103rd Annual Report

2016

BOARD OF GOVERNORS OF THE FEDERAL RESERVE SYSTEM

103rd Annual Report

2016

Board of Governors of the Federal Reserve System

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Letter of Transmittal

Board of Governors of the Federal Reserve System
Washington, D.C.

June 2017

The Speaker of the House of Representatives:

Pursuant to the requirements of section 10 of the Federal Reserve Act, I am pleased to submit the 103rd annual report of the Board of Governors of the Federal Reserve System.

This report covers operations of the Board during calendar-year 2016.

Sincerely,

Janet L. Yellen
Chair

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1 Overview

The Federal Reserve, the central bank of the United States, is a federal system composed of a central governmental agency—the Board of Governors—and 12 regional Federal Reserve Banks.

The Board of Governors, located in Washington, D.C., consists of seven members appointed by the President of the United States and supported by a 2,919-person staff. Besides conducting research, analysis, and policymaking related to domestic and international financial and economic matters, the Board plays a major role in the supervision and regulation of U.S. financial institutions and activities, has broad oversight responsibility for the nation's payments system and the operations and activities of the Federal Reserve Banks, and plays an important role in promoting consumer protection, fair lending, and community development.

For More Background on Board Operations

For more information about the Federal Reserve Board and the Federal Reserve System, visit the Board's website at www.federalreserve.gov/aboutthefed/default.htm. An online version of this annual report is available at www.federalreserve.gov/publications/annual-report/default.htm.

About This Report

This report covers Board and System operations and activities during calendar-year 2016. The report includes the following sections:

- **Monetary policy and economic developments.** Section 2 provides adapted versions of the Board's semiannual monetary policy reports to Congress.
- **Federal Reserve operations.** Section 3 provides a summary of Board and System activities in the areas of financial stability policy and research; section 4, in supervision and regulation; section 5, in consumer and community affairs; and section 6, in Reserve Bank operations.
- **Dodd-Frank Act implementation and other requirements.** Section 7 summarizes the Board's efforts in 2016 to implement provisions of the Dodd-Frank Wall Street Reform and Consumer Protection Act as well as the Board's compliance with the Government Performance and Results Act of 1993.
- **Policy actions and litigation.** Section 8 and section 9 provide accounts of policy actions taken by the Board in 2016, including new or amended rules and regulations and other actions as well as the deliberations and decisions of the Federal Open Market Committee (FOMC); section 10 summarizes litigation involving the Board.
- **Statistical tables.** Section 11 includes 14 statistical tables that provide updated historical data concerning Board and System operations and activities.
- **Federal Reserve System audits.** Section 12 provides detailed information on the several levels of audit and review conducted in regards to System operations and activities, including those provided by outside auditors and the Board's Office of Inspector General.
- **Federal Reserve System budgets.** Section 13 presents information on the 2016 budget performance of the Board and Reserve Banks, as well as their 2016 budgets, budgeting processes, and trends in their expenses and employment.
- **Federal Reserve System organization.** Section 14 provides listings of key officials at the Board and in the Federal Reserve System, including the Board of

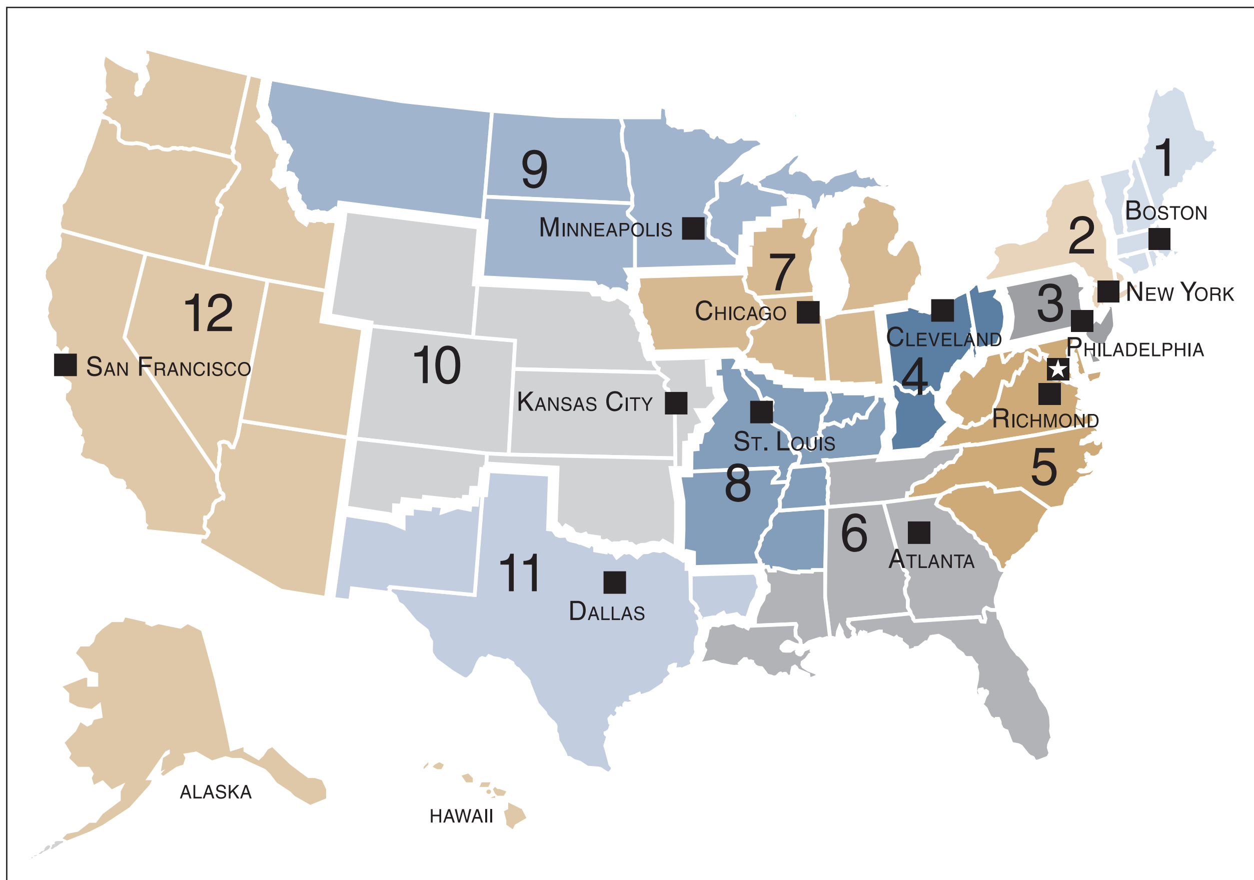
Governors, its officers, FOMC members, several System councils, and Federal Reserve Bank and Branch officers and directors.

About the Federal Reserve System

The Federal Reserve System, which serves as the nation's central bank, was created by an act of Congress on December 23, 1913. The System consists of a seven-member Board of Governors with headquarters in Washington, D.C., and the 12 Reserve Banks located in major cities throughout the United States.

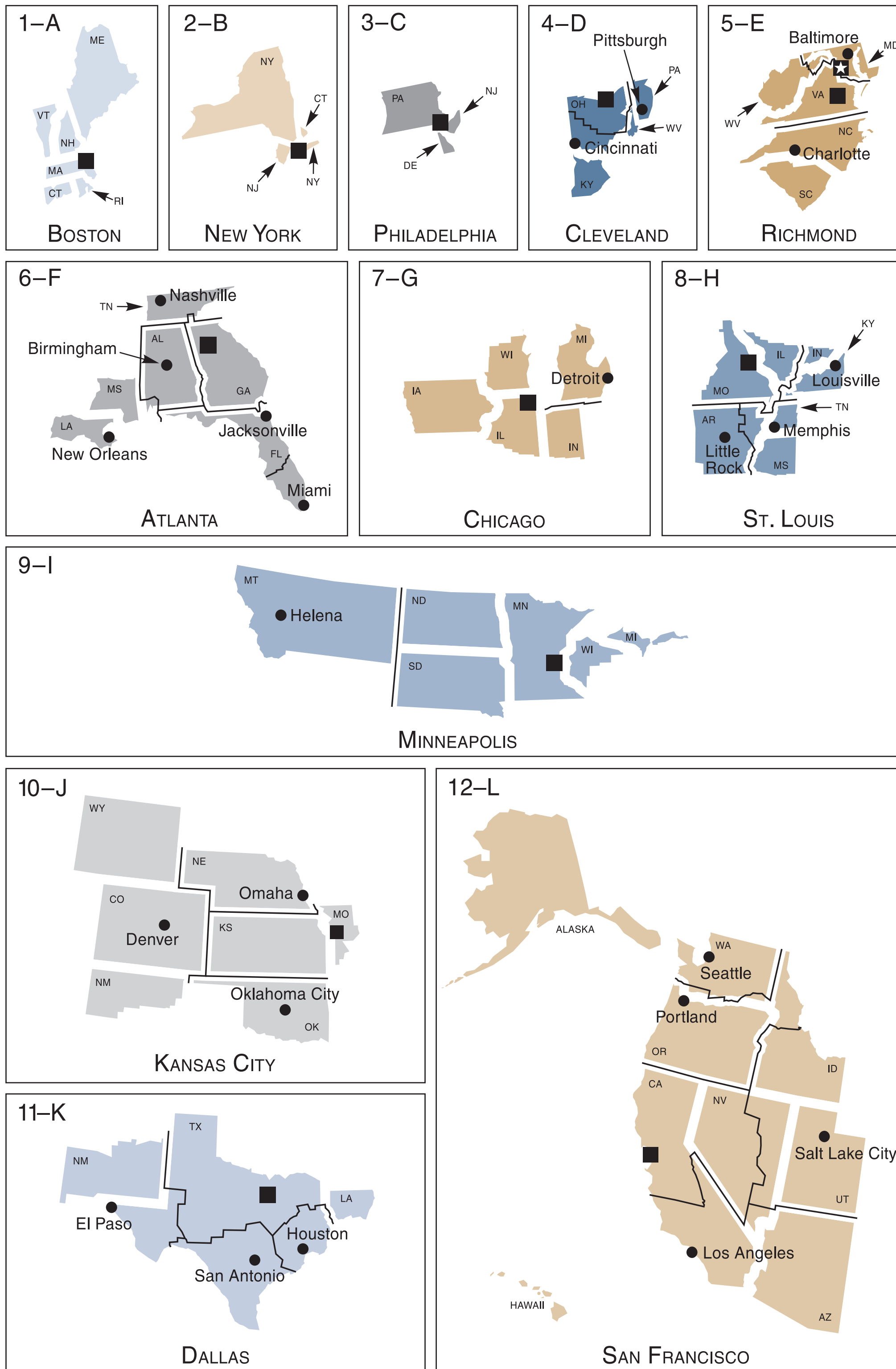
The Federal Reserve Banks are the operating arms of the central banking system, carrying out a variety of System functions, including operating a nationwide payment system; distributing the nation's currency and coin; under authority delegated by the Board of Governors, supervising and regulating a variety of financial institutions and activities; serving as fiscal agents of the U.S. Treasury; and providing a variety of financial services for the Treasury, other government agencies, and other fiscal principals.

The following maps identify Federal Reserve Districts by their official number, city, and letter designation.



■ Federal Reserve Bank city

✪ Board of Governors of the Federal Reserve System, Washington, D.C.



■ Federal Reserve Bank city
● Federal Reserve Branch city
✪ Board of Governors of the Federal Reserve System, Washington, D.C.
— Branch boundary

2 Monetary Policy and Economic Developments

As required by section 2B of the Federal Reserve Act, the Federal Reserve Board submits written reports to the Congress that contain discussions of "the conduct of monetary policy and economic developments and prospects for the future." The *Monetary Policy Report,* submitted semiannually to the Senate Committee on Banking, Housing, and Urban Affairs and to the House Committee on Banking and Financial Services, is delivered concurrently with testimony from the Federal Reserve Board Chair.

The following discussion is a review of U.S. monetary policy and economic developments in 2016, excerpted from the *Monetary Policy Report* published in February 2017 and June 2016. Those complete reports are available on the Board's website at www.federalreserve.gov/monetarypolicy/files/20170214_mprfullreport.pdf (February 2017) and www.federalreserve.gov/monetarypolicy/files/20160621_mprfullreport.pdf (June 2016).

Monetary Policy Report February 2017

Summary

Labor market conditions continued to strengthen over the second half of 2016. Payroll employment has continued to post solid gains, averaging 200,000 per month since last June, a touch higher than the pace in the first half of 2016, though down modestly from its 225,000-per-month pace in 2015. The unemployment rate has declined slightly since mid-2016; the 4.8 percent reading in January of this year was in line with the median of Federal Open Market Committee (FOMC) participants' estimates of its longer-run normal level. The labor force participation rate has edged higher, on net, since midyear despite a structural trend that is moving down as a result of changing demographics of the population. In addition, wage growth seems to have picked up somewhat relative to its pace of a few years ago.

Consumer price inflation moved higher last year but remained below the FOMC's longer-run objective of 2 percent. The price index for personal consumption expenditures (PCE) increased 1.6 percent over the 12 months ending in December, 1 percentage point more than in 2015, importantly reflecting that energy prices have turned back up and declines in non-oil import prices have waned. The PCE price index excluding food and energy items, which provides a better indication than the headline index of where overall inflation will be in the future, rose 1.7 percent over the 12 months ending in December, about ¼ percentage point more than its increase in 2015. Meanwhile, survey-based measures of longer-run inflation expectations have remained generally stable, though some are at relatively low levels; market-based measures of inflation compensation have moved up in recent months but also are at low levels.

Real gross domestic product is estimated to have increased at an annual rate of 2¾ percent in the second half of the year after rising only 1 percent in the first half. Consumer spending has been expanding at a moderate pace, supported by solid income gains and the ongoing effects of increases in wealth. The housing market has continued its gradual recovery, and fiscal policy at all levels of government has provided a modest boost to economic activity. Business investment had been weak for much of 2016 but posted larger gains toward the end of the year. Notwithstanding a transitory surge of exports in the third quarter, the underlying pace of exports has remained weak, a reflection of the appreciation of the dollar in recent years and the subdued pace of foreign economic growth.

Domestic financial conditions have generally been supportive of economic growth since mid-2016 and remain so despite increases in interest rates in recent months. Long-term Treasury yields and mortgage rates moved up from their low levels earlier last year but are still quite low by historical standards. Broad measures of stock prices rose, and the financial sector outperformed the broader equity market. Spreads

of yields of both speculative- and investment-grade corporate bonds over yields of comparable-maturity Treasury securities declined from levels that were somewhat elevated relative to the past several years. Even with an ongoing easing in mortgage credit standards, mortgage credit is still relatively difficult to access for borrowers with low credit scores, undocumented income, or high debt-to-income ratios. Student and auto loans are broadly available, including to borrowers with nonprime credit scores, and the availability of credit card loans for such borrowers appears to have expanded somewhat over the past several quarters. In foreign financial markets, meanwhile, equities, bond yields, and the exchange value of the U.S. dollar have all risen, and risk spreads have generally declined since June.

Financial vulnerabilities in the U.S. financial system overall have continued to be moderate since mid-2016. U.S. banks are well capitalized and have sizable liquidity buffers. Funding markets functioned smoothly as money market mutual fund reforms took effect in October. The ratio of household debt to income has changed little in recent quarters and is still far below the peak level it reached about a decade ago. Nonfinancial corporate business leverage has remained elevated by historical standards even though outstanding riskier corporate debt declined slightly last year. In addition, valuation pressures in some asset classes increased, particularly late last year. The Federal Reserve has continued to take steps to strengthen the financial system, including finalizing a rule that imposes total loss-absorbing capacity and long-term debt requirements on the largest internationally active bank holding companies as well as concluding an extensive review of its stress-testing and capital planning programs.

In December, the FOMC raised the target for the federal funds rate to a range of ½ to ¾ percent after maintaining it at ¼ to ½ percent for a year. The decision to increase the federal funds rate reflected realized and expected labor market conditions and inflation. With the stance of monetary policy remaining accommodative, the Committee has anticipated some further strengthening in labor market conditions and a return of inflation to the Committee's 2 percent objective.

The Committee has continued to emphasize that, in determining the timing and size of future adjustments to the target range for the federal funds rate, it will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. The Committee has expected that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate, and that the federal funds rate will likely remain, for some time, below levels that are expected to prevail in the longer run. Consistent with this outlook, in the most recent Summary of Economic Projections (SEP), which was compiled at the time of the December meeting of the FOMC, most participants projected that the appropriate level of the federal funds rate would be below its longer-run level through 2018. (The December SEP is included as Part 3 of the February 2017 *Monetary Policy Report* on pages 33–45; it is also included in section 9 of this annual report.)

With respect to its securities holdings, the Committee has stated that it will continue to reinvest principal payments from its securities portfolio, and that it expects to maintain this policy until normalization of the level of the federal funds rate is well under way. This policy of keeping the Committee's holdings of longer-term securities at sizable levels should help sustain accommodative financial conditions.

Part 1: Recent Economic and Financial Developments

Labor market conditions continued to improve during the second half of last year and early this year. Payroll employment has increased 200,000 per month, on average, since June, and the unemployment rate has declined slightly further, reaching 4.8 percent in January, in line with the median of Federal Open Market Committee (FOMC) participants' estimates of its longer-run normal level. The labor force participation rate has edged higher, on net, which is all the more notable given a demographically induced downward trend.

The 12-month change in the price index for overall personal consumption expenditures (PCE) was 1.6 percent in December—still below the Committee's 2 percent objective but up noticeably from 2015, when the increase in top-line prices was held down by declines in energy prices. The 12-month change in the index excluding food and energy prices (the core PCE price index) was 1.7 percent last year. Measures of longer-term inflation expectations have been generally stable, though some survey-based measures remain lower than a few years ago; market-based measures of inflation compensation moved higher in recent months but also remain below their levels from a few years ago.

Real gross domestic product (GDP) is estimated to have increased at an annual rate of 2¾ percent over the second half of 2016 after increasing just 1 percent in the first half. The economic expansion continues to be supported by accommodative financial conditions—including the still-low cost of borrowing for many households and businesses—and gains in household net wealth, which has been boosted further by a rise in the stock market in recent months and by increases in households' real income spurred by continuing job gains. However, net exports were a moderate drag on GDP growth in the second half, as imports picked up and the rise in the exchange value of the dollar in recent years remained a drag on export demand.

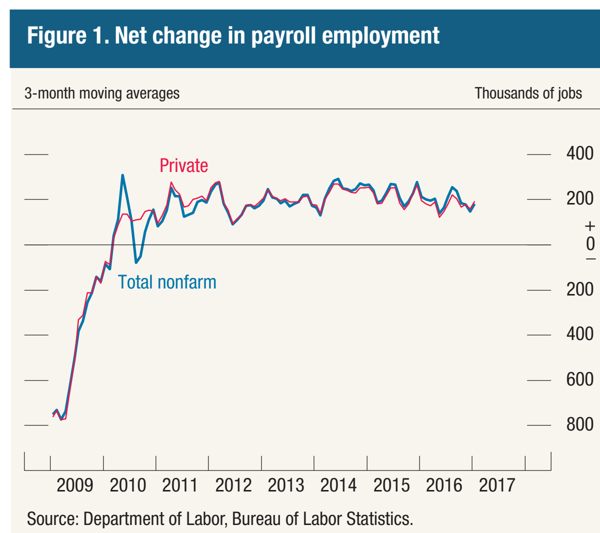
Domestic Developments

The labor market has continued to tighten gradually . . .

Labor market conditions strengthened over the second half of 2016 and early this year. Payroll employment has continued to post solid gains, averaging 200,000 per month since last June (figure 1). This rate of job gains is a bit higher than that seen during the first half of 2016, though it is a little slower than the 225,000 monthly pace in 2015. The unemployment rate has declined slightly further, on net, since the middle of last year. After dipping as low as 4.6 percent in November, the unemployment rate stood at 4.8 percent in January, in line with the median of FOMC participants' estimates of its longer-run normal level.

The labor force participation rate, at 62.9 percent, is up slightly since June 2016. Changing demographics and other longer-run structural changes in the labor market likely have continued to put downward pressure on the participation rate. A flat or increasing trajectory of the participation rate should therefore be viewed as a cyclical improvement relative to that downward trend. Reflecting the slightly higher participation rate and the small drop in the unemployment rate, the employment-to-population ratio has moved up about ¼ percentage point since mid-2016. (For additional historical context on the economic recovery, see the box "The Recovery from the Great Recession and Remaining Challenges" on pages 6–8 of the February 2017 *Monetary Policy Report.*)

Figure 1. Net change in payroll employment



Source: Department of Labor, Bureau of Labor Statistics.

. . . and is close to full employment

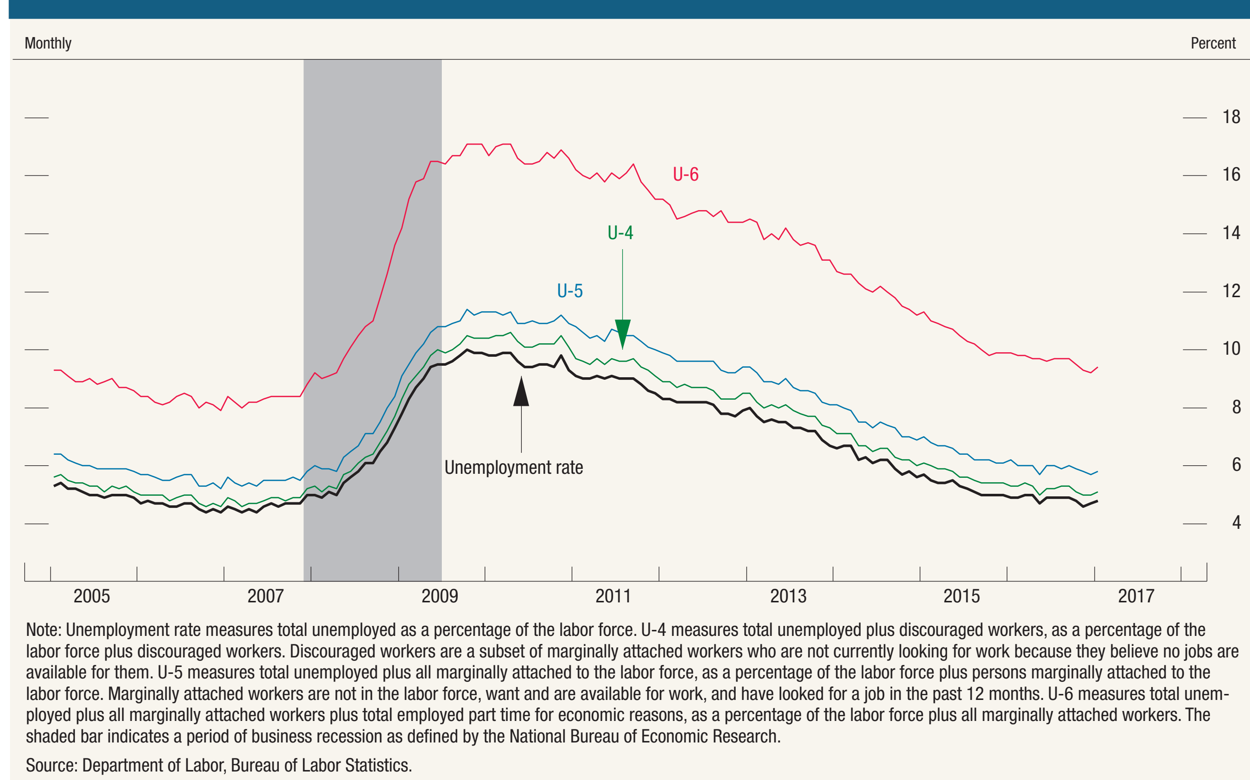
Other indicators are also consistent with a healthy labor market. Layoffs as a share of private employment, as measured in the Job Openings and Labor Turnover Survey (JOLTS), remained at a low level through December, and recent readings on initial claims for unemployment insurance, a more timely measure, point to a very low pace of involuntary separations. The JOLTS quits rate has generally continued to trend up and is now close to pre-crisis levels, indicating that workers feel increasingly confident about their employment opportunities. In addition, the rate of job openings as a share of private employment has remained near record-high levels. The share of workers who are employed part time but would like to work full time—which is part of the U-6 measure of underutilization from the Bureau of Labor Statistics (BLS)—is still somewhat elevated, however, even though it has declined further; as a result, the gap between U-6 and the headline unemployment rate is somewhat wider than it was in the years before the Great Recession (figure 2).

The jobless rate for African Americans also continued to edge lower in the second half of 2016, while the rate for Hispanics remained flat; as with the overall unemployment rate, these rates are near levels seen leading into the recession. Despite these gains, the average unemployment rates for these groups of Americans have remained high relative to the aggregate, and those gaps have not narrowed over the past decade.

Labor compensation growth is picking up . . .

The improving labor market appears to be contributing to somewhat larger gains in labor compensation. Major BLS measures of hourly compensation posted larger increases last year. Of these, the measures that include the costs of benefits have posted smaller gains than wage-only measures because of a slow-

Figure 2. Measures of labor underutilization



Note: Unemployment rate measures total unemployed as a percentage of the labor force. U-4 measures total unemployed plus discouraged workers, as a percentage of the labor force plus discouraged workers. Discouraged workers are a subset of marginally attached workers who are not currently looking for work because they believe no jobs are available for them. U-5 measures total unemployed plus all marginally attached to the labor force, as a percentage of the labor force plus persons marginally attached to the labor force. Marginally attached workers are not in the labor force, want and are available for work, and have looked for a job in the past 12 months. U-6 measures total unemployed plus all marginally attached workers plus total employed part time for economic reasons, as a percentage of the labor force plus all marginally attached workers. The shaded bar indicates a period of business recession as defined by the National Bureau of Economic Research.

Source: Department of Labor, Bureau of Labor Statistics.

down in the growth of employer health-care costs. A compensation measure computed by the Federal Reserve Bank of Atlanta, which tracks only the wages of workers who were employed at two points in time spaced 12 months apart, shows even more pickup than these BLS measures.

. . . amid persistently slow productivity growth

As in the previous several years, gains in labor compensation last year occurred against a backdrop of persistently slow productivity growth. Since 2008, labor productivity gains have averaged around 1 percent per year, well below the pace that prevailed from the mid-1990s to 2007 and somewhat below the 1974–95 average of 1½ percent per year. Since 2011, output per hour has averaged only a little more than ½ percent per year. The relatively slow pace of productivity growth in recent years is in part a consequence of the slower pace of capital accumulation; diminishing gains in technological innovations and downward trends in business formation also may have played a role.

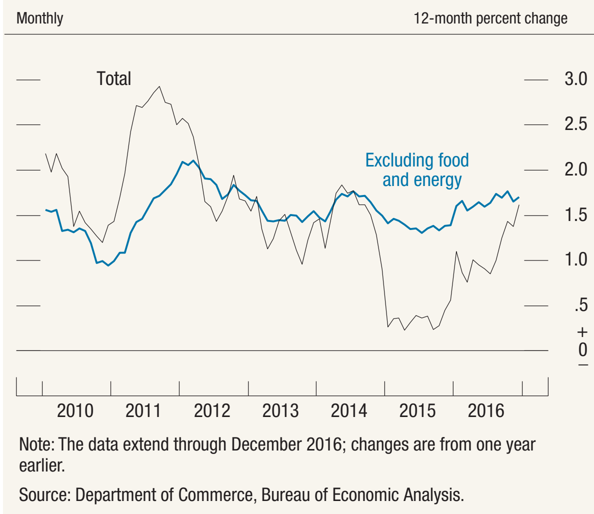
Price inflation has picked up over the past year . . .

In recent years inflation has been persistently low, in part because the drop in oil prices and the rise in the exchange value of the dollar since mid-2014 have led to sharp declines in energy prices and relatively weak non-energy import prices. The effects of these earlier developments have been waning, however, and overall inflation has been moving up toward the FOMC's 2 percent target; the 12-month change in overall PCE prices reached 1.6 percent in December, compared with only 0.6 percent over 2015. The PCE price index excluding food and energy items, which provides a better indication than the headline figure of where overall inflation will be in the future, rose 1.7 percent over the 12 months ending in December, somewhat greater than the 1.4 percent increase in the prior year, as prices for a wide range of core goods and services accelerated. Nonetheless, the rate of inflation for both total and core PCE prices remains below the Committee's target (figure 3).

. . . as oil and other commodity prices moved up moderately

The similar readings for headline and core PCE inflation last year partly reflect an upturn in crude oil in 2016 following the sharp decline in the prior two years. Since July, oil prices traded mostly in the $45 to $50 per barrel range until the November OPEC agreement regarding production cuts in 2017

Figure 3. Change in the price index for personal consumption expenditures



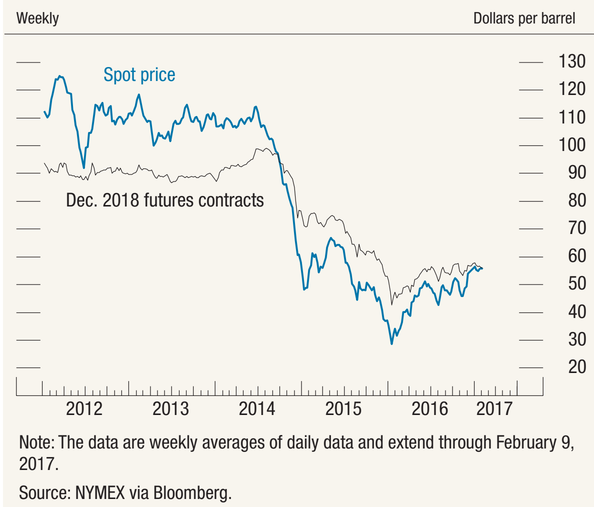
Note: The data extend through December 2016; changes are from one year earlier.

Source: Department of Commerce, Bureau of Economic Analysis.

(figure 4). In the wake of that agreement, prices moved up to about $55, roughly $15 per barrel higher since late 2015. Retail gasoline prices also rose after the November OPEC agreement, but that increase has partially reversed in recent weeks.

After falling during 2014 and 2015, non-oil import prices stabilized in late 2016, supported by the rise in nonfuel commodity prices as well as by an uptick in foreign inflation. In particular, prices of metals have increased in the past few months, boosted by production cuts combined with improved prospects for demand both in the United States and abroad. However, factors holding non-oil import prices down include dollar appreciation in the second half of 2016 and lower prices of agricultural goods last fall, as U.S. harvests hit record-high levels for many crops.

Figure 4. Brent spot and futures prices



Note: The data are weekly averages of daily data and extend through February 9, 2017.

Source: NYMEX via Bloomberg.

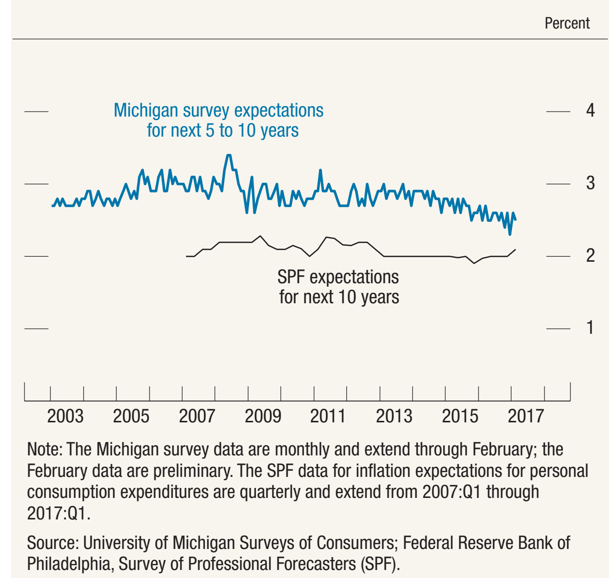
Survey measures of longer-term inflation expectations have been generally stable . . .

Wage- and price-setting decisions are likely influenced by expectations for inflation. Surveys of professional forecasters outside the Federal Reserve System indicate that their longer-term inflation expectations have remained stable and consistent with the FOMC's 2 percent objective for PCE inflation. In contrast, the median inflation expectation over the next 5 to 10 years as reported by the University of Michigan Surveys of Consumers has generally trended downward over the past few years, though it is little changed from a year ago; this measure was at 2.5 percent in early February (figure 5). It is unclear how best to interpret that downtrend; this measure of inflation expectations has been above actual inflation for much of the past 20 years.

. . . and market-based measures of inflation compensation have moved up notably in recent months but also remain relatively low

TIPS-based inflation compensation (5 to 10 years forward), after declining to very low levels through the middle of 2016, has risen to nearly 2 percent and is about 20 basis points higher than it was at the end of 2015. However, this level is still below the 2½ to

Figure 5. Median inflation expectations



Note: The Michigan survey data are monthly and extend through February; the February data are preliminary. The SPF data for inflation expectations for personal consumption expenditures are quarterly and extend from 2007:Q1 through 2017:Q1.

Source: University of Michigan Surveys of Consumers; Federal Reserve Bank of Philadelphia, Survey of Professional Forecasters (SPF).

3 percent range that persisted for most of the 10 years prior to 2014.

Real GDP growth picked up in the second half of 2016

Real GDP is reported to have increased at an annual rate of 2¾ percent in the second half of 2016 after increasing just 1 percent in the first half (figure 6). Much of the step-up reflects the stabilization of inventory investment, which held down GDP growth considerably in the first half of last year, as well as a pickup in government purchases of goods and services. Private domestic final purchases—that is, final purchases by U.S. households and businesses—grew more steadily than GDP last year and posted a fairly solid gain in the second half. PCE growth was bolstered by rising incomes and wealth, while private fixed investment was weak despite the low costs of borrowing for many households and businesses. Although the FOMC has increased the federal funds rate twice as this expansion has progressed—once in December 2015 and again in December 2016—in ¼ percentage point steps, overall financial conditions have been sufficiently accommodative to support somewhat-faster-than-trend growth in real activity.

Gains in income and wealth have continued to support consumer spending . . .

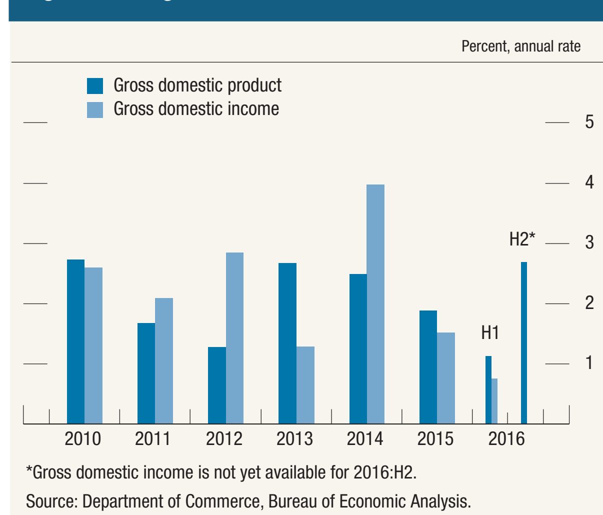
Real consumer spending rose at an annual rate of 2¾ percent in the second half of 2016, a solid pace similar to the one seen in the first half. Consumption has been supported by the ongoing improvement in the labor market and the associated increases in real disposable personal income (DPI)—that is, income after taxes and adjusted for price changes. Real DPI increased 2¼ percent in 2016 following a gain of 3 percent in 2015, when purchasing power was boosted by falling energy prices (figure 7).

Consumer spending has also been supported by further increases in household net worth. Broad measures of U.S. equity prices rose solidly over the past year, and house prices continued to move up. (In nominal terms, national house prices are approaching their peaks of the mid-2000s, though relative to rents or income, house price valuations are much lower than a decade ago. Buoyed by these cumulative increases in home and equity prices, aggregate household net worth has risen appreciably from its level during the recession, and the ratio of household net worth to income remains well above its historical average. The benefits of homeownership have not been distributed evenly; see the box "Homeownership by Race and Ethnicity" on pages 14–15 of the February 2017 *Monetary Policy Report*.

. . . as does credit availability

Consumer credit has continued to expand somewhat faster than income amid stable delinquencies on consumer debt. Auto and student loans remain widely available even to borrowers with lower credit scores, and outstanding balances on these types of loans continued to expand at a robust pace. Credit card balances continued to grow and were 6 percent higher than one year earlier in December. That said, credit card standards have remained tight for nonprime borrowers. As a result, delinquencies on credit cards are still near low historical levels.

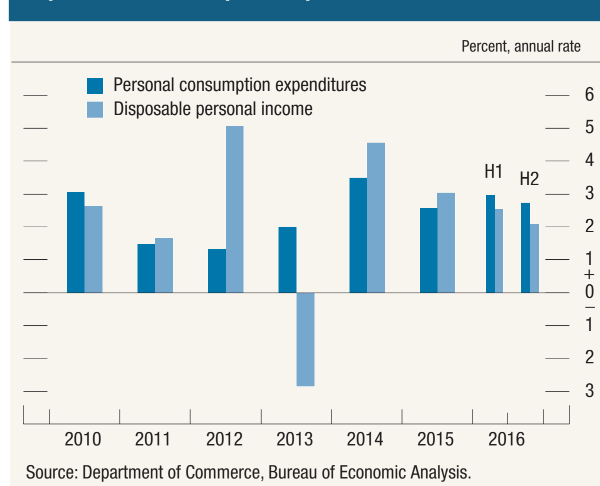
Figure 6. Change in real GDP and GDI



*Gross domestic income is not yet available for 2016:H2.

Source: Department of Commerce, Bureau of Economic Analysis.

Figure 7. Change in real personal consumption expenditures and disposable personal income



Source: Department of Commerce, Bureau of Economic Analysis.

Consumer confidence is strong

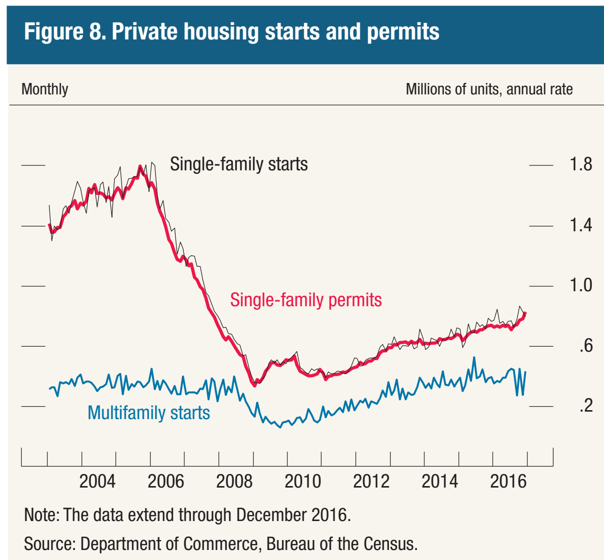
Household spending has also been supported by favorable consumer sentiment. In 2015 and through most of 2016, readings from the overall index of consumer sentiment from the Michigan survey were solid, likely reflecting rising incomes and job gains. Sentiment has improved further in the past couple of months. The share of households expecting real income gains over the next year or two is now close to its pre-recession level despite having lagged improvements in the headline sentiment measure earlier in the recovery.

Housing construction has been sluggish despite rising home demand

Residential investment spending appears to have only edged higher in 2016 following a larger gain in the previous year. Single-family housing starts registered a moderate increase in 2016, while multifamily housing starts flattened out on balance (figure 8). The pace of construction activity in 2016 remained sluggish despite solid gains in house prices and ongoing improvements in demand for both new and existing homes. As a result, the months' supply of inventories of homes for sale dropped to low levels, and the aggregate vacancy rate moved to its lowest level since 2005. Reportedly, tight supplies of skilled labor and developed lots have been restraining home construction.

Homebuying and residential construction have been supported by low interest rates and ongoing easing of credit standards for mortgages. Banks indicated in the October 2016 Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS) that they eased standards on several categories of residential home purchase loans.[1] Even so, mortgage credit is still relatively difficult to access for borrowers with low credit scores, harder-to-document income, or high debt-to-income ratios. Although mortgage rates moved up from their all-time low levels over the second half of last year, they remain quite low by historical standards, and, consequently, housing affordability remains favorable.

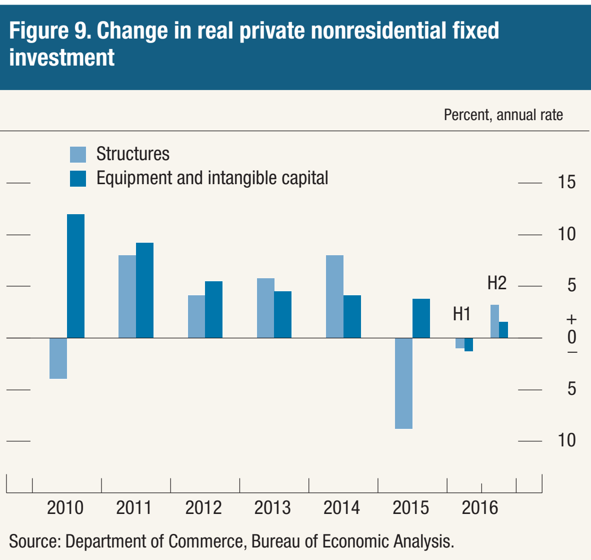
Figure 8. Private housing starts and permits



Note: The data extend through December 2016.

Source: Department of Commerce, Bureau of the Census.

Figure 9. Change in real private nonresidential fixed investment



Source: Department of Commerce, Bureau of Economic Analysis.

Business investment may be turning up after a period of surprising weakness

Real outlays for business investment—that is, private nonresidential fixed investment—were generally weak in 2016 but posted larger gains toward the end of the year (figure 9). Last year's weakness occurred despite moderate increases in aggregate demand and generally favorable financing conditions, and it was widespread across categories of equipment investment. Investment in equipment and intangibles moved down over most of the year, likely reflecting the effects of the combination of low oil prices, weak export demand, and a muted longer-run demand outlook among businesses. Although such declines are unusual outside of a recession, spending on these items did turn up in the fourth quarter. Investment in drilling and mining structures, which had been falling sharply since the drop in oil prices in 2014, fell further through most of 2016 but seems to be bottoming out. Outside of the energy sector, investment in nonresidential structures increased moderately in 2016. Finally, after having been subdued for much of

[1] The SLOOS is available on the Board's website at https://www.federalreserve.gov/boarddocs/snloansurvey.

2016, a widespread set of business sentiment indicators improved notably near the end of last year.

Financing conditions for nonfinancial firms have generally remained favorable

Nonfinancial businesses have continued to raise funds through bond issuance and bank loans, albeit at a somewhat slower pace than in the first half of 2016. The pace of such borrowing was supported in part by continued low interest rates: Corporate bond yields for speculative-grade borrowers have declined since last June, and those for investment-grade borrowers have increased but a fair bit less than those on comparable-maturity Treasury securities. Banks indicated in the October 2016 and January 2017 SLOOS that they eased lending terms on commercial and industrial loans in the second half of the year, but that standards on such loans remained unchanged relative to earlier in 2016; banks continued to tighten standards on commercial real estate loans over the second half of last year.

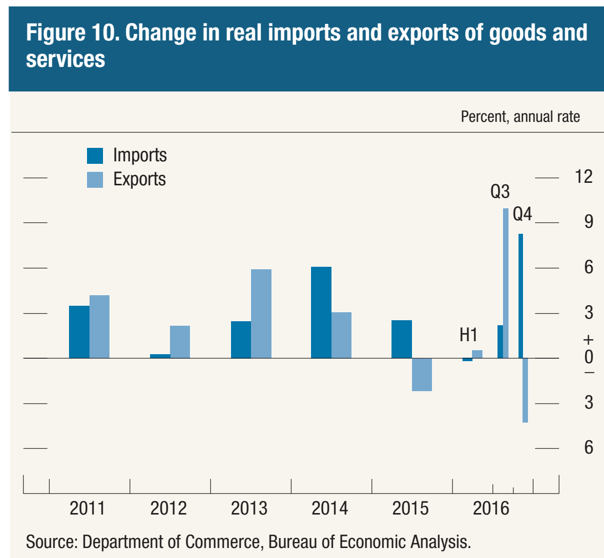
Net exports held down second-half real GDP growth

The rise in the dollar since mid-2014 and subdued foreign economic growth have continued to weigh on U.S. exports (figure 10). Nevertheless, exports increased at a moderate pace in the second half of 2016, but with much of the increase a result of rising agricultural exports. In particular, soybean exports surged in the third quarter before falling back toward a more normal level in the fourth quarter. Consistent with the stronger exchange value of the dollar, imports jumped in the second half of the year after having been about flat in the first half, when investment demand for imported equipment was very weak. Overall, real net exports were a moderate drag on real GDP growth in the second half of 2016. Although the trade balance and current account deficit narrowed slightly in the second and third quarters of 2016, the trade balance widened in the fourth quarter, as imports significantly outpaced exports.

Federal fiscal policy was a roughly neutral influence on GDP growth in 2016 . . .

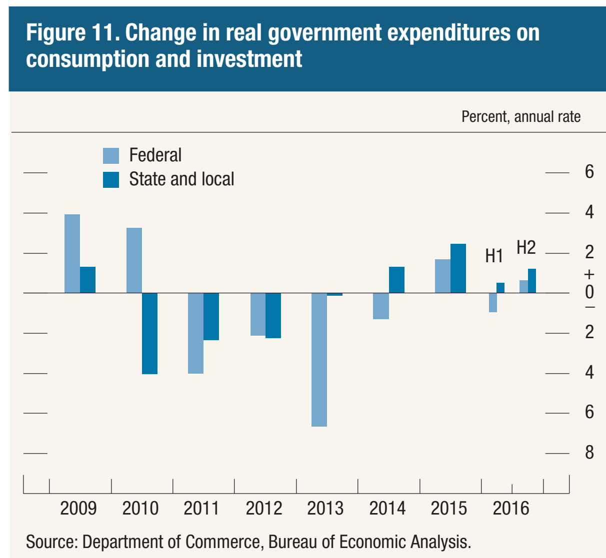
After being a drag on aggregate demand during much of the expansion, discretionary changes in federal fiscal policy have had a more neutral influence over the past two years. During 2016, policy actions had little effect on taxes and transfers, and federal purchases of goods and services are little changed over this period (figure 11). The federal budget deficit increased in fiscal year 2016 to 3.2 percent of GDP from 2.4 percent in fiscal 2015. Revenues rose only 1 percent last year in nominal terms and fell as a share of GDP because of soft personal income tax revenues and a decline in corporate income tax collections. Outlays rose 5 percent, edging up as a share of GDP, owing to increases in mandatory spending and interest payments as well as a shift in the timing of some payments that ordinarily would have been made in fiscal 2017. The Congressional Budget Office forecasts the deficit to be about the same size (as a share of GDP) in fiscal 2017 and in the next couple of years before rising thereafter. Consequently, the ratio of debt held by the public to nominal GDP is projected to remain near its current level of 77 percent of GDP for the next couple of years and then begin to rise.

Figure 10. Change in real imports and exports of goods and services



Source: Department of Commerce, Bureau of Economic Analysis.

Figure 11. Change in real government expenditures on consumption and investment



Source: Department of Commerce, Bureau of Economic Analysis.

. . . and real purchases at the state and local level continue to increase, albeit at a tepid pace

The fiscal conditions of most state and local governments have continued to improve, though the pace of improvement has been slower in recent quarters than it had been previously. The ongoing improvement facilitated a step-up in the average pace of employment gain in the sector to the strongest rate since 2008. At the same time, however, real investment in structures by state and local governments has declined, on net, since the first quarter of 2016 after trending up during the prior two years. All told, total real state and local purchases rose anemically in 2016. On the other side of the ledger, revenue growth was subdued overall, with little growth in tax collections at the state level but moderate gains at the local level.

Financial Developments

The expected path for the federal funds rate over the next several years steepened

Against the backdrop of continued strengthening in the labor market and an increase in inflation over the course of 2016, the path of the federal funds rate implied by market quotes on interest rate derivatives has moved up, on net, since the middle of last year. Following the U.S. elections in November, the expected policy path in the United States steepened significantly, apparently reflecting investors' expectations of a more expansionary fiscal policy. Meanwhile, market-based measures of uncertainty about the policy rate approximately one to two years ahead also increased, on balance, suggesting that some of the firming in market rates may reflect a rise in term premiums.

Survey-based measures of the expected path of policy also moved up in recent months. In the Survey of Primary Dealers that was conducted by the Federal Reserve Bank of New York just prior to the January 2017 FOMC meeting, the median dealer expected two rate hikes in 2017 and three rate hikes in 2018 as the most likely outcome.[2]

U.S. nominal Treasury yields increased considerably

After dropping significantly during the first half of 2016 and reaching near-historical lows in the aftermath of the U.K. referendum on exit from the European Union, or Brexit, in June, yields on medium- and longer-term nominal Treasury securities rebounded strongly in the second half of last year, with a substantial rise following the U.S. elections (figure 12). Market participants have attributed the increase in yields following the elections primarily to expectations of a more expansionary fiscal policy. The boost in longer-term nominal yields in recent months reflects roughly equal increases in real yields and inflation compensation. Consistent with the changes in Treasury yields, yields on 30-year agency mortgage-backed securities (MBS)—an important determinant of mortgage interest rates—increased significantly over the second half of the year. However, Treasury and MBS yields remain quite low by historical standards.

Broad equity price indexes increased notably . . .

U.S. equity markets were volatile around the Brexit vote in the United Kingdom but operated without disruptions. Broad equity price indexes have increased notably since late June, with a sizable portion of the gain occurring after the U.S. elections in November (figure 13). Reportedly, equity prices have been supported in part by the perception that corporate tax rates may be reduced. Stock prices of banks, which tend to benefit from a steepening in the yield curve, outperformed the broader market. Moreover, market participants pointed to expectations of changes in the regulatory environment as a factor contributing to the outperformance of bank stocks. By contrast, stock prices of firms that tend to benefit from lower interest rates, such as utilities, declined moderately on net. The implied volatility of the S&P 500 index—the VIX— fell, ending the period close to the bottom of its historical range. (For a discussion

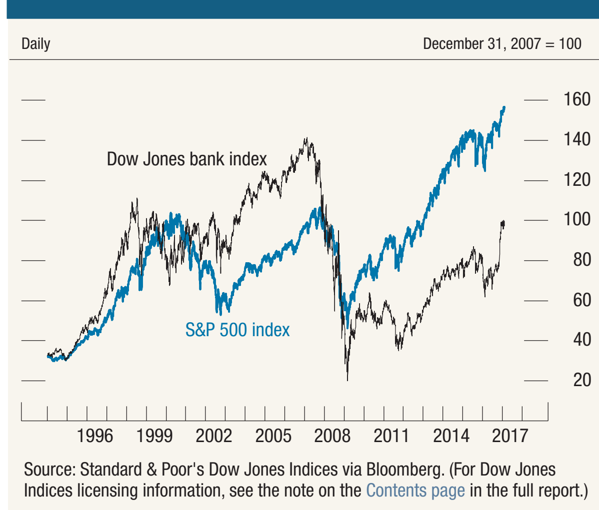
Figure 12. Yields on nominal Treasury securities

Note: The Treasury ceased publication of the 30-year constant maturity series on February 18, 2002, and resumed that series on February 9, 2006.

Source: Department of the Treasury.

[2] The Federal Reserve Bank of New York's Survey of Primary Dealers is available at https://www.newyorkfed.org/markets/primarydealer_survey_questions.html.

Figure 13. Equity prices



Source: Standard & Poor's Dow Jones Indices via Bloomberg. (For Dow Jones Indices licensing information, see the note on the Contents page in the full report.)

of financial stability issues over this same period, see the box "Developments Related to Financial Stability" on pages 22–23 of the February 2017 *Monetary Policy Report*.)

. . . while risk spreads on corporate bonds narrowed

Bond spreads in the nonfinancial corporate sector declined significantly across the credit spectrum, suggesting increased investor confidence in the outlook for the corporate sector since the middle of last year. Declines in spreads were particularly large for firms in the energy sector, likely reflecting improved prospects for U.S. producers as they continue to increase efficiency and benefit from higher prices.

Treasury market functioning and liquidity conditions in the mortgage-backed securities market were generally stable

Indicators of Treasury market functioning remained broadly stable over the second half of 2016 and early 2017. A variety of liquidity metrics—including bid-asked spreads and bid sizes—have displayed minimal signs of liquidity pressures overall, with a modest reduction in liquidity following the U.S. elections. In addition, Treasury auctions generally continued to be well received by investors. Liquidity conditions in the agency MBS market were also generally stable.

The compliance deadline for money market mutual fund reform passed in mid-October with no market disruption

In the weeks leading up to the October 14, 2016, deadline for money market mutual funds (also referred to as money market funds, or MMFs) to comply with a variety of regulatory reforms, shifts in investments from prime to government MMFs were substantial. However, the transition was smooth and without any market disruptions. Overnight Eurodollar deposit volumes fell significantly and have remained low as prime funds pulled back from lending in this market. Meanwhile, the rise in total assets of government funds appeared to contribute to modestly higher levels of take-up at the overnight reverse repurchase agreement (ON RRP) facility through late 2016. Overnight money market rates were little affected, although the spread between the three-month LIBOR (London interbank offered rate) and the OIS (overnight index swap) rate has remained elevated, likely reflecting MMFs' reduced appetite for term lending.

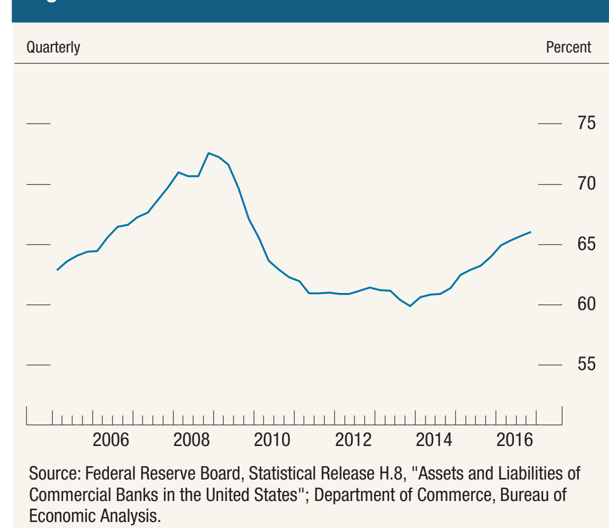
Bank credit continued to expand, and bank profitability improved

Aggregate credit provided by commercial banks continued to grow at a solid pace in the second half of 2016 (figure 14). The expansion in bank credit was driven by strong growth in core loans coupled with an increase in banks' holdings of securities. Measures of bank profitability improved since the middle of last year but remained below their historical averages.

Municipal bond markets continued to function smoothly

Credit conditions in municipal bond markets have generally remained stable since late June. Over that period, the MCDX—an index of credit default swap spreads for a broad portfolio of municipal bonds—decreased moderately, while yield spreads on 20-year

Figure 14. Ratio of total bank credit to nominal GDP



Source: Federal Reserve Board, Statistical Release H.8, "Assets and Liabilities of Commercial Banks in the United States"; Department of Commerce, Bureau of Economic Analysis.

general obligation municipal bonds over comparable-maturity Treasury securities were little changed on balance. The Puerto Rico Oversight, Management, and Economic Stability Act was passed into law in late June, providing the commonwealth with a clearer path toward debt restructuring. Although Puerto Rico missed a small amount of debt payments on general obligation bonds in August, this default appeared to have had no significant effect on the broader municipal bond market.

International Developments

Foreign financial market conditions improved despite global political uncertainties

Financial market conditions in both the advanced foreign economies (AFEs) and the emerging market economies (EMEs) have generally improved since June. In the AFEs, increasing distance from the Brexit vote, better-than-expected economic data for Europe, and the continuation of accommodative monetary policies by advanced-economy central banks have contributed to improved risk sentiment. Advanced-economy bond yields reversed their downward trend seen in the first half of the year and increased notably following the U.S. elections, in part on expectations of a more expansionary U.S. fiscal policy (figure 15).

Equity prices in the AFEs have generally risen since June, with financial stocks outperforming broader stock indexes as third-quarter earnings largely beat expectations, several major risk events passed, and the steepening of yield curves was expected to boost profits going forward. Despite some widening of euro-area corporate spreads in the last months of 2016, corporate credit conditions in the advanced foreign economies have remained accommodative, with the continuation of corporate asset purchase programs by several AFE central banks and with low corporate spreads.

In EMEs, equities have risen significantly and sovereign yield spreads have narrowed since June, supported in part by higher commodity prices. Financial conditions did tighten briefly following the U.S. elections, with increased capital outflows and wider sovereign spreads, on concerns that higher global interest rates, as well as the possibility of more protectionist trade policies, would weigh on EME growth. However, the favorable risk sentiment seen in the summer and early fall of 2016 resumed by the end of the year for most EMEs.

After depreciating slightly in the first half of last year, the dollar strengthened in the second half

The dollar has strengthened since June, with the broad dollar index—a measure of the trade-weighted value of the dollar against foreign currencies—rising about 4 percent on balance (figure 16). Much of this strengthening of the U.S. dollar reflects the combined influences of the large depreciation of the Mexican peso, expectations of fiscal and trade policy changes after the U.S. elections, and market expectations of tighter Federal Reserve monetary policy. The Chinese renminbi also weakened notably against the

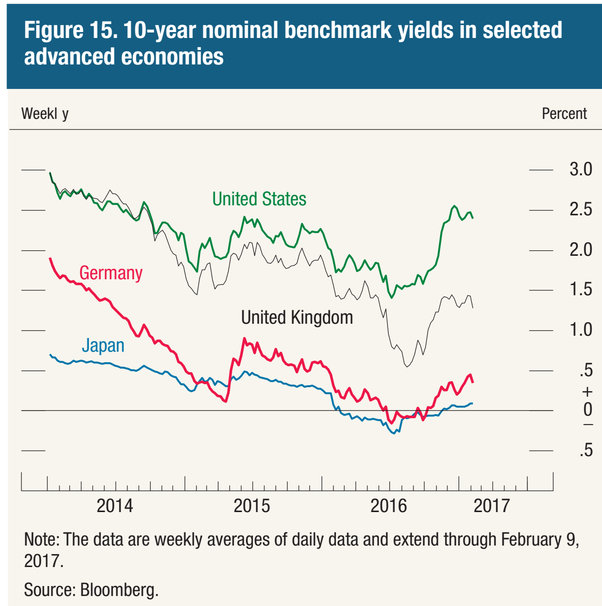


Figure 15. 10-year nominal benchmark yields in selected advanced economies

Note: The data are weekly averages of daily data and extend through February 9, 2017.

Source: Bloomberg.

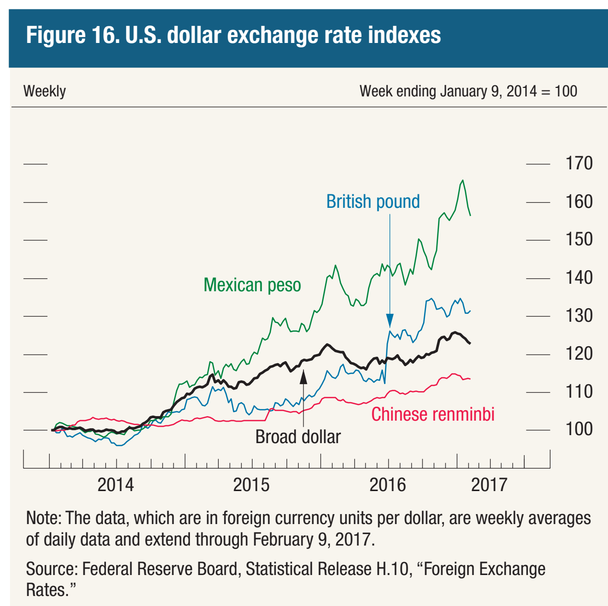


Figure 16. U.S. dollar exchange rate indexes

Note: The data, which are in foreign currency units per dollar, are weekly averages of daily data and extend through February 9, 2017.

Source: Federal Reserve Board, Statistical Release H.10, "Foreign Exchange Rates."

dollar, on net, as capital outflows from China picked up; Chinese authorities tightened capital controls in response.

In general, AFE economic growth was moderate and inflation remained subdued

In Canada, economic growth picked up sharply in the third quarter, following a contraction in the previous quarter, as oil extraction recovered from the disruptions caused by wildfires in May. In contrast, economic growth in Japan in the second and third quarters slowed after a strong first quarter, returning to a more typical moderate pace. Euro-area growth firmed in the second half, and, in the United Kingdom, economic activity was resilient in the aftermath of the Brexit referendum in June. Available indicators suggest that growth in most AFEs was moderate near the end of 2016 and early this year.

Headline inflation in most AFEs increased over the second half of 2016, in part driven by higher oil prices. In the United Kingdom, the substantial sterling depreciation after the Brexit referendum also exerted upward pressure on consumer prices. Even so, core inflation readings in AFEs remained generally subdued, and headline inflation stayed below central bank targets in Canada, the euro area, Japan, and the United Kingdom.

AFE central banks maintained highly accommodative monetary policies

In August, the Bank of England cut its policy rate 25 basis points, announced additional purchases of government and corporate bonds, and introduced a term funding scheme. In September, the Bank of Japan committed to expanding the monetary base until inflation exceeds 2 percent in a stable manner and adopted a new policy framework aimed at controlling the yield curve by targeting short- and long-term interest rates. In December, the European Central Bank announced an extension of the intended duration of its asset purchases through at least December 2017, albeit with a slight reduction in those purchases beginning in April 2017.

In EMEs, Asian growth was solid . . .

Chinese economic activity remained robust in the second half of 2016, as earlier policy easing supported stable manufacturing growth and a strong property market. However, the property market cooled somewhat toward the end of the year following the introduction of new macroprudential measures aimed at curbing rapidly rising house prices. Elsewhere in emerging Asia, growth held steady in the third quarter but stepped down in some countries in the fourth, even though exports and manufacturing improved. And in India, a surprise mandatory exchange of large-denomination bank notes—a move aimed at battling tax evasion and corruption—has disrupted activity.

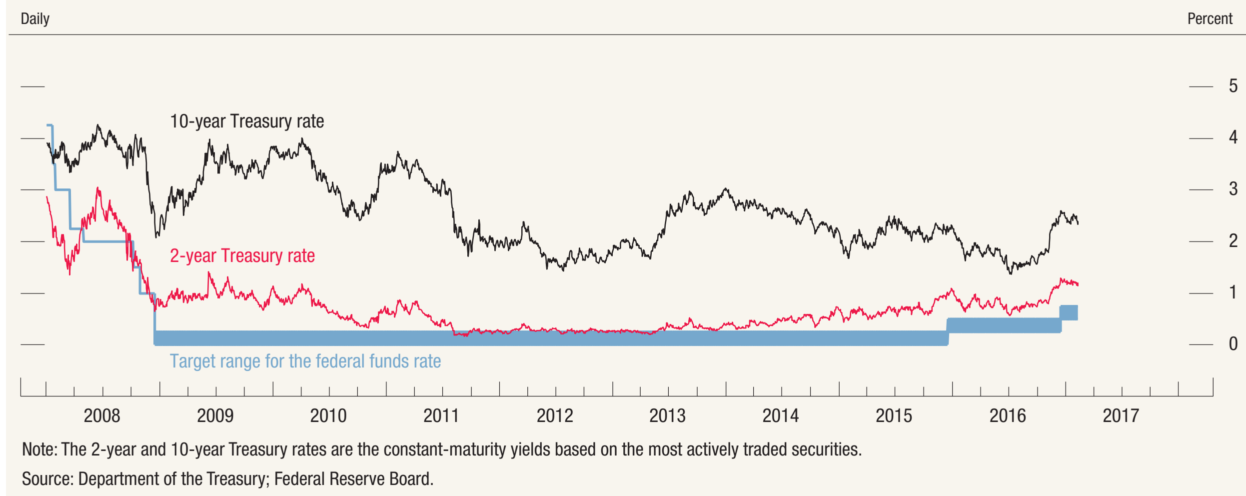
. . . but many Latin American economies continued to struggle

In Mexico, after considerable weakness in the first half of 2016, growth surged in the third quarter, supported in part by a recovery in exports to the United States. However, activity weakened again in the fourth quarter, as consumer and business confidence dropped. Furthermore, inflation in Mexico jumped over the second half of the year, pressured in part by the peso's sizable depreciation, prompting the Bank of Mexico to hike its policy rate sharply. Brazil's recession deepened in the third quarter, reflecting in part tight macroeconomic policies, although the central bank began to ease monetary policy as inflation dropped in response to the weak economy. Elsewhere in the region, activity in the third quarter was mixed; Chile's economy rebounded, but Argentina's GDP contracted and the crisis in Venezuela deepened.

Part 2: Monetary Policy

In December, the Federal Open Market Committee (FOMC) raised the target for the federal funds rate by ¼ percentage point to a range of ½ to ¾ percent. The FOMC's decision reflected realized and expected labor market conditions and inflation. Moreover, the decision to raise the target range was consistent with the Committee's expectation that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace, labor market conditions would strengthen somewhat further, and inflation would rise to the FOMC's 2 percent objective over the medium term. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data. In addition, the Committee anticipates reinvesting principal payments of its securities holdings until normalization of the level of the federal funds rate is well under way.

Figure 17. Selected interest rates



Note: The 2-year and 10-year Treasury rates are the constant-maturity yields based on the most actively traded securities.

Source: Department of the Treasury; Federal Reserve Board.

The FOMC raised the federal funds rate target range in December

About a year ago, in December 2015, the FOMC raised the target range for the federal funds rate after holding the range at near zero since late 2008 to support economic activity and stem disinflationary pressures in the wake of the Great Recession. At that time, the Committee judged that it had seen sufficient improvement in the labor market and was reasonably confident that inflation would move back to its 2 percent objective, which would warrant an initial increase in the federal funds rate. Through most of 2016, the Committee maintained the target range of ¼ to ½ percent, pending further evidence of continued progress toward its objectives. In December, in view of realized and expected labor market conditions and inflation, the FOMC raised the target range for the federal funds rate another ¼ percentage point, to a range of ½ to ¾ percent (figure 17).[3] The Committee kept that same target range at its most recent meeting, which concluded on February 1.

Monetary policy continues to support the economic expansion

The Committee has continued to see the federal funds rate as likely to remain, for some time, below the levels that are expected to prevail in the longer run. With gradual adjustments in the stance of monetary policy, the FOMC expects that economic activity will expand at a moderate pace, labor market conditions will strengthen somewhat further, and inflation will rise to 2 percent over the medium term.

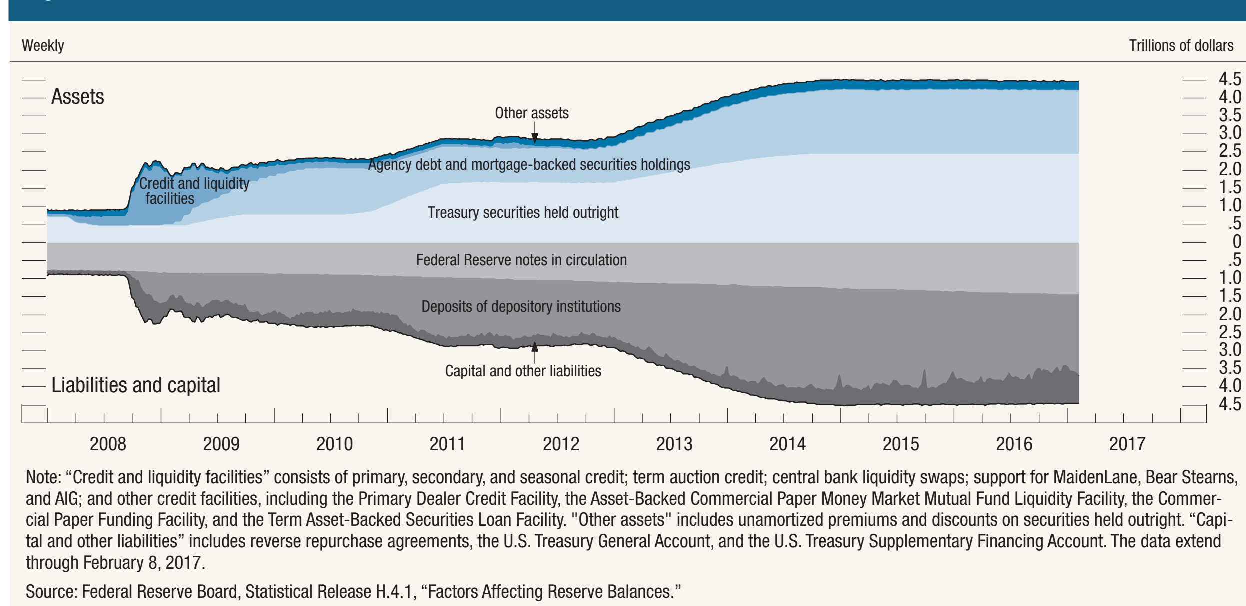
Consistent with this outlook, in the most recent Summary of Economic Projections (included as Part 3 of the February 2017 *Monetary Policy Report* on pages 33–45; also included in section 9 of this annual report), which was compiled at the time of the December 2016 meeting, most participants projected that the appropriate level of the federal funds rate would be below its longer-run level through 2018.

Future changes in the federal funds rate will depend on the economic outlook as informed by incoming data

Although the Committee has expected that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate, the Committee has continued to emphasize that the actual path of monetary policy will depend on the evolution of the economic outlook. In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee has indicated that it will carefully monitor actual and expected progress toward its inflation goal.

[3] See Board of Governors of the Federal Reserve System (2016), “Federal Reserve Issues FOMC Statement,” press release, December 14, https://www.federalreserve.gov/newsevents/press/monetary/20161214a.htm.

Figure 18. Federal Reserve assets and liabilities



Note: "Credit and liquidity facilities" consists of primary, secondary, and seasonal credit; term auction credit; central bank liquidity swaps; support for MaidenLane, Bear Stearns, and AIG; and other credit facilities, including the Primary Dealer Credit Facility, the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility, the Commercial Paper Funding Facility, and the Term Asset-Backed Securities Loan Facility. "Other assets" includes unamortized premiums and discounts on securities held outright. "Capital and other liabilities" includes reverse repurchase agreements, the U.S. Treasury General Account, and the U.S. Treasury Supplementary Financing Account. The data extend through February 8, 2017.

Source: Federal Reserve Board, Statistical Release H.4.1, "Factors Affecting Reserve Balances."

The size of the Federal Reserve's balance sheet has remained stable

To help maintain accommodative financial conditions, the Committee has continued its existing policy of rolling over maturing Treasury securities at auction and reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Federal Reserve's total assets have held steady at around $4.5 trillion, with holdings of U.S. Treasury securities at $2.5 trillion and holdings of agency debt and agency mortgage-backed securities at approximately $1.8 trillion (figure 18). The Committee has for some time stated that it anticipates maintaining this policy until normalization of the level of the federal funds rate is well under way.

Interest income on the System Open Market Account, or SOMA, portfolio has continued to support substantial remittances to the U.S. Treasury. Preliminary results indicate that the Reserve Banks provided for payments of $92 billion of their estimated 2016 net income to the Treasury. The Federal Reserve's remittances to the Treasury have averaged about $80 billion a year since 2008, compared with about $25 billion a year over the decade prior to 2008.[4]

The Federal Reserve's implementation of monetary policy has continued smoothly

As in December 2015, the Federal Reserve successfully raised the effective federal funds rate in December 2016 using the interest rate paid on reserve balances, together with an overnight reverse repurchase agreement (ON RRP) facility.[5] Specifically, the Federal Reserve raised the interest rate paid on required and excess reserve balances to ¾ percent and the ON RRP offering rate to ½ percent. In addition, the Board of Governors approved an increase in the discount rate (the primary credit rate) to 1.25 percent. The effective federal funds rate rose into the new range amid orderly trading conditions in money markets. Increases in interest rates in other money markets were similar to the rise in the federal funds rate following the December meeting.

The total take-up at the ON RRP facility increased modestly in the second half of 2016 as a result of higher demand by government money market mutual funds in the wake of money fund reform that took effect in mid-October.

[4] Total remittances include a one-time transfer of $19.3 billion in December 2015 to reduce the aggregate Reserve Bank capital surplus to $10 billion, as required by the Fixing America's Surface Transportation Act. See Board of Governors of the Federal Reserve System (2016), "Federal Reserve System Publishes Annual Financial Statements," press release, March 18, https://www.federalreserve.gov/newsevents/press/other/20160317a.htm.

[5] See Board of Governors of the Federal Reserve System (2014), "Federal Reserve Issues FOMC Statement on Policy Normalization Principles and Plans," press release, September 17, https://www.federalreserve.gov/newsevents/press/monetary/20140917c.htm.

Although the implementation of monetary policy has been smooth, the Federal Reserve has continued to test the operational readiness of other policy tools as part of prudent planning. Two operations of the Term Deposit Facility were conducted in the second half of 2016; seven-day deposits were offered at both operations with a floating rate of 1 basis point over the interest rate on excess reserves. In addition, the Open Market Desk conducted several small-value exercises solely for the purpose of maintaining operational readiness.

Monetary Policy Report June 2016

Summary

Labor market conditions clearly continued to strengthen during the early months of this year: Payrolls expanded at a solid pace of almost 200,000 per month in the first quarter, and while the unemployment rate flattened out at close to 5 percent, the labor force participation rate moved up strongly. More recently, the signals regarding labor market improvement have become more mixed: Payroll gains are reported to have slowed to an average of 80,000 per month in April and May (or about 100,000 after adjustment for the effects of a strike). The unemployment rate dropped in May to 4.7 percent, its lowest level since late 2007; however, the labor force participation rate fell back again and was little changed from its year-ago level. All told, the latest readings suggest that labor markets are tighter than they were at the end of last year but that the pace of improvement has slowed. Whether those signs of slowing will be confirmed by subsequent data, and how persistent any such slowing will be, remains to be seen.

Consumer price inflation has continued to be held down by lower prices for energy and imports, and the price index for personal consumption expenditures (PCE) increased only about 1 percent over the 12 months ending in April. Changes in the PCE price index excluding food and energy items, which provide a better indication than the headline figure of where overall inflation will be in the future, also remained modest; this index, which rose 1½ percent over the 12 months ending in April, was partly restrained by lower prices for non-oil imported goods. However, both the headline and core inflation measures have picked up somewhat from a year earlier. Meanwhile, some survey-based measures of longer-run inflation expectations have remained relatively stable, while others have moved down; market-based measures of inflation compensation also are at low levels.

Although real gross domestic product is reported to have increased at a sluggish rate in the first quarter of 2016, the available data for the second quarter point to a noticeable step-up in the pace of growth. On average, consumer spending so far this year appears to be expanding at a moderate pace, supported by solid income gains and the ongoing effects of the increases in wealth and the declines in oil prices of the past two years. The housing market continues its gradual recovery, and fiscal policy at all levels of government is now modestly boosting economic activity after exerting a considerable drag in recent years. One area of concern, however, is the softening in business fixed investment in recent quarters even beyond those sectors most directly affected by the plunge in energy prices. In addition, the weakness of exports—following the significant appreciation of the dollar over the past two years and the subdued pace of foreign economic growth—continues to hold back overall output growth.

On balance, household and business credit conditions in the United States have remained accommodative so far this year. Following a period of heightened global financial market volatility earlier this year in which risk spreads for U.S. corporate bonds rose, financial conditions have eased somewhat in recent months, and corporate bond yields have returned to historically low levels. Mortgage rates once again have approached their all-time lows, and mortgage credit appears widely available to borrowers with solid credit profiles, though less so to would-be borrowers with imperfect credit histories. Student and auto loans are broadly available, including to borrowers with nonprime credit scores, and the availability of credit card loans for such borrowers appears to have expanded somewhat over the past several quarters. Broad measures of U.S. equity prices have increased slightly, on net, since the beginning of the year. Meanwhile, foreign financial markets appear to have stabilized following the period of volatility earlier this year, with foreign equity prices higher and risk spreads lower. That said, the potential remains for spillovers to the U.S. economy from shocks to foreign economic activity and financial markets, including possible reverberations from the U.K. referendum this week on membership in the European Union.

Turning to the stability of the U.S. financial system, financial vulnerabilities have remained at a moderate level this year. Domestic financial institutions and markets functioned well during the period of heightened volatility early in the year. Large banking firms have kept their capital and liquidity ratios at high levels relative to historical standards, capital at other financial firms also appears to be elevated, and financial firms' use of short-term wholesale funding remains subdued. Debt growth in the household sector has been modest. However, leverage of nonfinancial corporations is elevated by historical standards, and lower-rated firms are potentially vulnerable to adverse developments. In particular, the performance of firms in the energy sector has been especially weak due to the prolonged period of low oil prices. In equity markets, valuation pressures have increased

somewhat as expectations for corporate earnings have been revised downward; valuation pressures have remained notable in the commercial real estate sector, to which some small banks have substantial exposures.

After having raised the target range for the federal funds rate to between ¼ and ½ percent last December, the Committee maintained that target range over the first half of the year. The Committee's decisions to leave the stance of policy unchanged were supported by its assessments earlier in the year that global economic and financial developments posed risks to the economic outlook and that growth in economic activity appeared to have slowed. In June, the Committee noted that recent information indicated that the pace of improvement in the labor market had slowed, while growth in economic activity appeared to have picked up. In addition, the Committee's policy stance so far this year reflected its expectation that inflation would remain low in the near term, in part due to earlier declines in energy prices and in the prices of non-energy imports. The Committee stated that its accommodative stance of policy is intended to support further improvements in labor market conditions and a return to 2 percent inflation.

The Committee continued to emphasize that, in determining the timing and size of future adjustments to the target range for the federal funds rate, it will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. These judgments will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual future increases in the federal funds rate, and that the federal funds rate will likely remain, for some time, below levels that are expected to prevail in the longer run. Consistent with this outlook, in the most recent Summary of Economic Projections (SEP), which was compiled at the time of the June meeting of the Federal Open Market Committee (FOMC), FOMC participants projected that the appropriate level of the federal funds rate would be below its longer-run level through 2018. (The June SEP is discussed in more detail in Part 3 of the June 2016 *Monetary Policy Report* on pages 33–36; it is also included in section 9 of this annual report.)

The Federal Reserve continued to use interest paid on reserve balances and employ an overnight reverse repurchase agreement facility to manage the federal funds rate, and these tools were effective in keeping the federal funds rate within its target range. The Federal Reserve also continued to test the operational readiness of other policy implementation tools.

Part 1: Recent Economic and Financial Developments

Labor market conditions have improved this year, though recent data suggest there has been a loss of momentum. Payroll gains averaged about 200,000 per month in the first quarter but then only 80,000 per month in April and May. The unemployment rate has edged down to 4¾ percent, a level that is near the midpoint of the Federal Open Market Committee (FOMC) participants' estimates of its longer-run rate. That said, a few indicators suggest that some slack in the labor market remains. Despite persistently weak productivity growth, measures of labor compensation show some tentative signs of acceleration. Overall consumer price inflation has continued to be held down by lower prices for energy and imports, but both overall inflation and inflation excluding food and energy items, a useful gauge of where overall inflation will be in the future, have picked up a bit over the past year. Some survey-based measures of longer-run inflation expectations have moved down; market-based measures of inflation compensation have declined noticeably since last summer.

Real gross domestic product (GDP) is estimated to have increased at a sluggish rate in the first quarter, but more recent data point to a noticeable step-up in the pace of growth in the second quarter. Consumer spending appears to be expanding at a moderate pace so far this year, while the housing market continues its gradual recovery, and fiscal policy at all levels of government is now modestly boosting economic activity after exerting a considerable drag in recent years. An area of concern, however, is the softening in business fixed investment in recent quarters, even beyond those sectors most directly affected by the plunge in energy prices. In addition, weak exports are providing little boost to overall output growth. Heightened global financial market volatility early this year damped confidence both domestically and abroad, but financial conditions have generally eased

somewhat in recent months; in the United States, credit conditions for both households and businesses have remained generally accommodative.

Domestic Developments

Early this year, the labor market continued to improve . . .

The labor market continued to improve in the first few months of this year. Payrolls expanded at an average rate of around 200,000 per month from January through March, modestly below the average of 230,000 jobs per month last year but still well above the number needed to absorb the trend number of new entrants into the workforce. The unemployment rate held at about 5 percent, where it had been since the fall, but both labor force participation and the employment-to-population ratio rose noticeably. The rise in the labor force participation rate was encouraging because it seemed to suggest that labor supply was responding significantly to the strengthening labor market.

. . . but recently there may have been a loss of momentum . . .

The data for April and May, however, suggest that the pace of labor market improvement has slowed. Payroll growth is reported to have averaged a pace of only 80,000 per month (about 100,000 after adjustment for the effects of a strike).[1] And although the unemployment rate fell to 4.7 percent in May, that decline occurred as both labor force participation and the employment-to-population ratio fell back somewhat from their levels in March. On net, the participation rate in May was little changed from a year earlier (a position that should nonetheless be viewed as a strengthening relative to a trend that is probably declining because of demographic changes, especially the aging of the baby-boom generation).

Despite these disappointing data, other labor market indicators are consistent with a job market that has continued to strengthen. In particular, initial claims for unemployment insurance, now available through early June, remain very low—and therefore at odds with the weaker tenor of the recent payroll figures. In addition, according to the Job Openings and Labor Turnover Survey, the rate of job openings as a share of private employment remains at a very high level; the quits rate has continued to trend up and is now fairly high, the latter measure indicating that workers feel increasingly confident about their employment opportunities.

[1] According to the Labor Department, payroll employment in May was reduced by about 35,000 because of workers on strike at Verizon. These employees have returned to work and are expected to be included in payroll figures for June.

. . . and a few signs of labor underutilization remain

Although the May level of the unemployment rate is near the midpoint of the FOMC participants' estimates of its longer-run rate, a few indicators suggest that some slack in labor resource utilization remains. Most notably, the share of workers who are employed part time but would like to work full time is still elevated; accordingly, the more comprehensive U-6 measure of labor underutilization, which includes these underemployed individuals, has remained well above its pre-recession level. Meanwhile, jobless rates for African Americans and Hispanics are high relative to the aggregate, though these rates have also improved during the economic recovery. (For additional discussion, see the box "Have the Gains of the Economic Expansion Been Widely Shared?" on pages 6–7 of the June 2016 *Monetary Policy Report*.)

Compensation growth has shown tentative signs of a pickup . . .

By most measures, the growth of labor compensation has remained modest, though recently there have been some signs of faster increases. The employment cost index (ECI) for private-industry workers, which includes the cost of employer-provided benefits as well as wages, registered a rise of only 1¾ percent over the 12 months ending in March. However, two other prominent measures of labor compensation—average hourly earnings for all private-sector employees and business-sector compensation per hour—recorded larger increases than the ECI over the past year, and the increases in both series were above their corresponding averages over the preceding several years. In addition, according to the Federal Reserve Bank of Atlanta's Wage Growth Tracker, the median of 12-month changes in individuals' hourly wages (from the monthly survey of households) has been gradually trending higher, reaching 3½ percent in May.

. . . amid persistently weak productivity growth

The relatively slow gains in labor compensation in recent years have occurred against a backdrop of persistently weak productivity growth. Since 2008, labor productivity gains have averaged around 1 percent per year, far below the pace that prevailed before the recession. Indeed, in the past five years, productivity growth has averaged only ½ percent per year.

The relatively slow pace of productivity growth is at least in part a consequence of the sustained weakness in capital investment over the recession and early recovery period. Productivity gains may improve in the future as investment in productivity-enhancing capital equipment and in research and development strengthens.

Falling energy prices have held down consumer price inflation

Overall consumer price inflation has moved up from the lows recorded last year, but it remains well below the FOMC's longer-run objective of 2 percent. In April, the 12-month change in the price index for personal consumption expenditures (PCE) was around 1 percent, higher than the ¼ percent rate recorded in April 2015. The pickup over this period was largely due to a slower rate of decline in both energy prices and non-energy import prices.

Low oil prices have reduced global investment in the oil sector and have led to some cutbacks in production, particularly in the United States. These declines, firming global demand, and some temporary supply disruptions—including in Canada due to wildfires—have recently pushed crude oil prices higher after they reached a 12-year low in mid-January. Nonetheless, at a bit below $50 per barrel, the spot price of Brent crude oil remains less than half its mid-2014 peak. Moreover, the continued low level of oil futures prices suggests that market participants expect only a modest increase in oil prices over the next couple of years, given the historically high global inventories of crude oil. The large cumulative drop in crude oil prices had mostly passed through to lower retail prices for gasoline and other energy products by early this year; despite some increases thereafter, prices at the pump remain at levels substantially below those of last summer.

Similar to the price of crude oil, prices of metals and agricultural goods have moved higher since early this year. The rise in the prices of agricultural goods followed several quarters of declines that have held down retail food prices for consumers so far this year. The rise in many nonfuel commodities prices, together with a weaker dollar, helped push non-oil import prices higher in May—the first increase since 2014.

Outside of the energy and food categories, inflation has picked up a little bit

Inflation for items other than food and energy (so-called core inflation) has picked up a little. Core PCE prices rose about 1½ percent over the 12 months ending in April, up about ¼ percentage point from its year-earlier pace.[2] The increase in the trimmed mean PCE price index, an alternative indicator of underlying inflation, has also picked up a bit over the past year; as is typically the case, this measure has run somewhat above core inflation over this period. Because the slack in labor and product markets appears to have been mostly taken up, and given the recent upward movements in oil prices and non-oil import prices—after months of declines—the downward pressure on inflation from these factors is likely waning.

Some survey-based measures of expected inflation have drifted downward . . .

The FOMC devotes careful attention to indicators of long-run inflation expectations, as these expectations are believed to be an important factor underlying many wage- and price-setting decisions. The latest readings from surveys of longer-term inflation expectations have sent mixed signals. In the Survey of Professional Forecasters, conducted by the Federal Reserve Bank of Philadelphia, the median second-quarter reading on expected annual PCE price inflation over the next 10 years was again 2 percent. The distribution of inflation expectations 5 to 10 years ahead derived from surveys of primary dealers has remained similarly stable. But in the University of Michigan Surveys of Consumers, the median reading on inflation expectations over the next 5 to 10 years has drifted down over the past two years and recorded a new low in early June. To the extent that this downward drift is a reaction to energy-driven declines in overall inflation, it could reverse over time as energy prices stop declining.

. . . and market-based measures of inflation compensation have remained low

Market-based measures of longer-term inflation compensation—derived either from differences between yields on nominal Treasury securities and Treasury Inflation-Protected Securities or from inflation swaps—have continued to decline and now stand at very low levels. Deducing the sources of changes in inflation compensation is challenging because such movements reflect not only expected inflation, but also an inflation risk premium—the compensation that holders of nominal securities demand for bearing inflation risk—and other factors. Nevertheless,

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[2] Data from the consumer price index and the producer price index point to a similar reading for the 12-month change in core PCE prices in May.

one cannot rule out a decline in inflation expectations among market participants since last summer.

Economic activity has been expanding at a moderate pace

Real GDP is currently reported to have increased at an annual rate of just ¾ percent in the first quarter, but with several signs of faster growth in the current quarter, real GDP appears on track to record a moderate overall gain in the first half of this year.[3] Consumer spending is advancing further, and housing activity continues to strengthen gradually. Meanwhile, government expenditures have maintained momentum. Although inventory investment exerted a sizable drag on GDP growth in the latter half of last year, it has been less of an influence in the first half of this year.

Nevertheless, several of the headwinds that were apparent last year have continued to restrain growth in activity this year. In particular, a substantial appreciation of the dollar over the past couple of years, along with continued sluggish foreign growth, is weighing on the demand for U.S. exports. In addition, the sizable drop in oil prices since 2014—notwithstanding the substantial benefit to households—has led to marked cutbacks in production and investment in the energy sector of our economy. These negative factors have had particularly pronounced effects on activity in the industrial sector.

Gains in income and wealth continue to support consumer spending

Consumption growth was lackluster early in 2016, but data on retail sales and motor vehicle sales suggest that spending has picked up appreciably so far this quarter. Smoothing through the monthly fluctuations, consumer spending is reported to have increased at an annual rate of nearly 3 percent over the first four months of this year, only a little slower than the pace in 2015. The improvement in the labor market has continued to support income growth, and low energy prices are boosting households' purchasing power. As a result, real disposable personal income—that is, income after taxes and adjusted for inflation—was reported to have advanced at an annual rate of about 3¼ percent over the first four months of this year, just a touch below the pace in 2015.

Ongoing gains in household net worth likely have also supported growth in consumer spending. House prices, which are of particular importance for the balance sheet positions of a broad set of households, have continued to move higher, with the CoreLogic national index showing a rise of about 6 percent over the 12 months ending in April. Elsewhere, although equity prices have only increased slightly, on net, so far this year, the prior gains of the past few years have helped improve households' financial positions. In the first quarter of this year, the ratio of aggregate household net worth to disposable income, which had previously returned to its pre-recession highs, ticked down slightly but remained far above its long-run historical average.

Consumers are upbeat about their economic prospects . . .

The solid pace of income growth over the past year has helped households retain fairly upbeat perceptions about their economic prospects. The Michigan survey's composite index of consumer sentiment—which incorporates households' views about their own financial situations as well as economic conditions more broadly—has improved again recently following a moderate deterioration earlier in the year, and the latest readings were near the upper end of the range of values recorded during the previous economic expansion. After having lagged behind improvements in headline sentiment earlier in the recovery, the survey measures of households' expectations for real income changes over the next year or two have also improved noticeably and now stand close to their pre-recession levels.

. . . and household credit availability is generally favorable

Consumer credit has continued to expand this year amid stable credit performance. Auto and student loans remain widely available, even to borrowers with lower credit scores, and outstanding balances of these types of loans expanded at a robust pace. Credit card borrowing has also accelerated a bit, on balance, and the outstanding balance in April was 5½ percent above its level a year earlier. Although there have been some tentative signs of easing overall, credit card standards have remained tight for nonprime borrowers.

Low interest rates and rising incomes have enabled many households to lower their debt payment bur-

[3] While it appears likely that residual seasonality—a predictable seasonal pattern remaining in data that have already been seasonally adjusted—in some components of GDP held down measured GDP growth in the first quarter, this factor would imply an offsetting boost in measured GDP growth over the remainder of the year.

dens. The household debt service ratio—that is, the ratio of required principal and interest payments on outstanding household debt to disposable personal income—has remained at a very low level by historical standards. Interest rates on 30-year fixed-rate mortgages are down about ½ percentage point from the level at the December liftoff date, and rates on auto loans, on net, have been little changed since then. Going forward, the effect of any policy rate tightening on mortgage rates and, in turn, on households' debt burdens will likely show through only gradually, as the current stock of household debt is disproportionately held in loan products with fixed interest rates.

Residential construction activity has improved at a gradual pace

The recovery in residential construction activity has maintained a moderate pace. Single-family starts continued to edge up slowly over the past year, while multifamily starts receded a little from their elevated levels in the middle of 2015. Looking further back, the rise in multifamily starts over the past five years has been substantial and has far exceeded the percent gain in single-family housing starts. The relative strength in multifamily construction partly reflects a shift in demand away from owner-occupied housing toward rental housing since the recession. Elsewhere, outlays for improvements to existing homes increased more than 10 percent over the past year, and commissions and fees paid on the sale of residential real estate rose moderately, in line with the uptrend in sales of existing homes and contracts for new homes. In all, residential investment rose almost 10 percent in 2015 and appears on track to maintain a similar pace in the first half of this year.

Low interest rates and an ongoing easing in mortgage credit standards have continued to support the expansions in housing demand and construction activity. In the April Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS), banks reported having eased lending standards and experienced stronger demand for most types of residential real estate loans in the first quarter.[4] Even so, for individuals with relatively low credit scores, mortgages remain difficult to obtain. With mortgage interest rates having again moved down close to their all-time lows, housing affordability has remained favorable despite the moderate growth in house prices over the past year.

4 The SLOOS is available on the Board's website at www.federalreserve.gov/boarddocs/snloansurvey.

Business fixed investment has declined . . .

A worrisome development in recent quarters has been the weakening in business fixed investment (private nonresidential fixed investment). Over the past year, real outlays in the nonresidential structures category—which constitutes roughly one-fourth of total business fixed investment—have fallen sharply, as investment in oil wells and other drilling and mining structures has followed the steep drop in oil prices. The decline in the number of drilling rigs in operation has been so pronounced that investment in drilling and mining structures has shrunk to less than one-third its peak in 2014, and the ongoing contraction has subtracted nearly ½ percentage point from real GDP growth over the past four quarters. Outside of the energy sector, business outlays for structures recorded relatively modest increases following the sizable gains observed in the first half of 2015. Meanwhile, business spending on equipment and intellectual property products moved down in the fourth quarter of last year and the first quarter of 2016, and the available indicators, such as orders and shipments of capital goods and surveys of business conditions, point to continued softness in the current quarter.

Although investment spending continues to be supported by low interest rates and generally accommodative financial conditions, spending is likely being restrained by a slowing in actual and expected business output growth. Weak foreign demand and the stronger dollar are already having an adverse effect on domestic businesses, and analysts' forecasts for year-ahead corporate earnings have been revised down considerably, even outside of the energy sector. Meanwhile, as reported by the Bureau of Economic Analysis, corporate profits recorded only a slight increase in the first quarter after falling sharply at the end of last year, although here, too, the weakness was heavily concentrated in the energy sector.

. . . while corporate financing conditions have remained generally accommodative

Corporate financing conditions remained generally accommodative in the first half of this year, although ongoing oil market developments and episodes of global financial stress led to sporadic periods of heightened perceptions of risk. In particular, corporate bond markets showed strains early in the year, especially for those firms most affected by the low energy prices. In recent months, however, pressures in bond markets have eased somewhat, and corporate bond yields overall have returned to historically low levels. In the April SLOOS, banks indicated that they had tightened their standards on commercial and

industrial (C&I) loans to large and middle-market firms in the first quarter, but even so, such financing remained broadly available. For the first quarter as a whole, corporate bond issuance and the growth of C&I loans on banks' balance sheets were quite strong. Firms' equity issuance was also generally solid, though initial public offerings have been weak. Meanwhile, the growth of small business loans was subdued.

Financing conditions in the commercial real estate (CRE) sector have remained accommodative overall, but here, too, there have been some signs of tightening. Growth of CRE loans at banks remained strong during the first half of the year. However, banks indicated that they had further tightened their lending standards on CRE loans in the first quarter of 2016, according to the April SLOOS. In addition, spreads on interest rates for CRE loans relative to 10-year swap rates and to yields on commercial mortgage-backed securities rose sharply further early this year, and although they have retreated significantly since then, these measures remain well above their historical average levels.

Exports and imports have both been weak this year

Based on recently released trade prices and the nominal census trade data, it appears that real exports were roughly flat in the first quarter of 2016, held back by slow foreign growth and the considerable appreciation of the dollar over the past two years. Despite the appreciation of the dollar, real imports looked to have declined in the first quarter, with weakness in both capital- and consumer-goods categories. Overall, the net export contribution to GDP growth was about neutral. While the nominal trade deficit narrowed a little in the first quarter, the current account deficit widened a touch to 2.7 percent of nominal GDP. The April trade data suggest that net exports will be a small drag on GDP growth in the current quarter, as the trade deficit increased, with imports rebounding from a very weak March level.

The drag from federal fiscal policy has ended . . .

Fiscal policy at the federal level had a roughly neutral influence on GDP growth in 2015, as the substantial contractionary effects of earlier fiscal consolidation have abated. Policy actions had little effect on taxes, while transfers and federal purchases of goods and services merely edged up. Going forward, if the increased spending authority enacted in last year's budget agreement is fully utilized, federal fiscal policy would likely be mildly supportive of GDP growth over 2016 and 2017.

After narrowing significantly over the past several years, the federal unified budget deficit has recently widened slightly. At 18 percent of GDP, receipts have remained high relative to the recession and early recovery period. At 21 percent, expenditures as a share of GDP are above the levels that prevailed before the start of the most recent recession. Although the ratio of federal debt held by the public to nominal GDP is already quite elevated, the deficit currently remains small enough to roughly stabilize this ratio at around 75 percent.

. . . and state and local government expenditures are rising

The expansion of economic activity and further gains in house prices continue to support a gradual improvement in the fiscal position of most state and local governments. Consistent with their improving finances, states and localities significantly expanded real construction spending in 2015 and in the early part of this year. By contrast, employment growth in the state and local sector was muted last year, but the pace has stepped up somewhat so far in 2016.

Financial Developments

Financial conditions tightened early in the year but then eased

Early in 2016, domestic financial conditions tightened, as uncertainty about the outlook for the Chinese economy, lower oil prices, and weak data on economic activity in several economies contributed to concerns about the prospects for global economic growth and to a pullback from risky assets. At that time, Treasury yields declined across maturities, equity prices fell steeply, equity price volatility rose, and risk spreads on corporate bonds widened notably. In addition, investors came to expect a more gradual increase in the target range for the federal funds rate than they had previously anticipated. However, investors' concerns appeared to diminish beginning in mid-February, and since then, amid mixed U.S. economic data, domestic financial conditions have generally eased on balance: Stock prices rose notably, equity price volatility declined, and credit spreads on corporate bonds narrowed. (For a discussion of financial stability developments over this same period, see the box "Developments Related to Financial Stability" on pages 20–21 of the June 2016 *Monetary Policy Report*.)

On balance to date this year, the expected path for the federal funds rate over the next several years declined . . .

The path of the federal funds rate implied by market quotes on interest rate derivatives flattened, on net, since December. The turbulence in global financial markets early in the year, the FOMC's communications, and some indications of a slowing in the pace of improvement in the labor market of late contributed to market participants' expectation that U.S. monetary policy would be more accommodative than they had anticipated late last year.

Survey-based measures of the expected path of policy also moved down this year. Respondents to the Survey of Primary Dealers and to the Survey of Market Participants in June expected fewer 25 basis point increases in the FOMC's target range for the federal funds rate this year than they projected in December. Market-based measures of uncertainty about the policy rate approximately one to two years ahead declined, on balance, from their year-end levels.

. . . longer-term nominal Treasury yields decreased . . .

Yields on 5-, 10-, and 30-year nominal Treasury securities declined in the first half of the year on balance. Treasury yields decreased most notably in the early part of the year amid an increase in safe-haven demands and a pullback from risky assets. Yields changed little since then, on net, as risk sentiment generally improved but concerns about longer-term economic growth remained. Consistent with the change in yields on Treasury securities, yields on 30-year agency mortgage-backed securities (MBS)—an important determinant of mortgage interest rates—decreased, on balance, in the first half of 2016.

. . . broad equity price indexes increased slightly, and those of companies linked to energy sectors rose substantially . . .

After incurring sharp declines early in the year, broad equity price indexes rebounded as risk sentiment improved, resulting in levels that were slightly higher, on net, than at year-end. In addition, reflecting the rebound in oil prices since the turn of the year, stock prices of companies in the energy sector outperformed broad equity market indexes over the first half of 2016. Meanwhile, implied volatility of the S&P 500 index increased through mid-February and then declined, ending the period above its year-end level.

. . . while risk spreads on corporate bonds narrowed

Similar to the movements in equity markets, spreads on corporate bonds over comparable-maturity Treasury securities widened early in the year but later retraced those moves, leaving spreads generally little changed, on net, over the first half of the year. Spreads on the lowest-rated speculative-grade issues declined appreciably. Nonetheless, corporate bond spreads stayed notably above their historical median levels, consistent with some deterioration in credit quality in the corporate sector.

Bank credit continued to expand, but profitability declined

Aggregate credit provided by commercial banks increased at a solid pace through May. The expansion in bank credit reflected strong loan growth coupled with a modest increase in banks' holdings of securities. The growth of loans on banks' books was generally consistent with banks' reports in the April SLOOS of stronger demand for most loan categories and easier lending standards for loans to households.

Measures of bank profitability remained below their historical averages and declined in the first quarter of 2016, pressured by higher provisioning for losses on loans to borrowers in the oil and gas sectors, reduced trading and investment banking revenues, and continued low net interest margins. However, with the exception of C&I loans, loan delinquency and charge-off rates continued to decline across most major loan types and remained near or at their lowest levels since the financial crisis. Stock prices of large bank holding companies decreased over the first half of the year, while banks' credit default swap spreads increased and stayed above their average level over the past two years.

Measures of liquidity conditions and functioning in financing markets were generally stable

Available indicators of Treasury market functioning have remained broadly stable over the first half of 2016. A variety of liquidity metrics—including bid-asked spreads and bid sizes in secondary markets for Treasury securities—have displayed no notable signs of liquidity pressures over the same period. In addition, Treasury auctions generally continued to be well received by investors.

Liquidity conditions in the agency MBS market also appeared to be generally stable. Dollar-roll-implied financing rates for production coupon MBS—an indicator of the scarcity of agency MBS for settle-

ment—suggested limited settlement pressures over the first half of 2016. In addition, measures of corporate bond market liquidity, such as gauges of the effect of trades on market prices, stayed at levels comparable with those seen prior to the financial crisis. However, accurately measuring liquidity in fixed-income markets can be challenging, and liquidity conditions may vary in certain segments of the market or during times of stress.

Short-term dollar funding markets also continued to function smoothly during the first half of 2016. There were generally no signs of stress in either secured or unsecured money markets, including at March quarter-end.

Municipal bond markets functioned smoothly despite recent developments on Puerto Rico's debt

Credit conditions in municipal bond markets continued to be stable even as the situation facing Puerto Rico and its creditors deteriorated further. Gross issuance of municipal bonds remained solid in the first quarter, and yield spreads on general obligation (GO) municipal bonds over comparable-maturity Treasury securities increased a bit on net. Puerto Rico's Government Development Bank missed a substantial debt payment due in early May, and investors remained focused on the next sizable payment of GO bonds due in July.

International Developments

Foreign financial market conditions improved after tightening early in the year

Foreign financial market conditions tightened early in the year, with bond spreads rising and equity markets falling in most countries as investor concerns about global economic growth increased, particularly with regard to China. Since mid-February, in response to the release of some positive foreign data, reassuring moves by Chinese policymakers, and a market perception that U.S. monetary policy would be somewhat more accommodative than previously expected, financial conditions generally improved. A rebound in oil prices also seemed to reassure investors, possibly by diminishing financial stability concerns around oil-producing firms and oil-exporting economies. Bond yields, however, have generally moved lower since February, both because of low readings on inflation and in response to the U.S. employment report in June.

The dollar depreciated early in the year but has risen, on balance, more recently

After increasing more than 20 percent from mid-2014 through its recent peak in January of this year, the broad dollar index—a measure of the trade-weighted value of the dollar against foreign currencies—has declined about 4 percent on balance. The exchange value of the dollar fluctuated importantly over the first half of this year in response to shifting views about the path of U.S. monetary policy—falling early on, rising starting in May, and declining again more recently. On net, the dollar declined significantly against currencies of some commodity exporters, including Canada, as higher oil prices provided support for those currencies. In contrast, the British pound appreciated less against the dollar than other currencies, likely reflecting investor concerns about the upcoming referendum on whether the United Kingdom should leave the European Union. The Chinese renminbi was under considerable depreciation pressure late last year and very early in 2016 but stabilized as fears that Chinese policymakers would allow the renminbi to fall considerably further were allayed by reassuring statements of Chinese authorities, positive macroeconomic data, and decreased capital outflows.

Economic growth remained modest in most advanced foreign economies

In the euro area, Canada, and Japan, economic growth picked up in the first quarter of 2016. The euro-area economy was supported by the European Central Bank's highly accommodative monetary policies, and the Canadian economy continued to recover from a brief recession in early 2015, with past depreciation of the Canadian dollar providing some support. However, GDP growth in the second quarter is likely to be hampered in Japan (as a result of an earthquake in April) and in Canada (on account of massive wildfires that have disrupted oil production). In addition, uncertainty related to the forthcoming U.K. referendum appears to have contributed to a step-down in U.K. growth this year.

Inflation also remained low . . .

In most advanced foreign economies (AFEs), core inflation remained subdued, reflecting continued economic slack in some countries and generally subdued wage growth. As a result, despite the recent rebound in oil prices and the inflationary effects of past sizable depreciations of some currencies, headline inflation remained well below central bank targets in

Canada, the euro area, Japan, and the United Kingdom.

. . . leading AFE central banks to maintain highly accommodative monetary policies

In late January of this year, the Bank of Japan adopted a negative policy rate, and in March, the European Central Bank reduced its deposit rate further into negative territory, increased the pace and scope of its asset purchases, and announced a new program of four-year loans—potentially at slightly negative rates—to euro-area banks. Meanwhile, the Bank of Canada, the Bank of England, and many other AFE central banks maintained their policy rates at historically low levels.

In emerging markets, economic growth picked up from late last year but remains subpar

The Chinese economy slowed in the first quarter. However, recent indicators suggest that more accommodative fiscal and monetary policies are providing a lift to economic activity, particularly in the property market, where easier credit conditions have fueled a sharp turnaround. Elsewhere in emerging Asia, weak external demand from both the advanced economies and China weighed on growth in the first quarter, but exports and manufacturing have improved more recently.

Mexico's economy was a bright spot in Latin America in the first quarter, as GDP growth picked up despite lackluster exports to the United States; however, it appears economic activity decelerated in the second quarter. In Brazil, the recession continued in the first quarter, reflecting long-standing structural problems, low commodity prices, and a political crisis, subsequently resulting in a change in government. However, the contraction was smaller than in previous quarters, as commodity prices recovered somewhat and the sharp depreciation of the currency last year helped boost exports. Growth was mixed in the rest of South America, with Chilean GDP rebounding sharply while Venezuela's economy continued to experience a deep recession.

Part 2: Monetary Policy

Over the first half of the year, monetary policy remained accommodative to support further improvement in labor market conditions and a return to 2 percent inflation. In particular, the Federal Open Market Committee (FOMC) maintained the target range for the federal funds rate at ¼ to ½ percent. This unchanged policy stance was supported, among other factors, by the FOMC's assessments in the first months of the year that global economic and financial developments posed risks to the economic outlook, and in June that recent information indicated that the pace of improvement in the labor market had slowed. In addition, the Committee's policy stance reflected its expectation that inflation would remain low in the near term. Looking ahead, the FOMC expects that economic conditions will warrant only gradual increases in the federal funds rate. In determining future adjustments to the federal funds rate, the Committee will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments.

The FOMC maintained the federal funds rate target range at ¼ to ½ percent in the first half of the year . . .

After raising the target range for the federal funds rate last December to between ¼ and ½ percent, the Committee has maintained that range over the first half of the year. This unchanged policy stance was supported initially by the Committee's assessment that global economic and financial developments posed risks to the economic outlook, as expressed in its March 2016 statement, and by its judgment in April that growth in domestic economic activity appeared to have slowed.[5] In June, the Committee noted that recent information indicated that the pace of improvement in the labor market had slowed, while growth in domestic economic activity appeared to have picked up in the spring.[6] The decision to maintain the target range for the federal funds rate also reflected the Committee's expectation that inflation would stay low in the near term, partly because of earlier declines in energy prices and in the prices of non-energy imports, as well as recently elevated uncertainty about the possible consequences of the U.K. referendum on European Union membership for the U.S. economic outlook.

[5] See Board of Governors of the Federal Reserve System (2016), "Federal Reserve Issues FOMC Statement," press release, March 16, https://www.federalreserve.gov/newsevents/press/monetary/20160316a.htm; and Board of Governors of the Federal Reserve System (2016), "Federal Reserve Issues FOMC Statement," press release, April 27, https://www.federalreserve.gov/newsevents/press/monetary/20160427a.htm.

[6] See Board of Governors of the Federal Reserve System (2016), "Federal Reserve Issues FOMC Statement," press release, June 15, https://federalreserve.gov/newsevents/press/monetary/20160615a.htm.

Over the first half of 2016, the Committee remained particularly attentive to risks to the U.S. economic outlook posed by global economic and financial developments. The Committee noted earlier in the year that it was closely monitoring such developments and assessing their implications for the labor market and inflation and for the balance of risks to the outlook. The Committee subsequently indicated that these concerns had attenuated, but that it would continue to closely monitor inflation indicators and global economic and financial developments.

. . . indicated that the stance of monetary policy was likely to remain accommodative . . .

The Committee continued to expect that the federal funds rate was likely to remain, for some time, below levels that were expected to prevail in the longer run, and that with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market indicators would continue to strengthen. The Committee also continued to expect inflation to remain low in the near term but to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipate and the labor market strengthens further.

Consistent with this outlook, in the most recent Summary of Economic Projections, which was compiled at the time of the June FOMC meeting, FOMC participants projected that the appropriate level of the federal funds rate would be below its longer-run level through 2018.

. . . and stressed that future changes in the target range for the federal funds rate will depend on the economic outlook as informed by incoming data

The FOMC continued to emphasize that, in determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee would assess realized and expected economic conditions, as informed by incoming data, relative to its objectives of maximum employment and 2 percent inflation. This assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee indicated that it would carefully monitor actual and expected progress toward its inflation goal. Stronger growth or a more rapid increase in inflation than the Committee currently anticipates would likely call for faster increases in the federal funds rate; conversely, if conditions prove weaker, a lower path of the federal funds rate would likely be appropriate.

The size of the Federal Reserve's balance sheet has remained stable

To help maintain accommodative financial conditions, the Federal Reserve kept its holdings of longer-term securities at sizable levels over the first half of the year. In particular, the Committee maintained its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way.

With the continuation of the Committee's reinvestment policy, the Federal Reserve's total assets have held steady at around $4.5 trillion. Holdings of U.S. Treasury securities in the System Open Market Account (SOMA) have remained at $2.5 trillion, and holdings of agency debt and agency mortgage-backed securities at approximately $1.8 trillion. Consequently, total liabilities on the Federal Reserve's balance sheet were mostly unchanged.

Interest income on the SOMA portfolio has continued to support substantial remittances to the U.S. Treasury Department. The Federal Reserve provided $117.1 billion of such distributions to the Treasury in 2015, which included a one-time transfer of $19.3 billion made in December 2015 to reduce aggregate Reserve Bank capital surplus to $10 billion, as required by the Fixing America's Surface Transportation Act, and a transfer of $24.8 billion during the first quarter of 2016.[7] The Federal Reserve's remittances to the Treasury have totaled over $600 billion on a cumulative basis since 2008.

The Federal Reserve's implementation of monetary policy has continued smoothly

Consistent with the FOMC's Policy Normalization Principles and Plans published on September 17,

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[7] See Board of Governors of the Federal Reserve System (2016), "Federal Reserve System Publishes Annual Financial Statements," press release, March 18, https://www.federalreserve.gov/newsevents/press/other/20160317a.htm; and Board of Governors of the Federal Reserve System (2016), *Quarterly Report on Federal Reserve Balance Sheet Developments* (Washington: Board of Governors, May), https://www.federalreserve.gov/monetarypolicy/files/quarterly_balance_sheet_developments_report_201605.pdf.

2014, and augmented with additional operational information at the March 2015 FOMC meeting, the Federal Reserve continued to use interest paid on reserve balances and employ an overnight reverse repurchase agreement (ON RRP) facility to manage the federal funds rate, and the effective federal funds rate has remained in its target range.[8] Specifically, the Board of Governors left the interest rate paid on required and excess reserve balances unchanged at ½ percent, while the FOMC continued to authorize daily ON RRP operations at an offering rate of ¼ percent. In addition, the Board of Governors took no action to change the discount rate (the primary credit rate), which remained at 1 percent.

The FOMC also continued to indicate that the Federal Reserve's daily ON RRP operations would be undertaken in amounts limited only by the value of Treasury securities held outright in the SOMA that are available for such operations and by a per-counterparty limit of $30 billion per day. The total take-up at ON RRP operations with the Federal Reserve generally decreased in the first half of the year and remained at levels below those observed prior to the increase in the target range for the federal funds rate in December. The Committee has stated that it intends to phase out the ON RRP facility when it is no longer needed to help control the federal funds rate.

The Federal Reserve also continued to test the operational readiness of other policy tools. In particular, two Term Deposit Facility operations were conducted in the first half of 2016; seven-day deposits were offered at both operations at a floating rate of 1 basis point over the interest rate on excess reserves. In these operations, term deposit volumes were broadly in line with those in previous tests with similar parameters. In addition, the Open Market Desk conducted several small–dollar value exercises solely for the purpose of maintaining operational readiness.

[8] See Board of Governors of the Federal Reserve System (2014), "Federal Reserve Issues FOMC Statement on Policy Normalization Principles and Plans," press release, September 17, www.federalreserve.gov/newsevents/press/monetary/20140917c.htm; and Board of Governors of the Federal Reserve System (2015), "Minutes of the Federal Open Market Committee, March 17–18, 2015," press release, April 8, www.federalreserve.gov/newsevents/press/monetary/20150408a.htm.

3 Financial Stability

A stable financial system promotes economic welfare through many channels: It facilitates household savings to purchase a home, finance a college education, and smooth consumption in response to job loss and other adverse developments; it promotes responsible risk-taking and economic growth by channeling savings to firms to start new businesses and expand existing businesses; and it spreads risk across investors. Therefore, the Federal Reserve's responsibilities for promoting financial stability strongly complement the goals of price stability and full employment.

The Federal Reserve promotes financial stability through its supervision and regulation of financial institutions; cooperation and coordination of activities with domestic agencies directly and through the Financial Stability Oversight Council (FSOC); and engagement with the global community in monitoring, supervision, and regulation that mitigate the risks and consequences of financial instability domestically and abroad.

A central tenet of the Federal Reserve's efforts in promoting financial stability is the adoption of an approach to supervision and regulation that accounts for the stability of the financial system as a whole, in addition to a traditional, microprudential approach, which focuses on the safety and soundness of individual institutions. In particular, the first approach informs the supervision of systemically important financial institutions (SIFIs), including large bank holding companies (BHCs), the U.S. operations of certain foreign banking organizations (FBOs), and financial market utilities (FMUs). In addition, the Federal Reserve serves as a "consolidated supervisor" of nonbank financial companies designated by the FSOC as institutions whose distress or failure could pose a threat to the stability of the U.S. financial system as a whole (see "Financial Stability Oversight Council Activities" later in this section). Enhanced standards for the largest, most systemic firms promote the safety of the overall system and minimize the regulatory burden on smaller, less systemic institutions.

Furthermore, the evolving nature of risks and fluctuations in financial markets and the broader economy require timely monitoring of conditions in domestic and international financial markets, among financial institutions, and in the nonfinancial sector in order to identify the buildup and propagation of vulnerabilities that might require further study or policy action.

This section discusses key financial stability activities undertaken by the Federal Reserve over 2016, which include monitoring risks to financial stability; promoting a perspective on the supervision and regulation of large, complex financial institutions that accounts for the potential spillovers from distress at such institutions to the financial system and broader economy; and engaging in domestic and international cooperation and coordination. Each of these activities is informed by research into financial stability issues (see box 1 for a summary of some recent research by Federal Reserve Board staff on financial stability topics).

Some of these activities are also discussed elsewhere in this annual report. A broader set of economic and financial developments are discussed in section 2, "Monetary Policy and Economic Developments," with the discussion that follows concerning surveillance of economic and financial developments focused on financial stability. The full range of activities associated with supervision of SIFIs, designated nonbank companies, and designated FMUs is discussed in section 4, "Supervision and Regulation."

Monitoring Risks to Financial Stability

Financial institutions are linked together through a complex set of relationships, and their condition depends on the economic condition of the nonfinancial sector. In turn, the condition of the nonfinancial sector hinges on the strength of financial institutions'

Box 1. 2016 Research on Financial Stability

The Federal Reserve's approach to promoting financial stability builds on a substantial and growing body of research on the factors that create vulnerabilities in the financial system and how prudential policies can mitigate such vulnerabilities.

Understanding of the array of factors affecting financial stability is incomplete and evolving. Consequently, Federal Reserve staff participate actively in research on financial stability and related issues. This research engages the broader research community in policy issues and often involves collaboration with academia and researchers at other domestic and international institutions.

The research efforts by Federal Reserve staff reflect their attempts to identify and address the topics of concern to the Federal Reserve, and the views expressed are those of the individual authors and not those of the Federal Reserve. Examples of staff research on financial stability in 2016 include the following:

- **Identifying the effect of bank regulation**

  —Two working papers and a forthcoming journal article document the effect of macroprudential policies on credit supply in the United States and examine the spillovers of domestic prudential regulation across borders.[1]

  —A paper finds that liquidity requirements complement capital regulations, thereby improving financial stability and promoting greater risk-taking in productive investments.[2]

- **The interplay of financial stability and the macroeconomy**

  —A working paper and a journal article study the effect of financial vulnerabilities and shocks on future macroeconomic performance.[3]

  —A working paper documents the effect of banks' capital and liquidity positions on credit growth.[4]

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[1] See Paul Calem, Ricardo Correa, and Seung Jung Lee, "Prudential Policies and Their Impact on Credit in the United States," International Finance Discussion Papers 1186 (Washington: Board of Governors of the Federal Reserve System, December 2016), https://www.federalreserve.gov/econresdata/ifdp/2016/files/ifdp1186.pdf; Jose Berrospide, Ricardo Correa, Linda Goldberg, and Friederike Niepmann, "International Banking and Cross-Border Effects of Regulation: Lessons from the United States," International Finance Discussion Papers 1180 (Washington: Board of Governors of the Federal Reserve System, September 2016), https://www.federalreserve.gov/econresdata/ifdp/2016/files/ifdp1180.pdf; and William F. Bassett and W. Blake Marsh, "Assessing Targeted Macroprudential Financial Regulation: The Case of the 2006 Commercial Real Estate Guidance for Banks," *Journal of Financial Stability* (forthcoming).

[2] See Gazi I. Kara and S. Mehmet Ozsoy, "Bank Regulation under Fire Sale Externalities," Finance and Economics Discussion Series 2016-026 (Washington: Board of Governors of the Federal Reserve System, April 2016), https://www.federalreserve.gov/econresdata/feds/2016/files/2016026pap.pdf.

[3] See David Aikman, Andreas Lehnert, Nellie Liang, and Michele Modugno, "Financial Vulnerabilities, Macroeconomic Dynamics, and Monetary Policy," Finance and Economics Discussion Series 2016-055 (Washington: Board of Governors of the Federal Reserve System, July 2016), https://www.federalreserve.gov/econresdata/feds/2016/files/2016055pap.pdf; and Sirio Aramonte, Samuel Rosen, and John W. Schindler, "Assessing and Combining Financial Conditions Indexes," *International Journal of Central Banking* 13 (February 2017): 1–52.

[4] See David E. Rappoport, "The Effect of Banks' Financial Position on Credit Growth: Evidence from OECD Countries," Finance and Economics Discussion Series 2016-101 (Washington: Board of Governors of the Federal Reserve System, December 2016), https://www.federalreserve.gov/econresdata/feds/2016/files/2016101pap.pdf.

(continued on next page)

balance sheets because the nonfinancial sector obtains funding through the financial sector. Monitoring risks to financial stability is aimed at better understanding these complex linkages and has been an important part of Federal Reserve efforts in pursuit of overall economic stability.

In order to understand the interaction between the financial and nonfinancial sectors and develop appropriate policy responses, the Federal Reserve maintains a flexible, forward-looking financial stability monitoring program to help inform policymakers of the financial system's vulnerabilities to a wide range of potential adverse shocks. Such a monitoring program is a critical part of a broader program in the Federal Reserve System to assess and address vulnerabilities in the U.S. financial system.

Each quarter, Federal Reserve Board staff assess a set of vulnerabilities relevant for financial stability, including but not limited to asset valuations and risk appetite, leverage in the financial system, liquidity risks and maturity transformation by the financial system, and borrowing by the nonfinancial sector (households and nonfinancial businesses). These monitoring efforts inform internal discussions concerning policies to promote financial stability, such as supervision and regulatory policies as well as monetary policy. They also inform Federal Reserve interactions with broader monitoring efforts, like those by the FSOC and the Financial Stability Board (FSB).

Asset Valuations and Risk Appetite

Overvalued assets constitute a source of fundamental vulnerability because the unwinding of high prices

Box 1. 2016 Research on Financial Stability—*continued*

—A journal article examines the negative effect of the recent financial crisis on consumer credit supply and the real economy.[5]

—An article reviews the progress in macroeconomic modeling for macroprudential policy analysis.[6]

- **Measuring spillovers and systemic risk**

—A journal article documents how local economic shocks spill over to the other regions of the economy through banks' internal capital markets.[7]

—A working paper shows empirically how low volatility induces risk-taking, which in turn increases the probability of a banking crisis.[8]

—A journal article and a working paper develop new methods for measuring and monitoring systemic risk.[9]

- **Asset managers, financial stability, and market liquidity**

—Two research papers document the effect of institutional investor behavior on prices of corporate bonds.[10]

—A working paper shows that market liquidity of corporate bonds that were downgraded deteriorated in recent years.[11]

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[5] See Rodney Ramcharan, Stéphane Verani, and Skander J. Van den heuvel, "From Wall Street to Main Street: The Impact of the Financial Crisis on Consumer Credit Supply," *Journal of Finance* 71 (June 2016):1323–56.

[6] See Michael T. Kiley, "Macroeconomic Modeling of Financial Frictions for Macroprudential Policymaking: A Review of Pressing Challenges," FEDS Notes (Washington: Board of Governors of the Federal Reserve System, May 26, 2016), https://www.federalreserve.gov/econresdata/notes/feds-notes/2016/macroeconomic-modeling-of-financial-frictions-for-macroprudential-policymaking-a-review-of-pressing-challenges-20160526.html.

[7] See Jose M. Berrospide, Lamont K. Black, and William R. Keeton, "The Cross-Market Spillover of Economic Shocks through Multimarket Banks," *Journal of Money, Credit and Banking* 48 (August 2016): 957–88.

[8] See Jon Danielsson, Marcela Valenzuela, and Ilknur Zer, "Learning from History: Volatility and Financial Crises," Finance and Economics Discussion Series 2016-093 (Washington: Board of Governors of the Federal Reserve System, November 2016), https://www.federalreserve.gov/econresdata/feds/2016/files/2016093pap.pdf.

[9] See Lamont Black, Ricardo Correa, Xin Huang, and Hao Zhou, "The Systemic Risk of European Banks during the Financial and Sovereign Debt Crises," *Journal of Banking and Finance* 63 (February 2016): 107–25; and Juan M. Londono, "Bad Bad Contagion," International Finance Discussion Papers 1178 (Washington: Board of Governors of the Federal Reserve System, September 2016), https://www.federalreserve.gov/econresdata/ifdp/2016/files/ifdp1178.pdf.

[10] See Ayelen Banegas, Gabriel Montes-Rojas, and Lucas Siga, "Mutual Fund Flows, Monetary Policy and Financial Stability," Finance and Economics Discussion Series 2016-071 (Washington: Board of Governors of the Federal Reserve System, September 2016), https://www.federalreserve.gov/econresdata/feds/2016/files/2016071pap.pdf; and Fang Cai, Song Han, Dan Li, and Yi Li, "Institutional Herding and Its Price Impact: Evidence from the Corporate Bond Market," Finance and Economics Discussion Series 2016-091 (Washington: Board of Governors of the Federal Reserve System, November 2016), https://www.federalreserve.gov/econresdata/feds/2016/files/2016091pap.pdf.

[11] See Jack Bao, Maureen O'Hara, and Alex Zhou, "The Volcker Rule and Market-Making in Times of Stress," Finance and Economics Discussion Series 2016-102 (Washington: Board of Governors of the Federal Reserve System, December 2016), https://www.federalreserve.gov/econresdata/feds/2016/files/2016102pap.pdf.

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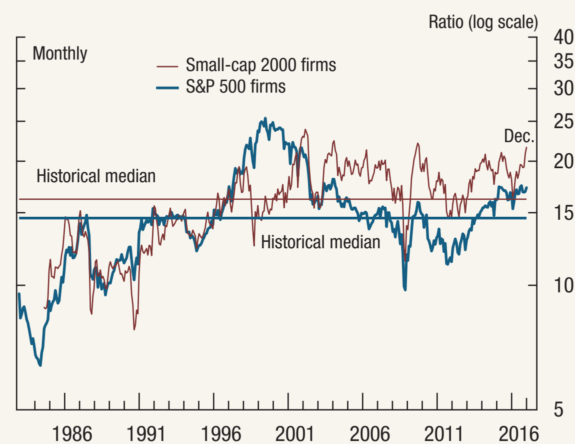
can be destabilizing, especially if the assets are widely held and the values are supported by excessive leverage, maturity transformation, or risk opacity. Moreover, stretched asset valuations may be an indicator of a broader buildup in risk-taking. Nonetheless, it is very difficult to judge whether an asset price is overvalued relative to fundamentals. As a result, analysis typically includes a broad range of possible valuation metrics and tracks developments in areas in which asset prices are rising particularly rapidly, into which investor flows have been considerable, or where volatility has been at unusually low or high levels.

Across markets, valuation pressures were moderate most of the year but moved up somewhat near the end of the year, when pressure increased in some areas and in several indicators of investors' risk appetite. In equity markets, valuations rose, especially near year-end. The forward price-to-earnings ratio widened considerably, particularly for small firms (figure 1). At the same time, estimates of the equity risk premium—for example, the gap between the expected return on equity and the long-term Treasury yield (adjusted for inflation expectations)—declined, and such measures no longer suggest that investors are demanding an unusually high premium to bear the risk of holding equities, in contrast to the picture seen almost continuously since the financial crisis. Moreover, both realized and expected volatility in equity markets fell to low levels over the course of 2016, and the implied volatility of the S&P 500 index—the VIX—fell to the lower end of its historical range by year-end (figure 2). The low level of expected volatility in financial markets in late 2016

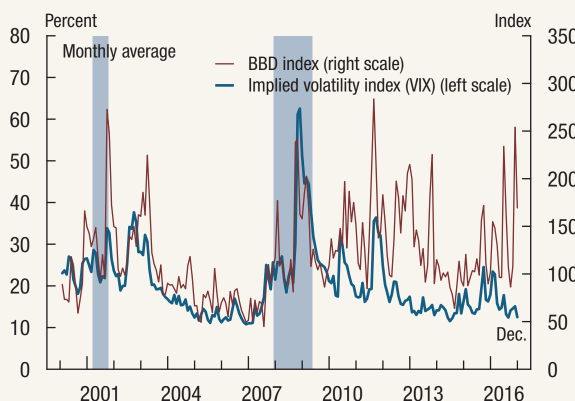
Figure 1. Forward price-to-earnings ratio, 1983–2016



Note: The data extend through December 2016. The data for small-cap 2000 firms start in October 1984. Based on expected earnings for 12 months ahead.

Source: Staff calculations using data from Thomson Reuters IBES.

Figure 2. Implied volatility index and BBD economic policy uncertainty index, 2000–16



Note: The data extend through December 2016. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.

Source: Chicago Board Options Exchange data via Bloomberg Per Security; Scott R. Baker, Nicholas Bloom, and Steven J. Davis, "Measuring Economic Policy Uncertainty," *Quarterly Journal of Economics* 131 (November 2016): 1593–1636.

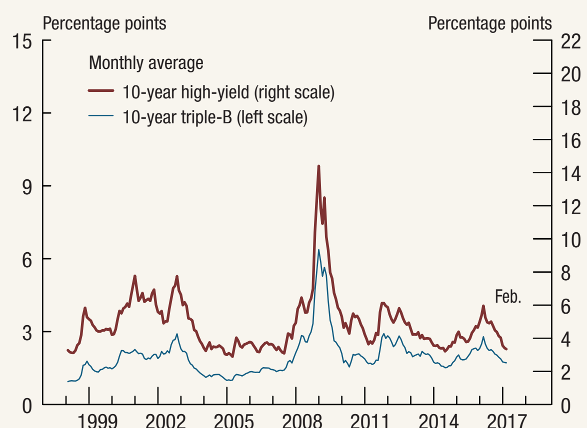
contrasted with some other measures of economic uncertainty late in the year, such as the Baker, Bloom, and Davis economic policy uncertainty index, which remained elevated in late 2016.[1]

Throughout 2016, yields on Treasury securities as well as term premiums remained below historical averages, although both rose near year-end as market expectations about future growth shifted higher. In the corporate bond market, spreads of high-yield and investment-grade bonds relative to comparable-maturity Treasury yields, a gauge of the compensation that investors demand for exposure to the credit risk of corporate borrowers, narrowed over the year, ending near the lowest level since 2013 (figure 3).

Issuance of high-yield corporate bonds edged down in the second half of 2016, and gross issuance of leveraged loans was strong most of the year but declined in the last quarter (figure 4). As a result, growth in risky debt outstanding in the fourth quarter of the year was close to the lowest level in recent years. However, the notable decrease in speculative-grade spreads in November and December suggests that the decline in issuance likely does not reflect a tightening of financial conditions.

An area of growing valuation pressures over the past year was commercial real estate (CRE), with property prices continuing to outpace rents and with capitalization rates decreasing to historically low levels (figure 5). While CRE debt remained modest relative to the overall size of the economy and the tightening in bank lending standards for CRE loans in the second half of 2016 may result in some reduction in CRE lending, some smaller banks may be vulnerable to a sizable decline in CRE prices. In addition, residential home prices continued to rise briskly in 2016, although price increases nationally in 2016 were not outsized relative to improvements in fundamentals or

Figure 3. Corporate bond spreads to similar-maturity Treasury securities, 1998–2017

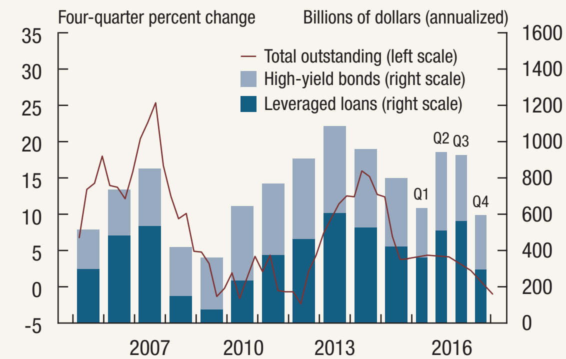


Note: The data extend through February 2017. Spreads over 10-year Treasury yield.

Source: Staff estimates based on corporate bond data from BofA Merrill Lynch Global Research (used with permission), computed using Nelson-Siegel yield curve model; semiannually compounded 10-year Treasury yield (par) estimated by Svensson term structure model.

[1] See Scott R. Baker, Nicholas Bloom, and Steven J. Davis, "Measuring Economic Policy Uncertainty," *Quarterly Journal of Economics* 131 (November 2016): 1593–1636.

Figure 4. Leveraged loan and high-yield bond issuance, 2005–16

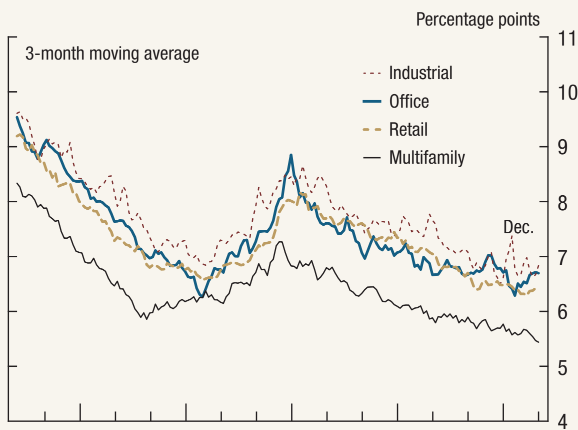


Note: Total outstanding is quarterly data, which start in 2005:Q1. Data include bonds and loans to both financial and nonfinancial companies, as well as unrated bonds and loans. For LCD, S&P and its third-party information providers expressly disclaim the accuracy and completeness of the information provided to the Board, as well as any errors or omissions arising from the use of such information. Further, the information provided herein does not constitute, and should not be used as, advice regarding the suitability of securities for investment purposes or any other type of investment advice.

Source: Standard & Poor's Leveraged Commentary & Data (LCD); Mergent Corporate Fixed Income.

earlier periods of rapid price gains. For example, house prices relative to rents—one measure of valuations—rose moderately in 2016, and they remained well within a typical range and far below the levels seen in the past decade across much of the country (figure 6).

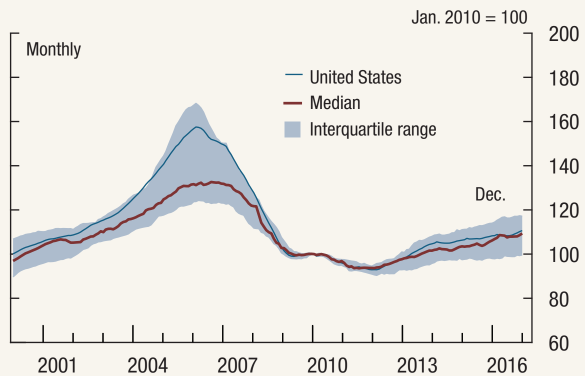
Figure 5. CRE capitalization rate at origin, 2002–16



Note: The data extend through December 2016. CRE is commercial real estate.

Source: Real Capital Analytics.

Figure 6. Median price-to-rent ratio, 2000–16



Note: The data extend through December 2016. Percentiles are based on 25 metropolitan statistical areas.

Source: For house prices, CoreLogic; for rent data, Bureau of Labor Statistics.

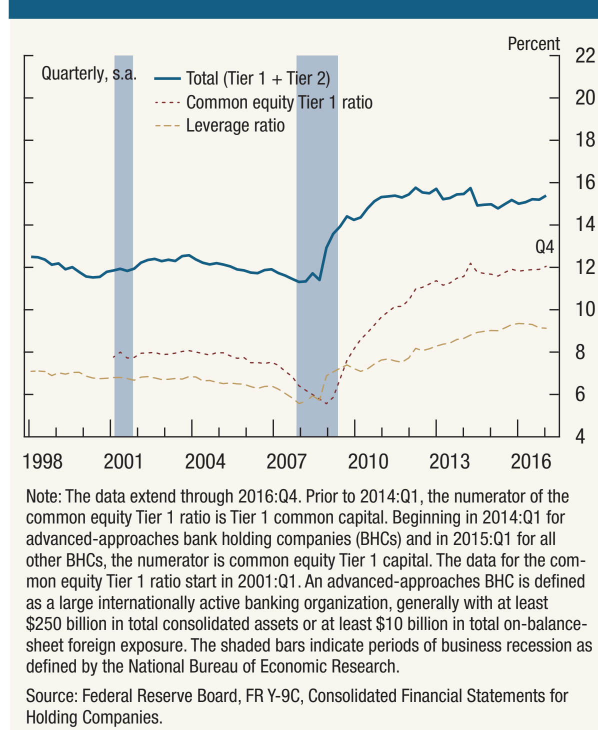
Leverage in the Financial System

The financial strength of the banking sector continued to improve in 2016, and stronger capital positions at domestic banking organizations have contributed to the improved resilience of the U.S. financial system. Regulatory capital remained at historically high levels for most large domestic banks. The ratio of Tier 1 common equity to risk-weighted assets stayed near 12 percent, on average, for BHCs in 2016 (figure 7). Moreover, the leverage ratio, which looks at common equity relative to total assets without adjusting for risk, also remained at levels substantially above pre-crisis norms. Finally, all 33 firms participating in the Federal Reserve's supervisory stress tests for 2016 were able to maintain capital ratios above required minimums to absorb losses from a severe macroeconomic shock.[2]

In addition, bank equity prices increased significantly in late 2016. However, the equity prices of many of the largest foreign banks remained depressed, reflecting investors' heightened concerns about the need for those firms to raise outside equity, meet unresolved legal exposures, and adapt their business models to the post-crisis environment. On December 23, the Department of Justice (DOJ) announced settlement agreements with Deutsche

2 The 2016 supervisory stress-test methodology and results are available on the Board's website at https://www.federalreserve.gov/bankinforeg/stress-tests/2016-supervisory-stress-test-results.htm.

Figure 7. Regulatory capital ratios, all BHCs, 1998–2016



Note: The data extend through 2016:Q4. Prior to 2014:Q1, the numerator of the common equity Tier 1 ratio is Tier 1 common capital. Beginning in 2014:Q1 for advanced-approaches bank holding companies (BHCs) and in 2015:Q1 for all other BHCs, the numerator is common equity Tier 1 capital. The data for the common equity Tier 1 ratio start in 2001:Q1. An advanced-approaches BHC is defined as a large internationally active banking organization, generally with at least $250 billion in total consolidated assets or at least $10 billion in total on-balance-sheet foreign exposure. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research.

Source: Federal Reserve Board, FR Y-9C, Consolidated Financial Statements for Holding Companies.

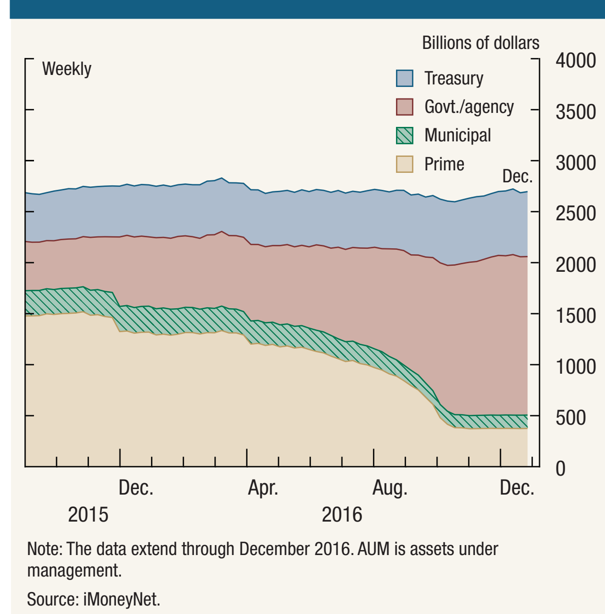
Bank and Credit Suisse over the mis-selling of residential mortgage-backed securities.[3] The DOJ still has pending cases with Barclays and the Royal Bank of Scotland.

Moreover, financial institutions outside the banking sector also do not appear to have taken on additional leverage in recent years. Insurance companies appear adequately capitalized relative to prudential standards. Available indicators of gross leverage at hedge funds, such as gross notional leverage, were little changed in 2016.

Liquidity Risks and Maturity Transformation by the Financial System

Vulnerabilities associated with liquidity risks and maturity transformation continued to fall in 2016. The most significant shifts over the year occurred at

Figure 8. Money market mutual funds, AUM, 2015–16



Note: The data extend through December 2016. AUM is assets under management.

Source: iMoneyNet.

money market mutual funds (also referred to as money market funds, or MMFs). In October 2016, regulations from the Securities and Exchange Commission (SEC) that required prime institutional MMFs to adopt a floating net asset value (NAV), along with other changes, came into effect.[4] Investors in such prime funds appear to have placed a high value on the funds' previous feature of maintaining the NAV at par, and the prospect of the regulatory changes led to a large decline of about $1 trillion in assets under management (AUM) at prime MMFs through October of last year, with most of the assets shifting to MMFs that invest in government-guaranteed assets. Money markets functioned smoothly ahead of the mid-October 2016 reform implementation deadline, and AUM stabilized in the last couple of months of the year (figure 8).

The new SEC regulations' floating NAV feature has likely reduced the first-mover advantage inherent in these funds, lowering their run risk. That said, the configuration of short-term funding markets is still evolving. For example, total commercial paper (CP) and certificates of deposit (CDs) held by MMFs fell more than the outstanding levels of CP and CDs, indicating that other investors now hold these assets.

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[3] For more details, see Deutsche Bank, "Deutsche Bank Agrees on Settlement in Principle with the DOJ regarding RMBS," press release, December 23, 2016, https://www.db.com/newsroom_news/2016/medien/deutsche-bank-agrees-on-settlement-in-principle-with-the-doj-regarding-rmbs-en-11790.htm. See also Credit Suisse, "Credit Suisse Reaches Settlement in Principle with U.S. Department of Justice regarding Legacy Residential Mortgage-Backed Securities Matter," press release, December 23, 2016, https://www.credit-suisse.com/us/en/about-us/media/news/articles/media-releases/2016/12/en/us-issue.html.

[4] For additional information, see Securities and Exchange Commission, "Money Market Reform; Amendments to Form PF," final rule (Release No. 33-9616), July 23, 2014, https://www.sec.gov/rules/final/2014/33-9616.pdf.

Apart from developments at prime funds, the stock of private, short-term, money-like instruments—which form funding intermediation chains that are vulnerable to runs and include prime MMFs, government-only MMFs, and other short-term instruments—has continued to trend down relative to gross domestic product (GDP) and total nonfinancial debt, maintaining a tendency toward less reliance on short-term funding across the financial system. Within the banking sector, the reliance of large BHCs on short-term funding remained subdued, and their holdings of liquid assets continued to be high by historical standards. In addition, securitization, which was associated with maturity transformation as well as lax lending standards and rapid credit growth in the few years prior to the financial crisis, stayed relatively stable by historical standards and did not appear to be funding rapid credit growth in 2016.

Finally, for open-end mutual funds that hold less-liquid assets and that could face elevated redemptions, liquidity transformation continued to pose a moderate financial stability risk, as large outflows from these funds in market downturns could exacerbate volatility in financial markets.

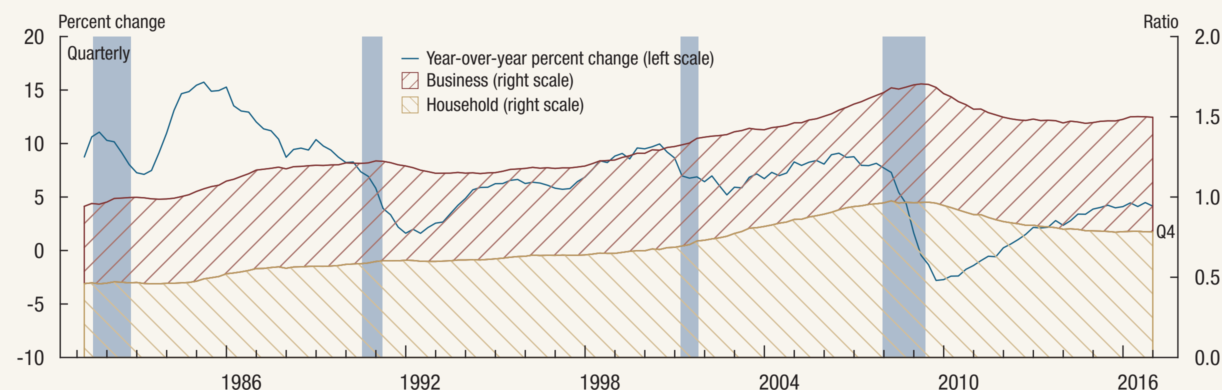
Borrowing by the Nonfinancial Sector

Excessive borrowing by the private nonfinancial sector has been an important contributor to past financial crises. Highly indebted households and nonfinancial businesses may be vulnerable to negative shocks to incomes or asset values and may be forced to curtail spending, which could amplify the effects of financial shocks. In turn, losses among households and businesses can lead to mounting losses at financial institutions, creating an adverse feedback loop in which weakness among households, nonfinancial businesses, and financial institutions causes further declines in income and accelerated financial losses, potentially leading to financial instability and a sharp contraction in economic activity.

Vulnerabilities associated with nonfinancial-sector leverage remained moderate in 2016. Nominal private nonfinancial-sector credit grew about 4½ percent over 2016, a shade faster than nominal GDP, leaving the private nonfinancial-sector credit-to-GDP ratio elevated but stable at approximately 150 percent, a level similar to that in the mid-2000s (figure 9). Household debt growth was modest through the fourth quarter, and the debt-to-income ratio for households continued to inch down over the past few years. Aggregate borrowing relative to income in the household sector has declined significantly from its peak, and recent borrowing remains skewed toward low-risk households.

Leverage among the riskier corporate borrowers, however, has stayed near or at multidecade highs, particularly for speculative-grade and unrated firms, although the growth of risky corporate debt has decelerated considerably over recent quarters (figure 10). Despite high leverage, interest expense ratios were low by historical standards, even among higher-risk firms, as were measures of expected default based on accounting and stock return data, especially

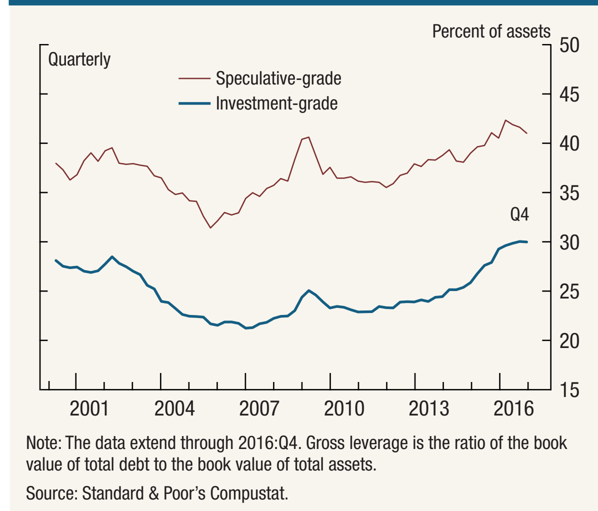
Figure 9. Nonfinancial-sector credit-to-GDP ratio, 1981–2016



Note: The data extend through 2016:Q4. The shaded bars indicate periods of business recession as defined by the National Bureau of Economic Research. GDP is gross domestic product.

Source: Federal Reserve Board, Statistical Release Z.1, "Financial Accounts of the United States"; Bureau of Economic Analysis, national income and product accounts; Board staff calculations.

Figure 10. Gross leverage for speculative-grade and investment-grade firms, 2000–16



Note: The data extend through 2016:Q4. Gross leverage is the ratio of the book value of total debt to the book value of total assets.

Source: Standard & Poor's Compustat.

outside the oil sector. Nonetheless, high leverage could leave some parts of the corporate sector vulnerable to difficulties should adverse shocks materialize.

Financial Stability and the Supervision and Regulation of Large, Complex Financial Institutions

Large, complex financial institutions interact with financial markets and the broader economy in a manner that may—during times of stress and in the absence of an appropriate regulatory framework and effective supervision—lead to financial instability.[5]

Key Supervisory Activities

One essential element of enhanced supervision of large banking organizations is the stress-testing process, which includes the stress tests mandated by the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act) and the Comprehensive Capital Analysis and Review (CCAR). In addition to fostering the safety and soundness of the participating institutions, stress tests embed elements focused on the stability of the financial system as a whole by incorporating the following:

- examining the loss-absorbing capacity of institutions under a common macroeconomic scenario that has features similar to the strains experienced in a severe recession and which includes, as appropriate, identified salient risks
- conducting a simultaneous exercise across large institutions to understand the potential for correlated exposures
- considering the effects of counterparty distress on the largest, most interconnected firms

The results from the 2016 supervisory stress tests conducted as part of the Dodd-Frank Act stress tests (DFAST) and CCAR were released in June 2016.[6] The DFAST and CCAR results suggest that all of the firms evaluated have sufficient capital to remain above minimum requirements through a severely adverse macroeconomic scenario. In addition, they continue to build capital. The severely adverse scenario featured a more severe downturn in the U.S. economy relative to the CCAR 2015 scenario, including short-term U.S. Treasury rates that fell below zero and a larger increase in unemployment. This increase in severity reflected the Board's scenario design framework for stress testing, which includes countercyclical elements. The international part of the scenario featured severe recessions in the euro area, the United Kingdom, and Japan and a mild recession in developing Asia.

In addition, the Federal Reserve Board completed an extensive review of its statutory stress-test and CCAR programs and made some related modifications to the rules associated with those programs for the 2017 cycle.[7] Among other changes, the Board removed certain large, noncomplex firms from the qualitative assessment of the CCAR, reducing significant burden on these firms and focusing the

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5 For more on the Federal Reserve's supervision and regulation of large institutions, especially related to the integration of the microprudential objective of safety and soundness of individual institutions with the macroprudential efforts outlined later in this section, see section 4, "Supervision and Regulation."

6 For additional information on DFAST, see Board of Governors of the Federal Reserve System, "Federal Reserve Releases Results of Supervisory Bank Stress Tests," press release, June 23, 2016, https://www.federalreserve.gov/newsevents/pressreleases/bcreg20160623a.htm. For more details on CCAR, see Board of Governors of the Federal Reserve System, "Federal Reserve Releases Results of Comprehensive Capital Analysis and Review (CCAR)," press release, June 29, 2016, https://www.federalreserve.gov/newsevents/pressreleases/bcreg20160629a.htm.

7 See Daniel K. Tarullo, "Next Steps in the Evolution of Stress Testing," speech delivered at the Yale University School of Management Leaders Forum, New Haven, Conn., September 26, 2016, https://www.federalreserve.gov/newsevents/speech/tarullo20160926a.htm.

qualitative review in CCAR on the largest, most complex financial institutions.[8]

Moreover, the Board, together with the other federal banking agencies, issued an advance notice of proposed rulemaking inviting public comment on a set of potential enhanced cybersecurity risk-management and resilience standards that would apply not only to depository institutions and regulated holding companies with over $50 billion in assets, but also to certain financial market infrastructure companies.[9] The standards would be tiered, with an additional set of higher standards for systems of covered entities that provide key functionality to the financial sector.

Key Regulatory Activities

Over the course of 2016, the Federal Reserve took a number of steps to continue improving the resilience of financial institutions and the overall financial system. This section summarizes steps that bear most directly on financial stability. First, last fall, the Federal Reserve Board finalized its framework for setting the countercyclical capital buffer (CCyB) and later voted to affirm the CCyB amount at 0 percent.[10] The buffer is designed to increase the resilience of the financial system by raising capital requirements on internationally active banking organizations when there is an elevated risk of above-normal losses in the future. In forming its view about the appropriate size of the U.S. CCyB, the Board intends to monitor a wide range of financial and economic indicators and consider their implications for financial system vulnerabilities, including but not limited to asset valuation pressures, risk appetite, leverage in the financial and nonfinancial sectors, and maturity and liquidity transformation in the financial sector. The decision to maintain the CCyB at 0 percent in part reflected an assessment that vulnerabilities associated with financial-sector leverage were at the lower ends of their historical ranges.

Second, the Board also took several further regulatory steps as part of its effort to improve the resilience of financial institutions and overall financial stability. For example, the Board finalized a rule that would impose total loss-absorbing capacity and long-term debt requirements on U.S. global systemically important bank holding companies (G-SIBs) and on the U.S. operations of certain foreign G-SIBs.[11] The final rule would require each covered firm to maintain a minimum amount of unsecured long-term debt that could be converted into equity in a possible resolution of the firm, thereby both recapitalizing the firm without putting public money at risk and diminishing the threat that its failure would pose to financial stability. The rule is an important step in addressing the perception that certain institutions are "too big to fail." Under the final rule, U.S. G-SIBs would need to raise an additional $70 billion by January 2019.

Third, the Board and the Federal Deposit Insurance Corporation (FDIC) continued to actively engage in the resolution-planning process with the largest banks. As part of that process, the Board and the FDIC announced that Bank of America, BNY Mellon, JPMorgan Chase, and State Street adequately remediated deficiencies in their 2015 resolution plans. The two agencies also announced that Wells Fargo did not adequately remedy all of its deficiencies and will be subject to restrictions on certain activities until the deficiencies are remedied.[12]

The enhanced prudential standards, together with stress testing and other regulatory safeguards, help ensure that large U.S. BHCs and FBOs operating in the United States have robust levels of capital and liquidity as well as strong risk management. Together, these efforts not only help make certain that these firms are financially sound individually, but also limit the risk that financial distress at these firms could cause negative spillovers to the financial

8 See Board of Governors of the Federal Reserve System, "Federal Reserve Board Announces Finalized Stress Testing Rules Removing Noncomplex Firms from Qualitative Aspect of CCAR Effective for 2017," press release, January 30, 2017, https://www.federalreserve.gov/newsevents/press/bcreg/20170130a.htm.

9 See Board of Governors of the Federal Reserve System, Office of the Comptroller of the Currency, and Federal Deposit Insurance Corporation, "Agencies Issue Advanced Notice of Proposed Rulemaking on Enhanced Cyber Risk Management Standards," joint press release, October 19, 2016, https://www.federalreserve.gov/newsevents/press/bcreg/20161019a.htm.

10 See Board of Governors of the Federal Reserve System, "Federal Reserve Board Announces It Has Voted to Affirm Countercyclical Capital Buffer (CCyB) at Current Level of 0 Percent," press release, October 24, 2016, https://www.federalreserve.gov/newsevents/press/bcreg/20161024a.htm.

11 See Board of Governors of the Federal Reserve System, "Federal Reserve Board Adopts Final Rule to Strengthen the Ability of Government Authorities to Resolve in Orderly Way Largest Domestic and Foreign Banks Operating in the United States," press release, December 15, 2016, https://www.federalreserve.gov/newsevents/press/bcreg/20161215a.htm.

12 See Board of Governors of the Federal Reserve System and Federal Deposit Insurance Corporation, "Agencies Announce Determinations on October Resolution Plan Submissions of Five Systemically Important Domestic Banking Institutions," joint press release, December 13, 2016, https://www.federalreserve.gov/newsevents/press/bcreg/20161213a.htm.

sector and the broader economy. Improvements in resolvability will mitigate adverse effects from perceptions of "too big to fail" and contribute to more orderly conditions in the financial system if institutions face strains. For more information on recovery and resolution-planning activity, see section 4, "Supervision and Regulation."

Domestic and International Cooperation and Coordination

The Federal Reserve cooperated and coordinated with both domestic and international institutions in 2016 to promote financial stability.

Financial Stability Oversight Council Activities

As mandated by the Dodd-Frank Act, the FSOC was created in 2010 and is chaired by the Treasury Secretary (box 2). It establishes an institutional framework for identifying and responding to sources of systemic risk. The Federal Reserve Chairman is a member of the FSOC. Through collaborative participation in the FSOC, U.S. financial regulators monitor not only institutions, but also the financial system as a whole. The Federal Reserve, in conjunction with other participants, assists in monitoring financial risks, analyzes the implications of those risks for financial stability, and identifies steps that can be taken to mitigate those risks. In addition, when an institution is designated by the FSOC as systemically important, the Federal Reserve assumes responsibility for supervising that institution.

In 2016, the Federal Reserve worked, in conjunction with other FSOC participants, on the following major initiatives:

- **Review of asset management products and activities**. After reviewing comment letters in response to its request for public comments on asset management industry risks, the FSOC released a public statement on April 18, 2016, providing an update on its review of potential risks to U.S. financial stability that may arise from asset management products and activities.[13] The statement detailed the FSOC's views regarding potential financial stability risks and next steps to respond to these potential risks. The evaluation of risks focused on the following areas: (1) liquidity and redemption, (2) leverage, (3) operational functions, (4) securities lending, and (5) resolvability and transition planning.
- **Creation of a hedge fund working group.** The April statement's review of the use of leverage in the hedge fund industry suggested a need for further analysis of hedge fund activities, and, as a result, the FSOC established a working group to gather and analyze regulatory and supervisory data on hedge funds. As a working group member, the Federal Reserve has continued to participate in the ongoing analysis of potential risks to the financial system posed by the hedge fund industry.
- **Nonbank designations process.** On June 29, 2016, the FSOC voted to rescind its determination that material financial distress at GE Capital Global Holdings could pose a threat to U.S. financial stability, and that the company should be subject to supervision by the Federal Reserve and enhanced prudential standards.[14] The FSOC made the decision that GE Capital's potential to pose material financial distress to U.S. financial stability was substantially reduced after the company had executed

Box 2. Regular Reporting on Financial Stability Oversight Council Activities

The Federal Reserve cooperated and coordinated with domestic agencies in 2016 to promote financial stability, including through the activities of the Financial Stability Oversight Council (FSOC).

Meeting minutes. In 2016, the FSOC met on a nearly monthly basis, and the minutes for each meeting are available on the U.S. Treasury website (https://www.treasury.gov/initiatives/fsoc/council-meetings/Pages/meeting-minutes.aspx).

FSOC annual report. On June 21, 2016, the FSOC released its sixth annual report (https://www.treasury.gov/initiatives/fsoc/studies-reports/Documents/FSOC%202016%20Annual%20Report.pdf), which includes a review of key developments through the beginning of 2016 and a set of recommended actions that could be taken to ensure financial stability and to mitigate systemic risks that affect the economy.

For more on the FSOC, see https://www.treasury.gov/initiatives/fsoc/Pages/home.aspx.

[13] For more details, see U.S. Department of the Treasury, "Financial Stability Oversight Council Releases Statement on Review of Asset Management Products and Activities," press release, April 18, 2016, https://www.treasury.gov/press-center/press-releases/Pages/jl0431.aspx.

[14] See U.S. Department of the Treasury, "Financial Stability Oversight Council Announces Rescission of Nonbank Financial Company Designation," press release, June 29, 2016, https://www.treasury.gov/press-center/press-releases/Pages/jl0503.aspx.

significant divestitures, transformed its funding model, and implemented a corporate reorganization since the FSOC's determination in July 2013.

Financial Stability Board Activities

The Federal Reserve participates in international bodies, such as the FSB, given the interconnected global financial system and the global activities of large U.S. financial institutions. The FSB is an international body that monitors the global financial system and promotes financial stability through the adoption of sound policies across countries. The Federal Reserve participates in the FSB, along with the SEC and the U.S. Treasury.

In 2016, the Federal Reserve continued its active participation in the FSB. The FSB is engaged in several issues, including monitoring of shadow banking activities, coordination of regulatory standards for global systemically important financial institutions, asset management, fintech (emerging financial technologies), evaluating the effects of reforms, and development of effective resolution regimes for large financial institutions. In June, the FSB released for consultation a set of proposed policy recommendations to address vulnerabilities from asset management activities.

4 Supervision and Regulation

The Federal Reserve has supervisory and regulatory authority over a variety of financial institutions and activities with the goal of promoting a safe, sound, and stable financial system that supports the growth and stability of the U.S. economy. As described in this report, the Federal Reserve carries out its supervisory and regulatory responsibilities and supporting functions primarily by

- promoting the safety and soundness of individual financial institutions supervised by the Federal Reserve;
- taking a macroprudential approach to the supervision of the largest, most systemically important financial institutions (SIFIs);[1]
- developing supervisory policy (rulemakings, supervision and regulation letters (SR letters), policy statements, and guidance);
- identifying requirements and setting priorities for supervisory information technology initiatives;
- ensuring ongoing staff development to meet evolving supervisory responsibilities;
- regulating the U.S. banking and financial structure by acting on a variety of proposals; and
- enforcing other laws and regulations.

2016 Developments

During 2016, the U.S. banking system and financial markets continued to improve following their recovery from the financial crisis that started in mid-2007.

Performance of bank holding companies. An improvement in bank holding companies' (BHCs) performance was evident during 2016. U.S. BHCs, in aggregate, reported earnings reaching an all-time high of $162 billion for 2016, up from $158 billion for the year ending December 31, 2015. The proportion of unprofitable BHCs was 2 percent, the same as 2015. However, assets from unprofitable BHCs increased to 3.1 percent in 2016, up from 2.9 percent in 2015. Provisions increased to 0.26 percent of average assets, up from 0.23 percent in 2015. They remained in line with historical lows. Nonperforming assets continued to decline, but remained elevated relative to historical levels at 2.4 percent of loans and foreclosed assets, down from 2.8 percent as of year-end 2015. (See "Bank Holding Companies" later in this section.)

Performance of state member banks. The performance at state member banks in 2016 improved from 2015. In aggregate, state member banks reported profits of $24.4 billion for 2016, up 11.7 percent from $21.8 billion in 2015. Return-on-assets improved while return-on-equity dipped slightly, but both measures continue to lag pre-crisis levels. The percent of profitable state member banks decreased slightly but remains well above pre-crisis levels as 2.7 percent of firms reported a loss for the year, up from 2.4 percent in 2015. Problem loans stayed flat in 2016 at 1.6 percent, in line with pre-crisis levels, ending a six-year declining trend. However, problem loans increased sharply in state member bank commercial & industrial and agricultural loan portfolios due to increases in nonaccrual loans. Provisions (as a percent of revenue) increased for a second consecutive year to 3.5 percent after falling five consecutive years from a high of 32.4 percent in 2009 to a low of 2.2 percent in 2014. The risk-based capital ratios for state member banks increased very slightly from 14.51 percent in 2015 to 14.52 percent in 2016, matching a similar increase in the percent of banks deemed well capitalized under prompt corrective action standards to 99.6 percent. In 2016, one state member bank, with $66.3 million in assets, failed. (See "State Member Banks" later in this section.)

Enhanced prudential standards. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act) directs the Board, in part, to establish prudential standards in order to prevent or mitigate risks to U.S. financial stability that could

[1] For a detailed discussion of macroprudential supervision and regulation, refer to section 3, "Financial Stability."

Box 1. Regulation of Global Systemically Important Banking Institutions

In 2016, the Board continued to advance its regulatory and supervisory program for G-SIBs, the banking firms whose failure would cause the most harm to the U.S. financial system and the broader economy. The Board's rules for G-SIBs pursue two complementary goals: reducing the probability that a G-SIB will fail, and reducing the harm that a G-SIB's failure would cause the financial system and economy. The Board had two significant accomplishments in 2016 in furtherance of that latter goal. First, the Board finalized its long-term debt and TLAC rule. Second, together with the Federal Deposit Insurance Corporation (FDIC), the Board issued public feedback to domestic G-SIBs on their resolution plans, as well as guidance for incorporation into the next full plan submission.

TLAC final rule

In December 2016, the Board issued a final rule to require the top-tier BHCs of U.S. G-SIBs and the U.S. intermediate holding companies of foreign G-SIBs to maintain minimum levels of unsecured, long-term debt and TLAC, which is made up of both capital and long-term debt. The final rule also prohibits covered holding companies (but not their operating subsidiaries) from engaging in certain financial activities, such as short-term debt issuance and derivatives contracts with third parties, which would pose a substantial risk to financial stability if the holding company were to fail.

If a covered holding company were to fail and enter resolution under bankruptcy or under the Dodd-Frank Act's Orderly Liquidation Authority, its unsecured, long-term debt could be converted into equity to recapitalize the firm's critical operations. The TLAC final rule would particularly improve a G-SIB's resolvability under a "single-point-of-entry" strategy, pursuant to which the failed firm's recapitalized subsidiaries would continue to operate normally—limiting disruption to the financial system—while only the top-tier holding company would enter a resolution proceeding. The TLAC final rule constitutes an important step forward in addressing the "too big to fail" problem by substantially reducing the harm a G-SIB's failure would do to U.S. financial stability.

Resolution planning

The Federal Reserve, in collaboration with the FDIC, has continued to work with large financial institutions to develop a range of recovery and resolution strategies in the event of their distress or failure. In April 2016, the FDIC and the Board jointly determined that the 2015 resolution plans of five G-SIBs were not credible or would not facilitate an orderly resolution under the U.S. Bankruptcy Code, and issued notices of deficiencies detailing the actions needed by October 1, 2016, to avoid restrictions on activities. Simultaneously, the agencies issued a white paper, *Resolution Plan Assessment Framework and Firm Determinations* (2016), explaining the determinations and processes for reviewing the plans as well as new guidance for the July 2017 submissions of all firms (www.federalreserve.gov/newsevents/pressreleases/files/bcreg20160413a2.pdf and www.federalreserve.gov/newsevents/pressreleases/files/bcreg20160413a1.pdf). The guidance sets forth a number of key vulnerabilities in resolution (for example, capital, liquidity, governance mechanisms, operational continuity, legal entity rationalization and separability, and derivatives and trading activities), and each G-SIB is expected to satisfactorily address these vulnerabilities in its 2017 submission.

In December 2016, the agencies announced determinations on the October 2016 submissions (www.federalreserve.gov/newsevents/pressreleases/bcreg20161213a.htm). Four of the five firms were found to have adequately remediated deficiencies in their 2015 resolution plans, while the fifth is subject to restrictions on the growth of international and nonbank activities. This latter firm is expected to file a revised submission by March 31, 2017. The deadline for the next full plan submission for all eight G-SIBs is July 1, 2017.

arise from the material financial distress or failure, or ongoing activities of, large, interconnected financial institutions. In 2016, the Board established or proposed to establish a variety of enhanced prudential standards. (See "Enhanced Prudential Standards" later in this section for details.)

Regulation of global systemically important banking institutions (G-SIBs). The Board continued to advance its macroprudential regulatory program for G-SIBs, the banking firms whose failure would cause the most harm to the U.S. financial system and the broader economy. For example, in 2016 the Board issued a final rule to require the top-tier BHCs of U.S. G-SIBs and the U.S. intermediate holding companies of foreign G-SIBs to maintain minimum levels of unsecured, long-term debt and "total loss-absorbing capacity" (TLAC), which is made up of both capital and long-term debt. The Board also finalized and issued for comment several other rulemakings that would apply to the largest and most systemically important institutions, as described further below in the "Supervisory Policy" section. (See box 1 for more information on G-SIBs.)

Box 2. Easing Regulatory Burden for Community Banking Organizations

The Federal Reserve continually seeks to minimize regulatory burden for community banks. To accomplish this, the Federal Reserve tailors its regulations, guidance, and supervisory programs to an institution's asset size, risk profile, and complexity. Over the past year, the Federal Reserve took a number of steps to reduce burden on community banks and to advance a more efficient and effective supervisory program. Some of these actions were taken in the context of the decennial review required by the Economic Growth and Regulatory Paperwork Reduction Act of 1996 (EGRPRA). Key examples of burden reduction efforts undertaken in 2016 include

- **Expanding the number of banks eligible for an 18-month examination cycle.** The total asset threshold for banks that may qualify for an 18-month versus 12-month examination cycle was increased from $500 million to $1 billion. As a result, 82 percent of state member banks may now qualify for the longer examination cycle compared to 68 percent previously.
- **Completing more examination work off-site**. In response to banker concerns about the disruption caused by large examination teams at community banks, the Federal Reserve issued new examination procedures in April 2016 encouraging examiners to conduct a greater portion of their examination work off-site whenever possible, including review of a bank's loan files, which is typically the most labor-intensive portion of the examination.
- **Making better use of off-site monitoring tools to tailor examination work.** The Federal Reserve continued to improve the rigor and accuracy of its off-site analysis, resulting in more efficient on-site examinations and reducing the amount of time spent reviewing well-managed activities at community banks that present lower risks.
- **Reducing regulatory reporting requirements.** A number of changes to regulatory filing requirements sought to reduce the amount of financial data that community banks must report while preserving data needed by the Federal Reserve for safety and soundness purposes. For financial institutions with total assets of $1 billion or greater, the Federal Reserve, in conjunction with the other banking agencies represented on the Federal Financial Institutions Examination Council (FFIEC), made burden-reducing changes to the Call Report in 2016 by deleting a number of data items and increasing the reporting threshold for certain other items.

  For small, non-complex financial institutions with fewer than $1 billion in total assets, the Federal Reserve, in conjunction with the FFIEC, implemented a new streamlined Call Report effective for the March 31, 2017 report date with approximately 40 percent less data items than the existing Call Report. Approximately 90 percent of all institutions that are required to file the existing Call Report will qualify to file the streamlined Call Report as of the March 2017 report date. Moreover, the agencies continue to evaluate the burden associated with regulatory reports and are considering further reductions to the Call Report.
- **Simplifying and streamlining regulations.** The Federal Reserve is working independently and with the other federal banking agencies to address concerns about regulatory burden. For example, the agencies reviewed the burden associated with elements of regulatory capital regulations and are considering options to simplify capital requirements for community banks. Similarly, the agencies are reviewing the current thresholds for when an institution is required to obtain an appraisal and are considering options to adjust the appraisal requirements, including in rural markets, to reduce burden in a manner consistent with safety and soundness. Additional regulatory burden reduction efforts are underway for community banks as described in the EGRPRA report.

Community bank burden reduction. The Federal Reserve continually seeks to minimize regulatory burden for community banks by tailoring its regulations, guidance, and supervisory programs to an institution's size, risk, and complexity. The Federal Reserve took a number of steps in 2016, including conducting more supervisory work offsite and reducing regulatory reporting requirements, to reduce burden on community banks and make the supervisory program for these institutions more efficient and effective. (See box 2 for more information on easing regulatory burden.)

Cybersecurity. Cybercrime has been identified by financial institutions and supervisors as a significant threat to specific institutions and to the broader financial system. In 2016, the Federal Reserve worked independently and in collaboration with other agencies, public/private partnerships, and international authorities to strengthen risk-management practices and reduce cyber risk to the financial system. (See box 3 for more information on cyber guidance.)

Supervision

The Federal Reserve is the federal supervisor and regulator of all U.S. BHCs, including financial holding companies (FHCs), savings and loan holding companies (SLHCs), and state-chartered commercial

Box 3. Cybersecurity Guidance

Financial institutions consistently identify cybercrime as one of the top threats to the safety and soundness of their firms. In 2016, well publicized cyber incidents in the financial sector underscored the growing sophistication of cyber attackers and the importance of recognizing the highly interconnected nature of the sector in developing and implementing cyber resilience strategies.

It is against this backdrop that the Federal Reserve recognizes the risk that ineffective cybersecurity poses to individual firms, the financial sector, and financial stability more broadly. In 2016, the Federal Reserve worked independently and in collaboration with other agencies, public/private partnerships, and international authorities to strengthen risk-management practices and reduce cyber risk to the financial system.

Guidance on Cyber Resilience for Financial Market Infrastructures

In June 2016, the Committee on Payments and Market Infrastructures (CPMI) and the International Organization of Securities Commissions (IOSCO) published *Guidance on Cyber Resilience for Financial Market Infrastructures* (guidance), which supplements the risk-management expectations set out in the CPMI-IOSCO *Principles for Financial Market Infrastructures*. Although the guidance is not mandatory, financial market infrastructures (FMIs) supervised by the Board are expected to apply the guidance as they strive to meet established standards. The guidance calls for FMIs to immediately take necessary steps, in concert with relevant stakeholders, to improve their cyber resilience and develop concrete plans to improve their capabilities to meet resumption time objectives by mid-2017. The following are key messages in the guidance:

- An FMI's board and its senior management should proactively address cyber risks within the context of managing an FMI's enterprise wide risks.
- FMIs should be prepared for the eventuality of successful attacks, and make preparations to respond and recover key services safely and promptly–the resumption objective is within two hours of a disruption.
- Effective use of high-quality threat intelligence as well as a rigorous testing regime are critical for ensuring that an FMI's cyber resilience measures continue to be effective.
- FMIs should pursue strong collaboration with connected entities to achieve collective resilience.

Enhanced Cyber Risk Management Standards

The Federal Reserve, FDIC, and Office of the Comptroller of the Currency (OCC) in October 2016 released an advance notice of proposed rulemaking (ANPR) on enhanced cyber risk management standards to increase the cybersecurity resilience of the largest and most interconnected entities under the agencies' supervision. By targeting the firms and systems at which a cyber event could most likely impact other firms, the potential standards would increase the resiliency of the financial sector more broadly.

The proposed standards would apply to the activities of banking organizations with total assets of $50 billion or more, FMIs, and nonbank financial companies supervised by the Federal Reserve and their third-party service providers. A key aspect of the standards is that they are tiered. While the potential standards would apply broadly to all of the firms within scope, a subset of higher standards would apply to the sector-critical systems operated by those firms, such as systems supporting payment, clearing, and settlement operations.

The proposed standards would require covered firms to

- demonstrate effective, enterprise-wide cyber risk management and governance;
- continuously monitor and manage cyber risks within the risk appetite and tolerance levels approved by their boards of directors;
- establish and implement strategies for cyber resilience and business continuity in the event of a disruption;
- establish protocols for secure, trustworthy storage of critical records; and
- maintain continuing situational awareness of their operational status and cybersecurity posture on an enterprise-wide basis.

The potential standards for sector-critical systems include minimizing cyber risk by implementing the most effective, commercially-available controls and establishing a two-hour time objective to recover from a cyber event.

banks that are members of the Federal Reserve System. The Federal Reserve also has responsibility for supervising the operations of all Edge Act and agreement corporations, the international operations of state member banks and U.S. BHCs, and the U.S. operations of foreign banking organizations. Furthermore, through the Dodd-Frank Act, the Federal Reserve has been assigned responsibilities for nonbank financial firms and financial market utilities (FMUs) designated by the by the Financial Stability Oversight Council (FSOC) as systemically important.

In overseeing the institutions under its authority, the Federal Reserve seeks primarily to promote safety and soundness, including compliance with laws and regulations.

Safety and Soundness

The Federal Reserve uses a range of supervisory activities to promote the safety and soundness of financial institutions and maintain a comprehensive understanding and assessment of each firm. These activities include horizontal reviews, firm-specific examinations and inspections, continuous monitoring and surveillance activities, and implementation of enforcement or other supervisory actions as necessary. The Federal Reserve also provides training and technical assistance to foreign supervisors and minority-owned and de novo depository institutions.

Examinations and Inspections

The Federal Reserve conducts examinations of state member banks, FMUs, the U.S. branches and agencies of foreign banks, and Edge Act and agreement corporations. In a process distinct from examinations, it conducts inspections of holding companies and their nonbank subsidiaries. Whether an examination or an inspection is being conducted, the review of operations entails

- an evaluation of the adequacy of governance provided by the board and senior management, including an assessment of internal policies, procedures, controls, and operations;
- an assessment of the quality of the risk-management and internal control processes in place to identify, measure, monitor, and control risks;
- an assessment of the key financial factors of capital, asset quality, earnings, and liquidity; and
- a review for compliance with applicable laws and regulations.

Table 1 provides information on examinations and inspections conducted by the Federal Reserve during the past five years.

Consolidated Supervision

Consolidated supervision, a method of supervision that encompasses the parent company and its subsid-

Table 1. State member banks and bank holding companies, 2012–16

Entity/item	2016	2015	2014	2013	2012
State member banks					
Total number	829	839	858	850	843
Total assets (billions of dollars)	2,577	2,356	2,233	2,060	2,005
Number of examinations	663	698	723	745	769
By Federal Reserve System	406	392	438	459	487
By state banking agency	257	306	285	286	282
Top-tier bank holding companies					
Large (assets of more than $1 billion)					
Total number	569	547	522	505	508
Total assets (billions of dollars)	17,593	16,961	16,642	16,269	16,112
Number of inspections	659	709	738	716	712
By Federal Reserve System[1]	646	669	706	695	691
On site	438	458	501	509	514
Off site	208	211	205	186	177
By state banking agency	13	40	32	21	21
Small (assets of $1 billion or less)					
Total number	3,682	3,719	3,902	4,036	4,124
Total assets (billions of dollars)	914	938	953	953	983
Number of inspections	2,597	2,783	2,824	3,131	3,329
By Federal Reserve System	2,525	2,709	2,737	2,962	3,150
On site	126	123	142	148	200
Off site	2,399	2,586	2,595	2,814	2,950
By state banking agency	72	74	87	169	179
Financial holding companies					
Domestic	473	442	426	420	408
Foreign	42	40	40	39	38

[1] For large bank holding companies subject to continuous, risk-focused supervision, includes multiple targeted reviews.

iaries, allows the Federal Reserve to understand the organization's structure, activities, resources, risks, and financial and operational resilience. Working with other relevant supervisors and regulators, the Federal Reserve seeks to ensure that financial, operational, or other deficiencies are addressed before they pose a danger to the consolidated organization, its banking offices, or to the broader economy.[2]

Large financial institutions increasingly operate and manage their integrated businesses across corporate boundaries. Financial trouble in one part of a financial institution can spread rapidly to other parts of the institution. Risks that cross legal entities or that are managed on a consolidated basis cannot be monitored properly through supervision that is directed at only one of the legal entity subsidiaries within the overall organization.

To strengthen its supervision of the largest, most complex financial institutions, the Federal Reserve created a centralized, multidisciplinary body called the Large Institution Supervision Coordinating Committee (LISCC). The LISCC coordinates the Federal Reserve's supervision of domestic bank holding companies and foreign banking organizations that pose elevated risk to U.S. financial stability as well as other nonbank financial institutions designated as systemically important by the FSOC.

The framework for the consolidated supervision of LISCC firms and other large financial institutions was issued in December 2012.[3] This framework strengthens traditional microprudential supervision and regulation to enhance the safety and soundness of individual firms and incorporates macroprudential considerations to reduce potential threats to the stability of the financial system. The framework has two primary objectives:

1. **Enhancing resiliency of a firm to lower the probability of its failure or inability to serve as a financial intermediary.** Each firm is expected to ensure that the consolidated organization (or the combined U.S. operations in the case of foreign banking organizations) and its core business lines can survive under a broad range of internal or external stresses. This requires financial resilience by maintaining sufficient capital and liquidity, and operational resilience by maintaining effective corporate governance, risk management, and recovery planning.
2. **Reducing the impact on the financial system and the broader economy in the event of a firm's failure or material weakness.** Each firm is expected to ensure the sustainability of its critical operations and banking offices under a broad range of internal or external stresses. This requires, among other things, effective resolution planning that addresses the complexity and the interconnectivity of the firm's operations.

The framework is designed to support a tailored supervisory approach that accounts for the unique risk characteristics of each firm, including the nature and degree of potential systemic risk inherent in a firm's activities and operations, and is being implemented in a multi-stage approach.

The Federal Reserve uses a range of supervisory activities to maintain a comprehensive understanding and assessment of each large financial institution:

- **Coordinated horizontal reviews**. These reviews involve examining several institutions simultaneously and encompass firm-specific supervision and the development of cross-firm perspectives. In addition, the Federal Reserve uses a multidisciplinary approach to draw on a wide range of perspectives, including those from supervisors, examiners, economists, financial experts, payments systems analysts, and other specialists. Examples include analysis of capital adequacy and planning through the Comprehensive Capital Analysis and Review (CCAR) as well as horizontal evaluations of resolution plans and incentive compensation practices.
- **Firm-specific examinations and/or inspections and continuous monitoring activities**. These activities are designed to maintain an understanding and assessment across the core areas of supervisory focus. These activities include review and assessment of changes in strategy, inherent risks, control processes, and key personnel, and follow-up on previously identified concerns (for example, areas subject to enforcement actions) or emerging vulnerabilities.
- **Interagency information sharing and coordination**. In developing and executing a detailed supervisory plan for each firm, the Federal Reserve generally relies to the fullest extent possible on the information and assessments provided by other relevant

[2] "Banking offices" are defined as U.S. depository institution subsidiaries as well as the U.S. branches and agencies of foreign banking organizations.

[3] For more information about the supervisory framework, see the Board's press release and SR letter 12-17/CA 12-14 at www.federalreserve.gov/newsevents/press/bcreg/20121217a.htm.

supervisors and functional regulators. The Federal Reserve actively participates in interagency information sharing and coordination, consistent with applicable laws, to promote comprehensive and effective supervision and limit unnecessary duplication of information requests. Supervisory agencies continue to enhance formal and informal discussions to jointly identify and address key vulnerabilities and to coordinate supervisory strategies for large financial institutions.

- **Internal audit and control functions**. In certain instances, supervisors may be able to rely on a firm's internal audit or internal control functions in developing a comprehensive understanding and assessment or for validating the remediation of previously identified control weaknesses and similar concerns.

The Federal Reserve uses a risk-focused approach to supervision, with activities directed toward identifying the areas of greatest risk to financial institutions and assessing the ability of institutions' management processes to identify, measure, monitor, and control those risks. For medium- and small-sized financial institutions, the risk-focused, consolidated supervision program provides that examination and inspection procedures are tailored to each organization's size, complexity, risk profile, and condition. The supervisory program for an institution, regardless of its asset size, entails both off-site and on-site work, including development of supervisory plans, pre-examination visits, detailed documentation, and preparation of examination reports tailored to the scope and findings of the review.

Capital Planning and Stress Tests

Since the financial crisis, the Board has led a series of initiatives to strengthen the capital positions of the largest banking organizations. Two related initiatives are the CCAR and the Dodd-Frank Act stress tests (DFAST).

CCAR is a supervisory exercise to evaluate capital adequacy, internal capital planning processes, and planned capital distributions simultaneously at all large and complex BHCs. In CCAR, the Federal Reserve assesses whether these BHCs have sufficient capital to withstand highly stressful operating environments and be able to continue operations, maintain ready access to funding, meet obligations to creditors and counterparties, and serve as credit intermediaries. Capital is central to a BHC's ability to absorb losses and continue to lend to creditworthy businesses and consumers. Through CCAR, a BHC's capital adequacy is evaluated on a forward-looking, post-stress basis as the BHC is required to demonstrate in its capital plan how it will maintain, throughout a very stressful period, capital above minimum regulatory capital requirements. From a microprudential perspective, CCAR provides a structured means for supervisors to assess not only whether these BHCs hold enough capital, but also whether they are able to rapidly and accurately determine their risk exposures, including how those might evolve under stress, which is an essential element of effective risk management. From a macroprudential perspective, the use of a common scenario allows the Federal Reserve to assess not just individual institutions, but also how a particular risk or combination of risks might affect the banking system as a whole under stressful conditions. The 2016 CCAR results are available at www.federalreserve.gov/newsevents/press/bcreg/bcreg20160629a1.pdf.

DFAST is a supervisory stress test conducted by the Federal Reserve to evaluate whether large BHCs have sufficient capital to absorb losses resulting from stressful economic and financial market conditions. The Dodd-Frank Act also requires BHCs and other financial companies supervised by the Federal Reserve to conduct their own stress tests. Together, the Dodd-Frank Act supervisory stress tests and the company-run stress tests are intended to provide company management and boards of directors, the public, and supervisors with forward-looking information to help gauge the potential effect of stressful conditions on the capital adequacy of these large banking organizations. The 2016 DFAST results are available at www.federalreserve.gov/newsevents/press/bcreg/bcreg20160623a1.pdf.

State Member Banks

At the end of 2016, a total of 1,750 banks (excluding nondepository trust companies and private banks) were members of the Federal Reserve System, of which 829 were state chartered. Federal Reserve System member banks operated 55,301 branches, and accounted for 34 percent of all commercial banks in the United States and for 70 percent of all commercial banking offices. State-chartered commercial banks that are members of the Federal Reserve, commonly referred to as state member banks, represented

approximately 16 percent of all insured U.S. commercial banks and held approximately 16 percent of all insured commercial bank assets in the United States.

Under section 10 of the Federal Deposit Insurance Act, as amended by section 111 of the Federal Deposit Insurance Corporation Improvement Act of 1991 and by the Riegle Community Development and Regulatory Improvement Act of 1994, the Federal Reserve must conduct a full-scope, on-site examination of state member banks at least once a year.[4] However, qualifying well-capitalized, well-managed state member banks with less than $1 billion in total assets are eligible for an 18-month examination cycle.[5] The Federal Reserve conducted 406 examinations of state member banks in 2016.

Bank Holding Companies

At year-end 2016, a total of 4,614 U.S. BHCs were in operation, of which 4,115 were top-tier BHCs. These organizations controlled 4,373 insured commercial banks and held approximately 97 percent of all insured commercial bank assets in the United States.

Federal Reserve guidelines call for annual inspections of large BHCs and complex smaller companies. In judging the financial condition of the subsidiary banks owned by holding companies, Federal Reserve examiners consult examination reports prepared by the federal and state banking authorities that have primary responsibility for the supervision of those banks, thereby minimizing duplication of effort and reducing the supervisory burden on banking organizations.

Inspections of BHCs, including FHCs, are built around a rating system introduced in 2005. The system reflects the shift in supervisory practices away from a historical analysis of financial condition toward a more dynamic, forward-looking assessment of risk-management practices and financial factors. Under the system, known as RFI but more fully termed RFI/C(D), holding companies are assigned a composite rating (C) that is based on assessments of three components: Risk Management (R), Financial Condition (F), and the potential Impact (I) of the parent company and its nondepository subsidiaries on the subsidiary depository institution. The fourth component, Depository Institution (D), is intended to mirror the primary supervisor's rating of the subsidiary depository institution.[6] Noncomplex BHCs with consolidated assets of $1 billion or less are subject to a special supervisory program that permits a more flexible approach.[7] In 2016, the Federal Reserve conducted 646 inspections of large BHCs and 2,525 inspections of small, noncomplex BHCs.

Financial Holding Companies

Under the Gramm-Leach-Bliley Act, BHCs that meet certain capital, managerial, and other requirements may elect to become FHCs and thereby engage in a wider range of financial activities, including full-scope securities underwriting, merchant banking, and insurance underwriting and sales. As of year-end 2016, a total of 473 domestic BHCs and 42 foreign banking organizations had FHC status. Of the domestic FHCs, 25 had consolidated assets of $50 billion or more; 35, between $10 billion and $50 billion; 146, between $1 billion and $10 billion; and 267, less than $1 billion.

Savings and Loan Holding Companies

The Dodd-Frank Act transferred responsibility for supervision and regulation of SLHCs from the former Office of Thrift Supervision (OTS) to the to the Federal Reserve in July 2011. At year-end 2016, a total of 436 SLHCs were in operation, of which 238 were top tier SLHCs. These SLHCs control 243 thrift institutions and include 21 companies engaged primarily in nonbanking activities, such as insurance underwriting (12 SLHCs), securities brokerage (4 SLHCs), and commercial activities (5 SLHCs). Excluding nonbank SIFI SLHCs, the 25 largest SLHCs accounted for more than $1.5 trillion of total combined assets. Approximately 90 percent of SLHCs engage primarily in depository activities. These firms hold approximately 16 percent ($256 billion) of the total combined assets of all SLHCs. The Office of the Comptroller of the Currency (OCC) is the primary regulator for most of the subsidiary savings associations of the firms engaged primarily in depository activities. Table 2 provides information on examinations of SLHCs for the past five years.

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[4] The Office of the Comptroller of the Currency examines nationally chartered banks, and the Federal Deposit Insurance Corporation examines state-chartered banks that are not members of the Federal Reserve.

[5] 81 Fed. Reg. 90,949 (December 16, 2016).

[6] Each of the first two components has four subcomponents: Risk Management—(1) Board and Senior Management Oversight; (2) Policies, Procedures, and Limits; (3) Risk Monitoring and Management Information Systems; and (4) Internal Controls. Financial Condition—(1) Capital, (2) Asset Quality, (3) Earnings, and (4) Liquidity.

[7] The special supervisory program was implemented in 1997, most recently modified in 2013. See SR letter 13-21 for a discussion of the factors considered in determining whether a BHC is complex or noncomplex (www.federalreserve.gov/bankinforeg/srletters/sr1321.htm).

Table 2. Savings and loan holding companies, 2012–16

Entity/item	2016	2015	2014	2013	2012
Top-tier savings and loan holding companies					
Large (assets of more than $1 billion)[1]					
Total number	67	67	76	81	94
Total assets (billions of dollars)	1,664	1,525	1,493	1,500	1,715
Number of inspections	54	58	83	72	82
By Federal Reserve System[2]	54	57	82	71	80
On site	34	31	45	58	53
Off site	20	26	37	13	27
Small (assets of $1 billion or less)					
Total number	171	194	221	251	272
Total assets (billions of dollars)	50	55	65	76	82
Number of inspections	181	187	212	258	229
By Federal Reserve System	181	187	212	258	229
On site	9	13	10	21	46
Off site	172	174	202	237	183

[1] Excludes SIFI SLHCs (AIG and GE).

[2] For large savings and loan holding companies subject to continuous, risk-focused supervision, includes multiple targeted reviews.

Several complex policy issues continue to be addressed by the Board, including those related to consolidated capital requirements for insurance SLHCs, issues pertaining to intermediate holding companies for commercial SLHCs, and the adoption of formal rating systems. A request for public comment on the adoption of the formal rating system for certain SLHCs was issued on December 9, 2016. The proposal would not apply the formal rating system to SLHCs engaged in significant insurance or commercial activities.

Savings and loan holding companies primarily engaged in insurance underwriting activities. The Federal Reserve supervises twelve non-SIFI insurance SLHCs (ISLHCs), with $1.015 trillion in estimated total combined assets, and $118 billion in thrift assets. Of the twelve, four firms have total assets greater than $50 billion, four firms have total assets between $10 billion and $50 billion, and four firms have total assets less than $10 billion. With the exception of one ISLHC, which owns a thrift subsidiary that comprises more than half of the firm's total assets, thrift subsidiary assets for most ISLHCs represent less than 25 percent of total assets. Since ISLHCs were transferred to the Federal Reserve from the former OTS in 2011, seventeen have deregistered as SLHCs.

As the consolidated supervisor of ISLHCs, the Federal Reserve evaluates the organization's risk-management practices, the financial condition of the overall organization, and the impact of the nonbank activities on the depository institution. The Federal Reserve focuses supervisory attention on legal entities and activities that are not directly supervised or regulated by state insurance regulators, including intercompany transactions between the depository institution and its affiliates. The Federal Reserve relies to the fullest extent possible on the work of state insurance regulators as part of the overall supervisory assessment of ISLHCs. The Federal Reserve has been active in engaging with the state departments of insurance and the National Association of Insurance Commissioners (NAIC) on general insurance supervision matters.

Financial Market Utilities

FMUs manage or operate multilateral systems for the purpose of transferring, clearing, or settling payments, securities, or other financial transactions among financial institutions or between financial institutions and the FMU. Under the Federal Reserve Act, the Federal Reserve supervises FMUs that are chartered as member banks or Edge Act corporations and coordinates with other federal banking supervisors to supervise FMUs considered bank service providers under the Bank Service Company Act.

In July 2012, the FSOC voted to designate eight FMUs as systemically important under title VIII of the Dodd-Frank Act. As a result of these designations, the Board assumed an expanded set of responsibilities related to these designated FMUs that include promoting uniform risk-management standards, playing an enhanced role in the supervision of

designated FMUs, reducing systemic risk, and supporting the stability of the broader financial system. For certain designated FMUs, the Board established risk-management standards and expectations that are articulated in the Board's Regulation HH. In addition to setting minimum risk-management standards, Regulation HH establishes requirements for the advance notice of proposed material changes to the rules, procedures, or operations of a designated FMU for which the Board is the supervisory agency under title VIII. Finally, Regulation HH also establishes minimum conditions and requirements for a Federal Reserve Bank to establish and maintain an account for, and provide services to, a designated FMU.[8]

The Federal Reserve's risk-based supervision program for FMUs is administered by the FMU Supervision Committee (FMU-SC). The FMU-SC is a multidisciplinary committee of senior supervision, payment policy, and legal staff at the Board of Governors and Reserve Banks who are responsible for, and knowledgeable about, supervisory issues for FMUs. The FMU-SC's primary objective is to provide senior-level oversight, consistency, and direction to the Federal Reserve's supervisory process for FMUs. The FMU-SC coordinates with the LISCC on issues related to the roles of LISCC firms in FMUs as well as the payment, clearing, and settlement activities of LISCC firms and the FMU activities and implications for financial institutions in the LISCC portfolio.

In an effort to promote greater financial market stability and mitigate systemic risk, the Board works closely with the Securities and Exchange Commission (SEC) and the Commodity Futures Trading Commission (CFTC), both of which also have supervisory authority for certain FMUs. The Federal Reserve's work with these agencies under title VIII, including the sharing of appropriate information and participation in designated FMU examinations, aims to improve consistency in FMU supervision, promote robust FMU risk management, and improve regulators' ability to monitor and mitigate systemic risks.

Designated Nonbank Financial Companies

Since 2013, the FSOC has designated four nonbank financial companies for supervision by the Board. These companies are General Electric Capital Corporation, Inc. (GECC)[9] and three companies with significant insurance activities: American International Group, Inc.; Prudential Financial, Inc.; and MetLife, Inc.[10]

The Federal Reserve's supervisory approach for designated companies is tailored to account for different material characteristics of each firm. The Dodd-Frank Act requires the Board to apply enhanced prudential standards to the nonbank financial companies designated by the FSOC for supervision by the Board. The act authorizes the Board to tailor the application of these standards and requirements to different companies on an individual basis or by category. In June 2016, the Board issued an advance notice of proposed rulemaking (ANPR) inviting comment on conceptual frameworks for capital standards that could apply to companies with significant insurance activities. The Board also issued a proposed rule to apply enhanced prudential standards relating to corporate governance, risk-management, and liquidity risk-management standards to such companies. Additionally, the Federal Reserve monitors developments at the designated nonbank financial companies and exercises its supervisory authority to foster safe and sound practices and to promote financial stability.

International Activities

The Federal Reserve supervises the foreign branches and overseas investments of state member banks, Edge Act and agreement corporations, and BHCs (including the investments by BHCs in export trading companies). In addition, it supervises the activities that foreign banking organizations conduct through entities in the United States, including branches, agencies, representative offices, and subsidiaries.

Foreign operations of U.S. banking organizations. In supervising the international operations of state member banks, Edge Act and agreement corporations, and BHCs, the Federal Reserve generally conducts its examinations or inspections at the U.S. head offices of these organizations, where the ultimate responsibility for the foreign offices resides. Examiners also visit the overseas offices of U.S. banking organizations to obtain financial and operating infor-

[8] The Federal Reserve Banks maintain accounts for and provide services to several designated FMUs.

[9] In June 2016, the FSOC rescinded the designation of GECC as systemically important. As a result, GECC is no longer supervised by the Federal Reserve.

[10] In March 2016, the U.S. District Court in Washington, D.C., rescinded the FSOC's designation of MetLife as a systemically important firm subject to Federal Reserve supervision. The effect of the court's action is that MetLife is no longer subject to supervision by the Federal Reserve.

mation and, in some instances, to test their adherence to safe and sound banking practices and compliance with rules and regulations. Examinations abroad are conducted with the cooperation of the supervisory authorities of the countries in which they take place; for national banks, the examinations are coordinated with the OCC.

At the end of 2016, a total of 33 member banks were operating 404 branches in foreign countries and overseas areas of the United States; 18 national banks were operating 354 of these branches, and 15 state member banks were operating the remaining 50. In addition, 7 nonmember banks were operating 15 branches in foreign countries and overseas areas of the United States.

Edge Act and agreement corporations. Edge Act corporations are international banking organizations chartered by the Board to provide all segments of the U.S. economy with a means of financing international business, especially exports. Agreement corporations are similar organizations, state or federally chartered, that enter into agreements with the Board to refrain from exercising any power that is not permissible for an Edge Act corporation. Sections 25 and 25A of the Federal Reserve Act grant Edge Act and agreement corporations permission to engage in international banking and foreign financial transactions. These corporations, most of which are subsidiaries of member banks, may (1) conduct a deposit and loan business in states other than that of the parent, provided that the business is strictly related to international transactions, and (2) make foreign investments that are broader than those permissible for member banks.

At year-end 2016, out of 42 banking organizations chartered as Edge Act or agreement corporations, 3 operated 7 Edge Act and agreement branches. These corporations are examined annually.

U.S. activities of foreign banks. Foreign banks continue to be significant participants in the U.S. banking system. As of year-end 2016, a total of 148 foreign banks from 48 countries operated 174 state-licensed branches and agencies, of which 6 were insured by the FDIC, and 49 OCC-licensed branches and agencies, of which 4 were insured by the FDIC. These foreign banks also owned 9 Edge Act and agreement corporations and 1 commercial lending company. In addition, they held a controlling interest in 45 U.S. commercial banks. Altogether, the U.S. offices of these foreign banks controlled approximately 20 percent of U.S. commercial banking assets. These 148 foreign banks also operated 87 representative offices; an additional 42 foreign banks operated in the United States through a representative office. The Federal Reserve—in coordination with appropriate state regulatory authorities—examines state-licensed, non-FDIC-insured branches and agencies of foreign banks on-site at least once every 18 months.[11] In most cases, on-site examinations are conducted at least once every 12 months, but the period may be extended to 18 months if the branch or agency meets certain criteria. As part of the supervisory process, a review of the financial and operational profile of each organization is conducted to assess the organization's ability to support its U.S. operations and to determine what risks, if any, the organization poses to the banking system through its U.S. operations. The Federal Reserve conducted or participated with state and federal regulatory authorities in 647 examinations of foreign banks in 2016.

Compliance with Regulatory Requirements

The Federal Reserve examines institutions for compliance with a broad range of legal requirements, including anti-money-laundering (AML) and consumer protection laws and regulations, and other laws pertaining to certain banking and financial activities. Most compliance supervision is conducted under the oversight of the Board's Division of Supervision and Regulation (S&R), but consumer compliance supervision is conducted under the oversight of the Division of Consumer and Community Affairs (DCCA).[12] The two divisions coordinate their efforts with each other and also with the Board's Legal Division to ensure consistent and comprehensive Federal Reserve supervision for compliance with legal requirements.

Anti-Money-Laundering Examinations

The Treasury regulations implementing the Bank Secrecy Act (BSA) generally require banks and other types of financial institutions to file certain reports and maintain certain records that are useful in criminal, tax, or regulatory proceedings. The BSA and separate Board regulations require banking organizations supervised by the Board to file reports on suspicious activity related to possible violations of federal law, including money laundering, terrorism financ-

[11] The OCC examines federally licensed branches and agencies, and the FDIC examines state-licensed FDIC-insured branches in coordination with the appropriate state regulatory authority.

[12] For a detailed discussion of consumer compliance supervision, refer to section 5, "Consumer and Community Affairs."

ing, and other financial crimes. In addition, BSA and Board regulations require that banks develop written BSA compliance programs and that the programs be formally approved by bank boards of directors. The Federal Reserve is responsible for examining institutions for compliance with applicable AML laws and regulations and conducts such examinations in accordance with the Federal Financial Institutions Examination Council's (FFIEC) *Bank Secrecy Act/Anti-Money Laundering Examination Manual*.[13]

Specialized Examinations

The Federal Reserve conducts specialized examinations of supervised financial institutions in the areas of information technology, fiduciary activities, transfer agent activities, and government and municipal securities dealing and brokering. The Federal Reserve also conducts specialized examinations of certain nonbank entities that extend credit subject to the Board's margin regulations.

Information Technology Activities

In recognition of the importance of information technology to safe and sound operations in the financial industry, the Federal Reserve reviews the information technology activities of supervised financial institutions as well as certain service providers that provide information technology services to these organizations. All safety-and-soundness examinations conducted by the Federal Reserve include a risk-focused review of information technology risk-management activities. During 2016, the Federal Reserve continued as the lead supervisory agency for 6 of the 16 large, multiregional data processing servicers recognized on an interagency basis.

During 2016, the Federal Reserve contributed to updates to the FFIEC Information Technology Examination Handbook, which provides guidance to examiners, financial institutions, and technology service providers. The revised Information Security booklet addresses the factors necessary to assess the level of security risks to a financial institution's information systems. The booklet describes effective information security program management and provides an overview of information security operations. Some of these operations include the need for effective threat identification, assessment, and monitoring as well as incident identification, assessment, and response. In addition, the Retail Payment Systems booklet was updated with the addition of a new appendix on Mobile Financial Services. The appendix focuses on the unique risks associated with mobile financial services and emphasizes an enterprise-wide risk-management approach to effectively manage and mitigate those risks.

Fiduciary Activities

The Federal Reserve has supervisory responsibility for state member banks and state member nondepository trust companies, which hold assets in various fiduciary and custodial capacities. On-site examinations of fiduciary and custodial activities are risk-focused and entail the review of an organization's compliance with laws, regulations, and general fiduciary principles, including effective management of conflicts of interest; management of legal, operational, and compliance risk exposures; the quality and level of earnings; the management of fiduciary assets; and audit and control procedures. In 2016, Federal Reserve examiners conducted 103 fiduciary examinations—excluding transfer agent examinations—of state member banks.

Transfer Agents

As directed by the Securities Exchange Act of 1934, the Federal Reserve conducts specialized examinations of those state member banks and BHCs that are registered with the Board as transfer agents. Among other things, transfer agents countersign and monitor the issuance of securities, register the transfer of securities, and exchange or convert securities. On-site examinations focus on the effectiveness of an organization's operations and its compliance with relevant securities regulations. During 2016, the Federal Reserve conducted transfer agent examinations at five state member banks that were registered as transfer agents.

Government and Municipal Securities Dealers and Brokers

The Federal Reserve is responsible for examining state member banks and foreign banks for compliance with the Government Securities Act of 1986 and with the Treasury regulations governing dealing and brokering in government securities. Fourteen state member banks and six state branches of foreign banks have notified the Board that they are government securities dealers or brokers not exempt from the Treasury's regulations. During 2016, the Federal Reserve conducted five examinations of broker-

[13] The FFIEC is an interagency body of financial regulatory agencies established to prescribe uniform principles, standards, and report forms and to promote uniformity in the supervision of financial institutions. The council has six voting members: the Board of Governors of the Federal Reserve System, the FDIC, the National Credit Union Administration, the OCC, the Consumer Financial Protection Bureau, and the chair of the State Liaison Committee.

dealer activities in government securities at these organizations. These examinations are generally conducted concurrently with the Federal Reserve's examination of the state member bank or branch.

The Federal Reserve is also responsible for ensuring that state member banks and BHCs that act as municipal securities dealers comply with the Securities Act Amendments of 1975. Municipal securities dealers are examined, pursuant to the Municipal Securities Rulemaking Board's rule G-16, at least once every two calendar years. Four entities supervised by the Federal Reserve that dealt in municipal securities were examined during 2016.

Securities Credit Lenders

Under the Securities Exchange Act of 1934, the Board is responsible for regulating credit in certain transactions involving the purchasing or carrying of securities. As part of its general examination program, the Federal Reserve examines the banks under its jurisdiction for compliance with the Board's Regulation U. In addition, the Federal Reserve maintains a registry of persons other than banks, brokers, and dealers who extend credit subject to Regulation U. The Federal Reserve may conduct specialized examinations of these lenders if they are not already subject to supervision by the Farm Credit Administration (FCA) or the National Credit Union Administration (NCUA).

Cybersecurity and Critical Infrastructure

The Federal Reserve is actively engaged in raising financial institution awareness of supervisory expectations relative to cybersecurity risk assessment and mitigation. In 2016, Federal Reserve examiners continued to conduct targeted cybersecurity assessments of the largest, most systemically important financial institutions, FMUs, and technology service providers. The Federal Reserve also implemented a new risk-focused information technology examination program that enhances the identification and assessment of technology and cybersecurity risks, as described below.

In October 2016, the Federal Reserve Board, FDIC, and OCC issued an ANPR and invited comment on a set of potential enhanced cybersecurity risk-management and resilience standards. The standards would apply to depository institutions and depository institution holding companies with total consolidated assets of $50 billion or more, the U.S. operations of foreign banking organizations with total U.S. assets of $50 billion or more, and financial market infrastructure companies and nonbank financial companies supervised by the Board. The standards would also apply to the services provided to these firms by third parties. The ANPR is available at www.federalregister.gov/documents/2016/10/26/2016-25871/enhanced-cyber-risk-management-standards.

The Federal Reserve is an active participant in the Group of Seven (G7) initiatives on cyber resilience. In 2016, the Federal Reserve played a leadership role in the development of cyber resilience guidance for FMIs by the Committee on Payments and Market Infrastructures (CPMI) and International Organization of Securities Commissions (IOSCO). The CPMI-IOSCO *Guidance on Cyber Resilience for FMIs* outlines an expectation that FMIs must be prepared for the eventuality of successful attacks and make preparations to respond and recover critical services safely and promptly. The Federal Reserve also participated in a G7 initiative to identify a core set of cyber resilience measures expected across the global financial sector, which led to the publication of the *G7 Fundamental Elements of Cybersecurity for the Financial Sector*. The publication identifies eight key elements as the building blocks upon which an entity can design and implement its cybersecurity strategy and operating framework: 1) cybersecurity strategy and framework, 2) governance, 3) risk and control assessment, 4) monitoring, 5) response, 6) recovery, 7) information sharing, and 8) continuous learning. (See box 3 on cyber guidance.)

The Federal Reserve, FDIC, and state banking agencies collaborated to develop the Information Technology Risk Examination program (InTREx). In general, InTREx applies to state member and nonmember banks with less than $50 billion in total assets. The Federal Reserve also applies InTREx to foreign banking organizations' U.S. branches and agencies with less than $50 billion in assets, as well as certain bank holding companies and savings and loan holding companies with less than $50 billion in total consolidated assets. InTREx provides supervisory staff with risk-focused and efficient examination procedures for conducting information technology reviews and assessing information technology and cybersecurity risks at supervised institutions.

The Federal Reserve continued to contribute to interagency groups such as the Financial and Banking Information Infrastructure Committee (FBIIC), the Cybersecurity Forum for Independent and Executive Branch Regulators, and the FFIEC's Cybersecurity and Critical Infrastructure Working Group

(CCIWG) to share information and collaborate on cyber- and critical infrastructure-related issues impacting the financial services sector. Through participation in the FBIIC, the Federal Reserve collaborated with the U.S. Treasury to plan and execute several financial services sector-wide tabletop exercises in 2016. The exercises focused on strategic, operational, financial stability, and tactical considerations that tested both government and private sector processes and capabilities for addressing cyber incidents across the financial services sector. In light of the findings from the 2016 exercises, the FBIIC formed new initiatives with Federal Reserve participation to strengthen cooperation and information sharing among sector-specific agencies and private-sector financial firms.

The Federal Reserve also contributed to FFIEC cybersecurity and critical infrastructure efforts, including a joint statement highlighting the threat of cyber attacks targeting interbank messaging and wholesale payment functions at institutions. The joint statement stressed that financial institutions should review risk-management practices and controls related to information technology systems and wholesale payment networks, including risk assessment; authentication, authorization, and access controls; monitoring and mitigation; fraud detection; and incident response. This statement and other resources are available on the FFIEC cybersecurity awareness website, which is a central repository for FFIEC-related materials on cybersecurity (www.ffiec.gov/cybersecurity.htm).

Enforcement Actions

The Federal Reserve has enforcement authority over the financial institutions it supervises and their affiliated parties. Enforcement actions may be taken to address unsafe and unsound practices or violations of any law or regulation. Formal enforcement actions include cease and desist orders, written agreements, prompt corrective action directives, removal and prohibition orders, and civil money penalties.[14] In 2016, the Federal Reserve completed 72 formal enforcement actions. Civil money penalties totaling $257,263,485 were assessed. As directed by statute, all civil money penalties are remitted to either the Treasury or the Federal Emergency Management Agency. Enforcement orders and prompt corrective action directives, which are issued by the Board, and written agreements, which are executed by the Reserve Banks, are made public and are posted on the Board's website (www.federalreserve.gov/apps/enforcementactions/search.aspx).

In 2016, the Reserve Banks completed 94 informal enforcement actions. Informal enforcement actions include memoranda of understanding (MOU), commitment letters, and board of directors' resolutions.

Surveillance and Off-Site Monitoring

The Federal Reserve uses automated screening systems to monitor the financial condition and performance of state member banks and BHCs in the period between on-site examinations. Such monitoring and analysis helps direct examination resources to institutions that have higher risk profiles. Screening systems also assist in the planning of examinations by identifying companies that are engaging in new or complex activities.

The primary off-site monitoring tool used by the Federal Reserve is the Supervision and Regulation Statistical Assessment of Bank Risk model (SR-SABR). Drawing mainly on the financial data that banks report on their Reports of Condition and Income (Call Reports), SR-SABR uses econometric techniques to identify banks that report financial characteristics weaker than those of other banks assigned similar supervisory ratings. To supplement the SR-SABR screening, the Federal Reserve also monitors various market data, including equity prices, debt spreads, agency ratings, and measures of expected default frequency, to gauge market perceptions of the risk in banking organizations. In addition, the Federal Reserve prepares quarterly Bank Holding Company Performance Reports (BHCPRs) for use in monitoring and inspecting supervised banking organizations. The BHCPRs, which are compiled from data provided by large BHCs in quarterly regulatory reports (FR Y-9C and FR Y-9LP), contain, for individual companies, financial statistics and comparisons with peer companies. BHCPRs are made available to the public on the National Information Center (NIC) website, which can be accessed at www.ffiec.gov.

Federal Reserve analysts use Performance Report Information and Surveillance Monitoring (PRISM), a querying tool, to access and display financial, surveillance, and examination data. In the analytical module, users can customize the presentation of institutional financial information drawn from Call

[14] On July 20, 2016, the Board issued an interim final rule modifying its Rules of Practice for Hearings, 12 CFR part 263, to adjust the maximum levels of its civil money penalties as required by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015.

Reports, Uniform Bank Performance Reports, FR Y-9 statements, BHCPRs, and other regulatory reports. In the surveillance module, users can generate reports summarizing the results of surveillance screening for banks and BHCs. During 2016, two major and two minor upgrades to the web-based PRISM application were completed to enhance the user's experience and provide the latest technology.

The Federal Reserve works through the FFIEC Task Force on Surveillance Systems to coordinate surveillance activities with the other federal banking agencies.

Training and Technical Assistance

The Federal Reserve provides training and technical assistance to foreign supervisors and minority-owned depository institutions.

International Training and Technical Assistance

In 2016, the Federal Reserve continued to provide training and technical assistance on bank supervisory matters to foreign central banks and supervisory authorities. Technical assistance involves visits by Federal Reserve staff members to foreign authorities as well as consultations with foreign supervisors who visit the Board of Governors or the Reserve Banks.

The Federal Reserve offered a number of training courses exclusively for the benefit of foreign supervisory authorities, which were held both in the United States and in many foreign jurisdictions. Federal Reserve staff took part in technical assistance and training assignments led by the International Monetary Fund, the World Bank, and the Financial Stability Institute. The Federal Reserve also contributed to the regional training provided under the Asia-Pacific Economic Cooperation Financial Regulators Training Initiative. Other training partners that collaborated with the Federal Reserve during 2016 to organize regional training programs included The South East Asian Central Banks Research and Training Centre, the Caribbean Group of Banking Supervisors, the Banque de France, and the Central Bank of the United Arab Emirates.

Additionally, the Federal Reserve is an associate member of the Association of Supervisors of Banks of the Americas (ASBA), an umbrella group of bank supervisors from countries in North and South America and the Caribbean. The Federal Reserve contributes significantly to ASBA's organizational management and to its training and technical assistance activities. ASBA, which is headquartered in Mexico, coordinates training programs throughout the region while promoting communication and cooperation among its members.

Efforts to Support Minority-Owned Depository Institutions

The Federal Reserve System implements its responsibilities under section 367 of the Dodd-Frank Act primarily through its Partnership for Progress (PFP) program. Established in 2008, this program promotes the viability of minority depository institutions (MDIs) by facilitating activities designed to strengthen their business strategies, maximize their resources, and increase their awareness and understanding of regulatory topics. In addition, the Federal Reserve continues to maintain the PFP website, which supports MDIs by providing them with technical information and links to useful resources (www.fedpartnership.gov). Representatives from each of the 12 Federal Reserve Districts, along with staff from the S&R and DCCA divisions at the Board of Governors, continue to offer technical assistance tailored to MDIs by providing targeted supervisory guidance, identifying additional resources, and fostering mutually beneficial partnerships between MDIs and community organizations. As of year-end 2016, the Federal Reserve's MDI portfolio included 16 state member banks.

Throughout 2016, the Federal Reserve System continued to support MDIs through the following activities:

- Co-organized the biannual Interagency Minority Depository Institutions and Community Development Financial Institutions (CDFI) Bank Conference to take place April 5-6, 2017 in Los Angeles, California. PFP staff at the Board of Governors and Reserve Banks will co-host this conference with staff from the OCC and FDIC. The theme is "*Expanding the Impact: Increasing Capacity & Influence*," and attendance is expected to be over 175 people, most of whom will be MDI bank leadership;
- Formalized and implemented a partnership between the Board's DCCA and S&R divisions to share management of the PFP program and diversify the resources and programing available to MDIs. The Federal Reserve System also worked to encourage partnership between examiner and com-

munity development staff at the Federal Reserve Banks to bring additional resources to MDIs around the country;

- Participated in the annual National Bankers Association (NBA) convention by hosting an exhibit table and speaking on a regulators panel;
- Provided technical assistance to MDIs on a wide variety of topics, including improving regulatory ratings, navigating the regulatory applications process, understanding changes to the Community Reinvestment Act, and refining capital-planning practices;
- Conducted outreach efforts through an internal teleconference session in October 2016 to educate Federal Reserve examiners and community development staff on the PFP program and related supervisory topics;
- Participated in an interagency task force to consider and address supervisory challenges facing MDIs;
- Facilitated in-person meetings between Federal Reserve and MDI leaders to better understand the challenges and opportunities facing Federal Reserve-regulated MDIs; and
- Commissioned research on MDIs that will be presented in 2017.

Throughout 2016, PFP representatives hosted and participated in numerous banking workshops and seminars aimed at promoting and preserving MDIs, including the NBA's Legislative and Regulatory Conference. Further, Reserve Bank program representatives continued to collaborate with community leaders, trade groups, the CDFI Fund, and other organizations to seek support for MDIs.

Supervisory Policy

The Federal Reserve's supervisory policy function, carried out by the Board, is responsible for developing regulations and guidance for financial institutions under the Federal Reserve's supervision as well as guidance for examiners. The Board, often in concert with the OCC and the FDIC (together, the federal banking agencies), issues rulemakings, public SR letters, and other policy statements and guidance in order to carry out its supervisory policies. Federal Reserve staff also take part in supervisory and regulatory forums, provide support for the work of the FFIEC, and participate in international policymaking forums, including the Basel Committee on Banking Supervision (BCBS), the Financial Stability Board (FSB), the CPMI, and the International Association of Insurance Supervisors (IAIS).

Consistent with the Federal Reserve's risk-focused approach to supervision and as provided by law, the Federal Reserve tailors supervisory rules and guidance in a way that applies the most stringent requirements to the largest, most complex banking organizations that pose the greatest risk to the financial system.

Enhanced Prudential Standards

The Board is responsible for issuing a number of rules and guidance statements under the Dodd-Frank Act, sometimes in conjunction with other agencies. Listed below are the initiatives undertaken by the Board in 2016.

- In March, the Board re-proposed a rule that would address the risk associated with excessive credit exposures of large banking organizations to a single counterparty. As demonstrated during the financial crisis, large credit exposures, particularly between financial institutions, can spread financial distress and undermine financial stability. The proposal would apply single-counterparty credit limits to bank holding companies with total consolidated assets of $50 billion or more and to certain foreign banks operating in the United States. The proposed limits are tailored to increase in stringency as the systemic footprint of a firm increases. The proposed rule would implement part of the Dodd-Frank Act and promote global consistency by generally reflecting the international large exposures framework released by the BCBS in 2014. The proposal is available at www.gpo.gov/fdsys/pkg/FR-2016-03-16/pdf/2016-05386.pdf. The Board also released a white paper associated with the proposal, available at www.gpo.gov/fdsys/pkg/FR-2016-03-16/pdf/2016-05386.pdf.
- In June, the Board approved an ANPR inviting comment on two tailored conceptual frameworks for capital standards that could apply to insurance companies. The ANPR contemplates that for nonbank financial companies that have significant insurance activities (systemically important insurance companies), which have been designated by the FSOC for supervision by the Board, the Board would determine minimum capital requirements at a consolidated level. For insurance companies that own a bank or thrift, the Board would aggregate capital resources and requirements for each legal entity as computed under existing regulatory

requirements, with some adjustments to determine a combined, group-level requirement. The approaches described in the ANPR reflect differences between insurance companies and banks, and would use insurance-focused risk weights and formulas. The ANPR is available at www.gpo.gov/fdsys/pkg/FR-2016-06-14/pdf/2016-14004.pdf.

- In June, the Board proposed a rule that would apply enhanced prudential standards relating to liquidity, corporate governance, and risk-management standards to systemically important insurance companies. These firms would also be required to conduct periodic liquidity stress testing and hold a buffer of highly liquid assets sufficient to meet 90 days of stressed cash-flow needs. The proposal is available at www.gpo.gov/fdsys/pkg/FR-2016-06-14/pdf/2016-14005.pdf.
- In September, the Board proposed a rule to modify its capital plan and stress testing rules for the 2017 capital planning cycle.[15] Among other changes, the proposal would effectively remove large and noncomplex firms from the qualitative component of the Federal Reserve's CCAR assessment. The proposed rule would define large and noncomplex firms as firms with total consolidated assets between $50 billion and $250 billion, on-balance sheet foreign exposure of less than $10 billion, and total consolidated nonbank assets of less than $75 billion. These firms would continue to be subject to the quantitative requirements of CCAR as well as normal supervision by the Federal Reserve regarding their capital planning. The proposed rule would also reduce certain reporting requirements for these firms. The proposal is available at www.gpo.gov/fdsys/pkg/FR-2016-09-30/pdf/2016-23629.pdf.
- In December, the Board issued a final rule that is designed to strengthen the ability of government authorities to resolve in an orderly way the largest domestic and foreign banks operating in the United States without support from taxpayer-provided capital. The final rule applies to domestic firms identified by the Board as G-SIBs and to the U.S. operations of foreign G-SIBs, requiring these firms to meet a new long-term debt requirement and a new TLAC requirement. The final rule bolsters financial stability by improving the ability of banking organizations covered by the rule to withstand financial stress and failure without imposing losses on taxpayers. The final rule also requires the parent holding company of a domestic G-SIB to avoid entering into certain financial arrangements that would create obstacles to an orderly resolution. The final rule is available at www.federalreserve.gov/newsevents/press/bcreg/bcreg20161215a1.pdf.
- In December, the Board finalized technical amendments to the rule that identifies G-SIBs and requires such firms to hold additional amounts of risk-based capital to avoid restrictions on capital distributions and discretionary bonus payments. The changes do not materially alter the underlying rule approved by the Board in July 2015. The final rule is available at www.federalreserve.gov/newsevents/press/bcreg/bcreg20161209b2.pdf. The Board also invited comment on an interim final rule extending the initial implementation of certain reporting requirements related to the G-SIB rule for firms that have $50 billion or more in total consolidated assets and are not currently identified as G-SIBs in order to align these requirements with other reporting requirements. The interim final rule is available at www.federalreserve.gov/newsevents/press/bcreg/bcreg20161209b1.pdf.

Other Rulemakings

In 2016, the Board issued several other rulemakings and guidance documents related to liquidity and regulatory capital, as listed below.

- In April, the Board finalized a rule to include certain U.S. general obligation state and municipal securities in the range of assets that large banking organizations may use to satisfy regulatory requirements designed to ensure that these banking organizations have the capacity to meet their liquidity needs during a period of financial stress. The liquidity coverage ratio (LCR) requirement adopted by the federal banking agencies in September 2014 requires large banking organizations to hold a minimum amount of high-quality liquid assets (HQLA) that can be readily converted into cash during a 30-day period of financial stress. While the LCR requirement did not initially include U.S. municipal securities as HQLA, subsequent analysis by the Federal Reserve suggested that certain U.S. municipal securities should qualify as HQLA because they have liquidity characteristics similar to other HQLA classes, such as corporate debt securities. The final rule allows investment-grade, U.S. general obligation state and municipal securities to be counted as HQLA up to certain levels if they meet the same liquidity criteria that currently apply to corporate debt securities.

[15] The rule was finalized in early 2017 and is effective for the 2017 capital planning cycle. For further information see www.federalreserve.gov/newsevents/press/bcreg/20170130a.htm.

The final rule is available at www.gpo.gov/fdsys/pkg/FR-2016-04-11/pdf/2016-07716.pdf.

- In May, the federal banking agencies proposed a net stable funding ratio rule to strengthen the resilience of large banking organizations by requiring them to maintain a minimum level of stable funding relative to the liquidity of their assets, derivatives, and commitments over a one-year period. The proposal is designed to reduce the likelihood that disruptions to a banking organization's sources of funding will compromise its liquidity position. The proposal would require institutions subject to the rule to maintain sufficient levels of stable funding, thereby reducing liquidity risk in the banking system. By requiring firms to have more stable funding profiles, the proposal would also enhance financial stability. The proposal is available at www.federalreserve.gov/newsevents/press/bcreg/bcreg20160503a1.pdf.
- In September, the Board proposed a rule that would strengthen existing requirements and limitations on the physical commodity activities of FHCs. The proposal would help reduce the catastrophic, legal, reputational, and financial risks that physical commodity activities pose to FHCs. Specifically, the proposal would require firms to hold additional capital in connection with activities involving physical commodities for which existing laws would impose liability for such commodities' unauthorized release into the environment. In addition, the proposal would rescind authorizations that permit FHCs to engage in energy tolling and energy management activities and establish new public reporting requirements. The proposal is available at www.gpo.gov/fdsys/pkg/FR-2016-09-30/pdf/2016-23349.pdf.
- In October, the Board voted to affirm the countercyclical capital buffer in the United States at its current level of 0 percent. The Board made this determination in accordance with the Board's policy statement adopted in September 2016 for setting the countercyclical capital buffer for private-sector credit exposures located in the United States. The countercyclical capital buffer is a macroprudential tool that can be used to increase the resilience of the financial system by raising capital requirements on internationally active banking organizations when there is an elevated risk of above-normal future losses and when the banking organizations for which capital requirements would be raised by the buffer are exposed to or are contributing to this elevated risk—either directly or indirectly. The Board consulted with the FDIC and the OCC in making this determination. The Board's announcement on the countercyclical capital buffer is available at www.federalreserve.gov/newsevents/press/bcreg/20161024a.htm and the final policy statement is available at www.gpo.gov/fdsys/pkg/FR-2016-02-03/pdf/2016-01934.pdf.
- In December, the Board issued a final rule requiring large banking organizations to disclose publicly certain quantitative liquidity risk metrics. The disclosures will provide market participants and the public with reliable and timely information for evaluating the financial strength and resiliency of the nation's largest banking organizations. The final rule requires large banking organizations to disclose their consolidated LCRs each quarter based on averages over the prior quarter as well as several other LCR-related metrics. Compliance dates would range from April 2017 through October 2018. The final rule is available at www.federalreserve.gov/newsevents/press/bcreg/bcreg20161219a1.pdf.

International Coordination on Supervisory Policies

As a member of several international financial standard-setting bodies, the Federal Reserve actively participates in efforts to advance sound supervisory policies for internationally active financial organizations and to enhance the strength and stability of the international financial system. By participating in the development of international regulatory standards, the Federal Reserve can influence these standards in ways to promote the financial stability of the United States and the competitiveness of U.S. firms.

Basel Committee on Banking Supervision

During 2016, the Federal Reserve participated in ongoing international initiatives to track the progress of implementation of the BCBS framework in member countries.

The Federal Reserve contributed to supervisory policy recommendations, reports, and papers issued for consultative purposes or finalized by the BCBS that are designed to improve the supervision of banking organizations' practices and to address specific issues that emerged during the financial crisis. The list below includes key final and consultative papers issued in 2016.

Final papers:

- *Fundamental review of the trading book – Minimum capital requirements for market risk* (issued in January and available at www.bis.org/bcbs/publ/d352.pdf).
- *Frequently asked questions on the Basel III leverage ratio framework* (issued in April and available at www.bis.org/bcbs/publ/d365.pdf).
- *Interest rate risk in the banking book* (issued in April and available at www.bis.org/bcbs/publ/d368.pdf).
- *Revisions to the securitisation framework* (issued in July and available at www.bis.org/bcbs/publ/d374.pdf).
- *Basel III – The Net Stable Funding Ratio: frequently asked questions* (issued in July and available at www.bis.org/bcbs/publ/d375.pdf).
- *Frequently asked questions on the revised Pillar 3 disclosure requirements* (issued in August and available at www.bis.org/bcbs/publ/d376.pdf).
- *Frequently asked questions on the supervisory framework for measuring and controlling large exposures* (issued in September and available at www.bis.org/bcbs/publ/d384.pdf)
- *TLAC holdings standard* (issued in October and available at www.bis.org/bcbs/publ/d387.pdf).

Consultative papers:

- *Standardised Measurement Approach for operational risk* (issued in March and available at www.bis.org/bcbs/publ/d355.htm).
- *Pillar 3 disclosure requirements – consolidated and enhanced framework* (issued in March and available at www.bis.org/bcbs/publ/d356.htm).
- *Reducing variation in credit risk-weighted assets – constraints on the use of internal model approaches* (issued in March and available at www.bis.org/bcbs/publ/d362.htm).
- *Prudential treatment of problem assets - definitions of non-performing exposures and forbearance* (issued in April and available at www.bis.org/bcbs/publ/d367.pdf).
- *Revisions to the Basel III leverage ratio framework* (issued in April and available at www.bis.org/bcbs/publ/d365.htm).
- *Regulatory treatment of accounting provisions - discussion document* (issued in October and available at www.bis.org/bcbs/publ/d385.pdf).
- *Regulatory treatment of accounting provisions – interim approach and transitional arrangements* (issued in October and available at www.bis.org/bcbs/publ/d386.htm).

Financial Stability Board

In 2016, the Federal Reserve continued its participation in the activities of the FSB, an international group that helps coordinate the work of national financial authorities and international standard-setting bodies, and develops and promotes the implementation of financial sector policies in the interest of financial stability. Several key publications are listed below.

- *Proposed Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities* (issued in June and available at www.fsb.org/wp-content/uploads/FSB-Asset-Management-Consultative-Document.pdf).
- *Guiding principles on the temporary funding needed to support the orderly resolution of a global systemically important bank ("G-SIB")* (issued in August and available at www.fsb.org/wp-content/uploads/Guiding-principles-on-the-temporary-funding-needed-to-support-the-orderly-resolution-of-a-global-systemically-important-bank-"G-SIB".pdf).
- *Guiding Principles on the Internal Total Loss-absorbing Capacity of G-SIBs ("Internal TLAC")* (issued in December and available at www.fsb.org/wp-content/uploads/Guiding-Principles-on-the-Internal-Total-Loss-absorbing-Capacity-of-G-SIBs.pdf).

Committee on Payments and Market Infrastructures

In 2016, the Federal Reserve continued its active participation in the activities of the CPMI, a forum in which central banks promote the safety and efficiency of payment, clearing, settlement, and related arrangements. In conducting its work on financial market infrastructures and market-related reforms, the CPMI often coordinates with IOSCO. Over the course of 2016, CPMI-IOSCO continued to monitor implementation of the *Principles for financial market infrastructures* published in 2012 and produce further guidance on these principles in order to enhance the resilience of central counterparties. In addition, the

CPMI-IOSCO advanced work on the harmonization of data elements reported to trade repositories. The CPMI and CPMI-IOSCO issued several final and consultative reports as well as research reports in 2016. Additional information is available at www.bis.org.

International Association of Insurance Supervisors

The Federal Reserve continued its participation in 2016 in the development of international supervisory standards and guidance to ensure that they best meet the needs of the U.S. insurance market. The Federal Reserve continues to participate actively in standard setting at the IAIS in consultation and collaboration with state insurance regulators, the NAIC, and the Federal Insurance Office to present a coordinated U.S. voice in these processes. The Federal Reserve's participation focuses on those aspects most relevant to the supervision of FSOC-designated insurance firms and in research and analysis related to financial stability topics.

The IAIS issued several final and consultative reports as well as research reports in 2016. Additional information is available at www.iaisweb.org.

Accounting Policy

The Federal Reserve supports sound corporate governance and effective accounting and auditing practices for all regulated financial institutions. Accordingly, the Federal Reserve's accounting policy function is responsible for providing expertise in policy development and implementation efforts, both within and outside the Federal Reserve System, on issues affecting the banking and insurance industries in the areas of accounting, auditing, internal controls over financial reporting, financial disclosure, and supervisory financial reporting.

Federal Reserve staff regularly consult with key constituents in the accounting and auditing professions, including domestic and international standard-setters, accounting firms, accounting and financial sector trade groups, and other financial sector regulators to facilitate the Board's understanding of domestic and international practices; proposed accounting, auditing, and regulatory standards; and the interactions between accounting standards and regulatory reform efforts. The Federal Reserve also participates in various accounting, auditing, and regulatory forums in order to both formulate and communicate its views.

The Financial Accounting Standards Board (FASB) issued a new expected credit losses standard (Accounting Standards Update (ASU) 2016-13, *Financial Instruments—Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*), commonly referred to as the current expected credit losses (CECL) methodology, in June 2016.[16] The new accounting standard introduced a single measurement objective to be applied to all financial assets carried at amortized cost, including held-for-investment loans and held-to-maturity debt securities. During 2016, the Federal Reserve together with the other federal banking agencies spent significant time monitoring developments and providing comments on significant interpretations and potential changes in the proposed standard as members of the FASB's Transition Resource Group and through other routine discussions with standard setters, as described above.

In addition to monitoring developments and the implementation of the new accounting standard on credit losses, Federal Reserve staff addressed numerous issues including accounting for transfers of financial instruments, troubled debt restructurings, accounting alternatives for private companies, financial instrument accounting and reporting, consolidation of structured entities, securitizations, securities financing transactions, revenue recognition, accounting for incentive compensation, and external and internal audit processes.

Federal Reserve staff also participated in meetings of the BCBS Accounting Experts Group and the IAIS Accounting and Auditing Working Group. These groups represent their respective organizations at international meetings on accounting, auditing, and disclosure issues affecting global banking and insurance organizations. Working with international bank supervisors, Federal Reserve staff contributed to the development of publications that were issued by the BCBS, including publications on the regulatory treatment of expected credit losses in light of pending changes to accounting standards. In collaboration with international insurance supervisors, Federal

[16] The ASU on credit losses will take effect for SEC filers for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2019. For public companies that are not SEC filers, the ASU on credit losses will take effect for fiscal years beginning after December 15, 2020, and interim periods within those fiscal years. For all other organizations, the ASU on credit losses will take effect for fiscal years beginning after December 15, 2020, and for interim periods within fiscal years beginning after December 15, 2021.

Reserve staff also made contributions to work related to enhancing IAIS standards on valuation, disclosures, and expectations for external audit-related matters.

In 2016, the Federal Reserve issued supervisory guidance to financial institutions and supervisory staff on accounting matters, as appropriate, and participated in a number of supervisory-related activities. For example, Federal Reserve staff

- participated in a banking supervision interagency steering committee established by the federal banking agencies. This steering committee is focused on CECL and has developed an overall project plan for the implementation period and has begun issuing interagency frequently asked questions to aid in the implementation of CECL. The day after the FASB issued the new accounting standard on credit losses in June, the federal banking agencies and the NCUA issued the "Joint Statement on the New Accounting Standard on Financial Instruments—Credit Losses" that provides initial supervisory views regarding the implementation of the new accounting standard (the Federal Reserve issued this as SR letter 16-12, "Interagency Guidance on the New Accounting Standard on Financial Instruments—Credit Losses," which is available at www.federalreserve.gov/bankinforeg/srletters/sr1612.htm). In December, the federal banking agencies and the NCUA also issued a supervisory guidance statement, published by the Federal Reserve as SR letter 16-19, "Frequently Asked Questions on the Current Expected Credit Losses Methodology (CECL)," to further aid institutions in their implementation of CECL. The guidance is available at www.federalreserve.gov/bankinforeg/srletters/sr1619.htm;
- developed and participated in a number of domestic and international supervisory training programs and sessions to educate supervisors and bankers about new and emerging accounting and reporting topics affecting financial institutions; and
- supported the efforts of the Reserve Banks in financial institution supervisory activities through participation in examinations and provision of expert guidance on specific questions related to financial accounting, auditing, reporting, and disclosures.

Federal Reserve System staff also provided their accounting and business expertise through participation in other supervisory activities during the past year. These activities included supporting Dodd-Frank Act initiatives related to stress testing of banks as well as various regulatory capital-related issues.

Credit-Risk Management

The Federal Reserve works with the other federal banking agencies to develop guidance on the management of credit risk; to coordinate the assessment of regulated institutions' credit-risk management practices; and to ensure that institutions properly identify, measure, and manage credit risk.

Shared National Credit Program

The Shared National Credit (SNC) program is a key supervisory program employed by the Federal Reserve and the other federal banking agencies to ensure the safety and soundness of the financial system. SNC is a long-standing program used to assess credit risk and trends as well as underwriting and risk-management practices associated with the largest and most complex loans shared by multiple regulated financial institutions. After four decades of annual reviews, in 2016 the federal banking agencies transitioned to twice-annual SNC examinations to increase the ability to react to changing market conditions and to increase the frequency of feedback to institutions on supervisory assessments.

A SNC is any loan or formal loan commitment—and any asset, such as other real estate, stocks, notes, bonds, and debentures taken as debts previously contracted—extended to borrowers by a supervised institution, its subsidiaries, and affiliates, which has the following characteristics: an original loan amount that aggregates to $20 million or more and either (1) is shared by three or more unaffiliated supervised institutions under a formal lending agreement, or (2) a portion of which is sold to two or more unaffiliated supervised institutions with the purchasing institutions assuming their pro rata share of the credit risk.

The 2016 SNC review was prepared in the first quarter of 2016 using data as of September 30, 2015. The 2016 SNC portfolio totaled $4.1 trillion, with 10,837 credit facilities to 6,676 borrowers.

The SNC examination found that the volume of non-pass criticized assets increased 11.5 percent to $421.4 billion. As a percentage of total commitments, the overall criticized asset rate remained elevated at 10.3 percent. The level of adversely rated assets in the SNC portfolio continued to be higher than observed in previous periods of economic expansion, such that

losses could rise considerably in the event of an economic downturn. The level of credit risk stemmed from a large share of leveraged finance loans underwritten based on weak practices, and the significant decline in oil prices since mid-2014 that reduced the repayment capacity of obligors in the oil and gas sector. The agencies noted improved underwriting and risk-management practices related to the most recent leveraged loan originations in 2015 as underwriters continued to better align practices with regulatory expectations, and as investor risk appetite moderated away from transactions at the lower end of the credit spectrum.

Leveraged lending, which accounts for approximately one quarter of the SNC portfolio, remained a focus of the agencies as they continue to evaluate the safety and soundness of bank underwriting and risk-management practices relative to expectations articulated in the 2013 Interagency Guidance on Leveraged Lending (guidance) and subsequent Frequently Asked Questions (FAQs) documents. The 2016 SNC reviews found the incidence of non-pass loan originations was low.

The review noted that banks had made continued progress in aligning their underwriting and risk-management practices with expectations set forth in the 2013 leveraged lending guidance and FAQs. However, some gaps between industry practices and supervisory expectations for safe and sound banking remained, which require continued supervisory attention. Examiners again raised concerns about borrowers' capacity to repay certain new originations—both underwritten and refinanced loans—if economic conditions deteriorated, or if interest rates rose to historical norms. Any downturn in the economy could result in a significant increase in the already considerable adversely–rated, leveraged lending exposures, especially considering the limited financial flexibility present in many of the credits that were not currently adversely rated.

The severe and prolonged decline in energy prices since 2014 caused financial stress to many energy companies, particularly non-investment grade and unrated exploration and production (E&P) and energy service companies. Increasing credit risk from reduced revenue was exacerbated by the high leverage of some E&P companies, primarily resulting from debt-funded acquisitions during recent drilling expansion activity, and corresponding reductions in liquidity. The low commodity price environment and declining hedging programs of many companies caused reductions in operating cash flow and lower valuations of reserve assets used to secure financing for further development. Many energy companies responded by taking actions to reduce operating costs and overhead, while preserving liquidity through asset sales, issuance of additional debt and equity instruments, and drawing on remaining senior bank commitments.

Generally, banks were found to have shown flexibility in working with borrowers by relaxing financial covenants to allow borrowers time to develop strategies to curtail borrowing base over-advances, reduce leverage, and reestablish profitable operations. Nonetheless, the reductions in liquidity and unsustainable debt burdens from excessive accumulation of second lien and unsecured debt resulted in a significant increase in borrower defaults and bankruptcy filings. Bank commitments to these borrowers were primarily in a senior secured position with the lowest risk of loss.

For more information on the 2016 SNC review, visit the Board's website at www.federalreserve.gov/newsevents/press/bcreg/20160729a.htm.

Compliance Risk Management

The Federal Reserve works with international and domestic supervisors to develop guidance that promotes compliance with Bank Secrecy Act and anti-money-laundering compliance (BSA/AML) and counter-terrorism laws.

Bank Secrecy Act and Anti-Money-Laundering Compliance

In 2016, the Federal Reserve continued to actively promote the development and maintenance of effective BSA/AML compliance risk-management programs, including developing supervisory strategies and providing guidance to the industry on trends in BSA/AML compliance. For example, the Federal Reserve supervisory staff participated in a number of industry conferences to continue to communicate regulatory expectations and policy interpretations for financial institutions.

The Federal Reserve is a member of the Treasury-led BSA Advisory Group, which includes representatives of regulatory agencies, law enforcement, and the financial services industry and covers all aspects of the BSA. The Federal Reserve also participated in a host of Treasury-led private/public sector dialogues with financial institutions, regulators, and supervisors from Mexico, the United Kingdom, Central

America, and the Gulf States, to name a few. These dialogues are designed to promote information sharing and understanding of BSA/AML issues between U.S. and country-specific financial sectors. In addition, the Federal Reserve participated in meetings during the year to discuss BSA/AML issues with delegations from Kyrgyzstan, Belize, the Marshall Islands, Jamaica, St. Maarten, and Curaçao, primarily regarding foreign correspondent banking.

The Federal Reserve also participates in the FFIEC BSA/AML working group, a monthly forum for the discussion of pending BSA policy and regulatory matters. In addition to the FFIEC agencies, the BSA/AML working group includes the Financial Crimes Enforcement Network (FinCEN) and, on a quarterly basis, the SEC, the CFTC, the Internal Revenue Service, and the Office of Foreign Assets Control (OFAC). The chairmanship rotates among its members, and the Federal Reserve continued to chair the working group throughout 2016. The FFIEC BSA/AML working group is responsible for updating the FFIEC *Bank Secrecy Act/Anti-Money Laundering Examination Manual*. The FFIEC developed this manual as part of its ongoing commitment to provide current and consistent interagency guidance on risk-based policies, procedures, and processes for financial institutions to comply with the BSA and safeguard their operations from money laundering and terrorist financing.

Throughout 2016, the Federal Reserve continued to regularly share examination findings and enforcement proceedings with FinCEN as well as with OFAC under the interagency MOUs finalized in 2004 and 2006.

International Coordination on Sanctions, Anti-Money-Laundering, and Counter-Terrorism Financing

The Federal Reserve participates in a number of international coordination initiatives related to sanctions, money laundering, and terrorism financing. The Federal Reserve has a long-standing role in the U.S. delegation to the intergovernmental Financial Action Task Force (FATF) and its working groups, contributing a banking supervisory perspective to formulation of international standards. Throughout 2016, the Federal Reserve also participated in extensive collaboration with the federal banking and other agencies in order to develop a coordinated U.S. government response for the 2016 FATF mutual evaluation of the United States. The FATF mutual evaluation assessed the U.S. AML and counter-terrorist financing framework against the FATF recommendations and included a review of the U.S. legal, law enforcement, and supervisory structures.

The Federal Reserve also continues to participate in committees and subcommittees through the Bank for International Settlements. Specifically, the Federal Reserve actively participates in the AML Experts Group under the BCBS that focuses on AML and counter-terrorism financing issues as well as the CPMI. With respect to the AML Experts Group, the Federal Reserve contributed to developing the annex to the *General Guide to Account Opening*, issued by the BCBS in February 2016, which supplements previous guidance on the sound management of risks related to money laundering and financing of terrorism. In addition, the Federal Reserve participated in developing a consultative document on foreign correspondent banking issued in November 2016, which is another annex to the same sound management of risks guidance referred to above. In addition, the Federal Reserve participated in drafting a report on *Correspondent Banking* issued in July 2016 by the CPMI Correspondent Banking Working Group. The report made recommendations which could potentially alleviate some of the costs and concerns associated with the reduction of foreign correspondent banking services.

Incentive Compensation

To foster improved incentive compensation practices in the financial industry, the Federal Reserve along with the other federal banking agencies has adopted interagency guidance oriented to the risk-taking incentives created by incentive compensation arrangements.[17] The guidance is principles-based, recognizing that the methods used to achieve appropriately risk-sensitive compensation arrangements likely will differ significantly across and within firms. Three principles are at the core of the guidance:

- Incentive compensation arrangements should balance risk and financial results in a manner that does not encourage employees to expose their organizations to imprudent risks.
- A banking organization's risk-management processes and internal controls should reinforce and support the development and maintenance of balanced incentive compensation arrangements, and incentive compensation should not hinder risk management and controls.

[17] See "Guidance on Sound Incentive Compensation Policies," 75 Fed. Reg. 36,395–36,414 (June 25, 2010).

- Banking organizations should have strong and effective corporate governance of incentive compensation.

Section 956 of the Dodd-Frank Act requires the Federal Reserve Board, OCC, FDIC, SEC, NCUA, and Federal Housing Finance Agency to prohibit incentive-based arrangements which the agencies determine to encourage inappropriate risks by covered institutions. The agencies published a notice of proposed rulemaking in the Federal Register on June 10, 2016, and are continuing to consider the comments received. Additionally, through ongoing supervision, the Federal Reserve continues to help improve incentive compensation practices at the largest firms.

Other Policymaking Initiatives

- In March, the federal banking agencies issued SR letter 16-3, "Interagency Guidance on Funds Transfer Pricing Related to Funding and Contingent Liquidity Risks," which seeks to address weaknesses observed in large financial institutions' funds transfer pricing practices related to funding risk (including interest rate and liquidity components) and contingent liquidity risk. The guidance builds on the principles of sound liquidity risk management described in previous supervisory guidance letters and it applies to large financial institutions that are domestic BHCs, SLHCs, and state member banks with consolidated assets of $250 billion or more or foreign exposure of $10 billion or more, and to the U.S. operations of foreign banking organizations with combined U.S. assets of $250 billion or more. The guidance is available at www.federalreserve.gov/bankinforeg/srletters/sr1603.htm.
- In March, the Board issued SR letter 16-4, "Relying on the Work of the Regulators of the Subsidiary Insured Depository Institution(s) of Bank Holding Companies and Savings and Loan Holding Companies with Total Consolidated Assets of Less than $50 Billion," which explains the Board's expectations for its examiners' reliance on the work of the regulators of insured depository institution subsidiaries in the supervision of BHCs and SLHCs. The letter presents separate tailored supervisory approaches for community banking organizations, which are defined as companies with total consolidated assets of $10 billion or less, and for regional banking organizations, which are defined as companies with total consolidated assets between $10 billion and $50 billion. The guidance is available at www.federalreserve.gov/bankinforeg/srletters/sr1604.htm.
- In December, the Board issued SR letter 16-18, "Procedures for a Banking Entity to Request an Extended Transition Period for Illiquid Funds," which provides guidance on how banking entities may seek an extension to conform their investments in a narrow class of funds that qualify as "illiquid funds" to the requirements of section 619 of the Dodd-Frank Act, commonly known as the Volcker rule. In particular, the supervisory guidance provides banking entities with information on the procedures for submitting a request for an extended transition period to conform investments in a limited class of hedge funds and private equity funds (covered funds) that qualify as an illiquid fund pursuant to section 13 of the Bank Holding Company Act of 1956. The supervisory guidance is available at www.federalreserve.gov/bankinforeg/srletters/sr1618.htm.
- In December, the federal banking agencies finalized an interim final rule issued in February that increases the number of small banks and savings associations eligible for an 18-month examination cycle rather than a 12-month cycle. The final rule is intended to reduce regulatory compliance costs for smaller institutions, while maintaining safety and soundness protections. Under the final rule, qualifying well-capitalized and well-managed banks and savings associations with less than $1 billion in total assets are eligible for an 18-month examination cycle. Previously, only firms with less than $500 million in total assets were eligible for the extended examination cycle. Qualifying well-capitalized and well-managed U.S. branches and agencies of foreign banks with less than $1 billion in total assets are also eligible. The final rule increases the number of institutions that may qualify for an 18-month examination cycle by more than 600 to approximately 4,800 banks and savings associations. In addition, the final rule increases the number of U.S. branches and agencies of foreign banks that may qualify for an 18-month examination cycle by 30 branches and agencies to a total of 89. The final rule is available at www.gpo.gov/fdsys/pkg/FR-2016-12-16/pdf/2016-30133.pdf. The Board also issued a supervisory guidance statement providing updates on the expanded examination cycle of 18 months for certain state member banks and U.S. branches and agencies of foreign banking

organizations, which was subsequently updated in January 2017.

Regulatory Reports

The Federal Reserve's data collections, reporting, and governance function is responsible for developing, coordinating, and implementing regulatory reporting requirements for various financial reporting forms filed by domestic and foreign financial institutions subject to Federal Reserve supervision. Federal Reserve staff members interact with other federal agencies and relevant state supervisors, including foreign bank supervisors as needed, to recommend and implement appropriate and timely revisions to the reporting forms and the attendant instructions.

Holding Company Regulatory Reports

The Federal Reserve requires that U.S. holding companies (HCs) periodically submit reports that provide information about their financial condition and structure.[18] This information is essential to formulating and conducting financial institution regulation and supervision. It is also used in responding to requests by Congress and the public for information about HCs and their nonbank subsidiaries. Foreign banking organizations also are required to periodically submit reports to the Federal Reserve. For more information on the various reporting forms, see www.federalreserve.gov/apps/reportforms/default.aspx.

During 2016, the following reporting forms were revised:

- **FR Y-9C**—to direct institutions using the advanced risk-based capital adequacy standards to report the supplementary leverage ratio (SLR) and implement a number of revisions, most of which were consistent with changes to the FFIEC Consolidated Reports of Condition and Income (Call Reports) (FFIEC 031 & 041; OMB No. 7100-0036). The FR Y-9C was revised (effective September 2016 and March 2017) to
  - —delete certain existing data items pertaining to troubled debt restructurings, FDIC loss share agreements and unused commitments to asset-backed commercial paper conduits;
  - —increase existing reporting thresholds for certain data items;
  - —add one new threshold for reinsurance recoverables; and
  - —eliminate the concept of extraordinary items and revise affected data items.
- **FR Y-6, FR Y-7, and FR Y-10**—to modify the confidentiality questions on the reporting forms and instructions, require foreign banking organizations to report their interest in an IHC on the FR Y-7 organization chart, expand the FR Y-10 reporting form and instructions to include IHC reporting guidance in the instructions, provide the option of electronically submitting the FR Y-6, and clarify several items in the FR Y-6, FR Y-7, and FR Y-10 reporting instructions.
- **FR Y-7Q**—to collect 12 new data items to monitor compliance with enhanced prudential standards for foreign banking organizations adopted pursuant to Subparts N and O of Regulation YY. The new data items allow the Federal Reserve to determine whether a foreign banking organizations with total consolidated assets of $50 billion or more meets capital adequacy standards at the consolidated level that are consistent with the Basel Capital Framework, as defined in Regulation YY.
- **FR Y-14**—to add a phased-in requirement for LISCC BHC respondents to attest to the material correctness and conformance to instructions of, and internal controls around, the data reported on the FR Y-14A/Q/M (effective beginning December 31, 2016) and add a similar phased-in attestation requirement for LISCC IHCs (effective beginning December 31, 2017). Also, the Federal Reserve modified other elements of the report schedules to improve consistency of reported data across firms, address industry concerns, and improve supervisory modeling.
- **FR Y-15**—to extend the amount of time that certain firms have to complete Schedule G, which captures short-term wholesale funding (effective December 31, 2016). The Federal Reserve also increased the reporting frequency from annual to quarterly (effective June 30, 2016). The Federal Reserve uses the data to monitor the systemic risk profile of the institutions which are subject to enhanced prudential standards under section 165 of the Dodd-Frank Act.
- **Form TA-1**—to require respondents to submit the forms and attachments to a designated Federal Reserve Board e-mail address, make instructional

[18] HCs are defined as BHCs, intermediate holding companies (IHCs), SLHCs, and securities holding companies.

clarifications, and reduce the number of copies registrants are required to file with the Federal Reserve Board.

Also during 2016, the Federal Reserve implemented reporting requirements for U.S. IHCs to require designated IHCs to file regulatory reports applicable to holding companies, and comply with the information collection requirements associated with regulatory capital requirements beginning in 2016.[19] In addition, separate final notices were published for IHCs to begin filing several FFIEC reporting forms in 2016.[20] The information collected on these reports provides the Board with information regarding the financial condition of the IHC, foreign and domestic legal entities, and intercompany transactions between legal entities. In addition, the Federal Reserve required an IHC to provide U.S. financial information in support of the Federal Reserve's supervisory programs, including its capital assessment and stress testing programs.

FFIEC Regulatory Reports

The law establishing the FFIEC and defining its functions requires the FFIEC to develop uniform reporting systems for federally supervised financial institutions. The Federal Reserve, along with the other member FFIEC agencies, requires financial institutions to submit various uniform regulatory reports. This information is essential to formulating and conducting supervision and regulation and for the ongoing assessment of the overall soundness of the nation's financial system. During 2016, the following FFIEC reporting forms were implemented or revised.

- FFIEC 101 was revised to include the addition of two new tables to collect information related to the SLR disclosures required in section 173 of the agencies' advanced approaches risk-based capital rule and to generally align with the international leverage ratio common disclosure template adopted by the BCBS. The two new SLR tables ensure transparency and comparability of reporting of regulatory capital elements among internationally active banking organizations. The FFIEC 101 was also revised to collect the Legal Entity Identifier (LEI) if the organization already has a currently valid LEI.
- FFIEC 102, FFIEC 009, and FFIEC 009a were revised to collect the LEI if the organization already has a currently valid LEI.
- FFIEC 031 and FFIEC 041 (Call Reports) were revised effective September 30, 2016, to

—delete certain existing data items pertaining to troubled debt restructurings and unused commitments to asset-backed commercial paper conduits;

—increase existing reporting thresholds for certain data items;

—add contact information for the reporting institution's chief executive officer;

—report the LEI for the reporting institution (if the institution already has a currently valid LEI);

—eliminate the concept of extraordinary items and revise affected data items;

—add a new item on "dually payable" deposits in foreign branches of U.S. banks (FFIEC 031 only); and

—revise the information reported about the SLR by institutions using the advanced risk-based capital adequacy standards.

Call Report Burden Reduction Initiative for Community Institutions

In September 2015, the FFIEC announced detailed steps regulators are taking to streamline and simplify regulatory reporting requirements for community banks and reduce their reporting burden. The objectives of the community bank burden-reduction initiative are consistent with the early feedback the FFIEC received as part of the regulatory review currently being conducted as required by the Economic Growth and Regulatory Paperwork Reduction Act of 1996. Work on this initiative continued throughout 2016.

As an initial step to streamline some reporting requirements, the federal banking agencies, under the auspices of the FFIEC, sought comment on proposals to, in part, eliminate or revise several Call Report data items. These changes would simplify the reporting requirements for banks and savings associations.

In evaluating changes to the Call Reports, the FFIEC sought to balance reporting burden against

[19] 81 Fed. Reg. 35,016 (June 1, 2016): FR 2314, FR 2314S, FR 4200, FR 4201, FR Y-6, FR Y-9C, FR Y-9LP, FR Y-9SP, FR Y-9ES, FR Y-9CS, FR Y-11, FR Y-11S, FR Y-12, FR Y-12A, FR Y-14A, FR Y-14Q, FR Y-14M, and FR Y-15.

[20] 81 Fed. Reg. 47,237 (July 20, 2016): FFIEC 009 and FFIEC 009a, 81 Fed. Reg. 55,260 (September 19, 2016): FFIEC 101, and 81 Fed. Reg. 70,739 (October 13, 2016): FFIEC 102.

regulators' need for reliable data to ensure banks and savings associations operate in a safe and sound manner and are able to meet the financial needs of the communities they serve.

In addition to the reporting changes proposed, the FFIEC also focused on four other areas:

- accelerating the start of a statutorily required review of the continued appropriateness of the data items collected in the Call Reports, which was scheduled to commence in 2017;[21]
- evaluating the feasibility and merits of creating a streamlined version of the quarterly Call Report for community institutions;
- continuing dialogue with community institutions to identify additional opportunities to reduce reporting burden by revising or redefining Call Report data items; and
- reaching out to banks and savings associations through teleconferences and webinars to explain upcoming reporting changes and clarify technical reporting requirements.

Progress made during 2016 by the FFIEC on this multiyear initiative included implementing previously proposed burden-reducing changes to the Call Reports, effective September 2016, and announcing further burden-reducing changes to the Call Reports to be implemented in March 2017. In addition, the FFIEC finalized a new and streamlined "Call Report" for small financial institutions (FFIEC 051) effective March 2017. Financial institutions with domestic offices only and less than $1 billion in total assets would qualify for this new report, representing approximately 90 percent of all institutions required to file Call Reports. The streamlined Call Report would reduce the existing Call Report from 85 to 61 pages resulting from the removal of approximately 950—or about 40 percent of the nearly 2,400—data items in the Call Report.

As a foundation for the actions it is undertaking, the FFIEC is using the guiding principles developed in 2015 for use in evaluating potential additions and deletions of Call Report data items and other revisions to the Call Reports. In general, any Call Report changes must meet three guiding principles for the data items to be collected:

- The data items serve a long-term regulatory or public policy purpose by assisting the FFIEC's member entities in fulfilling their missions of ensuring the safety and soundness of financial institutions and the financial system and protecting consumers as well as entity-specific missions affecting national and state-chartered institutions;
- The data items maximize practical utility and minimize, to the extent practicable and appropriate, burden on financial institutions; and
- Equivalent data items are not readily available through other means.

Other Burden Reduction Initiatives

To reduce reporting burden and respond to industry comments, the Federal Reserve developed a mapping document (Appendix VII to the FR 2052a instructions) to assist firms required to submit both the FR 2052a (liquidity monitoring report) and the FR Y-15 (systemic risk report). The document maps specific tables of the FR 2052a to specific line items on Schedule G (Short-Term Wholesale Funding) of the FR Y-15.

Supervisory Information Technology

The Federal Reserve's supervisory information technology function (SIT), under the governance of the Subcommittee on Supervisory Administration and Technology, works to deliver information technology solutions within the supervision and regulation function. Working collaboratively with the Federal Reserve System supervision and regulation business sponsors, the services provided to the business line include the development and maintenance of software applications and tools to assist with the examination of supervised institutions, data collections, collaboration, provisioning and review of user-access, quantitative analysis and data visualization software, and information security. SIT also provides information technology project management support to several critical national business applications supporting supervision and regulation.

Supervisory and support tools. To support examiners and other supervisory staff, SIT deployed tools to support the collection, use, and storage of supervisory data. SIT integrated supervisory planning and collection tools with a task and resource management program allowing management to better track and align resources. SIT deployed advanced quantitative analysis and data visualiza-

[21] This review is mandated by section 604 of the Financial Services Regulatory Relief Act of 2006 (12 USC 1817(a)(11)).

tion software to allow supervisory analysts to glean insights from supervisory data.

Streamlined data access and improved security. SIT streamlined data access for the supervision function, while enhancing overall information security. SIT provides access to data through a central access management tool to support data, applications, and research access-related responsibilities, and establishes effective prevention and detection controls to limit information security threats. In addition to data access provisioning, the tool supports information security measures through routine procedures to verify users' access to data and information to confirm whether there is a continued need for this access.

The National Information Center

The National Information Center (NIC) is the Federal Reserve's authoritative source for supervisory, financial, and banking structure data as well as supervisory documents. The NIC includes (1) data on banking structure throughout the United States and foreign banking concerns, (2) national applications supporting the various supervisory programs and the data they capture, (3) data collection processes, and (4) the sharing of the information with external agencies.

Information sharing and external collaboration. In 2016, in support of increasing requests for data from other regulatory agencies, the NIC developed a standard process to ensure that the appropriate prioritization and conditions were determined by the corresponding business areas for each data request received. NIC also began working with the business areas to identify gaps in business capabilities for collaboration between the agencies.

Document management. A high priority for the NIC was to improve document tracking, storage, and access through the implementation of document management software. The newly deployed software eliminates point-to-point interfaces between document management systems and systems uploading or referencing documents. The software also moves and tracks documents between management systems as the documents progress through their life cycle.

Data quality and usability. Efforts continue to meet the demand of the increasing amount of data being collected and shared. Much of the data is collected under revised supervisory programs. Similar data between programs cannot always be matched and requires alignment for cross-portfolio purposes. The NIC continues to ensure that the underlying data is consistent, readily available, and easily accessible for authorized use. The NIC also works to ensure that all NIC data is easily understood and integrated in a flexible manner.

Data collections. The NIC provides program budgetary oversight along with ensuring that information technology solutions for data collections meet architectural standards. Increased emphasis on data governance, security, and awareness prompted the build-out of a data collection management system that provides intake on data requests, playbook and tracking of the regulatory process as well as overall status reporting.

Staff Development

The Federal Reserve's staff development program supports the ongoing development of nearly 3,000 professional supervisory staff, ensuring that they have the requisite skills necessary to meet their evolving supervisory responsibilities. The Federal Reserve also provides course offerings to staff at state banking agencies. Training activities in 2016 are summarized in table 3.

Examiner Commissioning Program

The Federal Reserve System's Examiner Commissioning Program for assistant examiners is set forth in SR letter 98-2, "New Training Program Leading to Commissioned Examiner Status."[22] Examiners choose from one of two specialty tracks: (1) safety and soundness or (2) consumer compliance. In 2016, 98 examiners passed the proficiency examination (69 in safety and soundness and 29 in consumer compliance).

On average, individuals move through a combination of classroom offerings, self-paced learning, virtual instruction, and on-the-job training over a period of three years. Achievement is measured by completing the required course content, demonstrating adequate on-the-job knowledge, and passing a professionally validated proficiency examination.

In 2016, the Federal Reserve completed a major redesign of the community banking organization proficiency examination. In addition, further learn-

[22] SR letter 98-2 is available at www.federalreserve.gov/boarddocs/srletters/1998/sr9802.htm.

Table 3. Training for banking supervision and regulation, 2016

Course sponsor or type	Number of enrollments		Instructional time (approximate training days)[1]	Number of course offerings
	Federal Reserve personnel	State and federal banking agency personnel		
Federal Reserve System	1,243	190	650	130
FFIEC	778	474	412	103
Rapid Response[2]	14,545	3,212	10	83

1 Training days are approximate. System courses were calculated using five days as an average, with FFIEC courses calculated using four days as an average.

2 Rapid Response is a virtual program created by the Federal Reserve System as a means of providing information on emerging topics to Federal Reserve and state bank examiners.

ing units were released for the Large Financial Institutions Examiner Commissioning Program, which will continue to be developed and deployed in 2017.

Continuing Professional Development

Throughout 2016, the Federal Reserve System continued to enhance its continuing professional development program. Rapid Response sessions evolved to incorporate interactive elements into the sessions as well as provide continuing professional education credits for select archived sessions.

Regulation

The Federal Reserve exercises important regulatory influence over entry into the U.S. banking system structure through its administration of several federal statutes. The Federal Reserve is also responsible for imposing margin requirements on securities transactions. In carrying out its responsibilities, the Federal Reserve coordinates supervisory activities with the other federal banking agencies, state agencies, functional regulators (that is, regulators for insurance, securities, and commodities firms), and foreign bank regulatory agencies.

Regulation of the U.S. Banking Structure

The Federal Reserve administers six federal statutes that apply to BHCs, FHCs, member banks, SLHCs, and foreign banking organizations: the BHC Act, the Bank Merger Act, the Change in Bank Control Act, the Federal Reserve Act, section 10 of the Home Owners' Loan Act (HOLA), and the International Banking Act.

In administering these statutes, the Federal Reserve acts on a variety of applications and notices that directly or indirectly affect the structure of the U.S. banking system at the local, regional, and national levels; the international operations of domestic banking organizations; or the U.S. banking operations of foreign banks. The applications and notices concern BHC and SLHC formations and acquisitions, bank mergers, and other transactions involving banks and savings associations or nonbank firms. In 2016, the Federal Reserve acted on 1,073 applications filed under the six statutes.

In 2016, the Federal Reserve published its *Semiannual Report on Banking Applications Activity*, which provides aggregate information on proposals filed by banking organizations and reviewed by the Federal Reserve. The report includes statistics on the number of proposals that have been approved, denied, withdrawn, mooted, or returned as well as general information about the length of time taken to process proposals and common reasons for proposals to be withdrawn from consideration. The reports are available at www.federalreserve.gov/bankinforeg/semiannual-reports-banking-applications-activity.htm.

Bank Holding Company Act Applications

Under the BHC Act, a corporation or similar legal entity must obtain the Federal Reserve's approval before forming a BHC through the acquisition of one or more banks in the United States. Once formed, a BHC must receive Federal Reserve approval before acquiring or establishing additional banks. Also, BHCs generally may engage in only those nonbanking activities that the Board has previously determined to be closely related to banking

under section 4(c)(8) of the BHC Act. Depending on the circumstances, these activities may or may not require Federal Reserve approval in advance of their commencement.[23]

When reviewing a BHC application or notice that requires approval, the Federal Reserve considers the financial and managerial resources of the applicant, the future prospects of both the applicant and the firm to be acquired, financial stability factors, the convenience and needs of the community to be served, the potential public benefits, the competitive effects of the application, and the applicant's ability to make available to the Federal Reserve information deemed necessary to ensure compliance with applicable law. The Federal Reserve also must consider the views of the U.S. Department of Justice regarding the competitive aspects of any proposed BHC acquisition involving unaffiliated insured depository institutions. In the case of a foreign banking organization seeking to acquire control of a U.S. bank, the Federal Reserve also considers whether the foreign bank is subject to comprehensive supervision or regulation on a consolidated basis by its home-country supervisor. In 2016, the Federal Reserve acted on 269 applications and notices filed by BHCs to acquire a bank or a nonbank firm, or to otherwise expand their activities.

A BHC may repurchase its own shares from its shareholders. Certain stock redemptions require prior Federal Reserve approval. The Federal Reserve may object to stock repurchases by holding companies that fail to meet certain standards, including the Board's capital adequacy guidelines. In 2016, the Federal Reserve acted on seven stock repurchase applications by BHCs.

The Federal Reserve also reviews elections submitted by BHCs seeking FHC status under the authority granted by the Gramm-Leach-Bliley Act. BHCs seeking FHC status must file a written declaration with the Federal Reserve. In 2016, 48 domestic and 2 foreign FHC declarations were approved.

[23] Since 1996, the BHC Act has provided an expedited prior notice procedure for certain permissible nonbank activities and for acquisitions of small banks and nonbank entities. Since that time, the BHC Act has also permitted well-run BHCs that satisfy certain criteria to commence certain other nonbank activities on a de novo basis without first obtaining Federal Reserve approval.

Bank Merger Act Applications

The Bank Merger Act requires that all applications involving the merger of insured depository institutions be acted on by the relevant federal banking agency. The Federal Reserve has primary jurisdiction if the institution surviving the merger is a state member bank. In acting on a merger application, the Federal Reserve considers the financial and managerial resources of the applicant, the future prospects of the existing and combined organizations, financial stability factors, the convenience and needs of the communities to be served, and the competitive effects of the proposed merger. The Federal Reserve also must consider the views of the U.S. Department of Justice regarding the competitive aspects of any proposed bank merger involving unaffiliated insured depository institutions. In 2016, the Federal Reserve approved 55 merger applications under the Bank Merger Act.

Change in Bank Control Act Applications

The Change in Bank Control Act requires individuals and certain other parties that seek control of a U.S. bank, BHC, or SLHC to obtain approval from the relevant federal banking agency before completing the transaction. The Federal Reserve is responsible for reviewing changes in the control of state member banks, BHCs, and SLHCs. In its review, the Federal Reserve considers the financial position, competence, experience, and integrity of the acquiring person; the effect of the proposed change on the financial condition of the bank, BHC, or SLHC being acquired; the future prospects of the institution to be acquired; the effect of the proposed change on competition in any relevant market; the completeness of the information submitted by the acquiring person; and whether the proposed change would have an adverse effect on the Deposit Insurance Fund. A proposed transaction should not jeopardize the stability of the institution or the interests of depositors. During its review of a proposed transaction, the Federal Reserve also may contact other regulatory or law enforcement agencies for information about relevant individuals. In 2016, the Federal Reserve approved 163 change in control notices.

Federal Reserve Act Applications

Under the Federal Reserve Act, a bank must seek Federal Reserve approval to become a member bank. A member bank may be required to seek Federal Reserve approval before expanding its operations domestically or internationally. State

member banks must obtain Federal Reserve approval to establish domestic branches, and all member banks (including national banks) must obtain Federal Reserve approval to establish foreign branches. When reviewing applications for membership, the Federal Reserve considers, among other things, the bank's financial condition and its record of compliance with banking laws and regulations. When reviewing applications to establish domestic branches, the Federal Reserve considers, among other things, the scope and nature of the banking activities to be conducted. When reviewing applications for foreign branches, the Federal Reserve considers, among other things, the condition of the bank and the bank's experience in international banking. In 2016, the Federal Reserve acted on 27 membership applications, 451 new and merger-related domestic branch applications, and one foreign branch application.

State member banks also must obtain Federal Reserve approval to establish financial subsidiaries. These subsidiaries may engage in activities that are financial in nature or incidental to financial activities, including securities-related and insurance agency-related activities. In 2016, two financial subsidiary applications were approved.

Home Owners' Loan Act Applications

Under HOLA, a corporation or similar legal entity must obtain the Federal Reserve's approval before forming an SLHC through the acquisition of one or more savings associations in the United States. Once formed, an SLHC must receive Federal Reserve approval before acquiring or establishing additional savings associations. Also, SLHCs generally may engage in only those nonbanking activities that are specifically enumerated in HOLA or that the Board has previously determined to be closely related to banking under section 4(c)(8) of the BHC Act. Depending on the circumstances, these activities may or may not require Federal Reserve approval in advance of their commencement. In 2016, the Federal Reserve acted on 15 applications filed by SLHCs to acquire a savings association or a nonbank firm, or to otherwise expand their activities.

Under HOLA, a savings association reorganizing to a mutual holding company (MHC) structure must receive Federal Reserve approval prior to its reorganization. In addition, an MHC must receive Federal Reserve approval before converting to stock form, and MHCs must receive Federal Reserve approval before waiving dividends declared by the MHC's subsidiary. In 2016, the Federal Reserve acted on one MHC reorganization application. In 2016, the Federal Reserve acted on four applications filed by MHCs to convert to stock form, and six applications to waive dividends.

When reviewing an SLHC application or notice that requires approval, the Federal Reserve considers the financial and managerial resources of the applicant, the future prospects of both the applicant and the firm to be acquired, the convenience and needs of the community to be served, the potential public benefits, the competitive effects of the application, and the applicant's ability to make available to the Federal Reserve information deemed necessary to ensure compliance with applicable law. The Federal Reserve also must consider the views of the U.S. Department of Justice regarding the competitive aspects of any SLHC proposal involving the acquisition or merger of unaffiliated insured depository institutions.

The Federal Reserve also reviews elections submitted by SLHCs seeking status as FHCs under the authority granted by the Dodd-Frank Act. SLHCs seeking FHC status must file a written declaration with the Federal Reserve. In 2016, no SLHC FHC declarations were received.

Overseas Investment Applications by U.S. Banking Organizations

U.S. banking organizations may engage in a broad range of activities overseas. Many of the activities are conducted indirectly through Edge Act and agreement corporation subsidiaries. Although most foreign investments are made under general consent procedures that involve only after-the-fact notification to the Federal Reserve, large and other significant investments require prior approval. In 2016, the Federal Reserve approved 17 applications and notices for overseas investments by U.S. banking organizations, many of which represented investments through an Edge Act or agreement corporation.

International Banking Act Applications

The International Banking Act, as amended by the Foreign Bank Supervision Enhancement Act of 1991, requires foreign banks to obtain Federal Reserve approval before establishing branches, agencies, commercial lending company subsidiaries, or representative offices in the United States.

In reviewing applications, the Federal Reserve generally considers whether the foreign bank is subject to comprehensive supervision or regulation on a consolidated basis by its home-country supervisor. It also considers whether the home-country supervisor has consented to the establishment of the U.S. office; the financial condition and resources of the foreign bank and its existing U.S. operations; the managerial resources of the foreign bank; whether the home-country supervisor shares information regarding the operations of the foreign bank with other supervisory authorities; whether the foreign bank has provided adequate assurances that information concerning its operations and activities will be made available to the Federal Reserve, if deemed necessary to determine and enforce compliance with applicable law; whether the foreign bank has adopted and implemented procedures to combat money laundering and whether the home country of the foreign bank is developing a legal regime to address money laundering or is participating in multilateral efforts to combat money laundering; and the record of the foreign bank with respect to compliance with U.S. law. In 2016, the Federal Reserve approved five applications by foreign banks to establish branches, agencies, or representative offices in the United States.

Public Notice of Federal Reserve Decisions

Certain decisions by the Federal Reserve that involve an acquisition by a BHC, a bank merger, a change in control, or the establishment of a new U.S. banking presence by a foreign bank are made known to the public by an order or an announcement. Orders state the decision, the essential facts of the application or notice, and the basis for the decision; announcements state only the decision. All orders and announcements are made public immediately and are subsequently reported in the Board's weekly H.2 statistical release. The H.2 release also contains announcements of applications and notices received by the Federal Reserve upon which action has not yet been taken. For each pending application and notice, the related H.2A release gives the deadline for comments. The Board's website provides information on orders and announcements (www.federalreserve.gov/newsevents/press/orders/2017orders.htm) as well as a guide for U.S. and foreign banking organizations that wish to submit applications (www.federalreserve.gov/bankinforeg/afi/afi.htm).

Enforcement of Other Laws and Regulations

The Federal Reserve's enforcement responsibilities also extend to the disclosure of financial information by state member banks and the use of credit to purchase and carry securities.

Financial Disclosures by State Member Banks

Under the Securities Exchange Act of 1934 and the Federal Reserve's Regulation H, certain state member banks are required to make financial disclosures to the Federal Reserve using the same reporting forms (such as Form 10K—annual report and Schedule 14A—proxy statement) that are normally used by publicly held entities to submit information to the SEC.[24] As most of the publicly held banking organizations are BHCs and the reporting threshold was recently raised, only two state member banks were required to submit data to the Federal Reserve in 2016. The information submitted by these two small state member banks is available to the public upon request and is primarily used for disclosure to the bank's shareholders and public investors.

Assessments for Supervision and Regulation

The Dodd-Frank Act directs the Board to collect assessments, fees, or other charges equal to the total expenses the Board estimates are necessary or appropriate to carry out the supervisory and regulatory responsibilities of the Board for BHCs and SLHCs with total consolidated assets of $50 billion or more and nonbank financial companies designated for Board supervision by the FSOC. As a collecting entity, the Board does not recognize the supervision and regulation assessments as revenue nor does the Board use the collections to fund Board expenses; the funds are transferred to the Treasury. The Board collected and transferred

[24] Under section 12(g) of the Securities Exchange Act, certain companies that have issued securities are subject to SEC registration and filing requirements that are similar to those imposed on public companies. Per section 12(i) of the Securities Exchange Act, the powers of the SEC over banking entities that fall under section 12(g) are vested with the appropriate banking regulator. Specifically, state member banks with 2,000 or more shareholders and more than $10 million in total assets are required to register with, and submit data to, the Federal Reserve. These thresholds reflect the recent amendments by the Jumpstart Our Business Startups Act (JOBS Act).

$464,929,002 in 2016 for the 2015 supervision and regulation assessment.

Securities Credit

Under the Securities Exchange Act of 1934, the Board is responsible for regulating credit in certain transactions involving the purchasing or carrying of securities. The Board's Regulation T limits the amount of credit that may be provided by securities brokers and dealers when the credit is used to purchase debt and equity securities. The Board's Regulation U limits the amount of credit that may be provided by lenders other than brokers and dealers when the credit is used to purchase or carry publicly held equity securities if the loan is secured by those or other publicly held equity securities. The Board's Regulation X applies these credit limitations, or margin requirements, to certain borrowers and to certain credit extensions, such as credit obtained from foreign lenders by U.S. citizens.

Several regulatory agencies enforce the Board's securities credit regulations. The SEC, the Financial Industry Regulatory Authority, and the Chicago Board Options Exchange examine brokers and dealers for compliance with Regulation T. With respect to compliance with Regulation U, the federal banking agencies examine banks under their respective jurisdictions; the FCA and the NCUA examine lenders under their respective jurisdictions; and the Federal Reserve examines other Regulation U lenders.

5 Consumer and Community Affairs

The Division of Consumer and Community Affairs (DCCA) has primary responsibility for carrying out the Board of Governors' role in consumer financial protection and community development. DCCA conducts consumer supervision and oversight of community development programs, research, and policy analysis, as well as implements relevant statutory requirements for community reinvestment. Through these efforts, the division works to ensure that consumer and community perspectives inform Federal Reserve policy, research, and actions that advance DCCA's mission to promote a fair and transparent consumer financial services marketplace and effective community reinvestment.

Throughout 2016, the division engaged in numerous consumer and community-related functions and policy activities in the following areas:

- **Formulating consumer-focused supervision and examination policy to ensure that financial institutions for which the Federal Reserve has authority comply with consumer protection laws and regulations and meet requirements of community reinvestment laws and regulations.** The division provided oversight for the Reserve Bank consumer compliance supervision and examination programs in state member banks and bank holding companies (BHCs) through its policy development, examiner training, and supervision oversight programs. This involves policy setting and oversight of state member banks' performance under the Community Reinvestment Act (CRA); assessment of compliance with and enforcement of a wide range of consumer protection laws and regulations including those related to fair lending, unfair or deceptive acts or practices (UDAP), and flood insurance; analysis of bank and BHC applications in regard to consumer protection, convenience, and needs and the CRA; and processing of consumer complaints.
- **Conducting research, analysis, and data collection to inform Federal Reserve and other policymakers about consumer protection risks and community economic development issues and opportunities.** The division analyzed ongoing and emerging consumer financial services and community risks, practices, issues, and opportunities in order to understand and act on their implications for supervisory policies, as well as to gain insight into consumer decisionmaking related to financial services, implications of the financial crisis on young workers, and access to credit for small businesses.
- **Engaging and convening key stakeholders to identify emerging issues and advance what works in community reinvestment and consumer protection.** The division continued to promote fair and informed access to financial markets for all consumers, particularly underserved populations, by engaging lenders, government officials, and community leaders. Throughout the year, DCCA convened programs to share information on the financial and economic needs in low- and moderate-income (LMI) communities and research on effective community development policies and strategies.
- **Writing and reviewing regulations that effectively implement consumer protection and community reinvestment laws.** The division manages the Board's regulatory responsibilities with respect to certain entities and specific statutory provisions of the consumer financial services and fair lending laws. In 2016, DCCA participated in drafting interagency regulations, interpretations, and compliance guidance for the industry and the Reserve Banks.

Supervision and Examinations

DCCA develops supervisory policy and examination procedures for consumer protection laws and regulations, as well as for the CRA, as part of its supervision of the organizations for which the Board has authority, including holding companies, state member banks,[1] and foreign banking organizations. The

1 The Federal Reserve has examination and enforcement authority for federal consumer financial laws and regulations for

division also administers the Federal Reserve System's risk-focused program for assessing consumer compliance risk at the largest bank and financial holding companies in the System, with division staff ensuring that consumer compliance risk is effectively integrated into the consolidated supervision of the holding company.

The division oversees the efforts of the 12 Reserve Banks to ensure that consumer protection laws and regulations are rigorously and consistently enforced for the approximately 829 state member banks that the Federal Reserve supervises for compliance with consumer protection and community reinvestment laws and regulations. Division staff provide guidance and expertise to the Reserve Banks on consumer protection laws and regulations, bank and BHC application analysis and processing, examination and enforcement techniques and policy matters, examiner training, and emerging issues. Finally, staff members participate in interagency activities that promote consistency in examination principles, standards, and processes.

Examinations are one of the Federal Reserve's methods of ensuring compliance with consumer protection laws and assessing the adequacy of consumer compliance risk-management systems within regulated entities. During 2016, the Reserve Banks completed 209 consumer compliance examinations of state member banks and 48 examinations of foreign banking organizations, 2 examinations of Edge Act corporations, and 2 examinations of agreement corporations.[2]

insured depository institutions with assets of $10 billion or less that are state member banks and not affiliates of covered institutions, as well as for conducting CRA examinations for all state member banks regardless of size. The Federal Reserve Board also has examination and enforcement authority for certain federal consumer financial laws and regulations for insured depository institutions that are state member banks with over $10 billion in assets, while the Consumer Financial Protection Bureau has examination and enforcement authority for many federal consumer financial laws and regulations for insured depository institutions with over $10 billion in assets and their affiliates (covered institutions), as mandated by the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act).

[2] Agency and branch offices of foreign banking organizations, Edge Act corporations, and agreement corporations fall under the Federal Reserve's purview for consumer compliance activities. An agreement corporation is a type of bank chartered by a state to engage in international banking. The bank agrees with the Federal Reserve Board to limit its activities to those allowed by an Edge Act corporation. An Edge Act corporation is a banking institution with a special charter from the Federal Reserve to conduct international banking operations and certain other forms of business without complying with state-by-state banking laws. By setting up or investing in Edge Act corporations, U.S. banks are able to gain portfolio exposure to financial investing operations not available under standard banking laws.

Bank Holding Company Consolidated Supervision

During 2016, staff reviewed 121 bank and financial holding companies to ensure consumer compliance risk was appropriately incorporated into the consolidated risk-management program of the organization. Division staff participated with staff from the Board's Division of Supervision and Regulation on numerous projects related to ongoing implementation of the Dodd-Frank Act, including standards for assessing corporate governance and continued integration of savings and loan holding companies (SLHCs) under Federal Reserve supervision.[3]

Mortgage Servicing and Foreclosure

Payment Agreement Status

Throughout 2016, Board staff continued to work to oversee and implement the enforcement actions that were issued by the Federal Reserve and the Office of the Comptroller of the Currency (OCC) against 16 mortgage loan servicers between April 2011 and April 2012. At the time of the enforcement actions, along with other requirements, the two regulators directed servicers to retain independent consultants to conduct comprehensive reviews of foreclosure activity to determine whether eligible[4] borrowers suffered financial injury because of servicer errors, misrepresentations, or other deficiencies. The file review initiated by the independent consultants, combined with a significant borrower outreach process, was referred to as the Independent Foreclosure Review (IFR).

In 2013, the regulators entered into agreements with 15 of the mortgage loan servicers to replace the IFR with direct cash payments to all eligible borrowers and other assistance (the Payment Agreement).[5] The participating servicers agreed to pay an estimated

[3] In November 2014, the Federal Reserve issued a detailed listing of Federal Reserve supervisory guidance documents that are applicable to SLHCs. The listing is supplemental to previously issued guidance that informed SLHCs to comply with Federal Reserve guidance and not Office of Thrift Supervision (OTS) guidance issued prior to July 21, 2011—the date that supervision and regulation of SLHCs transferred from the OTS to the Federal Reserve.

[4] Borrowers were eligible if their primary residence was in a foreclosure action with one of the sixteen mortgage loan servicers at any time in 2009 or 2010.

[5] One OCC-regulated servicer elected to complete the Independent Foreclosure Review, and did not, therefore, enter into the Payment Agreement.

$3.9 billion to 4.4 million borrowers whose primary residence was in a foreclosure process in 2009 or 2010. The Payment Agreement also required the servicers to contribute an additional $5.8 billion in other foreclosure prevention assistance, such as loan modifications and forgiveness of deficiency judgments. For the participating servicers, fulfillment of the agreement satisfied the foreclosure review requirements of the enforcement actions issued by the regulators in 2011 and 2012. The Payment Agreement did not affect the servicers' continuing obligations under the enforcement actions to address deficiencies in their mortgage servicing and foreclosure policies and procedures.

A paying agent, Rust Consulting, Inc., (Rust) was retained to administer payments to borrowers on behalf of the participating servicers. Beginning in April 2013, a letter with an enclosed check was sent to borrowers who had a foreclosure action initiated, pending, or completed in 2009 or 2010 with any of the participating servicers. Letters with checks were mailed to eligible borrowers through 2016. During this timeframe, checks were reissued upon the borrower's request due to expiration, a request for a change in payee, or a request by borrowers to split the check amongst the borrowers on the loan. For checks that have not been cashed or were returned undeliverable, the agencies directed Rust to expand its efforts to locate more-current address information for the unpaid borrowers. For nearly all borrowers, at least two, and in most cases, three attempts were made to reach each borrower.

As of March 31, 2016, all outstanding checks from the initial distribution of funds expired, with $3.5 billion distributed through 3.9 million checks, representing nearly 91 percent of the total value of the funds. Receiving a payment under the agreement did not prevent borrowers from taking any action they may wish to pursue related to their foreclosure. Servicers were not permitted to ask borrowers to sign a waiver of any legal claims they may have against their servicer in connection with receiving payment.[6]

In November 2015, the Federal Reserve announced it would direct Rust to redistribute any funds remaining after all outstanding checks expired on March 31, 2016, to eligible borrowers of Federal Reserve supervised servicers who had cashed or deposited their initial checks. This direction applied only to funds related to mortgage servicers supervised by the Federal Reserve and was consistent with the Federal Reserve's intention to distribute the maximum amount of funds to borrowers potentially affected by deficient servicing and foreclosure practices. The redistribution of remaining funds occurred in August, with Rust mailing checks totaling just over $80 million to nearly 650,000 borrowers of servicers supervised by the Federal Reserve. Under the redistribution, every eligible loan received a payment of $124.30. Borrowers cashed approximately $59 million of the $80 million prior to the December 31, 2016, expiration date for the redistribution checks, resulting in a cash rate of nearly 73 percent.

Foreclosure Prevention Actions

The Payment Agreement also required servicers to undertake well-structured loss-mitigation efforts focused on foreclosure prevention, with preference given to activities designed to keep borrowers in their homes through affordable, sustainable, and meaningful home preservation actions within two years from the date the agreement in principle was reached. The foreclosure prevention actions are expected to provide significant and meaningful relief or assistance to qualified borrowers and, as stated in the agreement, "should not disfavor a specific geography within or among states, nor disfavor low and/or moderate income borrowers, and not discriminate against any protected class."

Servicers could fulfill their obligations through three specific consumer-relief activities set forth in the National Mortgage Settlement, including first-lien loan modifications, second-lien loan modifications, and short sales or deeds-in-lieu of foreclosure. Servicers were given the option, subject to non-objection from their regulator, to meet their foreclosure prevention assistance requirements by paying additional cash into the qualified settlement funds to be used for direct payments to consumers or by providing cash or other resource commitments to borrower counseling or education. Several of the participating servicers chose this option and have met their foreclosure prevention obligations.

All servicers were required to submit reports detailing the consumer-relief actions they had taken to satisfy these requirements. The foreclosure prevention assistance actions reported included loan modifications, short sales, deeds-in-lieu of foreclosure, debt cancellation, and lien extinguishment. In order to receive credit toward the servicer's total foreclosure prevention obligation, the actions submitted must be

[6] For more information, see www.federalreserve.gov/consumerinfo/independent-foreclosure-review-payment-agreement.htm.

validated by the regulators. A third party completed this validation to ensure that the foreclosure prevention assistance amounts met the requirements of the amendments to the enforcement actions. As stated in the *Independent Foreclosure Review Report* (July 2014),[7] the Federal Reserve expects to publish data in 2017 regarding the final status of the cash payments and the foreclosure prevention assistance focused primarily on servicers regulated by the Federal Reserve.

Servicer Efforts to Address Deficiencies

In addition to the foreclosure review requirements, the enforcement actions required mortgage servicers to submit acceptable written plans to address various mortgage loan servicing and foreclosure processing deficiencies. In the time since the enforcement actions were issued, the banking organizations have been implementing the action plans, including enhanced controls, and improving systems and processes. To date, the supervisory review of the mortgage servicers' action plans has shown that the banking organizations under the enforcement actions have implemented significant corrective actions with regard to their mortgage servicing and foreclosure processes, and for most servicers, those corrective actions appear to be sustainable. For some servicers, additional actions need to be taken and those actions are currently in process. Federal Reserve supervisory teams will continue to monitor and evaluate the servicers' progress on implementing the action plans to address unsafe and unsound mortgage servicing and foreclosure practices as required by the enforcement actions.

Supervisory Matters

Enforcement Activities

Fair Lending and UDAP Enforcement

Through its supervision and enforcement teams, DCCA is committed to ensuring that the institutions it supervises comply fully with the federal fair lending laws—the Equal Credit Opportunity Act (ECOA) and the Fair Housing Act (FHA). The ECOA prohibits creditors from discriminating against any applicant, in any aspect of a credit transaction, on the basis of race, color, religion, national origin, sex, marital status, or age. In addition, creditors may not discriminate against an applicant because the applicant receives income from a public assistance program or has exercised, in good faith, any right under the Consumer Credit Protection Act. The FHA prohibits discrimination in residential real estate related transactions, including the making and purchasing of mortgage loans, on the basis of race, color, religion, sex, handicap, familial status, or national origin.

The Board supervises all state member banks for compliance with the FHA. The Board and the CFPB both have supervisory authority for compliance with the Equal Credit Opportunity Act (ECOA). For state member banks with assets of $10 billion or less, the Board has the authority to enforce the ECOA. For state member banks with assets over $10 billion, the CFPB has this authority.

With respect to the Federal Trade Commission Act (FTC Act), which prohibits unfair or deceptive acts or practices (UDAP), the Board has supervisory and enforcement authority over all state member banks, regardless of asset size. The Board is committed to ensuring that the institutions it supervises comply fully with the prohibition on unfair or deceptive acts or practices as outlined in the FTC Act. An act or practice may be found to be unfair where it causes or is likely to cause substantial injury to consumers which is not reasonably avoidable by consumers themselves and not outweighed by countervailing benefits to consumers or to competition. A representation, omission, or practice is deceptive if it is likely to mislead a consumer acting reasonably under the circumstances and is likely to affect a consumer's conduct or decision regarding a product or service.

Fair lending and UDAP reviews are conducted regularly within the supervisory cycle. Additionally, examiners may conduct fair lending and UDAP reviews outside of the usual supervisory cycle, if warranted by fair lending and UDAP risk. When examiners find evidence of potential discrimination or potential UDAP violations, they work closely with DCCA's Fair Lending and UDAP Enforcement sections, which provide additional legal and statistical expertise and ensure that fair lending and UDAP laws are enforced consistently and rigorously throughout the Federal Reserve System.

With respect to fair lending, pursuant to the ECOA, if the Board has reason to believe that a creditor has engaged in a pattern or practice of discrimination in violation of the ECOA, the matter must be referred to the Department of Justice (DOJ). The DOJ reviews the referral and determines whether further investigation is warranted. A DOJ investigation may

[7] For the report, see www.federalreserve.gov/publications/other-reports/files/independent-foreclosure-review-2014.pdf.

result in a public civil enforcement action or settlement. Alternatively, the DOJ may decide to return the matter to the Board for administrative enforcement. When a matter is returned to the Board, staff ensure that the institution takes all appropriate corrective action.

During 2016, the Federal Reserve referred the following seven matters to the DOJ:

- Two referrals involved redlining, or discrimination against potential borrowers based upon the racial composition of their neighborhoods, in violation of the ECOA and the FHA. Based on an analysis of each bank's lending practices, its marketing, the location of its branches, and its delineated assessment area under the CRA, the Board determined that the banks avoided lending in minority neighborhoods.
- One referral involved discrimination on the basis of national origin, in violation of the ECOA. The lender charged Hispanic borrowers higher interest rates than non-Hispanic borrowers for unsecured consumer loans. Legitimate pricing factors failed to explain the pricing disparities.
- Four referrals involved discrimination on the basis of marital status, in violation of the ECOA. The banks improperly required spousal guarantees on loans, in violation of Regulation B.

If there is a fair lending violation that does not constitute a pattern or practice under ECOA or a UDAP violation, the Federal Reserve takes action to ensure that the violation is remedied by the bank. Most lenders readily agree to correct fair lending and UDAP violations, often taking corrective action as soon as they become aware of a problem. Thus, the Federal Reserve frequently uses informal supervisory tools (such as memoranda of understanding between banks' boards of directors and the Reserve Banks, or board resolutions) to ensure that violations are corrected. When necessary, the Board can bring public enforcement actions.

In 2016, the Board issued a consent order to cease and desist and assessed a civil money penalty of $960,000 for deceptive practices associated with deposit accounts that were in violation of the FTC Act. The actions addressed in this order involved several practices that, at various points in the financial aid refund selection process, misled students about significant aspects of the account, including terms and fees.[8] Specifically, the website and marketing materials associated with the deposit product omitted material information about the fees, features, and limitations of the product. The enrollment process also omitted information relating to the location and availability of fee-free ATMs where students could access their financial aid disbursements without additional cost. The bank's agent was subject to an enforcement action in 2015 and undertook corrective action to address these and other violations prior to the entry of the order against the bank in 2016.[9]

Given the complexity of this area of supervision, the Federal Reserve seeks to provide transparency on its perspectives and processes to the industry and the public. Fair Lending and UDAP Enforcement staff meet regularly with consumer advocates, supervised institutions, and industry representatives to discuss fair lending and UDAP issues and receive feedback. Through this outreach, the Board is able to address emerging fair lending and UDAP issues and promote sound fair lending and UDAP compliance. For example, in 2016, the Board sponsored a free interagency webinar on fair lending supervision through Compliance Outlook Live, which was attended by almost 6,000 registrants, most of which were community banks.[10] In addition, DCCA staff participate in numerous meetings, conferences, and trainings sponsored by consumer advocates, industry representatives, and interagency groups.

Flood Insurance

The National Flood Insurance Act imposes certain requirements on loans secured by buildings or mobile homes located in, or to be located in, areas determined to have special flood hazards. Under the Federal Reserve's Regulation H, which implements the act, state member banks are generally prohibited from making, extending, increasing, or renewing any such loan unless the building or mobile home, as well as any personal property securing the loan, are covered by flood insurance for the term of the loan. The law requires the Board and other federal financial institution regulatory agencies to impose civil money

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8 For more information, see www.federalreserve.gov/newsevents/press/enforcement/20151223a.htm.

9 For more information, see www.federalreserve.gov/newsevents/press/enforcement/20161206b.htm.

10 For more information and to obtain the webcast, see https://consumercomplianceoutlook.org/outlook-live/2015/interagency-fair-lending-hot-topics/.

penalties when they find a pattern or practice of violations of the regulation.

In 2016, the Federal Reserve issued two formal consent orders and assessed $33,485 in civil money penalties against state member banks to address violations of the flood regulations. These statutorily mandated penalties were forwarded to the National Flood Mitigation Fund held by the Department of the Treasury for the benefit of the Federal Emergency Management Agency.

The Board and four other federal agencies issued a proposal in November 2016 to implement provisions relating to lenders' acceptance of private flood insurance policies, as stipulated under the Biggert-Waters Flood Insurance Reform Act of 2012 (see "Consumer Laws and Regulations" later in this section).

Community Reinvestment Act

The CRA requires that the Federal Reserve and other federal banking and thrift regulatory agencies encourage financial institutions to help meet the credit needs of the local communities in which they do business, consistent with safe and sound operations. To carry out this mandate, the Federal Reserve

- examines state member banks to assess their performance under the CRA;
- considers state member banks' and bank holding companies' CRA performance in context with other supervisory information when analyzing applications for mergers and acquisitions; and
- disseminates information about community development techniques to bankers and the public through Community Development offices at the Reserve Banks.

The Federal Reserve assesses and rates the CRA performance of state member banks in the course of examinations conducted by staff at the 12 Reserve Banks. During the 2016 reporting period, the Reserve Banks completed 206 CRA examinations of state member banks. Of those banks examined, 12 were rated "Outstanding," 188 were rated "Satisfactory," 6 were rated "Needs to Improve," and none were rated "Substantial Non-Compliance."

During the 2016 review period, the Board, the Federal Deposit Insurance Corporation (FDIC), and the Office of the Comptroller of the Currency (OCC) published in the Federal Register "Interagency Questions and Answers Regarding Community Reinvestment" (Q&As) in July 2016.[11] The document provides additional guidance to financial institutions and the public on the agencies' CRA regulations. The revisions to the Q&As primarily consist of nine revisions to existing Q&As and seven newly added Q&As dealing with community development-related issues, the availability and effectiveness of retail banking services, innovative or flexible lending practices, and other definitional issues.

Mergers and Acquisitions

The Federal Reserve analyzes expansionary applications by banks or BHCs, taking into account the likely effects of the acquisition on competition, the convenience and needs of the communities to be served, the financial and managerial resources and future prospects of the companies and banks involved, and the effectiveness of the company's policies to combat money laundering. As part of this process, DCCA evaluates whether the institutions are currently meeting the convenience and needs of their communities and the effectiveness of existing managerial resources, as well as the institutions' ability to meet the convenience and needs of their communities and the adequacy of their managerial resources after the proposed transaction.

The depository institution's CRA record is a critical component of this analysis. The CRA requires the Federal Reserve to consider a depository institution's record of helping to meet the credit needs of its local communities in evaluating applications for mergers, acquisitions, and branches. An institution's most recent CRA performance evaluation is a particularly important, and often controlling, consideration in the applications process because it represents a detailed on-site evaluation of the institution's performance under the CRA by its federal supervisor.

As part of the analysis of managerial resources, the Federal Reserve reviews the institution's record of compliance with consumer protection laws and regulations. The institution's most recent consumer compliance rating is central to this review because, like the CRA performance evaluation, it represents the detailed findings of the institution's supervisory agency.

Less-than-satisfactory CRA or consumer compliance ratings or other significant consumer compliance issues can pose an impediment to the processing and

[11] See www.federalreserve.gov/newsevents/press/bcreg/20160715a.htm.

approval of the application. Federal Reserve staff gather additional information about CRA and consumer compliance performance in many circumstances, such as when the financial institution(s) involved in an application have less-than-satisfactory CRA or compliance ratings or recently identified consumer compliance issues, or when the Federal Reserve receives comments from interested parties that raise CRA or consumer compliance issues. To further enhance transparency about this process, the Board issued guidance to the public in 2014 describing the Federal Reserve's approach to applications and notices, highlighting those that may not satisfy statutory requirements for approval of a proposal or that otherwise raise supervisory or regulatory concerns.[12]

The Board provides information on its actions associated with these merger and acquisition transactions, issuing press releases and Board Orders for each.[13] The Federal Reserve also publishes semiannual reports that provide pertinent information on applications and notices filed with the Federal Reserve.[14] The reports include statistics on the number of proposals that had been approved, denied, and withdrawn as well as general information about the length of time taken to process proposals. Additionally, the reports discuss common reasons that proposals have been withdrawn from consideration.

Because these applications are of interest to the public, they often generate comments that raise various issues for Board staff to consider in their analyses of the supervisory and lending records of the applicants. With respect to consumer compliance and community reinvestment, one of the more common allegations is that either or both the target and the acquirer fail to make credit available to certain minority groups and to LMI individuals. Commenters also often express concerns about branch closures or the banks' record of lending to small businesses in LMI geographies.

In evaluating the applications and the merits of public comments, the Board considers information provided by applicants and analyzes supervisory information, including examination reports with evaluations of compliance with fair lending and other consumer protection laws and regulations, and confers with other regulators, as appropriate, for their supervisory views. If warranted, the Federal Reserve will also conduct pre-membership exams for a transaction in which an insured depository institution will become a state member bank or in which the surviving entity of a merger would be a state member bank.[15]

During 2016, the Board considered over 100 applications, with topics ranging from change in control notices, to branching requests, to mergers and acquisitions. DCCA staff analyzed the following 14 unrelated notices and applications for transactions involving bank mergers and branching that involved adverse public comments on CRA issues or consumer compliance issues, such as fair lending, which the Board considered and approved:[16]

- Frost Bank, San Antonio, Texas, to establish branches at 314 South WW White Road, San Antonio, and 2421 East Seventh Street, Austin, Texas, was approved in March.
- Goldman Sachs Bank USA, New York, New York, to assume certain deposits of, and acquire certain assets from, GE Capital Bank, Holladay, Utah, was approved in March.
- Republic Bancorp, Inc., Louisville, Kentucky, to merge with Cornerstone Bancorp, Inc., and thereby indirectly acquire Cornerstone Community Bank, both of St. Petersburg, Florida, was approved in May.
- Origin Bank, Choudrant, Louisiana, to establish a branch at 2049 West Gray Street, Houston, Texas, and a mobile branch in Harris County, Texas, was approved in May.
- BNC Bancorp, High Point, North Carolina, to acquire Southcoast Financial Corporation and thereby indirectly acquire Southcoast Community Bank, both of Mt. Pleasant, South Carolina, was approved in June.
- Compass Bank, Birmingham, Alabama, to establish a branch at 5900 Quebec Street, Fort Worth, Texas, was approved in June.

[12] For more information, see www.federalreserve.gov/bankinforeg/srletters/sr1402.htm.

[13] To access the Board's Orders on Banking Applications, see www.federalreserve.gov/newsevents/press/orders/2016orders.htm.

[14] For these reports, see www.federalreserve.gov/bankinforeg/semiannual-reports-banking-applications-activity.htm.

[15] In October 2015, the Federal Reserve issued guidance providing further explanation on its criteria for waiving or conducting such pre-merger or pre-membership examinations. For more information, see www.federalreserve.gov/bankinforeg/srletters/SR1511.htm.

[16] Related notices and applications for which a single Board Order was issued were counted as a single notice or application in this total.

- Bank of the Ozarks, Inc., Little Rock, Arkansas, to merge with Community & Southern Holdings, Inc., and thereby indirectly acquire Community & Southern Bank, both of Atlanta, Georgia, was approved in June.
- KeyCorp, Cleveland, Ohio, to acquire First Niagara Financial Group, Inc., and thereby indirectly acquire First Niagara Bank, National Association, both of Buffalo, New York, was approved in July.
- Huntington Bancshares Incorporated, Columbus, Ohio, to merge with FirstMerit Corporation and thereby indirectly acquire its wholly owned subsidiary, FirstMerit Bank, N.A., both of Akron, Ohio, was approved in July.
- Chemical Financial Corporation, Midland, Michigan, to merge with Talmer Bancorp, Inc., and thereby indirectly acquire Talmer Bank and Trust ("Talmer Bank"), both of Troy, Michigan; and Chemical Bank, Midland, Michigan, to merge with Talmer Bank and to establish and operate branches at the locations of Talmer Bank's main office and branches, were approved in August.
- BNC Bancorp to merge with High Point Bank Corporation and thereby indirectly acquire High Point Bank and Trust Company, all of High Point, North Carolina, was approved in October.
- Wintrust Financial Corporation, Rosemont, Illinois, to merge with First Community Financial Corporation and thereby indirectly acquire First Community Bank, both of Elgin, Illinois; and St. Charles Bank & Trust Company, St. Charles, Illinois, to merge with First Community Bank and to establish and operate a branch at the main office and at a branch of First Community Bank, were approved in October.
- First Midwest Bancorp, Inc., Itasca, Illinois, to merge with Standard Bancshares, Inc. and thereby indirectly acquire Standard Bank and Trust Company ("SB&T"), both of Hickory Hills, Illinois; and First Midwest Bank, Itasca, Illinois, to merge with SB&T and to establish and operate branches at the locations of SB&T's main office and branches, were approved in November.
- BOK Financial Corporation, Tulsa, Oklahoma, to acquire MBT Bancshares, Inc., and thereby indirectly acquire Missouri Bank and Trust Company of Kansas City, both of Kansas City, Missouri, was approved in November.

Coordination with the Consumer Financial Protection Bureau

During 2016, staff continued to coordinate on supervisory matters with the CFPB in accordance with the Interagency Memorandum of Understanding on Supervision Coordination with the CFPB. The agreement is intended to establish arrangements for coordination and cooperation among the CFPB and the OCC, the FDIC, the National Credit Union Association (NCUA), and the Board of Governors. The agreement strives to minimize unnecessary regulatory burden and to avoid unnecessary duplication of effort and conflicting supervisory directives amongst the prudential regulators. The regulators work cooperatively to share exam schedules for covered institutions and covered activities to plan simultaneous exams, provide final drafts of examination reports for comment, and share supervisory information.

Coordination with Other Federal Banking Agencies

The Board regularly coordinates with other federal banking agencies, including through the development of interagency guidance, in order to clearly communicate supervisory expectations. The Federal Reserve also works with the other member agencies of the Federal Financial Institutions Examination Council (FFIEC) to develop consistent examination principles, standards, procedures, and report formats.[17] In 2016, the banking agencies continued to work together on various initiatives.

Updating Examination Procedures

In April, the FFIEC developed examination procedures reflecting a July 2015 interagency rulemaking addressing force placement of flood insurance, escrow of flood insurance premiums and fees, and the exemption to the mandatory purchase of flood insurance requirement for certain detached structures.

In June, the FFIEC developed revised interagency examination procedures for Regulation P. The revised examination procedures incorporate amendments made by section 75001 of the Fixing America's Surface Transportation Act (FAST Act) to section 503 of the Gramm-Leach-Bliley Act (GLBA). GLBA section 503, which is implemented by Regulation P, generally requires a financial institution to provide annual notice to its customers of its policies and practices with respect to disclosing and protecting

[17] For more information, see www.ffiec.gov.

nonpublic personal information. Section 75001 of the FAST Act was effective upon enactment on December 4, 2015, and establishes an exception to this annual privacy notice requirement.

In September, the FFIEC also developed revised interagency examination procedures for the Military Lending Act (MLA). The revised procedures reflect amendments to the MLA implementing regulation made by the U.S. Department of Defense (DOD) in a final rule issued in July 2015. Among a range of other amendments, the DOD amended the regulation to extend the protections of the MLA to a wider range of closed-end and open-end credit products, including credit cards.

Coordinating Transfer of Regulation C (HMDA) Data Operations

Also in 2016, the FFIEC continued to implement its plan for the transfer of Regulation C (Home Mortgage Disclosure Act (HMDA)) data operations to the CFPB in January 2018. The Board will administer and maintain the current HMDA data operations system and continue to collect and process HMDA data through December 2017.

Uniform Interagency Consumer Compliance Ratings System

In November 2016, the FFIEC announced the issuance of an updated Uniform Interagency Consumer Compliance Rating System (CC Rating System).[18] The CC Rating System is a supervisory policy for evaluating financial institutions' adherence to consumer compliance requirements. The CC Rating System provides a general framework for assessing risks during the supervisory process using certain compliance factors and assigning an overall consumer compliance rating to each federally regulated financial institution. The primary purpose of the CC Rating System is to ensure that regulated financial institutions are evaluated in a comprehensive and consistent manner, and that supervisory resources are appropriately focused on areas exhibiting risk of consumer harm and on institutions that warrant elevated supervisory attention. The new CC Rating System is designed to better reflect current consumer compliance supervisory approaches and to more fully align the CC Rating System with current risk-based, tailored examination processes. The revisions to the CC Rating System were not developed to set new or higher supervisory expectations for financial institutions and their adoption will represent no additional regulatory burden. For more on the new system, see box 1.

[18] For more information, see www.federalreserve.gov/bankinforeg/caletters/caltr1608.htm.

Guidance on Deposit Reconciliation Practices

In May, the Board, CFPB, FDIC, NCUA, and OCC issued guidance to explain the agencies' supervisory expectations regarding institutions' account deposit reconciliation practices. Among other things, the guidance highlights the requirement in the Expedited Funds Availability Act, as implemented by Regulation CC, 12 CFR part 229, that financial institutions make funds that have been deposited in a transaction account available for withdrawal within prescribed time limits, as well as the FTC Act's prohibition against unfair or deceptive acts or practices.

Examiner Training

Ensuring that financial institutions comply with laws that protect consumers and encourage community reinvestment is a fundamental aspect of the bank examination and supervision process. As the complexity of both consumer financial transactions and the regulatory landscape has increased, timely and responsive training for consumer compliance examiners is vitally important. The examiner staff development function is responsible for the ongoing development of the professional consumer compliance supervisory staff, from an initial introduction to the Federal Reserve System through the development of proficiency in consumer compliance topics sufficient to earn an examiner's commission. DCCA's role is to ensure that examiners have the skills necessary to meet their supervisory responsibilities now and in the future.

Consumer Compliance Examiner Training Curriculum

Currently, the consumer compliance examiner training curriculum consists of five courses focused on consumer protection laws, regulations, and examining concepts. In 2016, these courses were offered in 10 sessions, and training was delivered to a total of 198 Federal Reserve consumer compliance examiners and staff members and 7 state banking agency examiners. These courses are principally conducted by traditional classroom method. Board and Reserve Bank staff regularly review the core curriculum for examiner training, updating subject matter and adding new elements as appropriate.

Throughout 2016, DCCA continued its partnership with Reserve Bank personnel to design and develop a modernized consumer compliance examiner training

Box 1. New Rating System Enhances Consumer Compliance Supervision

In November 2016, the Federal Financial Institutions Examination Council (FFIEC) issued its updated Uniform Interagency Consumer Compliance Rating System (CC Rating System).[1] The revisions in this rating system reflect the regulatory, examination, technological, and market changes that have occurred since the release of the original rating system in 1980. It is important to note that the CC Rating System does not set new or higher supervisory expectations for financial institutions or create more burden, but rather provides a consumer compliance rating scheme that more fully complements a risk-focused examination approach.

The FFIEC member agencies promote compliance with federal consumer protection laws and regulations through their supervisory and outreach programs. These agencies conduct regular consumer compliance examinations to assess the effectiveness of a financial institution's compliance with these requirements. The CC Rating System provides examiners with the mechanism for conveying conclusions regarding the effectiveness of an institution's compliance management system (CMS) to identify and manage compliance risk in the institution's products and services and to prevent violations of law and consumer harm.

A valuable aspect of the CC Rating System is that it provides a framework for assessing risks identified in the supervisory process to ensure that regulated financial institutions are evaluated in a comprehensive and consistent manner. It also helps to focus the agencies' supervisory resources on areas of risk of consumer harm and on institutions that warrant elevated supervisory attention.

[1] See 81 Fed. Reg. 79,473, November 14, 2016, www.federalregister.gov/documents/2016/11/14/2016-27226/uniform-interagency-consumer-compliance-rating-system.

Principles of the Interagency CC Rating System

A key advancement of the new CC Rating System is its focus on the effectiveness of a financial institution's CMS, rather than primarily on technical regulatory compliance. With the increasing complexity of consumer financial services, a strong and responsive CMS is vitally import to ensure ongoing adherence to consumer protection laws and regulations and to prevent consumer harm. With this priority in mind, the agencies developed the following foundational principles of the CC Rating System.

- **Risk-based**: Recognize and communicate clearly that CMS vary based on the size, complexity, and risk profile of supervised institutions.
- **Transparent**: Provide clear distinctions between rating categories to support consistent application by the agencies across supervised institutions. Reflect the scope of the review that formed the basis of the overall rating.
- **Actionable**: Identify areas of strength and direct appropriate attention to specific areas of weakness, reflecting a risk-based supervisory approach. Convey examiners' assessment of the effectiveness of an institution's CMS, including its ability to prevent consumer harm and ensure compliance with consumer protection laws and regulations.
- **Incentivizes compliance**: Incent the institution to establish an effective consumer compliance system across the institution and to identify and address issues promptly, including self-identification and correction of consumer compliance weaknesses. Reflect the potential impact of any consumer harm identified in examination findings.

The updated rating system will be applied to consumer compliance examinations that begin on or after March 31, 2017.

program. Modeled after existing programs in Division of Supervision & Regulation, the modernization effort was launched in 2015 with the assembly of a development team of dedicated examiners and instructional design experts. A multiyear effort slated for completion in late 2020, the goal of the modernization is to transition from traditional classroom-based training to virtual, self-directed, and blended delivery methods, designed by experts in adult learning and directed by System subject-matter experts, with additional oversight direction provided by Board staff. Thus far, the modernization teams have completed their analyses of the examination tasks to be captured, as well as the formulation of design documents. They are now involved in the development of storyboards, which serve as the curriculum narrative. As the modernization is fully implemented over the next three calendar years, continuing professional development and on-the-job training will be incorporated into the program.

Ongoing Training Opportunities

In addition to providing core examiner training, the examiner staff development function emphasizes the importance of continuing, lifelong learning. Opportunities for continuing learning include special proj-

ects and assignments, self-study programs, rotational assignments, the opportunity to instruct at System schools, mentoring programs, and a consumer compliance examiner forum held every 18 months where senior consumer compliance examiners receive information on emerging compliance issues and are able to share best practices from across the System. To accommodate those individuals unable to attend the forum in-person, a live-stream option was also added.

In 2016, the System continued to offer Rapid Response sessions. Introduced in 2008, Rapid Response sessions offer examiners one-hour teleconference webinars on emerging issues or urgent training needs that result from the implementation of new laws, regulations or supervisory guidance as well as case studies. Eight consumer compliance Rapid Response sessions were designed, developed, and presented to System staff during 2016. The topics covered the following:

- Fair Lending
  —Fair Lending Tool 6.0: Portfolio Analysis
  —2015 Year-End Review
  —Risk Assessment: Overview
  —Risk Assessment: Mortgage Pricing
  —Risk Assessment: Redlining
- Risk Focused Supervision Program Horizontal Review
- Consumer Complaints
- Community Reinvestment – Interagency Q&A

Outreach and Training to Agency and Industry Stakeholders

During 2016, the Federal Reserve System collaborated with its supervisory agency partners to offer seven Outlook Live and FFIEC Examiner Exchange webinars focused on delivering timely, relevant compliance information to the banking industry as well as to experienced examiners and other regulatory personnel. In 2016, Outlook Live webinars addressed the following topics:

- Community Reinvestment-Related Issues (February and November)
- "Know Before You Owe" Mortgage Disclosure Rule – Lessons Learned Post-Implementation (March and April)
- Interagency Fair Lending Hot Topics (October)
- Interagency Discussion of Overdraft Services (November)
- Military Lending Act Compliance (December)

Responding to Consumer Complaints and Inquiries

The Federal Reserve investigates complaints against state member banks and selected nonbank subsidiaries of BHCs (Federal Reserve regulated entities), and forwards complaints against other creditors and businesses to the appropriate enforcement agency. Each Reserve Bank investigates complaints against Federal Reserve regulated entities in its District. The Federal Reserve also responds to consumer inquiries on a broad range of banking topics, including consumer protection questions.

In late 2007, the Federal Reserve established Federal Reserve Consumer Help (FRCH) to centralize the processing of consumer complaints and inquiries. In 2016, FRCH processed 34,350 cases. Of these cases, 24,724 were inquiries and the remainder (9,626) were complaints, with most cases received directly from consumers. Approximately 7 percent of cases were referred to the Federal Reserve from other federal and state agencies.

While consumers can contact FRCH by a variety of different channels, most FRCH consumer contacts occurred by telephone (66 percent). Nevertheless, 31 percent (10,762) of complaint and inquiry submissions were made electronically (via e-mail, online submissions, and fax), and the online form page received 20,355 visits during the year.

Consumer Complaints

Complaints against Federal Reserve regulated entities totaled 2,805 in 2016. Approximately 5 percent (134) of these complaints were closed without investigation, pending the receipt of additional information from consumers. Nine percent of the total complaints were still under investigation in December 2016. Sixty-two percent (1,750) involved unregulated practices and 22 percent (621) involved regulated practices. (Table 1 shows the breakdown of complaints about regulated practices by regulation or act; table 2 shows complaints by product type.)

Complaints about Regulated Practices

The majority of regulated practices complaints concerned checking accounts (27.7 percent), credit card

Table 1. Complaints against state member banks and selected nonbank subsidiaries of bank holding companies about regulated practices, by regulation/act, 2016

Regulation/act	Number
Regulation AA (Unfair or Deceptive Acts or Practices)	26
Regulation B (Equal Credit Opportunity)	24
Regulation BB (Community Reinvestment)	1
Regulation C (Home Mortgage Disclosure Act)	1
Regulation CC (Expedited Funds Availability)	71
Regulation D (Reserve Requirements)	2
Regulation DD (Truth in Savings)	55
Regulation E (Electronic Funds Transfers)	99
Regulation H (National Flood Insurance Act/Insurance Sales)	5
Regulation P (Privacy of Consumer Financial Information)	23
Regulation V (Fair and Accurate Credit Transactions)	60
Regulation Z (Truth in Lending)	115
Check21	1
Garnishment Rule	3
Fair Credit Reporting Act	71
Fair Debt Collection Practices Act	20
Fair Housing Act	9
HOPA (Homeowners Protection Act)	2
Real Estate Settlement Procedures Act	31
Servicemembers Civil Relief Act (SCRA)	2
Total	**621**

accounts (27.1 percent), and real estate (10.6 percent).[19] The most common checking account complaints related to funds availability not as expected (33 percent), insufficient funds/overdraft charges and procedures (16 percent), disputed withdrawal of funds (12 percent), and alleged forgery/fraud/embezzlement/theft (6 percent). The most common credit card complaints related to inaccurate credit reporting (32 percent), billing error resolution (12 percent), account opening or closing (11 percent), and payment errors/delays (11 percent). The most common real estate complaints by problem code related to debt collection/foreclosure concerns (15 percent), escrow problems (14 percent), payment errors/delays (12 percent), and disputed rates, terms, and fees (9 percent).

Eleven regulated practices complaints alleging discrimination based on prohibited borrower traits or rights were received in 2016. Seven discrimination complaints were related to the race, color, national origin, or ethnicity of the applicant or borrower. Four discrimination complaints were related to either the age, handicap, familial status, or religion of the applicant or borrower. Of the closed complaints alleging discrimination based on a prohibited basis in 2016, there was one violation related to illegal credit discrimination.

In 83 percent of investigated complaints against Federal Reserve regulated entities, evidence revealed that institutions correctly handled the situation. Of the remaining 17 percent of investigated complaints, 7 percent were identified errors which were corrected by the bank, 6 percent were deemed violations of law, and the remainder included matters involving litigation or factual disputes, withdrawn complaints, internally referred complaints, or information was provided to the consumer.

Complaints about Unregulated Practices

The Board continued to monitor complaints about banking practices not subject to existing regulations. For example, a consumer complaint about poor service received at a bank is not subject to a regulation, and therefore is considered a complaint about an unregulated practice. In 2016, the Board received

[19] Real estate loans include adjustable-rate mortgages, residential construction loans, open-end home equity lines of credit, home improvement loans, home purchase loans, home refinance/closed-end loans, and reverse mortgages.

Table 2. Complaints against state member banks and selected nonbank subsidiaries of bank holding companies about regulated practices, by product type, 2016

Subject of complaint/product type	All complaints		Complaints involving violations	
	Number	Percent	Number	Percent
Total	**621**	**100.00**	**38**	**6.1**
Discrimination alleged				
Real estate loans	6	1.0	0	0.0
Credit Cards	3	0.4	1	0.1
Other loans	2	0.3	0	0.0
Nondiscrimination complaints				
Checking accounts	172	27.7	19	3.1
Real estate loans	66	10.6	9	1.5
Credit cards	168	27.1	4	0.6
Other	204	32.9	5	0.8

1,750 complaints against Federal Reserve regulated entities that involved these unregulated practices. The majority of the complaints were related to electronic transactions/prepaid products (44 percent), credit cards (24 percent), checking account activity (11 percent), and real estate loans (5 percent).

Complaint Referrals

In 2016, the Federal Reserve forwarded 6,868 complaints to other regulatory agencies and government offices for investigation. To minimize the time required to re-route complaints to these agencies, referrals were transmitted electronically.

The Federal Reserve forwarded 15 complaints to the Department of Housing and Urban Development (HUD) that alleged violations of the Fair Housing Act[20] and were closed in 2016. The Federal Reserve's investigation of these complaints revealed no instances of illegal credit discrimination.

Consumer Inquiries

The Federal Reserve received 24,724 consumer inquiries in 2016 covering a wide range of topics. Consumers were typically directed to other resources, including other federal agencies or written materials, to address their inquiries.

Consumer Laws and Regulations

Throughout 2016, DCCA continued to administer the Board's regulatory responsibilities with respect to certain entities and specific statutory provisions of the consumer financial services and fair lending laws. This included drafting regulations and issuing interpretations and compliance guidance for the industry and the Reserve Banks.

Flood Insurance Proposal

In November 2016, the Board, along with the Farm Credit Administration, the FDIC, the NCUA, and the OCC jointly issued a proposed rule to amend regulations applicable to loans secured by improved real estate or mobile homes located in special flood hazard areas.[21] Regulated lending institutions must ensure that flood insurance is purchased for such loans, consistent with the requirements of the National Flood Insurance Act. The November 2016 proposal would implement provisions of the Biggert-Waters Flood Insurance Reform Act of 2012 (Biggert-Waters Act) relating to lenders' acceptance of private flood insurance policies.

Consistent with the Biggert-Waters Act, the proposal would require regulated lending institutions to accept private flood insurance policies that meet the criteria set forth in the statute (mandatory acceptance). The proposal also would establish a compliance aid to help regulated lending institutions determine which private insurance policies they would be required to accept under the mandatory acceptance provision.

Under the proposal, regulated lending institutions would retain the ability to accept, at their discretion, other flood insurance policies issued by private insurers (discretionary acceptance), provided the policies meet a subset of the criteria for mandatory acceptance as specified in the rules. Regulated lending institutions would also be permitted under the proposal to accept policies issued by mutual aid societies, which typically do not meet all of the discretionary acceptance criteria, if, among other things, the appropriate supervisory agency determines that the policy qualifies as flood insurance for purposes of the Federal flood insurance statutes.

Threshold Adjustment Calculation

In November 2016, the Board and the CFPB issued final revisions to Official Staff Interpretations detailing the method for calculating annual inflation adjustments to the dollar thresholds for exempting certain consumer credit transactions under the Truth in Lending Act and certain consumer leasing transactions under the Consumer Leasing Act.[22] Similarly, the Board, the CFPB, and the OCC issued final revisions to Official Staff Interpretations detailing the method for calculating annual inflation adjustments to the dollar threshold for exempting small loans from special appraisal requirements.[23]

The revised Official Staff Interpretations provide that the existing dollar thresholds will remain unchanged if the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) decreases or stays the same. The revised Official Staff Interpretations also explain the method for making adjustments in years

[20] A memorandum of understanding between HUD and the federal bank regulatory agencies requires that complaints alleging a violation of the Fair Housing Act be forwarded to HUD.

[21] For more information, see www.federalreserve.gov/newsevents/press/bcreg/20161031a.htm.

[22] For more information, see www.federalreserve.gov/newsevents/press/bcreg/20161123b.htm.

[23] For more information, see www.federalreserve.gov/newsevents/press/bcreg/20161123c.htm.

following a year in which the exemption threshold was not adjusted because the CPI-W did not increase from the previous year. In that case, the annual percentage increase in the CPI-W will not be added to the existing dollar threshold (which was unchanged as a result of the decrease in the CPI-W). Instead, the dollar threshold will be calculated by applying the annual percentage increase in the CPI-W to the dollar amount that would have resulted if the decreases and any subsequent increases in the CPI-W had been taken into account. This calculation method ensures that the thresholds keep pace with the CPI-W.

Consumer Research and Emerging-Issues and Policy Analysis

Throughout 2016, DCCA analyzed emerging issues in consumer financial services policies and practices in order to understand their implications for the market-risk surveillance and supervisory policies that are core to the Federal Reserve's functions, as well as to gain insight into consumer financial decisionmaking.

Researching Issues Affecting Consumers and Communities

In 2016, DCCA explored various issues related to consumers and communities by convening experts, conducting original research, and fielding new and ongoing surveys. The information gleaned from these undertakings provided insights into the factors affecting consumers and households.

Household Economics and Decisionmaking

In order to better understand consumer decisionmaking in the rapidly evolving financial services sector, DCCA periodically conducts Internet panel surveys to gather data on consumers' experiences and perspectives on various issues of interest.

Results of DCCA's Survey of Household Economics and Decisionmaking (SHED) were published in the *Report on the Economic Well-Being of U.S. Households in 2015*, released in May 2016. DCCA launched the survey to better understand consumer decisionmaking in the wake of the Great Recession, with the aim to capture a snapshot of the financial and economic well-being of U.S. households. In doing so, the SHED collects information on households that is not readily available from other sources or is not available in combination with other variables of interest. It also oversamples LMI households in order to obtain additional precision regarding findings among these populations.

Among its key findings, the survey found that overall in 2015, individuals and their families continued to express mild improvements in their overall well-being relative to that seen in 2013 and 2014. However, a number of adults still said they were experiencing financial challenges, and optimism about the future tempered in 2015. Sixty-nine percent of adults reported that they were either "living comfortably" or "doing okay," compared to 65 percent in 2014 and 62 percent in 2013. However approximately 76 million adults in 2015 were either "struggling to get by" or are "just getting by."

The survey also asked respondents about specific aspects of their financial lives, including the following areas:

- income and savings
- economic preparedness
- banking and credit
- housing and living arrangements
- car purchasing and auto lending
- education and human capital
- education debt and student loans
- retirement

For a fuller discussion of survey results, see the report at www.federalreserve.gov/2015-report-economic-well-being-us-households-201605.pdf.

Emerging-Issues Analysis

The Policy Analysis function of DCCA provides key insights, information, and analysis on emerging financial services issues that affect the well-being of consumers and communities. To this end, Policy Analysis staff analyze and anticipate trends, lead division-wide issues working groups, and organize expert roundtables to identify emerging consumer risks and inform policy recommendations.

In 2016, the Policy Analysis team developed analyses on a broad range of issues in financial service markets that potentially pose risks to consumers. Among the priority issue areas were subprime auto lending, small-dollar lending, bank and alternative-lender provision of small business credit, and disparities in households' income and wealth by race. In addition,

the team conducted a suite of activities focused on trends in student lending.

Student Lending

Lifetime returns on investments in higher education are generally positive and substantial, but depend largely upon the institution the student attends, their field of study, and whether they graduate. The financing of higher education poses a daunting challenge for many students. While counseling can help students make the financial and educational choices that are best for them, many students lack access to quality financial advice. To gain a general understanding of how financial aid counselors work with students and how students make decisions about paying for their education, especially with student loans, the Policy Analysis team, in partnership with the National Association of Student Financial Aid Administrators (NASFAA) and the Texas Guaranteed Student Loan Corporation, conducted focus group research with several financial aid administrator members of NASFAA.

A Board report, *Student Loan Counseling Challenges and Opportunities*, was released in November.[24] Among the findings, participants noted that resource, administrative, regulatory, and legal constraints limit their ability to provide effective counseling to students. The counselors also indicated that offering general financial education to students in primary and secondary grades could help make financial aid counseling at the college level more effective.

The Policy Analysis team also hosted a public conference on the theme of the financial risks of pursuing postsecondary education, featuring researchers and university administrators from across the country. Presenters noted that certain groups—including students of color and those that do not complete their degrees—are at higher risk of low or negative returns to their investments in postsecondary education. Participants also offered proposals that they believe would reduce these risks. These include government-matched savings accounts for children, income-share agreements, and deferred tuition models. Researchers also described ongoing experiments that explore how insights from behavioral economics can be leveraged to empower students to make informed financial decisions. The networks and information generated from this conference will help inform the Board's ongoing monitoring of the student loan market.

[24] See www.federalreserve.gov/communitydev/files/student-loan-counseling-challenges-and-opportunities-2016.pdf.

Community Development

The Federal Reserve System's Community Development function promotes economic growth and financial stability—particularly for underserved households and communities—by informing research, policy, and action. As a decentralized function, the Community Affairs Officers at each of the 12 Reserve Banks design activities to respond to the specific needs of the communities they serve, with oversight from Board staff to promote and coordinate Systemwide priorities.

Exploring Economic Vitality of Rural Communities and Housing Markets

The Federal Reserve's mission is to promote a healthy economy and strong financial system. The financial crisis and the Great Recession demonstrated, in an unmistakable manner, the vulnerability of a significant portion of American families and communities. Clearly, those who struggled before the crisis—those with insufficient education, incomes, and assets—were disproportionately affected. Similarly, a protracted and uneven recovery meant that these families and communities did not share equally in the economic gains. This is particularly true for rural areas such as the Mississippi Delta, Appalachia, colonias,[25] and native communities that face challenges associated with persistent, generational poverty.

In response, Community Development staff at the Federal Reserve hosted "The Future of Rural Communities: Implications for Housing," a national policy forum in partnership with the U.S. Department of Agriculture's Rural Development. Forum participants explored changing demographic and economic trends that exacerbate the misalignment of existing housing and community development policy in rural communities as well as promising models for addressing community needs resulting from collaboration between policymakers and practitioners. Given the lack of data on rural consumers and housing markets—particularly as to how their characteristics and needs differ from urban America—the forum surfaced unanswered research and policy questions

[25] *Colonias* are residential areas, typically found in U.S. states bordering Mexico, that lack some of the most basic living necessities such as potable water, septic or sewer systems, electricity, paved roads or safe and sanitary housing. Most colonias do not have formal local government and the services that local government provides. See also www.dallasfed.org/~/media/microsites/cd/colonias/index.html.

that could contribute to developing evidence-based solutions for improving access to credit and financial stability in rural America.

Community Development staff will continue to convene national thought leaders to frame future research and policy considerations that would facilitate the flow of capital and economic investment in rural communities in 2017.

Informing the Board on the Evolving Financial Services Marketplace

In 2016, the Federal Reserve undertook efforts to better understand the intersections of banking and emerging financial technology (fintech) including marketplace lending to consumers and small businesses. Marketplace lenders have demonstrated the potential to increase the access to credit and financial services by providing more efficient ways for borrowers to find, apply for, and secure financing. The growth in the fintech sector naturally raises questions about the risks that marketplace lenders present to consumers and small businesses. In response, the DCCA held a roundtable discussion with a broad range of industry experts to explore the evolving landscape of marketplace lending; the changing financial behavior of borrowers, particularly of traditionally underserved households; and the evolving role of traditional financial institutions and nonbank partners. Moving forward, DCCA will continue to assess supervisory policies that can foster financial innovation while still protecting borrowers, and analyze the impact of new business models and the competitive landscape on financial institutions and consumers.

Exploring Experiences and Expectations in the Labor Market

Many individuals (entrant, current, and former workers) search for ways to earn supplemental or self-employment incomes and stop-gap measures to generate income to make ends meet. The Federal Reserve seeks to better understand the experiences and expectations of these individuals in order to identify potential implications for the labor market. In 2016, Community Development staff published the findings from a survey that examined the extent to which individuals are increasingly acting as their own agents of employment rather than as employees of a particular firm to supplement or supplant income. See box 2 for more details. In addition, staff published a report on findings from the Survey of Young Workers, which examined the perceptions and experiences of adults ages 18 to 30 in the labor market.[26] That survey attempted to better understand the connection between educational choices and employment opportunities.

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[26] The report is available at www.federalreserve.gov/econresdata/2015-experiences-and-perspectives-of-young-workers-201612.pdf.

Box 2. The “Gig” Economy: The Who and Why of Alternative Work Arrangements for Income

The prevalence of alternative work arrangements has grown rapidly as the evolution of digital platforms has transformed local and global markets. While traditional (offline) informal paid work has always been a part of the labor sector, the rise of online-enabled paid work activities requires new approaches to measure this growing trend. Economists and community development professionals in the Division of Consumer and Community Affairs (DCCA) conducted the Enterprising and Informal Work Activity (EIWA) survey in late 2015 to explore why individuals undertake alternative work arrangements. Survey questions aimed to capture participant motivations and attitudes toward informal offline and online paid work activities.

The EIWA survey was given to a nationally representative pool of adults ages 18 and older to track online and offline income-generating activities as well as their employment status during the previous six months. With analysis of the survey data conducted in the first half of 2016, the survey results were published in the November 2016 FEDS working paper, “Exploring Online and Offline Informal Work: Findings from the Enterprising and Informal Work Activities (EIWA) Survey” (available at www.federalreserve.gov/econresdata/feds/2016/files/2016089pap.pdf).

The results showed that 36 percent of the adult U.S. population participates in offline and online informal paid work activities. Among this group, termed “E&I qualified respondents,” participation in E&I work varies by demographic characteristics, such as income, sex, education, region, and race and ethnicity. The survey results revealed that a higher percentage of women (56 percent) than men (44 percent) participate in the informal paid workspace. Results also showed that E&I qualified respondents were concentrated in the South and West, and over 60 percent had attended college (30 percent had some college and 31 percent had a bachelor’s degree or higher). And E&I qualified respondents who are traditionally assumed to be non-working participate in online and offline informal paid work activities to varying degrees—for example, students (7 percent), retirees (12 percent), and homemakers (8 percent). Perhaps most relevant to policy exploration is that the main reason 65 percent of the E&I qualified survey respondents are engaged in online and offline informal paid work is to *earn extra money* for themselves, either as their main income source (26 percent) or as a means to supplement current employment wages/retirement income (29 percent) and to help their extended families (10 percent). Further, 25 percent of respondents reported that income from informal paid work activities is “very much” and “somewhat” a regular/consistent source of their monthly income.

As DCCA considers how to build on the first EIWA survey, it’s clear that another area of alternative work arrangements that requires thoughtful study is the digital literacy requirement that lowers the barriers to entry in new digital infrastructures while minimizing transactions costs (such as managing work schedules and tasks) and maximizing convenience and time-at-task. In addition, as technology-driven work modes become more commonplace, the divide between urban and rural/isolated locales as well as class/income inequality considerations may grow. Differences in digital channels as well as infrastructure affordability, access, and quality variation across geographical regions require further study and policy prescriptions.

6 Federal Reserve Banks

The Federal Reserve Banks provide payment services to depository and certain other institutions, distribute the nation's currency and coin to depository institutions, and serve as fiscal agents and depositories for the U.S. government and other entities. The Reserve Banks also contribute to setting national monetary policy and supervision of banks and other financial entities operating in the United States (discussed in sections 2 through 4 of this annual report).

Federal Reserve Priced Services

Reserve Banks provide a range of payment and related services to depository and certain other institutions; these "priced services" include collecting checks, operating an automated clearinghouse (ACH) service, transferring funds and securities, and providing a multilateral settlement service.[1]

The Reserve Banks have been engaged in a number of multiyear technology initiatives that will modernize their priced-services processing platforms. These investments are expected to enhance efficiency, the overall quality of operations, and the Reserve Banks' ability to offer additional services, consistent with the longstanding principles of fostering efficiency and safety, to depository institutions. The Reserve Banks continued to enhance the resiliency and information security posture of the Fedwire Funds, National Settlement Service, and Fedwire Securities Service through the Fedwire Resiliency Program, a multiyear initiative to respond to environmental threats and cyberthreats. The Reserve Banks are also developing and planning to implement a new FedACH-processing platform to improve the efficiency and reliability of their current FedACH operations. In September 2016, the Reserve Banks implemented the first of three phases of the SameDay ACH service in support of a National Automated Clearing House Association (NACHA) operating rule change; the new SameDay ACH service enhances the existing Reserve Bank SameDay ACH product by enabling time-critical payments via the ACH network and improving the availability of funds to end users. The first phase enables same-day ACH credits, and the second phase, which is expected to be implemented in the second half of 2017, will enable same-day ACH debits.[2]

Cost Recovery

The Monetary Control Act of 1980 requires that the Federal Reserve establish fees for priced services to recover, over the long run, all direct and indirect costs actually incurred as well as the imputed costs that would have been incurred—including financing costs, taxes, and certain other expenses—and the return on equity (profit) that would have been earned if a private business firm had provided the services.[3] The imputed costs and imputed profit are collectively referred to as the private-sector adjustment factor (PSAF). From 2007 through 2016, the Reserve Banks recovered 101.8 percent of the total priced services costs, including the PSAF (see table 1).[4]

In 2016 specifically, Reserve Banks recovered 104.7 percent of the total priced services costs,

[1] The ACH enables depository institutions and their customers to process large volumes of payments through electronic batch processes.

[2] Direct deposit of payroll, social security benefits, and tax refunds are typical examples of ACH credit transfers. Direct debit for mortgage payments and utility bills are typical examples of ACH debit transfers.

[3] Depository Institutions Deregulation and Monetary Control Act, Pub. L. No. 96–221, 94 Stat. 132 (1980). Financial data reported throughout this section—including revenue, other income, costs, income before taxes, and net income—will reference the "Pro Forma Financial Statements for Federal Reserve Priced Services" at the end of this section.

[4] According to the Accounting Standards Codification (ASC) Topic 715 (ASC 715), Compensation–Retirement Benefits, the Reserve Banks recognized a $12.9 million reduction in equity related to the priced services' benefit plans through 2016. Including this reduction in equity, which represents a decline in economic value, results in cost recovery of 95.6 percent for the 10-year period. For details on how implementing ASC 715 affected the pro forma financial statements, refer to note 3 to the pro forma financial statements at the end of this section.

Table 1. Priced services cost recovery, 2007–16
Millions of dollars, except as noted

Year	Revenue from services[1]	Operating expenses and imputed costs[2]	Targeted return on equity[3]	Total costs	Cost recovery (percent)[4]
2007	1,012.3	912.9	80.4	993.3	101.9
2008	873.8	820.4	66.5	886.9	98.5
2009	675.4	707.5	19.9	727.5	92.8
2010	574.7	532.8	13.1	545.9	105.3
2011	478.6	444.4	16.8	461.2	103.8
2012	449.8	423.0	8.9	432.0	104.1
2013	441.3	409.3	4.2	413.5	106.7
2014	433.1	418.7	5.5	424.1	102.1
2015	429.1	397.8	5.6	403.4	106.4
2016	434.1	410.5	4.1	414.7	104.7
2007–16	5,802.3	5,477.4	225.0	5,702.4	101.8

Note: Here and elsewhere in this section, components may not sum to totals or yield percentages shown because of rounding.

1 For the 10-year period, includes revenue from services of $5,545.4 million and other income and expense (net) of $256.9 million.

2 For the 10-year period, includes operating expenses of $5,308.8 million, imputed costs of $21.2 million, and imputed income taxes of $147.4 million.

3 From 2009 to 2012, the PSAF was adjusted to reflect the actual clearing balance levels maintained; previously, the PSAF had been calculated based on a projection of clearing balance levels.

4 Revenue from services divided by total costs. For the 10-year period, cost recovery is 95.6 percent, including the effect of accumulated other comprehensive income (AOCI) reported by the priced services under ASC 715. For details on changes to the estimation of priced services AOCI and their effect on the pro forma financial statements, refer to note 3 to the "Pro Forma Financial Statements for Federal Reserve Priced Services" at the end of this section.

including the PSAF.[5] The Reserve Banks' operating expenses and imputed costs totaled $410.6 million. Revenue from operations totaled $434.2 million, resulting in net income from priced services of $23.7 million. The commercial check-collection service and the Fedwire Funds and National Settlement Service achieved full cost recovery; however, the FedACH Service and the Fedwire Securities Service did not achieve full cost recovery because of investment costs associated with the multiyear technology initiatives discussed above. Greater-than-expected check volume processed by the Reserve Banks has been the single most significant factor in greater than full cost recovery overall.

Commercial Check-Collection Service

The commercial check-collection service provides a suite of electronic and paper processing options for forward and return collections. In 2016, the Reserve Banks recovered 112.7 percent of the total costs of their commercial check-collection service, including the related PSAF. Revenue from operations totaled $154.2 million, resulting in net income of $18.6 million. The Reserve Banks' operating expenses and imputed costs totaled $135.6 million. Reserve Banks handled 5.2 billion checks in 2016, a decrease of 3.9 percent from 2015 (see table 2). The average daily value of checks collected by the Reserve Banks in 2016 was approximately $32.2 billion, a decrease of 0.3 percent from the previous year.

Commercial Automated Clearinghouse Service

The commercial ACH service provides domestic and cross-border batched payment options for same-day and next-day settlement. In 2016, the Reserve Banks recovered 98.8 percent of the total costs of their commercial ACH services, including the related PSAF. Revenue from operations totaled $131.0 million, resulting in net loss of $0.3 million. The Reserve Banks' operating expenses and imputed costs totaled $131.4 million. The Reserve Banks processed 13.0 billion commercial ACH transactions in 2016, an increase of 5.4 percent from 2015 (see table 2). The average daily value of FedACH transfers in 2016 was approximately $86.7 billion, an increase of 5.9 percent from the previous year.

Fedwire Funds and National Settlement Services

In 2016, the Reserve Banks recovered 103.3 percent of the costs of their Fedwire Funds and National Settlement Services, including the related PSAF. Revenue from operations totaled $123.0 million, resulting

5 Total cost is the sum of operating expenses, imputed costs (income taxes, interest on debt, interest on float, and sales taxes), and the targeted return on equity.

Box 1. Improving the U.S. Payment System

The Federal Reserve plays many roles in the payment system, including payment system operator, supervisor of financial institutions and systemically important financial market utilities, regulator, researcher, and catalyst for improvement. Acting primarily in its catalyst role, the Federal Reserve encouraged payments stakeholders to join together to improve the payment system in the United States in its "Strategies for Improving the U.S. Payment System" paper, issued in January 2015. The strategies outlined in the paper included the creation of task forces focused on faster payments and payment security, both of which have provided a forum for a diverse group of industry participants to collaborate on an ongoing basis since they were established in mid-2015.

At the beginning of 2016, a professional services firm was selected to act as the Qualified Independent Assessment Team (QIAT) tasked with assessing Faster Payments Task Force (FPTF) members' proposals for implementing faster payment capabilities in the United States. Such proposals were solicited by the FPTF as an important component of its work. During the middle of the year, the QIAT conducted its initial assessment of the proposals. FPTF and Secure Payments Task Force (SPTF) members then had an opportunity to provide commentary on the 19 proposals and assessments that proposers opted to carry through the assessment process. In mid-2016, the FTPF established a work group to analyze challenges and opportunities related to implementing faster payment capabilities.

The FPTF released the first part of its final report in January 2017. The second part of the final report will be released in mid-2017 and will reflect the FPTF's perspectives on challenges and opportunities with implementing faster payments, outline its recommendations for next steps, and include the proposals and assessments for those proposers that opted to be included in the final report.

Over the course of the year, the SPTF launched work to address the industry's most pressing payment system security issues: identity management, data protection, and fraud and risk information-sharing. The SPTF also mapped existing identity management practices in end-to-end payment flows in order to identify opportunities for improvements, as well as defined the guiding principles for protecting sensitive data associated with payments. In addition, the SPTF inventoried current industry efforts to share information for fraud and risk protection and mitigation.

The Federal Reserve's FedPayments Improvement website (https://fedpaymentsimprovement.org/) hosts a FedPayments Improvement Community that enables interested parties to stay informed and to engage in an exchange of information pertaining to the Federal Reserve's efforts to improve the U.S. payment system.

in a net income of $5.3 million. The Reserve Banks' operating expenses and imputed costs totaled $117.8 million in 2016.

Fedwire Funds Service

The Fedwire Funds Service allows its participants to send or receive domestic time-critical payments using their balances at Reserve Banks to transfer funds in real time. From 2015 to 2016, the number of Fedwire funds transfers originated by depository institutions increased 4.0 percent, to approximately 152 million (see table 2). The average daily value of Fedwire funds transfers in 2016 was $3.1 trillion, a decrease of 7.7 percent from the previous year.

Table 2. Activity in Federal Reserve priced services, 2014–16
Thousands of items, except as noted

Service	2016	2015	2014	Percent change	
				2015 to 2016	2014 to 2015
Commercial check	5,241,286	5,452,369	5,741,527	-3.9	-5.0
Commercial ACH	12,960,346	12,298,307	11,620,376	5.4	5.8
Fedwire funds transfer	151,899	146,006	138,133	4.0	5.7
National settlement	501	508	597	-1.4	-14.9
Fedwire securities	3,881	4,218	4,578	-8.0	-7.9

Note: Activity in commercial check is the total number of commercial checks collected, including processed and fine-sort items; in commercial ACH, the total number of commercial items processed; in Fedwire funds transfer and securities transfer, the number of transactions originated online and offline; and in national settlement, the number of settlement entries processed.

Box 2. Distributed Ledger Technology

As part of its core objective to foster the safety and efficiency of the payment system and to promote financial stability, the Federal Reserve has a public policy interest in understanding and monitoring the development of innovations that could affect the structural design and functioning of financial markets. Distributed ledger technology (DLT) is one such payment system innovation and has been cited by the financial industry as a means of transforming payment, clearing, and settlement (PCS) processes, which are critical to the proper functioning of the financial markets and to financial stability more broadly.

As a preliminary step to understanding the implications of DLT developments in PCS, a Federal Reserve staff research team held discussions with a broad range of parties that are interested in, participate in, or are otherwise contributing to the evolution of DLT. The team conducted interviews and conversations with approximately 30 key industry stakeholders, including market infrastructures, financial institutions, other government agencies, technology start-ups, more-established technology firms, and industry consortia. The research team presented its findings in a December 2016 working paper (https://www.federalreserve.gov/econresdata/feds/2016/files/2016095pap.pdf) titled "Distributed ledger technology in payments, clearing, and settlement." The working paper examines how DLT might be used in the area of payments, clearing, and settlement and identifies both the opportunities and challenges facing its practical implementation and possible long-term adoption.

As noted in the working paper, the industry believes DLT has the potential to transform several areas in financial markets, including cross-border payments; post-trade processing of securities, commodities, and derivatives; and areas that are heavily paper-based, such as syndicated loans and trade finance. At the same time, however, a number of challenges to development and adoption remain, including technological hurdles, governance issues, and risk-management considerations.

The paper notes that the industry's understanding and application of DLT to financial market structures is still in its infancy, and stakeholders are taking a variety of approaches towards its development. At this stage, it is difficult to predict how DLT will figure into the future of payments as the industry continues to explore a range of possible uses. The Federal Reserve staff research team continues to engage the industry in order to follow developments and better understand the potential range of DLT adoption and how it may affect financial market structures.

National Settlement Service

The National Settlement Service is a multilateral settlement system that allows participants in private-sector clearing arrangements to settle transactions using their balances at Reserve Banks. In 2016, the service processed settlement files for 17 local and national private-sector arrangements. The Reserve Banks processed 8,329 files that contained about 501,000 settlement entries for these arrangements in 2016 (see table 2). Settlement file activity in 2016 was roughly the same as in 2015, and settlement entries decreased 1.4 percent.

Fedwire Securities Service

The Fedwire Securities Service allows its participants to transfer electronically to other service participants certain securities issued by the U.S. Treasury Department, federal government agencies, government-sponsored enterprises, and certain international organizations.[6] In 2016, the Reserve Banks recovered 99.2 percent of the costs of their Fedwire Securities Service, including the related PSAF. Revenue from operations totaled $25.9 million, resulting in a net income of $0.0 million. The Reserve Banks' operating expenses and imputed costs totaled $25.8 million in 2016. In 2016, the number of non-Treasury securities transfers processed via the service decreased 8.0 percent from 2015, to approximately 3.9 million (see table 2). The average daily value of Fedwire Securities transfers in 2016 was $1.1 trillion, a decrease of 2.7 percent from the previous year.

Float

In 2016, the Reserve Banks had daily average credit float of $334.4 million, compared with daily average credit float of $193.2 million in 2015.[7]

[6] The expenses, revenues, volumes, and fees reported here are for transfers of securities issued by federal government agencies, government-sponsored enterprises, and certain international organizations. Reserve Banks provide Treasury securities services in their role as Treasury's fiscal agent. These services are not considered priced services. For details, see "Treasury Securities Services" later in this section.

[7] Credit float occurs when the Reserve Banks debit the paying bank for checks and other items prior to providing credit to the depositing bank.

Currency and Coin

The Federal Reserve Board issues the nation's currency (in the form of Federal Reserve notes) to 28 Federal Reserve Bank offices. The Reserve Banks, in turn, distribute Federal Reserve notes to depository institutions in response to public demand. The Reserve Banks also distribute the nation's coin to depository institutions on behalf of the U.S. Department of the Treasury.[8] Together, the Board and Reserve Banks work to maintain the integrity of and confidence in Federal Reserve notes. In 2016, the Board paid Treasury's Bureau of Engraving and Printing (BEP) $660.0 million for costs associated with the production of nearly 7.3 billion Federal Reserve notes.

In 2016, the Reserve Banks distributed 36.3 billion Federal Reserve notes into circulation, a 1.4 percent decrease from 2015, and received 34.7 billion Federal Reserve notes from circulation, a 1.2 percent decrease from 2015. In 2016, the Reserve Banks also distributed 73.4 billion coins into circulation, a 2.8 percent increase from 2015, and received 58.2 billion coins from circulation, a 4.1 percent increase from 2015.

The value of Federal Reserve notes in circulation increased nearly 6.0 percent in 2016, to $1,463 billion at year-end. The Board estimates that as much as two-thirds of the value of Federal Reserve notes in circulation is held abroad, mainly as a store of value. The 2016 increase in value is attributable largely to increased demand for $100 notes; however, demand for transactional denominations also increased. The volume of $1 and $20 notes in circulation increased 3.3 percent in 2016, compared with 6.7 percent growth in the volume of $100 notes in circulation.

U.S. Currency Education Program

The U.S. Currency Education Program (CEP) is an interagency program managed by the Board in partnership with the United States Secret Service and the BEP. The CEP is responsible for ensuring that users of U.S. currency around the world have access to education, training, and information about all designs of Federal Reserve notes, from 1914 to the present.

[8] Whereas the Federal Reserve Board is the issuing authority for Federal Reserve notes, the United States Mint, a bureau of the U.S. Department of the Treasury, is the issuing authority for the nation's coin.

Education and training includes conducting domestic and international training seminars for staff at the Federal Reserve Banks, financial institutions, law enforcement agencies, the gaming industry, and government entities. During 2016, the CEP conducted outreach in the United States, Thailand, Cambodia, Guatemala, and Argentina, which included training for more than 600 key stakeholders. The CEP launched two new hard-copy materials in 2016, "Dollars in Detail" and "Know the $20," which are available on the educational website www.uscurrency.gov.

Other Improvements and Efforts

During 2016, the Reserve Banks began implementation of a new cash automation platform (CashForward) to replace legacy software applications, automate business concepts, and processes, and to employ technologies to meet the cash business's current and future needs more cost effectively. The new cash platform also will facilitate business continuity and contingency planning and enhance the support provided to Reserve Bank customers. Deployment of CashForward began in June 2016, with 10 offices successfully deploying the platform by year-end. Implementation for the remaining 18 offices will be completed in 2017.

The Federal Reserve also has initiated a program to replace the aging high-speed currency-processing equipment at all Reserve Banks by 2026. In 2016, the Federal Reserve issued a request for proposal for new equipment and related maintenance services and used a comprehensive scoring process to evaluate the proposals. The Federal Reserve expects to negotiate terms for contract award in 2017.

During 2016, the Board and the BEP continued to build on the improved quality assurance processes established to date at the BEP. The Board and BEP continued to reclaim $100 notes using single note inspection equipment, which allowed the Board to avoid nearly $25.4 million in variable production costs. During 2017, the Board and BEP will develop and implement processes and procedures to reclaim additional denominations using single-note inspection equipment, which will reduce overall spoilage and variable printing costs. In addition, the Board and BEP agreed on a long-term capital equipment replacement strategy to modernize and replace aging production equipment at the BEP that has exceeded its useful life; the replacement will improve production efficiency and reduce spoilage.

Fiscal Agency and Government Depository Services

As fiscal agents and depositories for the federal government, the Reserve Banks auction Treasury securities, process electronic and check payments for Treasury, collect funds owed to the federal government, maintain Treasury's bank account, and develop, operate, and maintain a number of automated systems to support Treasury's mission. The Reserve Banks also provide certain fiscal agency and depository services to other entities, typically other government instrumentalities at the request of Treasury; these services are primarily related to book-entry securities. Treasury and other entities fully reimburse the Reserve Banks for the expense of providing fiscal agency and depository services.

In 2016, fiscal agency expenses increased to $677.0 million (see table 3), primarily as a result of requests from Treasury's Bureau of the Fiscal Service and an increase in Reserve Bank pension costs to be reimbursed by Treasury and other entities.[9] Support for Treasury programs accounted for 94.0 percent of expenses, and support for other entities accounted for 6.0 percent.

In April 2014, as part of the federal government's effort to increase operational efficiency and effectiveness, Treasury announced the consolidation of the fiscal agency services provided by the Reserve Banks. Although Treasury expects long-term savings by reducing the number of Reserve Banks that provide fiscal agency services, the Reserve Banks are experiencing an increase in expenses during the consolidation process, which will continue over the next several

[9] Board policy requires the Reserve Banks to seek reimbursement for the costs to provide fiscal agency services. Historically, the Reserve Banks did not seek reimbursement for pension benefits to Reserve Bank employees who support fiscal agency services. The Reserve Banks began to seek reimbursement for the one-time pension costs that resulted from consolidation activities in 2014 and to seek full reimbursement for all fiscal agency-related pension costs beginning in 2015. Pension costs are shown in the aggregate across programs in table 3 rather than by each program.

Table 3. Expenses of the Federal Reserve Banks for fiscal agency and depository services, 2014–16
Thousands of dollars

Agency and service	2016	2015	2014[r]
Department of the Treasury			
Treasury securities services			
Treasury retail securities	50,203	52,945	54,958
Treasury auction	42,472	35,701	29,491
Treasury securities safekeeping and transfer	22,890	21,254	16,568
Technology infrastructure development and support[1]	6,909	6,371	5,792
Other services	3,213	2,194	853
Total	125,687	118,465	107,662
Payment, collection, and cash-management services			
Payment services	159,296	161,681	157,869
Collection services	66,425	59,513	52,878
Cash-management services	82,165	79,161	74,428
Technology infrastructure development and support[1]	96,931	89,069	79,289
Other services	10,358	10,998	11,465
Total	415,175	400,422	375,928
Other Treasury			
Total	39,293	41,971	44,756
Total, Treasury	580,155	560,857	528,346
Other entities			
Total, other entities	37,333	35,140	34,588
Pension costs			
Total, Treasury and other entities	59,493	54,586	6,704
Total reimbursable expenses	676,981	650,583	569,638

Note: In 2015, "Pension costs" were added as a new category in this table. The 2015 restatement of 2014 figures is reflected here.

[1] Formerly labeled "Computer infrastructure development and support."

r Revised.

years. In 2016, total consolidation expenses amounted to $20.9 million as a result of the eight Reserve Bank business lines that transitioned and preparations for the upcoming transitions.[10] Consolidation expenses are included in the line items for Payment, Collection, and Cash-management services in table 3.

Treasury Securities Services

The Reserve Banks work closely with Treasury's Fiscal Service in support of the borrowing needs of the federal government. The Reserve Banks auction, issue, maintain, and redeem securities; provide customer service; and operate the automated systems supporting U.S. savings bonds and marketable Treasury securities (bills, notes, and bonds). Treasury securities services consist of retail securities programs, which primarily serve individual investors, and wholesale securities programs, which serve institutional customers.

Retail Securities Programs

Reserve Bank operating expenses for the retail securities program decreased to $50.2 million in 2016, largely because of the shift in telephony infrastructure costs to the Fiscal Service. Program expense drivers included the Reserve Banks' operation of a virtual case-file system and a virtual contact center to support retail securities services, as well as increased staffing to manage the savings-bond transaction workload.

The Reserve Banks also provided support to Treasury's Retail Program Review initiative, which may shape the retail securities program's future mission, vision, and operating model. Operating expenses to support this effort were $2.3 million in 2016.

Wholesale Securities Programs

The Reserve Banks support wholesale securities programs through the sale, issuance, safekeeping, and transfer of marketable Treasury securities for institutional investors.[11] The Reserve Banks conducted 266 Treasury securities auctions in 2016. Of the 266 auctions, 12 auctions were for Floating Rate Notes.[12]

In 2016, Reserve Bank operating expenses to support Treasury securities auctions increased to $42.5 million. Operating expenses were driven by upgrades to the auction application, which receives and processes bids submitted primarily by wholesale securities auction participants, and by modernization of the application infrastructure.

Operating expenses associated with Treasury securities safekeeping and transfer activities increased to $22.9 million in 2016 as a result of the Reserve Banks' effort to migrate the securities services from a mainframe system to a distributed computing environment.[13]

Payment Services

The Reserve Banks work closely with Treasury's Fiscal Service and other government agencies to process payments to individuals and companies. The Reserve Banks process federal payroll payments, Social Security and veterans' benefits, income tax refunds, vendor payments, and other types of payments.

Reserve Bank operating expenses for payments-related activity decreased to $159.3 million in 2016, primarily because consolidation activities ended for International Treasury Services (ITS) and Automated Standard Application for Payments (ASAP). These decreases were partially offset by increased consolidation expenses and increased program expenses associated with Post Payment System (PPS), Invoice Processing Platform (IPP), and Stored Value Card (SVC).

The Reserve Banks operate the ITS application, which provides cross-border payment and collection services as well as cash-management functions on behalf of Treasury. U.S. government agencies use ITS to issue international benefit, payroll, and vendor payments in 100 currencies to recipients in established and emerging markets. ITS expenses in 2016 decreased to $15.5 million primarily because consolidation activities came to an end.

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[10] The four remaining business lines are scheduled to transition over the next four years.

[11] Wholesale securities auction participants include depository institutions, dealers and brokers, investment funds, pension and retirement funds, foreign and international entities, and individual investors.

[12] Introduced in 2014, Floating Rate Notes are a marketable Treasury security with a floating rate interest payment. Floating Rate Notes were the first new Treasury security issued since the introduction of Treasury Inflation-Protected Securities almost two decades ago.

[13] For details, see "Fedwire Securities Service" earlier in this section.

The ASAP application enables federal agencies to electronically disburse funds to recipient organizations. Expenses for ASAP decreased 35.5 percent from 2015, to $9.1 million in 2016, because of the completion of consolidation activities.

The Reserve Banks continued work on the PPS initiative, a multiyear effort to modernize several of Treasury's legacy post-payment processing systems into a single application to enhance operations, reduce expenses, improve data analytics capabilities, and provide a centralized and standardized set of payment data. In 2016, program expenses for PPS increased to $18.8 million as the result of greater system development expenses and $2.6 million in consolidation expenses.

The IPP is part of Treasury's all-electronic initiative—an electronic invoicing and payment information system that allows vendors to enter invoice data electronically, through either a web-based portal or electronic submission. The IPP accepts, processes, and presents data from supplier systems related to all stages of a payment transaction, including the purchase order, invoice, and other payment information. In 2016, the Reserve Banks' IPP expenses increased to $24.5 million, primarily because of increased staffing to support consolidation efforts.

The SVC program comprises three military cash-management programs: EagleCash, EZPay, and Navy Cash. These programs provide electronic payment methods for goods and services on military bases and Navy ships, both domestic and overseas, to reduce costs and increase convenience for the military and service members. The Reserve Banks, as fiscal agent, currently operate EagleCash and EZpay and will assume responsibility for Navy Cash in 2017. In 2016, Reserve Bank operating expenses for Treasury's SVC business increased to $24.4 million, largely because of $10.8 million in expenses associated with the transition of the Navy Cash program from a third-party financial agent.

Collection Services

The Reserve Banks also work closely with the Fiscal Service to collect funds owed to the federal government, including various taxes, fees for goods and services, and delinquent debts. In 2016, Reserve Bank operating expenses related to collection services increased to $66.4 million, largely because of greater operating expenses for Pay.gov, eCommerce, and the Collections Information Repository (CIR).

The Reserve Banks operate Pay.gov, an application that allows the public to use the Internet to authorize and initiate payments to federal agencies. During the year, the Pay.gov program expanded to include more than 140 new agency programs and processed more than 177 million online payments totaling $152 billion. Pay.gov expenses increased to $20.1 million in 2016, primarily because of software amortization expenses.

The Reserve Banks also continued supporting Treasury's electronic commerce initiative (eCommerce) to expand ways for agencies and the public to do business with Treasury through online banking solutions, mobile technologies, and other payment methods. Program expenses for eCommerce increased to $5.3 million in 2016 because of expenses associated with developing a new mobile payment platform that will facilitate more-efficient federal revenue collections and because of increased vendor fees for the program.

In 2016, the Reserve Banks transitioned the CIR application from a third-party financial agent. The CIR application enables the Fiscal Service to standardize the availability of financial information, furthering transparency goals and enabling federal agencies to improve cash-management decisions and performance. Expenses for CIR totaled $7.7 million in 2016 and were primarily attributable to transition expenses and application development.

Treasury Cash-Management Services

The Reserve Banks maintain Treasury's operating cash account and provide collateral-management and collateral-monitoring services for those Treasury programs that have collateral requirements. The Reserve Banks also support Treasury's efforts to modernize its financial management processes by developing software, operating help desks, and managing projects on behalf of the Fiscal Service.

In 2016, Reserve Bank operating expenses related to Treasury cash-management services increased to $82.2 million, of which $5.1 million was attributable to the consolidation. The increase was primarily due to significant application development efforts for Bank Management System and the G-invoicing system. The Bank Management System application determines commercial bank compensation for depository services provided to Treasury, and G-invoicing provides electronic intragovernmental invoicing processing. These increased expenses were

partially offset by decreased expenses associated with the end of consolidation activities for the Treasury Cash Management System and Direct Voucher Submission applications.

Services Provided to Other Entities

When permitted by federal statute or when required by the Secretary of the Treasury, the Reserve Banks provide fiscal agency and depository services to other domestic and international entities.

Reserve Bank operating expenses for services provided to other entities increased to $37.3 million in 2016. Book-entry securities issuance and maintenance activities account for a significant amount of the work performed for other entities, with the majority performed for the Federal Home Loan Mortgage Association (Freddie Mac), the Federal National Mortgage Association (Fannie Mae), and the Government National Mortgage Association (Ginnie Mae).

Use of Federal Reserve Intraday Credit

The Board's Payment System Risk policy governs the use of Federal Reserve Bank intraday credit, also known as daylight overdrafts. A daylight overdraft occurs when an institution's account activity creates a negative balance in the institution's Federal Reserve account at any time in the operating day. Daylight overdrafts enable an institution to send payments more freely throughout the day than if it were limited strictly by its available intraday funds balance, increasing efficiency and reducing payment system risk. The Payment System Risk policy recognizes explicitly the role of the central bank in providing intraday balances and credit to healthy institutions; under the policy, the Reserve Banks provide collateralized intraday credit at no cost.

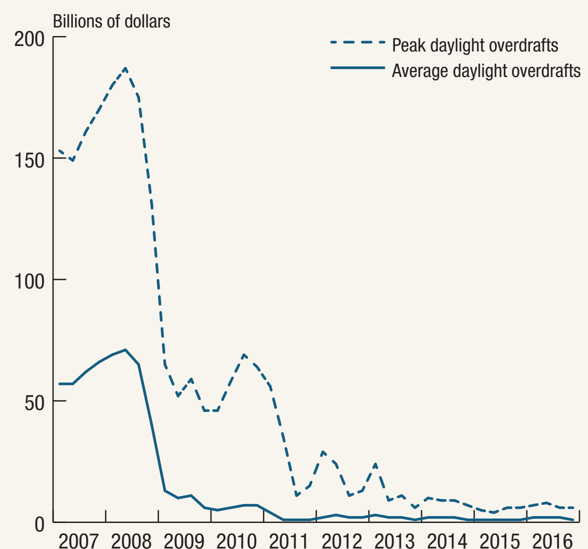
Before the 2007–09 financial crisis, overnight balances were much lower and daylight overdrafts significantly higher than levels observed since late 2008. The use of daylight overdrafts spiked amid the market turmoil near the end of 2008 but dropped sharply as various liquidity programs initiated by the Federal Reserve, all since terminated, took effect. During this period, the Federal Reserve also began paying interest on balances held at the Reserve Banks, increased its lending under the Term Auction Facility, and began purchasing government-sponsored enterprise mortgage-backed securities. These measures tended to increase balances institutions held at the Banks, which decreased the demand for intraday credit. In 2007, for example, institutions held, on average, less than $20 billion in overnight balances, and total average daylight overdrafts were around $60 billion. In contrast, institutions held historically high levels of overnight balances at the Reserve Banks in 2016, while daylight overdrafts remained historically low, as shown in figure 1.

Daylight overdraft fees are also at historically low levels. In 2016, institutions paid about $48,100 in daylight overdraft fees; in contrast, fees totaled more than $50 million in 2008. The decrease in fees is largely attributable to the elevated level of reserve balances that began to accumulate in late 2008 and to the 2011 policy revision that eliminated fees for daylight overdrafts that are collateralized.

FedLine Access to Reserve Bank Services

The Reserve Banks' FedLine access solutions provide financial institutions with a variety of alternatives for electronically accessing the Banks' payment and information services. For priced services, the Reserve Banks charge fees for these electronic connections and allocate the associated costs and revenue to the various services. There are currently five FedLine channels through which customers can access the

Figure 1. Aggregate daylight overdrafts, 2007–16



Reserve Banks' priced services: FedMail, FedLine Web, FedLine Advantage, FedLine Command, and FedLine Direct. These FedLine channels are designed to meet the individual connectivity, security, and contingency requirements of depository institution customers.

Between 2007 and 2016, Reserve Bank priced FedLine connections decreased nearly 18 percent, and the number of depository institutions in the United States declined 30 percent.[14] During this same period, the number of employees within depository institutions who have FedLine credentials increased 23 percent, reflecting in part the expansion of value-added services provided and use of the network for central bank applications. As of December 2016, more than 45,000 individuals had access to value-added services (Accounting Management Information, FedTransaction Analyzer, and ACH Risk Services) and more than 35,000 individuals had access to central bank applications for regulatory reporting purposes.

The Reserve Banks continue to maintain their focus on security and resiliency by upgrading critical elements of the FedLine solutions. Enhancements to the FedLine Advantage and FedLine Command access solutions were deployed to approximately 4,500 financial institutions, and enhancements to the FedLine Direct solution, used by approximately 210 of the largest financial institutions, were completed in 2016.

Information Technology

The improvement of efficiency, effectiveness, and security of information technology (IT) services and operations continued to be a focus for the Reserve Banks in 2016. Led by the Federal Reserve System's National IT organization, the Reserve Banks approved the System IT Strategic Plan to reduce the complexity and risk involved in the delivery of technology services. The plan focuses on IT productivity, simplicity, accountability, and stewardship across the System. National IT is guiding the plan's implementation and tracking progress toward the plan's goals. This effort is scheduled to be completed in 2020.

The Reserve Banks remained vigilant about their cybersecurity posture, investing in risk-mitigation initiatives and programs and continuously monitoring and assessing cybersecurity risks to its operations. The Federal Reserve implemented several cybersecurity initiatives that enable threat-driven analysis; increase the ability to respond to evolving cybersecurity threats with agility, decisiveness, and speed by streamlining decisionmaking during a cybersecurity incident; and continue to improve its continuous monitoring capabilities of key systems.

Examinations of the Federal Reserve Banks

The combined financial statements of the Reserve Banks as well as the financial statements of each of the 12 Reserve Banks are audited annually by an independent public accountant retained by the Board of Governors.[15] In addition, the Reserve Banks are subject to oversight by the Board of Governors, which performs its own reviews.

The Reserve Banks use the 2013 framework established by the Committee of Sponsoring Organizations of the Treadway Commission (COSO) to assess their internal controls over financial reporting, including the safeguarding of assets. Within this framework, the management of each Reserve Bank annually provides an assertion letter to its board of directors that confirms adherence to COSO standards.

The Federal Reserve Board engaged KPMG LLP (KPMG) to audit the 2016 combined and individual financial statements of the Reserve Banks.[16]

In 2016, KPMG also conducted audits of the internal controls associated with financial reporting for each of the Reserve Banks. Fees for KPMG's services totaled $6.7 million. To ensure auditor independence, the Board requires that KPMG be independent in all

[14] See the Federal Deposit Insurance Corporation (FDIC), https://www.fdic.gov/bank/statistical/stats/, and the National Credit Union Administration (NCUA), https://www.ncua.gov/analysis/Pages/industry.aspx, for depository institution data.

[15] See "Federal Reserve Banks Combined Financial Statements" in section 12 of this report.

[16] In addition, KPMG audited the Office of Employee Benefits of the Federal Reserve System (OEB), the Retirement Plan for Employees of the Federal Reserve System (System Plan), and the Thrift Plan for Employees of the Federal Reserve System (Thrift Plan). The System Plan and the Thrift Plan provide retirement benefits to employees of the Board, the Federal Reserve Banks, the OEB, and the Consumer Financial Protection Bureau.

matters relating to the audits. Specifically, KPMG may not perform services for the Reserve Banks or others that would place it in a position of auditing its own work, making management decisions on behalf of the Reserve Banks, or in any other way impairing its audit independence. In 2016, the Reserve Banks did not engage KPMG for significant non-audit services.

The Board's reviews of the Reserve Banks include a wide range of offsite and onsite oversight activities, conducted primarily by its Division of Reserve Bank Operations and Payment Systems. Division personnel monitor on an ongoing basis the activities of each Reserve Bank, National IT, and the System's Office of Employee Benefits (OEB). They conduct a comprehensive onsite review of each Reserve Bank and OEB at least once every three years and review National IT, the System Open Market Account (SOMA), and Fedwire annually.

The comprehensive onsite reviews include an assessment of the internal audit function's effectiveness and its conformance to the Institute of Internal Auditors' (IIA) *International Standards for the Professional Practice of Internal Auditing*, applicable policies and guidance, and the IIA's code of ethics.

The Board also reviews SOMA and foreign currency holdings to

1. determine whether the New York Reserve Bank, while conducting the related transactions and associated controls, complies with the policies established by the Federal Open Market Committee (FOMC); and
2. assess SOMA-related IT project management and application development, vendor management, and system resiliency and contingency plans.

In addition, KPMG audits the year-end schedule of participated asset and liability accounts and the related schedule of participated income accounts. The FOMC is provided with the external audit reports and a report on the Board review.

Income and Expenses

Table 4 summarizes the income, expenses, and distributions of net earnings of the Reserve Banks for 2016 and 2015. Income in 2016 was $111.7 billion, compared with $114.2 billion in 2015.

Expenses totaled $19,269 million:

1. $12,044 million in interest paid to depository institutions on reserve balances and term deposits;
2. $4,205 million in Reserve Bank operating expenses;
3. $1,122 million in interest expense on securities sold under agreements to repurchase;
4. $565 million in net periodic pension expense;
5. $709 million in assessments for Board of Governors expenditures;
6. $701 million for the cost of producing, issuing, and retiring currency;
7. $596 million for Consumer Financial Protection Bureau costs; and
8. $4 million in other costs.

The expenses were reduced by $677 million in reimbursements for services provided to government agencies. Net deductions from current net income totaled $114 million, which includes $103 million in unrealized losses on foreign currency denominated investments revalued to reflect current market exchange rates, $15 million in realized losses on Treasury securities, and $19 million in realized gains on federal agency and government-sponsored enterprise mortgage-backed securities (GSE MBS). Dividends paid to member banks for 2016 totaled $711 million. Effective January 1, 2016, the Fixing America's Surface Transportation Act (FAST Act) changed the dividend rate for member banks with more than $10 billion of consolidated assets to the smaller of 6 percent or the rate equal to the high yield of the 10-year Treasury note auctioned at the last auction held prior to the payment of the dividend. The FAST Act did not change the 6 percent dividend rate for member banks with $10 billion or less of total consolidated assets.

Net income before remittances to Treasury totaled $92,178 million in 2016 (net income of $92,361 million, decreased by other comprehensive loss of $183 million). Earnings remittances to the Treasury totaled $91,467 million in 2016. The FAST Act, which amended section 7(a) of the Federal Reserve Act, requires that any Reserve Bank capital surplus in excess of $10 billion be transferred to Treasury.[17]

[17] The FAST Act, Pub. L. No. 114-94, 129 Stat. 1312 (2015), was enacted on December 4, 2015. Before the enactment of the

Table 4. Income, expenses, and distribution of net earnings of the Federal Reserve Banks, 2016 and 2015
Millions of dollars

Item	2016	2015
Current income	111,744	114,234
Loan interest income	1	*
SOMA interest income	111,105	113,610
Other current income[1]	638	624
Net expenses	17,263	11,140
Operating expenses	4,205	4,042
Reimbursements	-677	-650
Net periodic pension expense	565	563
Interest paid on depository institutions deposits and term deposits	12,044	6,935
Interest expense on securities sold under agreements to repurchase	1,122	248
Other expenses	4	2
Current net income	94,481	103,094
Net additions to (deductions from) current net income	-114	-1,306
Treasury securities losses	-15	0
Federal agency and government-sponsored enterprise mortgage-backed securities	19	43
Foreign currency translation losses	-103	-1,382
Net income (loss) from consolidated VIEs	-12	36
Other deductions	-3	-3
Assessments by the Board of Governors	2,006	1,884
For Board expenditures	709	705
For currency costs	701	689
For Consumer Financial Protection Bureau costs[2]	596	490
Net income before providing for remittances to the Treasury	92,361	99,904
Earnings remittances to the Treasury	91,467	117,099
Interest on Federal Reserve notes	0	91,143
Required by the Federal Reserve Act, as amended by the FAST Act	91,467	25,956
Net income (loss) after providing for remittances to the Treasury	894	-17,195
Other comprehensive (loss) gain	-183	366
Comprehensive income (loss)	711	-16,829
Total distribution of net income	92,178	100,270
Dividends on capital stock	711	1,743
Transfer to surplus and change in accumulated other comprehensive income	0	-18,572
Earnings remittances to the Treasury	91,467	117,099

1 Includes income from priced services, compensation received for services provided, and securities lending fees.
2 The Board of Governors assesses the Reserve Banks to fund the operations of the Consumer Financial Protection Bureau.
* Less than $500,000.

The Reserve Banks reported comprehensive income of $711 million in 2016 after providing for remittances to Treasury.

Section 11 of this report, "Statistical Tables," provides more detailed information on the Reserve Banks. Table 9 is a statement of condition for each Reserve Bank; table 10 details the income and expenses of each Reserve Bank for 2016; table 11 shows a condensed statement for each Reserve Bank for the years 1914 through 2016; and table 13 gives the number and annual salaries of officers and employees for each Reserve Bank. A detailed account of the assessments and expenditures of the Board of Governors appears in the Board of Governors Financial Statements (see section 12, "Federal Reserve System Audits").

FAST Act, the Board of Governors required the Reserve Banks to maintain a surplus equal to the amount of capital paid-in. The FAST Act also amended section 7 of the Federal Reserve Act related to Reserve Bank payment of dividends to member banks. The FAST Act changed the dividend rate for member banks with more than $10 billion of consolidated assets, effective January 1, 2016, to the smaller of 6 percent or the rate equal to the high yield of the 10-year Treasury note auctioned at the last auction held prior to the payment of the dividend. The FAST Act did not change the 6 percent dividend rate for member banks with $10 billion or less of total consolidated assets.

SOMA Holdings and Loans

The Reserve Banks' average net daily SOMA holdings during 2016 amounted to $4,071 billion, a decrease of $83 billion from 2015 (see table 5).

Table 5. System Open Market Account (SOMA) holdings of the Federal Reserve Banks, 2016 and 2015
Millions of dollars, except as noted

Item	Average daily assets (+)/liabilities (–)		Current income (+)/expense (–)		Average interest rate (percent)	
	2016	2015	2016	2015	2016	2015
U.S. Treasury securities[1]	2,570,106	2,588,099	63,845	63,317	2.48	2.45
Government-sponsored enterprise debt (GSE) securities[1]	25,298	36,630	959	1,330	3.79	3.63
Federal agency and GSE mortgage-backed securities[2]	1,802,439	1,793,787	46,299	48,931	2.57	2.73
Foreign currency denominated investments[3]	20,713	19,846	-7	31	-0.03	0.15
Central bank liquidity swaps[4]	933	209	9	1	0.96	0.68
Other SOMA assets[5]	13	30	*	*	0.16	0.01
Total SOMA assets	4,419,502	4,438,601	111,105	113,610	2.51	2.56
Securities sold under agreements to repurchase: Primary dealers and expanded counterparties	-105,648	-125,656	-303	-84	0.29	0.07
Securities sold under agreements to repurchase: Foreign official and international accounts	-241,848	-157,929	-819	-164	0.34	0.10
Total securities sold under agreements to repurchase	-347,496	-283,585	-1,122	-248	0.32	0.09
Other SOMA liabilities[6]	-1,010	-1,116	n/a	n/a	n/a	n/a
Total SOMA liabilities	-348,506	-284,701	-1,122	-248	0.32	0.09
Total SOMA holdings	**4,070,996**	**4,153,900**	**109,983**	**113,362**	**2.70**	**2.73**

1 Face value, net of unamortized premiums and discounts.

2 Face value, which is the remaining principal balance of the securities, net of unamortized premiums and discounts. Does not include unsettled transactions.

3 Foreign currency denominated assets are revalued daily at market exchange rates.

4 Dollar value of foreign currency held under these agreements valued at the exchange rate to be used when the foreign currency is returned to the foreign central bank. This exchange rate equals the market exchange rate used when the foreign currency was acquired from the foreign central bank.

5 Cash and short-term investments related to the federal agency and government-sponsored enterprise mortgage-backed securities (GSE MBS) portfolio.

6 Represents the obligation to return cash margin posted by counterparties as collateral under commitments to purchase and sell federal agency and GSE MBS, as well as obligations that arise from the failure of a seller to deliver securities on the settlement date.

n/a Not applicable.

* Less than $500,000.

SOMA Securities Holdings

The average daily holdings of Treasury securities decreased by $18 billion, to an average daily amount of $2,570 billion. The average daily holdings of GSE debt securities decreased by $11 billion, to an average daily amount of $25 billion. The average daily holdings of federal agency and GSE MBS increased by $9 billion, to an average daily amount of $1,802 billion.

The increases in average daily holdings of federal agency and GSE MBS are due to reinvestment of principal payments from other SOMA holdings in federal agency and GSE MBS. The average daily holdings of GSE debt securities decreased as a result of maturities.

There were no significant holdings of securities purchased under agreements to resell in 2016 or 2015. Average daily holdings of foreign currency denominated investments in 2016 were $20,713 million, compared with $19,846 million in 2015. The average daily balance of central bank liquidity swap drawings was $933 million in 2016 and $209 million in 2015. The average daily balance of securities sold under agreements to repurchase was $347,496 million, an increase of $63,911 million from 2015.

The average rates of interest earned on the Reserve Banks' holdings of Treasury securities increased to 2.48 percent, and the average rates on GSE debt securities increased to 3.79 percent in 2016. The average rate of interest earned on federal agency and GSE MBS decreased to 2.57 percent in 2016. The average interest rates for securities sold under agreements to repurchase increased to 0.32 percent in 2016. The average rate of interest earned on foreign currency denominated investments decreased to –0.03 percent, while the average rate of interest earned on central bank liquidity swaps increased to 0.96 percent in 2016.

Lending

In 2016, the average daily primary, secondary, and seasonal credit extended by the Reserve Banks to depository institutions decreased by $24 million, to

$101 million. The average rate of interest earned on primary, secondary, and seasonal credit increased to 0.62 percent in 2016, from 0.28 percent in 2015.

ML is a lending facility established in 2008 under authority of FRA section 13(3) in response to the 2007–09 financial crisis. Net portfolio assets of ML decreased from $1,778 million in 2015 to $1,742 million in 2016, and liabilities decreased from $57 million to $33 million. ML net loss of $12 million in 2016 comprised interest income of $9 million, loss on investments of $19 million, and operating expenses of $2 million.

Federal Reserve Bank Premises

Several Reserve Banks took action in 2016 to maintain and renovate their facilities. The multiyear renovation programs at the New York, Richmond, Kansas City, and San Francisco Reserve Banks' headquarters and Los Angeles Branch building continued. All Reserve Banks continued to implement projects to maintain building systems to ensure efficient and reliable operations. The New York Reserve Bank continued repairs and renovations to the 33 Maiden Lane building. In 2016, the St. Louis Reserve Bank expanded its leased office space to accommodate increased Treasury services.

For more information on the acquisition costs and net book value of the Reserve Banks and Branches, see table 14 in section 11 ("Statistical Tables") of this annual report.

Pro Forma Financial Statements for Federal Reserve Priced Services

Table 6. Pro forma balance sheet for Federal Reserve priced services, December 31, 2016 and 2015
Millions of dollars

Item	2016		2015	
Short-term assets (note 1)				
Imputed investments	812.2		132.8	
Receivables	36.6		37.2	
Materials and supplies	0.5		0.6	
Prepaid expenses	11.5		10.6	
Items in process of collection	117.7		209.9	
Total short-term assets		978.4		391.1
Long-term assets (note 2)				
Premises	120.4		123.8	
Furniture and equipment	36.9		37.6	
Leases, leasehold improvements, and long-term prepayments	112.2		110.5	
Deferred tax asset	184.7		189.8	
Total long-term assets		454.1		461.7
Total assets		1,432.5		852.8
Short-term liabilities				
Deferred-availability items	921.5		342.7	
Short-term debt	0		8.2	
Short-term payables	20.8		20.8	
Total short-term liabilities		942.3		371.7
Long-term liabilities				
Long-term debt			0	
Accrued benefit costs	418.6		426.2	
Total long-term liabilities		418.6		426.2
Total liabilities		1,360.9		797.9
Equity (including accumulated other comprehensive loss of $670.4 million and $657.5 million at December 31, 2016 and 2015, respectively)		71.6		54.9
Total liabilities and equity (note 3)		1,432.5		852.8

Note: Components may not sum to totals because of rounding. The accompanying notes are an integral part of these pro forma priced services financial statements.

Table 7. Pro forma income statement for Federal Reserve priced services, 2016 and 2015
Millions of dollars

Item	2016		2015	
Revenue from services provided to depository institutions (note 4)		434.1		429.1
Operating expenses (note 5)		401.5		381.2
Income from operations		32.5		47.9
Imputed costs (note 6)				
Interest on debt	-1.4		4.2	
Interest on float	0.1		-0.2	
Sales taxes	3.8	2.5	3.6	7.5
Income from operations after imputed costs		30.0		
Other income and expenses (note 7)				
Investment income	0.2			
Income before income taxes		30.2		40.4
Imputed income taxes (note 6)		6.5		9.0
Net income		23.7		31.3
Memo: Targeted return on equity (note 6)		4.1		5.6

Note: Components may not sum to totals because of rounding. The accompanying notes are an integral part of these pro forma priced services financial statements.

Table 8. Pro forma income statement for Federal Reserve priced services, by service, 2016
Millions of dollars

Item	Total	Commercial check collection	Commercial ACH	Fedwire funds	Fedwire securities
Revenue from services (note 4)	434.1	154.2	131.0	123.0	25.9
Operating expenses (note 5)[1]	401.5	129.1	131.7	115.2	25.6
Income from operations	32.5	25.1	-0.6	7.8	0.3
Imputed costs (note 6)	2.5	1.4	-0.2	1.1	0.2
Income from operations after imputed costs	30.0	23.7	-0.4	6.7	0.0
Other income and expenses, net (note 8)	0.2	0.0	0.0	0.1	0.0
Income before income taxes	30.2	23.8	-0.4	6.7	0.0
Imputed income taxes (note 6)	6.5	5.1	-0.1	1.5	0.0
Net income	23.7	18.6	-0.3	5.3	0.0
Memo: Targeted return on equity (note 6)	4.1	1.3	1.3	1.3	0.2
Cost recovery (percent) (note 7)	104.7	112.7	98.8	103.3	99.2

Note: Components may not sum to totals because of rounding. The accompanying notes are an integral part of these pro forma priced services financial statements.

[1] Operating expenses include pension costs, Board expenses, and reimbursements for certain nonpriced services.

Notes to Pro Forma Financial Statements for Priced Services

(1) Short-Term Assets

Receivables are composed of fees due the Reserve Banks for providing priced services and the share of suspense- and difference-account balances related to priced services.

Items in process of collection are gross Federal Reserve cash items in process of collection (CIPC), stated on a basis comparable to that of a commercial bank. They reflect adjustments for intra-Reserve Bank items that would otherwise be double-counted on the combined Federal Reserve balance sheet and adjustments for items associated with nonpriced items (such as those collected for government agencies). Among the costs to be recovered under the Monetary Control Act is the cost of float, or net CIPC during the period (the difference between gross CIPC and deferred-availability items, which is the portion of gross CIPC that involves a financing cost), valued at the federal funds rate. Investments of excess financing derived from credit float are assumed to be invested in federal funds.

(2) Long-Term Assets

Long-term assets consist of long-term assets used solely in priced services and the priced-service portion of long-term assets shared with nonpriced services, including a deferred tax asset related to the priced services pension and postretirement benefits obligation. The tax rate associated with the deferred tax asset was 21.6 percent and 22.4 percent for 2016 and 2015, respectively.

Long-term assets also consist of an estimate of the assets of the Board of Governors used in the development of priced services.

(3) Liabilities and Equity

Under the matched-book capital structure for assets, short-term assets are financed with short-term payables and imputed short-term debt, if needed. Long-term assets are financed with long-term liabilities, imputed long-term debt, and imputed equity, if needed. To meet the Federal Deposit Insurance Corporation requirements for a well-capitalized institution, in 2016 equity is imputed at 5.0 percent of total assets and 10.9 percent of risk-weighted assets, and in 2015 equity is imputed at 6.4 percent of total assets and 10.0 percent of risk-weighted assets.

In 2014, the Board approved revisions to the Payment System Risk policy to reflect the new international standards for financial market infrastructures developed by the Committee on Payment and Settlement Systems and the Technical Committee of the International Organization of Securities Commissions in the Principles for Financial Market Infrastructures. The policy retains the expectation that the Fedwire Services will meet or exceed the applicable risk-management standards. Effective December 31, 2015, the Reserve Banks' priced services imputed six months of the Fedwire Funds Service's current operating expenses as liquid net financial assets and equity on the pro forma balance sheet. The imputed assets held as liquid net financial assets are cash items in process of collection, which are assumed to be invested in federal funds.

In accordance with Accounting Standards Codification (ASC) Topic 715 (ASC 715), Compensation–Retirement Benefits, the Reserve Banks record the funded status of pension and other benefit plans on their balance sheets. To reflect the funded status of their benefit plans, the Reserve Banks recognize the deferred

items related to these plans, which include prior service costs and actuarial gains or losses, on the balance sheet. This results in an adjustment to the pension and other benefit plan liabilities related to priced services and the recognition of an associated deferred tax asset with an offsetting adjustment, net of tax, to accumulated other comprehensive income (AOCI), which is included in equity. The Reserve Bank priced services recognized a pension liability, which is a component of accrued benefit costs, of $33.2 million in 2016 and $26.2 million in 2015. The change in the funded status of the pension and other benefit plans resulted in a corresponding increase in accumulated other comprehensive loss of $12.9 million in 2016.

(4) Revenue

Revenue represents fees charged to depository institutions for priced services and is realized from each institution through direct charges to an institution's account.

(5) Operating Expenses

Operating expenses consist of the direct, indirect, and other general administrative expenses of the Reserve Banks for priced services and the expenses of the Board related to the development of priced services. Board expenses were $5.0 million in 2016 and $3.3 million in 2015.

In accordance with ASC 715, the Reserve Bank priced services recognized qualified pension-plan operating expenses of $34.4 million in 2016 and $33.7 million in 2015. Operating expenses also include the nonqualified net pension expense of $4.9 million in 2016 and $3.2 million in 2015. The adoption of ASC 715 does not change the systematic approach required by generally accepted accounting principles to recognize the expenses associated with the Reserve Banks' benefit plans in the income statement. As a result, these expenses do not include amounts related to changes in the funded status of the Reserve Banks' benefit plans, which are reflected in AOCI.

The income statement by service reflects revenue, operating expenses, imputed costs, other income and expenses, and cost recovery. The tax rate associated with imputed taxes was 21.6 percent and 22.4 percent for 2016 and 2015, respectively.

(6) Imputed Costs

Imputed costs consist of income taxes, return on equity, interest on debt, sales taxes, and interest on float. Many imputed costs are derived from the PSAF model. The 2016 cost of short-term debt imputed in the PSAF model is based on nonfinancial commercial paper rates; the cost of imputed long-term debt is based on Merrill Lynch Corporate and High Yield Index returns; and the effective tax rate is derived from U.S. publicly traded firm data, which serve as the proxy for the financial data of a representative private-sector firm. The after-tax rate of return on equity is based on the returns of the equity market as a whole.[18]

Interest is imputed on the debt assumed necessary to finance priced-service assets. These imputed costs are allocated among priced services according to the ratio of operating expenses, less shipping expenses, for each service to the total expenses, less the total shipping expenses, for all services.

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[18] See Federal Reserve Bank Services Private-Sector Adjustment Factor, 77 Fed. Reg. 67,007 (November 8, 2012), www.gpo.gov/fdsys/pkg/FR-2012-11-08/pdf/2012-26918.pdf, for details regarding the PSAF methodology change.

Interest on float is derived from the value of float to be recovered for the check and ACH services, Fedwire Funds Service, and Fedwire Securities Services, through per-item fees during the period. Float income or cost is based on the actual float incurred for each priced service.

The following shows the daily average recovery of actual float by the Reserve Banks for 2016, in millions of dollars:

Total float	-334.4
Float not related to priced services[1]	0.1
Float subject to recovery through per-item fees	-334.3

[1] Float not related to priced services includes float generated by services to government agencies and by other central bank services.

Float that is created by account adjustments due to transaction errors and the observance of nonstandard holidays by some depository institutions was recovered from the depository institutions through charging institutions directly. Float subject to recovery is valued at the federal funds rate. Certain ACH funding requirements and check products generate credit float; this float has been subtracted from the cost base subject to recovery in 2016 and 2015.

(7) Other Income and Expenses

Other income consists of income on imputed investments. Excess financing resulting from additional equity imputed to meet the FDIC well-capitalized requirements is assumed to be invested and earning interest at the 3-month Treasury bill rate.

(8) Cost Recovery

Annual cost recovery is the ratio of revenue, including other income, to the sum of operating expenses, imputed costs, imputed income taxes, and after-tax targeted return on equity.

7 Other Federal Reserve Operations

Regulatory Developments

Dodd-Frank Implementation

Throughout 2016, the Federal Reserve continued to implement the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) (Pub. L. No. 111-203), which gives the Federal Reserve important responsibilities to issue rules and supervise financial companies to enhance financial stability and preserve the safety and soundness of the banking system. The Board also continued to implement other regulatory reforms to increase the resiliency of banking organizations and help to ensure that they are operating in a safe and sound manner.

The following is a summary of the key regulatory initiatives that were completed during 2016.

The Board's Framework for Implementing the Countercyclical Capital Buffer (Appendix A to Regulation Q)

In September 2016, the Board issued a policy statement detailing the framework the Board will follow to set the U.S. Countercyclical Capital Buffer (CCyB) for private-sector credit exposures located in the United States. The CCyB is a macroprudential tool in the Board's regulatory capital rule that can be used to increase the resilience of the financial system by raising capital requirements on internationally active banking organizations when the risk of above-normal losses is elevated. In particular, the CCyB increases the size of the capital conservation buffer for these banking organizations. Banking organizations that hold an amount of capital that is less than the amount of the capital conservation buffer face restrictions on capital distributions and discretionary bonus payments to senior executives. In this regard, the CCyB would be available to help the banking organizations absorb shocks associated with declining credit conditions. Implementation of the buffer could also help moderate fluctuations in the supply of credit.

The policy statement provides background on the range of financial system vulnerabilities and other factors the Board may take into account as it evaluates settings for the buffer, including but not limited to leverage in the nonfinancial sector, leverage in the financial sector, maturity and liquidity transformation in the financial sector, and asset valuation pressures. The policy statement also provides that the Board expects that the CCyB will be activated when systemic vulnerabilities are meaningfully above normal and that the Board generally would expect to provide notice to the public and seek comment on the proposed level of the CCyB as part of making any final determination to change the CCyB. The policy statement became effective on October 14, 2016.

Long-Term Debt and Total Loss-Absorbing Capacity Requirement (Regulation YY)

In December 2016, the Board issued a final rule to strengthen the ability of government authorities to resolve in an orderly way the largest domestic and foreign banks operating in the United States without any support from taxpayer-provided capital.

The final rule requires the parent holding companies of U.S. global systemically important banking organizations and the top-tier U.S. intermediate holding companies of foreign global systemically important banking organizations (collectively known as covered companies) to maintain outstanding a minimum amount of long-term unsecured debt, as well as a minimum amount of total loss-absorbing capacity and related buffers. The final rule also subjects the covered companies to "clean holding company" limitations at the top-tier holding company level that would prohibit or limit those companies from entering into certain financial arrangements that could impair their resolvability and the resiliency of their operating subsidiaries. Covered companies are

required to comply with the final rule by January 1, 2019.

Liquidity Standards

Liquidity Risk Measurement Standards (Regulation WW)

In April 2016, the Board issued a final rule that amends the liquidity coverage ratio (LCR) rule to include certain U.S. general obligation municipal securities as high-quality liquid assets (HQLA). The final rule applies only to entities supervised by the Board that are subject to the LCR. The final rule permits companies to include as level 2B liquid assets U.S. general obligation municipal securities that meet the same criteria as corporate debt securities that are included as level 2B liquid assets. To ensure appropriate diversification of the assets included in the total HQLA amount and address the liquidity structure of the U.S. municipal securities market, the final rule also limits the amount of U.S. general obligation municipal securities that may be included in a company's total HQLA amount. The final rule became effective on July 1, 2016.

Liquidity Coverage Ratio Rule Disclosures (Regulation WW)

In December 2016, the Board issued a final rule that amends the liquidity coverage ratio (LCR) rule to implement public disclosure requirements for certain companies subject to the LCR rule. The final rule applies to bank holding companies and certain savings and loan holding companies with total consolidated assets of $50 billion or more or total on-balance sheet foreign exposure of $10 billion or more, and to nonbank financial companies designated by the Financial Stability Oversight Council for Board supervision to which the Board has applied the LCR rule. These companies are required to disclose information about certain components of their LCR calculations on a quarterly basis in a standardized format and to discuss certain features of their LCR results. In addition, the Board simultaneously amended the modified LCR rule to provide one full year for bank holding companies and certain savings and loan holding companies to come into compliance with the rule. The final rule will become effective on April 1, 2017.

Key Regulatory Initiatives Proposed in 2016

The following is a summary of additional regulatory initiatives that the Board proposed in 2016.

Single-Counterparty Credit Limits (Regulation YY)

In March 2016, the Board proposed a rule that would apply single-counterparty credit limits to bank holding companies with total consolidated assets of $50 billion or more for public comment, as required by section 165(e) of the Dodd-Frank Act. The proposed rule addresses the risk associated with excessive credit exposures of large banking organizations to a single counterparty and included limits that are tailored to increase in stringency as the systemic footprint of a bank holding company increases, as well as similarly tailored requirements for foreign banks operating in the United States. The public comment period for the proposed rule ended on June 3, 2016.

Restrictions on Qualified Financial Contracts (Regulations Q, WW, and YY)

In May 2016, the Board proposed a rule to support U.S. financial stability by enhancing the resolvability of very large and complex financial firms. The proposed rule would require U.S. global systemically important banking institutions (G-SIBs) and the U.S. operations of foreign G-SIBs (collectively, covered entities) to amend their derivative, securities financing, and other qualified financial contracts (QFCs) to prevent the disorderly unwind of the contracts if the parent or another entity within the firm enters bankruptcy or a resolution process. Given the large volume of QFCs to which these entities are a party, the exercise of default rights en masse as a result of the failure of one of the firms could lead to a disorderly resolution if the failed firm were forced to sell off assets, which could spread contagion by increasing volatility and lowering the value of similar assets held by other firms, or to withdraw liquidity that it had provided to other firms. The proposed rule would require these entities to make clear in their QFCs that the U.S. resolution regimes for financial companies and institutions (i.e., title II of the Dodd-Frank Act and the Federal Deposit Insurance Act) apply to the contracts, which should reduce the risk of a foreign court disregarding provisions of those acts that would temporarily stay the termination of QFCs. The proposed rule also would require these entities to ensure that their QFCs restrict the ability of their counterparties to terminate the contract, liquidate collateral, or exercise other default rights based on the resolution or liquidation of an affiliate in bankruptcy or in a resolution. The proposed rule states that QFCs amended by the International Swaps and Derivatives Association 2015 Universal Resolution Stay Protocol would comply with the proposed rule.

The proposed rule also would make technical, conforming amendments to the Board's capital and liquidity rules. The public comment period for the proposed rule ended on August 5, 2016.

Net Stable Funding Ratio (Regulation WW)

In May 2016, the Board, the Office of the Comptroller of the Currency (OCC), and the Federal Deposit Insurance Corporation (FDIC) jointly proposed a rule that would implement the net stable funding ratio (NSFR), a stable funding requirement for large and internationally active banking organizations. The NSFR is designed to reduce the likelihood that disruptions to a firm's regular sources of funding will compromise its liquidity position. The NSFR would be the second quantitative liquidity requirement for U.S. banking firms and would be established as an enhanced prudential liquidity standard under section 165 of the Dodd-Frank Act.

The proposed rule, which would complement the liquidity coverage ratio, would require covered companies to maintain a minimum level of stable funding based on the liquidity characteristics of the covered company's assets, funding commitments, and derivative exposures over a one-year time horizon. The most stringent NSFR requirements would apply to banking organizations with total consolidated assets of $250 billion or more or total consolidated on-balance-sheet foreign exposure of $10 billion or more, and their subsidiary insured depository institutions with $10 billion or more of total consolidated assets. The proposed rule would apply a less stringent NSFR requirement to certain smaller depository institution holding companies with $50 billion or more in total consolidated assets that are not otherwise covered by the rule. The public comment period for the proposed rule ended on August 5, 2016.

Incentive Compensation (Regulation JJ)

In May 2016, the Board, the OCC, the FDIC, the Securities and Exchange Commission, the Federal Housing Finance Agency, and the National Credit Union Administration jointly reproposed a rule that would prohibit incentive-based compensation arrangements that encourage inappropriate risks at covered financial institutions as required by section 956 of the Dodd-Frank Act. The proposed rule would apply to covered financial institutions with total assets of $1 billion or more. The requirements are tailored based on total consolidated asset size. Covered institutions would be divided into three categories: institutions with assets of $250 billion and above (Level 1); institutions with assets of $50 billion to $250 billion (Level 2); and institutions with assets of $1 billion to $50 billion (Level 3). This proposal sought comments on revisions to a previous proposal made by the agencies in 2011.

The proposed rule primarily addresses heightened requirements for senior executive officers and employees who are significant risk-takers at Level 1 and Level 2 institutions. These requirements include mandatory deferral of incentive-based compensation, mandatory consideration of forfeiture and downward adjustment if certain adverse outcomes occur, and the inclusion of clawback provisions in incentive-based compensation arrangements. Boards of directors of covered institutions would be required to conduct oversight of incentive-based compensation programs. All covered institutions would be subject to general prohibitions on incentive-based compensation arrangements that could encourage inappropriate risk-taking by providing excessive compensation or that could lead to a material financial loss. The public comment period for the proposed rule ended on July 22, 2016.

Capital Standards for Supervised Institutions Significantly Engaged in Insurance Activities

In June 2016, the Board sought comment on an advance notice of proposed rulemaking (ANPR) regarding conceptual frameworks for capital standards that could apply to certain nonbank financial companies with significant insurance activities that the Financial Stability Oversight Council has determined should be supervised by the Board (otherwise known as systemically important insurance companies), insurance companies that own a bank or savings association, and holding companies with significant insurance activities. The ANPR presents one approach that would apply to systemically important insurance companies (the consolidated approach), and a second approach for less complex insurance companies that also own a bank or thrift (the building block approach).

The consolidated approach would classify the total consolidated assets and insurance liabilities of a company that is significantly engaged in insurance activities into risk segments, apply appropriate risk factors to each segment at the consolidated level, and then set a minimum ratio of required capital. The building block approach would aggregate existing capital requirements across a firm's different legal entities to arrive at a combined, group-level capital requirement,

subject to adjustments to reflect the Board's supervisory objectives. The public comment period for the ANPR ended on August 17, 2016.

Enhanced Prudential Standards for Systemically Important Insurance Companies (Regulation YY)

In June 2016, the Board proposed a rule that would apply enhanced prudential standards to systemically important insurance companies. The proposed rule would require systemically important insurance companies to comply with certain corporate governance, risk-management, and liquidity risk-management standards that are tailored to the business models, capital structures, risk profiles, and systemic footprints of those companies. The public comment period for the proposed rule ended on September 16, 2016.

Capital Planning and Stress Testing Requirements (Regulations Y and YY)

In September 2016, the Board proposed a rule that would modify its capital plan and stress testing rules to remove certain large and noncomplex firms from the qualitative assessment in the capital plans rule and from the Federal Reserve's Comprehensive Capital Analysis and Review (CCAR). Through CCAR, the Federal Reserve evaluates the capital planning processes and capital adequacy of bank holding companies with $50 billion or more in total consolidated assets. Under the proposed rule, bank holding companies and intermediate holding companies of foreign banking organizations with total consolidated assets between $50 billion and $250 billion, on-balance-sheet foreign exposure of less than $10 billion, and total consolidated nonbank assets of less than $75 billion would be considered large and noncomplex firms and would be removed from the qualitative assessment of CCAR. Large and noncomplex firms would remain subject to the quantitative review in the capital plan rule and CCAR.

The proposed rule would also reduce reporting and supporting documentation requirements for large and noncomplex firms. In addition, the proposed rule would decrease the amount of capital any firm subject to CCAR can distribute to shareholders outside of an approved capital plan without seeking prior approval from the Board (from 1 percent of tier 1 capital to .25 percent of tier 1 capital) and would implement a one-quarter blackout period for such requests while the Federal Reserve is conducting CCAR. The proposed rule would simplify the initial applicability provisions of the capital plan and stress test rules for all firms and would require all firms to report total nonbank assets. Finally, the proposed rule would extend the range of potential as-of dates for the trading and counterparty scenario components used in the stress test rules and make other necessary technical changes to the capital plan and stress test rules. The public comment period for the proposed rule ended on November 25, 2016. The Board adopted a final rule in January 2017.

The Board of Governors and the Government Performance and Results Act

Overview

The Government Performance and Results Act (GPRA) of 1993 requires federal agencies to prepare a strategic plan covering a multiyear period and requires each agency to submit an annual performance plan and an annual performance report. Although the Board is not covered by GPRA, the Board follows the spirit of the act and, like other federal agencies, prepares an annual performance plan and an annual performance report.

Strategic Plan, Performance Plan, and Performance Report

On July 7, 2015, the Board approved the *Strategic Plan 2016–19*, which identifies and frames the strategic priorities of the Board. In addition to investing in ongoing operations, the Board identified and prioritized investments and dedicated sufficient resources to six pillars over the 2016–19 period, which will allow the Board to advance its mission and respond to continuing and evolving challenges.

The annual performance plan outlines the planned initiatives and activities that support the framework's long-term objectives and resources necessary to achieve those objectives. The annual performance report summarizes the Board's accomplishments that contributed toward achieving the strategic goals and objectives identified in the annual plan.

The strategic plan, performance plan, and performance report are available on the Federal Reserve Board's website at www.federalreserve.gov/publications/gpra.htm.

8 Record of Policy Actions of the Board of Governors

Policy actions of the Board of Governors are presented pursuant to section 10 of the Federal Reserve Act. That section provides that the Board shall keep a record of all questions of policy determined by the Board and shall include in its annual report to Congress a full account of such actions. This section provides a summary of policy actions in 2016, as implemented through (1) rules and regulations, (2) policy statements and other actions, and (3) discount rates for depository institutions. Policy actions were approved by all Board members in office. More information on the actions is available from the relevant *Federal Register* notices or other documents (see links in footnotes) or on request from the Board's Freedom of Information Office.

For information on the Federal Open Market Committee's policy actions relating to open market operations, see section 9, "Minutes of Federal Open Market Committee Meetings."

Rules and Regulations

Regulations H (Membership of State Banking Institutions in the Federal Reserve System) and K (International Banking Operations)

On February 4, 2016, the Board approved a joint interim final rule with request for comment (Docket No. R-1531) to increase the number of insured depository institutions eligible for an 18-month (rather than a 12-month) on-site examination cycle.[1] Under the interim final rule, insured depository institutions that have total assets of less than $1 billion and are well capitalized and well managed (generally, institutions that have a composite rating of 1 or 2 under the Uniform Financial Institutions Rating System) are eligible for an extended examination cycle. Previously, only firms with less than $500 million in total assets were eligible for the extended examination cycle. The interim final rule, issued jointly with the Federal Deposit Insurance Corporation and Office of the Comptroller of the Currency, also makes parallel changes to the Board's regulation governing the on-site examination cycle for U.S. branches and agencies of foreign banks. The interim final rule, which implements provisions of the Fixing America's Surface Transportation Act (FAST Act), is effective February 29, 2016.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

On November 29, 2016, the Board approved a final rule (Docket No. R-1531), published jointly with the other agencies, that adopts, without change, the interim final rule establishing an 18-month examination cycle for insured depository institutions that have total assets of less than $1 billion.[2] The final rule is effective January 17, 2017.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Regulation I (Issue and Cancellation of Federal Reserve Bank Capital Stock)

On February 17, 2016, the Board approved an interim final rule with request for comment (Docket No. R-1533) to change the rates paid on dividends to Federal Reserve Bank stockholders with total consolidated assets greater than $10 billion (large member banks) to the lesser of 6 percent or the most recent 10-year Treasury auction rate prior to the dividend payment.[3] The dividend rate for member banks with $10 billion or less in total consolidated assets remains at 6 percent. The interim final rule imple-

[1] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-02-29/html/2016-03877.htm.

[2] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-12-16/html/2016-30133.htm.

[3] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-02-24/html/2016-03747.htm.

ments provisions of the FAST Act. In addition, the interim final rule requires the Board to annually adjust the $10 billion threshold to reflect inflation, and the rule adjusts the treatment of accrued dividends when a Reserve Bank issues or cancels capital stock owned by a large member bank. The interim final rule is effective February 24, 2016.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

On November 3, 2016, the Board approved a final rule (Docket No. R-1533) to implement the FAST Act provisions regarding payment of dividends to Reserve Bank stockholders that adopts, without change, the interim final rule that the Board approved on February 17, 2016.[4] The final rule is effective January 1, 2017.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Regulation Q (Capital Adequacy of Bank Holding Companies, Savings and Loan Holding Companies, and State Member Banks)

On December 6, 2016, the Board approved a final rule (Docket No. R-1535) regarding risk-based capital surcharges for U.S.-based global systemically important bank holding companies (G-SIBs).[5] The final rule requires G-SIBs to continue calculating their potential surcharges under two methods and use the higher of the two surcharges. The final rule specifies that G-SIBs must continue to calculate their method 1 and method 2 scores annually using year-end data, while reporting underlying data on a quarterly basis. In addition, the final rule clarifies that G-SIBs must calculate their method 2 scores using systemic indicator amounts expressed in billions of dollars. The final rule is effective January 17, 2017. (The surcharges are being phased in beginning on January 1, 2016, and become fully effective on January 1, 2019.)

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

On December 6, 2016, the Board approved an interim final rule with request for comment (Docket No. R-1535) to extend the filing deadline for certain firms to complete Schedule G of the Banking Organization Systemic Risk Report (FR Y-15), which is related to the G-SIB surcharge rule.[6] The adjusted timeline applies to firms with $50 billion or more in total consolidated assets that are not currently identified as G-SIBs. The reporting requirements are being harmonized with similar reporting requirements from other rules. The interim final rule is effective immediately.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Regulation Z (Truth in Lending)

On November 7, 2016, the Board approved a final rule (Docket No. R-1443) amending official staff interpretations to Regulation Z to clarify the method for making annual inflation adjustments to the dollar threshold for exempting small loans from the special appraisal requirements for higher-priced mortgage loans.[7] Regulation Z exempts higher-priced mortgage loans of $25,000 or less from the special appraisal requirements created under the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) and requires the exemption threshold to be adjusted annually to reflect increases, but not decreases, in the consumer price index. The final rule, issued jointly with the Office of the Comptroller of the Currency and Consumer Financial Protection Bureau, also describes how adjustments to the threshold are made in the years following a year in which the dollar values were not adjusted because there was no increase in the consumer price index. Based on the consumer price index in effect as of June 1, 2016, the exemption threshold will remain at $25,500 through 2017. The final rule is effective January 1, 2017.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

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[4] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-11-23/html/2016-28231.htm.

[5] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-12-16/html/2016-29966.htm.

[6] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-12-16/html/2016-29967.htm.

[7] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-11-30/html/2016-28699.htm.

Regulation Z (Truth in Lending) and Regulation M (Consumer Leasing)

On November 7, 2016, the Board approved final amendments (Docket Nos. R-1546 and R-1545) to official staff interpretations to Regulations Z and M to clarify the method for making annual inflation adjustments to the dollar thresholds for exempt consumer credit and consumer lease transactions, respectively.[8] The Dodd-Frank Act requires the exemption thresholds to be adjusted annually for inflation, based on changes in the consumer price index. The final rules, issued jointly with the Consumer Financial Protection Bureau, clarify that if there is no annual increase in the consumer price index, the agencies will not adjust the exemption thresholds from the prior year. The final rules also describe how adjustments to the thresholds are made in years following a year in which the dollar values were not adjusted because there was no increase in the consumer price index. Based on the consumer price index in effect as of June 1, 2016, the thresholds will remain at $54,600 through 2017. Although consumer credit and consumer lease transactions above the thresholds are generally exempt from the regulations' coverage, loans secured by real property or by personal property used or expected to be used as the principal dwelling of a consumer and private education loans are covered by the Truth in Lending Act regardless of the loan amount. The final rules are effective January 1, 2017.

Voting for these actions: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Regulation AA (Unfair or Deceptive Acts or Practices)

On January 13, 2016, the Board approved a final rule (Docket No. R-1490) repealing Regulation AA, in view of the Dodd-Frank Act's repeal of the Board's authority to issue rules under the Federal Trade Commission Act (FTC Act) regarding unfair or deceptive acts or practices by banks.[9] Regulation AA included the Board's credit practices rule. While the Dodd-Frank Act did not specifically transfer authority for the Board's Regulation AA to the Consumer Financial Protection Bureau, the bureau can issue its own rules on this subject. In August 2014, the Board, jointly with the Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, National Credit Union Administration, and the bureau, issued interagency guidance to clarify that the unfair or deceptive practices described in the Board's credit practices rule could violate the FTC Act's prohibitions. In addition, Regulation AA contained the Board's procedures for processing consumer complaints, which are currently provided on the Board's website.[10] The final rule is effective March 21, 2016.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Regulation KK (Margin and Capital Requirements for Covered Swap Entities)

On July 18, 2016, the Board approved a final rule (Docket No. R-1415) to exempt certain commercial and financial end users from initial and variation margin requirements for certain swaps not cleared through a clearinghouse, as required by title III of the Terrorism Risk Insurance Program Reauthorization Act of 2015.[11] The final rule, issued jointly with the Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, Farm Credit Administration, and Federal Housing Finance Agency, exempts from margin requirements certain non-cleared swaps and non-cleared security-based swaps between covered swap entities and certain commercial end users, captive finance companies, and small banks, savings associations, Farm Credit System institutions, and credit unions with $10 billion or less in total assets. The exemption from margin requirements would also apply to non-cleared swaps and security-based swaps between covered swap entities and certain treasury affiliates and financial cooperatives. In all cases, these entities must qualify for a clearing exemption or exception and be using the transactions to hedge or mitigate commercial risk. The final rule, effective October 1, 2016, is unchanged from an interim final rule published by the agencies in November 2015.

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8 See *Federal Register* notices at www.gpo.gov/fdsys/pkg/FR-2016-11-30/html/2016-28718.htm and www.gpo.gov/fdsys/pkg/FR-2016-11-30/html/2016-28710.htm.

9 See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-02-18/html/2016-03228.htm.

10 See consumer complaint information at www.federalreserveconsumerhelp.gov/.

11 See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-08-02/html/2016-18193.htm.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Regulation WW (Liquidity Risk Measurement Standards)

On March 28, 2016, the Board approved a final rule (Docket No. R-1514) that amends the liquidity coverage ratio (LCR) rule to include certain U.S. general obligation state and municipal securities in the range of assets that large banking organizations may hold to meet liquidity needs that could arise during a period of financial stress.[12] The LCR requires covered companies to hold a minimum amount of high-quality liquid assets (HQLA) sufficient to meet their net cash outflows during a short-term period of financial stress. Under the final rule, investment-grade U.S. general obligation state and municipal securities qualify as HQLA, provided the assets meet certain other criteria similar to those applied to corporate debt securities that are included as HQLA. The final rule, which also limits the amount of U.S. general obligation state and municipal securities that may be included in a covered company's HQLA amount to address the structure of the U.S. municipal securities market, is effective July 1, 2016.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

On December 18, 2016, the Board approved a final rule (Docket No. R-1525) to implement public disclosure requirements for the liquidity coverage ratio (LCR) rule.[13] The final rule requires firms subject to these requirements to publicly disclose, on a quarterly basis, quantitative information about their LCR and also provide a qualitative discussion of the factors that have a significant effect on their LCR. The final rule, which applies to depository institution holding companies and covered nonbank financial companies subject to the LCR, is effective April 1, 2017.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Regulation YY (Enhanced Prudential Standards)

On December 15, 2016, the Board approved a final rule (Docket No. R-1523) to improve the prospects for the orderly resolution of U.S. firms identified as global systemically important banks (G-SIBs) and the U.S. operations of foreign G-SIBs (collectively, covered companies) as well as to strengthen the resiliency of all G-SIBs.[14] The final rule requires covered companies to maintain outstanding a minimum amount of long-term unsecured debt, as well as a minimum amount of total loss-absorbing capacity and related buffers. In addition, the final rule applies "clean holding company" requirements that restrict financial arrangements that could impair the resolvability and the resiliency of a covered company or an operating subsidiary of a covered company. The final rule is effective March 27, 2017.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Rules of Practice for Hearings

On July 5, 2016, the Board approved an interim final rule with request for comment (Docket No. R-1543) amending its rules of practice and procedure to adjust the amounts of its civil monetary penalties to account for inflation, as required by the Federal Civil Penalties Inflation Adjustment Act Improvements Act of 2015.[15] The act requires this adjustment to be made annually rather than every four years, prescribes the formula for inflation adjustment, and directs the federal agencies to make a "catch-up" adjustment (the first inflation adjustment after enactment of the law). The interim final rule, effective August 1, 2016, sets the new civil monetary penalty levels pursuant to the required catch-up adjustment.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Rules Regarding Availability of Information

On December 8, 2016, the Board approved an interim final rule with request for comment (Docket No. R-1556) to amend its regulations for processing

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[12] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-04-11/html/2016-07716.htm.

[13] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-12-27/html/2016-30859.htm.

[14] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2017-01-24/html/2017-00431.htm.

[15] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-07-20/html/2016-16969.htm.

requests under the Freedom of Information Act (FOIA), pursuant to the FOIA Improvement Act of 2016.[16] The amendments clarify and update procedures for the disclosure of records to the public, extend the deadline for administrative appeals, and add information on dispute resolution services. The interim final rule is effective December 27, 2016.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Policy Statements and Other Actions

Community Reinvestment Act

On July 5, 2016, the Board approved final new and revised Interagency Questions and Answers Regarding Community Reinvestment (Docket No. OP-1497), issued jointly with the Federal Deposit Insurance Corporation and Office of the Comptroller of the Currency, to provide additional guidance to financial institutions and the public on the agencies' Community Reinvestment Act regulations.[17] The interagency questions and answers address topics such as the types of activities that promote economic development and address community development needs; how examiners evaluate the availability and effectiveness of retail banking services; innovative or flexible lending practices; the evaluation of retail and community development services; and responsiveness and innovativeness considerations. The interagency questions and answers are effective July 25, 2016.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Investments in Bank Premises

On June 2, 2016, the Board approved a revision to its policy on investments in bank premises, which conforms its approach to that of the other federal banking agencies. The previous standard for permissible bank premises held by state member banks generally required that at least 50 percent of the property must be used for banking purposes within five years of acquisition of the property. Under the revised policy, the Board will determine whether a state member bank is holding real estate in good faith for the business of banking and not for impermissible real estate speculation. The Board will analyze the facts and circumstances in each case, including the financial significance of the branch housed by the property, the state member bank's expected long-term plans for the property, and whether the bank has occupied the premises for a long period of time. The standard for permissible bank premises held by bank holding companies has not changed—generally at least 50 percent of the property must be used for banking purposes within five years of acquisition of the property. The revised policy is effective immediately.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Supervisory Rating System for Financial Market Infrastructures

On August 22, 2016, the Board approved a notice (Docket No. OP-1521) adopting a new supervisory rating system for financial market infrastructures (FMIs) subject to Federal Reserve supervision.[18] FMIs are multilateral systems that transfer, clear, settle, or record payments, securities, derivatives, or other financial transactions among market participants or between participants and the FMI operator. FMIs include payment systems, central securities depositories, securities settlement systems, central counterparties, and trade repositories. The Federal Reserve supervises certain FMIs that provide payment, clearing, and settlement services for critical U.S. financial markets. The ORSOM (Organization; Risk Management; Settlement; Operational Risk and Information Technology; and Market Support, Access, and Transparency) rating system is designed to link supervisory assessments and messages to supervised entities to the regulations and guidance that form the foundation of the supervisory program. The policy is effective October 27, 2016.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Countercyclical Capital Buffer

On September 6, 2016, the Board approved a policy statement (Docket No. R-1529) describing the frame-

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[16] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-12-27/html/2016-30670.htm.

[17] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-07-25/html/2016-16693.htm.

[18] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-08-26/html/2016-20517.htm.

work the Board will follow in setting the amount of the U.S. countercyclical capital buffer (CCyB) for advanced approaches bank holding companies, savings and loan holding companies, and state member banks.[19] The CCyB is a macroprudential policy tool that can be increased during periods of rising vulnerabilities in the financial system and reduced when vulnerabilities recede. The policy statement provides background on the range of financial-system vulnerabilities and other factors the Board may take into account as it evaluates the appropriate level of the CCyB. The policy statement states that (1) the Board expects to activate the CCyB when systemic vulnerabilities are meaningfully above normal and that the Board generally intends to increase the CCyB gradually, and (2) the Board expects to remove or reduce the CCyB when the conditions that led to its activation abate or lessen and when the release of CCyB capital would promote financial stability. The CCyB supplements the minimum capital requirements and other capital buffers included in Regulation Q, which are designed to provide resilience to unexpected losses created by normal fluctuations in economic and financial conditions. The policy statement (designated as Appendix A to Regulation Q) is effective October 14, 2016.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Post-Employment Restrictions for Officers and Senior Examiners

On October 21, 2016, the Board approved amendments to its policies regarding post-employment restrictions for officers and Reserve Bank senior examiners.[20] The Reserve Banks' Code of Conduct was revised to add new provisions to prohibit former Reserve Bank officers from representing financial institutions and other third parties before current Federal Reserve System employees for one year following their departure from the System. Also, a revised policy in the Federal Reserve Administrative Manual expands the definition of "senior examiners" subject to a one-year, post-employment restriction to include central points of contact (CPCs), deputy CPCs, senior supervisory officers (SSOs), deputy SSOs, enterprise risk officers, and supervisory team leaders. The restriction on former officers is effective on December 5, 2016, and the revised senior examiner policy is effective on January 2, 2017.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Interagency Consumer Compliance Rating System

On November 2, 2016, the Board approved final guidance (Docket No. FFIEC-2016-0003) to revise the Uniform Interagency Consumer Compliance Rating System (CC Rating System) to better reflect current consumer compliance supervisory approaches toward financial institutions and to more fully align the CC Rating System with the financial regulatory agencies' current risk-based, tailored examination processes.[21] The revisions reflect the regulatory, examination, supervisory, technological, and market changes that have occurred in the years since the original rating system was established in 1980. The Federal Financial Institutions Examination Council, on behalf of its member agencies, issued the guidance on November 7, 2016. The guidance is effective March 31, 2017.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Volcker Rule Conformance Period

On July 5, 2016, the Board approved an order extending until July 21, 2017, the conformance period for banking entities to divest ownership in certain legacy covered fund activities and investments under section 619 of the Dodd-Frank Act, the so-called Volcker rule.[22] Section 619 generally prohibits banking entities from engaging in proprietary trading and from acquiring or retaining an ownership interest in, sponsoring, or having certain relationships with a hedge fund or private equity fund (covered fund). Under the statute, banking entities were provided a grace period until July 2014 to conform their investments in and relationships with covered funds and foreign funds that were in place before December 31, 2013 (legacy covered funds). The act also authorized the Board to extend the con-

[19] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-09-16/html/2016-21970.htm.

[20] See press release at www.federalreserve.gov/newsevents/press/bcreg/20161118a.htm.

[21] See *Federal Register* notice at www.gpo.gov/fdsys/pkg/FR-2016-11-14/html/2016-27226.htm.

[22] See press release at www.federalreserve.gov/newsevents/press/bcreg/20160707a.htm.

formance period for one year at a time, for a total of not more than three years. (The Board has approved two previous one-year extensions of the conformance period.)

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

On December 7, 2016, the Board approved a policy statement with additional details regarding how banking entities may seek an additional five years to conform their investments in a narrow class of funds that qualify as "illiquid funds" to the requirements of section 619 of the Dodd-Frank Act (Volcker rule).[23] Banking entities seeking such an extension should submit information including details about the funds for which an extension is requested, a certification that each fund meets the definition of illiquid fund, a description of the specific efforts made to divest or conform the illiquid funds, the length of the requested extension, and the plan to divest or conform each illiquid fund within the requested extension period.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Interest on Reserves

On December 14, 2016, the Board approved raising the interest rate paid on required and excess reserve balances from ½ percent to ¾ percent, effective December 15, 2016.[24] This action was taken to support the Federal Open Market Committee's decision on December 14 to raise the target range for the federal funds rate by 25 basis points, to a range of ½ percent to ¾ percent.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

Discount Rates for Depository Institutions in 2016

Under the Federal Reserve Act, the boards of directors of the Federal Reserve Banks must establish rates on discount window loans to depository institutions at least every 14 days, subject to review and determination by the Board of Governors. Periodically, the Board considers proposals by the 12 Reserve Banks to establish the primary credit rate and approves proposals to maintain the formulas for computing the secondary and seasonal credit rates.

Primary, Secondary, and Seasonal Credit

Primary credit, the Federal Reserve's main lending program for depository institutions, is extended at the primary credit rate, which is set above the usual level of short-term market interest rates. It is made available, with minimal administration and for very short terms, as a backup source of liquidity to depository institutions that, in the judgment of the lending Federal Reserve Bank, are in generally sound financial condition. During 2016, the Board approved one change to the primary credit rate, an increase from 1 percent to 1¼ percent, effective December 15, 2016. The Board reached this determination on the primary credit rate recommendations of the Reserve Bank boards of directors. The Board's action was taken in conjunction with the FOMC's decision to raise the target range for the federal funds rate by 25 basis points, to ½ percent to ¾ percent. Monetary policy developments are reviewed more fully in other parts of this report (see section 2, "Monetary Policy and Economic Developments").

Secondary credit is available in appropriate circumstances to depository institutions that do not qualify for primary credit. The secondary credit rate is set at a spread above the primary credit rate. Throughout 2016, the spread was set at 50 basis points. At year-end, the secondary credit rate was 1¾ percent.

Seasonal credit is available to smaller depository institutions to meet liquidity needs that arise from regular swings in their loans and deposits. The rate on seasonal credit is calculated every two weeks as an average of selected money market yields, typically resulting in a rate close to the target range for the federal funds rate. At year-end, the seasonal credit rate was 0.70 percent.[25]

Votes on Changes to Discount Rates for Depository Institutions

Details on the action by the Board to approve a change to the primary credit rate are provided below.

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[23] See press release at www.federalreserve.gov/newsevents/press/bcreg/20161212b.htm.

[24] See press release at www.federalreserve.gov/newsevents/pressreleases/20161214a1.htm.

[25] For current and historical discount rates, see www.frbdiscountwindow.org/.

December 14, 2016. Effective December 15, 2016, the Board approved actions taken by the boards of directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Kansas City, Dallas, and San Francisco to increase the primary credit rate from 1 percent to 1¼ percent. On December 15, 2016, the Board approved an identical action subsequently taken by the board of directors of the Federal Reserve Bank of Minneapolis, effective immediately.

Voting for this action: Chair Yellen, Vice Chairman Fischer, and Governors Tarullo, Powell, and Brainard.

9 Minutes of Federal Open Market Committee Meetings

The policy actions of the Federal Open Market Committee, recorded in the minutes of its meetings, are presented in the Annual Report of the Board of Governors pursuant to the requirements of section 10 of the Federal Reserve Act. That section provides that the Board shall keep a complete record of the actions taken by the Board and by the Federal Open Market Committee on all questions of policy relating to open market operations, that it shall record therein the votes taken in connection with the determination of open market policies and the reasons underlying each policy action, and that it shall include in its annual report to Congress a full account of such actions.

The minutes of the meetings contain the votes on the policy decisions made at those meetings, as well as a summary of the information and discussions that led to the decisions. In addition, four times a year, a Summary of Economic Projections is published as an addendum to the minutes. The descriptions of economic and financial conditions in the minutes and the Summary of Economic Projections are based solely on the information that was available to the Committee at the time of the meetings.

Members of the Committee voting for a particular action may differ among themselves as to the reasons for their votes; in such cases, the range of their views is noted in the minutes. When members dissent from a decision, they are identified in the minutes and a summary of the reasons for their dissent is provided.

Policy directives of the Federal Open Market Committee are issued to the Federal Reserve Bank of New York as the Bank selected by the Committee to execute transactions for the System Open Market Account. In the area of domestic open market operations, the Federal Reserve Bank of New York operates under instructions from the Federal Open Market Committee that take the form of an Authorization for Domestic Open Market Operations and a Domestic Policy Directive. (A new Domestic Policy Directive is adopted at each regularly scheduled meeting.) In the foreign currency area, the Federal Reserve Bank of New York operates under an Authorization for Foreign Currency Operations and a Foreign Currency Directive. The Federal Reserve Bank of New York also operated under Procedural Instructions with Respect to Foreign Currency Operations until September 2016. Changes in the instruments during the year are reported in the minutes for the individual meetings.[1]

[1] As of January 1, 2016, the Federal Reserve Bank of New York was operating under the Domestic Policy Directive approved at the December 15–16, 2015, Committee meeting. The other policy instruments (the Authorization for Domestic Open Market Operations, the Authorization for Foreign Currency Operations, the Foreign Currency Directive, and Procedural Instructions with Respect to Foreign Currency Operations) in effect as of January 1, 2016, were approved at the January 27–28, 2015, meeting.

Meeting Held on January 26–27, 2016

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, January 26, 2016, at 12:00 p.m. and continued on Wednesday, January 27, 2016, at 9:00 a.m.[1]

Present

Janet L. Yellen
Chair

William C. Dudley
Vice Chairman

Lael Brainard

James Bullard

Stanley Fischer

Esther L. George

Loretta J. Mester

Jerome H. Powell

Eric Rosengren

Daniel K. Tarullo

Charles L. Evans, Patrick Harker, Robert S. Kaplan, and Neel Kashkari
Alternate Members of the Federal Open Market Committee

Jeffrey M. Lacker, Dennis P. Lockhart, and John C. Williams
Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco, respectively

Brian F. Madigan
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Scott G. Alvarez
General Counsel

Thomas C. Baxter
Deputy General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

Thomas A. Connors, Troy Davig, Michael P. Leahy, Jonathan P. McCarthy, Stephen A. Meyer, Ellis W. Tallman, and William Wascher
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Robert deV. Frierson
Secretary of the Board, Office of the Secretary, Board of Governors

Michael S. Gibson
Director, Division of Banking Supervision and Regulation, Board of Governors

Nellie Liang
Director, Office of Financial Stability Policy and Research, Board of Governors

James A. Clouse and William R. Nelson
Deputy Directors, Division of Monetary Affairs, Board of Governors

Daniel M. Covitz
Deputy Director, Division of Research and Statistics, Board of Governors

William B. English
Senior Special Adviser to the Board, Office of Board Members, Board of Governors

Andrew Figura, Ann McKeehan,[2] David Reifschneider, and Stacey Tevlin
Special Advisers to the Board, Office of Board Members, Board of Governors

Trevor A. Reeve
Special Adviser to the Chair, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

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[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

[2] Attended Wednesday session only.

Eric M. Engen
Senior Associate Director, Division of Research and Statistics, Board of Governors

Beth Anne Wilson
Senior Associate Director, Division of International Finance, Board of Governors

Michael T. Kiley
Senior Adviser, Division of Research and Statistics, and
Senior Associate Director, Office of Financial Stability Policy and Research,
Board of Governors

Ellen E. Meade and Joyce K. Zickler
Senior Advisers, Division of Monetary Affairs, Board of Governors

Jeremy B. Rudd
Senior Adviser, Division of Research and Statistics, Board of Governors

Gretchen C. Weinbach
Associate Director, Division of Monetary Affairs, Board of Governors

Min Wei
Deputy Associate Director, Division of Monetary Affairs, Board of Governors

Glenn Follette
Assistant Director, Division of Research and Statistics, Board of Governors

Eric C. Engstrom
Adviser, Division of Research and Statistics, Board of Governors

Penelope A. Beattie[2]
Assistant to the Secretary, Office of the Secretary, Board of Governors

Etienne Gagnon
Section Chief, Division of Monetary Affairs, Board of Governors

Katie Ross[3]
Manager, Office of the Secretary,
Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Deepa Datta
Senior Economist, Division of International Finance, Board of Governors

[3] Attended Tuesday session only.

Jonathan E. Goldberg
Senior Economist, Division of Monetary Affairs, Board of Governors

Achilles Sangster II
Information Management Analyst, Division of Monetary Affairs, Board of Governors

David Altig, Jeff Fuhrer, Glenn D. Rudebusch, and Daniel G. Sullivan
Executive Vice Presidents, Federal Reserve Banks of Atlanta, Boston, San Francisco, and Chicago, respectively

Samuel Schulhofer-Wohl
Senior Vice President, Federal Reserve Bank of Minneapolis

Todd E. Clark,[4] **Deborah L. Leonard, Keith Sill, and Mark A. Wynne**
Vice Presidents, Federal Reserve Banks of Cleveland, New York, Philadelphia, and Dallas, respectively

William Dupor
Assistant Vice President, Federal Reserve Bank of St. Louis

Robert L. Hetzel
Senior Economist, Federal Reserve Bank of Richmond

Annual Organizational Matters[5]

In the agenda for this meeting, it was reported that advices of the election of the following members and alternate members of the Federal Open Market Committee for a term beginning January 26, 2016, had been received and that these individuals had executed their oaths of office.

The elected members and alternate members were as follows:

William C. Dudley
President of the Federal Reserve Bank of New York, with

Michael Strine
First Vice President of the Federal Reserve Bank of New York, as alternate.

Eric Rosengren
President of the Federal Reserve Bank of Boston, with

[4] Attended the discussion of potential enhancements to the Summary of Economic Projections.

[5] Committee organizational documents are available at www.federalreserve.gov/monetarypolicy/rules_authorizations.htm.

Patrick Harker
President of the Federal Reserve Bank of Philadelphia, as alternate.

Loretta J. Mester
President of the Federal Reserve Bank of Cleveland, with

Charles L. Evans
President of the Federal Reserve Bank of Chicago, as alternate.

James Bullard
President of the Federal Reserve Bank of St. Louis, with

Robert S. Kaplan
President of the Federal Reserve Bank of Dallas, as alternate.

Esther L. George
President of the Federal Reserve Bank of Kansas City, with

Neel Kashkari
President of the Federal Reserve Bank of Minneapolis, as alternate.

By unanimous vote, the following officers of the Committee were selected to serve until the selection of their successors at the first regularly scheduled meeting of the Committee in 2017:

Janet L. Yellen
Chairman

William C. Dudley
Vice Chairman

Brian F. Madigan
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Scott G. Alvarez
General Counsel

Thomas C. Baxter
Deputy General Counsel

Richard M. Ashton
Assistant General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

Thomas A. Connors

Troy Davig

Michael P. Leahy

David E. Lebow

Jonathan P. McCarthy

Stephen A. Meyer

Ellis W. Tallman

Geoffrey Tootell

Christopher J. Waller

William Wascher
Associate Economists

By unanimous vote, the Federal Reserve Bank of New York was selected to execute transactions for the System Open Market Account (SOMA).

By unanimous vote, the Committee selected Simon Potter and Lorie K. Logan to serve at the pleasure of the Committee as manager and deputy manager of the SOMA, respectively, on the understanding that these selections were subject to their being satisfactory to the Federal Reserve Bank of New York.

> Secretary's note: Advice subsequently was received that the manager and deputy manager selections indicated above were satisfactory to the Federal Reserve Bank of New York.

By unanimous vote, the Authorization for Domestic Open Market Operations was approved with a non-substantive amendment that changed terminology used in paragraph 4.B.ii, related to the provision of intraday credit to Foreign Accounts in exchange for securities. The Guidelines for the Conduct of System Open Market Operations in Federal-Agency Issues remained suspended.

Authorization for Domestic Open Market Operations (As Amended Effective January 26, 2016)

1. The Federal Open Market Committee (the "Committee") authorizes and directs the Federal Reserve Bank selected by the Committee to execute open market transactions (the "Selected Bank"), to the extent necessary to carry out the

most recent domestic policy directive adopted by the Committee:

A. To buy or sell in the open market securities that are direct obligations of, or fully guaranteed as to principal and interest by, the United States, and securities that are direct obligations of, or fully guaranteed as to principal and interest by, any agency of the United States, that are eligible for purchase or sale under Section 14(b) of the Federal Reserve Act ("Eligible Securities") for the System Open Market Account ("SOMA"):

   i. As an outright operation with securities dealers and foreign and international accounts maintained at the Selected Bank: on a same-day or deferred delivery basis (including such transactions as are commonly referred to as dollar rolls and coupon swaps) at market prices; or

   ii. As a temporary operation: on a same-day or deferred delivery basis, to purchase such Eligible Securities subject to an agreement to resell ("repo transactions") or to sell such Eligible Securities subject to an agreement to repurchase ("reverse repo transactions") for a term of 65 business days or less, at rates that, unless otherwise authorized by the Committee, are determined by competitive bidding, after applying reasonable limitations on the volume of agreements with individual counterparties;

B. To allow Eligible Securities in the SOMA to mature without replacement;

C. To exchange, at market prices, in connection with a Treasury auction, maturing Eligible Securities in the SOMA with the Treasury, in the case of Eligible Securities that are direct obligations of the United States or that are fully guaranteed as to principal and interest by the United States; and

D. To exchange, at market prices, maturing Eligible Securities in the SOMA with an agency of the United States, in the case of Eligible Securities that are direct obligations of that agency or that are fully guaranteed as to principal and interest by that agency.

2. The Committee authorizes the Selected Bank to undertake transactions of the type described in paragraph 1 from time to time for the purpose of testing operational readiness, subject to the following limitations:

   A. All transactions authorized in this paragraph 2 shall be conducted with prior notice to the Committee;

   B. The aggregate par value of the transactions authorized in this paragraph 2 that are of the type described in paragraph 1.A.i shall not exceed $5 billion per calendar year; and

   C. The outstanding amount of the transactions described in paragraph 1.A.ii shall not exceed $5 billion at any given time.

3. In order to ensure the effective conduct of open market operations, the Committee authorizes the Selected Bank to operate a program to lend Eligible Securities held in the SOMA to dealers on an overnight basis (except that the Selected Bank may lend Eligible Securities for longer than an overnight term to accommodate weekend, holiday, and similar trading conventions).

   A. Such securities lending must be:

      i. At rates determined by competitive bidding;

      ii. At a minimum lending fee consistent with the objectives of the program;

      iii. Subject to reasonable limitations on the total amount of a specific issue of Eligible Securities that may be auctioned; and

      iv. Subject to reasonable limitations on the amount of Eligible Securities that each borrower may borrow.

   B. The Selected Bank may:

      i. Reject bids that, as determined in its sole discretion, could facilitate a bidder's ability to control a single issue;

   ii. Accept Treasury securities or cash as collateral for any loan of securities authorized in this paragraph 3; and

   iii. Accept agency securities as collateral only for a loan of agency securities authorized in this paragraph 3.

4. In order to ensure the effective conduct of open market operations, while assisting in the provision of short-term investments or other authorized services for foreign central bank and international accounts maintained at a Federal Reserve Bank (the "Foreign Accounts") and accounts maintained at a Federal Reserve Bank as fiscal agent of the United States pursuant to section 15 of the Federal Reserve Act (together with the Foreign Accounts, the "Customer Accounts"), the Committee authorizes the following when undertaken on terms comparable to those available in the open market:

   A. The Selected Bank, for the SOMA, to undertake reverse repo transactions in Eligible Securities held in the SOMA with the Customer Accounts for a term of 65 business days or less; and

   B. Any Federal Reserve Bank that maintains Customer Accounts, for any such Customer Account, when appropriate and subject to all other necessary authorization and approvals, to:

      i. Undertake repo transactions in Eligible Securities with dealers with a corresponding reverse repo transaction in such Eligible Securities with the Customer Accounts; and

      ii. Undertake intra-day repo transactions in Eligible Securities with Foreign Accounts.

   Transactions undertaken with Customer Accounts under the provisions of this paragraph 4 may provide for a service fee when appropriate. Transactions undertaken with Customer Accounts are also subject to the authorization or approval of other entities, including the Board of Governors of the Federal Reserve System and, when involving accounts maintained at a Federal Reserve Bank as fiscal agent of the United States, the United States Department of the Treasury.

5. The Committee authorizes the Chairman of the Committee, in fostering the Committee's objectives during any period between meetings of the Committee, to instruct the Selected Bank to act on behalf of the Committee to:

   A. Adjust somewhat in exceptional circumstances the stance of monetary policy and to take actions that may result in material changes in the composition and size of the assets in the SOMA; or

   B. Undertake transactions with respect to Eligible Securities in order to appropriately address temporary disruptions of an operational or highly unusual nature in U.S. dollar funding markets.

   Any such adjustment described in subparagraph A of this paragraph 5 shall be made in the context of the Committee's discussion and decision about the stance of policy at its most recent meeting and the Committee's long-run objectives to foster maximum employment and price stability, and shall be based on economic, financial, and monetary developments since the most recent meeting of the Committee. The Chairman, whenever feasible, will consult with the Committee before making any instruction under this paragraph 5.

The manager noted that the staff was in the process of evaluating the current framework for foreign reserves management and considering a possible restructuring of the documents governing the framework for foreign operations. He recommended that any changes to these documents be postponed until that process was complete. The Committee voted unanimously to reaffirm without change the Authorization for Foreign Currency Operations, the Foreign Currency Directive, and the Procedural Instructions with Respect to Foreign Currency Operations as shown below. The votes to reaffirm these documents included approval of the System's warehousing agreement with the U.S. Treasury.

Authorization for Foreign Currency Operations (As Reaffirmed Effective January 26, 2016)

1. The Federal Open Market Committee (the "Committee") authorizes and directs the Federal Reserve Bank selected by the Committee to

execute open market transactions (the "Selected Bank"), for the System Open Market Account, to the extent necessary to carry out the Committee's foreign currency directive and express authorizations by the Committee pursuant thereto, and in conformity with such procedural instructions as the Committee may issue from time to time:

A. To purchase and sell the following foreign currencies in the form of cable transfers through spot or forward transactions on the open market at home and abroad, including transactions with the U.S. Treasury, with the U.S. Exchange Stabilization Fund established by section 10 of the Gold Reserve Act of 1934, with foreign monetary authorities, with the Bank for International Settlements, and with other international financial institutions:

Australian dollars
Brazilian reais
Canadian dollars
Danish kroner
euro
Japanese yen
Korean won
Mexican pesos
New Zealand dollars
Norwegian kroner
Pounds sterling
Singapore dollars
Swedish kronor
Swiss francs

B. To hold balances of, and to have outstanding forward contracts to receive or to deliver, the foreign currencies listed in paragraph A above.

C. To draw foreign currencies and to permit foreign banks to draw dollars under the arrangements listed in paragraph 2 below, in accordance with the Procedural Instructions with Respect to Foreign Currency Operations.

D. To maintain an overall open position in all foreign currencies not exceeding $25.0 billion. For this purpose, the overall open position in all foreign currencies is defined as the sum (disregarding signs) of net positions in individual currencies, excluding changes in dollar value due to foreign exchange rate movements and interest accruals. The net position in a single foreign currency is defined as holdings of balances in that currency, plus outstanding contracts for future receipt, minus outstanding contracts for future delivery of that currency, i.e., as the sum of these elements with due regard to sign.

2. The Committee directs the Selected Bank to maintain for the System Open Market Account (subject to the requirements of section 214.5 of Regulation N, Relations with Foreign Banks and Bankers):

A. Reciprocal currency arrangements with the following foreign banks:

Foreign bank	Amount of arrangement (millions of dollars equivalent)
Bank of Canada	2,000
Bank of Mexico	3,000

B. Standing dollar liquidity swap arrangements with the following foreign banks:

Bank of Canada
Bank of England
Bank of Japan
European Central Bank
Swiss National Bank

C. Standing foreign currency liquidity swap arrangements with the following foreign banks:

Bank of Canada
Bank of England
Bank of Japan
European Central Bank
Swiss National Bank

Dollar and foreign currency liquidity swap arrangements have no pre-set size limits. Any new swap arrangements shall be referred for review and approval to the Committee. All swap arrangements are subject to annual review and approval by the Committee.

3. All transactions in foreign currencies undertaken under paragraph 1.A above shall, unless otherwise expressly authorized by the Committee, be at prevailing market rates. For the purpose of providing an investment return on System holdings of foreign currencies or for the purpose of adjusting interest rates paid or received in connection

with swap drawings, transactions with foreign central banks may be undertaken at non-market exchange rates.

4. It shall be the normal practice to arrange with foreign central banks for the coordination of foreign currency transactions. In making operating arrangements with foreign central banks on System holdings of foreign currencies, the Selected Bank shall not commit itself to maintain any specific balance, unless authorized by the Committee. Any agreements or understandings concerning the administration of the accounts maintained by the Selected Bank with the foreign banks designated by the Board of Governors under section 214.5 of Regulation N shall be referred for review and approval to the Committee.

5. Foreign currency holdings shall be invested to ensure that adequate liquidity is maintained to meet anticipated needs and so that each currency portfolio shall generally have an average duration of no more than 24 months (calculated as Macaulay duration). Such investments may include buying or selling outright obligations of, or fully guaranteed as to principal and interest by, a foreign government or agency thereof; buying such securities under agreements for repurchase of such securities; selling such securities under agreements for the resale of such securities; and holding various time and other deposit accounts at foreign institutions. In addition, when appropriate in connection with arrangements to provide investment facilities for foreign currency holdings, U.S. government securities may be purchased from foreign central banks under agreements for repurchase of such securities within 30 calendar days.

6. All operations undertaken pursuant to the preceding paragraphs shall be reported promptly to the Foreign Currency Subcommittee (the "Subcommittee") and the Committee. The Subcommittee consists of the Chairman and Vice Chairman of the Committee, the Vice Chairman of the Board of Governors, and such other member of the Board as the Chairman may designate (or in the absence of members of the Board serving on the Subcommittee, other Board members designated by the Chairman as alternates, and in the absence of the Vice Chairman of the Committee, the Vice Chairman's alternate). Meetings of the Subcommittee shall be called at the request of any member, or at the request of the manager, System Open Market Account ("manager"), for the purposes of reviewing recent or contemplated operations and of consulting with the manager on other matters relating to the manager's responsibilities. At the request of any member of the Subcommittee, questions arising from such reviews and consultations shall be referred for determination to the Committee.

7. The Chairman is authorized:

   A. With the approval of the Committee, to enter into any needed agreement or understanding with the Secretary of the Treasury about the division of responsibility for foreign currency operations between the System and the Treasury;

   B. To keep the Secretary of the Treasury fully advised concerning System foreign currency operations, and to consult with the Secretary on policy matters relating to foreign currency operations;

   C. From time to time, to transmit appropriate reports and information to the National Advisory Council on International Monetary and Financial Policies.

8. All Federal Reserve Banks shall participate in the foreign currency operations for System Account in accordance with paragraph 3G(1) of the Board of Governors' Statement of Procedure with Respect to Foreign Relationships of Federal Reserve Banks dated January 1, 1944.

9. The Committee authorizes the Selected Bank to undertake transactions of the type described in paragraphs 1, 2, and 5, and foreign exchange and investment transactions that it may be otherwise authorized to undertake from time to time for the purpose of testing operational readiness. The aggregate amount of such transactions shall not exceed $2.5 billion per calendar year. These transactions shall be conducted with prior notice to the Committee.

Foreign Currency Directive (As Reaffirmed Effective January 26, 2016)

1. System operations in foreign currencies shall generally be directed at countering disorderly market conditions, provided that market exchange rates

for the U.S. dollar reflect actions and behavior consistent with IMF Article IV, Section 1.

2. To achieve this end the System shall:

   A. Undertake spot and forward purchases and sales of foreign exchange.

   B. Maintain reciprocal currency arrangements with foreign central banks in accordance with the Authorization for Foreign Currency Operations.

   C. Maintain standing dollar liquidity swap arrangements with foreign banks in accordance with the Authorization for Foreign Currency Operations.

   D. Maintain standing foreign currency liquidity swap arrangements with foreign banks in accordance with the Authorization for Foreign Currency Operations.

   E. Cooperate in other respects with central banks of other countries and with international monetary institutions.

3. Transactions may also be undertaken:

   A. To adjust System balances in light of probable future needs for currencies.

   B. To provide means for meeting System and Treasury commitments in particular currencies, and to facilitate operations of the Exchange Stabilization Fund.

   C. For such other purposes as may be expressly authorized by the Committee.

4. System foreign currency operations shall be conducted:

   A. In close and continuous consultation and cooperation with the United States Treasury;

   B. In cooperation, as appropriate, with foreign monetary authorities; and

   C. In a manner consistent with the obligations of the United States in the International Monetary Fund regarding exchange arrangements under IMF Article IV.

Procedural Instructions with Respect to Foreign Currency Operations (As Reaffirmed Effective January 26, 2016)

In conducting operations pursuant to the authorization and direction of the Federal Open Market Committee (the "Committee") as set forth in the Authorization for Foreign Currency Operations and the Foreign Currency Directive, the Federal Reserve Bank selected by the Committee to execute open market transactions (the "Selected Bank"), through the manager, System Open Market Account ("manager"), shall be guided by the following procedural understandings with respect to consultations and clearances with the Committee, the Foreign Currency Subcommittee (the "Subcommittee"), and the Chairman of the Committee, unless otherwise directed by the Committee. All operations undertaken pursuant to such clearances shall be reported promptly to the Committee.

1. For the reciprocal currency arrangements authorized in paragraphs 2.A of the Authorization for Foreign Currency Operations:

   A. Drawings must be approved by the Subcommittee (or by the Chairman, if the Chairman believes that consultation with the Subcommittee is not feasible in the time available) if the swap drawing proposed by a foreign bank does not exceed the larger of (i) $200 million or (ii) 15 percent of the size of the swap arrangement.

   B. Drawings must be approved by the Committee (or by the Subcommittee, if the Subcommittee believes that consultation with the full Committee is not feasible in the time available, or by the Chairman, if the Chairman believes that consultation with the Subcommittee is not feasible in the time available) if the swap drawing proposed by a foreign bank exceeds the larger of (i) $200 million or (ii) 15 percent of the size of the swap arrangement.

   C. The manager shall also consult with the Subcommittee or the Chairman about proposed swap drawings by the System.

D. Any changes in the terms of existing swap arrangements shall be referred for review and approval to the Chairman. The Chairman shall keep the Committee informed of any changes in terms, and the terms shall be consistent with principles discussed with and guidance provided by the Committee.

2. For the dollar and foreign currency liquidity swap arrangements authorized in paragraphs 2.B and 2.C of the Authorization for Foreign Currency Operations:

   A. Drawings must be approved by the Chairman in consultation with the Subcommittee. The Chairman or the Subcommittee will consult with the Committee prior to the initial drawing on the dollar or foreign currency liquidity swap lines if possible under the circumstances then prevailing; authority to approve subsequent drawings for either the dollar or foreign currency liquidity swap lines may be delegated to the manager by the Chairman.

   B. Any changes in the terms of existing swap arrangements shall be referred for review and approval to the Chairman. The Chairman shall keep the Committee informed of any changes in terms, and the terms shall be consistent with principles discussed with and guidance provided by the Committee.

3. Any operation must be approved by:

   A. The Subcommittee (or by the Chairman, if the Chairman believes that consultation with the Subcommittee is not feasible in the time available) if it:

      i. Would result in a change in the System's overall open position in foreign currencies exceeding $300 million on any day or $600 million since the most recent regular meeting of the Committee.

      ii. Would result in a change on any day in the System's net position in a single foreign currency exceeding $150 million, or $300 million when the operation is associated with repayment of swap drawings.

      iii. Might generate a substantial volume of trading in a particular currency by the System, even though the change in the System's net position in that currency (as defined in paragraph 1.D of the Authorization for Foreign Currency Operations) might be less than the limits specified in 3.A.ii.

   B. The Committee (or by the Subcommittee, if the Subcommittee believes that consultation with the full Committee is not feasible in the time available, or by the Chairman, if the Chairman believes that consultation with the Subcommittee is not feasible in the time available) if it would result in a change in the System's overall open position in foreign currencies exceeding $1.5 billion since the most recent regular meeting of the Committee.

4. The Committee authorizes the Selected Bank to undertake transactions of the type described in paragraphs 1, 2, and 5 of the Authorization for Foreign Currency Operations and foreign exchange and investment transactions that it may be otherwise authorized to undertake from time to time for the purpose of testing operational readiness. The aggregate amount of such transactions shall not exceed $2.5 billion per calendar year. These transactions shall be conducted with prior notice to the Committee.

By unanimous vote, the Committee amended its Program for Security of FOMC Information (Program) with four sets of changes. These changes consisted of (1) a clarification that all Federal Reserve persons, which includes FOMC participants as well as staff members, must receive, review, and agree to abide by the Program before gaining access to confidential FOMC information, and annually thereafter; (2) a change to provide the Chairman flexibility to designate Board staff members to make decisions regarding access to FOMC information by Board staff; (3) technical changes to improve the consistency and accuracy of Program language; and (4) changes to the Program's provisions for handling potential breaches of the Committee's information security rules. This final set of changes codifies the approach used in recent years of promptly referring material potential breaches to the Board's inspector general (IG). In addition, it incorporates revised language that states that the prompt referral to the IG, which would include a request for an investigation, would be made by the secretary or the Committee's general counsel, with appropriate consultation with the Chairman, thereby vesting the referral responsibility

in more than one person and thus reducing the possibility of any apparent conflict of interest in making a referral determination.

At the end of the Committee's annual disposition of organizational matters, participants considered a revised Statement on Longer-Run Goals and Monetary Policy Strategy. The proposed revisions would clarify that the Committee viewed its 2 percent inflation goal as symmetric. In presenting the revised statement on behalf of the subcommittee on communications, Governor Fischer pointed out that, in a discussion of the statement in October 2014, participants had expressed widespread agreement that inflation moderately above the Committee's 2 percent goal and inflation the same amount below that level were equally costly. He noted that the proposed language was intended to encompass situations in which deviations from the Committee's inflation objective were expected to continue for a time and had the potential to affect longer-term inflation expectations. In addition to the explicit indication that the Committee viewed its inflation objective as symmetric, the revised statement would update the reference to participants' estimates of the longer-run normal rate of unemployment from the most recent Summary of Economic Projections (SEP), using the median of those projections rather than the central tendency.

Participants noted that the statement reflects an exceptionally high degree of consensus and that the threshold for amendments should be high; they judged that the revisions were important because they would clarify the symmetry of the Committee's 2 percent inflation objective and communicate to the public that the objective was not a ceiling. Participants also noted that the proposed new language indicating that the Committee would "be concerned if inflation were running persistently above or below" its 2 percent objective would not require that participants hold similar views about inflation dynamics; in addition, the proposed language would not specify the stance of monetary policy in such circumstances but would afford the Committee appropriate flexibility in tailoring a policy response to persistent deviations from the inflation objective. Moreover, participants generally agreed that the proposed new language should be interpreted as applying to situations in which inflation was seen as likely to remain below or above 2 percent for a sustained period. However, one participant judged that the proposed language could be read as referring to current and past deviations from the inflation objective, and argued that the statement should more clearly indicate that the Committee's policy decisions were based on expected future inflation. A couple of others agreed that there were reasons for concerns about deviations above or below the 2 percent objective, but noted that the reasons for, and degree of, those concerns could differ depending upon the direction of the deviation or broader macroeconomic conditions.

All participants but one supported adopting the proposed amendments. Participants agreed that it was appropriate to release the amended statement, which is reproduced below, in advance of the *Monetary Policy Report* and testimony, which were scheduled for mid-February.

Statement on Longer-Run Goals and Monetary Policy Strategy (As Amended Effective January 26, 2016)

"The Federal Open Market Committee (FOMC) is firmly committed to fulfilling its statutory mandate from the Congress of promoting maximum employment, stable prices, and moderate long-term interest rates. The Committee seeks to explain its monetary policy decisions to the public as clearly as possible. Such clarity facilitates well-informed decisionmaking by households and businesses, reduces economic and financial uncertainty, increases the effectiveness of monetary policy, and enhances transparency and accountability, which are essential in a democratic society.

Inflation, employment, and long-term interest rates fluctuate over time in response to economic and financial disturbances. Moreover, monetary policy actions tend to influence economic activity and prices with a lag. Therefore, the Committee's policy decisions reflect its longer-run goals, its medium-term outlook, and its assessments of the balance of risks, including risks to the financial system that could impede the attainment of the Committee's goals.

The inflation rate over the longer run is primarily determined by monetary policy, and hence the Committee has the ability to specify a longer-run goal for inflation. The Committee reaffirms its judgment that inflation at the rate of 2 percent, as measured by the annual change in the price index for personal consumption expenditures, is most consistent over the longer run with the Federal Reserve's statutory mandate. The Committee would be concerned if inflation were running persistently above or

below this objective. Communicating this symmetric inflation goal clearly to the public helps keep longer-term inflation expectations firmly anchored, thereby fostering price stability and moderate long-term interest rates and enhancing the Committee's ability to promote maximum employment in the face of significant economic disturbances. The maximum level of employment is largely determined by nonmonetary factors that affect the structure and dynamics of the labor market. These factors may change over time and may not be directly measurable. Consequently, it would not be appropriate to specify a fixed goal for employment; rather, the Committee's policy decisions must be informed by assessments of the maximum level of employment, recognizing that such assessments are necessarily uncertain and subject to revision. The Committee considers a wide range of indicators in making these assessments. Information about Committee participants' estimates of the longer-run normal rates of output growth and unemployment is published four times per year in the FOMC's Summary of Economic Projections. For example, in the most recent projections, the median of FOMC participants' estimates of the longer-run normal rate of unemployment was 4.9 percent.

In setting monetary policy, the Committee seeks to mitigate deviations of inflation from its longer-run goal and deviations of employment from the Committee's assessments of its maximum level. These objectives are generally complementary. However, under circumstances in which the Committee judges that the objectives are not complementary, it follows a balanced approach in promoting them, taking into account the magnitude of the deviations and the potentially different time horizons over which employment and inflation are projected to return to levels judged consistent with its mandate.

The Committee intends to reaffirm these principles and to make adjustments as appropriate at its annual organizational meeting each January."

All Committee members but one voted to adopt the revised statement. Although Mr. Bullard supported the statement without the changes and agreed that the Committee's inflation goal is symmetric, he dissented because he judged that the amended language was not sufficiently focused on expected future deviations of inflation from the 2 percent objective. In addition, because the Committee's past behavior had demonstrated the emphasis it places on expected future inflation, Mr. Bullard viewed the amended language as potentially confusing to the public.

Developments in Financial Markets, Open Market Operations, and Policy Normalization

The SOMA manager reported on developments in domestic and foreign financial markets, including changes in the expectations of market participants for the trajectory of monetary policy. The deputy manager followed with a briefing on money market developments and System open market operations conducted by the Open Market Desk during the period since the Committee met on December 15–16, 2015. The report included an assessment of the response of money market interest rates to the increase in the target range for the federal funds rate announced following the December meeting. Overall, the rate increase was implemented smoothly and money markets responded as anticipated. Take-up of overnight reverse repurchase agreement (ON RRP) operations over this period was consistent with that observed in the testing phase of operations over the second half of last year. The deputy manager also reviewed plans for reinvestment of the proceeds of upcoming maturations of SOMA holdings of Treasury securities, for small-value tests of various System operations and facilities during 2016, and for quarterly tests of the Term Deposit Facility.

The Committee then resumed its consideration of matters related to the System's reverse repurchase agreement (RRP) facilities, focusing in particular on the appropriate aggregate capacity of the ON RRP facility going forward. Previous communications had indicated that the Committee intended to allow aggregate capacity of the ON RRP facility to be temporarily elevated after policy firming had commenced to support monetary policy implementation and expected that it would be appropriate to reduce capacity fairly soon thereafter. A staff presentation at this meeting reviewed broad strategies for reintroducing an aggregate cap on ON RRP operations and managing the cap subsequently. In the discussion that followed, participants reiterated that the Committee expects to phase out the facility when it is no longer needed to help control the federal funds rate, and they unanimously expressed the view that it would be appropriate to reintroduce an aggregate cap on ON RRP operations at some point. Regarding

when to do so, participants held varied views, but nearly all indicated a preference for waiting a couple of months or longer before making operational adjustments to the facility, in part so that the Federal Reserve could gain additional experience with its policy implementation tools. Concerning the strategy that would be used to cap the ON RRP facility when the time came, most policymakers favored an approach in which a relatively high cap level would be imposed initially—though one that nonetheless would significantly reduce capacity relative to the current situation—with the intention of periodically making further reductions in the level of the cap as appropriate. Other participants indicated a preference for initially imposing a somewhat lower cap. Some noted that the demand for ON RRPs could be reduced by widening the spread between the interest rate on reserves and the offering rate on ON RRPs. In making these judgments, most policymakers emphasized the primacy of maintaining monetary control in setting the appropriate capacity of the ON RRP facility for the time being; participants indicated that the Committee's future decisions regarding the size and ultimate longevity of the facility should be largely driven by considerations of monetary control, although other factors, such as financial stability, should also be taken into account. Finally, policymakers also discussed the appropriate management of the Federal Reserve's RRP operations over quarter-ends, when private-sector cash investment options temporarily and predictably decline and result in temporary downward pressure on some money market rates, including the federal funds rate. Several participants indicated a preference for continuing to take account of such calendar effects in conducting RRPs; some policymakers emphasized, however, that they do not view such temporary declines in the federal funds rate as a materially adverse factor for monetary control. Overall, participants agreed that, for some time at least, the Committee would continue to provide ample RRPs in some form over quarter-ends, including in March.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account over the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the January 26–27 meeting indicated that labor market conditions continued to improve in the fourth quarter of last year even though growth in real gross domestic product (GDP) appeared to slow. Consumer price inflation was still running below the Committee's longer-run objective of 2 percent, restrained in part by decreases in both energy prices and the prices of non-energy imports. Recent survey-based measures of longer-run inflation expectations were little changed, on balance, while market-based measures of inflation compensation declined further.

Total nonfarm payroll employment increased substantially in December, and the monthly pace of job gains in the fourth quarter as a whole was faster than in the third quarter. The unemployment rate remained at 5.0 percent in December, while both the labor force participation rate and the employment-to-population ratio increased a little. The share of workers employed part time for economic reasons moved down a bit in December. The rates of private-sector job openings, hires, and quits were little changed in November. The four-week moving average of initial claims for unemployment insurance benefits was somewhat higher in early January than its very low level late last year. Average hourly earnings for all employees increased 2½ percent over the 12 months ending in December, about ½ percentage point more than over the same period a year earlier.

Industrial production decreased in November and December, primarily reflecting the ongoing effects of the appreciation of the foreign exchange value of the dollar and the declines in crude oil prices since the middle of 2014. Manufacturing output declined, with a step-down in the production of motor vehicles and parts from the high levels seen earlier last year, while production outside of the motor vehicle sector was roughly flat. Production in the mining sector continued to fall, and the output of utilities declined, as the weather was unseasonably warm. Automakers' assembly schedules and broader indicators of manufacturing production, such as the readings on new orders from national and regional manufacturing surveys, mostly pointed to a slow pace of gains in factory output early this year. Information on drilling activity for crude oil and natural gas in early January was consistent with further declines in mining output.

Real personal consumption expenditures (PCE) appeared to have increased at a slower rate in the fourth quarter than in the previous quarter. Although real PCE rose solidly in November, spending had been flat in October. Moreover, in December the components of the nominal retail sales data used

by the Bureau of Economic Analysis to construct its estimate of PCE edged down, and the rate of sales of light motor vehicles, while remaining at a high level, declined. However, recent readings on key factors that influence consumer spending were generally favorable. Growth in real disposable income continued to be solid in November. Households' net worth was supported by further strong gains in home values through November, although equity prices declined in recent months. Also, consumer sentiment in the University of Michigan Surveys of Consumers remained at an elevated level in early January.

Recent information on housing activity was consistent with a continued gradual recovery in this sector. Both starts and building permits for new single-family homes moved higher, on balance, in November and December, and starts of multifamily units also stepped up. New home sales increased modestly in November. Sales of existing homes rose strongly in December, more than offsetting an outsized decline in November, which likely reflected a change in mortgage regulations that temporarily held down existing home sales.

Growth in real private expenditures for business equipment and intellectual property products looked to be slower in the fourth quarter than in the third quarter. Nominal shipments of nondefense capital goods excluding aircraft moved down in November. Forward-looking indicators of equipment spending, such as new orders for nondefense capital goods along with recent readings from national and regional surveys of business conditions, generally pointed to soft business equipment spending in the coming months. Firms' nominal spending for nonresidential structures excluding drilling and mining declined somewhat in November. Indicators of spending for structures in the drilling and mining sector, such as the number of oil and gas rigs in operation, continued to fall through early January. The available information indicated that inventory investment decreased again in the fourth quarter, although there was little evidence that inventory-to-sales ratios were uncomfortably high outside of the energy sector.

Total real government purchases appeared to be about flat in the fourth quarter. Federal government spending for defense moved roughly sideways. State and local government payrolls increased somewhat in the fourth quarter, while nominal construction spending by these governments declined in October and November.

The U.S. international trade deficit narrowed in November, as imports fell more than exports. The value of exports declined to its lowest level since the beginning of 2012. The decrease in imports was widespread across categories, with a particularly large decline in the imports of consumer goods. The available trade data suggested that net exports continued to weigh on real GDP growth in the fourth quarter.

Total U.S. consumer prices, as measured by the PCE price index, increased about ½ percent over the 12 months ending in November, partly restrained by substantial declines in consumer energy prices. Core PCE price inflation, which excludes changes in food and energy prices, was 1¼ percent over the same 12-month period, held down in part by decreases in the prices of non-energy imports and the pass-through of declines in energy prices. Over the 12 months ending in December, total consumer prices as measured by the consumer price index (CPI) rose ¾ percent, while core CPI inflation was around 2 percent. Recent survey measures of longer-run inflation expectations were little changed on balance. In early January, the Michigan survey measure of median inflation expectations over the next 5 to 10 years ticked up but continued to run near the low end of its typical range of the past 15 years. The Survey of Primary Dealers and the Survey of Market Participants indicated that the median expectation of CPI inflation 5 to 10 years ahead was essentially unchanged in January.

In many foreign economies, real GDP growth in the fourth quarter appeared to continue at a pace roughly similar to that in the third quarter. In contrast, economic growth weakened in Canada, in part because investment spending continued to be weighed down by the effects of the sharp decline in oil prices since the middle of 2014. Lower oil prices and the slowing in U.S. manufacturing activity contributed to a step-down in the rate of economic growth in Mexico. Economic growth slowed slightly in China but remained robust, supported by a modest pickup in growth of Chinese manufacturing output. Further declines in energy prices pulled down

inflation in many foreign economies in the fourth quarter, with inflation falling to near zero in several advanced economies.

Staff Review of the Financial Situation

Domestic financial conditions tightened over the intermeeting period, as turmoil in Chinese financial markets and lower oil prices contributed to concerns about prospects for global economic growth and a pullback from risky assets. The increased reluctance to hold risky assets was associated with a sharp decline in equity prices and a notable widening in risk spreads on corporate bonds. Treasury yields declined across maturities, reflecting a downward revision in the expected path of the federal funds rate and likely some increase in safe-haven demands amid the market turbulence. The dollar appreciated against most foreign currencies.

The Committee's decision to raise the target range for the federal funds rate to ¼ to ½ percent at the December meeting was widely anticipated in financial markets and elicited little reaction in Treasury and interest rate futures markets. The expected path of the federal funds rate implied by market quotes on interest-rate derivatives moved down notably after year-end; the turbulence in global financial markets evidently led investors to expect a more gradual increase in the target range for the federal funds rate than they had previously anticipated. In line with that interpretation, results from the Desk's January Survey of Primary Dealers and Survey of Market Participants indicated that, on average, respondents expected fewer increases in the target range this year than they had projected in December.

Consistent with the decline in the expected path of the federal funds rate, yields on nominal Treasury securities moved lower over the intermeeting period. Part of the decline likely also reflected an increase in safe-haven demands for low-risk and highly liquid assets amid the turbulence in financial markets. Measures of forward inflation compensation based on Treasury Inflation-Protected Securities and inflation swaps fell further.

Broad U.S. equity price indexes declined sharply over the intermeeting period, exhibiting a high correlation with movements in crude oil prices and foreign equity indexes. Domestic equity indexes were quite volatile in January, and one-month-ahead option-implied volatility on the S&P 500 index climbed to the upper end of its range of the past few years. Spreads on corporate bonds over comparable-maturity Treasury securities widened over the intermeeting period, reportedly reflecting increased concerns about corporate credit quality, particularly in the energy sector, and a decline in investors' willingness to assume risk.

Financing conditions for nonfinancial businesses remained accommodative for firms of higher credit quality but tightened somewhat for riskier firms. Investment-grade bond issuance stayed robust, while speculative-grade bond issuance was weak. The growth of commercial and industrial (C&I) loans on banks' books continued to be strong, although a modest net percentage of banks reported tightening standards for C&I loans to large and middle-market firms during the fourth quarter in the most recent Senior Loan Officer Opinion Survey (SLOOS). Issuance of syndicated leveraged loans decreased in the fourth quarter amid higher spreads, with the most pronounced slowing in relatively risky loans such as those earmarked for leveraged buyouts.

Credit continued to be broadly available in the commercial real estate (CRE) sector. The growth of CRE loans on banks' balance sheets remained strong in the fourth quarter, and issuance of commercial mortgage-backed securities (CMBS) continued at a robust pace in December. However, a moderate net percentage of banks reported in the most recent SLOOS that they had tightened standards on CRE loans during the fourth quarter, and credit spreads in CMBS markets continued to widen over the intermeeting period.

Credit conditions for residential mortgages were little changed over the intermeeting period. Credit remained tight for borrowers with low credit scores, hard-to-document income, or high debt-to-income ratios. According to the January SLOOS, moderate net fractions of banks eased standards on several types of home mortgages over the past three months and expected to ease standards this year.

Financing conditions in consumer credit markets were little changed over the intermeeting period and remained accommodative on balance. Consumer loan balances continued to rise at a robust pace in the fourth quarter, reflecting further expansions in credit card, auto, and student loan balances. Student and auto loans remained broadly available, even to borrowers with subprime credit histories, but the availability of credit card loans to subprime borrowers was still tight. Respondents to the January SLOOS indicated that, over the past three months, they had

eased standards and terms on auto loans but tightened standards and terms on credit card loans.

Global financial market conditions deteriorated sharply in January, as recent developments in Chinese financial markets and the further decrease in crude oil prices appeared to increase concerns about global economic growth. Equity prices in emerging market economies (EMEs) and in advanced foreign economies (AFEs) fell sharply, and 10-year sovereign yields in the AFEs decreased substantially. Market expectations for the policy rates of major foreign central banks, which had risen somewhat after the December FOMC meeting, ended the period lower. Credit spreads in the EMEs widened. The foreign exchange value of the U.S. dollar appreciated further against most currencies, with larger increases relative to the currencies of commodity-exporting countries.

The staff provided its latest report on potential risks to financial stability and judged the financial vulnerabilities of the U.S. financial system as moderate on balance. Their assessment reflected strong capital and liquidity positions at banks, moderate leverage in the nonbank financial sector, and subdued borrowing by households. Risk premiums had increased as spreads widened by more than was estimated to be necessary to compensate for expected losses, suggesting a decline in the willingness of investors to bear credit risk. However, leverage continued to increase in the nonfinancial business sector, particularly among energy-related and other relatively risky firms. The high leverage of nonfinancial corporations and the liquidity mismatch at high-yield bond mutual funds suggested some elevated risks for bond investors and lower-rated borrowers.

Staff Economic Outlook

In the economic projection prepared by the staff for the January FOMC meeting, real GDP growth in the fourth quarter of last year was estimated to have been markedly slower than in the forecast for the December meeting. However, the medium-term projection for real GDP growth was only slightly lower, on balance, than the previous forecast. The staff estimated that the negative effects of a lower projected path for equity prices and a higher assumed trajectory for the foreign exchange value of the dollar would be mostly offset by the positive effects of a lower path for crude oil prices and slightly more stimulus to aggregate demand from changes in fiscal policy than was assumed in the previous forecast. In particular, federal legislation enacted in December unexpectedly included both a multiyear extension of the bonus depreciation tax credit for business investment and a delay in the introduction of several tax increases related to the Affordable Care Act. The staff continued to project that real GDP would expand at a somewhat faster pace than potential output in 2016 through 2018, supported primarily by increases in consumer spending. The unemployment rate was expected to gradually decline further and to run somewhat below the staff's estimate of its longer-run natural rate over this period.

The staff's forecast for inflation in the near term was revised down slightly, reflecting recent data for consumer prices and the further declines in the price of crude oil; the projection for inflation over the medium term was little revised. Energy prices and the prices of non-energy imported goods were expected to begin steadily rising later this year. The staff continued to project that inflation would increase gradually over the next several years and reach the Committee's longer-run objective of 2 percent by the end of 2018.

The staff viewed the uncertainty around its January projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The risks to the forecast for real GDP were seen as tilted to the downside, reflecting the staff's assessment that neither monetary nor fiscal policy was well positioned to help the economy withstand substantial adverse shocks; the downside risks to the forecast of economic activity were seen as more pronounced than in December, mainly reflecting the greater uncertainty about global economic prospects and the financial market turbulence in the United States and abroad. Consistent with the downside risk to aggregate demand, the staff viewed the risks to its outlook for the unemployment rate as skewed to the upside. The risks to the projection for inflation were seen as weighted to the downside, reflecting the possibility that longer-term inflation expectations may have edged down and that the foreign exchange value of the dollar could rise substantially further, which would put downward pressure on inflation.

Participants' Views on Current Conditions and the Economic Outlook

In their discussion of the economic situation and the outlook, meeting participants saw the information received over the intermeeting period as suggesting that labor market conditions had improved further in

late 2015 even as economic growth slowed. Household and business spending had been increasing at moderate rates; however, net exports had been soft and inventory investment had slowed. A range of labor market indicators pointed to some additional decline in underutilization of labor resources. Inflation continued to run below the Committee's 2 percent longer-run objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation declined further over the intermeeting period; survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months.

In considering the outlook for economic activity, participants weighed the divergent signals from recent strength in the labor market and the modest increase in real GDP suggested by the available data on spending and production. In part, the projected slow growth of real GDP in the fourth quarter of 2015 appeared to be caused by reduced inventory investment and a weather-related slowing in consumer spending on energy services—developments that would likely be reversed in the current quarter. Moreover, some participants noted that the preliminary spending data and initial estimates of GDP are often revised substantially, and they judged that labor market indicators tended to provide a more reliable early reading on the economy's underlying strength.

In assessing the medium-term outlook, participants discussed the extent to which the recent turbulence in global financial markets might restrain U.S. economic activity. While acknowledging the possible adverse effects of the tightening of financial conditions that had occurred, most policymakers thought that the extent to which tighter conditions would persist and what that might imply for the outlook were unclear, and they therefore judged that it was premature to alter appreciably their assessment of the medium-term economic outlook. They continued to anticipate that economic activity would expand at a moderate pace over the medium term and that the labor market would continue to strengthen. Inflation was expected to remain low in the near term, in part because of the further decline in energy prices. However, most participants continued to anticipate that inflation would rise to 2 percent over the medium term as the transitory effects of declines in energy and import prices dissipated and the labor market strengthened further. Given their increased uncertainty about how global economic and financial developments might evolve, participants emphasized the importance of closely monitoring these developments and of assessing their implications for the labor market and inflation, and for the balance of risks to the outlook.

Growth of consumer spending appeared to have slowed in the fourth quarter, with the December data showing a decline in nominal retail sales and a step-down in purchases of new motor vehicles from the elevated level of the preceding three months. Moreover, households' spending on energy services was evidently held down by unseasonably warm weather in many parts of the country. Although participants received mixed reports from their District contacts on consumer spending, some heard that retail activity had been generally positive at year-end, and a number of participants relayed indications that spending on services in their Districts remained solid. Regarding the outlook for consumer spending, a number of participants noted that the recent moderation in spending seemed inconsistent with continued strong gains in households' real income from rising employment and falling energy prices and with the relatively elevated level of consumer sentiment. Because of these favorable fundamentals, many participants indicated that they still expected consumer spending to contribute importantly to economic growth in the coming year. However, several were concerned that the rise in the saving rate since the middle of 2015 might suggest an elevated degree of caution about the economic outlook or that the recent retreat in equity values, if sustained, might damp spending. Nonetheless, a couple of others pointed out that information from surveys of consumer sentiment suggested that households, to date, had not appeared to be particularly sensitive to changes in financial market conditions.

Housing sales and construction continued to trend up though the end of 2015, extending the gradual recovery in the housing sector. In participants' reports on economic conditions in their Districts, some highlighted the sector as one in which activity had improved or about which contacts were upbeat. A couple of participants noted that new mortgage lending regulations appeared to have slowed the mortgage origination process and temporarily reduced home sales.

Manufacturing activity continued to weaken in late 2015. Production continued to contract in industries—such as steel and heavy machinery—in which demand had been negatively affected, either directly or indirectly, by the appreciation of the dollar, slow economic growth abroad, and declining oil prices.

Participants from those Reserve Banks that conduct surveys of manufacturing activity reported that the weakness extended into January. Nonetheless, several participants pointed to aerospace, autos, and consumer products as areas of strength in the manufacturing sector, and a few commented that manufacturers surveyed in their Districts were still relatively optimistic about the outlook for 2016. Information on business activity outside of the manufacturing sector was mixed. Commercial construction was reported to be strong in a couple of Districts, and a few participants commented that government spending was likely to provide a boost to business activity in the coming year. Several participants reported moderate growth in services industries, but a couple noted some slowing of activity. Some participants reported a deterioration in business sentiment among their contacts in the wake of recent global economic and financial developments, which could result in more-cautious capital spending plans.

Downward pressure on domestic energy activity intensified over the intermeeting period as oil prices dropped further. The imbalance of the supply of crude oil relative to demand remained very high and appeared unlikely to be resolved quickly, as was evidenced by a further downshift in oil futures prices. Participants' contacts in the energy sector reported that firms were still adjusting to lower prices and the contraction in their businesses, and some firms expected that they would need to cut investment and employment further. In addition, it was noted that energy firms continued to face tightening financial conditions and that financial stress was building for those with high levels of debt. In agriculture, depressed levels of crop prices and weak global demand continued to weaken farm income.

A broad range of indicators showed ongoing improvement in labor market conditions. Most notably, increases in nonfarm payroll employment were quite strong during the final three months of 2015. Although the unemployment rate, at 5.0 percent, was unchanged over that period, it was at a level close to or below most participants' estimates of its longer-run normal rate. Moreover, the labor force participation rate and the employment-to-population rate moved up toward year-end. Many viewed labor market underutilization as having been substantially reduced over the past year, and a few saw slack as having been largely eliminated. In their comments on labor market conditions, participants cited strong employment gains, low levels of unemployment in their Districts, reports of shortages of workers in various industries, or firming in wage increases. Most anticipated that employment would expand at a solid rate over the year ahead, although several saw the prospect of some moderation in employment gains from the particularly large increases in the fourth quarter of 2015.

Participants discussed the implications of the further decline in the prices of oil and other commodities and the additional appreciation of the dollar since the previous FOMC meeting for the outlook for inflation. They agreed that these developments would keep inflation low in the near term but offered a range of views on the effects on the medium-term outlook and the risks attending the outlook. Most continued to anticipate that once the price of energy and the exchange value of the dollar stabilized, the effects of those factors on inflation would fade. Several saw that outlook as depending importantly on continued strengthening of the labor market or on an above-trend pace of economic activity. Moreover, some emphasized the need for longer-run inflation expectations to remain well anchored. In that regard, while some participants interpreted the recent readings on survey-based measures of inflation expectations and market-based measures of inflation compensation as suggesting that long-term inflation expectations were still relatively well anchored, some others expressed concern about the further decline in inflation compensation recently and the historically low levels of some survey measures of longer-run inflation expectations. Some noted the difficulty of distinguishing declines in expected inflation embedded in those market-based measures from changes in risk and liquidity premiums or of interpreting the current high correlation of far-forward measures of inflation compensation and oil prices. Although most participants continued to expect that inflation would rise to the Committee's 2 percent objective over the medium term, a number of participants indicated that, in light of recent developments, they viewed the outlook for inflation as somewhat more uncertain or saw the risks as being to the downside. Several participants reiterated the importance of monitoring inflation developments closely to confirm that inflation was evolving along the path anticipated by the Committee.

Regarding the foreign economic outlook, it was noted that the slowdown in China's industrial sector and the decline in global commodity prices could restrain economic activity in the EMEs and other commodity-producing countries for some time. Participants discussed recent developments in China,

including the possibility that structural changes and financial imbalances in the Chinese economy might lead to a sharper deceleration in economic growth in that country than was generally anticipated. Such a downshift, if it occurred, could increase the economic and financial stresses on other EMEs and on commodity producers, including Canada and Mexico. Moreover, global financial markets could continue to be affected by uncertainty about China's exchange rate regime. While the exposure of the United States to the Chinese economy through direct trade ties was limited, a number of participants were concerned about the potential drag on the U.S. economy from the broader effects of a greater-than-expected slowdown in China and other EMEs.

Participants also discussed a range of issues related to financial market developments. Almost all participants cited a number of recent events as indicative of tighter financial conditions in the United States; these events included declines in equity prices, a widening in credit spreads, a further rise in the exchange value of the dollar, and an increase in financial market volatility. Some participants also pointed to significantly tighter financing conditions for speculative-grade firms and small businesses, and to reports of tighter standards at banks for C&I and CRE loans. The effects of these financial developments, if they were to persist, may be roughly equivalent to those from further firming in monetary policy. Participants mentioned several apparent factors underlying the recent financial market turbulence, including economic and financial developments in China and other foreign countries, spillovers in financial markets from stresses at firms and in countries that are producers of energy and other commodities, and an increase in concerns among market participants regarding the prospects for domestic economic growth. However, a number of participants noted that the large magnitude of changes in domestic financial market conditions was difficult to reconcile with incoming information on U.S. economic developments. A couple of participants pointed out that the recent decline in equity prices could be viewed as bringing equity valuations more in line with historical norms. Additionally, a few participants cautioned that valuations in CRE markets should be closely monitored. The effects of a relatively flat yield curve and low interest rates in reducing banks' net interest margins were also noted.

Participants discussed whether their current assessments of economic conditions and the medium-term outlook warranted either increasing the target range for the federal funds rate at this meeting or altering their earlier views of the appropriate path for the target range for the federal funds rate. Participants agreed that incoming indicators regarding labor market developments had been encouraging, but also that data releases since the December meeting on spending and production had been disappointing. Furthermore, developments in commodity and financial markets as well as the possibility of a significant weakening of some foreign economies had the potential to further restrain domestic economic activity, partly because the large cumulative declines in energy and other commodity prices could have pronounced adverse effects on some firms and countries that are important producers of such commodities. However, a few noted that the potential positive effects of lower energy costs on economic activity were a mitigating factor. Participants judged that the overall implication of these developments for the outlook for domestic economic activity was unclear, but they agreed that uncertainty had increased, and many saw these developments as increasing the downside risks to the outlook.

As expected, inflation had continued to run below 2 percent, but the further decline in energy prices and the additional appreciation of the dollar likely implied that inflation would take somewhat longer than previously anticipated to rise to the Committee's objective. It was noted that although it was generally appropriate for monetary policy not to respond substantially to temporary shocks to inflation, that prescription depended in part on the assumption that longer-term inflation expectations remained well anchored. Participants pointed out that some market-based measures of longer-term inflation compensation had declined to historically low levels, which increased concerns about whether inflation expectations could be moving lower. Other participants, however, noted that survey-based measures of longer-term inflation expectations had remained fairly steady, and a few participants characterized measures of underlying inflation rates, such as core and trimmed mean PCE inflation, as having stayed relatively stable. Most participants still expected inflation to increase gradually once energy prices and the prices of non-energy imports stabilized and as the labor market strengthened further. However, a few participants noted that direct evidence that inflation was rising toward 2 percent would be an important element of their assessment of the outlook and of the appropriate path for policy.

Participants expressed a range of views regarding the balance of risks to the medium-term economic outlook and its implications for the conduct of monetary policy. Most participants indicated that it was difficult to judge at this point whether the outlook for inflation and economic growth had changed materially, but they thought that uncertainty surrounding the outlook had increased as a result of recent financial and economic developments. Most participants were of the view that there was not yet enough evidence to indicate whether the balance of risks to the medium-term outlook had changed materially, but others judged that recent developments had increased the level of downside risks or that the risks were no longer balanced.

Several participants noted that monetary policy was less well positioned to respond effectively to shocks that reduce inflation or real activity than to upside shocks, and that waiting for additional information regarding the underlying strength of economic activity and prospects for inflation before taking the next step to reduce policy accommodation would be prudent. While participants continued to expect that gradual adjustments in the stance of monetary policy would be appropriate, they emphasized that the timing and pace of adjustments will depend on future economic and financial market developments and their implications for the medium-term economic outlook. A couple of participants questioned whether some financial market participants fully appreciated that monetary policy is data dependent, and a number of participants emphasized the importance of continuing to communicate this aspect of monetary policy.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the Committee met in December suggested that labor market conditions had improved further even as economic growth slowed late last year. Members noted that a range of recent labor market indicators, including strong job gains, pointed to some additional decline in the underutilization of labor resources. Members also agreed that household spending and business fixed investment had been increasing at moderate rates in recent months, and the housing sector had improved further; however, net exports had been soft and inventory investment had slowed. Members noted that inflation continued to run below the Committee's 2 percent longer-run objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation had declined further; survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months. Members expected that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market conditions would continue to strengthen.

In assessing whether economic conditions had improved sufficiently to warrant a further increase in the target range for the federal funds rate at this meeting, members agreed that labor market data had generally been stronger than anticipated at the time of the December meeting, and some members noted that wage growth had picked up. However, the spending and production data generally had been disappointing—in particular, information regarding indicators of manufacturing activity, consumption expenditures, and inventory investment. Regarding the outlook for inflation, the additional sharp declines in energy prices and strengthening of the exchange value of the dollar since the December meeting were likely to hold down inflation for longer than previously anticipated, but inflation was expected to increase gradually as energy prices and the prices of non-energy imports stabilized and the labor market strengthened further. A couple of members emphasized that direct evidence that inflation was rising toward 2 percent would be an important element of their assessments of the appropriate timing of further policy firming.

In discussing the appropriate path for the target range for the federal funds rate over the medium term, members agreed that it would be important to closely monitor global economic and financial developments and to continue to assess their implications for the labor market and inflation, and for the balance of risks to the outlook. Members expressed a range of views regarding the implications of recent economic and financial developments for the degree of uncertainty about the medium-term outlook, with many members judging that uncertainty had increased. Members generally agreed that the implications of the available information were not sufficiently clear to allow members to assess the balance of risks to the economic outlook in the Committee's postmeeting statement. However, members observed that if the recent tightening of global financial conditions was sustained, it could be a factor amplifying downside risks.

After assessing the outlook for economic activity, the labor market, and inflation, and after weighing the uncertainties associated with the outlook, members agreed to leave the target range for the federal funds rate unchanged at ¼ to ½ percent. The Committee also maintained its policy of reinvesting principal payments from agency debt and agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipated that it would be appropriate to continue this reinvestment policy until normalization of the level of the federal funds rate was well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective January 28, 2016, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of ¼ to ½ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 0.25 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

> "Information received since the Federal Open Market Committee met in December suggests that labor market conditions improved further even as economic growth slowed late last year. Household spending and business fixed investment have been increasing at moderate rates in recent months, and the housing sector has improved further; however, net exports have been soft and inventory investment slowed. A range of recent labor market indicators, including strong job gains, points to some additional decline in underutilization of labor resources. Inflation has continued to run below the Committee's 2 percent longer-run objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation declined further; survey-based measures of longer-term inflation expectations are little changed, on balance, in recent months.
>
> Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee currently expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market indicators will continue to strengthen. Inflation is expected to remain low in the near term, in part because of the further declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of declines in energy and import prices dissipate and the labor market strengthens further. The Committee is closely monitoring global economic and financial developments and is assessing their implications for the labor market and inflation, and for the balance of risks to the outlook.
>
> Given the economic outlook, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent. The stance of monetary policy remains accommodative, thereby supporting further improvement in labor market conditions and a return to 2 percent inflation.
>
> In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations,

and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions."

Voting for this action: Janet L. Yellen, William C. Dudley, Lael Brainard, James Bullard, Stanley Fischer, Esther L. George, Loretta J. Mester, Jerome H. Powell, Eric Rosengren, and Daniel K. Tarullo.

Voting against this action: None.

Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors took no action to change the interest rates on reserves or discount rates.

Potential Enhancements to the Summary of Economic Projections

Next, participants considered a proposal by the subcommittee on communications to add to the SEP several charts that would illustrate the uncertainty that attends participants' macroeconomic projections. A staff briefing reviewed the subcommittee's proposal, noting that these so-called fan charts could be constructed largely from information on historical errors from government and private-sector forecasts that is already provided in the SEP, thereby making it easy to explain the new charts to the public; in addition, the inclusion of a fan chart for the federal funds rate could help convey to the public that the future path of monetary policy is uncertain and will depend on economic and financial developments. The subcommittee had considered other approaches but opted to recommend a simple method similar to that followed by some foreign central banks.

Participants expressed a range of views regarding the advantages and disadvantages of including fan charts in the SEP. On the one hand, these charts would enhance the Committee's communications by providing a visual representation of the uncertainty surrounding the median projections for each variable, although it was noted that the meeting minutes and the SEP already provide information about participants' assessments of the uncertainty regarding the economic outlook. In addition, fan charts would help illustrate that the dispersion of participants' projections was usually modest relative to the uncertainty that attends macroeconomic forecasts. Moreover, a number of participants noted that the simple approach that the subcommittee was recommending would be more straightforward to explain to the public than the other options considered by the subcommittee and could be modified over time to incorporate greater complexity—for instance, by showing that the magnitude of uncertainty above the median projection was not necessarily equal to the magnitude of uncertainty below it. On the other hand, some participants thought that the proposed fan charts still could be challenging for the general public to interpret. It was also noted that other central banks that employ fan charts typically display uncertainty around a staff forecast or policymakers' consensus forecast, but that the median SEP projections do not necessarily represent the Committee's collective view. Moreover, the typical magnitude of the historical forecast errors used to construct the proposed fan charts could well differ from participants' judgments about uncertainty going forward—information that is already included in the SEP—and this difference could be difficult to explain.

With regard to including a fan chart to illustrate the uncertainty surrounding the path of the policy interest rate, a fan chart for the federal funds rate might be helpful in explaining that future monetary policy is necessarily uncertain and will depend upon economic and financial developments. However, participants raised several questions, including whether the band around the federal funds rate path should extend below zero, how any future forward guidance would be represented in this framework, and whether it would be appropriate to include a fan chart for the federal funds rate in light of the Committee's role in setting the policy target.

At the end of the discussion, the Chair noted that further work might be helpful to address participants' concerns and asked the subcommittee on communications to continue to investigate the possibility of incorporating a graphical depiction of uncertainty into the SEP.

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, March 15–16, 2016. The meeting adjourned at 12:25 p.m. on January 27, 2016.

Notation Vote

By notation vote completed on January 5, 2016, the Committee unanimously approved the minutes of the Committee meeting held on December 16–17, 2015.

Brian F. Madigan
Secretary

Meeting Held on March 15–16, 2016

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, March 15, 2016, at 1:00 p.m. and continued on Wednesday, March 16, 2016, at 9:00 a.m.[1]

Present

Janet L. Yellen
Chair

William C. Dudley
Vice Chairman

Lael Brainard

James Bullard

Stanley Fischer

Esther L. George

Loretta J. Mester

Jerome H. Powell

Eric Rosengren

Daniel K. Tarullo

Charles L. Evans, Patrick Harker, Robert S. Kaplan, Neel Kashkari, and Michael Strine
Alternate Members of the Federal Open Market Committee

Jeffrey M. Lacker, Dennis P. Lockhart, and John C. Williams
Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco, respectively

Brian F. Madigan
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Scott G. Alvarez
General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

Thomas A. Connors, Michael P. Leahy, David E. Lebow, Stephen A. Meyer, Christopher J. Waller, and William Wascher
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Robert deV. Frierson
Secretary of the Board, Office of the Secretary, Board of Governors

Michael S. Gibson
Director, Division of Banking Supervision and Regulation, Board of Governors

Nellie Liang
Director, Office of Financial Stability Policy and Research, Board of Governors

James A. Clouse
Deputy Director, Division of Monetary Affairs, Board of Governors

William B. English
Senior Special Adviser to the Board, Office of Board Members, Board of Governors

Andrew Figura, Ann McKeehan, David Reifschneider, and Stacey Tevlin[2]
Special Advisers to the Board, Office of Board Members, Board of Governors

Trevor A. Reeve
Special Adviser to the Chair, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Diana Hancock and Michael G. Palumbo
Senior Associate Directors, Division of Research and Statistics, Board of Governors

Beth Anne Wilson
Senior Associate Director, Division of International Finance, Board of Governors

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1 The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

2 Attended the discussion of the economic and financial situation through the close of the meeting.

Ellen E. Meade and Robert J. Tetlow
Senior Advisers, Division of Monetary Affairs, Board of Governors

Jane E. Ihrig and David López-Salido
Associate Directors, Division of Monetary Affairs, Board of Governors

Stephanie R. Aaronson and Glenn Follette[3]
Assistant Directors, Division of Research and Statistics, Board of Governors

Penelope A. Beattie[4]
Assistant to the Secretary, Office of the Secretary, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Kurt F. Lewis
Principal Economist, Division of Monetary Affairs, Board of Governors

Randall A. Williams
Information Manager, Division of Monetary Affairs, Board of Governors

Kenneth C. Montgomery
First Vice President, Federal Reserve Bank of Boston

David Altig, Ron Feldman, Alberto G. Musalem, Glenn D. Rudebusch, and Daniel G. Sullivan
Executive Vice Presidents, Federal Reserve Banks of Atlanta, Minneapolis, New York, San Francisco, and Chicago, respectively

Michael Dotsey, Evan F. Koenig, Paolo A. Pesenti, and John A. Weinberg
Senior Vice Presidents, Federal Reserve Banks of Philadelphia, Dallas, New York, and Richmond, respectively

Edward S. Knotek II, Giovanni Olivei, and Jonathan L. Willis
Vice Presidents, Federal Reserve Banks of Cleveland, Boston, and Kansas City, respectively

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) reported on developments in domestic and foreign financial markets, including recent monetary policy actions of foreign central banks and the expectations of market participants for the trajectory of U.S. monetary policy. The deputy manager followed with a briefing on money market developments and System open market operations conducted by the Open Market Desk during the period since the Committee met on January 26–27, 2016. Experience during the intermeeting period continued to suggest that the operational framework for monetary policy implementation was effective in maintaining control over the federal funds rate. Also, the transitions in early March to the FR 2420 reporting form (Report of Selected Money Market Rates) as the underlying source of data for computing the effective federal funds rate, and to a volume-weighted median as the calculation method, proceeded smoothly. In addition, the deputy manager reviewed recent and projected trends in foreign portfolio income of the SOMA, including the implications for portfolio income of foreign nominal interest rates that were very low, even negative.

The deputy manager also outlined factors that the Committee might consider in determining whether to offer term reverse repurchase agreements (RRPs) over the end of the first quarter. In the ensuing discussion of this question among Committee participants, it was noted that, in view of the very elevated capacity of the overnight (ON) RRP facility that would remain available for the time being, offering term RRPs in addition to ON RRPs would be unlikely to enhance control of the federal funds rate over quarter-end, and offering term RRPs at an interest rate spread over ON RRPs could marginally increase the Federal Reserve's interest costs. For these reasons, Committee participants generally preferred not to offer term RRPs over the end of the first quarter. Participants noted that it may be appropriate to offer term RRPs at some point in the future after the Committee reintroduces an aggregate cap on ON RRP operations, and the Committee's decisions regarding term RRPs over quarter-ends had no implications for the FOMC's plan to phase out the ON RRP facility when it was no longer needed to help control the federal funds rate.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account over the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the March 15–16 meeting suggested that labor market conditions were con-

3 Attended Wednesday session only.

4 Attended Tuesday session only.

tinuing to improve in the first quarter, and that the pace of expansion in real gross domestic product (GDP) was picking up somewhat from the previous quarter. Consumer price inflation was still running below the Committee's longer-run objective of 2 percent, restrained in part by decreases in both consumer energy prices and the prices of non-energy imports. Survey-based measures of longer-run inflation expectations were little changed, on balance, in recent months, while market-based measures of inflation compensation remained low.

Total nonfarm payroll employment increased in January and February at a solid average monthly pace. The unemployment rate declined to 4.9 percent in January and remained at that level in February, while both the labor force participation rate and the employment-to-population ratio increased over these months. The share of workers employed part time for economic reasons edged down in January and February. The rates of private-sector job openings, hires, and quits rose a little in December. The four-week moving average of initial claims for unemployment insurance benefits moved down in February and early March after increasing a little in January. Labor compensation continued to rise at a modest pace. Compensation per hour in the nonfarm business sector increased 2½ percent over the four quarters of 2015, and the employment cost index rose nearly 2 percent over the 12 months ending in December; both increases were similar to their averages in recent years. Average hourly earnings for all employees increased 2¼ percent over the 12 months ending in February, about ¼ percentage point more than over the preceding 12 months.

Industrial production increased in January. Manufacturing output rose, reversing the declines seen in the two previous months, and the output of utilities moved up sharply as the demand for heating rebounded after having been held down by unseasonably warm weather in December. Mining output was unchanged following four months of sizable declines that resulted from decreases in drilling activity. Automakers' assembly schedules and broader indicators of manufacturing production, such as the readings on new orders from national and regional manufacturing surveys, mostly pointed to a modest pace of gains in factory output over the next few months. Information on drilling activity for crude oil and natural gas through early March was consistent with further declines in mining output.

Growth in real personal consumption expenditures (PCE) appeared to pick up some in the first quarter. The components of the nominal retail sales data used by the Bureau of Economic Analysis to construct its estimate of PCE were little changed, on net, in January and February, but spending on energy services appeared likely to increase somewhat and the rate of sales of new light motor vehicles stepped up following a decline in December. Recent readings on key factors that influence consumer spending generally pointed toward solid growth in real PCE over the first half of the year. Gains in real disposable income picked up in December and January. Households' net worth was supported both by a rebound in equity prices following declines earlier in the year and by further increases in home values through January. Also, consumer sentiment in the University of Michigan Surveys of Consumers remained at an elevated level in February.

Recent information on housing activity was consistent with a continued gradual recovery in this sector. Starts for new single-family homes moved higher, on balance, in January and February, and building permits were little changed. Starts of multifamily units declined on net. New home sales fell in January, more than reversing an increase in December. Sales of existing homes increased further in January following a strong gain in December.

Real private expenditures for business equipment and intellectual property products appeared to be increasing only modestly in the first quarter. Nominal shipments of nondefense capital goods excluding aircraft declined in January, and forward-looking indicators of equipment spending, such as new orders for nondefense capital goods along with recent readings from national and regional surveys of business conditions, were generally soft. Firms' nominal spending for nonresidential structures excluding drilling and mining increased somewhat in January after having declined for two months. Indicators of spending for structures in the drilling and mining sector, such as the number of oil and gas rigs in operation, continued to fall through early March. The limited available data suggested that inventory investment continued to decline in the early part of the year. Nonetheless, with the exception of the energy sector, inventories generally seemed well aligned with the pace of sales.

Growth in total real government purchases appeared to be modest in the first quarter. Federal government

spending for defense was soft in January and February, while nondefense spending seemed likely to be slightly boosted early in the year by the effect of the 2015 Bipartisan Budget Act. Nominal construction spending by state and local governments increased sharply in January, but the payrolls of these governments were little changed, on net, over the first two months of the year.

The U.S. international trade deficit widened in both December and January, as exports declined in both months, continuing a downward trend that began in late 2014, with particular weakness in exports of capital goods. Imports rose slightly in December before falling back in January. Net exports subtracted from real GDP growth in the fourth quarter, and the January trade data suggested that net exports would continue to weigh on growth in the first quarter.

Total U.S. consumer prices as measured by the PCE price index increased 1¼ percent over the 12 months ending in January, partly restrained by declines in consumer energy prices. Core PCE price inflation, which excludes changes in food and energy prices, was 1¾ percent over the same 12-month period, held down in part by decreases in the prices of non-energy imports and the pass-through of declines in energy prices. Over the 12 months ending in February, total consumer prices as measured by the consumer price index (CPI) rose 1 percent, while core CPI inflation was around 2¼ percent. Both readings on core inflation were boosted, in part, by movements in prices for some categories of goods and services whose prices tend to be volatile. Survey measures of longer-run inflation expectations—including those from the Michigan survey, Blue Chip Economic Indicators, Survey of Professional Forecasters, Survey of Primary Dealers, and Survey of Market Participants—were generally little changed on balance. In February, the Michigan survey measure of median inflation expectations over the next 5 to 10 years was below its typical range of the past 15 years, likely reflecting—at least in part—decreases in energy prices over the past year and a half.

Foreign real GDP growth slowed in the fourth quarter, with Canadian activity restrained by declines in oil-related investment and the Japanese economy contracting amid weakness in consumption. Economic growth continued to be steady but modest in the euro area and the United Kingdom, while Brazil remained in recession. In contrast, some economies in emerging Asia recorded robust growth. Indicators pointed to a pickup in growth in most foreign economies in the current quarter but to a further softening of growth in China. Inflation in the advanced foreign economies remained low. In contrast, inflation rose in China because of a rebound in local food prices, while inflation in much of South America remained elevated, reflecting weaker currencies. Concerns about persistently low inflation spurred further monetary policy accommodation by the Bank of Japan (BOJ) and the European Central Bank (ECB).

Staff Review of the Financial Situation

Financial markets were turbulent over the first month and a half of the year, apparently reflecting investors' concerns about global growth prospects and associated risks to the U.S. outlook. However, these concerns appeared to diminish beginning in mid-February, and domestic financial conditions generally eased, on balance, since the January FOMC meeting: Stock prices rose, equity price volatility declined, and credit spreads on corporate bonds narrowed. The dollar depreciated against most foreign currencies, and long-term sovereign bond yields declined amid easing by central banks in advanced foreign economies.

Yields on 5- and 10-year nominal Treasury securities declined at the outset of the intermeeting period, reflecting the continued pullback from risky assets that began early in the year on concerns about prospects for global economic growth. These yields subsequently increased as market sentiment improved and were little changed, on balance, over the intermeeting period. Measures of inflation compensation over the next 5 years rose, on net, consistent with increases in oil prices, while inflation compensation 5 to 10 years ahead was little changed on the period and remained at the lower end of its historical range.

After becoming considerably flatter early in the intermeeting period, the path of the federal funds rate implied by market quotes on interest rate derivatives steepened subsequently as financial market conditions improved and was little changed, on balance, over the intermeeting period. However, the median respondent to the Desk's March Survey of Primary Dealers and to the Survey of Market Participants expected only two increases in the FOMC's target range for the federal funds rate this year, one fewer than they had projected in January.

Broad equity market indexes increased, on balance, over the intermeeting period and continued to exhibit a high correlation with crude oil prices. Reflecting the

improvement in investor sentiment that started in mid-February, corporate bond spreads narrowed, with spreads on investment-grade issues finishing the period slightly lower while spreads on speculative-grade issues—particularly those for the lowest-rated bonds—declined appreciably.

Financing conditions for investment-grade nonfinancial firms continued to be relatively accommodative. Corporate bond issuance by these firms was robust in January and February, while speculative-grade bond issuance stayed subdued. Commercial and industrial loan growth at banks was also strong, mostly driven by the origination of large loans to investment-grade borrowers. Refinancings of institutional leveraged loans were near zero in February, as was equity issuance through initial public offerings.

The credit quality of speculative-grade nonfinancial corporations continued to show signs of deterioration. Market analysts' earnings forecasts for speculative-grade companies, including those outside the energy sector, were revised down for the first quarter of 2016 amid concerns about a deterioration in the global economic outlook. In the broader corporate bond market, the volume of downgrades of ratings outpaced that of upgrades, even for investment-grade securities, in January and February, with energy firms accounting for most of the downgrades in February. The default rate on nonfinancial bonds remained somewhat elevated compared with typical levels outside recession periods.

Financing conditions for commercial real estate (CRE) tightened somewhat over the intermeeting period but remained accommodative. Spreads on commercial mortgage-backed securities (CMBS) continued to widen, on net, despite the narrowing of spreads in broader bond markets. Reportedly in response, CMBS issuance was down somewhat over the first two months of the year, although CRE loans on banks' balance sheets continued to increase at a robust pace through February.

Lending conditions in residential real estate markets were little changed, on balance, over the intermeeting period. Financing conditions in consumer credit markets generally remained accommodative, and outstanding student and auto debt continued to grow at a robust pace.

During the intermeeting period, foreign financial conditions improved on net. After deteriorating further early in the period, foreign equity prices bounced back and credit spreads on emerging market bonds narrowed, in both cases returning to December levels in most countries. Since the January FOMC meeting, the dollar depreciated, on net, against most foreign currencies. Long-term sovereign bond yields declined notably in the advanced economies, in part as foreign central banks announced additional monetary policy easing measures. The BOJ introduced a negative deposit rate. The ECB announced a comprehensive package of easing measures, including a further cut in benchmark policy rates, accelerated and more expansive asset purchases, and a new round of targeted long-term refinancing operations.

Over the period since mid-December, when the Committee raised the target range for the federal funds rate ¼ percentage point, U.S. financial market conditions had registered relatively small changes, on balance, amid significant volatility. Financial derivatives suggested that market participants had revised down their expected trajectory of the federal funds rate somewhat, and yields on medium- and longer-term Treasury securities declined 20 to 30 basis points. Yields on investment- and speculative-grade corporate bonds were down slightly less, leaving spreads over Treasury securities little changed over the period between mid-December and mid-March. Similarly, broad equity price indexes ended this interval only a bit lower, and one-month-ahead option-implied volatility on the S&P 500 index, the VIX, declined on balance. The broad index of the foreign exchange value of the dollar was also roughly unchanged, on net, since the December meeting.

Staff Economic Outlook

In the U.S. economic forecast prepared by the staff for the March FOMC meeting, real GDP in the first half of the year was projected to increase a little more slowly than in the forecast prepared for the January meeting, although estimated real GDP growth in the fourth quarter of last year was revised up. Beyond the near term, real GDP was expected to increase slightly faster than in the previous forecast, largely reflecting a somewhat higher projected path for equity prices and a lower assumed trajectory for the foreign exchange value of the dollar. The staff continued to project that real GDP would expand at a somewhat faster pace than potential output in 2016 through 2018, supported primarily by increases in consumer spending. The unemployment rate was expected to gradually decline further and to run somewhat below the staff's estimate of its longer-run

natural rate over this period; the staff's estimate of the natural rate was revised down slightly in this forecast.

The staff's forecast for inflation over the first half of the year was revised up somewhat, reflecting recent increases in the price of crude oil as well as stronger-than-expected data on core consumer prices early in the year. The staff continued to project that inflation would increase gradually over the next several years, as energy prices and the prices of non-energy imported goods were expected to begin steadily rising later this year. Beyond 2016, the forecast was a bit lower than the previous projection, primarily reflecting a flatter expected path for crude oil prices. As a result, inflation was projected still to be slightly below the Committee's longer-run objective of 2 percent in 2018.

The staff viewed the uncertainty around its March projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The risks to the forecast for real GDP were seen as tilted to the downside, reflecting the staff's assessment that neither monetary nor fiscal policy was well positioned to help the economy withstand substantial adverse shocks; in addition, global economic prospects were still seen as an important downside risk to the forecast. Consistent with the downside risk to aggregate demand, the staff viewed the risks to its outlook for the unemployment rate as skewed to the upside. The risks to the projection for inflation were still seen as weighted to the downside, reflecting the possibility that longer-term inflation expectations may have edged down, and that the foreign exchange value of the dollar could rise substantially, which would put additional downward pressure on inflation.

Participants' Views on Current Conditions and the Economic Outlook

In conjunction with this FOMC meeting, members of the Board of Governors and Federal Reserve Bank presidents submitted their projections of the most likely outcomes for real GDP growth, the unemployment rate, inflation, and the federal funds rate for each year from 2016 through 2018 and over the longer run. Each participant's projections were conditioned on his or her judgment of appropriate monetary policy. The longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. These projections and policy assessments are described in the Summary of Economic Projections, which is an addendum to these minutes.

In their discussion of the economic situation and the outlook, meeting participants viewed the information received over the intermeeting period as suggesting that economic activity had been expanding moderately despite the global economic and financial developments of recent months. Household spending had been increasing at a moderate rate, and the housing sector had improved further; however, business fixed investment and net exports had been soft. A range of labor market indicators, including strong employment growth and rising labor force participation, pointed to a further strengthening of the labor market. Participants generally saw the data on economic activity and labor market conditions as broadly consistent with their earlier expectations. Inflation picked up in recent months, but it continued to run below the Committee's 2 percent longer-run objective. Market-based measures of inflation compensation remained low, while survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months. Early in the intermeeting period, concerns among investors about the global economic outlook appeared to trigger a sharp reduction in their risk-taking. Financial conditions deteriorated, with equity prices falling and credit spreads on riskier corporate bonds widening. Subsequently, investor sentiment rebounded, and domestic and global financial conditions eased on net over the intermeeting period.

With respect to the outlook for economic activity and the labor market, participants shared the assessment that, with gradual adjustments in the stance of monetary policy, real GDP would continue to increase at a moderate rate over the medium term and labor market indicators would continue to strengthen. Participants observed that strong job gains in recent months had reduced concerns about a possible slowing of progress in the labor market. Many participants, however, anticipated that relative strength in household spending would be partially offset by weakness in net exports associated with lackluster foreign growth and the appreciation of the dollar since mid-2014. In addition, business fixed investment seemed likely to remain sluggish. Furthermore, participants generally saw global economic and financial developments as continuing to pose risks to the outlook for economic activity and the labor market in the United States. In particular, several partici-

pants expressed the view that the underlying factors abroad that led to a sharp, though temporary, deterioration in global financial conditions earlier this year had not been fully resolved and thus posed ongoing downside risks. Several participants also noted the possibility that economic activity or labor market conditions could turn out to be stronger than anticipated. For example, strong expansion of household demand could result in rapid employment growth and overly tight resource utilization, particularly if productivity gains remained sluggish.

Notwithstanding the downward revisions to recent retail sales data, participants were encouraged by the moderate average growth of consumer spending over recent quarters. Continued increases in household spending had buoyed growth of overall aggregate demand despite the volatility in financial markets. Among the various categories of household spending, participants noted that motor vehicle sales remained particularly strong, albeit with some support from price discounting and other incentives. Looking ahead, participants generally expected consumer spending to continue to rise moderately. Solid gains in employment and income, the relatively high ratio of household wealth to income, low gasoline prices, and a high level of consumer confidence were seen as factors that should contribute to moderate growth in consumer spending.

Reports on the housing sector were mixed, with some participants noting a weakening of housing activity in regions adversely affected by the decline in energy prices. Nonetheless, fundamentals for housing activity were seen as strong except for a reported shortage of buildable lots in some areas. Some participants reported that contacts were generally upbeat about the outlook for housing construction in their Districts, and participants anticipated that activity in the housing sector would continue to expand this year.

In contrast, several participants noted recent softness in business fixed investment and signs that the sluggish growth would continue. Orders and shipments for nondefense capital goods had been about flat. Capital expenditures continued to be depressed by the contraction in the energy sector. Capital spending plans appeared to remain soft. The possible adverse effects on investment spending of concerns about global growth and the associated volatility in financial markets were also noted. District reports on commercial construction activity, however, were generally positive.

With regard to the external sector, a number of participants said that they expected declines in net exports to continue to subtract from real GDP growth, reflecting weak foreign activity as well as the earlier appreciation of the dollar. The outlook for growth abroad had dimmed in recent months, suggesting a more persistent drag on growth of U.S. exports. A couple of participants commented that emerging market economies faced an extended period of less rapid export growth, reflecting slower economic growth in many advanced foreign economies and in China. It also was noted that weak growth abroad could lead to further appreciation of the dollar.

In discussing domestic business conditions, several participants noted that their contacts saw rising sales in the retail sector and that reports from firms in the services sector were mostly strong. In some Districts, surveys suggested that manufacturing activity had bottomed out. However, a number of participants commented that previous declines in commodity and energy prices, along with the earlier appreciation of the dollar and weak foreign activity, continued to weigh on manufacturing activity. A few participants also noted that such factors were reducing farm incomes in their Districts.

During the intermeeting period, the labor market strengthened further. In their comments on labor market conditions, participants cited strong payroll gains and a further tick down in the civilian unemployment rate. Broader measures of labor force underutilization had also shown progress, including an increase in labor force participation. The quits rate had returned to its prerecession level, as had households' perceptions of job availability and firms' assessments of the difficulty of filling jobs, providing further evidence of improved labor market conditions. Some participants judged that current labor market conditions were at or near those consistent with maximum sustainable employment, noting that the unemployment rate was at or below their estimates of its longer-run normal level and citing anecdotal reports of labor shortages or increased wage pressures. In contrast, some other participants judged that the economy had not yet reached maximum employment. They noted several indicators other than the unemployment rate that pointed to remaining underutilization of labor resources; these indicators included the still-high rate of involuntary part-time employment and the low level of the employment-to-population ratio for prime-age work-

ers. The surprisingly limited extent to which aggregate data indicated upward pressure on wage growth also suggested some remaining slack in labor markets.

Participants commented on the recent increase in inflation. Some participants saw the increase as consistent with a firming trend in inflation. Some others, however, expressed the view that the increase was unlikely to be sustained, in part because it appeared to reflect, to an appreciable degree, increases in prices that had been relatively volatile in the past. Participants continued to anticipate that inflation would run below the Committee's 2 percent objective in the near term but that, as the transitory effects of earlier declines in energy and import prices dissipated and the labor market strengthened further, inflation would rise to 2 percent over the medium term. Several participants indicated that the persistence of global disinflationary pressures or the possibility that inflation expectations were moving lower continued to pose downside risks to the inflation outlook. A few others expressed the view that there were also risks that could lead to inflation running higher than anticipated; for example, overly tight resource utilization could push inflation above the Committee's 2 percent goal, particularly if productivity gains remained sluggish.

Participants discussed readings from various market- and survey-based measures of longer-run inflation expectations. Some survey-based measures had edged down, while others had remained stable and one had edged up; such measures were little changed, on balance, in recent months. The market-based measures of inflation compensation that had declined earlier were still at low levels. Several participants noted that some of the softness in the market-based measures likely reflected changes in risk and liquidity premiums, and that some of the survey-based measures appeared to be excessively sensitive to movements in gasoline prices. Some participants concluded that longer-run inflation expectations remained reasonably stable, but some others expressed concern that longer-run inflation expectations may have already moved lower, or that they might do so if inflation was to persist for much longer at a rate below the Committee's objective.

Participants discussed the implications of the global economic and financial developments of the past few months for the medium-term outlook, and they offered different characterizations of the risks to the U.S. economy stemming from these developments. Many participants expressed a view that the global economic and financial situation still posed appreciable downside risks to the domestic economic outlook. Some noted that recent financial market turbulence provided an important reminder that the ability of central banks to offset the effects of adverse economic shocks might be limited, particularly by the low level of policy interest rates in most advanced economies. In contrast, a few noted that the actions taken by several foreign central banks in recent weeks to increase monetary accommodation likely had helped mitigate downside risks to the global outlook. Nonetheless, many participants indicated that the heightened global risks and the asymmetric ability of monetary policy to respond to them warranted caution in making adjustments to the stance of U.S. monetary policy.

Participants generally agreed that the incoming information indicated that the U.S. economy had been resilient to recent global economic and financial developments, and that the domestic economic indicators that had become available in recent weeks had been mostly consistent with their expectations. Moreover, the sharp asset price movements that occurred earlier in the year had been reversed to a large extent, but longer-term interest rates and market participants' expectations for the future path of the federal funds rate remained lower. Taking these developments into account, participants generally judged that the medium-term outlook for domestic demand was not appreciably different than it had been when the Committee met in December. However, most participants, while recognizing the likely positive effects of recent policy actions abroad, saw foreign economic growth as likely to run at a somewhat slower pace than previously expected, a development that probably would further restrain growth in U.S. exports and tend to damp overall aggregate demand. Several participants also cited wider credit spreads as a factor that was likely to restrain growth in demand. Accordingly, many participants expressed the view that a somewhat lower path for the federal funds rate than they had projected in December now seemed most likely to be appropriate for achieving the Committee's dual mandate. Many participants also noted that a somewhat lower projected interest rate path was one reason for the relatively small revisions in their medium-term projections for economic activity, unemployment, and inflation.

Several participants also argued for proceeding cautiously in reducing policy accommodation because they saw the risks to the U.S. economy stemming

from developments abroad as tilted to the downside or because they were concerned that longer-term inflation expectations might be slipping lower, skewing the risks to the outlook for inflation to the downside. Many participants noted that, with the target range for the federal funds rate only slightly above zero, the FOMC continued to have little room to ease monetary policy through conventional means if economic activity or inflation turned out to be materially weaker than anticipated, but could raise rates quickly if the economy appeared to be overheating or if inflation was to increase significantly more rapidly than anticipated. In their view, this asymmetry made it prudent to wait for additional information regarding the underlying strength of economic activity and prospects for inflation before taking another step to reduce policy accommodation.

For all of these reasons, most participants judged it appropriate to maintain the target range for the federal funds rate at ¼ to ½ percent at this meeting while noting that global economic and financial developments continued to pose risks. These participants saw their judgment as consistent with the Committee's data-dependent approach to setting monetary policy; it was noted that, in this context, the relevant data include not only domestic economic releases, but also information about developments abroad and changes in financial conditions that bear on the economic outlook. A couple of participants, however, saw an increase in the target range to ½ to ¾ percent as appropriate at this meeting, citing evidence that the economy was continuing to expand at a moderate rate despite developments abroad and earlier volatility in financial conditions, continued improvement in labor market conditions, the firming of inflation over recent months, and the apparent leveling-off of oil prices. In their judgment, increasing the target range for the federal funds rate too gradually in the near term risked having to raise it quickly later, which could cause economic and financial strains at that time.

Participants agreed that their ongoing assessments of the data and the implications for the outlook, rather than calendar dates, would determine the timing and pace of future adjustments to the stance of monetary policy. They expressed a range of views about the likelihood that incoming information would make an adjustment appropriate at the time of their next meeting. A number of participants judged that the headwinds restraining growth and holding down the neutral rate of interest were likely to subside only slowly. In light of this expectation and their assessment of the risks to the economic outlook, several expressed the view that a cautious approach to raising rates would be prudent or noted their concern that raising the target range as soon as April would signal a sense of urgency they did not think appropriate. In contrast, some other participants indicated that an increase in the target range at the Committee's next meeting might well be warranted if the incoming economic data remained consistent with their expectations for moderate growth in output, further strengthening of the labor market, and inflation rising to 2 percent over the medium term.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the Committee met in January suggested that economic activity had been expanding at a moderate pace despite the global economic and financial developments of recent months. They also agreed that household spending had been increasing at a moderate rate, and that the housing sector had improved further; however, business fixed investment and net exports had been soft. Members saw a range of recent indicators, including strong job gains, as pointing to additional strengthening of the labor market. Members noted that inflation had picked up in recent months; however, they also noted that inflation had continued to run below the Committee's 2 percent longer-run objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation remained low. Survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months.

With respect to the economic outlook and its implications for monetary policy, members continued to expect that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market indicators would continue to strengthen. However, they saw global economic and financial developments as continuing to pose risks. Members also continued to expect inflation to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of declines in energy and import prices dissipated and the labor market strengthened further. Members noted the increase in inflation reported in recent months but expressed a range of views about the extent to which the increase would prove persistent. Several members expressed concern that longer-

run inflation expectations may have declined. Members agreed they would continue to monitor inflation developments closely.

Against the backdrop of its discussion of current conditions, the economic outlook, and the risks and uncertainties surrounding the outlook, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent at this meeting. This accommodative stance of monetary policy was expected to support further improvement in labor market conditions and a return to 2 percent inflation. One member, however, preferred to raise the target range for the federal funds rate, indicating that the current low level of real interest rates was not appropriate in the context of current economic conditions and the progress that had been achieved toward the Committee's objectives.

Members again agreed that, in determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee would assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee agreed that it would carefully monitor actual and expected progress toward its inflation goal. The Committee expected that economic conditions would evolve in a manner that would warrant only gradual increases in the federal funds rate, and that the federal funds rate was likely to remain, for some time, below levels that were expected to prevail in the longer run. Indeed, several members noted that their current projections of the path for the federal funds rate that would likely be appropriate this year and next were lower than they had projected in December. However, members agreed that future data and developments could lead to changes in the economic outlook and in their projections of appropriate monetary policy, and that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming data.

The Committee also decided to maintain its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipated doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective March 17, 2016, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of ¼ to ½ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 0.25 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

> "Information received since the Federal Open Market Committee met in January suggests that economic activity has been expanding at a moderate pace despite the global economic and financial developments of recent months. Household spending has been increasing at a moderate rate, and the housing sector has improved further; however, business fixed investment and net exports have been soft. A range of recent indicators, including strong job gains, points to additional strengthening of the labor

market. Inflation picked up in recent months; however, it continued to run below the Committee's 2 percent longer-run objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance, in recent months.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee currently expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market indicators will continue to strengthen. However, global economic and financial developments continue to pose risks. Inflation is expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of declines in energy and import prices dissipate and the labor market strengthens further. The Committee continues to monitor inflation developments closely.

Against this backdrop, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent. The stance of monetary policy remains accommodative, thereby supporting further improvement in labor market conditions and a return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions."

Voting for this action: Janet L. Yellen, William C. Dudley, Lael Brainard, James Bullard, Stanley Fischer, Loretta J. Mester, Jerome H. Powell, Eric Rosengren, and Daniel K. Tarullo.

Voting against this action: Esther L. George.

Ms. George dissented because she believed that a 25 basis point increase in the target range for the federal funds rate was warranted at this meeting. Although risks to the global economy had increased in recent months and financial markets were unusually volatile at times, she believed that monetary policy should focus primarily on progress toward the Committee's longer-run objectives. Recently, labor market conditions had continued to strengthen, with the economy apparently near full employment, and some data had suggested a firming of underlying inflation trends. She believed that monetary policy should respond to these developments by gradually removing accommodation. She noted that, in such circumstances, postponing the removal of accommodation could increase financial distortions and risks to the economy and undermine the achievement of the Committee's longer-run objectives.

Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors took no action to change the interest rates on reserves or discount rates.

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, April 26–27, 2016. The meeting adjourned at 10:40 a.m. on March 16, 2016.

Notation Vote

By notation vote completed on February 16, 2016, the Committee unanimously approved the minutes of the Committee meeting held on January 26–27, 2016.

Brian F. Madigan
Secretary

Addendum: Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on March 15–16, 2016, meeting participants submitted their projections of the most likely outcomes for real output growth, the unemployment rate, inflation, and the federal funds rate for each year from 2016 to 2018 and over the longer run. Each participant's projection was based on information available at the time of the meeting, together with his or her assessment of appropriate monetary policy and assumptions about the factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. "Appropriate monetary policy" is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the Federal Reserve's objectives of maximum employment and stable prices.

FOMC participants generally expected that, under appropriate monetary policy, growth in real gross domestic product (GDP) would be at or somewhat above their individual estimates of the longer-run growth rate in 2016 and 2017 and would converge toward the longer-run rate in 2018 (table 1 and figure 1). All participants projected that by the end of the current year, the unemployment rate would decline to, or fall below, their individual estimates of the longer-run normal unemployment rate—that is, their projected unemployment gaps would be zero or negative—and that these zero or negative gaps would persist through 2018, even though many participants

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, March 2016

Percent

Variable	Median[1]				Central tendency[2]				Range[3]			
	2016	2017	2018	Longer run	2016	2017	2018	Longer run	2016	2017	2018	Longer run
Change in real GDP	2.2	2.1	2.0	2.0	2.1–2.3	2.0–2.3	1.8–2.1	1.8–2.1	1.9–2.5	1.7–2.3	1.8–2.3	1.8–2.4
December projection	2.4	2.2	2.0	2.0	2.3–2.5	2.0–2.3	1.8–2.2	1.8–2.2	2.0–2.7	1.8–2.5	1.7–2.4	1.8–2.3
Unemployment rate	4.7	4.6	4.5	4.8	4.6–4.8	4.5–4.7	4.5–5.0	4.7–5.0	4.5–4.9	4.3–4.9	4.3–5.0	4.7–5.8
December projection	4.7	4.7	4.7	4.9	4.6–4.8	4.6–4.8	4.6–5.0	4.8–5.0	4.3–4.9	4.5–5.0	4.5–5.3	4.7–5.8
PCE inflation	1.2	1.9	2.0	2.0	1.0–1.6	1.7–2.0	1.9–2.0	2.0	1.0–1.6	1.6–2.0	1.8–2.0	2.0
December projection	1.6	1.9	2.0	2.0	1.2–1.7	1.8–2.0	1.9–2.0	2.0	1.2–2.1	1.7–2.0	1.7–2.1	2.0
Core PCE inflation[4]	1.6	1.8	2.0		1.4–1.7	1.7–2.0	1.9–2.0		1.4–2.1	1.6–2.0	1.8–2.0	
December projection	1.6	1.9	2.0		1.5–1.7	1.7–2.0	1.9–2.0		1.4–2.1	1.6–2.0	1.7–2.1	
Memo: Projected appropriate policy path												
Federal funds rate	0.9	1.9	3.0	3.3	0.9–1.4	1.6–2.4	2.5–3.3	3.0–3.5	0.6–1.4	1.6–2.8	2.1–3.9	3.0–4.0
December projection	1.4	2.4	3.3	3.5	0.9–1.4	1.9–3.0	2.9–3.5	3.3–3.5	0.9–2.1	1.9–3.4	2.1–3.9	3.0–4.0

Note: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The December projections were made in conjunction with the meeting of the Federal Open Market Committee on December 15–16, 2015.

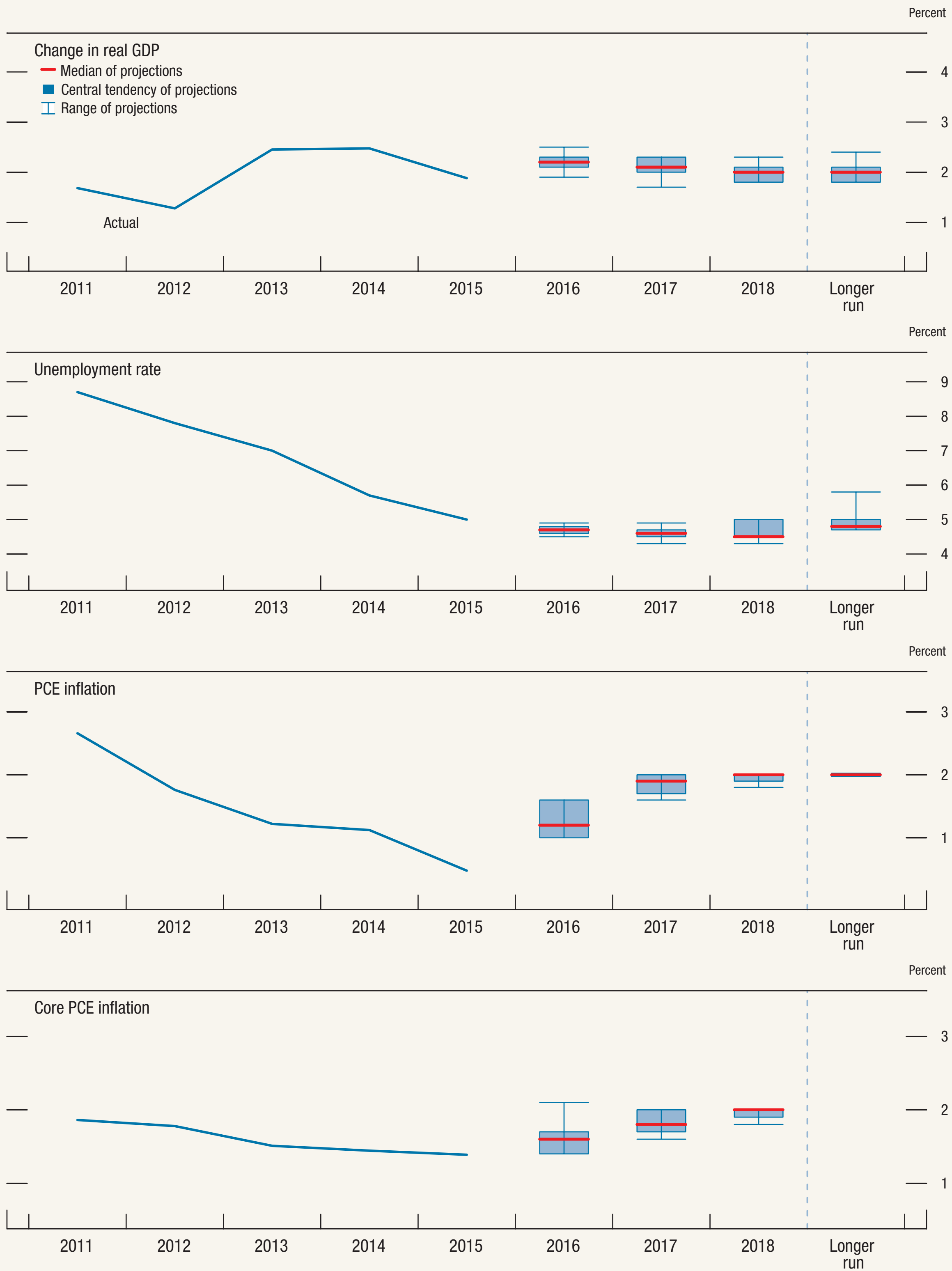
[1] For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

[2] The central tendency excludes the three highest and three lowest projections for each variable in each year.

[3] The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

[4] Longer-run projections for core PCE inflation are not collected.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2016–18 and over the long run



Note: Definitions of variables are in the general note to table 1. The data for the actual values of the variables are annual.

reduced their estimates of the longer-run normal rate. All participants projected that inflation, as measured by the four-quarter change in the price index for personal consumption expenditures (PCE), would pick up in 2016 and 2017 from the very low rate seen in 2015. Participants generally projected inflation to be either at or just slightly below the Committee's 2 percent objective by the end of 2018.

As shown in figure 2, participants expected that it would be appropriate to raise the target range for the federal funds rate gradually over the projection period as headwinds to economic growth dissipate slowly over time and as inflation rises toward the Committee's goal of 2 percent. Consistent with this outlook, nearly all participants projected that the appropriate level of the federal funds rate would be below their individual estimates of its longer-run level through 2018.

Almost all participants regarded the levels of uncertainty associated with their forecasts for economic growth and the unemployment rate as broadly similar to the norms of the previous 20 years and shared a similar view regarding the uncertainty surrounding their inflation projections. Participants were about evenly divided as to whether they judged the risks to their forecasts for real GDP growth to be weighted to the downside or broadly balanced; no participant saw risks to real GDP growth as weighted to the upside. Participants who thought that risks to their outlook for real GDP growth were skewed to the downside tended to cite developments in foreign economies, recent volatility in financial markets, or the limited capacity of policy to respond to adverse developments as contributing to that view. Risk perceptions regarding the unemployment rate were more dispersed. Most participants regarded risks to their unemployment rate forecasts as broadly balanced, but four participants considered risks as skewed toward a higher unemployment rate, and two viewed risks as weighted toward a lower unemployment rate. A majority of participants thought that the risks attending their projections for PCE price inflation were weighted to the downside; almost all of these participants also saw risks to core PCE inflation as tilted in the same direction. Among the reasons cited by participants for perceptions of downside risk to their inflation projections were ongoing developments in overseas economies and their possible implications for U.S. import prices, declines in energy prices since December, and low readings for some indicators of long-term inflation expectations.

The Outlook for Economic Activity

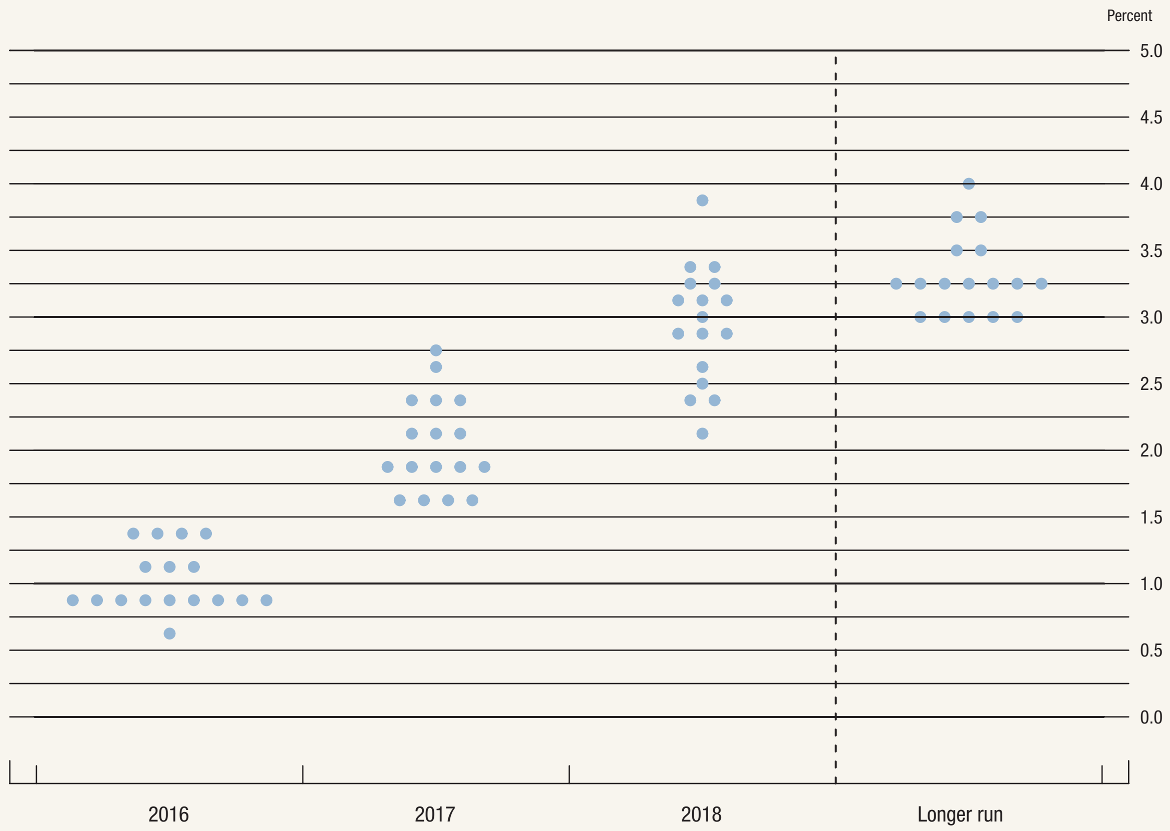
A substantial majority of participants expected that, conditional on their individual assumptions about appropriate monetary policy, real GDP in 2016 and 2017 would increase at a rate above their individual estimates of the longer-run normal growth rate before decelerating to a pace at or near their individual estimates of the longer-run normal rate. A number of participants indicated that they expected domestic factors—including improving labor market conditions, stronger household and business balance sheets, lower consumer energy prices, and a still-accommodative stance of monetary policy—to contribute to strength in aggregate expenditures, while foreign conditions were projected to be a source of weakness for some time.

Compared with their forecasts prepared for the Summary of Economic Projections (SEP) in December, most participants marked down their projections of real GDP growth in 2016, and several did so for 2017. Overall, the median value of participants' projections for real GDP growth in 2016 was revised down a little to 2.2 percent, and that for 2017 was revised down slightly to 2.1 percent.

The median forecast for the unemployment rate was a bit lower in 2017 and 2018 than in December and showed a modest downward tilt over the three years of the forecast. Participants cited stronger-than-expected labor market data in recent months as a factor explaining these revisions. Moreover, many participants also reduced their estimates of the longer-run normal rate of unemployment, resulting in a modest reduction in the median of the longer-run rate. Thus, while a majority expected the unemployment rate gap to turn negative by the end of this year, fewer participants projected a negative gap at that time than was the case in December. For 2017, all participants projected a negative unemployment rate gap, and a substantial majority did so for 2018 as well. All told, however, the medians of the unemployment rate gaps for the three years of the projection were essentially unchanged from the December SEP.

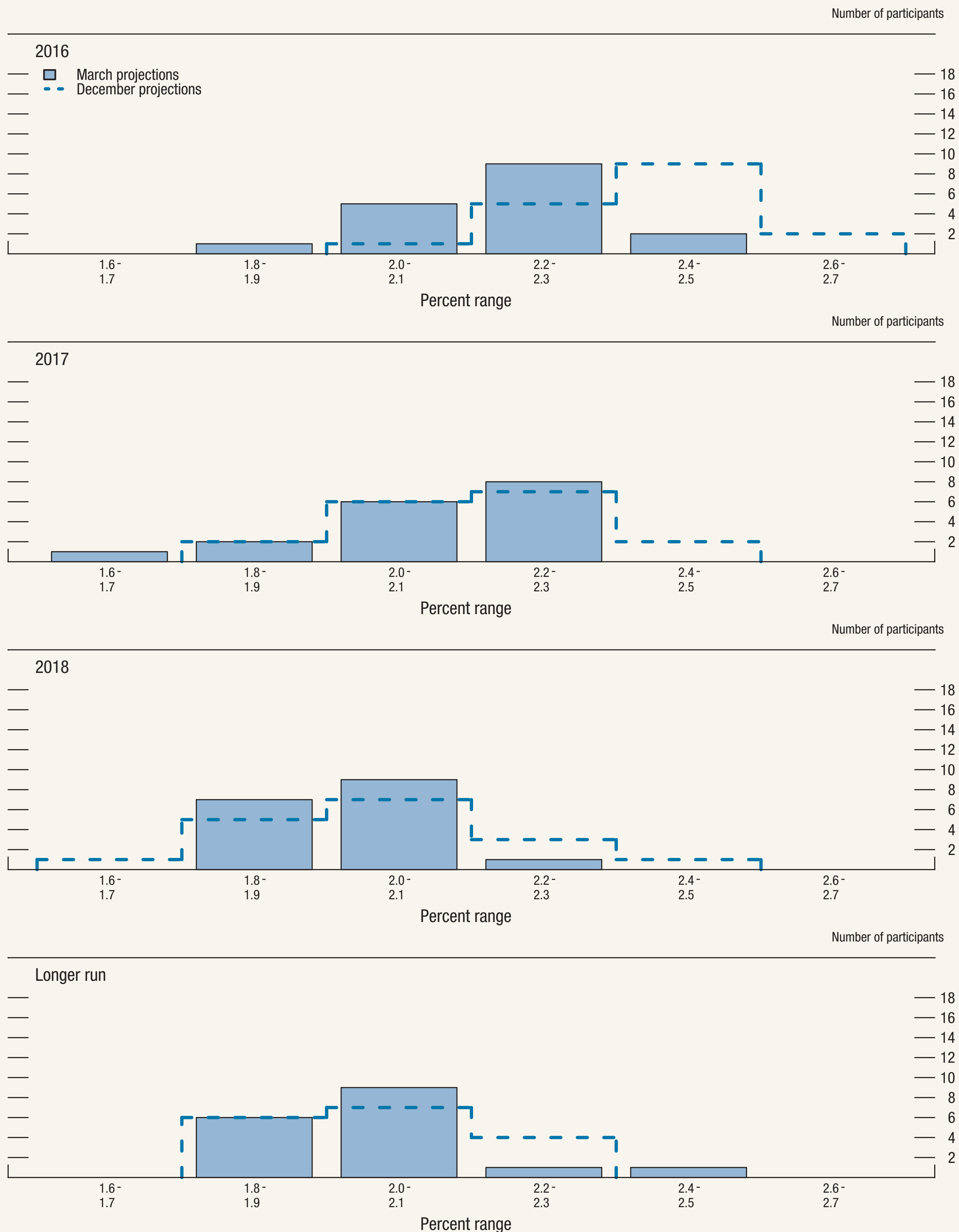
Figures 3.A and 3.B show the distribution of participants' views regarding the likely outcomes for real GDP growth and the unemployment rate through 2018 and in the longer run. The distribution of the projections of GDP growth shifted toward lower values for 2016; differences from December for 2017 and 2018 were less noteworthy, but there was a modest

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



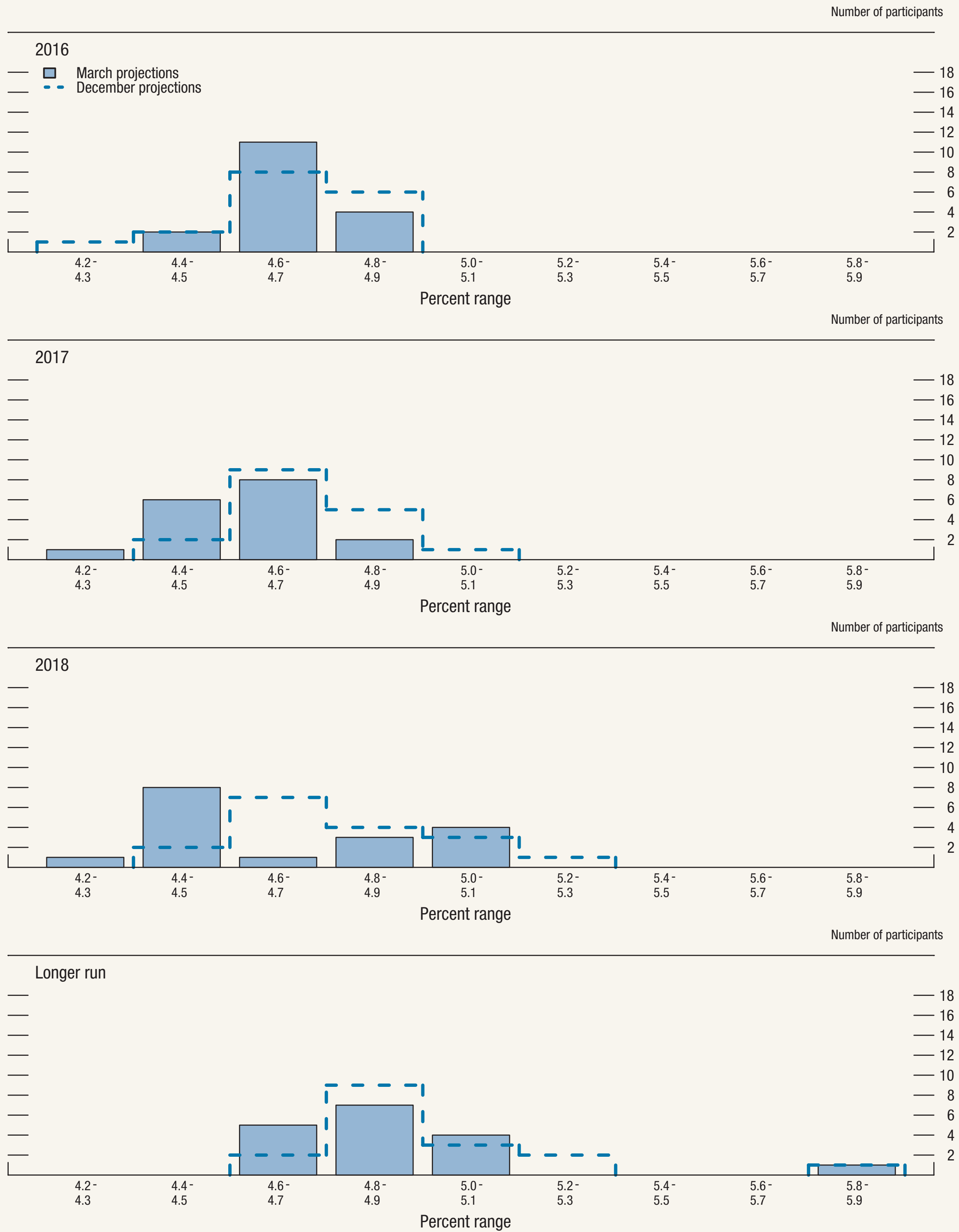
Note: Each shaded circle indicates the value (rounded to the nearest ⅛ percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2016–18 and over the longer run



Note: Definitions of variables are in the general note to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2016–18 and over the longer run



Note: Definitions of variables are in the general note to table 1.

narrowing of the distribution for 2018. The distributions of projections for the unemployment rate in 2017 and beyond shifted modestly toward lower values, relative to the December SEP, on the basis of strong labor market indicators in recent months.

The Outlook for Inflation

All participants projected PCE price inflation to pick up in 2016 and to rise further in 2017. For 2018, nearly all expected PCE price inflation to be at or very close to the Committee's 2 percent longer-run objective. However, relative to the December SEP, almost all participants marked down their projections for PCE price inflation in 2016, observing that declines in energy prices since the end of last year and continued strength in the dollar were expected to impart additional downward pressure on inflation this year. Many participants also lowered their projections for inflation in 2017, although the median value for that year was unchanged. Inflation projections in 2018 were little changed from December. Regarding core PCE price inflation, some participants marked down their projections for 2016, although almost all still expected core inflation to rise gradually over the projection period and to be at or very close to 2 percent by the end of 2018. Factors cited by participants as contributing to their expectation that inflation will rise over the medium term included recent readings for core inflation, an anticipation that improvements in labor markets will continue, the fading effects of recent dollar appreciation and declines in oil prices, and an assessment that long-term inflation expectations will remain at levels consistent with the FOMC's 2 percent objective, all supported by a stance of monetary policy that participants generally described as accommodative.

Figures 3.C and 3.D provide information on the distribution of participants' views about the outlook for inflation. The distribution for PCE price inflation in 2016 shifted notably to the left compared with the December SEP, while changes in the distributions of projections for 2017 and 2018 were small. The distributions of participants' projections for core PCE price inflation shifted only a touch toward lower values for 2017 and 2018 as compared with December.

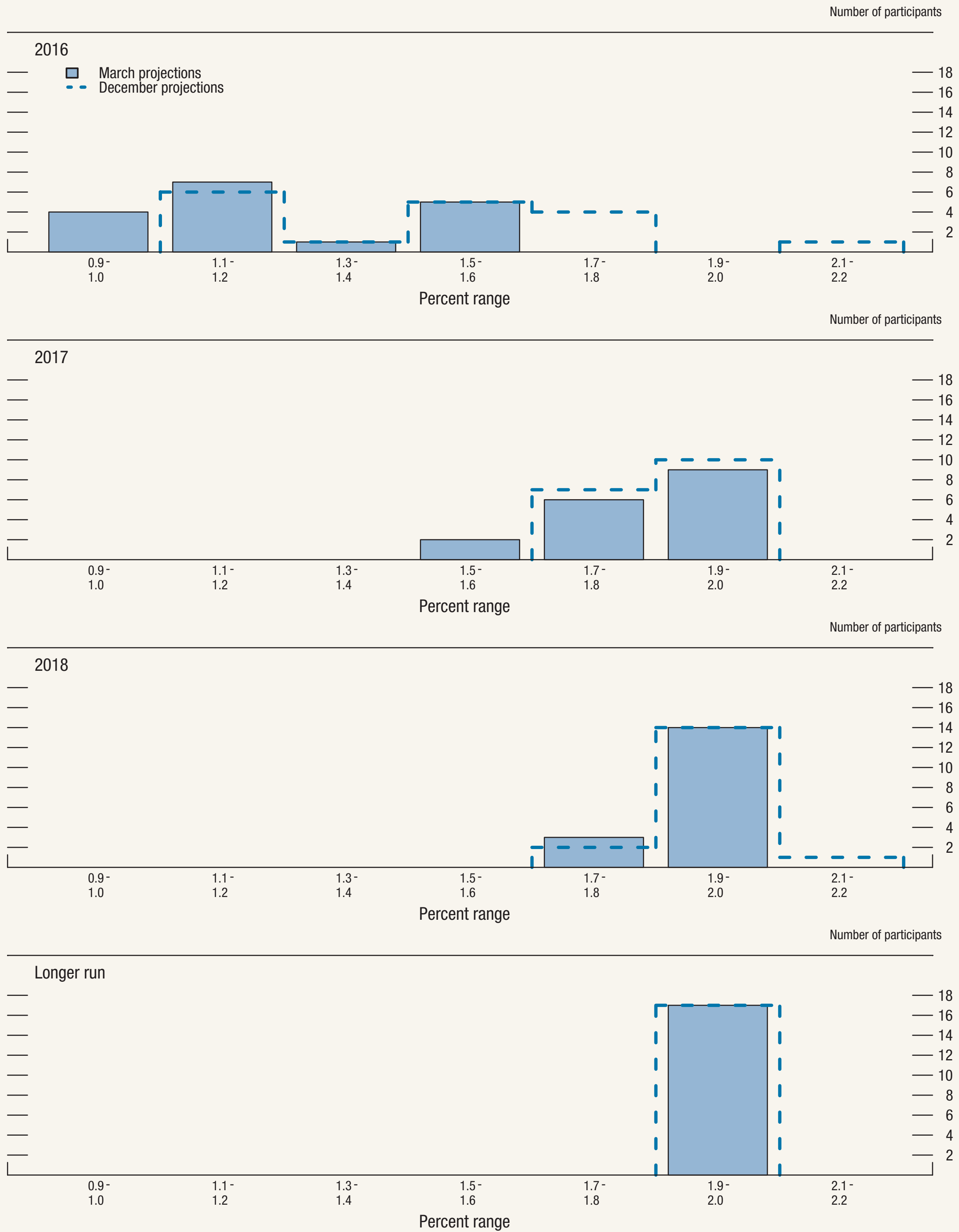
Appropriate Monetary Policy

Figure 3.E provides the distribution of participants' judgments regarding the appropriate level of the target federal funds rate at the end of each calendar year from 2016 to 2018 and over the longer run. Relative to December, the projections of the appropriate levels of the federal funds rate over the next three years shifted notably toward lower values. The median projections for the federal funds rate at the end of 2016 and 2017 both declined 0.50 percentage point, to levels of 0.88 percent and 1.88 percent, respectively, while the median for the end of 2018 fell 0.25 percentage point, to 3.0 percent. The median for the federal funds rate in the longer run was also reduced 0.25 percentage point, to 3.25 percent. The view that a lower path of the federal funds rate relative to December would be appropriate for achieving the Committee's objectives was broadly shared across participants, especially for the first two years of their forecasts. Given their expectations that certain factors would continue to restrain economic growth for a time, that inflation will increase only gradually to 2 percent, and that the economic and policy outlook entails asymmetric risks over the next few years, participants generally projected that a gradual rise in the federal funds rate over that period would be appropriate; almost all participants judged it advisable for the federal funds rate to remain below their individual estimates of its longer-run normal level through the end of 2018.

Although the median of participants' projections of the federal funds rate in the longer run moved lower, the range of estimates for the longer-run rate was unchanged from December. Hence, with all participants anticipating that inflation would eventually reach the Committee's objective of 2 percent, the range of participants' judgments of the longer-run level of the real federal funds rate was also unchanged from December, at 1 to 2 percent; the median value for the longer-run real rate was 1.25 percent, down 0.25 percentage point from December.

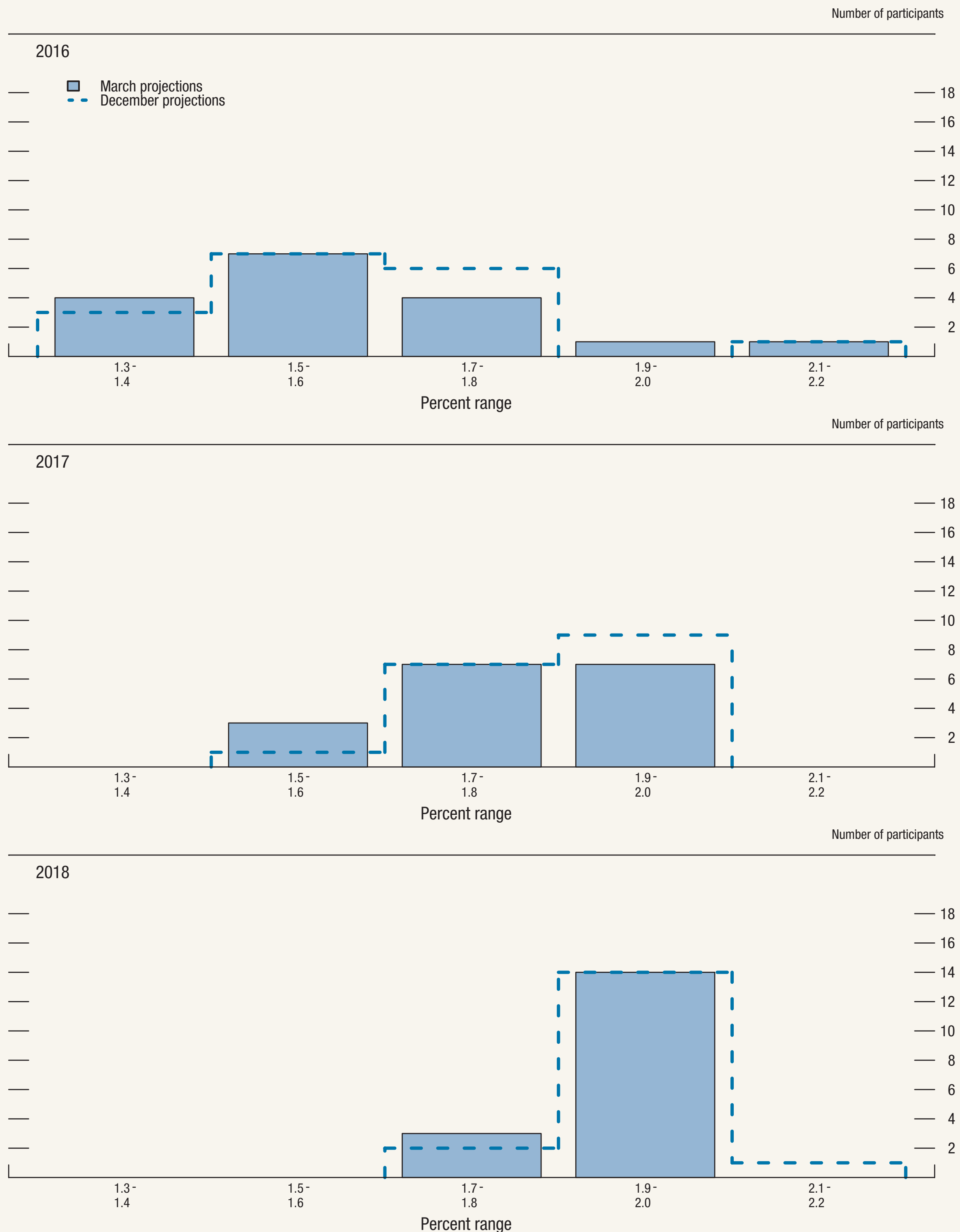
Participants' views of the appropriate path for monetary policy were informed by their judgments about the outlook for economic activity, labor markets, and inflation as well as the risks and uncertainties associated with that outlook. One important consideration for many participants was their assessment that several factors—including weak foreign economic conditions, a persistently high exchange value of the dollar, and tighter financial conditions—will continue to restrain economic growth for a time and thus collectively imply a temporarily low level for the neutral rate of interest. These forces, combined with the current proximity of short-term interest rates to their effective lower bound and the related asymmetry of risks around the outlook for real GDP growth and

Figure 3.C. Distribution of participants' projections for PCE inflation, 2016–18 and over the longer run



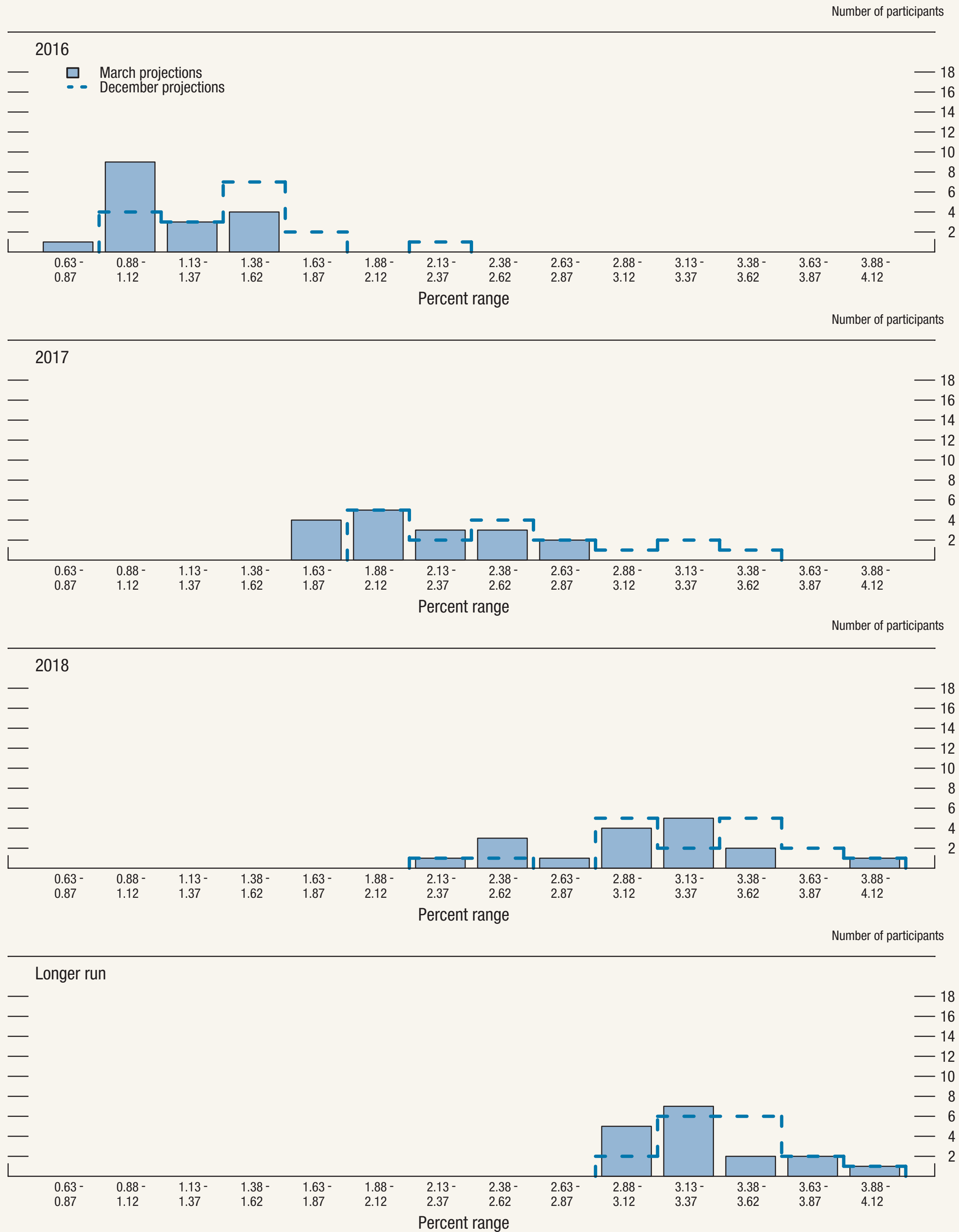
Note: Definitions of variables are in the general note to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2016–18



Note: Definitions of variables are in the general note to table 1.

Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2016–18 and over the long run



Note: The midpoints of the target ranges for the federal funds rate and the target levels for the federal funds rate are measured at the end of the specified calendar year or over the longer run.

Table 2. Average historical projection error ranges
Percentage points

Variable	2016	2017	2018
Change in real GDP[1]	±1.6	±2.1	±2.1
Unemployment rate[1]	±0.5	±1.2	±1.7
Total consumer prices[2]	±0.9	±1.1	±1.1

Note: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1996 through 2015 that were released in the spring by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, and consumer prices will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2007), "Gauging the Uncertainty of the Economic Outlook from Historical Forecasting Errors," Finance and Economics Discussion Series 2007-60 (Washington: Board of Governors of the Federal Reserve System, November), available at www.federalreserve.gov/pubs/feds/2007/200760/200760abs.html; and Board of Governors of the Federal Reserve System, Division of Research and Statistics (2014), "Updated Historical Forecast Errors," memorandum, April 9, www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.pdf.

1 Definitions of variables are in the general note to table 1.

2 Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projection is percent change, fourth quarter of the previous year to the fourth quarter of the year indicated.

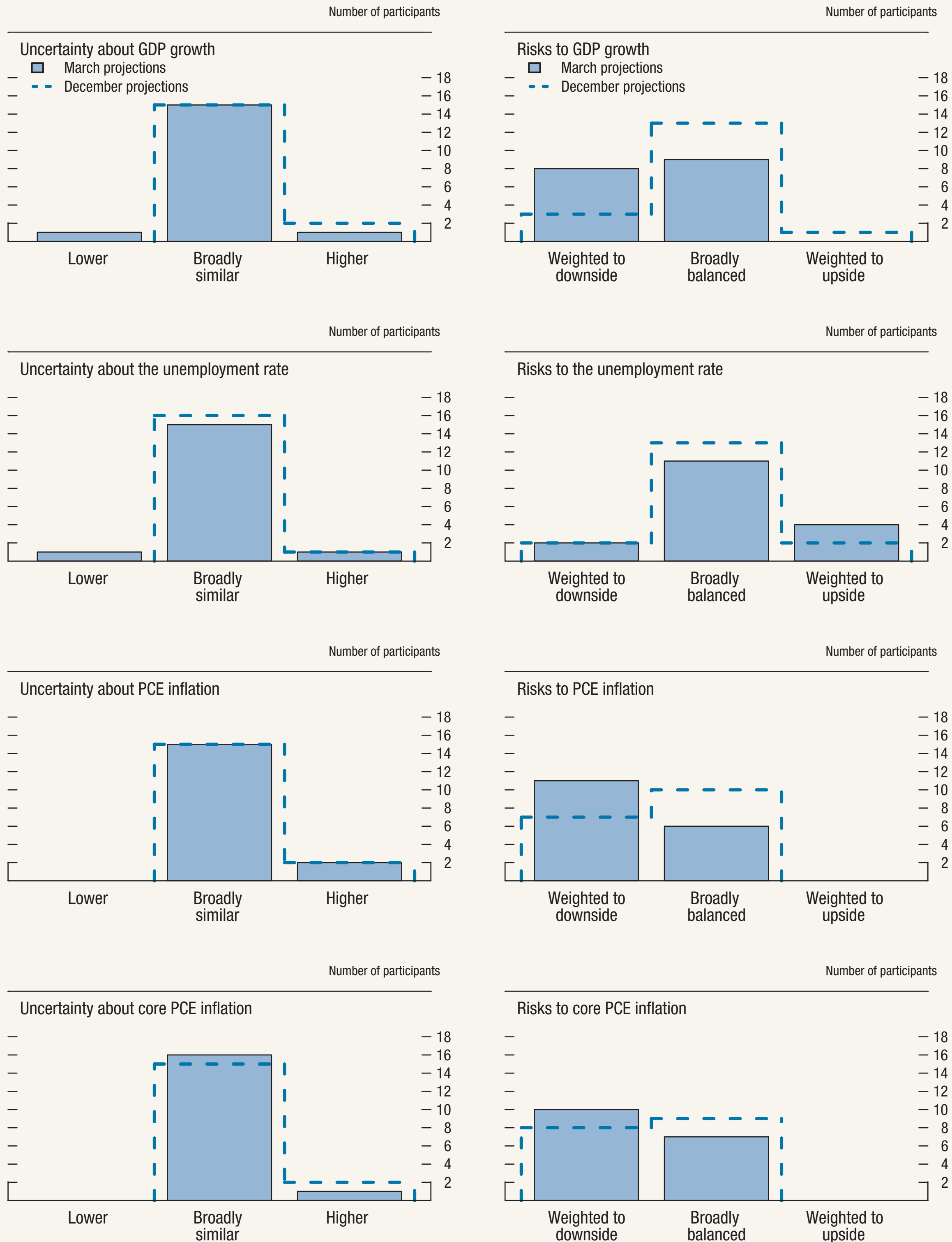
inflation, were noted as reasons why a gradual approach to raising the federal funds rate would be appropriate, provided that the outlook for the economy unfolded about as expected. Another consideration underlying the anticipated gradual removal of policy accommodation involved the prospects for inflation to return to the Committee's objective of 2 percent. In assessing those prospects, participants weighed the implications of a range of factors, including indicators of longer-run inflation expectations and the magnitude and persistence of the effects of both low energy prices and the earlier appreciation of the dollar. Judgments regarding the likely future strength of the labor market and future wage gains also figured into participants' forecasts for inflation.

Uncertainty and Risks

As in the December SEP, nearly all participants judged the levels of uncertainty around their projections for real GDP growth, the unemployment rate, and both headline and core PCE price inflation as broadly similar to the average levels of the past 20 years (as shown in the left-hand column of figure 4).[5] In contrast, participants revised appreciably their assessments of the risks to real GDP growth, the unemployment rate, and both headline and core inflation since December (as shown in the right-hand column). Eight participants saw the risks to real GDP growth as weighted to the downside—up from three in December. Four participants saw risks to the unemployment rate as skewed toward higher unemployment—two more than in December—while two continued to see risks weighted toward lower unemployment. Explanations for the less marked shift in risks to the outlook for the unemployment rate versus the outlook for real GDP growth included favorable labor market news over the past three months. More generally, participants cited financial market and global economic conditions, either on their own or coupled with the limited capacity of policymakers to respond to possible adverse economic conditions, as reasons for the downward tilt to their perceptions of the risks to growth. Turning to inflation, 11 participants indicated that the risks to their headline inflation forecasts were skewed to the downside, up from 7 in December, and nearly all of these participants saw the same tilt to the risks for core inflation. Many participants noted some recent evidence of a deterioration, or an absence of improvement, in indicators of long-term inflation expectations as contributing to increased downside risks for inflation, while some pointed to the further declines in energy prices.

5 Table 2 provides estimates of the forecast uncertainty for the change in real GDP, the unemployment rate, and total consumer price inflation over the period from 1996 through 2015. At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty in the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

Figure 4. Uncertainty and risks in economic projections



Note: For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty." Definitions of variables are in the general note to table 1.

Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Reports* and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee. The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 1.4 to 4.6 percent in the current year and 0.9 to 5.1 percent in the second and third years. The corresponding 70 percent confidence intervals for overall inflation would be 1.1 to 2.9 percent in the current year and 0.9 to 3.1 percent in the second and third years.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty in the past, as shown in table 2. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, participants judge whether each variable is more likely to be above or below their projections of the most likely outcome. These judgments about the uncertainty and the risks attending each participant's projections are distinct from the diversity of participants' views about the most likely outcomes. Forecast uncertainty is concerned with the risks associated with a particular projection rather than with divergences across a number of different projections.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward.

Meeting Held on April 26–27, 2016

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, April 26, 2016, at 10:30 a.m. and continued on Wednesday, April 27, 2016, at 9:00 a.m.[1]

Present

Janet L. Yellen
Chair

William C. Dudley
Vice Chairman

Lael Brainard

James Bullard

Stanley Fischer

Esther L. George

Loretta J. Mester

Jerome H. Powell

Eric Rosengren

Daniel K. Tarullo

Charles L. Evans, Patrick Harker, Robert S. Kaplan, Neel Kashkari, and Michael Strine
Alternate Members of the Federal Open Market Committee

Jeffrey M. Lacker, Dennis P. Lockhart, and John C. Williams
Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco, respectively

Brian F. Madigan
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Scott G. Alvarez
General Counsel

Thomas C. Baxter
Deputy General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

Thomas A. Connors, Troy Davig, Michael P. Leahy, David E. Lebow, Stephen A. Meyer, Geoffrey Tootell, and William Wascher
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Robert deV. Frierson
Secretary of the Board, Office of the Secretary, Board of Governors

Michael S. Gibson
Director, Division of Banking Supervision and Regulation, Board of Governors

Nellie Liang
Director, Office of Financial Stability Policy and Research, Board of Governors

James A. Clouse
Deputy Director, Division of Monetary Affairs, Board of Governors

William B. English
Senior Special Adviser to the Board, Office of Board Members, Board of Governors

Andrew Figura, Ann McKeehan, David Reifschneider, and Stacey Tevlin
Special Advisers to the Board, Office of Board Members, Board of Governors

Trevor A. Reeve
Special Adviser to the Chair, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Eric M. Engen
Senior Associate Director, Division of Research and Statistics, Board of Governors

Fabio M. Natalucci
Senior Associate Director, Division of Monetary Affairs, Board of Governors

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[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

Antulio N. Bomfim, Egon Zakrajšek,[2] and Joyce K. Zickler
Senior Advisers, Division of Monetary Affairs, Board of Governors

Jeremy B. Rudd
Senior Adviser, Division of Research and Statistics, Board of Governors

Mark Carey[2]
Associate Director, Division of International Finance, Board of Governors

Joshua Gallin
Associate Director, Division of Research and Statistics, Board of Governors

Shaghil Ahmed
Deputy Associate Director, Division of International Finance, Board of Governors

Rochelle M. Edge
Deputy Associate Director, Office of Financial Stability Policy and Research, Board of Governors

Glenn Follette and John M. Roberts
Assistant Directors, Division of Research and Statistics, Board of Governors

Christopher J. Gust
Assistant Director, Division of Monetary Affairs, Board of Governors

Burcu Duygan-Bump
Adviser, Division of Monetary Affairs, Board of Governors

Penelope A. Beattie[3]
Assistant to the Secretary, Office of the Secretary, Board of Governors

Dana L. Burnett
Section Chief, Division of Monetary Affairs, Board of Governors

Bora Durdu[2]
Section Chief, Office of Financial Stability Policy and Research, Board of Governors

Jae Sim[2]
Principal Economist, Division of Research and Statistics, Board of Governors

Andrea Ajello
Senior Economist, Division of Monetary Affairs, Board of Governors

Kelly J. Dubbert
First Vice President, Federal Reserve Bank of Kansas City

David Altig, Kartik B. Athreya, Jeff Fuhrer,[2] and Glenn D. Rudebusch
Executive Vice Presidents, Federal Reserve Banks of Atlanta, Richmond, Boston, and San Francisco, respectively

Tobias Adrian,[2] Michael Dotsey, and Samuel Schulhofer-Wohl
Senior Vice Presidents, Federal Reserve Banks of New York, Philadelphia, and Minneapolis, respectively

Joseph G. Haubrich, Anna Paulson, and David C. Wheelock
Vice Presidents, Federal Reserve Banks of Cleveland, Chicago, and St. Louis, respectively

Richard K. Crump[2] and Marco Del Negro
Assistant Vice Presidents, Federal Reserve Bank of New York

Jim Dolmas
Senior Research Economist, Federal Reserve Bank of Dallas

Nina Boyarchenko[2]
Financial Economist, Federal Reserve Bank of New York

The Relationship between Monetary Policy and Financial Stability

The staff presented several briefings on a special topic, the relationship between monetary policy and financial stability. The presentations began with an overview of the possible linkages among monetary policy, macroprudential tools, and financial stability, drawing on both academic research and experience with such tools in various countries. The staff then reviewed empirical literature on the linkages between the stance of monetary policy and financial stability. Lastly, the staff presented illustrative simulation results from a specific macroeconomic model to explore whether and how monetary policy should react to financial imbalances as well as the extent to which monetary and macroprudential policies should be coordinated to best achieve macroeconomic goals and financial stability goals.

In their comments on the briefings and in their discussion of the relationship between monetary policy and financial stability, FOMC participants noted that more stringent regulatory and supervisory poli-

[2] Attended the discussion of the relationship between monetary policy and financial stability.

[3] Attended Tuesday session only.

cies implemented since the financial crisis, including enhanced capital and liquidity requirements for some types of financial institutions, had significantly increased the resilience of the financial system to shocks. Participants emphasized the importance of macroprudential tools in promoting financial stability, and they generally expressed the view that such tools should be the primary means to address financial stability risks. However, it was noted that relatively few macroprudential tools are available to financial regulators in the United States and that, for the most part, such tools are untested. Moreover, a number of institutional factors, including the dispersion of responsibilities across regulatory agencies, differences in mandates among those agencies, and resulting coordination challenges, may make it difficult to deploy macroprudential tools expeditiously in the United States and may lessen their effectiveness. Some participants noted that these considerations would be less significant for tools that were likely to be adjusted only infrequently. Most participants judged that the benefits of using monetary policy to address threats to financial stability would typically be outweighed by the costs associated with deviations from the Committee's employment and price-stability objectives induced by such actions; some also noted that the benefits are highly uncertain. Nonetheless, participants generally agreed that the Committee should not completely rule out the possibility of using monetary policy to address financial stability risks, particularly in circumstances in which such risks significantly threatened the achievement of its dual mandate and when macroprudential tools had been or were likely to be ineffective at mitigating those risks. Finally, participants stressed the need for further research and analysis to advance understanding of the relationship between monetary policy and financial stability and to help identify situations in which it might be desirable to incorporate financial stability considerations in the design of monetary policy.

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) reported on developments in domestic and foreign financial markets, including changes in market participants' expectations for the course of U.S. monetary policy. The deputy manager provided a briefing on money market developments and System open market operations conducted by the Open Market Desk during the period since the Committee met on March 15–16, 2016. Except for the March quarter-end, the daily effective federal funds rate had again remained very close to the center of the Committee's ¼ to ½ percent target range over the intermeeting period. The manager then briefed the Committee on a routine review by the staff of the process for managing foreign currency reserves and a resulting proposal for an enhanced analytical framework for the management of those reserves.

The Committee voted unanimously to renew the reciprocal currency arrangements with the Bank of Canada and the Bank of Mexico; these arrangements are associated with the Federal Reserve's participation in the North American Framework Agreement of 1994. In addition, the Committee voted unanimously to renew the dollar and foreign currency liquidity swap arrangements with the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, and the Swiss National Bank. The votes to renew the Federal Reserve's participation in these standing arrangements are taken annually at the April FOMC meeting.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the April 26–27 FOMC meeting indicated that labor market conditions improved further in the first quarter even though growth in real gross domestic product (GDP) appeared to have slowed. Consumer price inflation continued to run below the Committee's longer-run objective of 2 percent, restrained in part by earlier decreases in energy prices and declining prices of non-energy imports. Survey-based measures of longer-run inflation expectations were little changed, on balance, in recent months, while market-based measures of inflation compensation were still low.

Total nonfarm payroll employment expanded at a solid pace in March, and labor market conditions generally continued to strengthen. Although the unemployment rate edged up to 5.0 percent, both the labor force participation rate and the employment-to-population ratio continued to increase. The share of workers employed part time for economic reasons rose slightly but had been about flat, on balance, over recent months. The rates of private-sector hires and quits moved up in February, while the rate of job

openings declined a little but was still at an elevated level. In late March and early April, the four-week moving average of initial claims for unemployment insurance benefits was essentially unchanged, on net, at a low level. Labor productivity growth appeared to have remained slow over the four quarters ending in the first quarter of this year. Measures of labor compensation continued to rise at a modest pace, as average hourly earnings for all employees increased 2¼ percent over the 12 months ending in March.

Total industrial production declined in February and March. Manufacturing output decreased, partly reflecting the effects on export demand of earlier appreciation of the foreign exchange value of the dollar. Meanwhile, mining output continued to contract as a result of further declines in drilling activity associated with low crude oil prices. Moreover, unseasonably warm weather in February and March held down the output of utilities. Automakers' assembly schedules and broader indicators of manufacturing production, such as the readings on new orders from national and regional manufacturing surveys, mostly pointed to only modest gains in factory output over the next few months. Information on extraction and drilling activity for crude oil and natural gas in early April was consistent with further declines in mining output.

Growth in real personal consumption expenditures (PCE) appeared to have slowed in the first quarter. Real PCE rose moderately in February after being flat in January. The components of the nominal retail sales data used by the Bureau of Economic Analysis to construct its estimate of PCE moved sideways in March, and the rate of sales of new light motor vehicles decreased markedly. Nevertheless, recent readings on key factors that influence consumer spending were consistent with a pickup in real PCE growth in the coming months. Gains in real disposable income continued to be solid in February. Households' net worth was boosted by the rise in equity prices over the intermeeting period and by further strong increases in home values through February. Also, consumer sentiment as measured by the University of Michigan Surveys of Consumers remained upbeat in early April.

Recent information on housing activity was broadly consistent with a continued slow recovery in this sector. Starts and building permits for new single-family homes declined in March, but both measures were higher in the first quarter as a whole than in the fourth quarter of 2015. However, starts of multifamily units continued to decrease in March. Sales of existing homes rose in March after decreasing in February, while new home sales moved lower in both months; nonetheless, sales of both new and existing homes in the first quarter as a whole were above those in the fourth quarter.

Real private expenditures for business equipment and intellectual property appeared to decline further in the first quarter. Nominal shipments of nondefense capital goods excluding aircraft decreased, on net, in February and March. Forward-looking indicators of equipment spending, such as new orders for nondefense capital goods along with recent readings from national and regional surveys of business conditions, continued to be soft. Firms' nominal spending for nonresidential structures excluding drilling and mining decreased in February. Indicators of spending for structures in the drilling and mining sector, such as the number of oil and gas rigs in operation, continued to fall through early April. The available data suggested that inventory investment moved down in the first quarter.

Total real government purchases seemed to have risen modestly in the first quarter. Federal government spending for defense appeared to have declined. However, the payrolls of state and local governments increased in the first quarter, and nominal construction spending by these governments rose, on net, in the first two months of the quarter.

The U.S. international trade deficit widened in February, as imports rose more than exports; however, preliminary data on trade in goods suggested that the deficit narrowed substantially in March, with imports falling back sharply even as exports declined. Large increases in both exports and imports of consumer goods in February were more than reversed in March. Also, imports of capital goods dropped sharply in March after increasing in February. In all, the recent data indicated that net exports probably continued to be a moderate drag on real GDP growth in the first quarter.

Total U.S. consumer prices, as measured by the PCE price index, increased 1 percent over the 12 months ending in February, partly restrained by declines in consumer energy prices. Core PCE price inflation, which excludes changes in food and energy prices, was 1¾ percent over the same 12-month period, held down in part by falling prices of non-energy imports and the pass-through of declines in energy prices to prices of other goods and services. Over the 12 months ending in March, total consumer prices as

measured by the consumer price index (CPI) rose 1 percent, while core CPI inflation was 2¼ percent. In light of the CPI data, both total and core PCE price inflation on a 12-month basis appeared to slow a bit in March. Survey measures of longer-run inflation expectations—including those from the Michigan survey along with the Desk's Survey of Primary Dealers and Survey of Market Participants—were generally little changed, on balance, in recent months, although the reading from the Michigan survey in early April was at the low end of its historical range.

Recent indicators suggested that foreign real GDP growth had picked up in the first quarter after a lackluster performance last year. Economic growth in Canada appeared to have rebounded from a very weak fourth quarter. Recent data on industrial production and retail sales pointed to a pickup in economic growth in the euro area. Although weak economic performance persisted in Japan and South America, the weakness appeared to have abated somewhat. In contrast, economic growth in China moderated in the first quarter, although economic indicators in March were more upbeat than in the earlier months of the year. In the advanced foreign economies (AFEs), headline inflation remained low, held down by earlier declines in energy prices. With inflation generally running below the target rates in these economies, monetary policies remained very accommodative. By contrast, overall inflation in emerging market economies (EMEs) rose in the first quarter, largely reflecting increases in inflation in much of Latin America along with an increase in inflation in China that was driven by higher food prices.

Staff Review of the Financial Situation

Financial market conditions improved further, on balance, over the intermeeting period, with investors appearing to respond to Federal Reserve communications that were viewed as more accommodative than anticipated and to somewhat better-than-expected incoming data on foreign economic activity. Risk sentiment also appeared to improve further, on net, accompanied by a decline in financial market volatility and higher oil prices. Domestic economic data releases over the period had, on balance, a limited effect on asset prices.

Federal Reserve communications following the March FOMC meeting were interpreted by market participants as more accommodative than expected. In particular, investors were attentive to the larger-than-expected downward revisions to the projections of the federal funds rate in the FOMC's Summary of Economic Projections as well as to references in the March FOMC statement and the Chair's prepared remarks at the press conference to risks to the U.S. economic outlook stemming from global economic and financial developments. Meanwhile, domestic data releases were mixed and elicited only modest market reactions. On net, financial market quotes implied that the federal funds rate path expected by investors flattened notably, and that their estimated probability of a rate hike by the June FOMC meeting declined significantly. In the Survey of Market Participants, the median investor's modal path for the federal funds rate also moved down substantially, while in the Survey of Primary Dealers, the median dealer's modal path was little changed.

Consistent with the flatter path for the federal funds rate implied by market quotes, yields on nominal Treasury securities with maturities up to 10 years declined slightly over the period since the March FOMC meeting. Measures of inflation compensation based on Treasury Inflation-Protected Securities increased somewhat but remained at low levels. Credit conditions in municipal bond markets continued to be stable even as the situation facing Puerto Rico and its creditors deteriorated further.

Over the intermeeting period, broad U.S. equity price indexes moved up, on net, likely because of investors' views that monetary policy would be more accommodative than previously expected along with an improvement in risk sentiment. Stock prices increased broadly across industries, including the energy sector. One-month-ahead implied volatility on the S&P 500 index—the VIX—moved down and ended the period below its historical median. Spreads on 10-year corporate bond yields over yields on comparable-maturity Treasury securities for both triple-B-rated and speculative-grade issuers declined, on balance, but remained at levels near the high end of their ranges since 2012, as the outlook for corporate earnings deteriorated somewhat over the period. In light of available earnings reports of some companies in the S&P 500 index along with equity analysts' forecasts for companies that had not yet issued reports, corporate earnings in the first quarter appeared to have decreased markedly relative to the previous quarter.

Financing conditions for U.S. nonfinancial businesses remained generally accommodative for investment-grade issuers, and those for speculative-grade firms improved somewhat after showing strains

earlier in the year. Corporate bond issuance by speculative-grade firms rebounded in March from the sluggish pace in January and February. Growth of commercial and industrial (C&I) loans on banks' books remained strong and continued to be driven by lending to investment-grade borrowers by large banks. Nonetheless, according to the most recent Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS), on balance, banks further tightened their lending standards on C&I loans to large and middle-market firms in the first quarter, while demand for such loans weakened. The SLOOS indicated that banks expected an increase this year in delinquencies and charge-offs on existing loans to firms in the energy sector; banks also noted some deterioration in credit quality of loans to non-energy businesses located in U.S. regions that were dependent on the energy sector.

A significant number of SLOOS respondents reported tightening their lending standards on all major categories of commercial real estate (CRE) loans during the first quarter. However, demand for CRE loans reportedly strengthened, and CRE loans on banks' books continued to grow at a robust pace over the first quarter. In response to wider and more volatile spreads on commercial mortgage-backed securities (CMBS) since the summer of 2015, CMBS issuance was subdued in the first quarter, consistent with reports from banks in the SLOOS. Over the intermeeting period, CMBS spreads narrowed markedly but remained elevated.

Growth of residential real estate (RRE) loans on banks' books continued to be low through the first quarter, and credit conditions stayed tight for mortgage borrowers with low credit scores, hard-to-document income, or relatively high debt-to-income ratios. A significant number of SLOOS respondents reportedly eased lending standards on residential mortgages eligible for purchase by the government-sponsored enterprises, and a significant number also experienced stronger demand overall for RRE loans in the first quarter. Over the intermeeting period, rates on 30-year fixed-rate mortgages for well-qualified borrowers edged down in line with yields on mortgage-backed securities and comparable-duration Treasury securities and were near their all-time lows at the end of the period.

Financing conditions in consumer credit markets were little changed and remained largely accommodative in the first quarter, with student and auto loans continuing to be broadly available. Credit card lending conditions were still relatively tight, particularly for borrowers with subprime credit scores. Responses to the SLOOS indicated that during the first quarter, while credit card lending standards were little changed, a modest number of banks eased standards on auto and other consumer loans. Over the same period, demand for auto loans reportedly strengthened further at many banks. Consumer loan balances continued to increase at a robust pace through February, and data on bank lending activities suggested further growth through March. Issuance of asset-backed securities continued to be strong in the first quarter. Spreads on such securities remained at levels that were a bit higher than usual.

Since the March FOMC meeting, foreign financial market conditions eased, on net, and overall risk sentiment appeared to have improved. A number of factors likely contributed to the improvement, including expectations of more accommodative monetary policy in the United States. Sentiment was also likely boosted by the release of generally favorable foreign economic data. Against this backdrop, stock prices rose in most countries, with the equity indexes of the EMEs outperforming those of the AFEs. Changes in longer-term yields in the AFEs were mixed: Ten-year sovereign yields decreased slightly in Germany and Japan but increased in Canada and in the United Kingdom. The foreign exchange value of the dollar depreciated against most currencies, in part because higher oil prices supported the currencies of oil exporters.

In its latest report on potential risks to the stability of the U.S. financial system, the staff continued to judge that vulnerabilities were moderate overall. In particular, leverage and maturity transformation in the financial sector were subdued relative to historical levels, and growth of aggregate private nonfinancial-sector credit was modest. These indicators suggested that the financial system was fairly resilient, as did the absence of a significant increase in funding stresses or margin calls earlier this year when prices of risky assets fell and volatility rose sharply. Since then, prices of risky assets rebounded notably, and valuation pressures rose somewhat. Term premiums remained very low, and CRE valuations were elevated. In addition, corporate debt positions were high, although the issuance of low-rated debt had slowed.

Staff Economic Outlook

In the U.S. economic forecast prepared by the staff for the April FOMC meeting, real GDP growth in

the first quarter of this year was estimated to have been much slower than in the forecast prepared for the March meeting, although projected real GDP growth in the second quarter was revised up a little. Beyond the near term, real GDP was expected to increase slightly faster than in the previous forecast, largely reflecting a somewhat higher projected trajectory for equity prices and lower assumed paths for both longer-term interest rates and the foreign exchange value of the dollar. The staff continued to project that real GDP would expand at a modestly faster pace than potential output in 2016 through 2018, supported primarily by increases in consumer spending. The unemployment rate was expected to gradually decline further and to run somewhat below the staff's estimate of its longer-run natural rate over this period.

The staff's forecast for inflation was little changed from the previous projection. The staff continued to project that inflation would increase over the next several years, as energy prices and the prices of non-energy imports were expected to begin steadily rising this year, but inflation was still projected to be slightly below the Committee's longer-run objective of 2 percent in 2018.

The staff viewed the uncertainty around its April projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The risks to the forecast for real GDP were seen as tilted to the downside, reflecting the staff's assessment that neither monetary nor fiscal policy was well positioned to help the economy withstand substantial adverse shocks. In addition, while there had been recent improvements in global financial and economic conditions, downside risks to the forecast from developments abroad, though smaller, remained. Consistent with the downside risk to aggregate demand, the staff viewed the risks to its outlook for the unemployment rate as skewed to the upside. The risks to the projection for inflation were still judged as weighted to the downside, reflecting the possibility that longer-term inflation expectations may have edged down.

Participants' Views on Current Conditions and the Economic Outlook

In their discussion of the economic situation and the outlook, meeting participants agreed that the information received over the intermeeting period indicated that labor market conditions improved further even as growth in economic activity appeared to have slowed. Growth in household spending had moderated, although households' real income had risen at a solid rate and consumer sentiment remained high. Since the beginning of the year, the housing sector had improved further, but business fixed investment and net exports had been soft. A range of indicators, including strong job gains, pointed to additional strengthening of the labor market. Inflation had continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and falling prices of non-energy imports. Market-based measures of inflation compensation remained low; survey-based measures of longer-run inflation expectations were little changed, on balance, in recent months. Domestic and global financial conditions eased over the intermeeting period, the incoming news on the foreign economic outlook was generally positive, and investor sentiment improved.

Although the incoming data suggested that aggregate spending in the first quarter had been weaker than expected, participants continued to anticipate that economic activity would expand at a moderate pace over the medium term and that labor market indicators would continue to strengthen. Inflation was expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of the declines in energy and import prices dissipated and the labor market strengthened further. Participants generally saw the risks stemming from global economic and financial developments as having diminished over the intermeeting period but as continuing to warrant close monitoring.

Participants indicated that their assessments of the medium-term economic outlook had not changed materially since March and discussed a number of factors suggesting that the apparent softness in spending in the first quarter was unlikely to persist. Most pointed to the steady improvement in the labor market as an indicator that the underlying pace of economic activity had likely not deteriorated as much as was suggested by the recent data on spending and production. Notably, solid job gains and real income growth, along with a high level of household wealth and relatively upbeat consumer sentiment, were expected to support a pickup in consumer spending after its slowdown in the first quarter. In addition, the easing of financial conditions in recent months was anticipated to provide some support for consumer spending and business investment going forward. Many also thought that, as had apparently

been the case in recent years, a low reading on seasonally adjusted first-quarter GDP growth could partly reflect measurement problems and, if so, would likely be followed by stronger GDP growth in subsequent quarters. However, some participants were concerned that transitory factors may not fully explain the softness in consumer spending or the broad-based declines in business investment in recent months. They saw a risk that a more persistent slowdown in economic growth might be under way, which could hinder further improvement in labor market conditions.

Participants generally agreed that the risks to the economic outlook posed by global economic and financial developments had receded over the intermeeting period. The public appeared to have interpreted Federal Reserve communications following the March FOMC meeting as indicating that achieving the Committee's economic objectives would likely require a somewhat more gradual pace of increases in the federal funds rate than anticipated earlier. The shift in policy expectations, along with incoming data showing that economic growth abroad picked up during the first quarter of the year, seemed to contribute to the improved tone in global financial markets. Several FOMC participants judged that the risks to the economic outlook were now roughly balanced. However, many others indicated that they continued to see downside risks to the outlook either because of concerns that the recent slowdown in domestic spending might persist or because of remaining concerns about the global economic and financial outlook. Some participants noted that global financial markets could be sensitive to the upcoming British referendum on membership in the European Union or to unanticipated developments associated with China's management of its exchange rate.

While the recent data suggested markedly slower growth in consumer spending in the first quarter than seen in 2015, most participants expected to see a pickup in the growth rate of consumer spending in coming months in light of the still-solid fundamental determinants of household spending. Ongoing strong gains in employment and low energy prices were boosting aggregate household real income, and the level of household wealth was relatively high. It was noted that the slowdown in consumer spending early this year was primarily due to weaker expenditures for goods while outlays for services continued to increase in line with recent trends. Although a couple of participants noted that consumers' caution in recent months might have been the result of financial market turmoil in the first two months of this year, they and others observed that financial conditions had since improved and that consumer confidence remained at a relatively high level. Reports from District contacts on consumer spending were generally positive.

In the housing sector, indicators of sales and starts of new single-family homes were up, on balance, from their fourth-quarter levels. Activity in the multifamily sector appeared to have slowed during the first quarter, although demographic trends should continue to support this sector going forward. Business contacts in a number of Districts noted an improvement in housing activity and a continued rise in house prices, although their reports showed that the pace of sales and construction varied across regions.

Participants summarized survey readings and anecdotal reports on business conditions that were, on balance, mixed. According to several District surveys, activity in services industries continued to expand, and in some Districts, surveys and reports from business contacts indicated that manufacturing activity had strengthened or stabilized. Motor vehicle production remained at a high level. Nonetheless, manufacturing industries dependent on exports or the energy sector were still experiencing weak demand. The low level of oil prices continued to depress activity in the domestic energy sector, and a couple of participants suggested that, even with the ongoing cutbacks in production and potential increases in global demand, the imbalance of supply of crude oil relative to demand could last into 2017 and lead to further reductions in capital investment by energy firms. One participant noted that bankruptcies were rising among natural gas and coal producers as well as among firms engaged in oil exploration and extraction. A few participants also reported that low prices for agricultural commodities continued to strain the profitability of farming operations in their Districts.

Business fixed investment declined in the fourth quarter of 2015 and appeared to have dropped further in early 2016. As noted by a number of participants, the weakness in capital spending in recent quarters was in part due to the ongoing contraction in drilling activity and weak demand from abroad for goods manufactured in the United States. More broadly, several participants commented that their business contacts had expressed considerable caution about the economic outlook or had indicated that their firms were focused on cost-cutting measures

that included delaying major expenditures, despite relatively favorable financial conditions. However, some other participants were more positive about the outlook for business spending, pointing to the optimism reported in a number of business surveys or to rising business investment in both equipment and commercial structures in their Districts.

Labor market conditions strengthened further in recent months. Increases in nonfarm payroll employment averaged almost 210,000 per month over the first three months of 2016. Although the unemployment rate changed little over that period, the labor force participation rate moved up and the pool of potential workers, which includes the unemployed as well as those who would like a job but are not actively looking, continued to shrink. Many participants judged that labor market conditions had reached or were quite close to those consistent with their interpretation of the Committee's objective of maximum employment. Several of them reported that businesses in their Districts had seen a pickup in wages, shortages of workers in selected occupations, or pressures to retain or train workers for hard-to-fill jobs. Many other participants continued to see scope for reducing labor market slack as labor demand continued to expand. In that regard, a number of participants indicated that the recent rise in the participation rate was a positive development, suggesting that a tighter labor market could potentially draw more individuals back into the workforce on a sustained basis without adding to inflationary pressures and thus increase the productive capacity of the economy. It was also noted that businesses might satisfy increases in labor demand in part by converting involuntary part-time jobs to full-time positions.

Over the past five years, employment and hours worked rose relatively strongly while the pace of the expansion in output was moderate, resulting in measured productivity growth of slightly less than ½ percent per year on average. It was noted that participants' projections of the longer-run growth rate of real GDP, shown in the Summary of Economic Projections, appeared to assume that productivity growth would strengthen. While acknowledging uncertainty about the reasons for the slowdown in productivity growth in recent years and whether it would persist, many participants commented on a range of possible outcomes that could result from slower-than-expected productivity growth. Some saw the possibility that, even with real GDP growth remaining relatively slow, the unemployment rate might decline more quickly and inflation might rise a bit more rapidly than expected if productivity growth continued to disappoint in coming quarters while hiring remained strong. In that case, monetary policy accommodation might need to be removed more quickly than currently anticipated. Alternatively, continued low productivity growth for a time might instead lead to slower-than-anticipated growth in household income and business sales, thereby resulting in paths for the unemployment rate and the federal funds rate little different than currently expected. Moreover, several participants noted that if trend productivity growth remained permanently lower—a development that could be quite difficult to identify in only a few quarters—the likely implication for monetary policy would be a reduction in the longer-run equilibrium federal funds rate.

The incoming information on inflation over the intermeeting period showed that the earlier declines in energy prices and falling prices of non-energy imports were still contributing importantly to low headline inflation. The 12-month change in core PCE prices also continued to run below 2 percent, but it moved up to 1.7 percent in January and February from 1.4 percent at the end of 2015. Despite the recent rise in core inflation, some participants continued to see progress toward the Committee's 2 percent inflation objective as likely to be gradual. They noted that, as they had expected, the March CPI data showed that the high monthly readings on some components of core prices in January and February were transitory, and that the March CPI data suggested that the 12-month change in core PCE prices likely moved down in March. Several commented that the stronger labor market still appeared to be exerting little upward pressure on wage or price inflation. Moreover, several continued to see important downside risks to inflation in light of the still-low readings on market-based measures of inflation compensation and the slippage in the past couple of years in some survey measures of expected longer-run inflation. However, for many other participants, the recent developments provided greater confidence that inflation would rise to 2 percent over the medium term. Some viewed the recent firming in core inflation as broadly based and unlikely to unwind, with several noting recent increases in alternative measures of the trend in inflation, such as the trimmed mean PCE and the median CPI, or citing evidence that wage growth was picking up. In addition to the ongoing tightening of resource utilization, the recent depreciation of the dollar and the firming in oil prices sug-

gested that the downward pressures on both core and headline inflation from declining prices of non-oil imports and energy should begin to subside.

U.S. and global financial conditions improved significantly over the intermeeting period, marked by a rise in equity indexes, more positive risk sentiment, and a decline in financial market volatility. During their discussion of these developments, participants cited several factors that likely contributed to the easing in financial conditions. In the view of many FOMC participants, Federal Reserve communications after the March FOMC meeting led financial market participants to shift down their expectations concerning the likely path of the Committee's target for the federal funds rate. In addition, the recent depreciation of the dollar and indications of a rebound of economic growth in China appeared to reduce pressures on the renminbi. More broadly, signs of a pickup in growth in economic activity in some AFEs and emerging Asian economies other than China also appeared to contribute to the improvement in sentiment in financial markets. Participants generally agreed that the easing in financial conditions in the United States would provide some support for consumer spending and business investment going forward and had reduced the downside risks to the outlook. Moreover, a number of participants cited reports from business contacts in their Districts of favorable credit conditions for household and business borrowers.

Several participants pointed out that U.S. firms and financial markets had come through the period of elevated financial market volatility earlier in the year looking relatively resilient. However, several noted the ongoing need to remain alert to vulnerabilities in the financial system. In that regard, a few cited concerns about rapidly rising prices of CRE, including multifamily properties, or about illiquidity of the assets of some mutual funds. It was also noted that the debt situation in Puerto Rico had deteriorated further over the intermeeting period and remained unresolved. To date, the situation had not led to strains in broader financial markets and was not expected to do so.

Participants discussed whether their current assessments of economic conditions and the medium-term outlook warranted increasing the target range for the federal funds rate at this meeting. Participants agreed that incoming indicators regarding labor market developments continued to be encouraging. They generally concurred that data releases during the intermeeting period on components of private domestic demand had been disappointing, but most participants judged that the slowdown in growth of domestic spending would be temporary, citing possible measurement problems and other transitory factors. Financial market conditions continued to improve, providing support to aggregate demand and suggesting that market participants saw some reduction in downside risks to the outlook: Equity prices rose further, credit spreads declined somewhat, and the dollar depreciated over the intermeeting period. Taking these developments into account, participants generally judged that the medium-term outlook for economic activity and the labor market had not changed appreciably since the previous meeting. Furthermore, most participants continued to expect that, with labor markets continuing to strengthen, the dollar no longer appreciating, and energy prices apparently having bottomed out, inflation would move up to the Committee's 2 percent objective in the medium run.

Still, with 12-month PCE inflation continuing to run below the Committee's 2 percent objective, a number of participants judged that it would be appropriate to proceed cautiously in removing policy accommodation. Some participants pointed to the risk that the recent weak data on domestic spending could reflect a loss of momentum in the economy that might hinder further gains in the labor market and raise the likelihood that inflation could fail to increase as expected. Accordingly, these participants believed that it would be important to evaluate whether incoming information was consistent with their expectation that economic growth would pick up and thus support continued improvement in the labor market. In addition, a number of participants judged that the risks to the outlook for inflation remained tilted to the downside in light of low readings on measures of inflation compensation and the fall over the past year in some survey measures of longer-term inflation expectations. Also, many participants noted that downside risks emanating from developments abroad, while reduced, still warranted close monitoring. For these reasons, participants generally saw maintaining the target range for the federal funds rate at ¼ to ½ percent at this meeting and continuing to assess developments carefully as consistent with setting policy in a data-dependent manner and as leaving open the possibility of an increase in the federal funds rate at the June FOMC meeting.

Some participants saw limited costs to maintaining a patient posture at this meeting but noted the risks—including potential risks to financial stability—of

waiting too long to resume the process of removing policy accommodation, especially given the lags with which monetary policy affects the economy. A couple of participants were concerned that further postponement of action to raise the federal funds rate might confuse the public about the economic considerations that influence the Committee's policy decisions and potentially erode the Committee's credibility.

A few participants judged it appropriate to increase the target range for the federal funds rate at this meeting, citing their assessments that downside risks associated with global economic and financial developments had diminished substantially since early this year, that labor market conditions were consistent with the Committee's maximum-employment objective, and that inflation was likely to rise this year toward the Committee's 2 percent objective. Two participants noted that several standard policy benchmarks, such as a number of interest rate rules and some measures of the equilibrium real interest rate, continued to imply values for the federal funds rate well above the current target range. Such large and persistent deviations of the federal funds rate from these benchmarks, in their view, posed a risk that the removal of policy accommodation was proceeding too slowly and that the Committee might, in the future, find it necessary to raise the federal funds rate quickly to combat inflation pressures, potentially unduly disrupting economic or financial activity. Overly accommodative policy could also induce imprudent risk-taking in financial markets, posing additional risks to achieving the Committee's goals in the future.

Participants agreed that their ongoing assessments of the data and other incoming information, as well as the implications for the outlook, would determine the timing and pace of future adjustments to the stance of monetary policy. Most participants judged that if incoming data were consistent with economic growth picking up in the second quarter, labor market conditions continuing to strengthen, and inflation making progress toward the Committee's 2 percent objective, then it likely would be appropriate for the Committee to increase the target range for the federal funds rate in June. Participants expressed a range of views about the likelihood that incoming information would make it appropriate to adjust the stance of policy at the time of the next meeting. Several participants were concerned that the incoming information might not provide sufficiently clear signals to determine by mid-June whether an increase in the target range for the federal funds rate would be warranted. Some participants expressed more confidence that incoming data would prove broadly consistent with economic conditions that would make an increase in the target range in June appropriate. Some participants were concerned that market participants may not have properly assessed the likelihood of an increase in the target range at the June meeting, and they emphasized the importance of communicating clearly over the intermeeting period how the Committee intends to respond to economic and financial developments.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that information received since the FOMC met in March indicated that labor market conditions had improved further even as growth in economic activity had appeared to slow. They noted that growth in household spending had moderated, although households' real income had risen at a solid rate and consumer sentiment had remained high. They also agreed that since the beginning of the year, the housing sector had improved further, but business fixed investment and net exports had been soft. Members saw a range of recent indicators, including strong job gains, as pointing to additional strengthening of the labor market. Members noted that inflation had continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and falling prices of non-energy imports. Market-based measures of inflation compensation remained low. Survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months.

With respect to the economic outlook and its implications for monetary policy, members continued to expect that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market indicators would continue to strengthen. Although the recent spending and production data had been disappointing, members generally judged this weakness to be temporary, though some members noted the risk that it might persist, potentially undermining further improvement in the labor market. Members also continued to expect inflation to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of declines in energy and import prices dissipated and the labor market strengthened further. In its postmeeting statement, rather than stating that

global economic and financial developments continued to pose risks, the Committee decided to indicate that it would continue to closely monitor inflation indicators and global economic and financial developments. This change in language was intended to convey the Committee's sense that the risks associated with global developments had diminished somewhat since the March FOMC meeting without characterizing the overall balance of risks.

Against the backdrop of its discussion of current conditions, the economic outlook, and the risks and uncertainties surrounding the outlook, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent at this meeting. Members generally agreed that, in light of the recent weak readings on spending and production, and with inflation below the Committee's objective, it would be prudent to wait for additional information bearing on the medium-term outlook before deciding whether to raise the target range for the federal funds rate. One member, however, preferred to raise the target range for the federal funds rate at this meeting, noting that downside risks to the outlook had diminished and that the outlook was for outcomes consistent with the Committee's objectives.

Members again agreed that, in determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee would assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee agreed that it would carefully monitor actual and expected progress toward its inflation goal. The Committee expected that economic conditions would evolve in a manner that would warrant only gradual increases in the federal funds rate, and that the federal funds rate was likely to remain, for some time, below levels that were expected to prevail in the longer run. Regarding the possibility of adjustments in the stance of policy at the next meeting, members generally judged it appropriate to leave their policy options open and maintain the flexibility to make this decision based on how the incoming data and developments shaped their outlook for the labor market and inflation as well as their evolving assessments of the balance of risks around that outlook. It was noted that communications could help the public understand how the Committee might respond to incoming data and developments over the upcoming intermeeting period. Some members expressed concern that the likelihood implied by market pricing that the Committee would increase the target range for the federal funds rate at the June meeting might be unduly low.

The Committee also decided to maintain its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipated doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective April 28, 2016, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of ¼ to ½ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 0.25 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

"Information received since the Federal Open Market Committee met in March indicates that labor market conditions have improved further even as growth in economic activity appears to have slowed. Growth in household spending has moderated, although households' real income has risen at a solid rate and consumer sentiment remains high. Since the beginning of the year, the housing sector has improved further but business fixed investment and net exports have been soft. A range of recent indicators, including strong job gains, points to additional strengthening of the labor market. Inflation has continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and falling prices of non-energy imports. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance, in recent months.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee currently expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market indicators will continue to strengthen. Inflation is expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of declines in energy and import prices dissipate and the labor market strengthens further. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

Against this backdrop, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent. The stance of monetary policy remains accommodative, thereby supporting further improvement in labor market conditions and a return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions."

Voting for this action: Janet L. Yellen, William C. Dudley, Lael Brainard, James Bullard, Stanley Fischer, Loretta J. Mester, Jerome H. Powell, Eric Rosengren, and Daniel K. Tarullo.

Voting against this action: Esther L. George.

Ms. George dissented because she believed that a 25 basis point increase in the target range for the federal funds rate was appropriate at this meeting. Potential downside risks to the economic outlook had diminished since the March FOMC meeting, and the modal outlook was for economic growth, employment, and inflation outcomes consistent with the Committee's statutory objectives. She believed that monetary policy should respond to these developments by gradually removing accommodation and noted that several frameworks for assessing the appropriate stance of monetary policy, such as prescriptions from various policy rules and some estimates of equilibrium interest rates, also suggested that a reduction in monetary policy accommodation would be appropriate.

Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors took no action to change the interest rates on reserves or discount rates.

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, June 14–15, 2016. The meeting adjourned at 10:05 a.m. on April 27, 2016.

Notation Vote

By notation vote completed on April 5, 2016, the Committee unanimously approved the minutes of the Committee meeting held on March 15–16, 2016.

Brian F. Madigan
Secretary

Meeting Held on June 14–15, 2016

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, June 14, 2016, at 1:00 p.m. and continued on Wednesday, June 15, 2016, at 9:00 a.m.[1]

Present

Janet L. Yellen
Chair

William C. Dudley
Vice Chairman

Lael Brainard

James Bullard

Stanley Fischer

Esther L. George

Loretta J. Mester

Jerome H. Powell

Eric Rosengren

Daniel K. Tarullo

Charles L. Evans, Patrick Harker, Robert S. Kaplan, and Neel Kashkari
Alternate Members of the Federal Open Market Committee

Jeffrey M. Lacker, Dennis P. Lockhart, and John C. Williams
Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco, respectively

Brian F. Madigan
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Scott G. Alvarez
General Counsel

Steven B. Kamin
Economist

[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

Thomas Laubach
Economist

David W. Wilcox
Economist

Thomas A. Connors, Michael P. Leahy, David E. Lebow, Jonathan P. McCarthy, Stephen A. Meyer, Ellis W. Tallman, Christopher J. Waller, and William Wascher
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Robert deV. Frierson
Secretary of the Board, Office of the Secretary, Board of Governors

Michael S. Gibson
Director, Division of Banking Supervision and Regulation, Board of Governors

James A. Clouse
Deputy Director, Division of Monetary Affairs, Board of Governors

Andreas Lehnert
Deputy Director, Division of Financial Stability, Board of Governors

David Bowman, Andrew Figura, Ann McKeehan, David Reifschneider, and Stacey Tevlin
Special Advisers to the Board, Office of Board Members, Board of Governors

Trevor A. Reeve
Special Adviser to the Chair, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Fabio M. Natalucci
Senior Associate Director, Division of Monetary Affairs, Board of Governors

Beth Anne Wilson
Senior Associate Director, Division of International Finance, Board of Governors

Michael T. Kiley
Senior Adviser, Division of Research and Statistics, and
Senior Associate Director, Division of Financial Stability, Board of Governors

Antulio N. Bomfim, Ellen E. Meade, and Joyce K. Zickler
Senior Advisers, Division of Monetary Affairs, Board of Governors

Jeremy B. Rudd
Senior Adviser, Division of Research and Statistics, Board of Governors

Shaghil Ahmed
Deputy Associate Director, Division of International Finance, Board of Governors

Christopher J. Gust[2] and Jason Wu
Assistant Directors, Division of Monetary Affairs, Board of Governors

Paul A. Smith
Assistant Director, Division of Research and Statistics, Board of Governors

Eric C. Engstrom and Patrick E. McCabe
Advisers, Division of Research and Statistics, Board of Governors

Penelope A. Beattie[3]
Assistant to the Secretary, Office of the Secretary, Board of Governors

Brett Berger
Senior Economic Project Manager, Division of International Finance, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Wendy E. Dunn
Principal Economist, Division of Research and Statistics, Board of Governors

Marcelo Rezende
Principal Economist, Division of Monetary Affairs, Board of Governors

Edward Herbst and Hiroatsu Tanaka
Senior Economists, Division of Monetary Affairs, Board of Governors

Randall A. Williams
Information Manager, Division of Monetary Affairs, Board of Governors

David Sapenaro
First Vice President, Federal Reserve Bank of St. Louis

David Altig, Kartik B. Athreya, and Jeff Fuhrer
Executive Vice Presidents, Federal Reserve Banks of Atlanta, Richmond, and Boston, respectively

Stephanie Heller, Evan F. Koenig, and Spencer Krane
Senior Vice Presidents, Federal Reserve Banks of New York, Dallas, and Chicago, respectively

Roc Armenter, Sarah K. Bell, Òscar Jordà, and George A. Kahn
Vice Presidents, Federal Reserve Banks of Philadelphia, New York, San Francisco, and Kansas City, respectively

Cristina Arellano
Senior Research Economist, Federal Reserve Bank of Minneapolis

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) reported on developments in domestic and foreign financial markets during the period since the Committee met on April 26–27, 2016. Market participants' expectations for a firming of monetary policy at the June FOMC meeting rose considerably in the middle of the period, largely in response to monetary policy communications, but those expectations subsequently fell sharply following the release of labor market data for May. Nominal yields on Treasury securities declined over the period. Forward measures of inflation compensation derived from yields on nominal and inflation-indexed Treasury securities fell despite an appreciable increase in crude oil prices, a development that contrasted with the positive correlation between these variables that had been evident for some time. The manager also noted that bond yields globally had declined to very low levels and discussed some of the possible reasons for the drop. Actions by investors to shift their portfolios away from very low-yielding foreign sovereign debt were cited as adding to the downward pressure on U.S. yields. The manager also reviewed the apparent effects on financial markets of changes in the perceived odds that the United Kingdom would vote in a referendum on June 23 to leave the European Union.

In domestic money markets, the effective federal funds rate once again stayed close to the middle of the FOMC's ¼ to ½ percent target range over the intermeeting period except on month-ends. Usage of the System's overnight reverse repurchase agreement facility remained low. Market participants anticipated that changes to the regulation of money market mutual funds that will take effect later in the year

2 Attended Wednesday session only.

3 Attended Tuesday session only.

could lead to some increase in usage of the facility. Finally, the manager briefed the Committee on various efforts, including small-value tests of System facilities, to enhance operational readiness.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the June 14–15 meeting indicated that the pace of improvement in labor market conditions slowed in April and May but that real gross domestic product (GDP) appeared to be rising faster than in the first quarter. Consumer price inflation continued to run below the Committee's longer-run objective of 2 percent, restrained in part by earlier decreases in energy prices and in prices of non-energy imports. Survey-based measures of longer-run inflation expectations were mixed in recent months, while market-based measures of inflation compensation declined from levels that were already low.

Total nonfarm payroll employment gains slowed in April and May, even after adjusting for the effects of a strike at a large telecommunications company. The unemployment rate dropped to 4.7 percent in May, partly reflecting an unusually large number of unemployed persons exiting the labor force. Over the first two months of the second quarter, both the labor force participation rate and the employment-to-population ratio moved down on net. The share of workers employed part time for economic reasons rose noticeably in May. Although the rate of private-sector job openings remained elevated, the rate of hires declined in both March and April and the rate of quits was unchanged. The four-week moving average of initial claims for unemployment insurance benefits moved up a little, on net, from late April to early June but was still at a low level. Labor productivity growth remained slow over the four quarters ending in the first quarter of 2016. Measures of labor compensation continued to rise at a moderate pace on balance: Compensation per hour in the nonfarm business sector increased 3¾ percent over the four quarters ending in the first quarter, the employment cost index for private workers rose 1¾ percent over the 12 months ending in March, and average hourly earnings for all employees increased 2½ percent over the 12 months ending in May.

The unemployment rates for African Americans and for Hispanics stayed above the rate for whites, although the differentials in jobless rates across the different groups were similar to those before the most recent recession. The share of African American and Hispanic workers employed part time for economic reasons remained higher than for whites, and the gap in these rates was wider than in the years just before the most recent recession.

Total industrial production (IP) rose in April, principally reflecting a rebound in the output of utilities following a couple of unseasonably warm winter months as well as a moderate increase in manufacturing production. Meanwhile, mining output continued to contract as a result of further declines in drilling activity, a slower pace of crude oil extraction, and a continued pullback in coal production. A variety of indicators—including manufacturing production worker hours, motor vehicle assemblies, and oil and gas extraction and drilling activity—suggested that IP likely declined in May. Automakers' assembly schedules and mixed readings on other indicators of manufacturing production, such as new orders from national and regional manufacturing surveys, pointed to only subdued gains in factory output over the next few months.

Growth in real personal consumption expenditures (PCE) appeared to be picking up in the second quarter. The components of the nominal retail sales data used by the Bureau of Economic Analysis to construct its estimate of PCE rose at a solid pace in April and May, and sales of light motor vehicles rebounded after dipping in March. The apparent pickup in real PCE growth was consistent with recent readings on key factors that influence consumer spending. Gains in real disposable personal income continued to be solid in March and April, and households' net worth was boosted by further strong increases in home values through April. Also, consumer sentiment as measured by the University of Michigan Surveys of Consumers remained upbeat in early June.

Recent information on housing activity was broadly consistent with a continued gradual recovery in this sector. Starts for new single-family homes increased in April but were below the average pace in the first quarter, and building permit issuance remained essentially flat at the level that prevailed since late last year. The pace of starts for multifamily units moved up in April and was faster than in the first quarter. Sales of both new and existing homes rose in April.

Real private expenditures for business equipment and intellectual property appeared to be relatively flat early in the second quarter after declining sharply in the previous quarter. Nominal shipments of nondefense capital goods excluding aircraft edged up in April, and forward-looking indicators, such as new orders for these capital goods and recent readings from national and regional surveys of business conditions, suggested little change in business equipment spending in the near term. Firms' nominal spending for nonresidential structures excluding drilling and mining was little changed, on net, in March and April. The number of oil and gas rigs in operation, an indicator of spending for structures in the drilling and mining sector, fell through late May but edged up in early June.

Total real government purchases rose modestly in the first quarter and appeared to be increasing at about the same pace in the second quarter. Nominal outlays for defense in April and May pointed to an increase in real federal purchases in the second quarter, after such purchases had declined in the first quarter. In contrast, real state and local government purchases seemed to be edging down in the second quarter; the payrolls of these governments were little changed, on net, in April and May, and their nominal spending for construction declined in April.

The U.S. international trade deficit narrowed substantially in March, with a sharp decline in imports more than offsetting a fall in exports. The March data, together with revised estimates for earlier months, suggested that real exports were about flat in the first quarter while imports fell slightly. In April, the deficit widened as imports recovered somewhat, but it remained narrower than its first-quarter average.

Total U.S. consumer prices, as measured by the PCE price index, increased about 1 percent over the 12 months ending in April, partly restrained by earlier declines in consumer energy prices. Core PCE price inflation, which excludes changes in food and energy prices, was a little above 1½ percent over the same 12-month period, held down in part by decreases in the prices of non-energy imports over much of this period and the pass-through of the declines in energy prices to prices of other goods and services. Over the 12 months ending in April, total consumer prices as measured by the consumer price index (CPI) also rose about 1 percent, while core CPI inflation was a little above 2 percent. The Michigan survey measure of longer-run inflation expectations fell to its lowest level on record in early June, but other measures of such expectations—including those from the Survey of Professional Forecasters and from the Desk's Survey of Primary Dealers and Survey of Market Participants—were generally little changed, on balance, in recent months.

Foreign real GDP growth picked up in the first quarter, supported by relatively robust increases in Canada, the euro area, Japan, and Mexico. However, the pace of growth appeared to slow in many foreign economies in the second quarter, although in some cases as a result of what were likely to be temporary disruptions, including wildfires in Canada and an earthquake in Japan. In the United Kingdom, uncertainty about the outcome of the referendum on exit from the European Union seemed to be holding down investment. In contrast, indicators for emerging Asia, including China, suggested that economic growth picked up in the second quarter. Inflation remained low in the advanced foreign economies (AFEs), in part reflecting previous declines in energy prices. Inflation also continued to be subdued in most emerging market economies (EMEs).

Staff Review of the Financial Situation

Domestic financial market conditions remained accommodative over the intermeeting period. Equity price indexes and corporate bond spreads were little changed, on net, and, in aggregate, corporations continued to tap credit markets at a solid pace. Credit also remained broadly available to households, except for higher-risk borrowers in some markets. The expected near-term path of the federal funds rate implied by market quotes varied notably over the intermeeting period. On balance, it flattened, largely in response to the disappointing May employment report and growing concerns among investors about the British referendum on membership in the European Union. The flatter expected path of the federal funds rate, along with an apparent decline in global risk sentiment early in the period, contributed to an appreciable reduction in longer-term Treasury yields.

Market-based estimates of the probability of a hike in the federal funds rate at the June FOMC meeting were variable during the intermeeting period. The probability of an increase in June fell to near zero in early May in response to incoming economic data, jumped to about 30 percent after the release of the April FOMC minutes and other Federal Reserve communications, and dropped again to near zero after the May employment report. The expected path

of the federal funds rate for the medium term implied by market quotes declined somewhat on net. The average probability assigned by respondents to the Desk's June Survey of Primary Dealers and Survey of Market Participants was near zero for a rate hike in June and around 20 percent for a rate increase in July. The median respondent in each survey indicated that the most likely outcome was only one hike in 2016, down from two in the April surveys.

The nominal Treasury yield curve flattened, on net, over the intermeeting period, mainly reflecting declines in longer-term rates; the flattening left the spread between yields on 2- and 10-year Treasury securities near its lowest level since 2007. Although a significant portion of the declines in yields occurred following the release of the May employment report, yields at longer maturities had begun drifting down earlier in the period, consistent with an apparent deterioration in global risk sentiment. Yields moved lower late in the period amid growing concerns about the upcoming British referendum. Some market participants attributed the decline in Treasury yields in part to heavy demand from foreign investors faced with extraordinarily low yields on foreign sovereign securities. Inflation compensation based on Treasury Inflation-Protected Securities (TIPS) decreased, particularly at longer tenors. Measures of inflation compensation based on inflation swaps also declined, but less than TIPS-based measures, consistent with anecdotal reports suggesting that a portion of the declines in TIPS-based measures might have been driven by elevated demand for longer-term nominal Treasury securities.

Broad stock price indexes moved within narrow ranges but were modestly lower, on net, over the intermeeting period. However, one-month-ahead option-implied volatility on the S&P 500 index—the VIX—rose notably from fairly low levels and ended the period close to its historical median level. Spreads of 10-year triple-B-rated corporate bond yields over those on comparable-maturity Treasury securities were little changed on balance. High-yield spreads widened, mainly for firms outside of the energy sector; spreads on bonds for firms in the energy sector narrowed, likely in response to rising oil prices.

Overall financing conditions for nonfinancial firms improved a bit over the intermeeting period, remaining accommodative. Amid still-low yields, bond issuance by investment-grade corporations rose to a robust pace in May, and speculative-grade issuance also picked up. Growth of commercial and industrial (C&I) loans on banks' books remained strong in April and May, particularly at large banks. Following significant declines in the first quarter of 2016, gross issuance of leveraged loans increased slightly in April and May, as refinancing was reportedly boosted by lower loan spreads. Equity issuance by nonfinancial firms through initial public offerings remained subdued over the intermeeting period. Meanwhile, nonfinancial firms continued to repurchase their shares at a brisk pace in the first quarter, and dividends stayed near record levels.

Recent developments pointed to some decline in the credit quality of nonfinancial firms. The percentage of C&I loans entering delinquency or being charged off increased further in the first quarter, the default rate of corporate bonds moved up in April, and downgrades of nonfinancial bonds significantly outpaced upgrades in May. Expected year-ahead default rates for nonfinancial firms remained moderately elevated relative to previous expansions, while those for oil companies continued to be high.

Financing conditions for commercial real estate remained fairly accommodative. All major categories of commercial real estate loans on banks' books increased briskly during April and May. However, spreads on commercial mortgage-backed securities (CMBS) stayed elevated, continuing to depress CMBS issuance.

On balance, credit conditions in municipal bond markets continued to be stable. Yield spreads on general obligation municipal bonds were little changed, and gross issuance remained solid. The default by Puerto Rico's Government Development Bank on debt payments due in early May was widely expected and elicited limited reaction in broader municipal bond markets.

Conditions in consumer credit markets were little changed and generally remained accommodative. Consumer loan balances continued to increase at a robust pace in recent months, with year-over-year growth in credit card balances outstanding continuing to trend upward. Credit in mortgage markets stayed tight for borrowers with low credit scores, hard-to-document income, or high debt-to-income ratios. Interest rates on 30-year fixed-rate mortgages declined and continued to be low by historical standards.

Over the intermeeting period, developments in global financial markets were driven in large part by shifting views on the expected path of U.S. monetary policy

and by fluctuating expectations about the outcome of the U.K. vote on membership in the European Union. The exchange value of the U.S. dollar rose in the middle of the intermeeting period along with expectations for less accommodative Federal Reserve monetary policy. However, the dollar partially retraced these increases following the much weaker-than-expected U.S. employment report for May, finishing the period a bit stronger against the currencies of the AFEs and about 3 percent higher against EME currencies. In contrast to its changes against most currencies, the dollar depreciated against the Japanese yen, in large part because of the unexpected decision by the Bank of Japan not to ease policy further at its April meeting. AFE sovereign yields declined, with U.K. yields in particular being weighed down following polls showing an increase in support for the "leave" vote in the upcoming referendum. Decreases in equity indexes in the AFEs, particularly in Europe, also reportedly reflected concerns about the possibility of a successful "leave" vote. Most EME equity markets also edged lower.

Staff Economic Outlook

In the U.S. economic forecast prepared by the staff for the June FOMC meeting, real GDP growth was estimated to have been faster in the first quarter than in the April forecast, and the incoming information was consistent with a moderate pickup in GDP growth in the second quarter. Real GDP was projected to rise a little slower in the second half of this year than in the previous forecast and to increase at about the same pace thereafter; the small boosts to real GDP growth implied by a lower assumed path for interest rates and by a slightly stronger trajectory for home values were essentially offset by restraint from higher projected paths for the foreign exchange value of the dollar and for oil prices. The staff continued to forecast that real GDP would expand at a modestly faster pace than potential output in 2016 through 2018, supported primarily by increases in consumer spending. The unemployment rate was expected to remain relatively flat over the second half of the year and then to gradually decline further; over this period, the unemployment rate was projected to run somewhat below the staff's estimate of its longer-run natural rate.

The staff's forecast for inflation was little changed from the previous projection. The staff continued to project that inflation would increase over the next several years, as energy prices and the prices of non-energy imports were expected to begin steadily rising this year. However, inflation was still projected to be slightly below the Committee's longer-run objective of 2 percent in 2018.

The staff viewed the uncertainty around its April projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The risks to the forecast for real GDP were seen as tilted to the downside, reflecting the staff's assessment that neither monetary nor fiscal policy was well positioned to help the economy withstand substantial adverse shocks. In addition, the staff continued to see the risks to the forecast from developments abroad as skewed to the downside. Consistent with the downside risks to aggregate demand, the staff viewed the risks to its outlook for the unemployment rate as tilted to the upside. The risks to the projection for inflation were still judged as weighted to the downside, reflecting the possibility that longer-term inflation expectations may have edged down.

Participants' Views on Current Conditions and the Economic Outlook

In conjunction with this FOMC meeting, members of the Board of Governors and Federal Reserve Bank presidents submitted their projections of the most likely outcomes for real GDP growth, the unemployment rate, inflation, and the federal funds rate for each year from 2016 through 2018 and over the longer run.[4] Each participant's projections were conditioned on his or her judgment of appropriate monetary policy. The longer-run projections represented each participant's assessment of the rate to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. These projections and policy assessments are described in the Summary of Economic Projections, which is an addendum to these minutes.

In their discussion of the economic situation and the outlook, meeting participants agreed that information received over the intermeeting period indicated that the pace of improvement in the labor market had slowed while growth in economic activity appeared to have picked up. Although the unemployment rate had declined, job gains had diminished. Growth in household spending had strengthened. Since the beginning of the year, the housing sector

[4] One participant did not submit longer-run projections in conjunction with the June 2016 FOMC meeting.

had continued to improve and the drag from net exports appeared to have lessened, but business fixed investment had been soft. Inflation had continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation declined; most survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months.

Participants generally expected that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market indicators would strengthen. Inflation was expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipated and the labor market strengthened further. Participants generally agreed that the Committee should continue to closely monitor inflation indicators and global economic and financial developments.

Growth of consumer spending appeared to have picked up from its slow pace in the first quarter. Retail sales posted strong gains in April and May, and sales of light motor vehicles moved back up. At the time of the April meeting, most participants had anticipated a rebound in consumer spending in light of the still-solid fundamental determinants of household spending. Some participants indicated that consumption was likely to continue being supported by these factors, which included ongoing gains in income, robust household balance sheets, and the positive assessment of current economic conditions that was evident in recent surveys of consumers. However, a few participants expressed caution about the outlook for consumer expenditures, noting that slower increases in employment and higher energy prices could restrain spending.

The housing sector continued to improve since the beginning of the year. Reports from a number of participants indicated that single-family construction was strengthening and house prices were rising in most parts of their Districts. However, some areas that were affected by the slowdown in the energy sector experienced house price declines or increases in mortgage delinquency rates.

Participants summarized survey readings and anecdotal reports on business conditions in their Districts. Those indicators were mixed regarding the pace of economic activity within the manufacturing sector. Some of the weakness in manufacturing activity was linked to the effects of earlier declines in oil prices on firms in the energy sector and to previous increases in the exchange value of the dollar, which had adversely affected exporters. But manufacturing activity was judged to have stabilized in a couple of Districts, and contacts there were optimistic about further improvement in the months ahead. It was noted that the recent increase in crude oil prices had improved the outlook for the energy sector. However, a couple of participants observed that financial strains caused by previous declines in energy prices had continued for firms or financial institutions in their Districts, and such difficulties were seen as likely to persist absent further increases in energy prices. Regarding the service sector, a few participants commented that activity and hiring continued to expand in their Districts. The near-term outlook for farm income remained weak despite recent increases in the futures prices of some agricultural commodities.

Available indicators suggested that the softness in business fixed investment since late last year persisted early in the second quarter. While weakness in the drilling and mining sector was attributable to the earlier declines in oil prices, participants identified a variety of potential causes of the broader weakness in investment spending, including a slowdown in corporate profits, concern about prospects for economic growth, heightened uncertainty regarding the future course of domestic regulatory and fiscal policies, and a persistent reluctance on the part of firms to undertake new projects in the wake of the financial crisis. Some participants mentioned that the sluggishness in business investment could portend a broader economic slowdown. A couple of participants also noted that elevated inventory levels could be a drag on economic growth in the near term. However, participants also cited factors that could lead to a pickup in business spending, including the recent turnaround in energy prices and the greater optimism on the part of firms indicated by surveys of businesses and anecdotal reports in some Districts.

The employment report for May showed considerably weaker growth in payrolls than had been expected, and gains in previous months were revised down. Although the unemployment rate fell in May, a drop in labor force participation accounted for the decline. Participants discussed a range of interpretations of these data. Many participants observed that, because of transitory factors, such as statistical noise

and the effects of a strike in the telecommunications industry, the reported rate of payroll job growth likely understated its underlying pace; however, many participants thought that the underlying pace had slowed some from that of previous months. Some noted that other indicators did not corroborate a material weakening of labor market conditions. These indicators included a number of regional surveys of labor market conditions, relatively low levels of initial claims for unemployment insurance, surveys of business hiring plans, and positive views of labor market conditions in recent consumer surveys. In addition, a few participants commented that the movements in labor force participation in recent months were, on balance, consistent with its secular downtrend. In contrast, some noted that the lower rate of payroll gains could instead be indicative of a broader slowdown in growth of economic activity that was also evidenced by other downbeat labor market indicators, such as a decline in the diffusion indexes of industry payrolls, an increase in the number of workers reporting that they were working part time for economic reasons, or the recent sharp drop in labor force participation. Finally, a few participants suggested that the weak employment growth may instead reflect supply constraints associated with a general tightening of labor market conditions. These participants saw the rising trend in wages, business reports of reduced worker availability, and high rate of job openings as supporting this interpretation. Others thought it unlikely that such constraints would have become evident so abruptly.

Almost all participants judged that the surprisingly weak May employment report increased their uncertainty about the outlook for the labor market. Even so, many remarked that they were reluctant to change their outlook materially based on one economic data release. Participants generally expected to see a resumption of monthly gains in payroll employment that would be sufficient to promote continued strengthening of the labor market. However, some noted that with labor market conditions at or near those consistent with maximum employment, it would be reasonable to anticipate that gains in payroll employment would soon moderate from the pace seen over the past few years.

Inflation continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Core PCE price inflation registered an increase of 1.6 percent for the 12 months ending in April, while recent readings on retail energy prices moved up notably. Most participants expected to see continued progress toward the Committee's 2 percent inflation objective. They viewed the firming in some measures of core inflation, the evidence that wage growth was picking up, the ongoing tightening of resource utilization, the recent firming in oil prices, and the stabilization of the foreign exchange value of the dollar this year as factors likely to boost inflation over time. However, other participants were less confident that inflation would return to its target level over the medium term. They thought that progress could be very slow, particularly in light of the likelihood that tighter resource utilization may impart only modest upward pressure on prices. They also saw important downside risks, including persistent disinflationary pressures from very low inflation and weak economic growth abroad as well as the softening in some survey-based measures of longer-term inflation expectations and market-based measures of inflation compensation.

Global financial conditions had improved since earlier in the year, and recent data on net exports suggested that the drag on domestic economic activity from the external sector had abated somewhat. Still, participants generally agreed that global economic and financial developments should continue to be monitored closely. Some participants indicated that prospects for economic activity in many foreign economies appeared to be subdued, that global inflation and interest rates remained very low by historical standards, and that recurring bouts of global financial market instability remained a risk. Most participants noted that the upcoming British referendum on membership in the European Union could generate financial market turbulence that could adversely affect domestic economic performance. Some also noted that continued uncertainty regarding the outlook for China's foreign exchange policy and the relatively high levels of debt in China and some other EMEs represented appreciable risks to global financial stability and economic performance.

In light of participants' updates to their economic projections, they discussed their current assessments of the appropriate trajectory of monetary policy over the medium term. Most still expected that the appropriate target range for the federal funds rate associated with their projections of further progress toward the Committee's statutory objectives would rise gradually in coming years. However, some noted that their forecasts were now consistent with a shallower path than they had expected at the time of the March meeting. Many participants commented that the level

of the federal funds rate consistent with maintaining trend economic growth—the so-called neutral rate—appeared to be lower currently or was likely to be lower in the longer run than they had estimated earlier. While recognizing that the longer-run neutral rate was highly uncertain, many judged that it would likely remain low relative to historical standards, held down by factors such as slow productivity growth and demographic trends. Several noted that in the prevailing circumstances of considerable uncertainty about the neutral federal funds rate, the Committee could better gauge the effects of increases in the federal funds rate on the economy if it proceeded gradually in adjusting policy.

Participants weighed a number of considerations in assessing the conditions under which it would be appropriate to increase the target range for the federal funds rate. Most participants indicated that they made only small changes to their forecasts for achieving and maintaining the Committee's objectives of maximum employment and 2 percent inflation over the medium term. Several noted that the fundamentals underlying their forecasts remained solid, with several mentioning, in particular, that financial conditions were accommodative and household balance sheets had improved. In evaluating recent economic information, participants generally agreed that it was advisable to avoid overreacting to one or two labor market reports; however, the implications of the recent data on labor market conditions for the economic outlook were uncertain. Most judged that they would need to accumulate additional information on the labor market, production, and spending to help clarify how the economy was evolving in order to evaluate whether the stance of monetary policy should be adjusted. In addition, participants generally thought that it would be prudent to wait for the outcome of the upcoming referendum in the United Kingdom on membership in the European Union in order to assess the consequences of the vote for global financial market conditions and the U.S. economic outlook.

Most participants judged that, in the absence of significant economic or financial shocks, raising the target range for the federal funds rate would be appropriate if incoming information confirmed that economic growth had picked up, that job gains were continuing at a pace sufficient to sustain progress toward the Committee's maximum-employment objective, and that inflation was likely to rise to 2 percent over the medium term. Some participants viewed a broad range of labor market indicators as well as the recent firming in wages as consistent with a high level of labor utilization. They also pointed out that core inflation had begun to move up and that the transitory factors that had been holding down headline inflation were receding. Several of these participants expressed concern that a delay in resuming further gradual increases in the federal funds rate would increase the risks to financial stability or would raise the potential for overshooting the Committee's objectives; such an overshooting might require a rapid removal of policy accommodation at some point in the future, which could entail significant risks for U.S. financial markets and the economy.

However, some other participants were uncertain whether economic conditions would soon warrant an increase in the target range for the federal funds rate. Several of them noted downside risks to the outlook for growth in economic activity and for further improvement in labor market conditions, including the possibility that the sharp slowdown in employment gains and the continued weakness in business fixed investment signaled a downshift in economic growth, as well as the potential for global economic or financial shocks. Moreover, several of them worried about the declines in measures of inflation compensation and in some survey-based measures of inflation expectations and suggested that monetary policy may need to remain accommodative for some time in order to move inflation closer to 2 percent on a sustained basis. A few pointed out that with inflation likely to remain low for some time and to rise only gradually, maintaining an accommodative stance of policy could extend the strengthening of the labor market. In addition, several participants observed that because short-term interest rates were still near zero, monetary policy could, if necessary, respond more effectively to surprisingly strong inflationary pressures in the future than to a weakening in the labor market and falling inflation.

A number of participants emphasized that the Committee's approach to policy-setting was necessarily data dependent given the uncertainties associated with medium-term forecasts of economic activity and, accordingly, with the appropriate policy path over the medium term. It was noted that their expectations for the federal funds rate did not represent a preset plan and could change as incoming information influenced their views of the economic outlook and the risks associated with it. Several participants expressed concern that the Committee's communications had not been fully effective in informing the public how incoming information affected the Committee's view of the economic outlook, its degree of

confidence in the outlook, or the implications for the trajectory of monetary policy.

Committee Policy Action

In their consideration of monetary policy for the period ahead, members judged that the information received since the Committee met in April indicated that the pace of improvement in labor market conditions had slowed in recent months while growth in economic activity appeared to have picked up from the low rates recorded in the fourth quarter of 2015 and the first quarter of 2016. Although the unemployment rate had declined over the intermeeting period, job gains had diminished. After only a modest increase early in the year, growth in household spending had strengthened in recent months. Since the beginning of the year, the housing sector had continued to improve and the drag from net exports had lessened, but business fixed investment had been soft. Inflation continued to run below the Committee's 2 percent objective, partly reflecting declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation declined over the intermeeting period; most survey-based measures of inflation expectations were little changed.

With respect to the economic outlook and its implications for monetary policy, members continued to expect that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market indicators would strengthen. Most members made only small changes to their forecasts for economic activity and the labor market. Most judged it appropriate to avoid overweighting one or two labor market reports in their consideration of the economic outlook, but they indicated that the recent slowing in payroll employment gains had increased their uncertainty about the likely pace of improvements in the labor market going forward. Many noted that the slowdown could be a temporary aberration and that other labor market indicators—such as new claims for unemployment insurance, the rate of job openings, and readings on consumers' perceptions of the labor market—remained positive. Some of them judged that labor market conditions were now at or close to the Committee's objectives and pointed out that some moderation in employment gains was to be expected when such conditions were near those consistent with maximum employment. However, other members observed that the recent soft readings on payroll jobs as well as the decline in the labor force participation rate and the absence of further reductions in the number of individuals who were working part time for economic reasons in recent months suggested a possible downshift in the pace of improvement in the labor market.

An additional factor in the Committee's policy deliberations was the upcoming U.K. referendum on membership in the European Union. Members noted the considerable uncertainty about the outcome of the vote and its potential economic and financial market consequences. They indicated that they would closely monitor developments associated with the referendum as well as other global economic and financial developments that could affect the U.S. outlook.

Members expected inflation to remain low in the near term, in part because of earlier declines in energy prices, but most anticipated that inflation would rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipated and the labor market strengthened further. Although headline inflation continued to run below the Committee's objective, some members observed that core inflation had risen, and one member noted that the annual rate of increase in core PCE inflation in the first quarter had exceeded 2 percent. However, several others continued to see downside risks to inflation, citing the decline in inflation expectations and the risk of adverse shocks to U.S. economic activity from developments abroad. In light of the current shortfall of inflation from 2 percent, the Committee agreed to continue carefully monitoring actual and expected progress toward its inflation goal.

After assessing the outlook for economic activity, the labor market, and inflation, and after weighing the uncertainties associated with the outlook, members agreed to leave the target range for the federal funds rate unchanged at ¼ to ½ percent at this meeting. Members generally agreed that, before assessing whether another step in removing monetary accommodation was warranted, it was prudent to wait for additional data regarding labor market conditions as well as information that would allow them to assess the consequences of the U.K. vote for global financial conditions and the U.S. economic outlook. They judged that their decisions about the appropriate level of the federal funds rate in coming months would depend importantly on whether incoming information corroborated the Committee's expectations for economic activity, the labor market, and inflation. Some of them emphasized that, with labor market conditions and inflation at or close to the

Committee's objectives, taking another step in removing monetary accommodation should not be delayed too long. However, a couple of members underscored that they would need to accumulate sufficient evidence to increase their confidence that economic growth was strong enough to withstand a possible downward shock to demand and that inflation was moving closer to 2 percent on a sustained basis.

Members reiterated that, in determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee would assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee expected that economic conditions would evolve in a manner that would warrant only gradual increases in the federal funds rate, and the federal funds rate was likely to remain, for some time, below levels that were expected to prevail in the longer run. Members emphasized that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming data. In that regard, they judged it appropriate to continue to leave their policy options open and maintain the flexibility to adjust the stance of policy based on how incoming information affected the Committee's assessment of the outlook for economic activity, the labor market, and inflation as well as the risks to the outlook.

The Committee also decided to maintain its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipated doing so until normalization of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective June 16, 2016, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of ¼ to ½ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 0.25 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

> "Information received since the Federal Open Market Committee met in April indicates that the pace of improvement in the labor market has slowed while growth in economic activity appears to have picked up. Although the unemployment rate has declined, job gains have diminished. Growth in household spending has strengthened. Since the beginning of the year, the housing sector has continued to improve and the drag from net exports appears to have lessened, but business fixed investment has been soft. Inflation has continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation declined; most survey-based measures of longer-term inflation expectations are little changed, on balance, in recent months.
>
> Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee currently expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market indicators will strengthen. Inflation is

expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipate and the labor market strengthens further. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

Against this backdrop, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent. The stance of monetary policy remains accommodative, thereby supporting further improvement in labor market conditions and a return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions."

Voting for this action: Janet L. Yellen, William C. Dudley, Lael Brainard, James Bullard, Stanley Fischer, Esther L. George, Loretta J. Mester, Jerome H. Powell, Eric Rosengren, and Daniel K. Tarullo.

Voting against this action: None.

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, July 26–27, 2016. The meeting adjourned at 10:30 a.m. on June 15, 2016.

Notation Vote

By notation vote completed on May 17, 2016, the Committee unanimously approved the minutes of the Committee meeting held on April 26–27, 2016.

Brian F. Madigan
Secretary

Addendum: Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on June 14–15, 2016, meeting participants submitted their projections of the most likely outcomes for real output growth, the unemployment rate, inflation, and the federal funds rate for each year from 2016 to 2018 and over the longer run.[5] Each participant's projection was based on information available at the time of the meeting, together with his or her assessment of appropriate monetary policy and assumptions about the factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. "Appropriate monetary policy" is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the Federal Reserve's objectives of maximum employment and stable prices.

FOMC participants generally expected that, under appropriate monetary policy, growth in real gross domestic product (GDP) this year, next year, and in 2018 would be at or quite close to their individual estimates of GDP growth over the longer run. All but a few participants projected that the unemployment rate at the end of this year will be at or below

[5] One participant did not submit longer-run projections in conjunction with the June 2016 FOMC meeting.

its longer-run normal rate and expected it to edge lower next year. For 2018, nearly all participants expected the unemployment rate to be at or a bit below its longer-run level. Almost all participants projected that inflation, as measured by the four-quarter percentage change in the price index for personal consumption expenditures (PCE), would increase this year and over the next two years, and most expected inflation to have converged to the Committee's objective of 2 percent by 2018. Table 1 and figure 1 provide summary statistics for the projections.

As shown in figure 2, almost all participants expected that it would be appropriate for the target range for the federal funds rate to rise gradually as the economy steadily progresses toward the Committee's longer-run goals of maximum employment and 2 percent inflation. Indeed, participants generally judged that the federal funds rate in 2018 would still be below their estimates of its longer-run rate. However, because the economic outlook is inherently uncertain, participants' assessments of appropriate policy were also uncertain and likely would change in response to revisions to their economic outlooks and associated risks.

Participants generally viewed the level of uncertainty associated with their individual forecasts for economic growth, unemployment, and inflation as broadly similar to the norms of the previous 20 years. Most participants also judged the risks around their projections for economic activity and inflation as broadly balanced, although many participants saw the risks to their GDP growth and inflation forecasts as weighted to the downside. In addition, some participants viewed the risks to their forecasts of the unemployment rate as tilted to the upside.

The Outlook for Economic Activity

The median of participants' projections for the growth rate of real GDP, conditional on their individual assumptions about appropriate monetary policy, was 2 percent for each year from 2016

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, June 2016
Percent

Variable	Median[1]				Central tendency[2]				Range[3]			
	2016	2017	2018	Longer run	2016	2017	2018	Longer run	2016	2017	2018	Longer run
Change in real GDP	2.0	2.0	2.0	2.0	1.9–2.0	1.9–2.2	1.8–2.1	1.8–2.0	1.8–2.2	1.6–2.4	1.5–2.2	1.6–2.4
March projection	2.2	2.1	2.0	2.0	2.1–2.3	2.0–2.3	1.8–2.1	1.8–2.1	1.9–2.5	1.7–2.3	1.8–2.3	1.8–2.4
Unemployment rate	4.7	4.6	4.6	4.8	4.6–4.8	4.5–4.7	4.4–4.8	4.7–5.0	4.5–4.9	4.3–4.8	4.3–5.0	4.6–5.0
March projection	4.7	4.6	4.5	4.8	4.6–4.8	4.5–4.7	4.5–5.0	4.7–5.0	4.5–4.9	4.3–4.9	4.3–5.0	4.7–5.8
PCE inflation	1.4	1.9	2.0	2.0	1.3–1.7	1.7–2.0	1.9–2.0	2.0	1.3–2.0	1.6–2.0	1.8–2.1	2.0
March projection	1.2	1.9	2.0	2.0	1.0–1.6	1.7–2.0	1.9–2.0	2.0	1.0–1.6	1.6–2.0	1.8–2.0	2.0
Core PCE inflation[4]	1.7	1.9	2.0		1.6–1.8	1.7–2.0	1.9–2.0		1.3–2.0	1.6–2.0	1.8–2.1	
March projection	1.6	1.8	2.0		1.4–1.7	1.7–2.0	1.9–2.0		1.4–2.1	1.6–2.0	1.8–2.0	
Memo: Projected appropriate policy path												
Federal funds rate	0.9	1.6	2.4	3.0	0.6–0.9	1.4–1.9	2.1–2.9	3.0–3.3	0.6–1.4	0.6–2.4	0.6–3.4	2.8–3.8
March projection	0.9	1.9	3.0	3.3	0.9–1.4	1.6–2.4	2.5–3.3	3.0–3.5	0.6–1.4	1.6–2.8	2.1–3.9	3.0–4.0

Note: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The March projections were made in conjunction with the meeting of the Federal Open Market Committee on March 15–16, 2016. One participant did not submit longer-run projections in conjunction with the June 14–15, 2016 meeting.

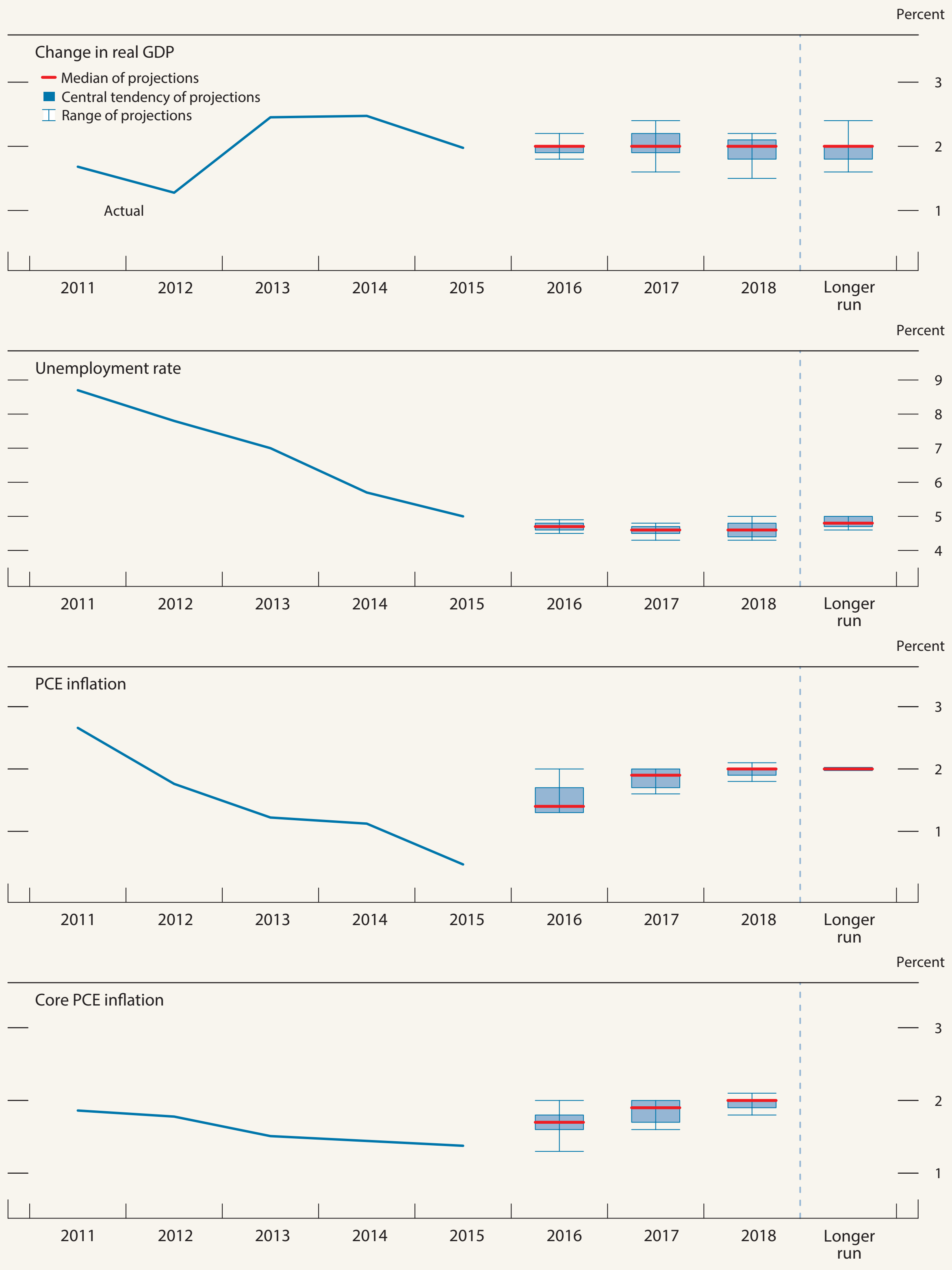
1 For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

2 The central tendency excludes the three highest and three lowest projections for each variable in each year.

3 The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

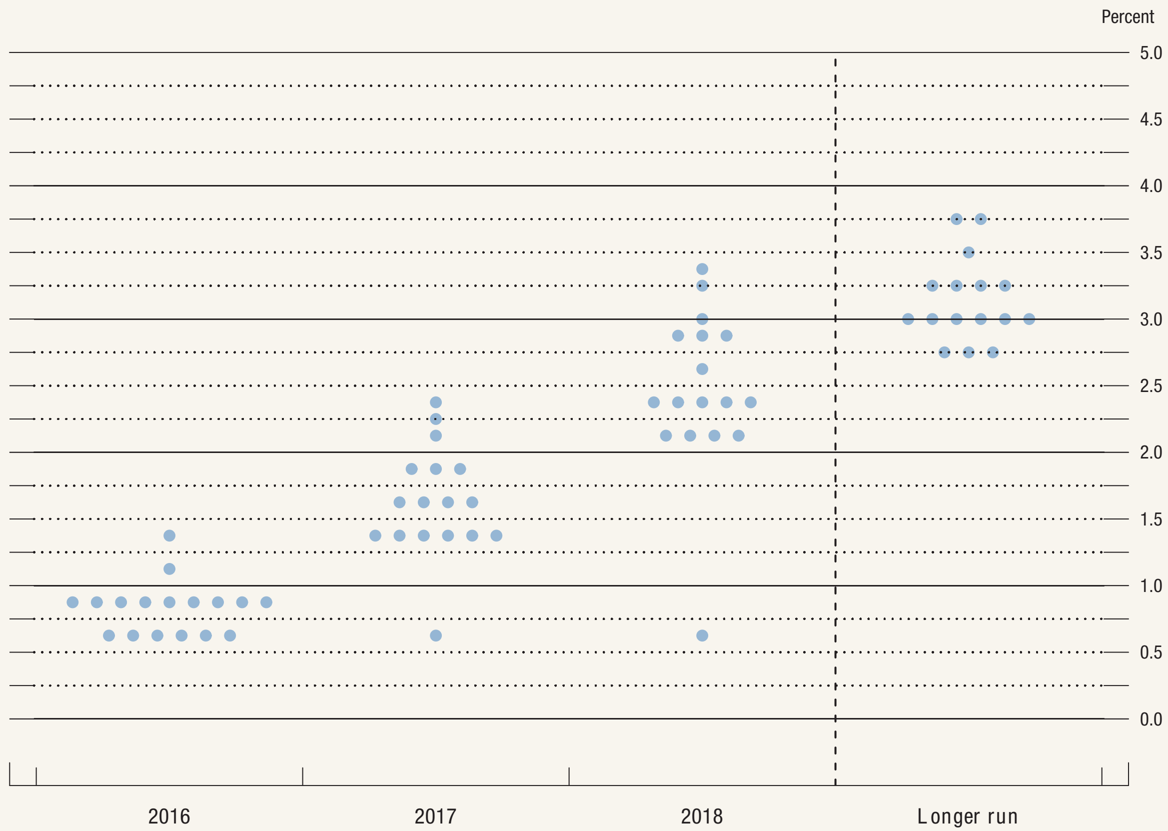
4 Longer-run projections for core PCE inflation are not collected.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2016–18 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



Note: Each shaded circle indicates the value (rounded to the nearest ⅛ percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections.

through 2018, the same as the median of their projections of the longer-run GDP growth rate. However, a majority of participants expected that real GDP growth would pick up a bit in 2017 from this year's pace, and most expected it to remain at or above their estimates of its longer-run pace in 2018. Participants pointed to a number of factors that they expected would contribute to moderate output growth over the next few years, including a diminution of the drag on net exports from a strong dollar, the continued improvements in household and business balance sheets, accommodative financial conditions, and somewhat more supportive fiscal policy.

Participants' median projections for real GDP growth in 2016 and 2017 were slightly lower than the medians shown in the March 2016 Summary of Economic Projections (SEP). Participants who lowered their projections for near-term GDP growth generally attributed their revisions to weaker-than-expected growth in the first quarter and soft readings on economic activity in recent months, particularly those on business spending. Although several participants also reduced their forecasts for real GDP growth in 2018 and in the longer run, those downward revisions did not alter the median forecasts.

The median of projections for the unemployment rate edged down from 4.7 percent at the end of 2016 to 4.6 percent in 2017 and remained at that level in 2018, modestly below the median assessment of the longer-run normal unemployment rate of 4.8 percent. The medians and ranges of the unemployment rate projections for 2016 to 2018 were nearly unchanged from March.

Figures 3.A and 3.B show the distributions of participants' projections for real GDP growth and the unemployment rate from 2016 through 2018 and in the longer run. The distribution of individual projections of GDP growth for 2016 shifted lower relative to the distribution of the March projections. The distributions of projections for GDP growth over the next two years and in the longer run also shifted down. For this year and next, the distributions of projections for the unemployment rate were little changed, while the distribution for 2018 became less dispersed.

The Outlook for Inflation

In the June SEP, the median of projections for headline PCE price inflation in 2016 was 1.4 percent, a bit higher than in March. Many participants pointed to stronger-than-expected readings on inflation early this year, as well as to the recent stabilization of oil prices, as factors contributing to the upward revision to their inflation projections. The projections for headline PCE price inflation over the next two years and in the longer run were little changed since March, with the median inflation projection still rising to 1.9 percent in 2017 and to the Committee's objective of 2 percent in 2018. Almost all participants projected that inflation will be within 0.1 percentage point of the Committee's objective by 2018. The median of individual projections for core PCE price inflation also increases gradually over the next two years.

Figures 3.C and 3.D provide information on the distribution of participants' views about the outlook for inflation. The distribution of projections for headline PCE price inflation for this year shifted up relative to projections for the March meeting. The distribution of projections for core PCE price inflation this year also moved to the right on balance. For 2017 and 2018, the distributions of projections for both total and core PCE price inflation were nearly unchanged.

Appropriate Monetary Policy

Figure 3.E provides the distribution of participants' judgments regarding the appropriate level of the target federal funds rate at the end of each year from 2016 to 2018 and over the longer run.[6] The distributions for 2016 to 2018 and for the longer run shifted to the left. The median projection for the federal funds rate rises gradually from 0.88 percent at the end of 2016 to 1.63 percent at the end of 2017 and 2.38 percent at the end of 2018; the median for the longer-run projections of the federal funds rate is 3 percent. Although the median federal funds rate at the end of 2016 was unchanged from the March projection, a majority of participants revised down their projections for that year, most by 0.25 percentage point. For 2017 and 2018, the median projections were 0.25 percentage point and 0.62 percentage point lower, respectively, than in March.

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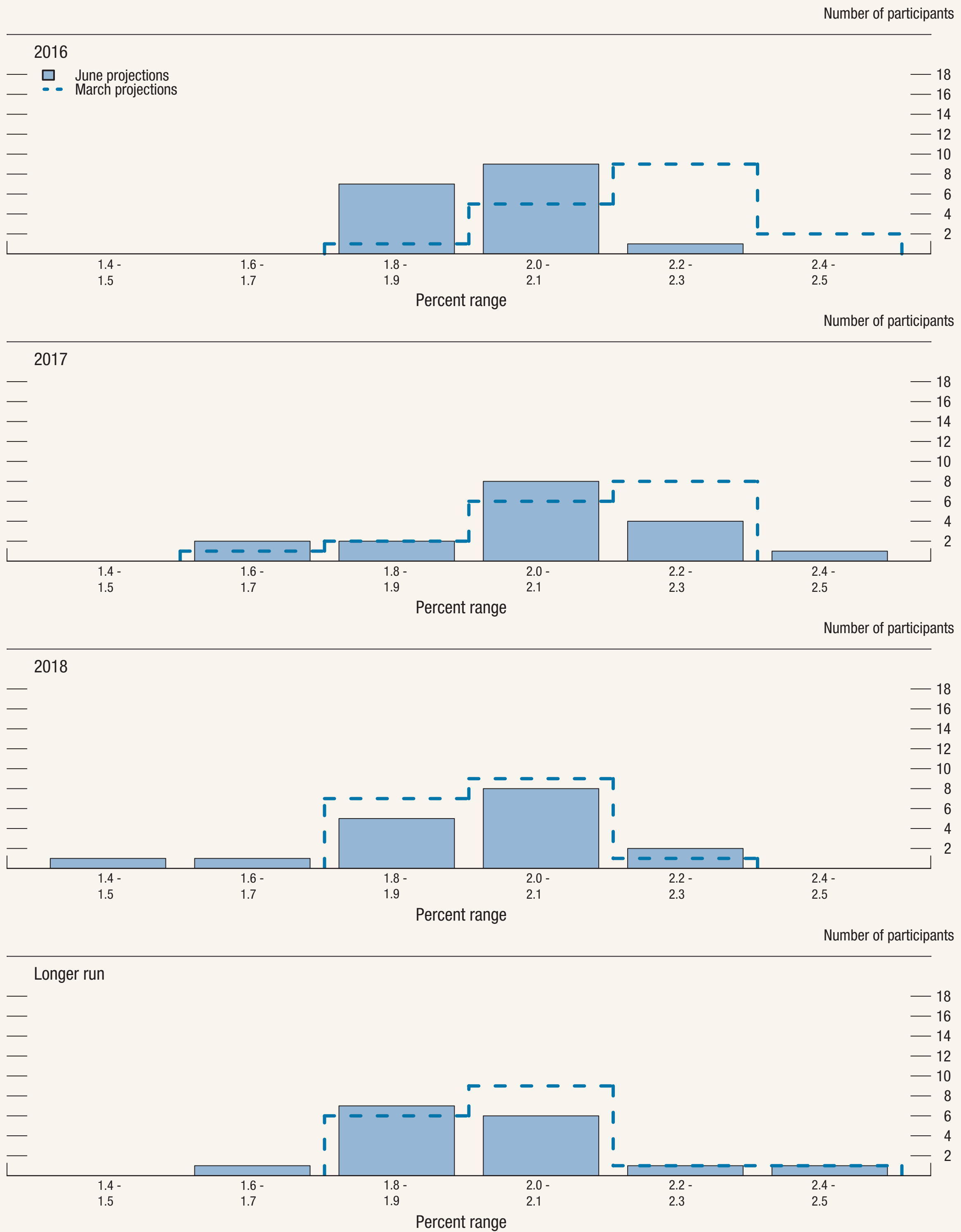
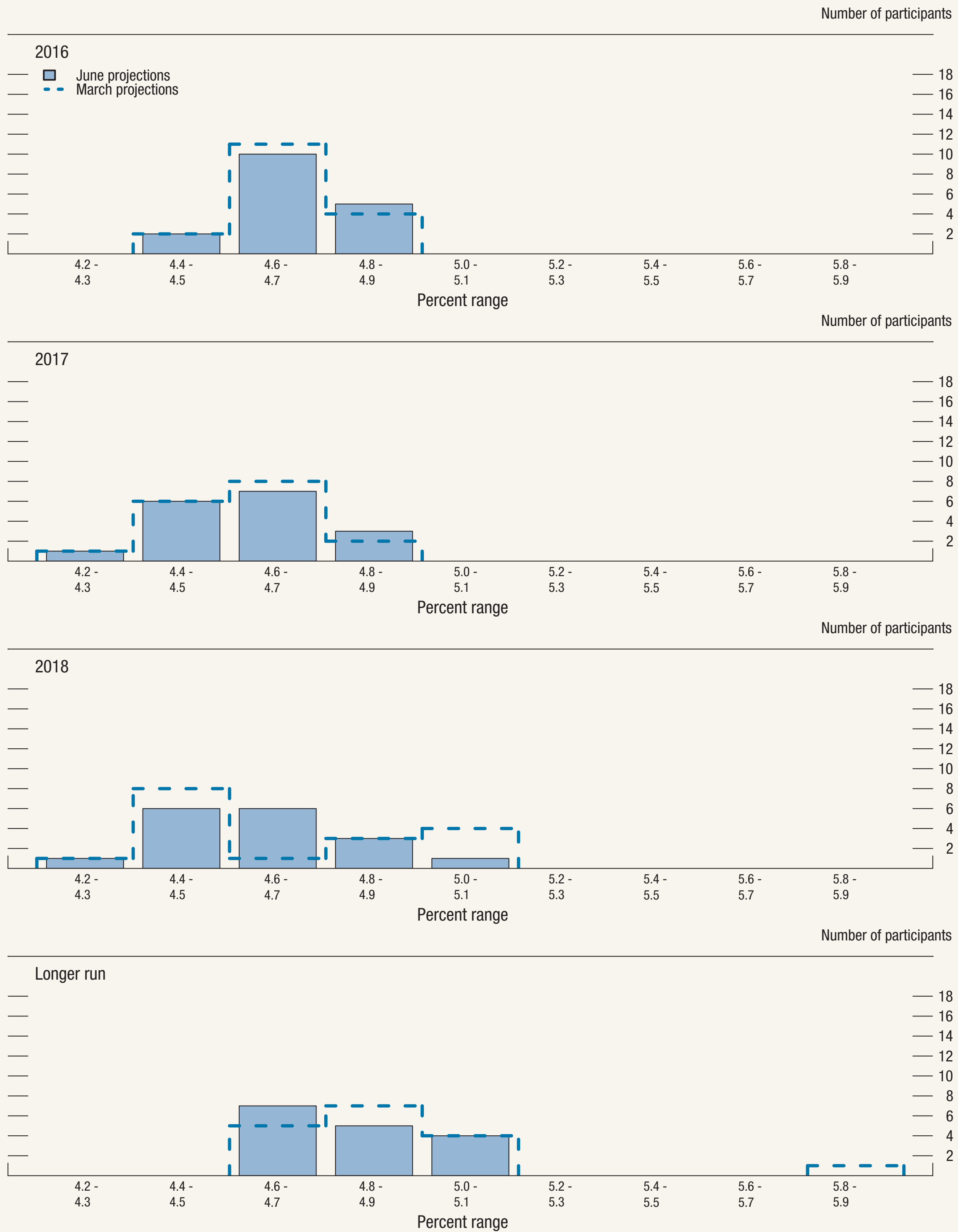
[6] One participant's projections for the federal funds rate, GDP growth, the unemployment rate, and inflation were informed by the view that there are multiple possible medium-term regimes for the U.S. economy, that these regimes are persistent, and that the economy shifts between regimes in a way that cannot be forecast. Under this view, the economy currently is in a regime characterized by expansion of economic activity with low productivity growth and a low short-term real interest rate, but longer-term outcomes cannot be usefully projected.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2016–18 and over the longer run



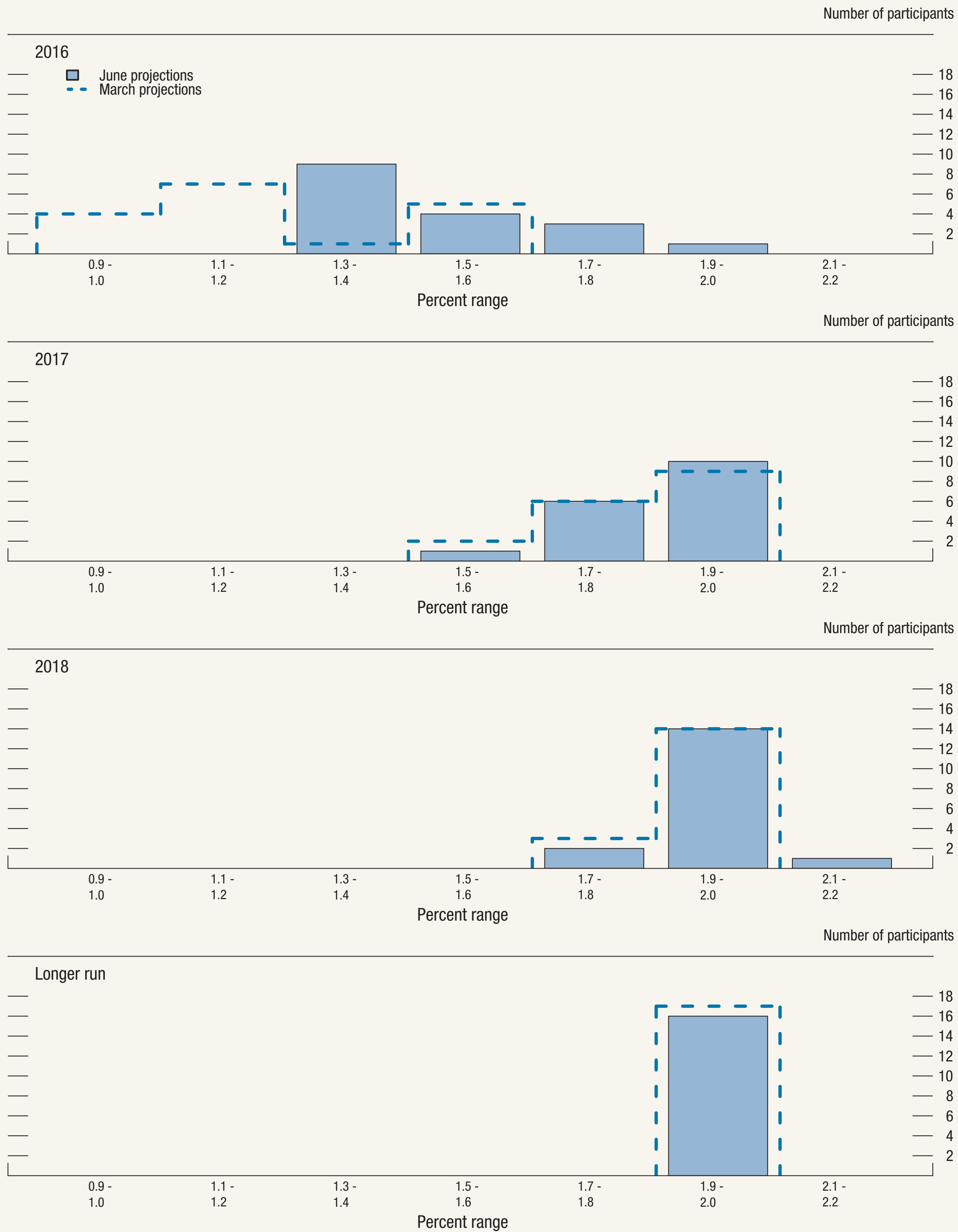
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2016–18 and over the longer run



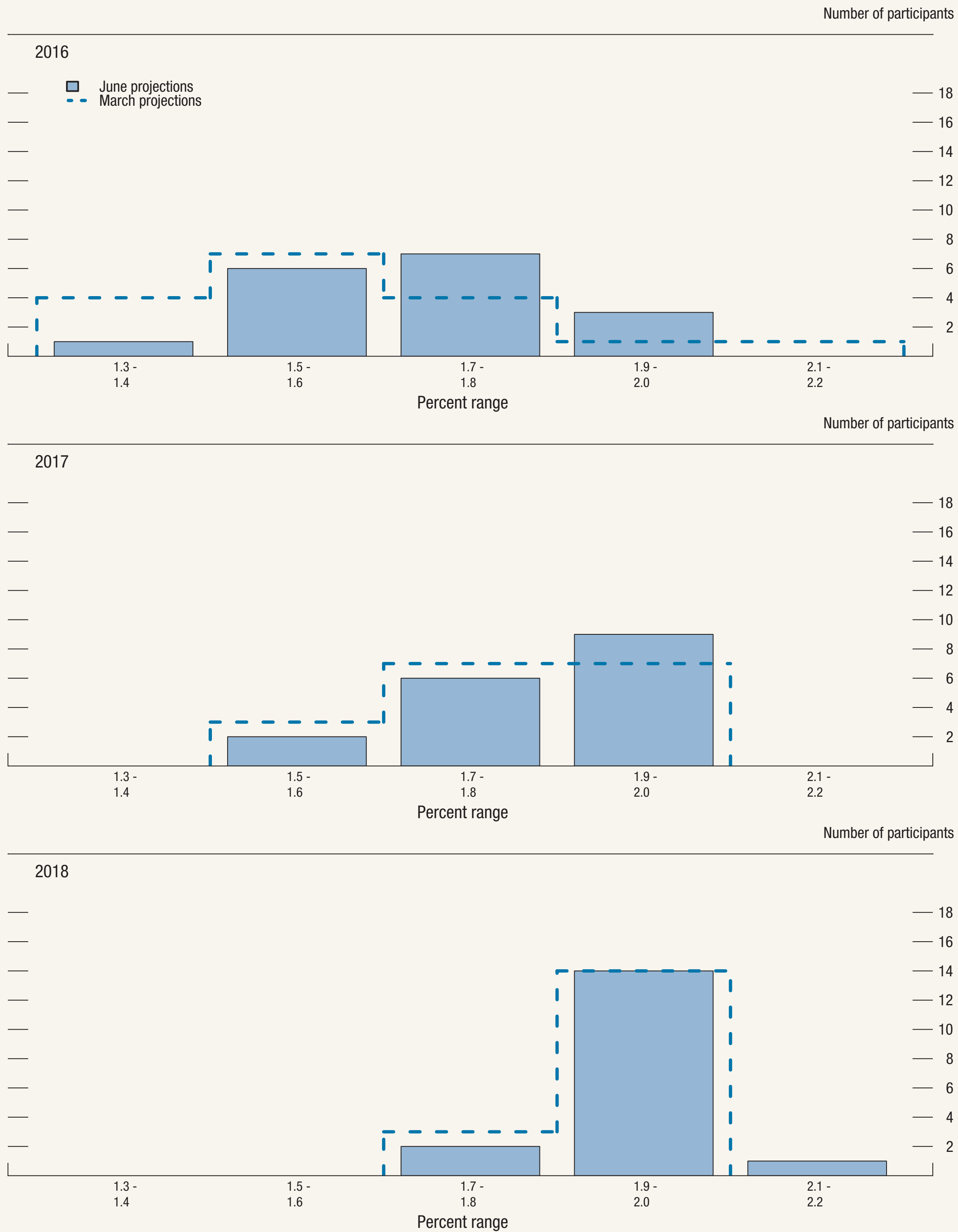
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2016–18 and over the longer run



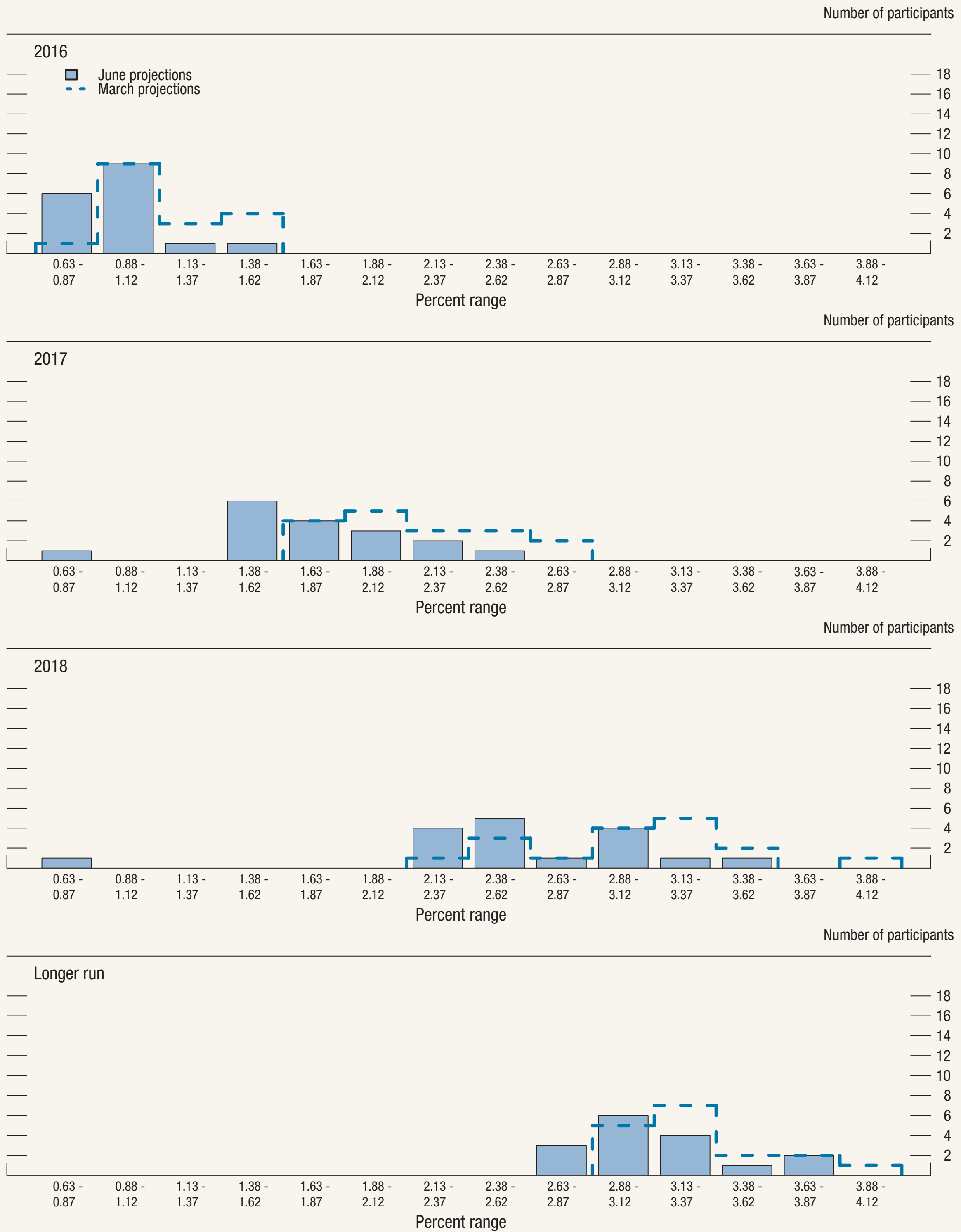
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2016–18



Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2016–18 and over the longer run



Note: The midpoints of the target ranges for the federal funds rate and the target levels for the federal funds rate are measured at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections.

Table 2. Average historical projection error ranges
Percentage points

Variable	2016	2017	2018
Change in real GDP[1]	±1.4	±2.0	±2.2
Unemployment rate[1]	±0.4	±1.2	±1.8
Total consumer prices[2]	±0.8	±1.0	±1.0

Note: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1996 through 2015 that were released in the summer by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, and consumer prices will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2007), "Gauging the Uncertainty of the Economic Outlook from Historical Forecasting Errors," Finance and Economics Discussion Series 2007-60 (Washington: Board of Governors of the Federal Reserve System, November), available at www.federalreserve.gov/pubs/feds/2007/200760/200760abs.html; and Board of Governors of the Federal Reserve System, Division of Research and Statistics (2014), "Updated Historical Forecast Errors," memorandum, April 9, www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.pdf.

1 Definitions of variables are in the general note to table 1.

2 Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projection is percent change, fourth quarter of the previous year to the fourth quarter of the year indicated.

Compared with the March SEP, the median of participants' projections for the federal funds rate in the longer run moved down 0.25 percentage point. This change reflected downward revisions by about half of the participants.

Participants' projections for the path of the federal funds rate represented their individual assessments of appropriate monetary policy consistent with their projections of economic growth, employment, inflation, and other factors. In discussing their June forecasts, many participants expressed a view that increases in the federal funds rate over the next several years would need to be gradual in light of a short-term neutral interest rate that was currently low—a phenomenon that several participants attributed to the persistence of factors that restrained spending over recent years—and that was likely to rise only slowly as the effects of those factors faded over time. Some participants noted the proximity of short-term nominal interest rates to the effective lower bound as limiting the Committee's ability to increase monetary accommodation to counter adverse shocks to the economy should they occur. They judged that, as a result, the Committee should take a cautious approach to monetary policy normalization. Participants cited a number of factors that pushed down their projections of the longer-run rate, including domestic and global demographic trends and weak productivity growth, which together imply a slower pace of trend output growth.

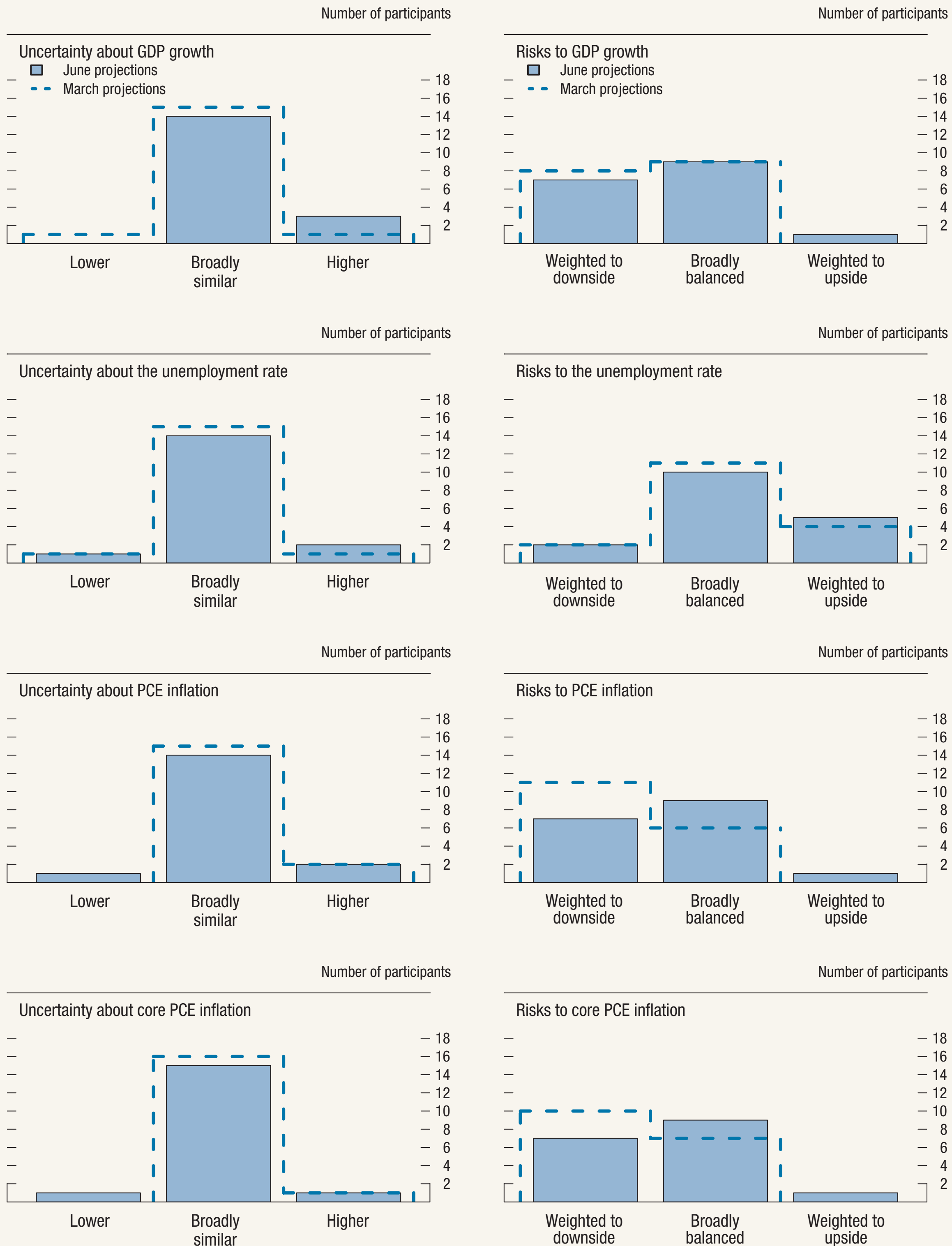
Uncertainty and Risks

The left-hand column of figure 4 shows that all but a few participants judged the levels of uncertainty around their June projections for real GDP growth, the unemployment rate, and headline and core PCE price inflation to be broadly similar to the average levels of the past 20 years.[7] A few participants saw the uncertainty about GDP growth as higher than its historical average, up from only one in March. These participants cited the surprisingly weak productivity growth of recent years or the continuing fragile nature of the global economic environment as supporting such a view. Most participants' assessments of the level of uncertainty surrounding their economic projections did not change materially from March.

As in March, most participants judged the risks to their projections of GDP growth and the unemployment rate to be broadly balanced, although many still assessed the risks to GDP growth as weighted to the downside and some saw the risks to the unemployment rate as tilted to the upside (top two panels in the right-hand column of figure 4). Participants who saw the risks to growth as tilted to the downside attributed this assessment to the weaker-than-expected May employment report; recent softness in business fixed investment; concerns about the global economic environment, including possible economic and financial consequences of the upcoming British referendum on European Union membership; or the proximity of short-term nominal interest rates to the effective lower bound. A majority of participants judged the risks to their inflation projections to be broadly balanced. However, many viewed the risks to inflation as skewed to the downside, although fewer than in March. A couple of participants pointed to the firming of some measures of inflation in recent months as contributing to the change in their risk assessment. Among those who continued to judge that the risks to inflation were weighted to the downside, almost all cited recent declines in measures of inflation compensation and some survey-based measures of longer-run inflation expectations as reasons for that assessment.

7 Table 2 provides estimates of the forecast uncertainty for the change in real GDP, the unemployment rate, and total consumer price inflation over the period from 1996 through 2015. At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty in the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

Figure 4. Uncertainty and risks in economic projections



Note: For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty." Definitions of variables are in the notes to table 1.

Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Reports* and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee. The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 1.6 to 4.4 percent in the current year, 1.0 to 5.0 percent in the second year, and 0.8 to 5.2 percent in the third year. The corresponding 70 percent confidence intervals for overall inflation would be 1.2 to 2.8 percent in the current year and 1.0 to 3.0 percent in the second and third years.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty in the past, as shown in table 2. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, participants judge whether each variable is more likely to be above or below their projections of the most likely outcome. These judgments about the uncertainty and the risks attending each participant's projections are distinct from the diversity of participants' views about the most likely outcomes. Forecast uncertainty is concerned with the risks associated with a particular projection rather than with divergences across a number of different projections.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward.

Meeting Held on July 26–27, 2016

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, July 26, 2016, at 10:00 a.m. and continued on Wednesday, July 27, 2016, at 9:00 a.m.[1]

Present

Janet L. Yellen
Chair

William C. Dudley
Vice Chairman

Lael Brainard

James Bullard

Stanley Fischer

Esther L. George

Loretta J. Mester

Jerome H. Powell

Eric Rosengren

Daniel K. Tarullo

Charles L. Evans, Patrick Harker, Robert S. Kaplan, Neel Kashkari, and Michael Strine
Alternate Members of the Federal Open Market Committee

Jeffrey M. Lacker, Dennis P. Lockhart, and John C. Williams
Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco, respectively

Brian F. Madigan
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Scott G. Alvarez
General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

Thomas A. Connors, Troy Davig, Michael P. Leahy, David E. Lebow, Stephen A. Meyer, Ellis W. Tallman, Christopher J. Waller, and William Wascher
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Robert deV. Frierson
Secretary of the Board, Office of the Secretary, Board of Governors

Matthew J. Eichner[2]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Michael S. Gibson
Director, Division of Banking Supervision and Regulation, Board of Governors

Nellie Liang
Director, Division of Financial Stability, Board of Governors

James A. Clouse
Deputy Director, Division of Monetary Affairs, Board of Governors

Daniel M. Covitz
Deputy Director, Division of Research and Statistics, Board of Governors

Andrew Figura, David Reifschneider, and Stacey Tevlin
Special Advisers to the Board, Office of Board Members, Board of Governors

Trevor A. Reeve
Special Adviser to the Chair, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

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[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

[2] Attended the discussions of the long-run monetary policy implementation framework and financial developments.

Fabio M. Natalucci and Gretchen C. Weinbach[3]
Senior Associate Directors, Division of Monetary Affairs, Board of Governors

Michael G. Palumbo
Senior Associate Director, Division of Research and Statistics, Board of Governors

Beth Anne Wilson
Senior Associate Director, Division of International Finance, Board of Governors

Michael T. Kiley
Senior Adviser, Division of Research and Statistics, and
Senior Associate Director, Division of Financial Stability, Board of Governors

Antulio N. Bomfim and Joyce K. Zickler
Senior Advisers, Division of Monetary Affairs, Board of Governors

Brian M. Doyle[3]
Senior Adviser, Division of International Finance, Board of Governors

Jane E. Ihrig[3]
Associate Director, Division of Monetary Affairs, Board of Governors

John J. Stevens
Deputy Associate Director, Division of Research and Statistics, Board of Governors

Glenn Follette and Steven A. Sharpe
Assistant Directors, Division of Research and Statistics, Board of Governors

Elizabeth Klee[3]
Assistant Director, Division of Monetary Affairs, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Elmar Mertens
Principal Economist, Division of Monetary Affairs, Board of Governors

Valerie Hinojosa
Information Manager, Division of Monetary Affairs, Board of Governors

Marie Gooding
First Vice President, Federal Reserve Bank of Atlanta

3 Attended the discussion of the long-run monetary policy implementation framework.

David Altig and Ron Feldman
Executive Vice Presidents, Federal Reserve Banks of Atlanta and Minneapolis, respectively

Tobias Adrian, Michael Dotsey, Stephanie Heller, Susan McLaughlin,[3] **Julie Ann Remache,**[3] **and John A. Weinberg**
Senior Vice Presidents, Federal Reserve Banks of New York, Philadelphia, New York, New York, New York, and Richmond, respectively

John Duca, Jonas D. M. Fisher, Deborah L. Leonard,[3] **Antoine Martin,**[3] **Ed Nosal,**[3] **Anna Paulson,**[3] **Joe Peek, and Patricia Zobel**[3]
Vice Presidents, Federal Reserve Banks of Dallas, Chicago, New York, New York, Chicago, Chicago, Boston, and New York, respectively

John Fernald
Senior Research Advisor, Federal Reserve Bank of San Francisco

Long-Run Monetary Policy Implementation Framework

The staff provided several briefings that reviewed progress on a long-term effort begun in July 2015 to evaluate potential long-run frameworks for monetary policy implementation. The briefings highlighted some foundational considerations that are relevant for such an evaluation. The staff described the recent experience of several central banks of advanced foreign economies (AFEs) in implementing monetary policy, noting that they use a wide variety of frameworks to control short-term interest rates and that their approaches have evolved over time. For example, foreign central banks vary in their choice of the interest rate used to communicate monetary policy; in their approach to the provision of reserve balances; and in their use of policies, such as large-scale asset purchases, various funding programs, and negative interest rates, to supplement more traditional means of policy implementation. The staff also described the Federal Reserve's experience in implementing monetary policy during the recent financial crisis. Before the financial crisis, traditional implementation tools—relatively small-sized open market operations and discount window lending—were adequate for interest rate control even during periods of stress. But the evidence from the period of the crisis and its aftermath suggested that the Federal Reserve's pre-crisis framework did not enable close control over the federal funds rate when liquidity programs were expanded significantly and subse-

quently was unable to generate sufficiently accommodative financial conditions to support economic recovery without the use of new policy tools. Finally, the staff noted that various aspects of U.S. money markets, which determine short-term interest rates and are important for transmitting monetary policy, have changed since the financial crisis. The differences include changes the Federal Reserve has made to its policy tools and balance sheet, changes in market participants' business practices, and the regulatory changes made around the globe to strengthen the financial system. Taken together, these factors may, for example, raise the long-run demand for safe assets, including reserve balances, and they should help make U.S. money markets more stable than they were before and during the financial crisis.

In the discussion that followed the staff presentations, policymakers agreed that decisions regarding an appropriate long-run implementation framework would not be necessary for some time. Furthermore, their judgments regarding a future framework would benefit from accruing additional experience with recently developed policy tools, such as the payment of interest on reserves, and accumulating more information about some important considerations that are still evolving, including financial regulations and market participants' responses to them.

One key consideration discussed by policymakers was the appropriate amount of flexibility that an implementation framework might have—for example, the extent to which a framework could readily enable interest rate control under a wide range of economic and financial circumstances. With neutral interest rates potentially remaining quite low, policymakers also observed that, in order to promote the Federal Reserve's policy objectives, the framework should have the capacity to supplement conventional policy accommodation with other measures when short-term nominal interest rates are near zero. Policymakers emphasized that the relationship between the monetary policy implementation framework and financial stability considerations would require careful attention. Importantly, the policy implementation framework would need to be consistent with recent changes in regulation designed to enhance the stability of the financial system. Also, because episodes of financial stress can arise with little warning, policymakers noted the advantage of being operationally ready for such situations; however, they also recognized that such operational readiness could entail some costs. Participants observed that various choices associated with policy implementation frameworks—such as the selection of counterparties or types of collateral to accept, and the overall size and composition of the Federal Reserve's balance sheet—may both be influenced by, and themselves influence, incentives and activity in financial markets. Moreover, they indicated that the implications of the implementation framework for the efficiency of the financial system needed to be taken into account.

Meeting participants commented on several other considerations that they saw as being relevant for evaluating possible implementation frameworks. Other major central banks have successfully employed a range of policy rates, including both administered rates and market rates, suggesting that either type of rate can be effective in communicating and implementing policy. However, the factors affecting market rates, as well as the relationships between the policy interest rate and other short-term interest rates, would need to be well understood in deciding on a particular policy rate. The potential benefits of improving the functioning of certain policy tools were noted; for example, approaches to reducing the perceived stigma associated with borrowing at the discount window, particularly in periods of financial strain, would need further careful consideration. In addition, it was noted that the dollar is a principal reserve currency and that monetary transmission in the United States occurs through funding markets that are quite globally connected. At the conclusion of the discussion, the Chair asked the staff to continue its work and noted that policymakers would review further analysis at a future meeting.

Developments in Financial Markets and Open Market Operations

The deputy manager of the System Open Market Account (SOMA) reported on developments in financial markets and open market operations during the period since the Committee met on June 14–15, 2016. Following the outcome of the June 23 referendum in the United Kingdom in which a majority indicated a preference to leave the European Union (EU), yields on U.S. Treasury securities fell sharply, U.S. equity prices declined, and the foreign exchange value of the dollar increased. However, these changes generally reversed in subsequent weeks. On balance, Treasury yields were down only slightly over the intermeeting period, equity prices were higher, and the foreign exchange value of the dollar was little changed. Although the expected path of the federal funds rate implied by market prices was about unchanged on net, the Open Market Desk's Survey

of Primary Dealers and Survey of Market Participants indicated that the median responses for the most likely path of the federal funds rate over coming quarters had declined.

During the intermeeting period, federal funds continued to trade at rates well within the FOMC's ¼ to ½ percent target range. However, the average effective federal funds rate was modestly higher than in the previous intermeeting period. The slightly firmer conditions in the federal funds market were supported by higher rates in money markets for secured transactions, which appeared to reflect at least in part more cautious liquidity management by some money market participants in the wake of the U.K. referendum. Take-up at the System's overnight reverse repurchase agreement facility rose somewhat. The increase seemed to be in part the result of shifts in investments by money market funds in advance of the scheduled implementation in October of changes to the regulation of the money market fund industry.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the July 26–27 meeting indicated that labor market conditions generally improved in June and that growth in real gross domestic product (GDP) was moderate in the second quarter. Consumer price inflation continued to run below the Committee's longer-run objective of 2 percent, restrained in part by earlier decreases in energy prices and in prices of non-energy imports. Most survey-based measures of longer-run inflation expectations were little changed, on balance, while market-based measures of inflation compensation remained low.

Total nonfarm payroll employment increased briskly in June, but the increase for the second quarter as a whole was noticeably slower than in the first quarter. The unemployment rate rose to 4.9 percent in June, partly reversing its decline in the previous month. The labor force participation rate edged up in June, while the employment-to-population ratio edged down. The share of workers employed part time for economic reasons declined in June after a similarly sized increase in May. The rate of private-sector job openings declined in May, albeit from an elevated level, and the rates of hires and of quits were both unchanged. The four-week moving average of initial claims for unemployment insurance benefits remained low through mid-July. Average hourly earnings for all employees increased 2½ percent over the 12 months ending in June.

The unemployment rates for African Americans and for Hispanics stayed above the rate for whites, although the differentials in jobless rates across the different groups were similar to those before the most recent recession. A similar pattern among demographic groups held for a broader measure of labor underutilization that also includes persons who were marginally attached to the labor force and those who were employed part time for economic reasons.

Total industrial production rose modestly, on net, in May and June, primarily reflecting an increase in the output of utilities in June related to unseasonably warm weather during that month. Manufacturing production was little changed, on balance, in May and June, and mining output edged up following a string of steep declines. Automakers' assembly schedules pointed to an increase in motor vehicle production during the third quarter, but other indicators of manufacturing production, such as new orders diffusion indexes from national and regional manufacturing surveys, suggested only modest gains in factory output over the next few months.

Growth in real personal consumption expenditures (PCE) appeared to have picked up in the second quarter. The components of the nominal retail sales data used by the Bureau of Economic Analysis to construct its estimate of PCE continued to rise at a solid pace in June. Although sales of light motor vehicles declined in June, the average pace for the second quarter as a whole was essentially the same as in the first quarter. The apparent pickup in real PCE growth was consistent with recent readings on key factors that influence consumer spending, including continued gains in real disposable personal income and in households' net worth. Also, consumer sentiment as measured by the University of Michigan Surveys of Consumers remained reasonably upbeat in the second quarter and in early July.

Recent information on housing activity suggested that the pace of the gradual recovery in the sector had slowed in recent months. Starts for new single-family homes were little changed, on average, in May and June at a level below that in the first quarter, while starts for multifamily units moved up, on net,

and were above their first-quarter average. Building permit issuance for both single-family and multifamily units remained essentially flat in the second quarter and pointed to little improvement in the rate of starts over the next few months. Sales of new and existing homes both increased, on net, in May and June.

Real private expenditures for business equipment and intellectual property appeared to have declined for a third consecutive quarter. Nominal shipments of nondefense capital goods excluding aircraft decreased in May and June, and orders for these goods also declined on balance. However, recent readings from national and regional surveys of business conditions suggested some pickup in business equipment spending in the near term. Firms' nominal spending for nonresidential structures excluding drilling and mining declined in May. The number of oil and gas rigs in operation, an indicator of spending for structures in the drilling and mining sector, fell through late May but edged up through mid-July.

Nominal outlays for defense through June pointed to a decline in real federal government purchases in the second quarter. Real state and local government purchases also appeared to have declined. Although payrolls for state and local governments expanded over the quarter, nominal construction spending by these governments declined noticeably in April and May.

The U.S. international trade deficit widened in May, as imports rose and exports declined slightly. The export decline was led by decreased exports of capital goods and automotive products. For imports, increased imports of industrial supplies and consumer goods more than offset decreased imports of capital goods. These recent indicators, combined with data from earlier in the year, suggested that net exports made a near-neutral contribution to the growth of real GDP in the first half of 2016.

Total U.S. consumer prices, as measured by the PCE price index, increased about 1 percent over the 12 months ending in May, partly restrained by earlier declines in consumer energy prices. Core PCE price inflation, which excludes changes in food and energy prices, was a little above 1½ percent over the same 12-month period, held down in part by decreases in the prices of non-energy imports over much of this period and the pass-through of the declines in energy prices to the prices of other goods and services. Over the 12 months ending in June, total consumer prices as measured by the consumer price index (CPI) rose 1 percent, while core CPI inflation was about 2¼ percent. The Michigan survey measure of longer-run inflation expectations edged up in June and was unchanged in early July. Other measures of longer-run inflation expectations—including those from the Desk's Survey of Primary Dealers and Survey of Market Participants—were generally little changed, on balance, in recent months.

The pace of foreign real GDP growth appeared to slow in the second quarter, driven in large part by temporary factors such as wildfires in Canada and, to a lesser extent, by a deceleration of activity in the euro area. In the emerging market economies (EMEs), a pickup in growth in China in the second quarter, supported by policy stimulus, appeared to be more than offset by slower growth in Latin America. In the United Kingdom, early indicators following the June 23 referendum on exit from the EU ("Brexit") pointed to a slowdown in economic growth. Inflation in the AFEs picked up in the second quarter, largely reflecting some increase in energy prices, but generally remained low. Inflation also remained subdued in the EMEs.

Staff Review of the Financial Situation

Domestic financial conditions remained accommodative over the intermeeting period. Equity price indexes increased, on net, despite an initial sharp decline following the Brexit vote, and corporate bond spreads declined on balance. Conditions in business and consumer credit markets were about unchanged. The expected policy path of the federal funds rate implied by market quotes was little changed, on net, but fluctuated notably over the intermeeting period.

In the days immediately following the Brexit vote, asset prices were volatile, and some financial markets, particularly certain foreign exchange markets, experienced brief periods of strained liquidity. Global stock indexes fell notably, credit spreads widened, and safe-haven assets appreciated substantially. However, broad-based market dislocations did not develop, apparently because market participants had prepared for a significant risk event. Market analysts also pointed to the communications and actions by advanced-economy authorities both before and after the vote as helping to reassure investors. Overall, negative sentiment surrounding the Brexit outcome early in the intermeeting period was subsequently alleviated by expectations for greater policy accommodation in some AFEs, some resolution of near-term political uncertainty in the United Kingdom,

and positive U.S. economic data releases. Nevertheless, several longer-term global risks related to Brexit remained.

Federal Reserve communications released in conjunction with the June FOMC meeting were interpreted by market participants as more accommodative than expected. The expected path of the federal funds rate implied by market quotes declined in response to the release of forecasts collected for the June Summary of Economic Projections, which showed larger-than-expected downward revisions to projections of the federal funds rate. The expected policy path implied by market quotes fell further in the aftermath of the Brexit vote, but it later retraced most of the earlier declines, supported by better-than-expected domestic data releases—particularly the employment and retail sales reports for June—as well as improved sentiment regarding the possible near-term implications of Brexit. The median respondents to the Desk's Survey of Primary Dealers and Survey of Market Participants saw one rate hike in 2016 as most likely, the same as in the June surveys.

The nominal Treasury yield curve flattened slightly, on net, over the intermeeting period. Longer-term nominal Treasury yields fell sharply in the two weeks following the Brexit vote. Market participants attributed the decline in Treasury yields to a variety of factors, including expectations for a more accommodative stance of monetary policy by major central banks; an intensification of demand for safe-haven assets immediately following the Brexit vote; and strong demand by global institutional investors for higher-yielding U.S. fixed-income assets following decreases in sovereign yields in Europe and Japan, in some cases further into negative territory. Most of the decline in nominal Treasury yields was reversed later in the period. The small net decline in longer-term nominal Treasury yields over the period was attributable to a comparable drop in real yields, as longer-term inflation compensation measures based on Treasury Inflation-Protected Securities and inflation swaps were little changed on net. Spreads of yields on agency mortgage-backed securities over yields on Treasury securities narrowed slightly.

Broad stock price indexes increased, on net, over the intermeeting period. One-month-ahead option-implied volatility on the S&P 500 index—the VIX—fell, returning to the lower end of its distribution of the past few years. U.S. bank stock prices dropped sharply after the Brexit vote but then retraced that decrease, buoyed by better-than-expected earnings reports from some of the largest domestic banks. Declines in European bank stock prices following the Brexit vote also reversed later in the intermeeting period. Spreads of yields on investment-grade corporate bonds over those on comparable-maturity Treasury securities ended the period somewhat lower, on net, and spreads on speculative-grade corporate bonds declined notably. Near-term forward spreads on speculative-grade issues dropped substantially more than their far-term forward counterparts, suggesting that the overall decline in speculative-grade spreads was due in part to a less negative credit outlook and not just an increase in investors' risk appetite.

Overall financing conditions for nonfinancial firms remained accommodative. Gross issuance of corporate bonds stayed robust in June, particularly in the investment-grade sector. Issuance slowed significantly in early July for both investment- and speculative-grade bonds, in part reflecting seasonal factors. The growth of commercial and industrial (C&I) lending on banks' books slowed in June, but expansion of such loans continued through early July. This pattern was consistent with the responses to the July 2016 Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS), in which modest net fractions of respondents indicated that they had tightened their C&I lending standards and experienced weaker demand for such loans during the second quarter.

On balance, the credit quality of nonfinancial corporations continued to weaken in recent months, although some indicators suggested that the pace of deterioration was subsiding. The net volume of bonds downgraded in the second quarter was notably smaller than in the previous quarter. Even so, default rates on bonds issued by nonfinancial corporations and expected year-ahead default rates for nonfinancial firms both remained elevated relative to the ranges that typically prevail during expansions.

Financing conditions for commercial real estate (CRE) stayed fairly accommodative, on balance, and bank lending in all major CRE categories was strong through June. Spreads on U.S. commercial mortgage-backed securities (CMBS) did not appear to have been affected by the Brexit vote. They remained elevated, however, a factor that likely contributed to depressed CMBS issuance so far this year. Meanwhile, CMBS delinquency rates edged up for the third consecutive month. A significant net fraction of respondents to the July SLOOS indicated that, dur-

ing the second quarter, they had tightened their CRE lending standards for construction and land development loans and loans secured by multifamily residential properties, and a moderate net fraction of respondents reported tightening their lending standards for loans secured by nonfarm nonresidential properties.

Credit conditions in municipal bond markets remained solid. Gross issuance of municipal bonds in June was strong, credit quality continued to be stable overall, and the ratio of yields on general obligation bonds to those on comparable-maturity Treasury securities was little changed on net. The default by Puerto Rico and the downgrade of the general obligation bonds of Illinois both appeared to have only a limited effect on the broader municipal bond market.

Financing conditions in the residential mortgage market became more accommodative, on balance, since the June FOMC meeting. Interest rates on 30-year fixed-rate mortgages decreased further, partly reflecting the declines in yields on Treasury securities. A number of large banks noted in the July SLOOS an easing of standards for home-purchase loans eligible for purchase by the government-sponsored enterprises (GSEs). Banks also reported a broad-based pickup in demand across most major categories of home-purchase loans. Indicators suggested a pickup in refinancing activity in response to the drop in mortgage rates.

Financing conditions in consumer credit markets were little changed and remained largely accommodative against a backdrop of stable credit performance across debt categories. Growth of auto loans remained robust even though a modest net fraction of respondents to the July SLOOS indicated that they had tightened their standards for such loans. Credit card balances continued to grow moderately on balance. Yield spreads for securities backed by credit card and auto loans over Treasury securities remained largely stable, and market participants reportedly expected asset-backed security issuance to pick up in the coming weeks.

As in the United States, global financial market developments during the intermeeting period were driven, in large part, by reactions to the U.K. referendum on EU membership on June 23 and to the release of U.S. economic data. Immediately after the Brexit vote, the British pound depreciated sharply against other major currencies, while the U.S. dollar and the Japanese yen strengthened on what appeared to be safe-haven flows. Prices of risky assets and advanced-economy bond yields also fell in response to the heightened uncertainty and expectations of slower economic growth. Later in the period, however, investors' concerns eased substantially on the resolution of some of the near-term political uncertainty in the United Kingdom, increased expectations for additional policy stimulus in Europe and Japan, and U.S. data on employment and retail sales in June that exceeded market expectations. Some AFE sovereign yields recovered partially from their post-Brexit lows, but U.K. long-term yields remained low on expectations of slower growth there and further monetary policy accommodation. Global equity indexes ended higher, on net, over the intermeeting period. However, European bank equities, especially those of Italian banks, underperformed, reflecting investor fears that lower interest rates will continue to weigh on profitability. Emerging market asset prices were generally resilient over the intermeeting period; the dollar was weaker against most emerging market currencies, and flows into emerging market assets surged. Although the Chinese renminbi depreciated against both the U.S. dollar and the broader currency basket referenced by the Chinese government, this development elicited little market reaction. The unsuccessful coup attempt in Turkey on July 15 left little imprint on global financial markets.

In its latest report on potential risks to the stability of the U.S. financial system, the staff continued to judge that vulnerabilities overall remained at a moderate level and noted that the financial system had been resilient to the Brexit vote. While vulnerabilities stemming from financial-sector leverage were assessed as still low, those from maturity and liquidity transformation were judged by the staff to be somewhat higher in the near term than in the previous assessment. Although upcoming regulatory changes were expected to improve the stability of money market funds in the longer run, the staff noted the potential for large withdrawals by investors in anticipation of those changes to lead to some disruptions in the short run. Vulnerabilities emanating from leverage in the nonfinancial private sector remained moderate: While business debt ratios stayed elevated, household debt-to-income ratios continued to inch down. Valuation pressures also remained at a moderate level. Although term premiums on Treasury securities became more deeply negative and CRE valuation pressures remained appreciable, corporate bond and equity risk premiums were unchanged on net.

Staff Economic Outlook

In the U.S. economic projection prepared by the staff for the July FOMC meeting, real GDP growth was estimated to have picked up in the second quarter, consistent with the forecast in June. However, the projected step-up in real GDP growth over the second half of this year was marked down a little, partly reflecting softer news on construction. The forecast for real GDP growth in 2017 and 2018 was little revised, as the positive effects of a slightly lower assumed path for interest rates and a stronger trajectory for household wealth were mostly offset by the restraint from a weaker outlook for foreign GDP growth and a slightly stronger path for the foreign exchange value of the dollar. The staff continued to forecast that real GDP would expand at a modestly faster pace than potential output in 2016 through 2018, supported primarily by increases in consumer spending and, to a lesser degree, by a projected pickup in business and residential investment. The unemployment rate was expected to remain flat over the second half of this year and then to gradually decline through the end of 2018. Over this period, the unemployment rate was projected to run somewhat below the staff's estimate of its longer-run natural rate.

The staff's forecast for consumer price inflation over the second half of 2016 was a little lower than in the previous projection, as recent declines in crude oil prices were expected to hold down consumer energy prices. Thereafter, the forecast for inflation was essentially unrevised. The staff continued to project that inflation would increase over the next several years, as energy prices and the prices of non-energy imports were expected to begin steadily rising this year and as resource utilization was expected to tighten further. However, inflation was still projected to be slightly below the Committee's longer-run objective of 2 percent in 2018.

The staff viewed the uncertainty around its July projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The risks to the forecast for real GDP were seen as tilted to the downside, reflecting the staff's assessment that both monetary and fiscal policy appeared to be better positioned to offset large positive shocks than adverse ones. In addition, the staff continued to see the risks to the forecast from developments abroad as skewed to the downside. Consistent with the downside risks to aggregate demand, the staff viewed the risks to its outlook for the unemployment rate as tilted to the upside. The risks to the projection for inflation were still judged as weighted to the downside, reflecting the possibility that longer-term inflation expectations may have edged lower.

Participants' Views on Current Conditions and the Economic Outlook

In their discussion of the economic situation and the outlook, meeting participants agreed that the information received over the intermeeting period indicated that the labor market had strengthened and that economic activity had been expanding at a moderate rate. Job gains were strong in June following weak growth in May. On balance, payrolls and other labor market indicators pointed to some increase in labor utilization in recent months. Household spending had been growing strongly, but business fixed investment had been soft. Inflation had continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation remained low; most survey-based measures of longer-run inflation expectations were little changed, on balance, in recent months. Domestic and global asset prices were volatile early in the intermeeting period following the vote by the United Kingdom to leave the EU, but they subsequently recovered their earlier declines, and, on net, U.S. financial conditions eased over the intermeeting period.

Participants generally indicated that their economic forecasts had changed little over the intermeeting period. They continued to anticipate that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market indicators would strengthen. Inflation was expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipated and the labor market strengthened further. Participants viewed the near-term risks to the U.S. economic outlook as having diminished. However, some noted that the Brexit vote had created uncertainty about the medium- to longer-run outlook for foreign economies that could affect economic and financial conditions in the United States. Participants generally agreed that the Committee should continue to closely monitor inflation indicators and global economic and financial developments.

Growth in consumer spending was estimated to have rebounded in the second quarter from the slow pace in the first quarter, as monthly gains in retail sales were strong through June. Sales of new motor vehicles remained at a high level, on average, in the second quarter, although sales appeared to be supported by substantial incentives for consumers and by business fleet purchases. With the second-quarter pickup in spending, real PCE appeared to have risen over the first half of the year at a rate consistent with the positive trends in fundamental determinants of household spending. Participants cited a number of factors that had likely been supporting household spending, including solid real income growth, gains in house and equity values, low gasoline prices, and favorable levels of consumer confidence.

Residential investment posted a strong increase in the first quarter of the year, but data on starts of new single-family homes indicated that outlays likely edged down in the second quarter. Data on permit issuance through June suggested that new-home building activity might rise only slowly in the near term. However, participants commented on a number of factors suggesting that the housing sector was likely to continue to improve, albeit gradually: Rising sales of existing homes, responses to the July SLOOS pointing to stronger demand for residential mortgage loans, and the steady increase in house prices were seen as evidence of rising demand. In addition, credit conditions remained favorable: Mortgage rates had fallen further, and the SLOOS reported easier terms for loans eligible for purchase by the GSEs. Moreover, several participants noted positive reports on residential construction activity from business contacts in their Districts, with a few suggesting that shortages of lots and skilled labor, rather than low demand, might be contributing to the recent slowing.

Business fixed investment appeared to have declined further during the second quarter, with broad-based weakness in equipment and another steep drop in drilling and mining structures. Participants noted that the recent rise in energy prices had spurred an uptick in drilling activity, suggesting that if energy prices firm over time as expected, the drag on investment from declining energy-sector activity should diminish. In addition, it was pointed out that the upward trend in investment in intellectual property products was a positive in the outlook for investment. Several participants commented on favorable reports from their business contacts on commercial construction. Based on conversations with their contacts, participants discussed a number of factors that may have been contributing to businesses' cautious approach to investment spending, including concern about the likelihood of an extended period of slow economic growth, both in the United States and abroad; narrowing profit margins; and uncertainty about prospects for government policies.

In their discussion of business conditions in their Districts, many participants reported that their contacts anticipated that the U.K. referendum would have little effect on their businesses. Activity in the manufacturing sector continued to be mixed: Several participants indicated that manufacturing in their Districts was still quite weak, while several others reported that their Banks' June surveys showed that manufacturing activity had picked up or stabilized. The available surveys indicated that service-sector activity continued to expand. However, economic activity continued to be depressed in areas affected by the downturn in the energy sector and falling agricultural commodity prices, although several participants noted that the recent firming in crude oil prices had led to a modest increase in drilling activity. Businesses in the energy industry were reported to be highly leveraged, and additional restructurings and bankruptcies were seen as likely. Farm loans continued to increase, and banks had seen some rise in delinquencies on such credits.

The labor market report for June appeared to confirm participants' earlier assessments that the small gain in payroll employment in May likely had substantially understated its underlying pace. The sharp rebound in payroll employment gains put the average monthly increase in jobs over the three months ending in June at about 150,000. Although this pace was noticeably slower than the average rate during 2015 and the first quarter of 2016, many participants viewed it as consistent with continued strengthening in labor market conditions and with a further gradual decline in the unemployment rate. The unemployment rate rose in June after having declined in May, but the labor force participation rate ticked up, the rate of involuntary part-time employment more than reversed its increase in May, and the broader U-6 measure of labor underutilization continued to move down. Some participants noted that recent signs of a moderate step-up in wage increases provided further evidence of improving labor market conditions. Although most participants judged that labor market conditions were at or approaching those consistent with maximum employment, their views on the implications for progress on the Committee's policy objectives varied. Some of them believed that a conver-

gence to a more moderate, sustainable pace of job gains would soon be necessary to prevent an unwanted increase in inflationary pressures. Other participants continued to judge that labor utilization remained below that consistent with the Committee's maximum-employment objective. These participants noted that progress in reducing slack in the labor market had slowed, citing relatively little change, on net, since the beginning of the year in the unemployment rate, the number of persons working part time for economic reasons, the employment-to-population ratio, labor force participation, or rates of job openings and quits.

Available information on inflation suggested that the change in headline PCE prices for the 12 months ending in June continued to run well below the Committee's longer-run objective and that the 12-month change in core PCE prices likely remained near its May level of 1.6 percent. On a 12-month-change basis, core PCE inflation had risen from 1.3 percent a year earlier, but it continued to be held down by the pass-through of earlier declines in energy prices and by soft prices of imports. Core PCE inflation over the first half of 2016 was expected to have been close to an annual rate of 2 percent, but it was noted that some of the increase likely reflected transitory effects that would be in part reversed during the second half of the year. Longer-run inflation expectations, as reported in the Michigan survey, were little changed in June and early July. The reading from the Federal Reserve Bank of New York's Survey of Consumer Expectations for inflation three years ahead moved up further in June, returning to near its level of a year earlier. Most market-based measures of longer-run inflation compensation remained low.

Participants also discussed recent developments in financial markets and issues related to financial stability. The vote by the United Kingdom to leave the EU led to sharp declines in risk asset prices and a spike in volatility in financial markets early in the intermeeting period. But those price moves were subsequently reversed, likely in response to expectations for policy actions by some major central banks, the resolution of some of the political uncertainty in the United Kingdom, and better-than-expected data on U.S. economic activity. Financial markets and institutions were generally resilient in the aftermath of the vote, apparently reflecting in part advance preparations by key market participants and communications from advanced-economy central banks before and after the vote that they would take the steps necessary to provide liquidity to support the orderly functioning of markets. Overall, U.S. financial conditions eased during the intermeeting period: Major equity indexes rose, longer-term interest rates fell, credit spreads narrowed, and the broad index of the foreign exchange value of the dollar was little changed.

In the discussion of developments related to financial stability, it was noted that while the capital and liquidity positions of U.S. banks remained strong, European banks, particularly Italian banks, were under pressure—as evidenced by the sharp declines in their equity prices—from a weaker economic outlook for that region, thin interest margins, and concerns about the quality of their loan portfolios. In U.S. markets, overall financial vulnerabilities were judged to remain moderate, as nonfinancial debt had continued to increase roughly in line with nominal GDP and valuation pressures were not widespread. However, during the discussion, several participants commented on a few developments, including potential overvaluation in the market for CRE, the elevated level of equity values relative to expected earnings, and the incentives for investors to reach for yield in an environment of continued low interest rates. Regarding CRE, it was noted that the recent SLOOS reported that a significant fraction of banks tightened lending standards in the first and second quarters of the year and that overvaluation did not appear to be widespread across markets. It was also pointed out that investors potentially were becoming more comfortable locking in current yields in an environment in which low interest rates were expected to persist, rather than engaging in the type of speculative behavior that could pose financial stability concerns.

Participants discussed the implications of recent economic and financial developments for the economic outlook and the risks attending the outlook. They indicated that their forecasts for economic growth, the labor market, and inflation had changed little over the intermeeting period. Regarding the near-term outlook, participants generally agreed that the prompt recovery in financial markets following the Brexit vote and the pickup in job gains in June had alleviated two key uncertainties about the outlook that they had faced at the June meeting. Brexit now appeared likely to have little effect on the U.S. economic outlook in the near term. Moreover, the employment report for June, along with other recent information that suggested that real GDP rose at a moderate rate in the second quarter, provided some reassurance that a sharp slowdown in employment

and economic activity was not under way. Participants judged that the incoming information, on the whole, had lowered the downside risks to the near-term economic outlook. Most participants anticipated that economic growth would move up to a rate somewhat above its longer-run trend during the second half of 2016 and that the labor market would strengthen further. However, several noted that while the outlook for consumer spending remained positive, continued weakness in business investment and the possibility of slower improvement in the housing sector posed some downside risks to their forecasts.

Although the near-term risks to the outlook associated with Brexit had diminished over the intermeeting period, participants generally agreed that they should continue to closely monitor economic and financial developments abroad. As a consequence of Brexit, economic growth in the United Kingdom and, to a lesser extent, in the euro area would likely be slower than previously anticipated. Moreover, the exit process was expected to entail an extended period of negotiations that, in the view of most participants, had the potential to increase the political and economic uncertainties in that region; several also saw the possibility that complications during the exit process could result in spells of elevated volatility in global financial markets. Some participants noted that the weak capital positions and high levels of nonperforming loans at some European banks could also weigh on economic growth in the region. In addition to the situation in Europe, some participants continued to see a number of other downside risks to the medium-term economic and financial outlook from abroad, including weakness in the global economy more broadly, uncertainty about the outlook for China's foreign exchange policy, and the implications of China's run-up in debt to support its economy. A few others noted uncertainty about the strength of domestic economic activity going forward. However, some other participants indicated that they did not view the uncertainties attending the outlook to be unusually elevated and continued to see the risks to their economic forecasts as balanced.

In discussing the outlook for the labor market, most participants viewed some further strengthening in labor market indicators as consistent with achieving the Committee's maximum-employment objective. With inflation still below the Committee's longer-run objective and likely to continue to respond only slowly to somewhat tighter labor markets, most also saw relatively low risk that a further gradual strengthening of the labor market would generate an unwanted increase in inflationary pressures. Nevertheless, a few participants continued to caution about the risks to the inflation outlook from overshooting the natural rate of unemployment. Some indicated that a step-down in monthly job gains seemed appropriate as labor market conditions approached those consistent with the Committee's maximum-employment objective and that a more moderate pace of hiring could still be consistent with further increases in labor utilization. However, several others were concerned that if labor market slack diminished more slowly than they had previously anticipated, progress on the Committee's maximum-employment and inflation objectives could be delayed.

Regarding the outlook for inflation, incoming information appeared to be broadly in line with most participants' earlier expectations that inflation would gradually rise to 2 percent over the medium term. Most noted that the firming in various indicators of core inflation over the past year, together with signs that the direct and indirect effects of earlier declines in energy prices and prices of non-oil imports had begun to fade, provided support for their forecasts. Several added that recent indications of a pickup in wage increases were evidence of the effect of tightening resource utilization. However, other participants expressed greater uncertainty about the trajectory of inflation. They saw little evidence that inflation was responding much to higher levels of resource utilization and suggested that the natural rate of unemployment, and the responsiveness of inflation to labor market conditions, may be lower than most current estimates. Several viewed the risks to their inflation forecasts as weighted to the downside, particularly in light of the still-low level of measures of longer-run inflation expectations and inflation compensation and the likelihood that disinflationary pressures from abroad would persist.

Against the backdrop of their views of the economic outlook, participants discussed the conditions that could warrant taking another step in removing monetary policy accommodation. With inflation continuing to run below the Committee's 2 percent objective, many judged that it was appropriate to wait for additional information that would allow them to evaluate the underlying momentum in economic activity and the labor market and whether inflation was continuing to rise gradually to 2 percent as expected. Several suggested that the Committee would likely have ample time to react if inflation rose more quickly than they currently anticipated, and they preferred to defer another increase in the federal funds rate until

they were more confident that inflation was moving closer to 2 percent on a sustained basis. In addition, although near-term downside risks to the outlook had diminished over the intermeeting period, some participants stressed that the Committee needed to consider the constraints on the conduct of monetary policy associated with proximity to the effective lower bound on short-term interest rates. These participants concluded that the Committee should wait to take another step in removing accommodation until the data on economic activity provided a greater level of confidence that economic growth was strong enough to withstand a possible downward shock to demand. However, some other participants viewed recent economic developments as indicating that labor market conditions were at or close to those consistent with maximum employment and expected that the recent progress in reaching the Committee's inflation objective would continue, even with further steps to gradually remove monetary policy accommodation. Given their economic outlook, they judged that another increase in the federal funds rate was or would soon be warranted, with a couple of them advocating an increase at this meeting. A few participants pointed out that various benchmarks for assessing the appropriate stance of monetary policy supported taking another step in removing policy accommodation. A few also emphasized the risk to the economic expansion that would be associated with allowing labor market conditions to tighten to an extent that could lead to an unwanted buildup of inflation pressures and thus eventually require a rapid increase in the federal funds rate. In addition, several expressed concern that an extended period of low interest rates risked intensifying incentives for investors to reach for yield and could lead to the misallocation of capital and mispricing of risk, with possible adverse consequences for financial stability.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that the information received since the Committee met in June indicated that the labor market had strengthened and that economic activity had been expanding at a moderate rate. They noted that the most recent employment report showed that job gains had been strong in June following weak growth in May, and, on balance, payrolls and other labor market indicators pointed to some increase in labor utilization in recent months. Members agreed that household spending had been growing strongly but business fixed investment had been soft. Inflation continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation remained low over the intermeeting period, and most survey-based measures of longer-term inflation expectations were, on balance, little changed.

With respect to the economic outlook and its implications for monetary policy, members continued to expect that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market indicators would strengthen. Members saw developments during the intermeeting period as reducing near-term uncertainty along two dimensions discussed at the June meeting. The first was about the outlook for the labor market. They agreed that the strong rebound in job gains in June—together with a rise in the labor force participation rate and a decline in the number of individuals who were working part time for economic reasons—suggested that, despite the very soft employment report for May, labor market conditions remained solid and slack had continued to diminish. Many members commented on the somewhat slower average pace of improvement in labor market conditions in recent months. Several of these members observed that the recent pace of job gains remained well above that consistent with stable rates of labor utilization. A couple of members indicated that, in light of their judgment that labor market conditions were at or close to the Committee's objectives, some moderation in employment gains was to be expected. In contrast, several other members expressed concern about the likelihood of a further reduction in the pace of job gains, and it was noted that if that slowing turned out to be persistent, the case for increasing the target range for the federal funds rate in the near term would be less compelling.

A second source of near-term uncertainty that members had discussed at the June meeting pertained to the potential economic and financial market consequences of the U.K. referendum on membership in the EU. At the current meeting, most members pointed to the quick recovery of financial market conditions since the "leave" vote as an encouraging sign of resilience in global financial markets that helped reduce near-term uncertainty about the outlook for the U.S. economy.

While members judged that near-term risks to the domestic outlook had diminished, some noted that the U.K. vote, along with other developments

abroad, still imparted significant uncertainty to the medium- to longer-term outlook for foreign economies, with possible consequences for the U.S. outlook. As a result, members agreed to indicate that they would continue to closely monitor global economic and financial developments.

Members continued to expect inflation to remain low in the near term, in part because of earlier declines in energy prices, but most anticipated that inflation would rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipated and the labor market strengthened further. Nonetheless, in light of the current shortfall of inflation from 2 percent, members agreed that they would continue to carefully monitor actual and expected progress toward the Committee's inflation goal.

After assessing the outlook for economic activity, the labor market, and inflation, as well as the risks around that outlook, members decided to maintain the target range for the federal funds rate at ¼ to ½ percent at this meeting. Members generally agreed that, before taking another step in removing monetary accommodation, it was prudent to accumulate more data in order to gauge the underlying momentum in the labor market and economic activity. A couple of members preferred also to wait for more evidence that inflation would rise to 2 percent on a sustained basis. Some other members anticipated that economic conditions would soon warrant taking another step in removing policy accommodation. One member preferred to raise the target range for the federal funds rate at the current meeting, citing the easing of financial conditions since the U.K. referendum, the return to trend economic growth, solid job growth, and inflation moving toward 2 percent.

Members again agreed that, in determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee would assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. They noted that this assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee expected that economic conditions would evolve in a manner that would warrant only gradual increases in the federal funds rate, and that the federal funds rate was likely to remain, for some time, below levels that are expected to prevail in the longer run. However, members emphasized that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming data. In that regard, members judged it appropriate to continue to leave their policy options open and maintain the flexibility to adjust the stance of policy based on incoming information and its implications for the Committee's assessment of the outlook for economic activity, the labor market, and inflation, as well as the risks to the outlook. Most members noted that effective communications from the Committee would help the public understand how monetary policy might respond to incoming data and developments.

The Committee also decided to maintain its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipated doing so until normalization of the level of the federal funds rate is well under way. Members noted that this policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective July 28, 2016, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of ¼ to ½ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 0.25 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed

securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

"Information received since the Federal Open Market Committee met in June indicates that the labor market strengthened and that economic activity has been expanding at a moderate rate. Job gains were strong in June following weak growth in May. On balance, payrolls and other labor market indicators point to some increase in labor utilization in recent months. Household spending has been growing strongly but business fixed investment has been soft. Inflation has continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation remain low; most survey-based measures of longer-term inflation expectations are little changed, on balance, in recent months.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee currently expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market indicators will strengthen. Inflation is expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipate and the labor market strengthens further. Near-term risks to the economic outlook have diminished. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

Against this backdrop, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent. The stance of monetary policy remains accommodative, thereby supporting further improvement in labor market conditions and a return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions."

Voting for this action: Janet L. Yellen, William C. Dudley, Lael Brainard, James Bullard, Stanley Fischer, Loretta J. Mester, Jerome H. Powell, Eric Rosengren, and Daniel K. Tarullo.

Voting against this action: Esther L. George.

Ms. George dissented because she believed that a 25 basis point increase in the target range for the federal funds rate was appropriate at this meeting. Information available since the June FOMC meeting showed solid employment growth, economic growth near its trend, and inflation outcomes aligning with the Committee's objective. Domestic financial conditions had eased since the U.K. referendum. She believed that monetary policy should respond to these developments by gradually removing accommo-

dation, consistent with the prescriptions of several frameworks for assessing the appropriate stance of monetary policy. She believed that by waiting longer to adjust the policy stance and deviating from the appropriate path to policy normalization, the Committee risked eroding the credibility of its policy communications.

Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors took no action to change the interest rates on reserves or discount rates.

> Secretary's note: The following statement regarding the June 14–15, 2016, FOMC meeting was inadvertently omitted from minutes of that meeting: "Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors took no action to change the interest rates on reserves or discount rates."

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, September 20–21, 2016. The meeting adjourned at 10:30 a.m. on July 27, 2016.

Notation Vote

By notation vote completed on July 5, 2016, the Committee unanimously approved the minutes of the Committee meeting held on June 14–15, 2016.

Brian F. Madigan
Secretary

Meeting Held on September 20–21, 2016

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, September 20, 2016, at 1:00 p.m. and continued on Wednesday, September 21, 2016, at 9:00 a.m.[1]

Present

Janet L. Yellen
Chair

William C. Dudley
Vice Chairman

Lael Brainard

James Bullard

Stanley Fischer

Esther L. George

Loretta J. Mester

Jerome H. Powell

Eric Rosengren

Daniel K. Tarullo

Charles L. Evans, Patrick Harker, Robert S. Kaplan, Neel Kashkari, and Michael Strine
Alternate Members of the Federal Open Market Committee

Jeffrey M. Lacker, Dennis P. Lockhart, and John C. Williams
Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco, respectively

Brian F. Madigan
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Michael Held
Deputy General Counsel

Richard M. Ashton
Assistant General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

Thomas A. Connors, Troy Davig, Michael P. Leahy, Stephen A. Meyer, Ellis W. Tallman, Geoffrey Tootell, and William Wascher
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Robert deV. Frierson
Secretary of the Board, Office of the Secretary, Board of Governors

Matthew J. Eichner[2]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

James A. Clouse
Deputy Director, Division of Monetary Affairs, Board of Governors

Maryann F. Hunter
Deputy Director, Division of Banking Supervision and Regulation, Board of Governors

David Bowman, Andrew Figura, Joseph W. Gruber, Ann McKeehan, and David Reifschneider
Special Advisers to the Board, Office of Board Members, Board of Governors

Trevor A. Reeve
Special Adviser to the Chair, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Eric M. Engen, Joshua Gallin, and Michael G. Palumbo
Senior Associate Directors, Division of Research and Statistics, Board of Governors

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[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

[2] Attended through the discussion on financial developments and open market operations.

Michael T. Kiley
Senior Associate Director, Division of Financial Stability, and
Senior Adviser, Division of Research and Statistics, Board of Governors

Antulio N. Bomfim, Ellen E. Meade, and Joyce K. Zickler
Senior Advisers, Division of Monetary Affairs, Board of Governors

David López-Salido
Associate Director, Division of Monetary Affairs, Board of Governors

Elizabeth Klee and Jason Wu
Assistant Directors, Division of Monetary Affairs, Board of Governors

Shane M. Sherlund
Assistant Director, Division of Research and Statistics, Board of Governors

Paul R. Wood
Assistant Director, Division of International Finance, Board of Governors

Penelope A. Beattie[3]
Assistant to the Secretary, Office of the Secretary, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Sophia H. Allison[2]
Special Counsel, Legal Division, Board of Governors

Jonathan E. Goldberg and Francisco Vazquez-Grande
Senior Economists, Division of Monetary Affairs, Board of Governors

Paul Dozier[2]
Senior Financial Analyst, Division of International Finance, Board of Governors

Randall A. Williams
Information Manager, Division of Monetary Affairs, Board of Governors

Mark A. Gould
First Vice President, Federal Reserve Bank of San Francisco

David Altig, Kartik B. Athreya, and Daniel G. Sullivan
Executive Vice Presidents, Federal Reserve Banks of Atlanta, Richmond, and Chicago, respectively

Mary Daly, Evan F. Koenig, Susan McLaughlin,[2] **and Paolo A. Pesenti**
Senior Vice Presidents, Federal Reserve Banks of San Francisco, Dallas, New York, and New York, respectively

David Andolfatto
Vice President, Federal Reserve Bank of St. Louis

Thomas D. Tallarini, Jr.
Assistant Vice President, Federal Reserve Bank of Minneapolis

Satyajit Chatterjee
Senior Economic Advisor, Federal Reserve Bank of Philadelphia

Cindy Hull[2]
Markets Officer, Federal Reserve Bank of New York

Selection of Committee Officer

By unanimous vote, the Committee selected Michael Held to serve as deputy general counsel, effective September 20, 2016, until the selection of his successor at the first regularly scheduled meeting of the Committee in 2017.

Revisions to Documents Governing Foreign Currency Operations

The manager of the System Open Market Account (SOMA) briefed the Committee on a staff proposal to revise the documents governing the System's foreign currency operations, including the Authorization for Foreign Currency Operations (Foreign Authorization), the Foreign Currency Directive (Foreign Directive), and the Procedural Instructions with Respect to Foreign Currency Operations (Procedural Instructions). The objectives of the proposal were to simplify the organization of the documents, to better reflect the current operating environment, and to clarify guidance provided to the Federal Reserve Bank selected by the Committee to execute open market transactions (Selected Bank). The staff proposed incorporating the material in the Foreign Authorization, Foreign Directive, and Procedural Instructions into a new authorization and directive that would parallel the domestic authorization and directive; the Procedural Instructions document would no longer be necessary. The proposed Foreign Authorization was structured by operation type, including standalone spot and forward transactions; warehousing of funds for the Exchange Stabilization Fund; reciprocal currency arrangements, and standing dollar and foreign currency liquidity swaps; and

[3] Attended Tuesday session only.

foreign currency holdings. Proposed substantive changes to procedures and governance included the removal of the Selected Bank's ability to independently decide, within limits, to enter into standalone spot and forward transactions, the addition of a provision for the Foreign Currency Subcommittee (Subcommittee) to give additional guidance to the Selected Bank regarding management of SOMA foreign currency holdings, and the incorporation of procedures that would allow decisions to be made promptly under circumstances in which the normal procedures would not be feasible. Additionally, the definition of and provisions governing the Subcommittee were removed from the Foreign Authorization and incorporated into the Committee's Rules of Procedure and Rules of Organization, as appropriate. By unanimous vote, the proposed Foreign Authorization, Foreign Directive, Rules of Organization, and Rules of Procedure were approved, and the Procedural Instructions were rescinded.[4]

Authorization for Foreign Currency Operations (As Amended Effective September 20, 2016)

In General

1. The Federal Open Market Committee (the "Committee") authorizes the Federal Reserve Bank selected by the Committee (the "Selected Bank") to execute open market transactions for the System Open Market Account as provided in this Authorization, to the extent necessary to carry out any foreign currency directive of the Committee:

   A. To purchase and sell foreign currencies (also known as cable transfers) at home and abroad in the open market, including with the United States Treasury, with foreign monetary authorities, with the Bank for International Settlements, and with other entities in the open market. This authorization to purchase and sell foreign currencies encompasses purchases and sales through standalone spot or forward transactions and through foreign exchange swap transactions. For purposes of this Authorization, foreign exchange swap transactions are: swap transactions with the United States Treasury (also known as warehousing transactions), swap transactions with other central banks under reciprocal currency arrangements, swap transactions with other central banks under standing dollar liquidity and foreign currency liquidity swap arrangements, and swap transactions with other entities in the open market.

   B. To hold balances of, and to have outstanding forward contracts to receive or to deliver, foreign currencies.

2. All transactions in foreign currencies undertaken pursuant to paragraph 1 above shall, unless otherwise authorized by the Committee, be conducted:

   A. In a manner consistent with the obligations regarding exchange arrangements under Article IV of the Articles of Agreement of the International Monetary Fund (IMF).[5]

   B. In close and continuous cooperation and consultation, as appropriate, with the United States Treasury.

   C. In consultation, as appropriate, with foreign monetary authorities, foreign central banks, and international monetary institutions.

   D. At prevailing market rates.

Standalone Spot and Forward Transactions

3. For any operation that involves standalone spot or forward transactions in foreign currencies:

   A. Approval of such operation is required as follows:

      i. The Committee must direct the Selected Bank in advance to execute the operation if it would result in the overall volume of standalone spot and forward transactions in foreign currencies, as defined in paragraph 3.C of this Authorization, exceed-

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[4] The approved Foreign Authorization and Foreign Directive are included in these minutes. The approved Rules of Organization and Rules of Procedure, as well as other Committee organizational documents, are available at www.federalreserve.gov/monetarypolicy/rules_authorizations.htm.

[5] In general, as specified in Article IV, each member of the IMF undertakes to collaborate with the IMF and other members to assure orderly exchange arrangements and to promote a stable system of exchange rates. These obligations include seeking to direct the member's economic and financial policies toward the objective of fostering orderly economic growth with reasonable price stability. These obligations also include avoiding manipulating exchange rates or the international monetary system in such a way that would impede effective balance of payments adjustment or to give an unfair competitive advantage over other members.

ing $5 billion since the close of the most recent regular meeting of the Committee. The Foreign Currency Subcommittee (the "Subcommittee") must direct the Selected Bank in advance to execute the operation if the Subcommittee believes that consultation with the Committee is not feasible in the time available.

ii. The Committee authorizes the Subcommittee to direct the Selected Bank in advance to execute the operation if it would result in the overall volume of standalone spot and forward transactions in foreign currencies, as defined in paragraph 3.C of this Authorization, totaling $5 billion or less since the close of the most recent regular meeting of the Committee.

B. Such an operation also shall be:

i. Generally directed at countering disorderly market conditions; or

ii. Undertaken to adjust System balances in light of probable future needs for currencies; or

iii. Conducted for such other purposes as may be determined by the Committee.

C. For purposes of this Authorization, the overall volume of standalone spot and forward transactions in foreign currencies is defined as the sum (disregarding signs) of the dollar values of individual foreign currencies purchased and sold, valued at the time of the transaction.

Warehousing

4. The Committee authorizes the Selected Bank, with the prior approval of the Subcommittee and at the request of the United States Treasury, to conduct swap transactions with the United States Exchange Stabilization Fund established by section 10 of the Gold Reserve Act of 1934 under agreements in which the Selected Bank purchases foreign currencies from the Exchange Stabilization Fund and the Exchange Stabilization Fund repurchases the foreign currencies from the Selected Bank at a later date (such purchases and sales also known as warehousing).

Reciprocal Currency Arrangements, and Standing Dollar and Foreign Currency Liquidity Swaps

5. The Committee authorizes the Selected Bank to maintain reciprocal currency arrangements established under the North American Framework Agreement, standing dollar liquidity swap arrangements, and standing foreign currency liquidity swap arrangements as provided in this Authorization and to the extent necessary to carry out any foreign currency directive of the Committee.

A. For reciprocal currency arrangements all drawings must be approved in advance by the Committee (or by the Subcommittee, if the Subcommittee believes that consultation with the Committee is not feasible in the time available).

B. For standing dollar liquidity swap arrangements all drawings must be approved in advance by the Chairman. The Chairman may approve a schedule of potential drawings, and may delegate to the manager, System Open Market Account, the authority to approve individual drawings that occur according to the schedule approved by the Chairman.

C. For standing foreign currency liquidity swap arrangements all drawings must be approved in advance by the Committee (or by the Subcommittee, if the Subcommittee believes that consultation with the Committee is not feasible in the time available).

D. Operations involving standing dollar liquidity swap arrangements and standing foreign currency liquidity swap arrangements shall generally be directed at countering strains in financial markets in the United States or abroad, or reducing the risk that they could emerge, so as to mitigate their effects on economic and financial conditions in the United States.

E. For reciprocal currency arrangements, standing dollar liquidity swap arrangements, and

standing foreign currency liquidity swap arrangements:

i. All arrangements are subject to annual review and approval by the Committee;

ii. Any new arrangements must be approved by the Committee; and

iii. Any changes in the terms of existing arrangements must be approved in advance by the Chairman. The Chairman shall keep the Committee informed of any changes in terms, and the terms shall be consistent with principles discussed with and guidance provided by the Committee.

Other Operations in Foreign Currencies

6. Any other operations in foreign currencies for which governance is not otherwise specified in this Authorization (such as foreign exchange swap transactions with private-sector counterparties) must be authorized and directed in advance by the Committee.

Foreign Currency Holdings

7. The Committee authorizes the Selected Bank to hold foreign currencies for the System Open Market Account in accounts maintained at foreign central banks, the Bank for International Settlements, and such other foreign institutions as approved by the Board of Governors under Section 214.5 of Regulation N, to the extent necessary to carry out any foreign currency directive of the Committee.

   A. The Selected Bank shall manage all holdings of foreign currencies for the System Open Market Account:

   i. Primarily, to ensure sufficient liquidity to enable the Selected Bank to conduct foreign currency operations as directed by the Committee;

   ii. Secondarily, to maintain a high degree of safety;

   iii. Subject to paragraphs 7.A.i and 7.A.ii, to provide the highest rate of return possible in each currency; and

   iv. To achieve such other objectives as may be authorized by the Committee.

   B. The Selected Bank may manage such foreign currency holdings by:

   i. Purchasing and selling obligations of, or fully guaranteed as to principal and interest by, a foreign government or agency thereof ("Permitted Foreign Securities") through outright purchases and sales;

   ii. Purchasing Permitted Foreign Securities under agreements for repurchase of such Permitted Foreign Securities and selling such securities under agreements for the resale of such securities; and

   iii. Managing balances in various time and other deposit accounts at foreign institutions approved by the Board of Governors under Regulation N.

   C. The Subcommittee, in consultation with the Committee, may provide additional instructions to the Selected Bank regarding holdings of foreign currencies.

Additional Matters

8. The Committee authorizes the Chairman:

   A. With the prior approval of the Committee, to enter into any needed agreement or understanding with the Secretary of the United States Treasury about the division of responsibility for foreign currency operations between the System and the United States Treasury;

   B. To advise the Secretary of the United States Treasury concerning System foreign currency operations, and to consult with the Secretary on policy matters relating to foreign currency operations;

   C. To designate Federal Reserve System persons authorized to communicate with the United States Treasury concerning System Open Market Account foreign currency operations; and

   D. From time to time, to transmit appropriate reports and information to the National Advisory Council on International Monetary and Financial Policies.

9. The Committee authorizes the Selected Bank to undertake transactions of the type described in this Authorization, and foreign exchange and investment transactions that it may be otherwise authorized to undertake, from time to time for the purpose of testing operational readiness. The aggregate amount of such transactions shall not exceed $2.5 billion per calendar year. These transactions shall be conducted with prior notice to the Committee.

10. All Federal Reserve banks shall participate in the foreign currency operations for System Open Market Account in accordance with paragraph 3G(1) of the Board of Governors' Statement of Procedure with Respect to Foreign Relationships of Federal Reserve Banks dated January 1, 1944.

11. Any authority of the Subcommittee pursuant to this Authorization may be exercised by the Chairman if the Chairman believes that consultation with the Subcommittee is not feasible in the time available. The Chairman shall promptly report to the Subcommittee any action approved by the Chairman pursuant to this paragraph.

12. The Committee authorizes the Chairman, in exceptional circumstances where it would not be feasible to convene the Committee, to foster the Committee's objectives by instructing the Selected Bank to engage in foreign currency operations not otherwise authorized pursuant to this Authorization. Any such action shall be made in the context of the Committee's discussion and decisions regarding foreign currency operations. The Chairman, whenever feasible, will consult with the Committee before making any instruction under this paragraph.

Foreign Currency Directive (As Amended Effective September 20, 2016)

1. The Committee directs the Federal Reserve Bank selected by the Committee (the "Selected Bank") to execute open market transactions, for the System Open Market Account, in accordance with the provisions of the Authorization for Foreign Currency Operations (the "Authorization") and subject to the limits in this Directive.

2. The Committee directs the Selected Bank to execute warehousing transactions, if so requested by the United States Treasury and if approved by the Foreign Currency Subcommittee (the "Subcommittee"), subject to the limitation that the outstanding balance of United States dollars provided to the United States Treasury as a result of these transactions not at any time exceed $5 billion.

3. The Committee directs the Selected Bank to maintain, for the System Open Market Account:

   A. Reciprocal currency arrangements with the following foreign central banks:

Foreign central bank	Maximum amount (millions of dollars or equivalent)
Bank of Canada	2,000
Bank of Mexico	3,000

   B. Standing dollar liquidity swap arrangements with the following foreign central banks:

   Bank of Canada
   Bank of England
   Bank of Japan
   European Central Bank
   Swiss National Bank

   C. Standing foreign currency liquidity swap arrangements with the following foreign central banks:

   Bank of Canada
   Bank of England
   Bank of Japan
   European Central Bank
   Swiss National Bank

4. The Committee directs the Selected Bank to hold and to invest foreign currencies in the portfolio in accordance with the provisions of paragraph 7 of the Authorization.

5. The Committee directs the Selected Bank to report to the Committee, at each regular meeting of the Committee, on transactions undertaken pursuant to paragraphs 1 and 6 of the Authorization. The Selected Bank is also directed to provide quarterly reports to the Committee regarding the management of the foreign currency holdings pursuant to paragraph 7 of the Authorization.

6. The Committee directs the Selected Bank to conduct testing of transactions for the purpose of

operational readiness in accordance with the provisions of paragraph 9 of the Authorization.

Developments in Financial Markets and Open Market Operations

The manager reported on developments in financial markets during the period since the Committee met on July 26–27, 2016. Over much of the period, financial market volatility was relatively low, but volatility increased somewhat in the last couple of weeks of the period amid shifting views among market participants about potential monetary policy actions by the Federal Reserve and foreign central banks. The deputy manager followed with a briefing on open market operations and developments in money markets, including investment flows and changes in market interest rates in anticipation of the upcoming implementation of reforms to the money market fund (MMF) industry. Usage of the System's overnight reverse repurchase agreement facility increased modestly in the most recent intermeeting period. Federal funds generally continued to trade close to the middle of the FOMC's target range of ¼ to ½ percent.

The Committee was also briefed on planned revisions to the policies of the Open Market Desk on counterparties for domestic and foreign open market operations. The proposal was intended in part to create a single unified framework for the management of counterparties and to increase the transparency of the Desk's counterparty policies. The Committee indicated its general support for the proposal. Desk staff anticipated that the revisions would be published later this year.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the September 20–21 meeting indicated that labor market conditions strengthened in recent months and that real gross domestic product (GDP) was increasing at a faster pace in the third quarter than in the first half of the year. Consumer price inflation continued to run below the Committee's longer-run objective of 2 percent, restrained in part by earlier decreases in energy prices and in prices of non-energy imports. Survey-based measures of longer-run inflation expectations were little changed, on balance, while market-based measures of inflation compensation remained low.

Total nonfarm payroll employment expanded strongly, on average, in July and August. The unemployment rate remained at 4.9 percent in recent months. Both the labor force participation rate and the employment-to-population ratio had edged up since June. The share of workers employed part time for economic reasons was little changed on balance. The rates of private-sector job openings and of hires increased over June and July, and the rate of quits was unchanged. The four-week moving average of initial claims for unemployment insurance benefits continued to be low. Labor productivity in the business sector declined slightly over the four quarters ending in the second quarter of 2016. Measures of labor compensation continued to rise at a moderate pace. Compensation per hour in the business sector rose 2 percent over the four quarters ending in the second quarter, the employment cost index for private workers increased 2½ percent over the 12 months ending in June, and average hourly earnings for all employees increased 2½ percent over the 12 months ending in August.

The unemployment rates for African Americans and for Hispanics remained above the rate for whites, although the differentials in jobless rates across these groups were similar to those before the most recent recession. The employment-to-population ratio for individuals aged 25 to 64 continued to be higher for whites than for African Americans and for Hispanics.

Total industrial production rose slightly, on net, in July and August. The output of the mining sector increased since April after having trended down from late 2014. Manufacturing production was unchanged, on balance, since June and had generally been moving sideways since the end of 2014, as weak export demand and spillovers from the decline in crude oil and natural gas drilling weighed on industrial activity. Although automakers' assembly schedules pointed to some increase in motor vehicle production in the near term, broader indicators of manufacturing production, such as new orders diffusion indexes from national and regional manufacturing surveys, suggested that factory output would remain on a flat trajectory in the coming months.

Real personal consumption expenditures (PCE) appeared to be increasing solidly, on net, in the third quarter. Real PCE rose strongly in July, but the com-

ponents of the nominal retail sales data used by the Bureau of Economic Analysis to construct its estimate of PCE were flat in August and the pace of light motor vehicle sales softened. Recent readings on key factors that influence consumer spending were consistent with solid real PCE growth for the third quarter as a whole, including continued gains in employment, real disposable personal income, and households' net worth. In addition, consumer sentiment as measured by the University of Michigan Surveys of Consumers remained relatively upbeat through early September.

Recent information on housing activity suggested that real residential investment spending continued to be soft in the third quarter. Starts for new single-family homes declined, on net, in July and August, as did starts for multifamily units. Building permit issuance for new single-family homes—which tends to be a good indicator of the underlying trend in construction—was little changed, on balance, in recent months and was essentially flat since late last year. Sales of new homes increased strongly in July, but sales of existing homes decreased modestly.

Real private expenditures for business equipment and intellectual property appeared to be rising slowly in the third quarter. Nominal shipments of nondefense capital goods excluding aircraft declined in July. However, new orders for these capital goods rose substantially in July and were notably above the level of shipments, suggesting a pickup in business spending for equipment in the near term. Firms' nominal spending for nonresidential structures excluding drilling and mining increased in June and July. The number of oil and gas rigs in operation, an indicator of spending for structures in the drilling and mining sector, continued to edge up through early September. The limited information available suggested that the change in inventory investment would be positive in the third quarter after subtracting substantially from real GDP growth in the second quarter. Except in the energy sector, inventories generally seemed well aligned with the pace of sales.

Nominal outlays for defense through August pointed to flat real federal government purchases in the third quarter. Real state and local government purchases also appeared to be little changed, on net, relative to their level in the previous quarter. Although payrolls for state and local governments expanded in July and August, nominal construction spending by these governments declined in July.

The U.S. international trade deficit widened in June before narrowing substantially in July. Exports increased in both months, with strong growth in July driven by higher agricultural exports. After rising in June, imports retraced some of this gain in July, driven by lower imports of consumer goods and capital goods.

Total U.S. consumer prices, as measured by the PCE price index, increased about ¾ percent over the 12 months ending in July, partly restrained by recent decreases in consumer food prices and earlier declines in consumer energy prices. Core PCE price inflation, which excludes changes in food and energy prices, was a little above 1½ percent over those same 12 months, held down in part by decreases in the prices of non-energy imports over much of this period and the pass-through of earlier declines in energy prices into the prices of other goods and services. Over the 12 months ending in August, total consumer prices as measured by the consumer price index (CPI) rose about 1 percent, while core CPI inflation was around 2¼ percent. The Michigan survey measure of median longer-run inflation expectations edged down in August and was unchanged in early September. The measure of longer-run inflation expectations for PCE prices from the Survey of Professional Forecasters was unchanged in the third quarter. Other measures of longer-run inflation expectations from the Desk's Survey of Primary Dealers and Survey of Market Participants were also unchanged in September.

Foreign real GDP growth slowed noticeably in the second quarter, primarily owing to contractions in Canada and Mexico; economic growth in other foreign economies fell only slightly on average. Wildfires disrupted oil production in Canada, and a second-quarter decline in U.S. manufacturing production weighed on Mexican exports. Aggregate foreign economic growth appeared to pick up in the third quarter amid signs of recovery of oil production in Canada and of improved manufacturing production in Mexico. However, weaker investment readings pointed to a slight moderation of economic activity in China in the third quarter. The outcome of the U.K. referendum on exit from the European Union (Brexit) apparently exerted less drag on economic activity than previously anticipated by many analysts. Nonetheless, recent data suggested that economic growth in Europe remained modest. Inflation was generally subdued in recent months in both the

advanced foreign economies (AFEs) and the emerging market economies (EMEs).

Staff Review of Financial Situation

Domestic financial conditions remained accommodative since the July FOMC meeting. Asset prices moved within a fairly narrow range for much of the intermeeting period, although volatility increased somewhat in the last few days of the period as market participants focused on central bank communications in the United States and abroad. Market expectations for a policy rate increase by the end of this year rose a bit since the July FOMC meeting, reportedly reflecting comments of Federal Reserve officials that were viewed, on balance, as suggesting that the case for policy firming had strengthened over recent months. Nominal Treasury yields across the curve edged up. Anticipation of the impending deadline for compliance with MMF reform measures continued to prompt net outflows from prime MMFs and put upward pressure on some term money market rates.

Comments by a number of Federal Reserve officials over the intermeeting period were interpreted by market participants as raising the odds on policy firming by the end of this year. However, domestic economic data releases appeared to be a little softer, on balance, than investors had expected; the August employment report and manufacturing surveys, in particular, were below expectations. Market-based estimates of the probability of a rate hike at the September FOMC meeting were volatile but ended the period slightly lower, on balance, at roughly 15 percent, while the probability of an increase by the end of the year rose slightly to around 50 percent. The medium-term federal funds rate path implied by market quotes edged up on net. Consistent with market-based estimates, respondents to the Desk's September surveys of primary dealers and market participants assigned a probability of about 15 percent to a rate hike at the September meeting. The median respondent in each survey continued to expect one policy firming in 2016, with respondents generally expecting the rate increase to occur at the December meeting. Based on the median responses, the most likely path of the target federal funds rate in 2017 and 2018 was little changed.

Nominal Treasury yields increased moderately, on net, since the July FOMC meeting, reflecting the slight upward revision in the expected path for the federal funds rate and a rise in global bond yields that was apparently spurred by an increased impression among investors that monetary policy in other advanced economies might be less accommodative than previously expected. Measures of forward inflation compensation based on Treasury Inflation-Protected Securities rose slightly but remained near the lower end of their historical range.

Broad stock price indexes moved down, on net, since the July FOMC meeting. Realized and implied volatilities in various asset markets were relatively low during most of the intermeeting period but increased somewhat in the last few days before the meeting as market participants reacted to global central bank communications. Spreads on yields of both investment-grade and high-yield nonfinancial corporate bonds over those on comparable-maturity Treasury securities declined somewhat to levels fairly close to their historical norms.

MMF reform continued to affect several short-term funding markets in advance of the October 14, 2016, compliance date. While total assets under the management of MMFs changed little over the intermeeting period, investors continued to shift from prime funds to government funds. As a result, MMF holdings of commercial paper (CP) and certificates of deposit continued to decline, and prime institutional funds further reduced their weighted-average maturities to historically low levels. Reflecting MMFs' reduced appetite for term lending, spreads of three-month money market rates over rates on comparable-maturity overnight index swap contracts rose during the intermeeting period. Rates on short-term municipal securities and net yields on tax-exempt MMFs also increased sharply, primarily because of outflows from these funds.

Financing conditions for nonfinancial firms remained generally accommodative. While outstanding commercial and industrial loans and CP both declined somewhat in August, gross issuance of corporate bonds was quite large. The overall credit quality of the nonfinancial corporate sector, which had deteriorated a bit over the past few quarters, showed signs of stabilizing over the intermeeting period. Financing conditions in commercial real estate (CRE) markets also remained accommodative. Commercial mortgage-backed securities (CMBS) issuance picked up in August, likely reflecting the narrowing of CMBS spreads—albeit to levels that were still

wider than typical—over the past few months. Growth in CRE loans at banks continued to be strong.

Gross issuance of municipal bonds in July and August was strong, credit quality remained stable, and yields on municipal bonds edged down. Although Puerto Rico missed a small debt payment due on August 1, prices of Puerto Rico's benchmark general obligation bonds were roughly unchanged over the intermeeting period.

Financing conditions for households generally continued to be accommodative; however, mortgage markets remained relatively tight for borrowers with low credit scores. Interest rates on 30-year fixed-rate mortgages moved higher, in line with comparable-maturity Treasury yields, but remained at a low level. Mortgage refinancing activity in August was the highest in three years, reflecting lower mortgage rates during June and July. Consumer loan balances continued to increase, with credit card balances expanding at a robust pace.

Global risk asset prices broadly increased amid improving sentiment among investors and low volatility. Capital flows to EMEs continued, and sovereign debt spreads in these economies and corporate bond spreads in both EMEs and AFEs narrowed further. European financial markets remained resilient following the Brexit vote, and European bank equity prices increased on net.

Announcements by foreign central banks garnered investor attention and contributed to somewhat higher asset price volatility later in the period. The European Central Bank left its policy rates and asset purchase program unchanged at its September meeting. Global yields moved higher and the euro strengthened following the meeting, as some market participants had expected an extension of the program. The Bank of Japan (BOJ) left its policy rates unchanged at its July meeting and instead expanded its purchases of exchange-traded stock funds and introduced additional measures to facilitate dollar funding. Japanese bond yields increased notably and the yen appreciated in the aftermath of the announcement. At its September meeting, the BOJ introduced a new monetary policy framework, which includes yield curve control and a commitment to expand the monetary base until inflation exceeds 2 percent and stays above that target in a stable manner. The introduction of the BOJ's new framework elicited little immediate market reaction outside of Japan. At its early August meeting, the Bank of England announced a rate cut, a resumption of its asset purchase program, and a new bank funding program. Longer-term U.K. yields and the pound fell immediately following the announcement but retraced these declines following better-than-expected economic data later in the period. The Bank of England maintained its policy stance at the September meeting, in line with market expectations.

Staff Economic Outlook

In the U.S. economic projection prepared by the staff for the September FOMC meeting, the forecast for real GDP growth in 2016 through 2019 was little changed from the one presented in July. The pace of real GDP growth was forecast to be faster over the second half of this year than in the first half, primarily reflecting a modest increase in the rate of growth of private domestic final purchases and a sizable turnaround in inventory investment. The staff continued to project that real GDP would expand at a modestly faster pace than potential output in 2016 through 2019, supported primarily by increases in consumer spending and, to a lesser degree, by somewhat faster growth in business investment beginning next year. (The staff slightly lowered its assumption for potential output growth over the medium term and in the longer run.) The unemployment rate was forecast to remain flat over the remainder of this year and then to gradually decline through the end of 2019; over this period, the unemployment rate was projected to run below the staff's estimate of its longer-run natural rate.

The forecast for consumer price inflation was essentially unchanged from the previous projection. The staff continued to project that inflation would increase over the next several years, as food and energy prices along with the prices of non-energy imports were expected to begin steadily rising this year. However, inflation was projected to be marginally below the Committee's longer-run objective of 2 percent in 2019.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The risks to the forecast for real GDP were seen as tilted to the downside, reflecting the staff's assessment that both monetary and fiscal policy appeared to be better positioned to offset large positive shocks than adverse ones. In addition, the staff continued to see the risks to the forecast from devel-

opments abroad as skewed to the downside. Consistent with the downside risks to aggregate demand, the staff viewed the risks to its outlook for the unemployment rate as tilted to the upside. The risks to the projection for inflation were still judged as weighted somewhat to the downside, partly reflecting the possibility that longer-term inflation expectations may have edged down.

Participants' Views on Current Conditions and the Economic Outlook

In conjunction with this FOMC meeting, members of the Board of Governors and Federal Reserve Bank presidents submitted their projections of the most likely outcomes for real GDP growth, the unemployment rate, inflation, and the federal funds rate for each year from 2016 through 2019 and over the longer run.[6] Each participant's projections were conditioned on his or her judgment of appropriate monetary policy. The longer-run projections represented each participant's assessment of the rate to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. These projections and policy assessments are described in the Summary of Economic Projections, which is an addendum to these minutes.

In their discussion of the economic situation and the outlook, participants agreed that information received over the intermeeting period suggested that the labor market had continued to strengthen and growth of economic activity had picked up from the modest pace seen in the first half of the year. Although the unemployment rate was little changed in recent months, job gains had been solid, on average. Household spending had been growing strongly but business fixed investment had remained soft. Inflation had continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of nonenergy imports. Market-based measures of inflation compensation remained low; most survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months. Volatility in domestic and global asset markets was relatively low over most of the intermeeting period, and U.S. financial conditions were broadly accommodative.

[6] One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate.

Participants generally expected that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market conditions would strengthen somewhat further. Inflation was expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipated and the labor market strengthened further. A number of participants indicated that there had been little change in their economic outlooks over recent months. A substantial majority now viewed the near-term risks to the economic outlook as roughly balanced, with several of them indicating the risks from Brexit had receded. However, a few still judged that overall risks were weighted to the downside, citing various factors that included the possibility of weaker-than-expected growth in foreign economies, continued uncertainty associated with Brexit, the proximity of policy interest rates to the effective lower bound, or persistent headwinds to economic growth. Participants agreed that the Committee should continue to closely monitor inflation indicators and global economic and financial developments.

Growth in consumer spending appeared to have moderated somewhat in the third quarter from its rapid second-quarter pace, reflecting a softening in retail sales since June. District contacts provided mixed reports, consistent with some easing in growth of sales. Nevertheless, incoming data pointed to still-solid growth in consumption expenditures overall. Many participants noted that they expected household spending to be a primary contributor to economic growth going forward. They saw consumer spending as likely to be supported by a number of factors, including ongoing job gains, rising household income and wealth, improved household balance sheets, and buoyant consumer sentiment.

Economic activity in the second half of the year was expected to be buoyed in part by a pickup in business fixed investment and some rebuilding of inventories. A recent increase in oil drilling rigs in operation was seen as a positive sign for business investment, although the continued low level of oil prices was still weighing on capital investment in the energy industry. Contacts in some Districts suggested that businesses were taking a cautious approach to capital spending even outside of the energy sector—for instance, preferring to modernize existing manufacturing facilities rather than increase capacity by investing in new facilities—in light of continuing sluggish global

demand, shorter investment time horizons for businesses, and uncertainty about prospects for government policy and regulation. Nonresidential construction was reported to be strong in a few Districts. However, the sluggishness in the housing sector appeared to have continued into the third quarter. A couple of participants pointed to limited availability of lots and a shortage of skilled labor as restraining residential construction activity in their Districts; in one District, constraints on the supply of new homes for sale were expected to boost spending on home improvements and offset some of the drag from the slowing in new construction.

Participants' reports on the manufacturing sector indicated varying conditions across Districts, but, on the whole, manufacturing activity remained flat. The most recent survey evidence was downbeat, although smoothing through the past several months provided a more neutral signal. A couple of participants noted that the firming in crude oil prices had led to a stabilization in drilling activity. In the agricultural sector, lower crop prices continued to weigh on profit margins, farm income was expected to fall, and loan repayment rates had declined.

Global financial conditions had improved somewhat in recent months. However, participants noted that economic growth in many foreign economies remained subdued, and inflation rates abroad generally continued to be quite low. Some participants continued to see important downside risks from abroad.

Participants generally agreed that labor market conditions had improved appreciably over the course of the year, with monthly payroll gains averaging about 180,000. Reports from several Districts indicated widespread increases in employment over the intermeeting period. Although job gains had slowed from their pace in 2015, average monthly increases so far this year had exceeded most estimates discussed by participants of monthly payroll increases that could be expected to prevail with economic growth proceeding at its longer-run trend rate. In addition, several participants cited the rise in the labor force participation rate since late 2015 or the increase in the employment-to-population ratio—series with downward structural trends—as welcome developments. However, it was noted that the unemployment rate and broader measures of unemployment had changed little since the beginning of the year. Participants generally expected the unemployment rate to run somewhat below their estimates of its longer-run normal rate over the next couple of years, but they offered differing views about the extent of slack that currently remained in the labor market. Some participants pointed to the slowing in payroll gains and modest pickup in wages this year and judged that the labor market had little or no remaining slack. Some others noted that still-muted wage growth, a level of involuntary part-time employment that remained elevated, and recent increases in labor force participation indicated that slack remained in resource utilization, or expressed the view that the longer-run normal rate of unemployment was uncertain and could be lower than current estimates. Participants commented on a staff analysis showing differential patterns of unemployment across racial and ethnic groups that remained after taking education into account; it was suggested that it might be worthwhile to examine such issues further.

Recent readings on headline and core PCE price inflation had come in about as expected, and participants continued to anticipate that headline inflation would rise over the medium term to the Committee's 2 percent objective. It was noted, however, that 12-month core PCE price inflation had been running at a steady rate below 2 percent, and several participants commented on factors that might be expected to restrain increases in inflation. Such factors included the limited evidence of rising cost or price pressures, the apparent low responsiveness of inflation to the rate of labor utilization, a possible downward shift in inflation expectations, and remaining economic slack. The median expectation for inflation over the next 5 to 10 years from the Michigan survey dropped to its historical low of 2.5 percent in August and held steady in September. However, a couple of participants indicated that the drop in some survey-based measures of inflation expectations could be explained by a decline in the number of respondents who had previously expected relatively high inflation outcomes. Overall, survey-based measures of longer-term expectations were judged to have been reasonably stable in recent months. Many participants observed that core CPI inflation had been running appreciably above core PCE inflation; it was noted that different weights on rents and medical prices as well as different measurement of health-care inflation in the two indexes largely accounted for the disparity.

In their discussion of the outlook, participants considered the likelihood of, and the potential benefits and costs associated with, a more pronounced undershooting of the longer-run normal rate of unemployment than envisioned in their modal forecasts. A

number of participants noted that they expected the unemployment rate to run somewhat below its longer-run normal rate and saw a firming of monetary policy over the next few years as likely to be appropriate. A few participants referred to historical episodes when the unemployment rate appeared to have fallen well below its estimated longer-run normal level. They observed that monetary tightening in those episodes typically had been followed by recession and a large increase in the unemployment rate. Several participants viewed this historical experience as relevant for the Committee's current decisionmaking and saw it as providing evidence that waiting too long to resume the process of policy firming could pose risks to the economic expansion, or noted that a significant increase in unemployment would have disproportionate effects on low-skilled workers and minority groups. Some others judged this historical experience to be of limited applicability in the present environment because the economy was growing only modestly above trend, inflation was below the Committee's 2 percent objective, and inflation expectations were low—circumstances that differed markedly from those earlier episodes. Moreover, the increase in labor force participation over the past year suggested that there could be greater scope for economic growth without putting undue pressure on labor markets; it was also noted that the longer-run normal rate of unemployment could be lower than previously thought, with a similar implication. Participants agreed that it would be useful to continue to analyze and discuss the dynamics of the adjustment of the economy and labor markets in circumstances when unemployment falls well below its estimated longer-run normal rate.

With regard to recent financial developments, it was noted that regulatory changes and impending MMF reforms likely had led to an increase in certain short-term interest rates, but these developments were expected to have only a small effect on the borrowing costs of nonfinancial corporations and little adverse influence on overall financial market conditions. A few participants expressed concern that the protracted period of very low interest rates might be encouraging excessive borrowing and increased leverage in the nonfinancial corporate sector. Finally, one participant expressed the view that prolonged periods of low interest rates could encourage pension funds, endowments, and investors with fixed future payout obligations to save more, depressing economic growth and adding to downward pressure on the neutral real interest rate.

Participants discussed reasons for the apparent fall over recent years in the neutral real rate of interest—or r*— including lower productivity growth, demographic shifts, and an excess of saving around the world. Although several participants indicated that there was uncertainty as to how long the low level of r* would persist, one pointed to a growing consensus that the long period of slow productivity growth and recent evidence that the neutral rate had fallen across countries suggested that r* was likely to remain low for some time. A number of participants noted that they had revised down their estimates of longer-run r* in their contributions to the Summary of Economic Projections for this meeting. Participants discussed the implications of a fall in longer-run r* for monetary policy, including the possibility that policy interest rates might be closer to the effective lower bound more frequently and for a long period, or that monetary policy was ill equipped to address structural factors such as the decline in productivity growth. A couple of participants noted that a lower estimated value for r* over the near term implied that monetary policy was providing less accommodation than previously thought.

Against the backdrop of their economic projections, participants discussed whether available information warranted taking another step to reduce policy accommodation at this meeting. Participants generally agreed that the case for increasing the target range for the federal funds rate had strengthened in recent months. Many of them, however, expressed the view that recent evidence suggested that some slack remained in the labor market. With inflation continuing to run below the Committee's 2 percent objective and few signs of increased pressure on wages and prices, most of these participants thought it would be appropriate to await further evidence of continued progress toward the Committee's statutory objectives. In contrast, some other participants believed that the economy was at or near full employment and inflation was moving toward 2 percent. They maintained that a further delay in raising the target range would unduly increase the risk of the unemployment rate falling markedly below its longer-run normal level, necessitating a more rapid removal of monetary policy accommodation that could shorten the economic expansion. In addition, several participants expressed concern that continuing to delay an increase in the target range implied a further divergence from policy benchmarks based on the Committee's past behavior or risked eroding its credibility, especially given that recent economic data had

largely corroborated the Committee's economic outlook.

Among the participants who supported awaiting further evidence of continued progress toward the Committee's objectives, several stated that the decision at this meeting was a close call. Some participants believed that it would be appropriate to raise the target range for the federal funds rate relatively soon if the labor market continued to improve and economic activity strengthened, while some others preferred to wait for more convincing evidence that inflation was moving toward the Committee's 2 percent objective. Some participants noted the importance of clearly communicating to the public the conditions that would warrant an increase in the policy rate.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that the information received since the Committee met in July indicated that the labor market had continued to strengthen and growth of economic activity had picked up from the modest pace seen in the first half of this year. Although the unemployment rate was little changed in recent months, job gains had been solid, on average. Household spending had been growing strongly but business fixed investment had remained soft. Inflation had continued to run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation remained low; most survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months. In addition, financial conditions remained accommodative.

With respect to the economic outlook and its implications for monetary policy, members continued to expect that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market indicators would strengthen somewhat further. They judged that near-term risks to the economic outlook now appeared roughly balanced.

Members generally acknowledged that labor market conditions had improved appreciably over the past year, evidenced in particular by the solid pace of monthly payroll employment gains. Some of them noted that the increase in the labor force participation rate this year suggested more room for labor supply to expand than previously expected, or contended that the slower progress seen this year in other labor market indicators—such as the unemployment rate, broader measures of labor utilization, job openings and quits, and wage growth—indicated that slack was being taken up at only a modest pace. This view suggested that proceeding cautiously with reducing monetary policy accommodation could promote further labor market improvement. In contrast, a few other members were concerned that, without a prompt resumption of gradual increases in the target range for the federal funds rate, labor market conditions could tighten well beyond normal levels over the next few years, potentially necessitating a subsequent sharp tightening of monetary policy that could shorten the economic expansion.

Members continued to expect inflation to remain low in the near term, but most anticipated that, with gradual adjustments in the stance of monetary policy, it would rise gradually to the Committee's 2 percent objective over the medium term. Many members remarked that there were few signs of emerging inflationary pressures or that progress on inflation had been slow. A couple of other members pointed to recent readings on core CPI inflation as suggesting that PCE price inflation was close to meeting the Committee's 2 percent inflation objective. Nonetheless, in light of the current shortfall of inflation from 2 percent, members agreed that they would continue to carefully monitor actual and expected progress toward the Committee's inflation goal.

After assessing the outlook for economic activity, the labor market, and inflation, as well as the risks around that outlook, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent at this meeting. Members generally agreed that the case for an increase in the policy rate had strengthened. But, with some slack likely remaining in the labor market and inflation continuing to run below the Committee's objective, a majority of members judged that the Committee should, for the time being, await further evidence of progress toward its objectives of maximum employment and 2 percent inflation before increasing the target range for the federal funds rate. It was noted that a reasonable argument could be made either for an increase at this meeting or for waiting for some additional information on the labor market and inflation. A couple of members emphasized that a cautious approach to removing accommodation was warranted given the proximity of policy rates to the effective lower bound, as the Committee had more scope to increase

policy rates, if necessary, than to reduce them. Three members preferred to raise the target range for the federal funds rate by 25 basis points at this meeting. They cautioned that postponing policy firming for too long could push the unemployment rate markedly below its longer-run normal rate over the next few years. If so, the Committee might then need to tighten policy more rapidly, thereby posing risks to continued economic expansion. A couple of these members expressed concern about the potential adverse effects on the credibility of the Committee's policy communications if the next step in the gradual removal of accommodation was further postponed.

The Committee agreed that, in determining the timing and size of future adjustments to the target range for the federal funds rate, it would assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee expected that economic conditions would evolve in a manner that would warrant only gradual increases in the federal funds rate, and that the federal funds rate was likely to remain, for some time, below levels that are expected to prevail in the longer run. However, members emphasized that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming data. Several members judged that it would be appropriate to increase the target range for the federal funds rate relatively soon if economic developments unfolded about as the Committee expected; they saw the new sentence in the third paragraph of the Committee's statement—a sentence indicating that the case for an increase in the federal funds rate had strengthened but that the Committee had decided, for the time being, to wait for further evidence of continued progress toward its objectives—as reflecting this view. A few others, however, emphasized that decisions regarding near-term adjustments in the stance of monetary policy would appropriately remain data dependent and expressed some concern that the new sentence might be misread as indicating that the passage of time rather than the accumulation of evidence would be the key factor in the Committee's decisions at future meetings.

The Committee also decided to maintain its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipated doing so until normalization of the level of the federal funds rate is well under way. Members noted that this policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective September 22, 2016, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of ¼ to ½ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 0.25 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

> "Information received since the Federal Open Market Committee met in July indicates that the labor market has continued to strengthen and growth of economic activity has picked up from the modest pace seen in the first half of this year. Although the unemployment rate is little changed in recent months, job gains have been solid, on average. Household spending has been growing strongly but business fixed investment has remained soft. Inflation has continued to

run below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation remain low; most survey-based measures of longer-term inflation expectations are little changed, on balance, in recent months.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market conditions will strengthen somewhat further. Inflation is expected to remain low in the near term, in part because of earlier declines in energy prices, but to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipate and the labor market strengthens further. Near-term risks to the economic outlook appear roughly balanced. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

Against this backdrop, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent. The Committee judges that the case for an increase in the federal funds rate has strengthened but decided, for the time being, to wait for further evidence of continued progress toward its objectives. The stance of monetary policy remains accommodative, thereby supporting further improvement in labor market conditions and a return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions."

Voting for this action: Janet L. Yellen, William C. Dudley, Lael Brainard, James Bullard, Stanley Fischer, Jerome H. Powell, and Daniel K. Tarullo.

Voting against this action: Esther L. George, Loretta J. Mester, and Eric Rosengren.

Mses. George and Mester and Mr. Rosengren dissented because they preferred to increase the target range for the federal funds rate by 25 basis points at this meeting.

Ms. George judged that with the unemployment rate and inflation at or near their longer-run levels, removing some accommodation was warranted and would be consistent with the prescriptions of several frameworks for assessing the appropriate stance of monetary policy. She was concerned that the Committee's recent policy choices had incorporated too much discretion, and her assessment was that by waiting longer to adjust the policy stance and deviating from the appropriate path to policy normalization, the Committee risked eroding the credibility of its policy communications.

Ms. Mester noted that the economy had made considerable progress on the Committee's statutory goals, the outlook for continued progress had been corroborated by recent economic developments, and risks around that outlook had diminished. In these circumstances, she believed it appropriate to gradually increase the target range for the federal funds rate, consistent with the Committee's recent communications. A gradual path would give the Committee a better chance of recalibrating the policy path over

time as it gains more insights into the underlying structure of the economy. Further delays in taking the next step on the gradual path might require the Committee to subsequently steepen the policy path to foster its goals, which would be inconsistent with the Committee's recent communications, thereby posing risks to the Committee's credibility.

Mr. Rosengren noted that, since the Committee's most recent policy action in late 2015, significant progress had been made toward the Committee's dual mandate. He believed that with inflation gradually rising and robust employment growth moving the economy very close to full employment, it was appropriate to continue the gradual normalization of monetary policy at this meeting. He believed that a failure to do so could require the Committee to raise policy interest rates faster and more aggressively later on, which could shorten, rather than lengthen, the duration of the economic expansion.

Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors took no action to change the interest rates on reserves or discount rates.

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, November 1–2, 2016. The meeting adjourned at 10:45 a.m. on September 21, 2016.

Notation Vote

By notation vote completed on August 16, 2016, the Committee unanimously approved the minutes of the Committee meeting held on July 26–27, 2016.

Brian F. Madigan
Secretary

Addendum: Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on September 20–21, 2016, meeting participants submitted their projections of the most likely outcomes for real output growth, the unemployment rate, inflation, and the federal funds rate for each year from 2016 to 2019 and over the longer run.[7] Each participant's projection was based on information available at the time of the meeting, together with his or her assessment of appropriate monetary policy and assumptions about the factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. "Appropriate monetary policy" is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the Federal Reserve's objectives of maximum employment and stable prices.

Most FOMC participants expected that, under appropriate monetary policy, growth in real gross domestic product (GDP) would pick up a bit next year and run at or a little above their individual estimates of its longer-run rate in 2017 and 2018, and a majority of participants expected real GDP growth to be at its longer-run trend rate in 2019. A large majority of participants projected that the unemployment rate will fall to or modestly below their estimates of its longer-run normal level over the next two years. Many participants expected the unemployment rate to edge up to or toward their individual estimates of its longer-run level in 2019. All participants projected that inflation, as measured by the four-quarter percentage change in the price index for personal consumption expenditures (PCE), would increase over the next two years, and all but one expected inflation to be within 0.1 percentage point of the Committee's objective in 2019. Table 1 and figure 1 provide summary statistics for the projections.

As shown in figure 2, almost all participants expected that the evolution of the economy would warrant only gradual increases in the federal funds rate to achieve and maintain the Committee's objectives over time. Participants generally judged that the appropriate level of the federal funds rate in 2019 would still be at or below their estimates of its longer-run rate. However, because the economic outlook is inherently uncertain, participants' assess-

[7] One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate.

ments of appropriate policy are subject to change in response to revisions to their economic outlooks and associated risks.

Participants generally viewed the level of uncertainty associated with their individual forecasts for economic growth, unemployment, and inflation as broadly similar to the norms of the previous 20 years. Most participants also judged the risks around their projections for economic activity and for the unemployment rate as broadly balanced, while several participants saw the risks to their GDP growth forecasts as weighted to the downside. In addition, most participants saw the risks to their forecasts for inflation as broadly balanced, although some viewed the risks to their inflation forecasts as tilted to the downside.

The Outlook for Economic Activity

The median of participants' projections for the growth rate of real GDP, conditional on their individual assumptions about appropriate monetary policy, was 1.8 percent in 2016, 2 percent in 2017 and 2018, and 1.8 percent in 2019; the median of projections for the longer-run normal GDP growth rate was 1.8 percent. Most participants projected that economic growth will pick up a bit next year and run at or slightly above their individual estimates of its longer-run rate in 2017 and 2018, and a majority of participants expected real GDP growth to be at its longer-run trend rate in 2019. Participants pointed to a number of factors that they expected would contribute to above-trend output growth over the next few years, including some firming in business investment, diminution of the drag on net exports from a strong dollar, continued improvements in household and business balance sheets, and accommodative financial conditions.

The median of participants' projections for real GDP growth in 2016 was lower than the median shown in the June 2016 Summary of Economic Projections (SEP). Many participants who lowered their projections for GDP growth this year attributed their revisions to weaker-than-expected GDP growth in the

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, September 2016
Percent

Variable	Median[1]					Central tendency[2]					Range[3]				
	2016	2017	2018	2019	Longer run	2016	2017	2018	2019	Longer run	2016	2017	2018	2019	Longer run
Change in real GDP	1.8	2.0	2.0	1.8	1.8	1.7–1.9	1.9–2.2	1.8–2.1	1.7–2.0	1.7–2.0	1.7–2.0	1.6–2.5	1.5–2.3	1.6–2.2	1.6–2.2
June projection	2.0	2.0	2.0	n.a.	2.0	1.9–2.0	1.9–2.2	1.8–2.1	n.a.	1.8–2.0	1.8–2.2	1.6–2.4	1.5–2.2	n.a.	1.6–2.4
Unemployment rate	4.8	4.6	4.5	4.6	4.8	4.7–4.9	4.5–4.7	4.4–4.7	4.4–4.8	4.7–5.0	4.7–4.9	4.4–4.8	4.3–4.9	4.2–5.0	4.5–5.0
June projection	4.7	4.6	4.6	n.a.	4.8	4.6–4.8	4.5–4.7	4.4–4.8	n.a.	4.7–5.0	4.5–4.9	4.3–4.8	4.3–5.0	n.a.	4.6–5.0
PCE inflation	1.3	1.9	2.0	2.0	2.0	1.2–1.4	1.7–1.9	1.8–2.0	1.9–2.0	2.0	1.1–1.7	1.5–2.0	1.8–2.0	1.8–2.1	2.0
June projection	1.4	1.9	2.0	n.a.	2.0	1.3–1.7	1.7–2.0	1.9–2.0	n.a.	2.0	1.3–2.0	1.6–2.0	1.8–2.1	n.a.	2.0
Core PCE inflation[4]	1.7	1.8	2.0	2.0		1.6–1.8	1.7–1.9	1.9–2.0	2.0		1.5–2.0	1.6–2.0	1.8–2.0	1.8–2.1	
June projection	1.7	1.9	2.0	n.a.		1.6–1.8	1.7–2.0	1.9–2.0	n.a.		1.3–2.0	1.6–2.0	1.8–2.1	n.a.	
Memo: Projected appropriate policy path															
Federal funds rate	0.6	1.1	1.9	2.6	2.9	0.6–0.9	1.1–1.8	1.9–2.8	2.4–3.0	2.8–3.0	0.4–1.1	0.6–2.1	0.6–3.1	0.6–3.8	2.5–3.8
June projection	0.9	1.6	2.4	n.a.	3.0	0.6–0.9	1.4–1.9	2.1–2.9	n.a.	3.0–3.3	0.6–1.4	0.6–2.4	0.6–3.4	n.a.	2.8–3.8

Note: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The June projections were made in conjunction with the meeting of the Federal Open Market Committee on June 14–15, 2016. One participant did not submit longer-run projections in conjunction with the June 14–15, 2016, meeting. For the September 20–21, 2016, meeting, one participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate.

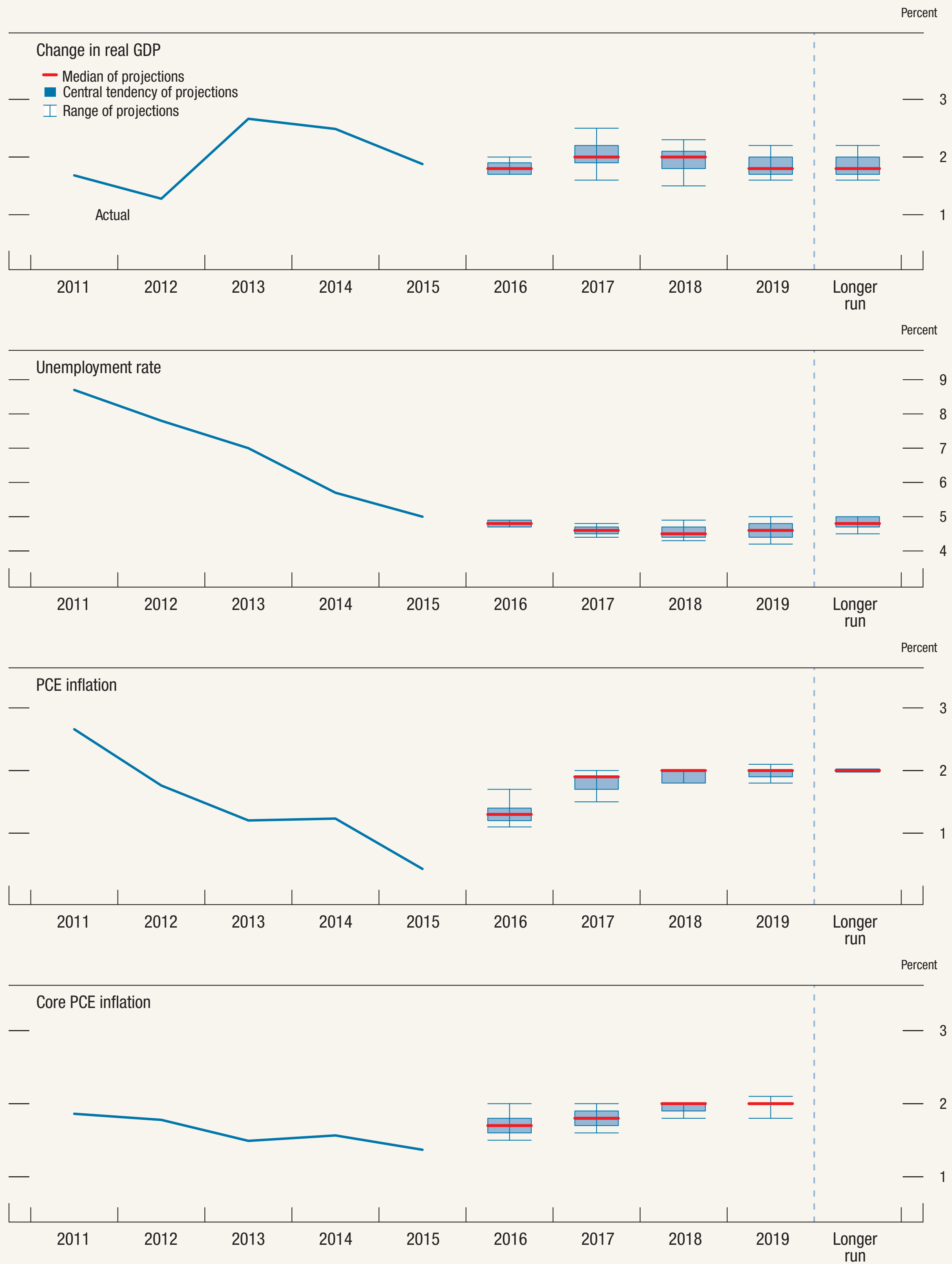
1 For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

2 The central tendency excludes the three highest and three lowest projections for each variable in each year.

3 The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

4 Longer-run projections for core PCE inflation are not collected.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2016–19 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate

Note: Each shaded circle indicates the value (rounded to the nearest ⅛ percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate.

first half of the year. The medians of participants' projections for real GDP growth in 2017 and 2018 were unchanged from June at 2 percent. This pace was slightly above the median projection of the longer-run growth rate of GDP, which was revised down to 1.8 percent.

The median of projections for the unemployment rate at the end of 2016 was 4.8 percent, slightly higher than in June. Based on the median projections, the unemployment rate was anticipated to decline to 4.6 percent in 2017 and to 4.5 percent in 2018 before moving up slightly to 4.6 percent in 2019. The median for 2019 remained below the 4.8 percent median assessment of the longer-run normal unemployment rate, with a majority of participants projecting the unemployment rate in 2019 to be 0.2 percentage point or more below their individual estimates of the longer-run normal rate.

Figures 3.A and 3.B show the distributions of participants' projections for real GDP growth and the unemployment rate from 2016 to 2019 and in the longer run. The distribution of individual projections of GDP growth for 2016 shifted lower relative to the distribution of the June projections, while the distributions for 2017 and 2018 were little changed. The distribution of projections for GDP growth in the longer run shifted down slightly. The distributions of projections for the unemployment rate were little changed except for a shift upward for 2016.

The Outlook for Inflation

In the September SEP, the median of projections for headline PCE price inflation in 2016 was 1.3 percent, a bit lower than in June. The projections for headline PCE price inflation over the next two years and in the longer run were little changed since June, with the median inflation projection still rising to 1.9 percent in 2017 and to the Committee's objective of 2 percent in 2018, then remaining there in 2019. All participants but one projected that inflation will be within 0.1 percentage point of the Committee's objective in 2019. The median of individual projections for core PCE price inflation increases gradually over the next two years.

Figures 3.C and 3.D provide information on the distribution of participants' views about the outlook for inflation. The distribution of projections for headline PCE price inflation for this year shifted down relative to projections for the June meeting, with some participants attributing their forecast revisions to weaker-than-expected incoming data, while the distribution of projections for core PCE price inflation this year narrowed. For 2017 and 2018, the distributions of projections for both total and core PCE price inflation shifted down slightly.

Appropriate Monetary Policy

Figure 3.E provides the distribution of participants' judgments regarding the appropriate level of the target federal funds rate at the end of each year from 2016 to 2019 and over the longer run.[8] The distributions for 2016 to 2018 shifted down. The median projections of the federal funds rate continued to show gradual increases, from 0.63 percent at the end of 2016 to 1.13 percent at the end of 2017, 1.88 percent at the end of 2018, and 2.63 percent at the end of 2019; the median of the longer-run projections of the federal funds rate was 2.88 percent. Relative to the June projections, the median of the projections for the federal funds rate at the end of 2016 was 0.25 percentage point lower, and for 2017 and 2018, the median projections were each 0.50 percentage point lower. Compared with the June SEP, most participants reduced their projection for the federal funds rate in the longer run; the median moved down 0.13 percentage point, to 2.88 percent.

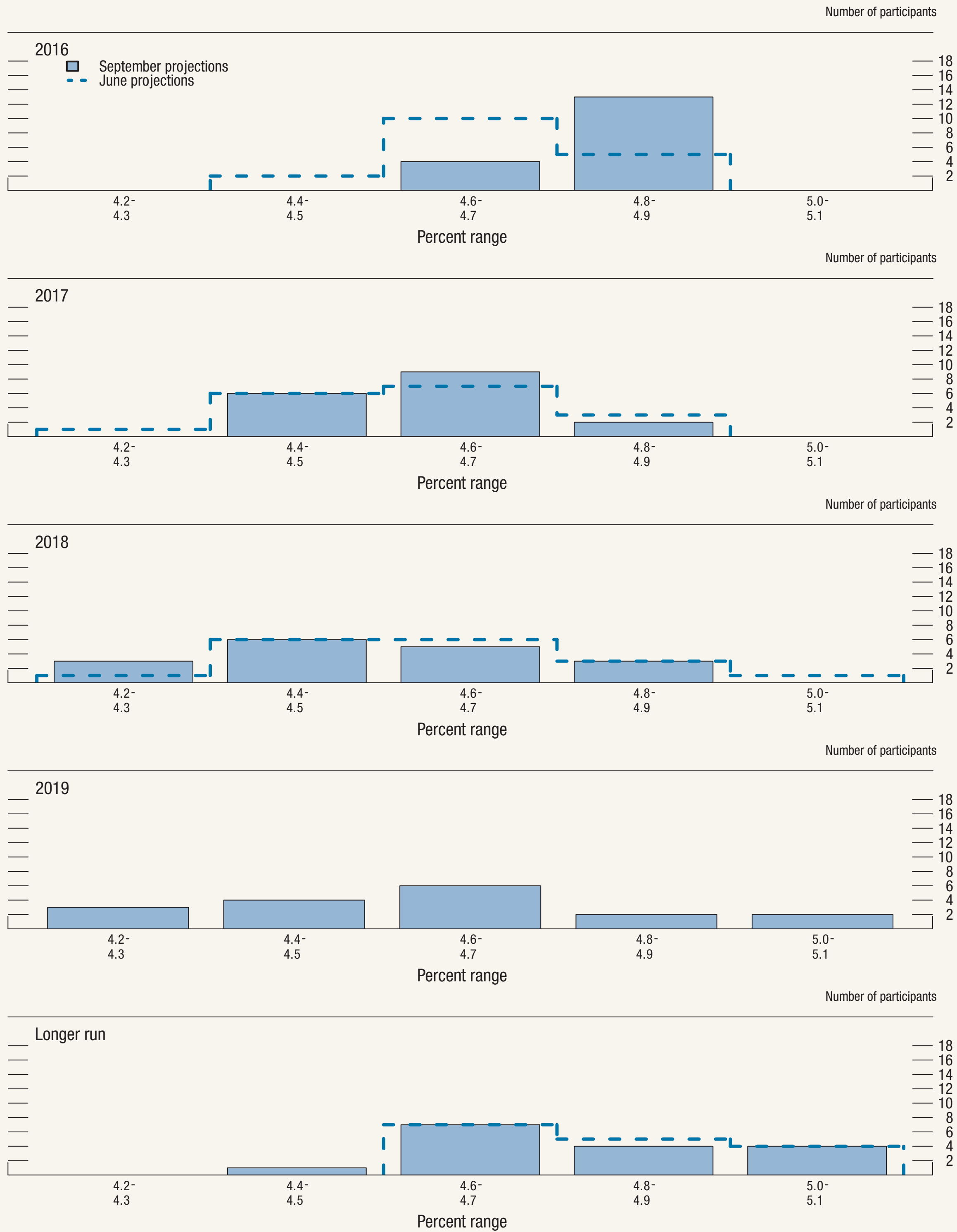
In discussing their September forecasts, many participants expressed a view that increases in the federal funds rate over the next several years would need to be gradual in light of a short-term neutral interest rate that was currently low and likely to rise only slowly. A number of participants attributed the low level of the short-term neutral rate to the persistence of low productivity growth, continued strength of the dollar, a weak outlook for economic growth abroad, demand for safe longer-term assets, and other factors, and they anticipated that the effects of these factors would fade gradually over time. Some participants noted the proximity of short-term nominal interest rates to the effective lower bound as limiting the Committee's ability to increase monetary accommodation to counter adverse shocks to the economy. These participants judged that, as a result,

[8] One participant's projections for the federal funds rate, GDP growth, the unemployment rate, and inflation were informed by the view that there are multiple possible medium-term regimes for the U.S. economy, that these regimes are persistent, and that the economy shifts between regimes in a way that cannot be forecast. Under this view, the economy currently is in a regime characterized by expansion of economic activity with low productivity growth and a low short-term real interest rate, but longer-term outcomes for variables other than inflation cannot be usefully projected.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2016–19 and over the longer run

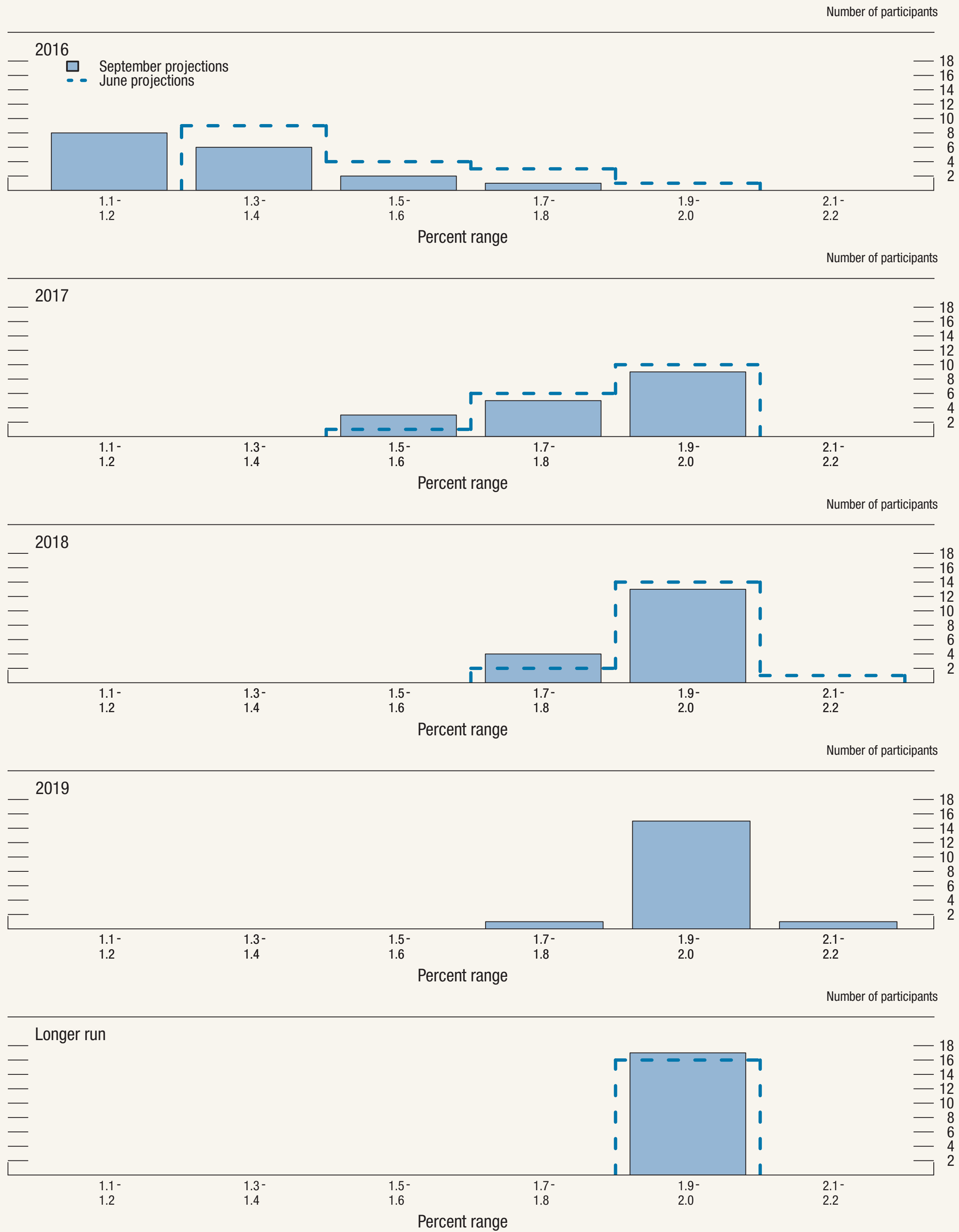
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2016–19 and over the longer run



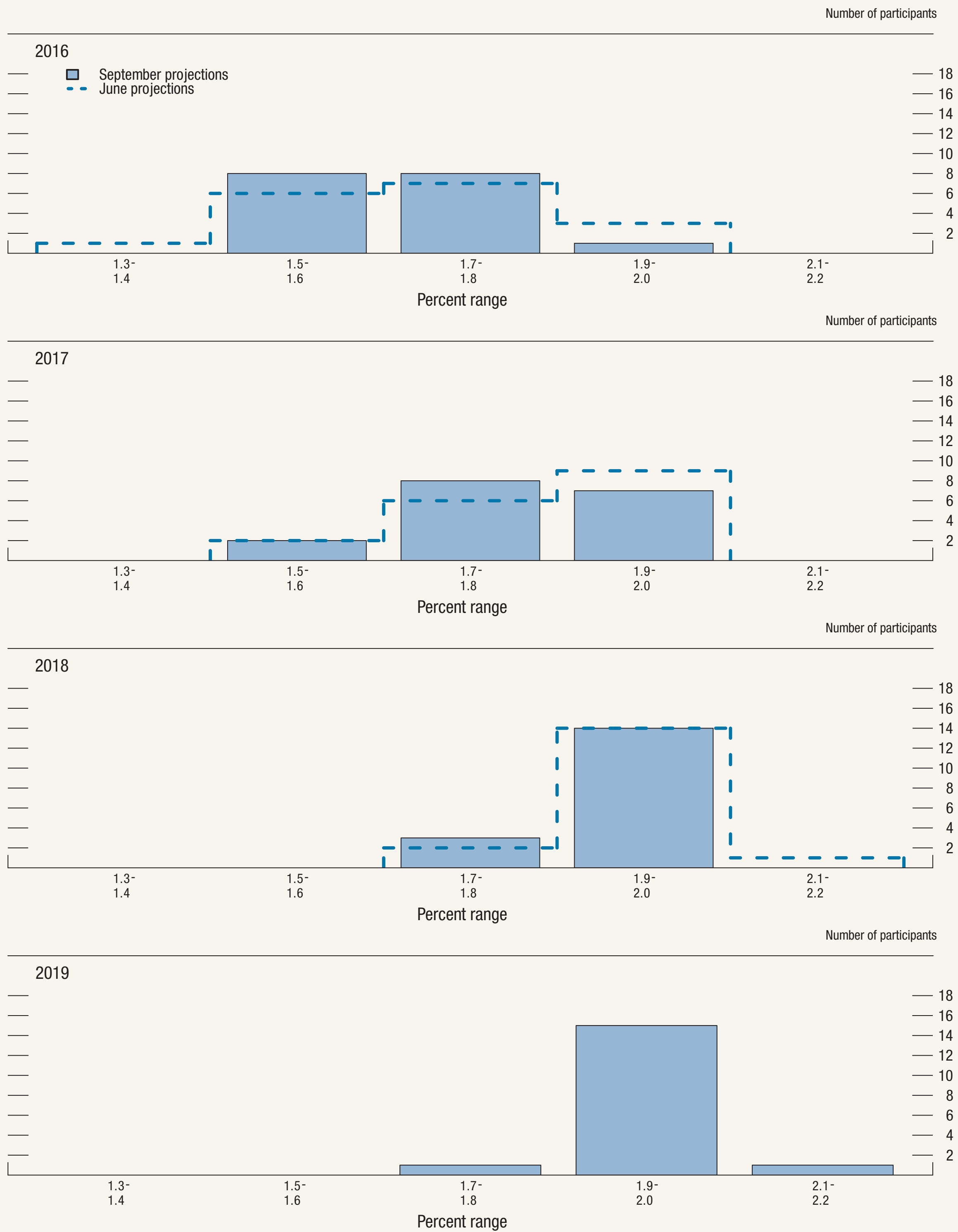
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2016–19 and over the longer run



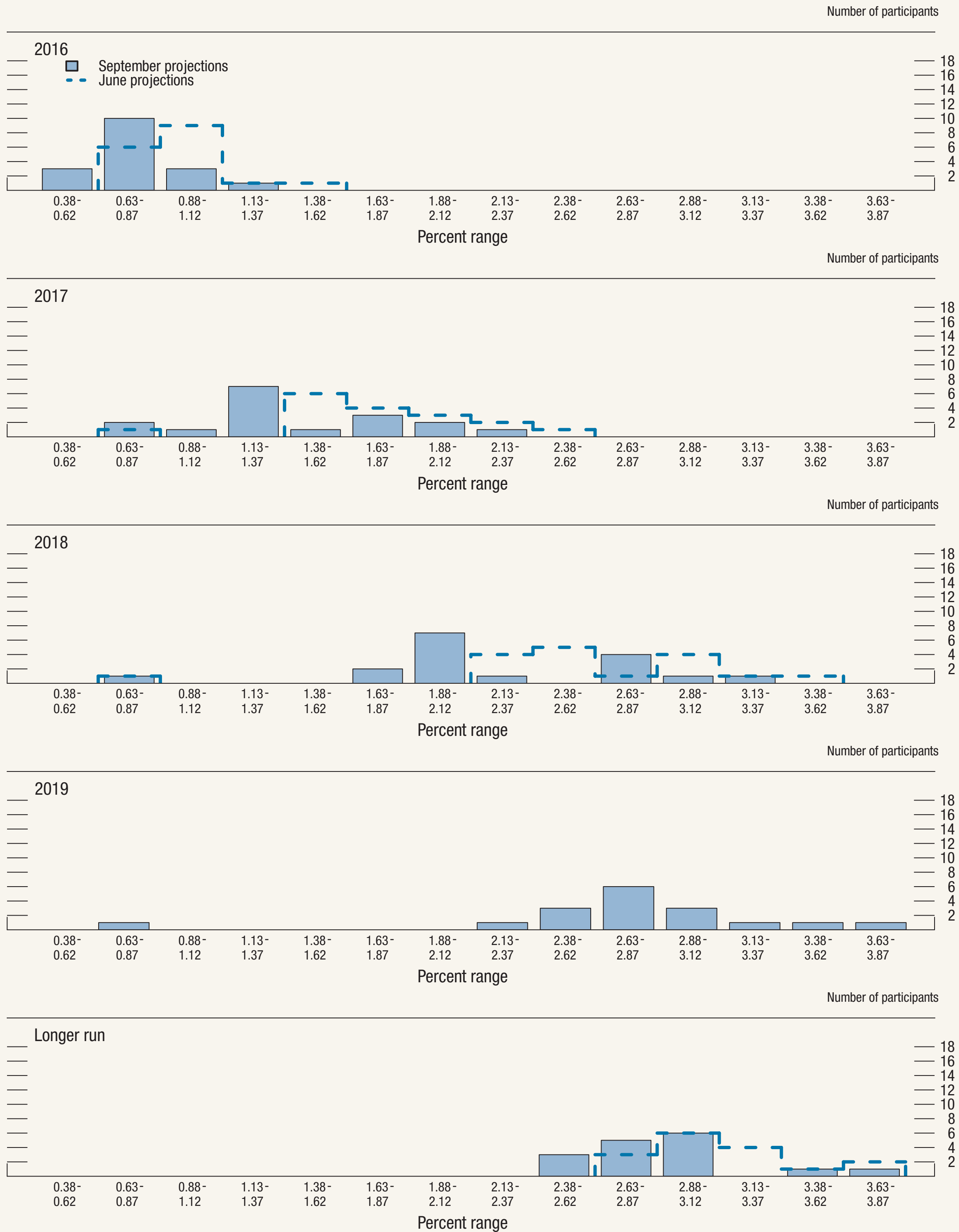
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2016–19



Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2016–19 and over the longer run



Note: The midpoints of the target ranges for the federal funds rate and the target levels for the federal funds rate are measured at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate in conjunction with the June 14–15, 2016, meeting. One participant did not submit longer-run projections for the federal funds rate in conjunction with the September 20–21, 2016, meeting.

the Committee should take a cautious approach to removing policy accommodation. Participants cited a number of factors that pushed down their projections of the longer-run federal funds rate, including domestic and global demographic trends and weak productivity growth, which together imply a slower pace of trend output growth.

Uncertainty and Risks

The left-hand column of figure 4 shows that, for each variable, all but a few participants judged the levels of uncertainty associated with their September projections for real GDP growth, the unemployment rate, and headline inflation to be broadly similar to the average of the past 20 years, and all but one participant viewed uncertainty around core inflation to be broadly similar to its average historical level.[9] One participant saw uncertainty surrounding real GDP growth as higher than average, down from three participants in June. Participants noted that continued uncertainty about the rate of productivity growth and concerns about international developments were sources of uncertainty attending their forecasts of real GDP growth. Most participants' assessments of the level of uncertainty surrounding their economic projections did not change materially since June.

For each variable, the number of participants viewing the risks as balanced increased since June, and fewer participants assessed the risks to economic growth as weighted to the downside or viewed the risks to unemployment as weighted to the upside (figure 4, top two panels in the right-hand column). Participants who revised their view from an assessment that the risks to GDP growth were to the downside to a view that the risks were broadly balanced cited reasons such as an easing of concerns regarding the potential for global economic and financial conditions to deteriorate. Participants who saw the risks to GDP growth as tilted to the downside attributed this assessment to some signs that the momentum of growth in domestic demand may be slowing, businesses' caution regarding investment and hiring decisions, the risk of adverse shocks to U.S. economic activity from developments abroad, or potential limits to the ability of monetary policy to respond to adverse shocks near the effective lower bound on short-term interest rates. As indicated in the two bottom-right figures, the number of participants who saw the risks to their inflation projections as broadly balanced increased; those who revised their view from an assessment that the risks to inflation were tilted downward pointed to an easing of concerns about global financial developments or accumulating evidence that inflation expectations were remaining anchored at policy-consistent levels. Those who continued to judge that the risks to inflation were weighted to the downside cited the risks associated with encountering negative economic shocks when the policy rate is close to the effective lower bound or with continued low readings on survey-based measures of inflation expectations and financial-market measures of inflation compensation.

Table 2. Average historical projection error ranges
Percentage points

Variable	2016	2017	2018	2019
Change in real GDP[1]	±1.3	±1.9	±2.1	±2.2
Unemployment rate[1]	±0.3	±1.0	±1.7	±2.0
Total consumer prices[2]	±0.8	±1.1	±1.1	±1.1

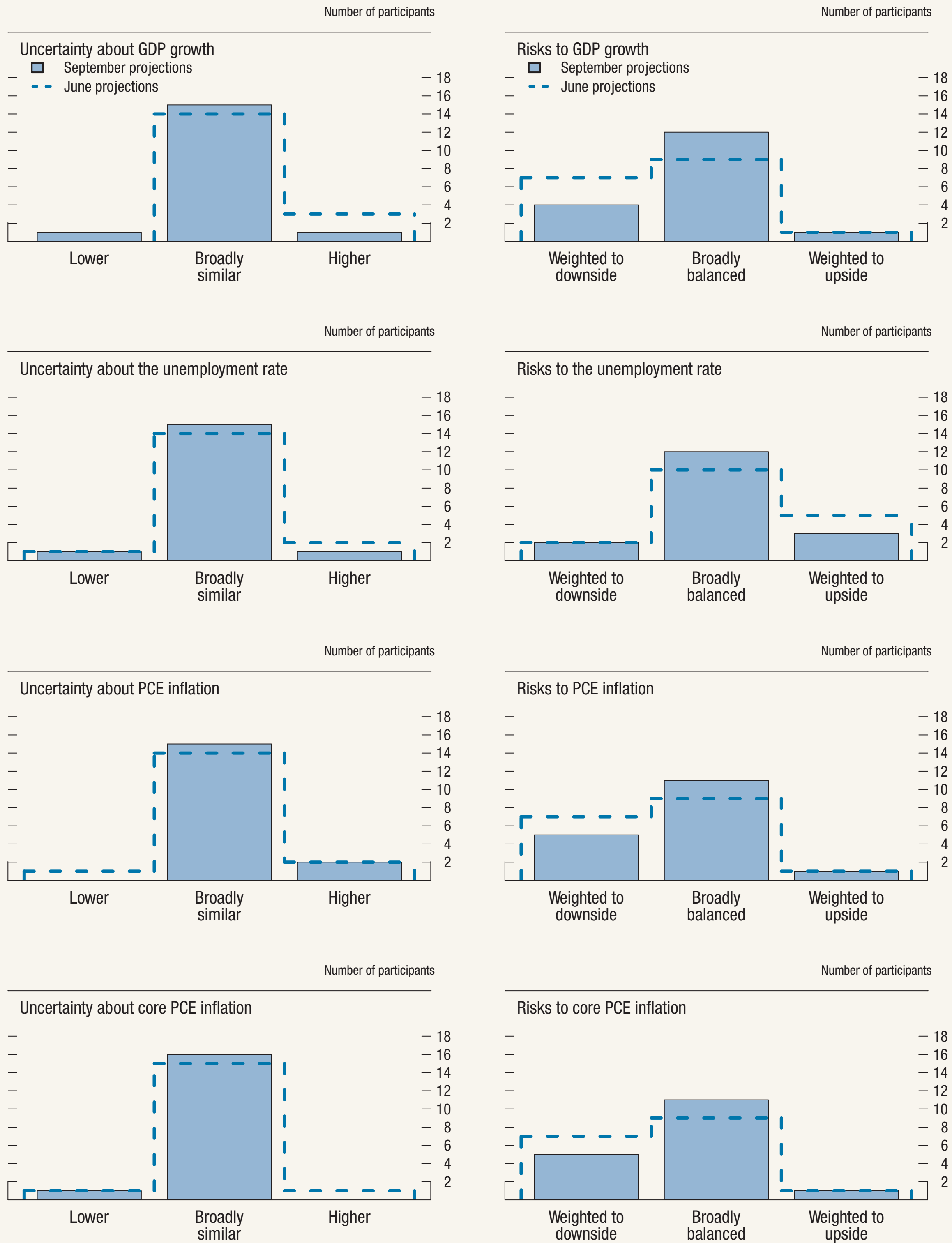
Note: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1995 through 2015 that were released in the fall by various private and government forecasters. As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, and consumer prices will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2007), "Gauging the Uncertainty of the Economic Outlook from Historical Forecasting Errors," Finance and Economics Discussion Series 2007-60 (Washington: Board of Governors of the Federal Reserve System, November), available at www.federalreserve.gov/pubs/feds/2007/200760/200760abs.html; and Board of Governors of the Federal Reserve System, Division of Research and Statistics (2014), "Updated Historical Forecast Errors," memorandum, April 9, www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.pdf.

1 Definitions of variables are in the general note to table 1.

2 Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projection is percent change, fourth quarter of the previous year to the fourth quarter of the year indicated.

9 Table 2 provides estimates of the forecast uncertainty for the change in real GDP, the unemployment rate, and total consumer price inflation over the period from 1996 through 2015. At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty in the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

Figure 4. Uncertainty and risks in economic projections



Note: For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty." Definitions of variables are in the notes to table 1.

Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Reports* and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee. The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 1.7 to 4.3 percent in the current year, 1.1 to 4.9 percent in the second year, 0.9 to 5.1 percent in the third year, and 0.8 to 5.2 percent in the fourth year. The corresponding 70 percent confidence intervals for overall inflation would be 1.2 to 2.8 percent in the current year and 0.9 to 3.1 percent in the second, third, and fourth years.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty in the past, as shown in table 2. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, participants judge whether each variable is more likely to be above or below their projections of the most likely outcome. These judgments about the uncertainty and the risks attending each participant's projections are distinct from the diversity of participants' views about the most likely outcomes. Forecast uncertainty is concerned with the risks associated with a particular projection rather than with divergences across a number of different projections.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward.

Meeting Held on November 1–2, 2016

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, November 1, 2016, at 10:00 a.m. and continued on Wednesday, November 2, 2016, at 9:00 a.m.[1]

Present

Janet L. Yellen
Chair

William C. Dudley
Vice Chairman

Lael Brainard

James Bullard

Stanley Fischer

Esther L. George

Loretta J. Mester

Jerome H. Powell

Eric Rosengren

Daniel K. Tarullo

Charles L. Evans, Patrick Harker, Robert S. Kaplan, Neel Kashkari, and Michael Strine
Alternate Members of the Federal Open Market Committee

Jeffrey M. Lacker, Dennis P. Lockhart, and John C. Williams
Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco, respectively

Brian F. Madigan
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Scott G. Alvarez
General Counsel

Michael Held
Deputy General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

Thomas A. Connors, Troy Davig, Michael P. Leahy, Stephen A. Meyer, Ellis W. Tallman, Christopher J. Waller, and William Wascher
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Matthew J. Eichner[2]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Michael S. Gibson
Director, Division of Banking Supervision and Regulation, Board of Governors

Nellie Liang
Director, Division of Financial Stability, Board of Governors

Margie Shanks
Deputy Secretary, Office of the Secretary, Board of Governors

James A. Clouse
Deputy Director, Division of Monetary Affairs, Board of Governors

Trevor A. Reeve
Senior Special Adviser to the Chair, Office of Board Members, Board of Governors

Andrew Figura, Joseph W. Gruber, and Ann McKeehan
Special Advisers to the Board, Office of Board Members, Board of Governors

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

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[1] The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

[2] Attended the discussions of the long-run monetary policy implementation framework and financial developments.

Eric M. Engen and Michael G. Palumbo
Senior Associate Directors, Division of Research and Statistics, Board of Governors

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Long-Run Monetary Policy Implementation Framework

Committee participants continued their discussion of potential long-run frameworks for monetary policy implementation, a topic last discussed at the July 2016 FOMC meeting. The staff provided briefings that summarized considerations regarding potential choices of policy rates, operating regimes, and balance sheet policies and highlighted tradeoffs associated with these choices.

The staff noted that if the long-run implementation framework was such that the supply of reserve balances was quite abundant, then operational tools that

help establish a floor under short-term interest rates, such as the payment of interest on reserves and the overnight reverse repurchase agreement (ON RRP) facility, would remain important elements of the operating regime. Reserve requirements would probably not be necessary in this case, and the Federal Reserve could likely maintain control of short-term interest rates without needing to conduct frequent open market operations to adjust the supply of reserves. Such an approach could also be effective with an appreciably smaller balance sheet and supply of reserves than at present. In contrast, if in the long run the supply of reserves was quite small, such as was the situation before the financial crisis, either reserve requirements or voluntary reserve targets would probably be needed to help stabilize the demand for reserves and increase its predictability. The Federal Reserve would likely need to conduct frequent open market operations in this case to maintain adequate control of short-term interest rates, and banks would probably trade actively in the federal funds market. Some short-term interest rates could display greater volatility under this approach than one in which the level of reserve balances was relatively high, and operational tools to limit both downward and upward pressure on such rates would probably be needed. Regardless of the level of reserves, the policy rate in either of these cases could be an unsecured overnight market rate or an interest rate administered by the Federal Reserve. The FOMC might instead target an overnight Treasury repurchase agreement rate and use standing facilities to keep repurchase agreement rates close to the target level.

The staff noted the importance of having effective arrangements to provide liquidity in times of stress. Stigma associated with borrowing from the discount window has likely prevented it from effectively enhancing control of short-term interest rates and improving liquidity conditions in various situations. Possible options to provide appropriate liquidity when necessary while mitigating such stigma were mentioned.

The staff discussed the possibility that changes in the size and composition of the Federal Reserve's balance sheet, including the duration of its securities holdings, could be used to help achieve policymakers' macroeconomic goals when short-term interest rates had declined to their effective lower bound—and conceivably when short-term interest rates were above that bound. The staff also described the possibility of using balance sheet policies to promote financial stability.

In the discussion that followed the staff presentations, policymakers agreed that decisions regarding the long-run implementation framework were not necessary at this time. They indicated that the current framework was working well and that, with the supply of reserve balances expected to remain large for a while, the present approach to policy implementation would likely remain appropriate for some time. Moreover, policymakers expected to benefit from accruing additional information before making judgments about a future implementation framework. For example, they acknowledged that recent changes in financial regulations were likely to continue to be an important factor in the ongoing evolution of financial markets. Policymakers also underscored the importance of taking account of the possibility that neutral short-term interest rates could remain quite low. For these reasons, policymakers emphasized that their current views regarding the long-run policy implementation framework were preliminary and they expected that further deliberations would be appropriate before decisions were made.

Meeting participants commented on the advantages of using an approach to policy implementation in which active management of the supply of reserves would not be required. Such an approach could be compatible with a balance sheet that was much smaller than at present, though likely at least somewhat larger than in the years before the financial crisis, reflecting trend growth of balance sheet items such as currency as well as a larger supply of reserves. In addition, such an approach was seen as likely to be relatively simple and efficient to administer, relatively straightforward to communicate, and effective in enabling interest rate control across a wide range of circumstances. A number of policymakers stated that they continued to view expansion of the balance sheet through large-scale asset purchases as an important tool to provide macroeconomic stimulus in situations in which short-term interest rates were at their effective lower bound. Most participants did not indicate support for using the balance sheet as an active tool in other situations or for other purposes, although a few expressed support for undertaking further study of this possibility. Policymakers noted the merits of relying on a policy rate that would be robust to shifts in financial market structure, practices, and regulations as well as to changes in premiums for credit risk. Other important

considerations for the choice of policy rate included the volatility of the rate, the breadth of the set of Federal Reserve counterparties that would be required to ensure adequate control of short-term interest rates, and the role of the policy rate in FOMC communications.

At the end of the discussion, the Chair reiterated that additional experience with the Federal Reserve's current monetary policy implementation framework would help inform policymakers' future deliberation of issues related to a long-run framework and that decisions regarding these issues would not be required for some time. The Chair also noted that the Federal Reserve would proceed cautiously and would communicate any intended changes to its approach to implementing monetary policy well in advance of making the changes.

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) reported on developments in financial markets during the period since the Committee met on September 20–21, 2016, including changes in market expectations for U.S. monetary policy, adjustments to foreign central bank monetary policies, and the evolution of investors' views about risk factors in global financial markets. The deputy manager followed with a briefing on open market operations and developments in money markets. The implementation on October 14 of reforms to the money market fund (MMF) industry generally proceeded smoothly, although the shift in investments from prime to government-only money funds had been substantial and left an imprint on levels of some money market interest rates. Largely reflecting this shift, usage of the System's ON RRP facility rose somewhat further in the most recent intermeeting period. Federal funds generally continued to trade close to the middle of the FOMC's target range of ¼ to ½ percent. The deputy manager also updated the Committee on implementation of the new framework for investment of foreign currency reserves and on a proposal to publish data series on interest rates in the market for general collateral repurchase agreements.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the November 1–2 meeting indicated that real gross domestic product (GDP) expanded at a faster pace in the third quarter than in the first half of the year and that labor market conditions continued to strengthen in recent months. Consumer price inflation increased further above its pace early in the year but was still running below the Committee's longer-run objective of 2 percent, restrained in part by earlier decreases in energy prices and in prices of non-energy imports. Most survey-based measures of longer-run inflation expectations were little changed, on balance, while market-based measures of inflation compensation moved up but remained low.

Total nonfarm payroll employment expanded at a solid pace in September, and the unemployment rate was little changed at 5.0 percent. The labor force participation rate and the employment-to-population ratio both edged up in September. The share of workers employed part time for economic reasons was still slightly elevated relative to its level before the recession. The rate of private-sector job openings edged down in August, and the rates of hiring and of quits were unchanged. The four-week moving average of initial claims for unemployment insurance benefits remained low. Measures of labor compensation continued to rise at a moderate pace. The employment cost index for private industry workers increased 2¼ percent over the 12 months ending in September, and average hourly earnings for all employees increased 2½ percent over the same 12-month period.

The unemployment rates for African Americans and for Hispanics remained above the rate for whites but were close to the levels seen just prior to the most recent recession. The labor force participation rate for white individuals aged 25 to 54 continued to be higher than for African Americans and for Hispanics, but the rates for all three groups appeared to have either moved sideways or edged up recently.

Total industrial production increased slightly in September after little change, on net, in July and August. Mining output continued to rise, on balance, in recent months, but manufacturing production was little changed. Over the previous two years, manufacturing output was relatively flat, reflecting the effects of weak export demand, spillovers from the earlier declines in crude oil and natural gas drilling, and slow domestic capital investment more generally. Automakers' assembly schedules suggested that

motor vehicle production would be about unchanged in the near term, and broader indicators of manufacturing production, such as the new orders indexes from national and regional manufacturing surveys, pointed toward only tepid gains, at best, in factory output in the coming months.

Real personal consumption expenditures (PCE) increased at a moderate pace in the third quarter, supported by continued gains in employment, real disposable personal income, and households' net worth. Consumer spending increased in September, partly because of an increase in outlays for motor vehicles. Indeed, unit sales of light motor vehicles rose sharply in September and moved higher in October, supported in part by sizable sales incentives. In addition, consumer sentiment as measured by the University of Michigan Surveys of Consumers remained relatively upbeat in October.

Housing market activity was weak in the third quarter. Real residential investment spending decreased, partly reflecting a decline in total housing starts. The most recent construction data were mixed, with starts for new single-family homes increasing in September and starts for multifamily units declining sharply. Building permit issuance for new single-family homes—which tends to be a good indicator of the underlying trend in construction—was little changed, on balance, in recent months and had remained essentially flat since late last year. Sales of new homes decreased, on net, in August and September, but sales of existing homes increased modestly.

Real private expenditures for business equipment and intellectual property were about flat in the third quarter. New orders for nondefense capital goods excluding aircraft were little changed over August and September, but orders were somewhat above the level of shipments, suggesting a modest pickup in business spending for equipment in the near term. Real business expenditures for nonresidential structures increased in the third quarter, and the number of oil and gas rigs in operation, an indicator of spending for structures in the drilling and mining sector, continued to edge up in October. Real inventory investment was positive in the third quarter after subtracting substantially from real GDP growth in the second quarter. Except in the energy sector, inventories generally seemed well aligned with the pace of sales.

Real federal purchases increased in the third quarter, as defense expenditures turned up and nondefense spending continued to rise. Real state and local government purchases decreased, reflecting a decline in real construction spending by these governments that more than offset a net expansion in state and local government payrolls during the third quarter.

Net exports contributed positively to real GDP growth in the third quarter, largely because of the strength of soybean exports. The nominal U.S. international trade deficit widened in August relative to July, as imports rose more than exports. Import growth was driven by higher imports of capital goods and services, while export growth was led in part by higher exports of industrial supplies and automotive products. The Census Bureau's advance trade estimates for September suggested a narrowing of the trade deficit, with further growth in exports and a decline in imports relative to August.

Total U.S. consumer prices, as measured by the PCE price index, increased about 1¼ percent over the 12 months ending in September, partly restrained by recent decreases in consumer food prices and earlier declines in consumer energy prices. Core PCE price inflation, which excludes changes in food and energy prices, was about 1¾ percent over those same 12 months, held down in part by decreases in the prices of non-energy imports over part of this period and by the pass-through of earlier declines in energy prices into the prices of other goods and services. Over the 12 months ending in September, total consumer prices as measured by the consumer price index (CPI) rose 1½ percent, while core CPI inflation was around 2¼ percent. The Michigan survey measure of median longer-run inflation expectations moved down in October to a new historical low, and the longer-run measure from the Blue Chip Economic Indicators also declined slightly. Measures of longer-run inflation expectations from the Desk's Survey of Primary Dealers and Survey of Market Participants were unchanged in October.

Foreign real GDP growth appeared to pick up significantly in the third quarter following weak growth in the second quarter that primarily reflected contractions in Canada and Mexico. The recovery of oil production in Canada boosted economic activity there, and a pickup in U.S. economic activity and strong household spending in Mexico supported a sharp rebound in Mexican GDP growth. The improvements in these economies more than offset some moderation of growth in China. In the euro area and Japan, economic growth continued at a modest pace. Inflation generally remained subdued in both the emerging market economies and the

advanced foreign economies (AFEs). A notable exception was the United Kingdom, where inflationary pressures increased, partly as a result of a substantial depreciation of the pound in recent months.

Staff Review of the Financial Situation

Domestic financial markets were relatively calm over the period since the September FOMC meeting. Asset prices were little changed, and volatility was mostly low. Market expectations for an increase in the target range for the federal funds rate before the end of the year rose modestly. Nominal Treasury yields edged up on net. No significant market disruptions were observed around the October 14 compliance deadline for MMF reform. Financing conditions for nonfinancial firms and households remained accommodative, on balance, and the credit quality of nonfinancial corporations continued to show signs of stabilization after having deteriorated in earlier quarters.

Federal Reserve communications immediately following the September meeting, notably the Summary of Economic Projections, were interpreted by market participants as slightly more accommodative than expected. Subsequent Federal Reserve communications and U.S. economic data releases over the intermeeting period were generally interpreted as in line with market expectations. The expected path for the federal funds rate implied by quotes on overnight index swap rates steepened slightly, on net, over the intermeeting period. Market-based estimates of the probability of a rate increase before the end of the year rose modestly to about 65 percent. Consistent with market-based estimates, respondents to the Desk's November surveys of primary dealers and market participants on average assigned a probability of about 60 percent to a rate increase by the end of this year. Based on the median responses, the most likely path of the target federal funds rate in 2017 and 2018 was little changed from that reported in the September surveys.

Nominal Treasury yields edged up, on net, since the September FOMC meeting. Yields declined early in the period following the September FOMC communications and amid concerns about developments potentially affecting profitability in the European banking sector, but they subsequently rose. Although those market concerns ebbed somewhat, they remained significant. Nominal yields were pushed up by an increase in inflation compensation, which appeared attributable to a combination of factors, including the recent rise in oil prices and a decline in investors' concerns about the risk of very low inflation outcomes, as implied by quotes on inflation caps and floors.

Broad stock price indexes were little changed, on net, since the September FOMC meeting. Realized and implied volatility in equity markets remained relatively low. Spreads of yields on nonfinancial investment-grade and speculative-grade corporate bonds over those of comparable-maturity Treasury securities declined a bit, with both spreads finishing the period at levels close to their medians during the economic expansions of the past two decades. Based on available reports and analysts' estimates, aggregate corporate earnings per share appeared to continue to rebound in the third quarter, reflecting improvements across a wide range of industries, including the energy sector.

Foreign equity indexes broadly increased over the intermeeting period. Nonetheless, foreign financial markets were sensitive to news about upcoming negotiations between the United Kingdom and the European Union (EU) over the U.K. exit from the EU as well as to ongoing developments in the European banking sector. Over the period, the dollar appreciated against most AFE currencies; the appreciation against the pound was particularly pronounced, reflecting increased concerns that negotiations between U.K. and European officials would result in an outcome featuring less economic integration than anticipated earlier. Concerns about U.K.–EU negotiations and higher U.K. inflation compensation also drove up 10-year gilt yields. In contrast, the dollar depreciated against the currencies of most commodity-exporting countries, including the Mexican peso and Russian ruble, consistent with the increase in oil prices.

Money market reform continued to affect several short-term funding markets in the weeks leading up to the October 14, 2016, compliance deadline, as investors continued to shift from prime funds to government funds. However, these flows slowed significantly in the days just before October 14 and remained subdued afterward. Measures of the liquidity of institutional prime funds, which had increased substantially ahead of the compliance deadline, subsequently declined. The rise in total assets of government funds over the intermeeting period appeared to contribute to moderately elevated take-up at the System's ON RRP facility. Overnight Eurodollar deposit volumes fell substantially in the weeks pre-

ceding the MMF reform compliance deadline and remained low as prime funds pulled back from lending in this market. Despite these volume changes, there was little effect on overnight money market rates, although the spread between the three-month London interbank offered rate and the overnight index swap rate remained elevated.

Financing conditions for nonfinancial firms remained generally accommodative. Gross issuance of corporate bonds was robust in September amid strong global demand for bonds and low yields. Growth of commercial and industrial (C&I) loans slowed overall in the third quarter but picked up in September. Demand and lending standards for C&I loans remained unchanged, on net, in the third quarter, according to the October Senior Loan Officer Opinion Survey on Bank Lending Practices (SLOOS).

The credit quality of nonfinancial corporations, which had deteriorated somewhat over the past few quarters, continued to show signs of stabilization. The volume of bond downgrades only slightly outpaced that of upgrades in September. Default rates and expected year-ahead default rates for nonfinancial firms both edged down, although they remained elevated compared with their ranges in recent years.

Financing conditions for commercial real estate (CRE) also remained largely accommodative but showed some signs of tightening. Growth of CRE loans on banks' books continued to be strong in the third quarter, even though a significant number of banks reported in the October SLOOS that they had tightened lending standards on CRE loans. Issuance of commercial mortgage-backed securities (CMBS) picked up in the third quarter relative to its pace in the first half of the year. Spreads on CMBS were little changed over the intermeeting period.

In the municipal bond market, gross issuance of bonds was brisk and yields on general obligation bonds, on balance, edged up. The credit quality of state and local governments was generally stable.

Financing conditions in the residential mortgage market were little changed since the September FOMC meeting, and credit remained readily available for most borrowers. Interest rates on 30-year fixed-rate mortgages edged up but stayed at a low level. In the October SLOOS, several large banks noted a continued easing of standards for home-purchase loans eligible for purchase by the government-sponsored enterprises. Indicators suggested that refinancing activity continued to increase and reached its highest level since 2013 in response to the low level of mortgage rates.

Conditions in consumer credit markets were little changed, on balance, against a backdrop of largely stable credit quality. Growth in both revolving and nonrevolving loans remained robust. While auto credit standards were broadly unchanged, respondents to the October SLOOS indicated that they had tightened credit card standards for subprime customers. Yield spreads for securities backed by credit card and auto loans over Treasury securities of comparable maturities were little changed on balance. Issuance of consumer asset-backed securities picked up somewhat in the third quarter from the levels seen earlier this year.

In its latest report on potential risks to the stability of the U.S. financial system, the staff continued to judge that overall vulnerabilities remained moderate. Vulnerabilities associated with maturity and liquidity transformation appeared to have been reduced, reflecting the effects of newly implemented rules for prime MMFs. Vulnerabilities emanating from leverage in the financial sector remained low, as the largest U.S. banks had strong regulatory capital and liquidity positions. Valuation pressures across major asset categories remained at a moderate level: Although some metrics for CRE transactions indicated notable valuation pressures, CRE lending standards had tightened somewhat over the previous year, and valuations for domestic corporate equity and bonds were, on balance, in the middle of their historical ranges in relation to still-low Treasury yields. Vulnerabilities from leverage in the private nonfinancial sector were seen as moderate overall, reflecting the combination of relatively high aggregate leverage in the corporate sector, a sharp slowdown in the expansion of the riskiest forms of corporate debt, and a continued modest rise in aggregate household debt that accrued almost exclusively to borrowers with very high credit scores.

Monetary policy announcements by foreign central banks had limited effects on asset prices. At its September monetary policy meeting, the Bank of Japan (BOJ) announced that it will purchase Japanese government bonds (JGBs) to keep the yield on 10-year JGBs around zero; the BOJ also announced that it will continue to expand the monetary base until consumer price inflation exceeds the 2 percent target and stays above the target in a stable manner. No further

changes were announced following the BOJ's October meeting. The European Central Bank kept its policy stance unchanged at its October meeting while signaling that further changes to its asset purchase program could be announced at its next meeting.

Staff Economic Outlook

In the U.S. economic projection prepared by the staff for the November FOMC meeting, the pace of real GDP growth was forecast to be faster over the second half of this year than in the first half, as business investment was anticipated to turn up and the drag from inventory investment was expected to end. However, the forecast for the second half was lower than in the September projection, primarily reflecting softer-than-expected data on consumer spending. The staff's forecast for real GDP growth over the next couple of years was also slightly lower than in the previous projection, primarily reflecting the effects of higher assumed paths for the dollar and for crude oil prices. Nonetheless, the staff projected that real GDP would expand at a modestly faster pace than potential output in 2017 and 2018, supported by solid gains in consumer spending and, to a lesser degree, by pickups in both residential and business investment; in 2019, GDP was projected to expand at the same rate as its potential. The unemployment rate was forecast to edge down gradually through the end of 2018 and then flatten out in 2019; the path for the unemployment rate was a little higher than in the previous projection but was still projected to run below the staff's estimate of its longer-run natural rate.

The near-term forecast for consumer price inflation was somewhat higher than in the previous projection, reflecting incoming data on core prices and energy prices. Beyond the near term, the inflation forecast was generally little revised. The staff continued to project that inflation would increase over the next several years, as food and energy prices along with the prices of non-energy imports were expected to begin rising steadily this year. However, inflation was projected to be marginally below the Committee's longer-run objective of 2 percent in 2019.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The risks to the forecast for real GDP were seen as tilted to the downside, reflecting the staff's assessment that both monetary and fiscal policy appeared to be better positioned to offset large positive shocks than adverse ones. In addition, the staff continued to see the risks to the forecast from developments abroad as skewed to the downside. Consistent with the downside risks to aggregate demand, the staff viewed the risks to its outlook for the unemployment rate as tilted to the upside. The risks to the projection for inflation were seen as roughly balanced. The possibility that longer-term inflation expectations may have edged down was roughly counterbalanced by the risks that somewhat firmer inflation this year could be more persistent than expected, particularly in an economy that was projected to continue operating above its long-run potential.

Participants' Views on Current Conditions and the Economic Outlook

In their discussion of the economic situation and the outlook, meeting participants agreed that information received over the intermeeting period indicated that the labor market had continued to strengthen and that growth of economic activity had picked up from the modest pace seen in the first half of the year. Job gains had been solid in recent months, although the unemployment rate was little changed. Household spending had been rising moderately, but business fixed investment had remained soft. Inflation had increased somewhat since earlier this year but remained below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation had moved up but remained low; most survey-based measures of longer-term inflation expectations had changed little, on balance, in recent months. Domestic and global asset markets remained relatively calm over the intermeeting period, and U.S. financial conditions continued to be broadly accommodative.

Participants generally indicated that their economic forecasts had changed little over the intermeeting period. They continued to anticipate that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market conditions would strengthen somewhat further. Inflation was expected to rise to 2 percent over the medium term, as the transitory effects of past declines in energy and import prices continued to dissipate and the labor market strengthened further. A substantial majority viewed the near-term risks to the economic outlook as roughly balanced, although a few participants judged that significant downside risks remained, cit-

ing various factors including the low value of the neutral federal funds rate and its proximity to the effective lower bound, the possibility of weaker-than-expected growth in foreign economies, the continued uncertainty associated with the United Kingdom's exit from the EU, or financial fragilities in some countries. Participants agreed that the Committee should continue to closely monitor inflation indicators and global economic and financial developments.

Participants noted that although real GDP growth in the third quarter was appreciably above the slow pace of the first half, it had been boosted in part by transitory factors, including a surge in agricultural exports and a bounceback in inventory investment. Excluding these factors, underlying economic growth had been relatively modest: Growth of consumer spending had slowed from its brisk pace earlier in the year, residential investment had fallen again, and business fixed investment had remained soft. Retailers in a few Districts reported weak to moderate activity, although some contacts thought that holiday sales were likely to peak late in the season. Real economic activity was expected to advance at a moderate pace in coming quarters, primarily reflecting solid growth in consumer spending, consistent with ongoing employment gains, increases in household wealth, and low interest rates.

Participants continued to expect economic activity in the coming quarters to be supported by a pickup in business investment. Recent increases in oil and gas drilling activity in response to higher energy prices were seen as a positive development for the investment outlook; however, a few participants reported that uncertainty about prospects for government policy, shorter investment time horizons for businesses, or the potential for advances in technology to disrupt existing business models were likely weighing on capital spending plans. A few participants noted weakness in nonresidential construction. District reports on residential construction activity were mixed. One participant reported generally strong conditions in the District's housing markets but also cited various factors that were restraining residential construction in some locales, including constraints on builder financing, limitations on the supply of buildable lots, and shortages of skilled labor.

In their discussion of business activity in their Districts, participants provided mixed reports on manufacturing, with a few areas that had been adversely affected by the downturn in energy prices reporting a modest pickup in output. In the agricultural sector, low crop prices were said to continue to weigh on farm income and farm spending.

Participants noted that economic growth in many foreign economies remained subdued, and that inflation rates abroad generally were still quite low. Some participants observed that important international downside risks remained, including constraints on monetary policies in the low interest rate environments of some countries; investors' concerns about developments potentially affecting profitability in the European banking sector; the possible consequences of upcoming negotiations and eventual terms of the United Kingdom's exit from the EU; potential deleterious effects from rapid credit growth in China; and the potential for further dollar appreciation, which could restrain U.S. inflation for a considerable time.

Participants generally agreed that labor market conditions had continued to improve over the intermeeting period. Reports from some Districts pointed to a tightening in labor markets, evidenced by shortages of qualified workers in some occupations, increases in overtime hours, or a pickup in wage inflation. In several of these Districts, business contacts had undertaken workforce development and worker training to address a shortage of labor with the necessary skills.

Many participants commented on the rise in the labor force participation rate since late 2015. A few of them noted that the increase had largely reflected a diminution in the flow of individuals leaving the workforce rather than an increase of new entrants into the labor force and had been more prevalent among workers with relatively less education. Participants expressed uncertainty about how long the participation rate could be expected to continue rising, particularly in light of the downward structural trend in this series. On the one hand, the participation rate for prime-age males remained significantly below its level before the financial crisis, suggesting that it could rise further over time. In addition, there was some uncertainty around estimates of the longer-run trend rate of labor force participation and it could be higher than previously thought, reflecting, for example, a shift toward later retirement. On the other hand, from a business cycle perspective, the increase in the participation rate in recent months was consistent with a tightening labor market and an economy nearing full employment; furthermore, it was not clear that output growth above the economy's poten-

tial growth rate would succeed in drawing new entrants permanently into the labor force. Overall, while some participants expressed the view that the economy was close to or at full employment, several others judged that appreciable slack could remain in the labor market. Some participants characterized wage pressures as only moderate, although one noted that wage growth was similar to its pace at the peak of the previous economic expansion.

Readings on headline and core PCE price inflation had come in somewhat higher than expected in recent months. Participants generally regarded this as a positive development, consistent with headline inflation rising over the medium term to the Committee's objective of 2 percent. A few participants observed that it was difficult to judge how much of the uptick in core PCE price inflation reflected transitory factors, while a couple of others saw the incoming data as suggesting that inflation could move up to the Committee's objective more rapidly than previously expected. Participants discussed possible policy implications of the risks surrounding the outlook for inflation, including the possibility that achieving the Committee's inflation objective sooner than previously anticipated could cause a revision in market expectations of the path for policy rates and a sharp rise in longer-term interest rates, or the possibility that a further appreciation of the dollar stemming from developments abroad could renew disinflationary pressures and postpone the need for policy firming. Some participants regarded the uptick in market-based measures of inflation compensation over the intermeeting period as a welcome suggestion of further progress toward the Committee's inflation goal. However, several cautioned that these measures remained low or that the measures still appeared to embed a significant weight on undesirably low inflation outcomes. The median expectation for inflation over the next 5 to 10 years from the Michigan survey edged down in October to a new historical low, although it was noted that this drop could be explained by a reduction in the number of respondents who had previously expected relatively high inflation outcomes. Overall, participants judged that survey-based measures of inflation expectations had been fairly stable in recent months.

Participants discussed a range of issues related to recent developments in financial markets and financial stability. MMF reforms that became effective in mid-October had resulted in a substantial shift of assets out of prime funds and into government-only funds. It was observed that these reforms had contributed to a sizable reduction of risk in the shadow banking system. Participants also discussed some causes of the low yields on longer-term Treasury securities and their embedded term premiums, which were below historical average levels. Among the factors cited were a persistent decline in the neutral federal funds rate, and depressed term premiums likely owing to the elevated size of the Federal Reserve's balance sheet as well as the reduced likelihood of high inflation relative to several decades ago. Some of these factors could endure for some time.

In connection with the participants' discussion of the long-run monetary policy implementation framework, many participants noted that the Committee's broader monetary policy strategy needed both to be considered in conjunction with the design of such a framework and to receive careful further consideration in its own right. In particular, accumulating evidence of slow trend productivity and output growth and associated persistently low levels of neutral interest rates, both in the United States and abroad, had potential implications for the most effective policy implementation framework for the Federal Reserve in coming years as well as the monetary policy strategy that would best promote the Committee's macroeconomic objectives. Among other factors that needed to be taken into account, it was observed that neutral real short-term interest rates could decline further if central bank balance sheets contracted or the positive effects of quantitative easing on economic activity waned over time. Participants agreed that issues associated with monetary policy implementation should be discussed within the context of the current and potential future economic and financial environment and the Committee's strategy for monetary policy.

Against the backdrop of their views of the economic outlook, participants discussed whether the available information warranted taking another step to reduce policy accommodation at this meeting. Based on the relatively limited information received since the September FOMC meeting, participants generally agreed that the case for increasing the target range for the federal funds rate had continued to strengthen. Participants saw recent information as indicating that labor market conditions had improved further and considered the firming in inflation and inflation compensation to be positive developments, consistent with continued progress toward the Committee's 2 percent inflation objective. However, a number of participants expressed the view that some modest slack remained in the labor market or noted that readings on inflation compensation and inflation

expectations remained low. Moreover, some participants suggested that current conditions did not point to an immediate need to tighten policy or that some further evidence of continued progress toward the Committee's objectives would provide greater support for policy firming.

Most participants expressed a view that it could well become appropriate to raise the target range for the federal funds rate relatively soon, so long as incoming data provided some further evidence of continued progress toward the Committee's objectives. Some participants noted that recent Committee communications were consistent with an increase in the target range for the federal funds rate in the near term or argued that to preserve credibility, such an increase should occur at the next meeting. A few participants advocated an increase at this meeting; they viewed recent economic developments as indicating that labor market conditions were at or close to those consistent with maximum employment and expected that recent progress toward the Committee's inflation objective would continue, even with further gradual steps to remove monetary policy accommodation. In addition, many judged that risks to economic and financial stability could increase over time if the labor market overheated appreciably, or expressed concern that an extended period of low interest rates risked intensifying incentives for investors to reach for yield, potentially leading to a mispricing of risk and misallocation of capital. In contrast, some others judged that allowing the unemployment rate to fall below its longer-run normal level for a time could result in favorable supply-side effects or help hasten the return of inflation to the Committee's 2 percent objective; noted that proximity of the federal funds rate to the effective lower bound places potential constraints on monetary policy; or stressed that global developments could pose risks to U.S. economic activity. More generally, it was emphasized that decisions regarding near-term adjustments of the stance of monetary policy would appropriately remain dependent on the outlook as informed by incoming data, and participants expected that economic conditions would evolve in a manner that would warrant only gradual increases in the federal funds rate.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that the information received since the Committee met in September indicated that the labor market had continued to strengthen and that growth of economic activity had picked up from the modest pace seen in the first half of this year. Although the unemployment rate was little changed in recent months, job gains had been solid. Household spending had been rising moderately but business fixed investment had remained soft. Inflation had increased somewhat since earlier this year but was still below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation had moved up but remained low; most survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months.

With respect to the economic outlook and its implications for monetary policy, members continued to expect that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market conditions would strengthen somewhat further. Almost all of them continued to judge that near-term risks to the economic outlook were roughly balanced. Members generally observed that labor market conditions had improved appreciably over the past year, a development that was particularly evident in the solid pace of monthly payroll employment gains and the increase in the labor force participation rate. It was noted that allowing the unemployment rate to modestly undershoot its longer-run normal level could foster the return of inflation to the FOMC's 2 percent objective over the medium term. A few members, however, were concerned that a sizable undershooting of the longer-run normal unemployment rate could necessitate a steep subsequent rise in policy rates, undermining the Committee's prior communications about its expectations for a gradually rising policy rate or even posing risks to the economic expansion.

Members continued to expect inflation to remain low in the near term, but most anticipated that, with gradual adjustments in the stance of monetary policy, inflation would rise to the Committee's 2 percent objective over the medium term. Some members observed that the increases in inflation and inflation compensation in recent months were welcome, although a couple of them noted that inflation was still running below the Committee's objective. Against this backdrop and in light of the current shortfall of inflation from 2 percent, members agreed

that they would continue to carefully monitor actual and expected progress toward the Committee's inflation goal.

After assessing the outlook for economic activity, the labor market, and inflation, as well as the risks around that outlook, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent at this meeting. Members generally agreed that the case for an increase in the policy rate had continued to strengthen. But a majority of members judged that the Committee should, for the time being, await some further evidence of progress toward its objectives of maximum employment and 2 percent inflation before increasing the target range for the federal funds rate. A few members emphasized that a cautious approach to removing accommodation was warranted given the proximity of policy rates to the effective lower bound, as the Committee had more scope to increase policy rates, if necessary, than to reduce them. Two members preferred to raise the target range for the federal funds rate by 25 basis points at this meeting. They saw inflation as close to the 2 percent objective and viewed an increase in the federal funds rate as appropriate at this meeting because they judged that the economy was essentially at maximum employment and that monetary policy was unable to contribute to a permanent further improvement in labor market conditions in these circumstances.

The Committee agreed that, in determining the timing and size of future adjustments to the target range for the federal funds rate, it would assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee expected that economic conditions would evolve in a manner that would warrant only gradual increases in the federal funds rate and that the federal funds rate was likely to remain, for some time, below levels that are expected to prevail in the longer run. However, members emphasized that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming data.

The Committee also decided to maintain its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipated doing so until normalization of the level of the federal funds rate is well under way. Members noted that this policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective November 3, 2016, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of ¼ to ½ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 0.25 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

> "Information received since the Federal Open Market Committee met in September indicates that the labor market has continued to strengthen and growth of economic activity has picked up from the modest pace seen in the first half of this year. Although the unemployment rate is little changed in recent months, job gains have been solid. Household spending has been rising moderately but business fixed investment has remained soft. Inflation has increased some-

what since earlier this year but is still below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation have moved up but remain low; most survey-based measures of longer-term inflation expectations are little changed, on balance, in recent months. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market conditions will strengthen somewhat further. Inflation is expected to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipate and the labor market strengthens further. Near-term risks to the economic outlook appear roughly balanced. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

Against this backdrop, the Committee decided to maintain the target range for the federal funds rate at ¼ to ½ percent. The Committee judges that the case for an increase in the federal funds rate has continued to strengthen but decided, for the time being, to wait for some further evidence of continued progress toward its objectives. The stance of monetary policy remains accommodative, thereby supporting further improvement in labor market conditions and a return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions."

Voting for this action: Janet L. Yellen, William C. Dudley, Lael Brainard, James Bullard, Stanley Fischer, Jerome H. Powell, Eric Rosengren, and Daniel K. Tarullo.

Voting against this action: Esther L. George and Loretta J. Mester.

Mses. George and Mester dissented because they preferred to increase the target range for the federal funds rate by 25 basis points at this meeting.

Ms. George judged that, with the labor market near full employment and inflation approaching the Committee's 2 percent objective, another step in the gradual adjustment of monetary policy was appropriate. While a low level of the target range for the federal funds rate had supported achieving the Committee's objectives, such low levels were no longer warranted and, if maintained, could pose a risk to the sustainability of the economic expansion with stable inflation. In particular, she viewed the supply-side benefits of allowing labor utilization to rise above its neutral level as temporary, and noted that monetary policy was unable to affect the longer-run growth potential of the economy.

Ms. Mester judged that the economy was essentially at full employment in terms of what can be achieved through monetary policy. The unemployment rate was at her estimate of its longer-run normal level, and labor market conditions were projected to tighten further. In addition, she noted that inflation was moving up and was close to the Committee's 2 percent objective. In these circumstances, she believed it appropriate to gradually increase the target range for the federal funds rate from its current

low level, which would allow monetary policy to continue to lend support to the economic expansion. A gradual path would allow the Committee to better calibrate policy over time as it learns more about the underlying structural aspects of the economy. Ms. Mester saw taking the next step in removing policy accommodation as consistent with the Committee's communications about the appropriate path for monetary policy.

Consistent with the Committee's decision to leave the target range for the federal funds rate unchanged, the Board of Governors took no action to change the interest rates on reserves or discount rates.

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, December 13–14, 2016. The meeting adjourned at 10:00 a.m. on November 2, 2016.

Notation Vote

By notation vote completed on October 11, 2016, the Committee unanimously approved the minutes of the Committee meeting held on September 20–21, 2016.

Brian F. Madigan
Secretary

Meeting Held on December 13–14, 2016

A joint meeting of the Federal Open Market Committee and the Board of Governors was held in the offices of the Board of Governors of the Federal Reserve System in Washington, D.C., on Tuesday, December 13, 2016, at 1:00 p.m. and continued on Wednesday, December 14, 2016, at 9:00 a.m.[1]

Present

Janet L. Yellen
Chair

William C. Dudley
Vice Chairman

Lael Brainard

James Bullard

Stanley Fischer

Esther L. George

Loretta J. Mester

Jerome H. Powell

Eric Rosengren

Daniel K. Tarullo

Charles L. Evans, Patrick Harker, Robert S. Kaplan, Neel Kashkari, and Michael Strine
Alternate Members of the Federal Open Market Committee

Jeffrey M. Lacker, Dennis P. Lockhart, and John C. Williams
Presidents of the Federal Reserve Banks of Richmond, Atlanta, and San Francisco, respectively

Brian F. Madigan
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Scott G. Alvarez
General Counsel

Michael Held
Deputy General Counsel

Steven B. Kamin
Economist

Thomas Laubach
Economist

David W. Wilcox
Economist

Thomas A. Connors, David E. Lebow, Stephen A. Meyer, Christopher J. Waller, and William Wascher
Associate Economists

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Robert deV. Frierson
Secretary, Office of the Secretary, Board of Governors

Matthew J. Eichner[2]
Director, Division of Reserve Bank Operations and Payment Systems, Board of Governors

Michael S. Gibson
Director, Division of Banking Supervision and Regulation, Board of Governors

Margie Shanks[3]
Deputy Secretary, Office of the Secretary, Board of Governors

James A. Clouse
Deputy Director, Division of Monetary Affairs, Board of Governors

Andreas Lehnert
Deputy Director, Division of Financial Stability, Board of Governors

Beth Anne Wilson
Deputy Director, Division of International Finance, Board of Governors

Trevor A. Reeve
Senior Special Adviser to the Chair, Office of Board Members, Board of Governors

David Bowman, Andrew Figura, Joseph W. Gruber, Ann McKeehan, and David Reifschneider
Special Advisers to the Board, Office of Board Members, Board of Governors

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1 The Federal Open Market Committee is referenced as the "FOMC" and the "Committee" in these minutes.

2 Attended the discussions of the Rules Regarding Availability of Information and developments in financial markets and open market operations.

3 Attended Wednesday session only.

Linda Robertson
Assistant to the Board, Office of Board Members, Board of Governors

Antulio N. Bomfim, Robert J. Tetlow, and Joyce K. Zickler
Senior Advisers, Division of Monetary Affairs, Board of Governors

Wayne Passmore
Senior Adviser, Division of Research and Statistics, Board of Governors

Brian M. Doyle
Associate Director, Division of International Finance, Board of Governors

Stacey Tevlin
Associate Director, Division of Research and Statistics, Board of Governors

Stephanie R. Aaronson
Assistant Director, Division of Research and Statistics, Board of Governors

Christopher J. Gust
Assistant Director, Division of Monetary Affairs, Board of Governors

Don Kim
Adviser, Division of Monetary Affairs, Board of Governors

Karen M. Pence
Adviser, Division of Research and Statistics, Board of Governors

Penelope A. Beattie[4]
Assistant to the Secretary, Office of the Secretary, Board of Governors

David H. Small
Project Manager, Division of Monetary Affairs, Board of Governors

Edward Herbst and Lubomir Petrasek
Principal Economists, Division of Monetary Affairs, Board of Governors

Achilles Sangster II
Information Management Analyst, Division of Monetary Affairs, Board of Governors

Mark L. Mullinix
First Vice President, Federal Reserve Bank of Richmond

David Altig
Executive Vice President, Federal Reserve Bank of Atlanta

Michael Dotsey, Evan F. Koenig, Spencer Krane, and Mark E. Schweitzer
Senior Vice Presidents, Federal Reserve Banks of Philadelphia, Dallas, Chicago, and Cleveland, respectively

Terry Fitzgerald, Giovanni Olivei, Argia M. Sbordone, Mark Spiegel, and Alexander L. Wolman
Vice Presidents, Federal Reserve Banks of Minneapolis, Boston, New York, San Francisco, and Richmond, respectively

Willem Van Zandweghe
Assistant Vice President, Federal Reserve Bank of Kansas City

Rules Regarding Availability of Information

The Committee unanimously voted to amend its Rules Regarding Availability of Information (Rules) in order to comply with the FOIA Improvement Act of 2016 and to make a number of other technical changes.[5] The amended Rules would be published in the *Federal Register* as an interim final rule, which would become effective immediately on publication. The Committee anticipated finalization of the Rules after any appropriate changes were incorporated based on comments received from the public during the 60-day comment period following the *Federal Register* notice.

> Secretary's note: The amended Rules were published in the *Federal Register* on December 27, 2016.

Developments in Financial Markets and Open Market Operations

The manager of the System Open Market Account (SOMA) reported on developments in U.S. and global financial markets during the period since the Committee met on November 1–2, 2016. Nominal yields on longer-term U.S. Treasury securities rose substantially over the period, reflecting both higher real yields and an increase in inflation compensation. The value of the dollar on foreign exchange markets rose, U.S. equity indexes increased considerably, and credit spreads on U.S. corporate bonds narrowed.

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[4] Attended Tuesday session only.

[5] The approved Rules Regarding Availability of Information are available at www.federalreserve.gov/monetarypolicy/rules_authorizations.htm.

Market pricing and survey results indicated that market participants had come to see a high probability of an increase of 25 basis points in the FOMC's target range for the federal funds rate at this meeting, and that the path of the federal funds rate anticipated by market participants for coming years had steepened. Surveys of market participants indicated that revised expectations for government spending and tax policy following the U.S. elections in early November were seen as the most important reasons, among several factors, for the increase in longer-term Treasury yields, the climb in equity valuations, and the rise in the dollar.

The manager also reported on developments in money markets and open market operations. Market interest rates on overnight repurchase agreements (repos) fell during the intermeeting period. Market participants pointed to a number of factors contributing to the decline, including lower demands for funding by securities dealers and the ample availability of financing from government-only money market funds (MMFs). The decline in repo rates, together with the shift of MMF assets toward government-only funds, had likely boosted usage of the System's overnight reverse repurchase agreement (ON RRP) facility over the period. In contrast to the decline in interest rates for secured money market transactions, the effective federal funds rate generally remained near the middle of the FOMC's ¼ to ½ percent target range. The manager also reported on the Open Market Desk's regular review of operational readiness for a range of open market operations.

By unanimous vote, the Committee ratified the Desk's domestic transactions over the intermeeting period. There were no intervention operations in foreign currencies for the System's account during the intermeeting period.

Staff Review of the Economic Situation

The information reviewed for the December 13–14 meeting indicated that real gross domestic product (GDP) was expanding at a moderate pace over the second half of the year and that labor market conditions had continued to strengthen in recent months. Consumer price inflation increased further above its pace early in the year but was still running below the Committee's longer-run objective of 2 percent, restrained in part by earlier declines in energy prices and in prices of non-energy imports.

Taken together, a range of recent indicators showed that labor market conditions had tightened further. Total nonfarm payroll employment increased at a solid pace in October and November, and the unemployment rate declined, reaching 4.6 percent in November. The share of workers employed part time for economic reasons decreased; however, both the labor force participation rate and the employment-to-population ratio edged down on net. The rates of private-sector job openings, of hiring, and of quits were generally little changed in September and October at levels above those seen during much of the current economic expansion. The four-week moving average of initial claims for unemployment insurance benefits remained low. Labor productivity in the business sector was flat over the four quarters ending in the third quarter. Measures of labor compensation continued to rise at a moderate rate. Compensation per hour in the business sector rose 3 percent over the four quarters ending in the third quarter, and average hourly earnings for all employees increased 2½ percent over the 12 months ending in November. The unemployment rates for African Americans, for Hispanics, and for whites all declined in recent months. The unemployment rates for African Americans and for Hispanics remained above the rate for whites but were close to the levels seen just before the most recent recession.

Total industrial production was flat in October. Both manufacturing production and mining output increased, but the output of utilities declined markedly because of unseasonably warm weather in October. Automakers' assembly schedules suggested that motor vehicle production would be roughly flat in the near term, and broader indicators of manufacturing production, such as the new orders indexes from national and regional manufacturing surveys, pointed toward only modest gains in factory output in the coming months.

Real personal consumption expenditures (PCE) appeared to be rising at a moderate pace in the fourth quarter. Consumer expenditures increased modestly in October but were restrained by a decline in spending for energy services that reflected unseasonably warm weather in that month. Unit sales of light motor vehicles were higher in October and November than average monthly sales in the third quarter. The components of the nominal retail sales data used by the Bureau of Economic Analysis to construct its estimate of PCE rose moderately in November. Recent readings on key factors that influence consumer spending—such as continued gains in employ-

ment, real disposable personal income, and households' net worth—were consistent with moderate real PCE growth for the fourth quarter as a whole. In addition, consumer sentiment as measured by the University of Michigan Surveys of Consumers moved higher in November and early December.

Recent information on housing market activity suggested that real residential investment was picking up in the fourth quarter after decreasing in the previous two quarters. Starts for both new single-family homes and multifamily units rose substantially in October. Building permit issuance for new single-family homes—which tends to be a good indicator of the underlying trend in construction—also increased. Sales of existing homes advanced, although new home sales dipped.

Real private expenditures for business equipment and intellectual property seemed to be soft early in the fourth quarter. Nominal shipments of nondefense capital goods excluding aircraft edged down in October. However, new orders of these capital goods rose and were running above the level of shipments, suggesting a pickup in business spending for equipment in the near term. Nominal business expenditures for nonresidential structures declined in October, but the number of oil and gas rigs in operation, an indicator of spending for structures in the drilling and mining sector, continued to edge up through early December.

Real government purchases looked to be rising modestly in the fourth quarter. Nominal federal government spending in October and November pointed to increases in real defense purchases in the fourth quarter. The payrolls of state and local governments expanded, on balance, in October and November, and nominal construction spending by these governments rose in October.

The U.S. international trade deficit widened in October after narrowing in September. After increasing in September, exports fell substantially in October, reflecting declines in exports of agricultural products, consumer goods, and industrial supplies. Imports in October retraced their September decline, as imports of consumer goods and capital goods rose. The available trade data suggested that real net exports would make a negative contribution to real U.S. GDP growth in the fourth quarter.

Total U.S. consumer prices, as measured by the PCE price index, increased almost 1½ percent over the 12 months ending in October, partly restrained by recent decreases in consumer food prices and earlier declines in consumer energy prices. Core PCE prices, which exclude food and energy prices, rose about 1¾ percent over the same period, held down in part by decreases in the prices of non-energy imports over a portion of this period and by the pass-through of earlier declines in energy prices into the prices of other goods and services. Over the same 12-month period, total consumer prices as measured by the consumer price index (CPI) rose a bit more than 1½ percent, while core CPI inflation was around 2 percent. The Michigan survey measure of median longer-run inflation expectations edged up, on net, in November and early December. The measure of longer-run inflation expectations for PCE prices from the Survey of Professional Forecasters was unchanged in the fourth quarter, and measures of longer-run inflation expectations from the Desk's Survey of Primary Dealers and Survey of Market Participants were also unchanged in December.

Foreign real GDP growth rebounded in the third quarter from an unusually subdued pace in the second quarter. This bounceback was driven primarily by stronger economic growth in Canada and Mexico, two countries where the second-quarter weakness was most pronounced. In the advanced foreign economies (AFEs), recent indicators were consistent with a more moderate pace of economic activity in the fourth quarter. Economic growth also appeared to slow after its uptick in the third quarter in the emerging market economies (EMEs), as indicators for Mexico suggested a return to a more sustainable pace of economic growth and as investment decelerated in China. Inflation increased in most AFEs in recent months but remained significantly below central bank targets. Inflation in the EMEs also moved up, driven largely by a rebound in Chinese food prices and, in some countries, by the effects of currency depreciation.

Staff Review of the Financial Situation

Over the intermeeting period, incoming U.S. economic data and Federal Reserve communications reinforced market participants' expectations for an increase in the target range for the federal funds rate at the December meeting. Asset price movements as well as changes in the expected path for U.S. monetary policy beyond December appeared to be driven largely by expectations of more expansionary fiscal policy in the aftermath of U.S. elections. Nominal Treasury yields rose across the maturity spectrum, and measures of inflation compensation based on

Treasury Inflation-Protected Securities continued to move up. Meanwhile, broad equity price indexes increased, and credit spreads on corporate bonds narrowed. Most private borrowing rates increased somewhat, but financing conditions for nonfinancial firms and households remained broadly accommodative.

Market expectations for an increase in the target range for the federal funds rate at the December meeting rose over the intermeeting period. By the end of the period, quotes on federal funds futures contracts, without adjustment for term premiums, suggested that market participants saw a nearly 95 percent probability of a rate hike. In addition, the expected federal funds rate path over the next few years implied by quotes on overnight index swap (OIS) rates steepened. Most of the steepening of the expected policy path occurred following the U.S. elections, reportedly in part reflecting investors' perception that the incoming Congress and Administration would enact significant fiscal stimulus measures. Market-based measures of uncertainty regarding monetary policy at horizons beyond one year moved up, suggesting that some of the firming in OIS rates could reflect a rise in term premiums. Consistent with market-based estimates, respondents to the Desk's December surveys of primary dealers and market participants assigned a probability near 90 percent to a rate hike in December.

Nominal Treasury yields moved up considerably since the November FOMC meeting. Intermediate- and longer-term yields were boosted by roughly equal increases in real yields and inflation compensation. Measures of inflation compensation extended an upward trajectory that began around midyear. Changes in market quotes for inflation caps and floors suggested that the rise in inflation compensation reflected in part higher costs of protection against above-target inflation outcomes. The rise in inflation compensation appeared to be spurred in part by the recent climb in oil prices, with a notable jump after OPEC's agreement at its November 30 meeting to cut production.

Broad U.S. equity price indexes rose over the intermeeting period, apparently boosted by investors' expectations of stronger earnings growth and improved risk sentiment, with much of the rally coming after the U.S. elections. Share prices for the financial sector outperformed the broader market, while stock prices in sectors that typically benefit from lower interest rates, such as utilities, underperformed. Implied volatility in equity markets decreased, and yield spreads of nonfinancial corporate bonds over those of comparable-maturity Treasury securities narrowed for both investment- and speculative-grade firms. Available reports suggested that earnings for firms in the S&P 500 index increased in the third quarter on a seasonally adjusted basis, and the improvement in earnings was broad based across sectors.

Money market flows continued to stabilize over the intermeeting period following outsized movements in the period before implementation of MMF reforms in mid-October. Assets under management at government MMFs rose modestly, while assets at prime MMFs were about unchanged. In addition, outstanding levels of commercial paper (CP) and negotiable certificates of deposit were stable. The effective federal funds rate remained well within the FOMC's target range. Rates on overnight Eurodollar deposits, CP, and other short-term unsecured instruments were close to the federal funds rate. Overnight Treasury repo rates declined in mid-November but stayed above the ON RRP offering rate. Rates on term money market instruments increased, consistent with firming expectations for a December rate hike.

Financing conditions for nonfinancial firms remained generally accommodative. Although gross issuance of corporate bonds slowed notably in October and November from the brisk pace in the third quarter, the decrease in corporate bond spreads after the U.S. elections suggests that the lower issuance did not reflect a tightening of financial conditions. In addition, growth in commercial and industrial loans from banks picked up after having dipped some during the third quarter, issuance of leveraged loans by nonbanks was robust, and CP outstanding at nonfinancial firms increased on balance.

The credit quality of nonfinancial corporations remained solid. The volume of corporate bond rating downgrades in October and November outpaced that of upgrades but was moderate compared with rates seen in the first half of the year. Default rates and expected year-ahead default rates for nonfinancial firms declined modestly over the intermeeting period, although both remained somewhat elevated compared with their ranges in recent years. Indicators of supply and demand conditions for small business credit were generally unchanged over the past quarter, with demand appearing to remain weak.

Gross issuance of municipal bonds remained solid in October, and the credit quality of state and local governments was stable, as the number of ratings downgrades only moderately outpaced the number of upgrades in October and November. Yields on general obligation bonds rose somewhat more than those on comparable-maturity Treasury securities over the intermeeting period, reportedly reflecting expected reductions in the tax benefit of municipal bonds.

Financing conditions for commercial real estate (CRE) also remained largely accommodative. The average rate of growth of CRE loans at banks continued to be strong in October and November. Spreads on commercial mortgage-backed securities narrowed a little over the intermeeting period, and issuance of such securities continued to outpace that of the first half of 2016.

The interest rate on 30-year fixed-rate residential mortgages moved up in line with Treasury yields, although the rate remained low by historical standards and mortgage availability appeared little changed. Likely in part because of the increase in mortgage rates, refinance originations decreased in November, but purchase originations were little changed.

Consumer credit continued to be readily available for most borrowers, and overall loan balances increased about 6 percent over the 12 months ending in September. In the subprime sector, credit card lending standards appeared to remain tight, and extensions of new credit to subprime auto loan borrowers edged down in the third quarter. Measures of consumer credit quality were little changed in the third quarter.

Foreign financial markets responded primarily to U.S. developments over the intermeeting period, as market participants assessed the effects of potential policy changes resulting from the U.S. elections on foreign economies. Spillovers from U.S. markets lifted yields and equity prices in most AFEs, but higher yields in the United States seemed to weigh on investor sentiment toward EMEs, where prices of risky assets declined. On a trade-weighted basis, the dollar appreciated notably against both AFE and EME currencies. In particular, the dollar strengthened about 10 percent against the Japanese yen and 5 percent against the Mexican peso. The declines in EME currencies and risky asset prices were reportedly driven by higher U.S. yields as well as by uncertainty about possible changes in U.S. trade policies. Currency weakness prompted some EME central banks, such as the Bank of Mexico and the Central Bank of the Republic of Turkey, to tighten monetary policy. However, the Central Bank of Brazil eased monetary policy to support economic growth.

In the euro area, investors were attentive to the constitutional referendum in Italy and the December meeting of the European Central Bank (ECB). In Italy, the "No" vote on constitutional reform and the subsequent resignation of the prime minister raised concerns that recapitalization of the country's banking sector would become more difficult. However, these developments left little imprint on financial markets on net. At its December meeting, the ECB extended its asset purchase program for a longer period of time than market participants anticipated while reducing the pace of asset purchases. In addition, the minimum maturity for eligible securities was lowered, and the limitation on purchases of securities with a yield below the deposit facility rate was relaxed. As a result, sovereign yield curves in the euro area steepened somewhat.

Staff Economic Outlook

In the U.S. economic projection prepared by the staff for the December FOMC meeting, the near-term forecast was little changed from the projection prepared for the November meeting. Real GDP growth in the second half of 2016 was still expected to be faster than in the first half. The staff's forecast for real GDP growth over the next several years was slightly higher, on balance, largely reflecting the effects of the staff's provisional assumption that fiscal policy would be more expansionary in the coming years. These effects were substantially counterbalanced by the restraint from the higher assumed paths for longer-term interest rates and the foreign exchange value of the dollar. The staff projected that real GDP would expand at a modestly faster pace than potential output in 2017 through 2019. The unemployment rate was forecast to edge down gradually, on net, and to continue to run below the staff's estimate of its longer-run natural rate through the end of 2019; the path for the unemployment rate was a little lower than in the previous projection.

The near-term forecast for consumer price inflation was somewhat higher than in the previous projection, reflecting recent increases in energy prices. Beyond the near term, the inflation forecast was little revised. The staff continued to project that inflation would edge up over the next several years, as food and energy prices along with the prices of non-energy

imports were expected to begin steadily rising in 2017. However, inflation was projected to be marginally below the Committee's longer-run objective of 2 percent in 2019.

The staff viewed the uncertainty around its projections for real GDP growth, the unemployment rate, and inflation as similar to the average of the past 20 years. The risks to the forecast for real GDP were seen as tilted to the downside, reflecting the staff's assessment that monetary policy appeared to be better positioned to offset large positive shocks than substantial adverse ones. In addition, the staff continued to see the risks to the forecast from developments abroad as skewed to the downside. Consistent with the downside risks to aggregate demand, the staff viewed the risks to its outlook for the unemployment rate as tilted to the upside. The risks to the projection for inflation were seen as roughly balanced. The downside risks from the possibility that longer-term inflation expectations may have edged lower or that the dollar could appreciate more than anticipated were seen as roughly counterbalanced by the upside risk that inflation could increase more than expected in an economy that was projected to continue operating above its long-run potential.

Participants' Views on Current Conditions and the Economic Outlook

In conjunction with this FOMC meeting, members of the Board of Governors and Federal Reserve Bank presidents submitted their projections of the most likely outcomes for real output growth, the unemployment rate, and inflation for each year from 2016 through 2019 and over the longer run, based on their individual assessments of the appropriate path for the federal funds rate.[6] The longer-run projections represented each participant's assessment of the rate to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. These projections and policy assessments are described in the Summary of Economic Projections, which is an addendum to these minutes.

In their discussion of the economic situation and the outlook, participants agreed that information received over the intermeeting period indicated that the labor market had continued to strengthen and that economic activity had been expanding at a moderate pace since midyear. Job gains had been solid in recent months, and the unemployment rate had declined. Household spending had been rising moderately, but business fixed investment remained soft. Inflation had increased since earlier in the year but was still below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation had moved up considerably but still were low; most survey-based measures of longer-term inflation expectations were little changed, on balance, in recent months.

Participants expected that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market conditions would strengthen somewhat further. Inflation was expected to rise to 2 percent over the medium term as the transitory effects of past declines in energy prices and non-energy import prices dissipated and the labor market strengthened further. Participants indicated that recently available economic data had been broadly in line with their expectations, and they judged that near-term risks to the economic outlook appeared roughly balanced. Moreover, participants generally made only modest changes to their forecasts for real GDP growth, the unemployment rate, and inflation. About half of the participants incorporated an assumption of more expansionary fiscal policy in their forecasts.

In their discussion of their economic forecasts, participants emphasized their considerable uncertainty about the timing, size, and composition of any future fiscal and other economic policy initiatives as well as about how those policies might affect aggregate demand and supply. Several participants pointed out that, depending on the mix of tax, spending, regulatory, and other possible policy changes, economic growth might turn out to be faster or slower than they currently anticipated. However, almost all also indicated that the upside risks to their forecasts for economic growth had increased as a result of prospects for more expansionary fiscal policies in coming years. Many participants underscored the need to continue to weigh other risks and uncertainties attending the economic outlook. In that regard, several noted upside risks to U.S. economic activity from the potential for better-than-expected economic growth abroad or an acceleration of domestic business investment. Among the downside risks cited were the possibility of additional appreciation of the foreign exchange value of the dollar, financial vulner-

[6] One participant did not submit longer-run projections for real output growth, the unemployment rate, or the federal funds rate.

abilities in some foreign economies, and the proximity of the federal funds rate to the effective lower bound. Several participants also commented on the uncertainty about the outlook for productivity growth or about the potential effects of tight labor markets on labor supply and inflation. For some participants, the greater upside risks to economic growth, the upward movement in inflation compensation over recent months, or the possibility of further increases in oil prices had increased the upside risks to their inflation forecasts. However, several others pointed out that a further rise in the dollar might continue to hold down inflation. Participants generally agreed that they should continue to closely monitor inflation indicators and global economic and financial developments.

Regarding the household sector, the available information indicated that consumer spending had been rising at a moderate rate, on balance, since midyear. Participants cited a number of factors likely to support continued moderate gains in consumer spending. Consumer confidence remained positive. The outlook was for further solid gains in jobs and income, and household balance sheets had improved. The personal saving rate was still relatively high, and household wealth had been boosted by ongoing gains in housing and equity prices. In the housing market, recent data on starts and permits for new residential construction suggested a firming in residential investment after two quarters of decline. Several participants commented that housing activity appeared to be gaining momentum in their Districts, and it was noted that the rate of new construction still appeared to be low relative to levels that would be expected based on the longer-run rate of household formation.

The outlook for the business sector improved over the intermeeting period. Although nonresidential investment was still weak and equipment spending had been flat in the third quarter, orders for nondefense capital goods and the number of drilling rigs in operation had both turned up recently. A couple of participants reported plans for a pickup in capital spending by businesses in their Districts, driven by stronger demand and increasing revenues. Surveys and information gathered from contacts in several Districts indicated an improvement in manufacturing activity as well as expectations for further gains in factory production in the near term. And the recent firming in oil prices, if sustained, was anticipated to boost domestic energy production. In contrast, conditions in the agricultural sector remained depressed, and a couple of reports highlighted softer activity in some service-sector industries. More generally, participants reported that many of their District business contacts expressed greater optimism about the economic outlook, and several participants commented that the improved sentiment could spur stronger investment spending. Some contacts thought that their businesses could benefit from possible changes in federal spending, tax, and regulatory policies, while others were uncertain about the outlook for significant government policy changes or were concerned that their businesses might be adversely affected by some of the proposals under discussion.

Labor market conditions continued to improve over the intermeeting period. Monthly increases in nonfarm payroll employment averaged nearly 180,000 over the three months ending in November, in line with the average pace of job creation over the past year. The unemployment rate dropped markedly to 4.6 percent in November; a few participants suggested that part of the decline might be reversed in coming months. Most participants viewed the cumulative progress in the labor market as having brought labor market conditions to or close to those consistent with the Committee's maximum-employment objective. Over the past year, broad measures of labor underutilization that include both the unemployed and workers marginally attached to the labor force had trended lower, the labor force participation rate had been relatively steady despite downward pressure from demographic trends, and layoffs had fallen to low levels. National surveys reported that job availability was high and that firms were increasingly finding their job openings hard to fill. Some participants commented that some businesses in their Districts were experiencing shortages of skilled workers in some occupations or were needing to offer higher wages to fill positions. However, some others noted that aggregate measures of wages were still rising at a subdued pace, suggesting that upward pressure on wages had not become widespread.

Participants expected the labor market to strengthen somewhat further over the medium run, with almost all anticipating that the unemployment rate over the next couple of years would run below their estimates of its longer-run normal level. Some participants saw the possibility that an extended period during which labor markets remained relatively tight could continue to shrink remaining margins of underutilization, including the still-high level of prime-age workers outside the labor force and elevated levels of involuntary part-time employment and long-duration

unemployment. A few added that continued gradual strengthening in labor markets would help return inflation to the Committee's 2 percent objective. But some other participants were uncertain that a period of tight labor utilization would yield lasting labor market benefits or were concerned that it risked a buildup of inflationary pressures. Most participants expected that if economic growth remained moderate, as they projected, the unemployment rate would be only modestly below their estimates of the longer-run normal rate of unemployment over the next few years, but several anticipated a more substantial undershoot. A few participants noted the uncertainty surrounding real-time estimates of the longer-run normal rate of unemployment, and it was pointed out that geographic variation in labor market conditions contributed to that uncertainty. In discussing the possible implications of a more significant undershooting of the longer-run normal rate, many participants emphasized that, as the economic outlook evolved, timely adjustments to monetary policy could be required to achieve and maintain both the Committee's maximum-employment and inflation objectives.

Participants generally viewed the information on inflation received over the intermeeting period as reinforcing their expectation that inflation would rise to the Committee's 2 percent objective over the medium term. The 12-month change in the headline PCE price index moved up further to 1.4 percent in October, as the rise in energy prices since the spring offset much of the decline earlier in the year. Although the headline measure was still below 2 percent, it had increased more than 1 percentage point over the past year. Core PCE price inflation had also moved up moderately over the past year, and, over the 12 months ending in October, it was 1.7 percent for a third consecutive month. Median 5-to-10-year inflation expectations in the Michigan survey were, on balance, stable in November and early December, just above the low recorded in October. Market-based measures of inflation compensation had moved up considerably over the intermeeting period. A few participants added that other readings from financial markets, such as implied probabilities of various inflation outcomes derived from inflation derivatives, pricing in the inflation swaps market, and the apparent upward shift of the estimated term premium in the 10-year Treasury yield, suggested that the risks to the inflation outlook had become more balanced around the Committee's 2 percent inflation objective. A couple of participants noted that the recent firming in oil prices might have contributed to the changes in these market-based measures. Several, however, pointed out that market-based measures of inflation compensation were still low or that downside risks to inflation remained, given the recent further appreciation of the dollar.

Most participants attributed the substantial changes in financial market conditions over the intermeeting period—including the increase in longer-term interest rates, the strengthening of the dollar, the rise in equity prices, and the narrowing of credit spreads—to expectations for more expansionary fiscal policies in coming years or to possible reductions in corporate tax rates. Many participants expressed the need for caution in evaluating the implications of recent financial market developments for the economic outlook, in light of the uncertainty about how federal spending, tax, and regulatory policies might unfold and how global economic and financial conditions will evolve.

In their consideration of economic conditions and monetary policy, participants agreed that sufficient evidence had accumulated of continued progress toward the Committee's objectives of maximum employment and 2 percent inflation to warrant an increase of 25 basis points in the target range for the federal funds rate at this meeting. Participants judged that, even after the increase in the target range, the stance of policy would remain accommodative, consistent with some further strengthening in labor market conditions and a return of inflation to 2 percent over the medium term.

Participants discussed the implications of the economic outlook for the likely future path of the target range for the federal funds rate. Most participants judged that a gradual pace of rate increases was likely to be appropriate to promote the Committee's objectives of maximum employment and 2 percent inflation. A gradual pace was also viewed by some participants as likely to be warranted because the proximity of the federal funds rate to the effective lower bound placed constraints on the ability of monetary policy to respond to adverse shocks to the aggregate demand for goods and services. In addition, the neutral real rate—defined as the real interest rate that is neither expansionary nor contractionary when the economy is operating at or near its potential—still appeared to be low by historical standards, and it was

noted that gradual increases in the federal funds rate over the next few years probably would be sufficient to return to a neutral policy stance.

While viewing a gradual approach to policy firming as likely to be appropriate, participants emphasized the need to adjust the policy path as economic conditions evolved. They pointed to a number of risks that, if realized, might call for a different path of policy than they currently expected. Moreover, uncertainty regarding fiscal and other economic policies had increased. Participants agreed that it was too early to know what changes in these policies would be implemented and how such changes might alter the economic outlook. It was also noted that fiscal and other policies were only some of the many factors that could influence the economic outlook and thus the appropriate course of monetary policy. Moreover, many participants emphasized that the greater uncertainty about these policies made it more challenging to communicate to the public about the likely path of the federal funds rate. Participants noted that, in the circumstances of heightened uncertainty, it was especially important that the Committee continue to underscore in its communications that monetary policy would continue to be set to promote attainment of the Committee's statutory objectives of maximum employment and price stability.

Many participants judged that the risk of a sizable undershooting of the longer-run normal unemployment rate had increased somewhat and that the Committee might need to raise the federal funds rate more quickly than currently anticipated to limit the degree of undershooting and stem a potential buildup of inflationary pressures. However, with inflation still below the Committee's 2 percent objective, it was noted that downside risks to inflation remained and that a moderate undershooting of the longer-run normal unemployment rate could help return inflation to 2 percent. A couple of participants expressed concern that the Committee's communications about a gradual pace of policy firming might be misunderstood as a commitment to only one or two rate hikes per year; participants agreed that policy would need to respond appropriately to the evolving outlook. Several participants noted circumstances that might warrant changes to the path for the federal funds rate could also have implications for the reinvestment of proceeds from maturing Treasury securities and principal payments from agency debt and mortgage-backed securities.

Committee Policy Action

In their discussion of monetary policy for the period ahead, members judged that the information received since the Committee met in November indicated that the labor market had continued to strengthen and that economic activity had been expanding at a moderate pace since midyear. Job gains had been solid in recent months, and the unemployment rate had declined. Household spending had been rising moderately, but business fixed investment had remained soft. Inflation had increased since earlier this year but was still below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation compensation had moved up considerably but still were low; most survey-based measures of longer-term inflation expectations were little changed on balance.

With respect to the economic outlook and its implications for monetary policy, members continued to expect that, with gradual adjustments in the stance of monetary policy, economic activity would expand at a moderate pace and labor market conditions would strengthen somewhat further. They generally observed that labor market conditions had improved appreciably over the past year and that labor market slack had declined. Members agreed that there was heightened uncertainty about possible changes in fiscal and other economic policies as well as their effects. However, members also agreed that near-term risks to the economic outlook appeared roughly balanced. Some members saw, with gradual adjustments of the stance of monetary policy, only modest risk of a scenario in which an undershooting of the longer-run normal rate of unemployment would create a sharp acceleration in prices. These members observed that inflation continued to run below the Committee's 2 percent objective and that wage gains had been subdued, and they expressed the view that inflation was likely to rise gradually, giving monetary policy time to respond if necessary. Several members noted that if the labor market appeared to be tightening significantly more than expected, it might become necessary to adjust the Committee's communications about the expected path of the federal funds rate, consistent with the possibility that a less gradual pace of increases could become appropriate.

At this meeting, members continued to expect that, with gradual adjustments in the stance of monetary

policy, inflation would rise to the Committee's 2 percent objective over the medium term as the transitory effects of past declines in energy prices and non-energy import prices dissipated and the labor market strengthened further. This view was reinforced by the rise in inflation in recent months and by recent increases in inflation compensation. Against this backdrop and in light of the current shortfall in inflation from 2 percent, members agreed that they would continue to closely monitor actual and expected progress toward the Committee's inflation goal.

After assessing the outlook for economic activity, the labor market, and inflation, members agreed to raise the target range for the federal funds rate to ½ to ¾ percent. This increase in the target range was viewed as appropriate in light of the considerable progress that had been made toward the Committee's objective of maximum employment and, in view of the rise in inflation since earlier in the year, the Committee's confidence that inflation would rise to 2 percent in the medium term. Members judged that, even after this increase in the target range, the stance of monetary policy remained accommodative, thereby supporting some further strengthening in labor market conditions and a return to 2 percent inflation.

The Committee agreed that, in determining the timing and size of future adjustments to the target range for the federal funds rate, it would assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment would take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee expected that economic conditions would evolve in a manner that would warrant only gradual increases in the federal funds rate and that the federal funds rate was likely to remain, for some time, below levels that are expected to prevail in the longer run. However, members emphasized that the actual path of the federal funds rate would depend on the economic outlook as informed by incoming data.

The Committee also decided to maintain its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipated doing so until normalization of the level of the federal funds rate is well under way. Members noted that this policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

At the conclusion of the discussion, the Committee voted to authorize and direct the Federal Reserve Bank of New York, until it was instructed otherwise, to execute transactions in the SOMA in accordance with the following domestic policy directive, to be released at 2:00 p.m.:

> "Effective December 15, 2016, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of ½ to ¾ percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 0.50 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

The vote also encompassed approval of the statement below to be released at 2:00 p.m.:

> "Information received since the Federal Open Market Committee met in November indicates that the labor market has continued to strengthen and that economic activity has been expanding at a moderate pace since mid-year. Job gains have been solid in recent months and the unemployment rate has declined. Household spending has been rising moderately but business fixed investment has remained soft. Inflation has increased since earlier this year but is still below the Committee's 2 percent longer-run objective, partly reflecting earlier declines in energy prices and in prices of non-energy imports. Market-based measures of inflation

compensation have moved up considerably but still are low; most survey-based measures of longer-term inflation expectations are little changed, on balance, in recent months.

Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace and labor market conditions will strengthen somewhat further. Inflation is expected to rise to 2 percent over the medium term as the transitory effects of past declines in energy and import prices dissipate and the labor market strengthens further. Near-term risks to the economic outlook appear roughly balanced. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

In view of realized and expected labor market conditions and inflation, the Committee decided to raise the target range for the federal funds rate to ½ to ¾ percent. The stance of monetary policy remains accommodative, thereby supporting some further strengthening in labor market conditions and a return to 2 percent inflation.

In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. In light of the current shortfall of inflation from 2 percent, the Committee will carefully monitor actual and expected progress toward its inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant only gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions."

Voting for this action: Janet L. Yellen, William C. Dudley, Lael Brainard, James Bullard, Stanley Fischer, Esther L. George, Loretta J. Mester, Jerome H. Powell, Eric Rosengren, and Daniel K. Tarullo.

Voting against this action: None.

To support the Committee's decision to raise the target range for the federal funds rate, the Board of Governors voted unanimously to raise the interest rates on required and excess reserve balances ¼ percentage point, to ¾ percent, effective December 15, 2016. The Board of Governors also voted unanimously to approve a ¼ percentage point increase in the primary credit rate (discount rate) to 1¼ percent, effective December 15, 2016.[7]

It was agreed that the next meeting of the Committee would be held on Tuesday–Wednesday, January 31–February 1, 2017. The meeting adjourned at 10:05 a.m. on December 14, 2016.

Notation Vote

By notation vote completed on November 22, 2016, the Committee unanimously approved the minutes of the Committee meeting held on November 1–2, 2016.

Brian F. Madigan
Secretary

[7] In taking this action, the Board approved requests submitted by the boards of directors of the Federal Reserve Banks of Boston, New York, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Kansas City, Dallas, and San Francisco. This vote also encompassed approval by the Board of Governors of the establishment of a 1¼ percent primary credit rate by the remaining Federal Reserve Bank, effective on the later of December 15, 2016, and the date such Reserve Bank informed the Secretary of the Board of such a request.
(Secretary's note: Subsequently, the Federal Reserve Bank of Minneapolis was informed by the Secretary of the Board of the Board's approval of its establishment of a primary credit rate of 1¼ percent, effective December 15, 2016.) This vote of the Board of Governors also encompassed approval of the renewal by all 12 Federal Reserve Banks of the existing formulas for calculating the rates applicable to discounts and advances under the secondary and seasonal credit programs.

Addendum: Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on December 13–14, 2016, meeting participants submitted their projections of the most likely outcomes for real output growth, the unemployment rate, and inflation for each year from 2016 to 2019 and over the longer run.[8] Each participant's projection was based on information available at the time of the meeting, together with his or her assessment of appropriate monetary policy, including a path for the federal funds rate and its longer-run value, and assumptions about other factors likely to affect economic outcomes. The longer-run projections represent each participant's assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. "Appropriate monetary policy" is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the Federal Reserve's objectives of maximum employment and stable prices.

Most FOMC participants expected that, under appropriate monetary policy, growth in real gross domestic product (GDP) would pick up a bit next year and run at or slightly above their individual estimates of its longer-run rate through 2019. Almost all participants projected that the unemployment rate would run below their estimates of its longer-run normal level in 2017 and remain below that level through 2019. All participants projected that inflation, as measured by the four-quarter percentage change in the price index for personal consumption expenditures (PCE), would increase over the next two years, and several expected inflation to slightly exceed the Committee's 2 percent objective in 2018 or 2019. Table 1 and figure 1 provide summary statistics for the projections.

As shown in figure 2, almost all participants expected that the evolution of economic conditions would warrant only gradual increases in the federal funds rate to achieve and sustain maximum employment and 2 percent inflation. Many participants judged that the appropriate level of the federal funds rate in 2019 would be close to their estimates of its longer-run normal level. However, the economic outlook is uncertain, and participants noted that their economic projections and assessments of appropriate monetary policy may change in response to incoming information.

A majority of participants viewed the level of uncertainty associated with their individual forecasts for economic growth, unemployment, and inflation as broadly similar to the norms of the previous 20 years, though some participants saw uncertainty associated with their forecasts as higher than average. Most participants also judged the risks around their projections for economic activity, the unemployment rate, and inflation as broadly balanced, while several participants saw the risks to their forecasts of real GDP growth as weighted to the upside and the risks to their unemployment rate forecasts as tilted to the downside.

The Outlook for Economic Activity

The median of participants' projections for the growth rate of real GDP, conditional on their individual assumptions about appropriate monetary policy, was 1.9 percent in 2016, 2.1 percent in 2017, 2.0 percent in 2018, and 1.9 percent in 2019; the median of projections for the longer-run normal rate of real GDP growth was 1.8 percent. Most participants projected that economic growth would pick up a bit in 2017 from the current year's pace and run at or slightly above their individual estimates of its longer-run rate through 2019. Compared with the September Summary of Economic Projections (SEP), the medians of the projections for real GDP growth were slightly higher over the period from 2017 to 2019, while the median assessment of the longer-run growth rate was unchanged. Since September, almost half of the participants revised up their projections for real GDP growth in 2018 or 2019, generally only slightly. Those increasing their projections for output growth in those years cited expected changes in fiscal, regulatory, or other policies as factors contributing to their revisions. However, many participants noted that the effects on the economy of such policy changes, if implemented, would likely be partially offset by tighter financial conditions, including higher longer-term interest rates and a strengthening of the dollar.

The median of projections for the unemployment rate in the fourth quarter of 2016 was 4.7 percent, slightly lower than in September. Based on the

[8] One participant did not submit longer-run projections for real output growth, the unemployment rate, or the federal funds rate.

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assessments of projected appropriate monetary policy, December 2016
Percent

Variable	Median[1]					Central tendency[2]					Range[3]				
	2016	2017	2018	2019	Longer run	2016	2017	2018	2019	Longer run	2016	2017	2018	2019	Longer run
Change in real GDP	1.9	2.1	2.0	1.9	1.8	1.8–1.9	1.9–2.3	1.8–2.2	1.8–2.0	1.8–2.0	1.8–2.0	1.7–2.4	1.7–2.3	1.5–2.2	1.6–2.2
September projection	1.8	2.0	2.0	1.8	1.8	1.7–1.9	1.9–2.2	1.8–2.1	1.7–2.0	1.7–2.0	1.7–2.0	1.6–2.5	1.5–2.3	1.6–2.2	1.6–2.2
Unemployment rate	4.7	4.5	4.5	4.5	4.8	4.7–4.8	4.5–4.6	4.3–4.7	4.3–4.8	4.7–5.0	4.7–4.8	4.4–4.7	4.2–4.7	4.1–4.8	4.5–5.0
September projection	4.8	4.6	4.5	4.6	4.8	4.7–4.9	4.5–4.7	4.4–4.7	4.4–4.8	4.7–5.0	4.7–4.9	4.4–4.8	4.3–4.9	4.2–5.0	4.5–5.0
PCE inflation	1.5	1.9	2.0	2.0	2.0	1.5	1.7–2.0	1.9–2.0	2.0–2.1	2.0	1.5–1.6	1.7–2.0	1.8–2.2	1.8–2.2	2.0
September projection	1.3	1.9	2.0	2.0	2.0	1.2–1.4	1.7–1.9	1.8–2.0	1.9–2.0	2.0	1.1–1.7	1.5–2.0	1.8–2.0	1.8–2.1	2.0
Core PCE inflation[4]	1.7	1.8	2.0	2.0		1.7–1.8	1.8–1.9	1.9–2.0	2.0		1.6–1.8	1.7–2.0	1.8–2.2	1.8–2.2	
September projection	1.7	1.8	2.0	2.0		1.6–1.8	1.7–1.9	1.9–2.0	2.0		1.5–2.0	1.6–2.0	1.8–2.0	1.8–2.1	
Memo: Projected appropriate policy path															
Federal funds rate	0.6	1.4	2.1	2.9	3.0	0.6	1.1–1.6	1.9–2.6	2.4–3.3	2.8–3.0	0.6	0.9–2.1	0.9–3.4	0.9–3.9	2.5–3.8
September projection	0.6	1.1	1.9	2.6	2.9	0.6–0.9	1.1–1.8	1.9–2.8	2.4–3.0	2.8–3.0	0.4–1.1	0.6–2.1	0.6–3.1	0.6–3.8	2.5–3.8

Note: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The September projections were made in conjunction with the meeting of the Federal Open Market Committee on September 20–21, 2016. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the September 20–21, 2016, meeting, and one participant did not submit such projections in conjunction with the December 13–14, 2016, meeting.

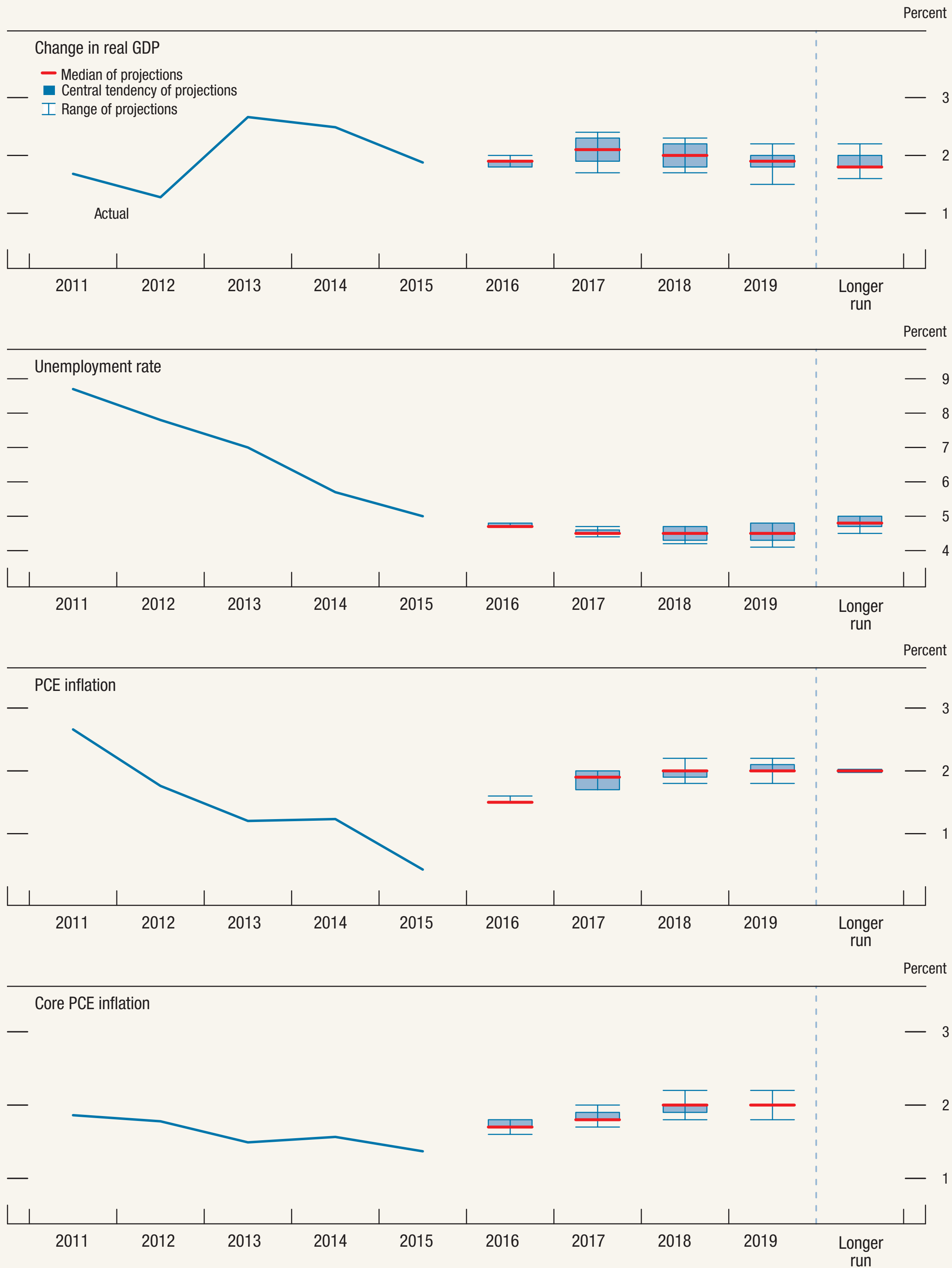
1 For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

2 The central tendency excludes the three highest and three lowest projections for each variable in each year.

3 The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

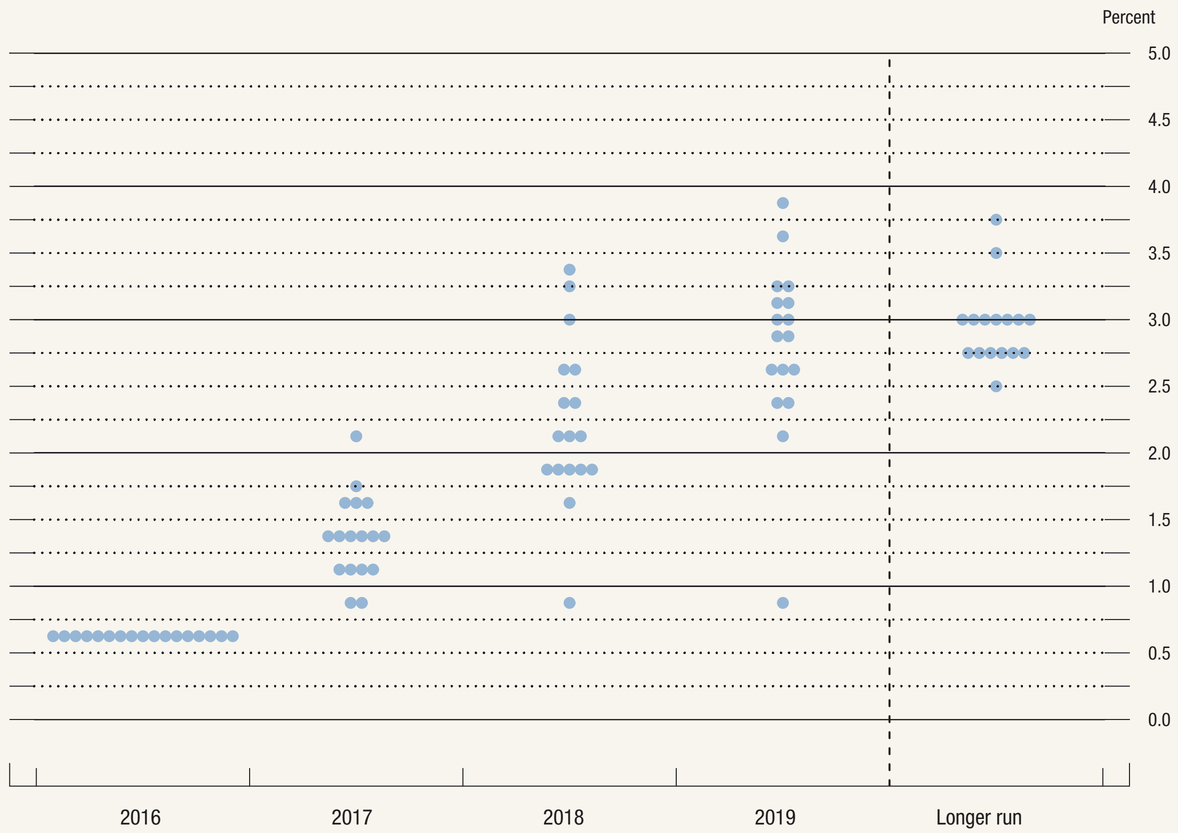
4 Longer-run projections for core PCE inflation are not collected.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2016–19 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



Note: Each shaded circle indicates the value (rounded to the nearest ⅛ percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate.

median projections, the anticipated path of the unemployment rate for coming years also shifted down a bit, with the median for the end of 2019 at 4.5 percent, 0.3 percentage point below the median assessment of the longer-run normal rate of unemployment, which was unchanged from September.

Figures 3.A and 3.B show the distributions of participants' projections for real GDP growth and the unemployment rate from 2016 to 2019 and in the longer run. The distributions of individual projections of real GDP growth shifted slightly higher relative to the distribution of the September projections for 2017 through 2019. The distributions of projections for the unemployment rate shifted modestly lower for 2016 through 2019, while the distribution of projections for the longer-run normal rate of unemployment was unchanged.

The Outlook for Inflation

In the December SEP, the median of projections for headline PCE price inflation in 2016 was 1.5 percent, a bit higher than in September. The median of projections for headline PCE price inflation was 1.9 percent in 2017 and 2.0 percent in 2018 and 2019, unchanged from September. Several participants projected that inflation will slightly exceed the Committee's objective in 2018 or 2019. The medians of projections for core PCE price inflation were the same as in September, rising from 1.7 percent in 2016 to 1.8 percent in 2017 and 2.0 percent in 2018 and 2019.

Figures 3.C and 3.D provide information on the distribution of participants' views about the outlook for inflation. The distributions of projections for headline and core PCE price inflation shifted up slightly relative to projections for the September meeting. Some participants attributed the upward shift in projected inflation this year and next to recent data that showed somewhat higher inflation than they had expected. A few saw higher inflation in 2019 in conjunction with somewhat greater undershooting of the unemployment rate below its longer-run normal level.

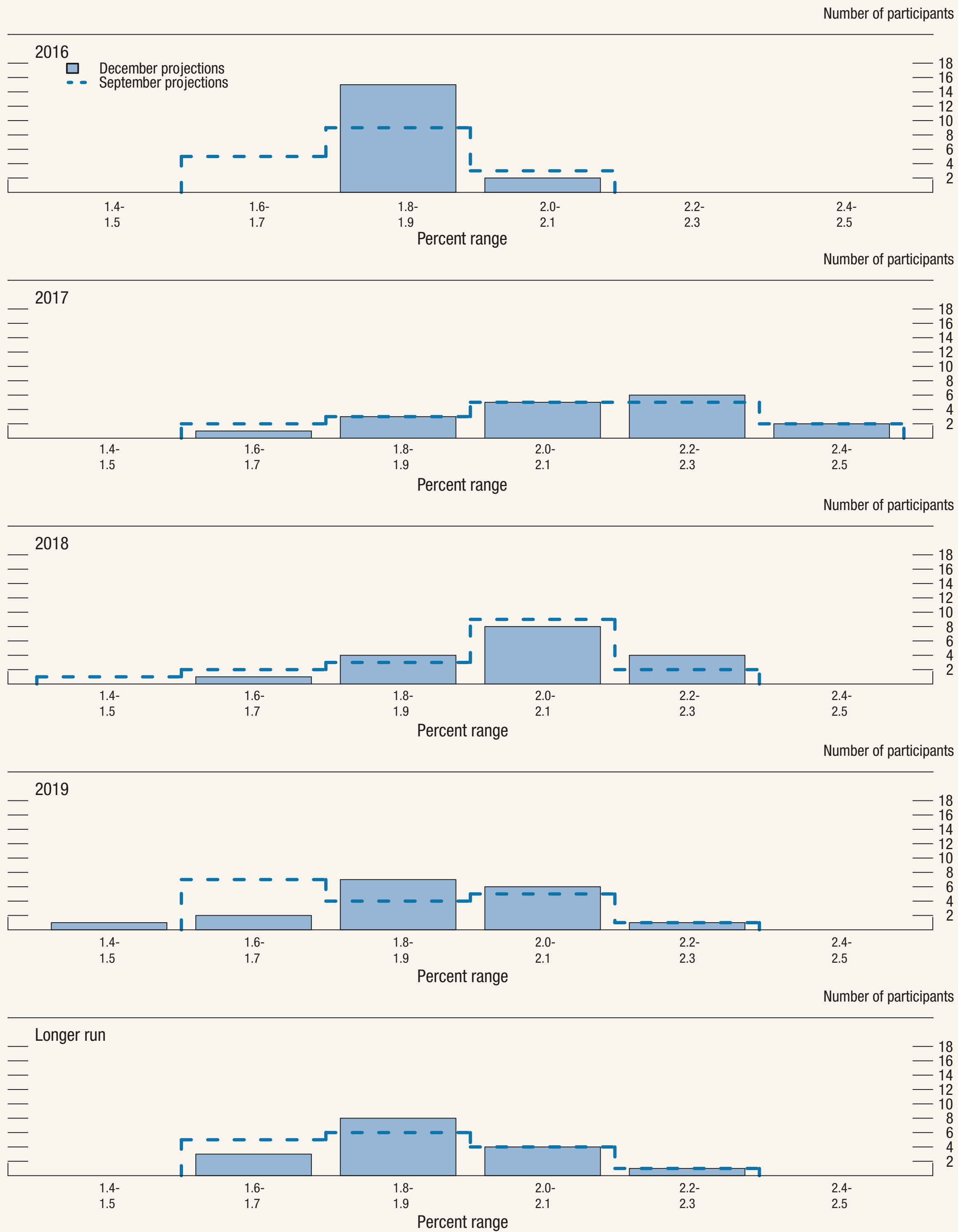
Appropriate Monetary Policy

Figure 3.E provides the distribution of participants' judgments regarding the appropriate target for the federal funds rate at the end of each year from 2016 to 2019 and over the longer run.[9] All participants saw an increase of 25 basis points in the federal funds rate at the December meeting as appropriate. The distributions for 2017 through 2019 shifted up modestly. The median projections of the federal funds rate continued to show gradual increases, to 1.4 percent at the end of 2017, 2.1 percent at the end of 2018, and 2.9 percent at the end of 2019; the median of the longer-run projections of the federal funds rate was 3.0 percent. The medians of the projections for the level of the federal funds rate for 2017 through 2019 were all 25 basis points higher than in the September projections. A few participants revised up their assessments of the longer-run federal funds rate 25 basis points, resulting in an increase in the median of 13 basis points.

In discussing their December forecasts, many participants expressed a view that increases in the federal funds rate over the next few years would likely be gradual in light of a short-term neutral real interest rate that currently was low—a phenomenon that a number of participants attributed to the persistence of low productivity growth, continued strength of the dollar, a weak outlook for economic growth abroad, strong demand for safe longer-term assets, or other factors—and that was likely to rise only slowly as the effects of these factors faded over time. Some participants noted the continued proximity of short-term nominal interest rates to the effective lower bound, even with an increase at this meeting, as limiting the Committee's ability to increase monetary accommodation to counter possible adverse shocks to the economy. These participants judged that, as a result, the Committee should take a cautious approach to removing policy accommodation. Many participants noted that there was currently substantial uncertainty about the size, composition, and timing of prospective fiscal policy changes, but they also commented that a more expansionary fiscal policy might raise aggregate demand above sustainable levels, potentially necessitating somewhat tighter monetary policy than currently anticipated. Furthermore,

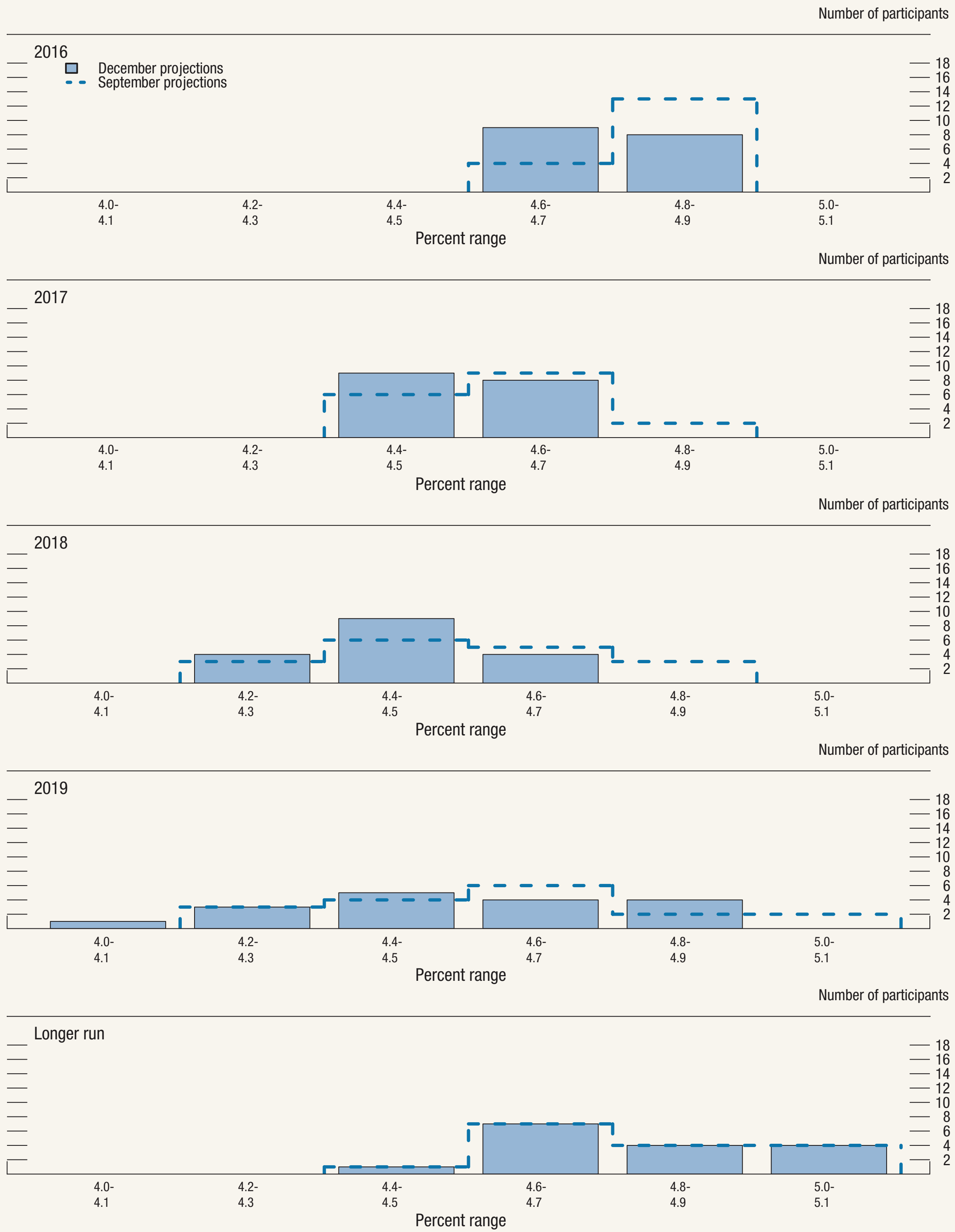
[9] One participant's projections for the federal funds rate, real GDP growth, the unemployment rate, and inflation were informed by the view that there are multiple possible medium-term regimes for the U.S. economy, that these regimes are persistent, and that the economy shifts between regimes in a way that cannot be forecast. Under this view, the economy currently is in a regime characterized by expansion of economic activity with low productivity growth and a low short-term real interest rate, but longer-term outcomes for variables other than inflation cannot be usefully projected.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2016–19 and over the longer run



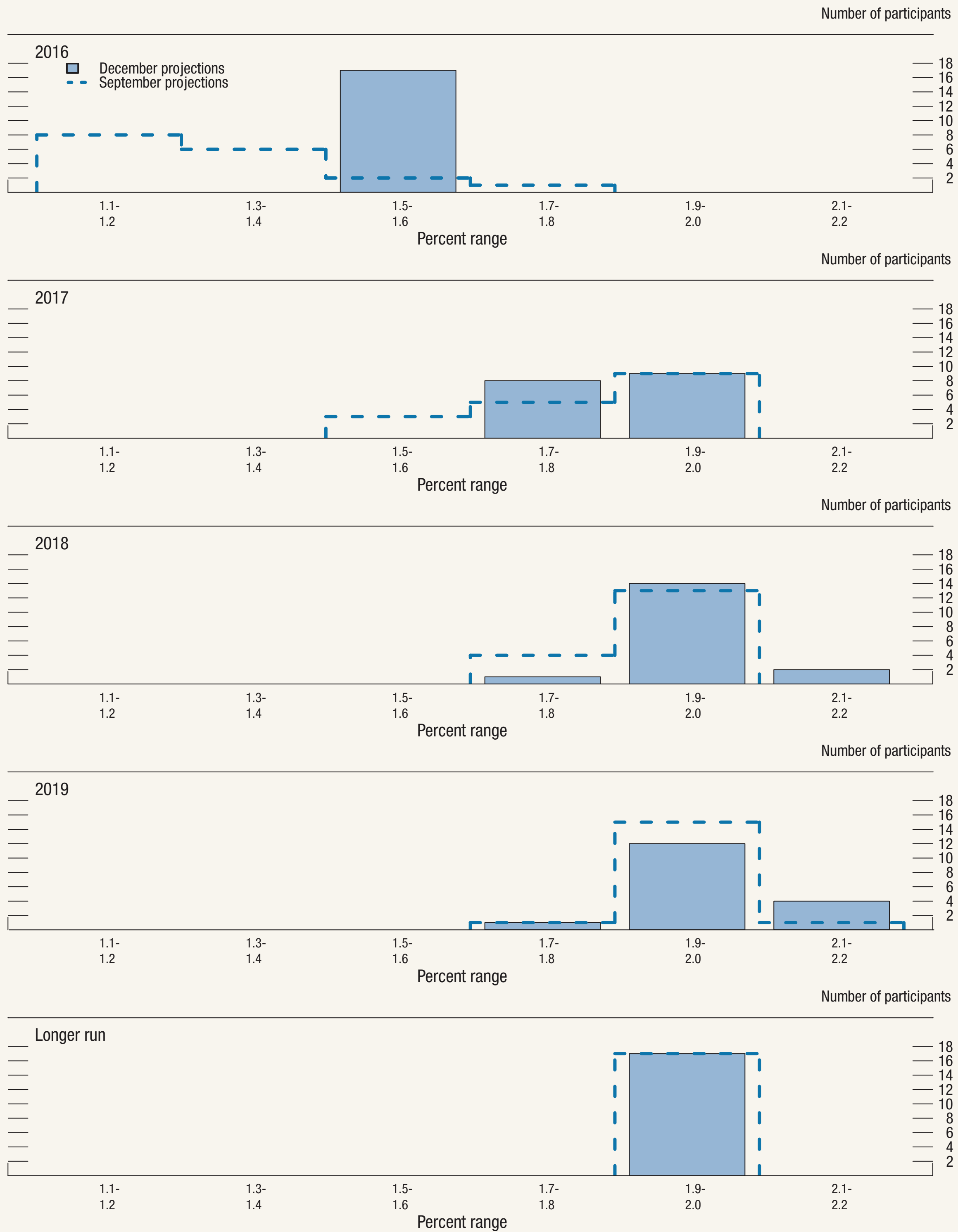
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2016–19 and over the longer run



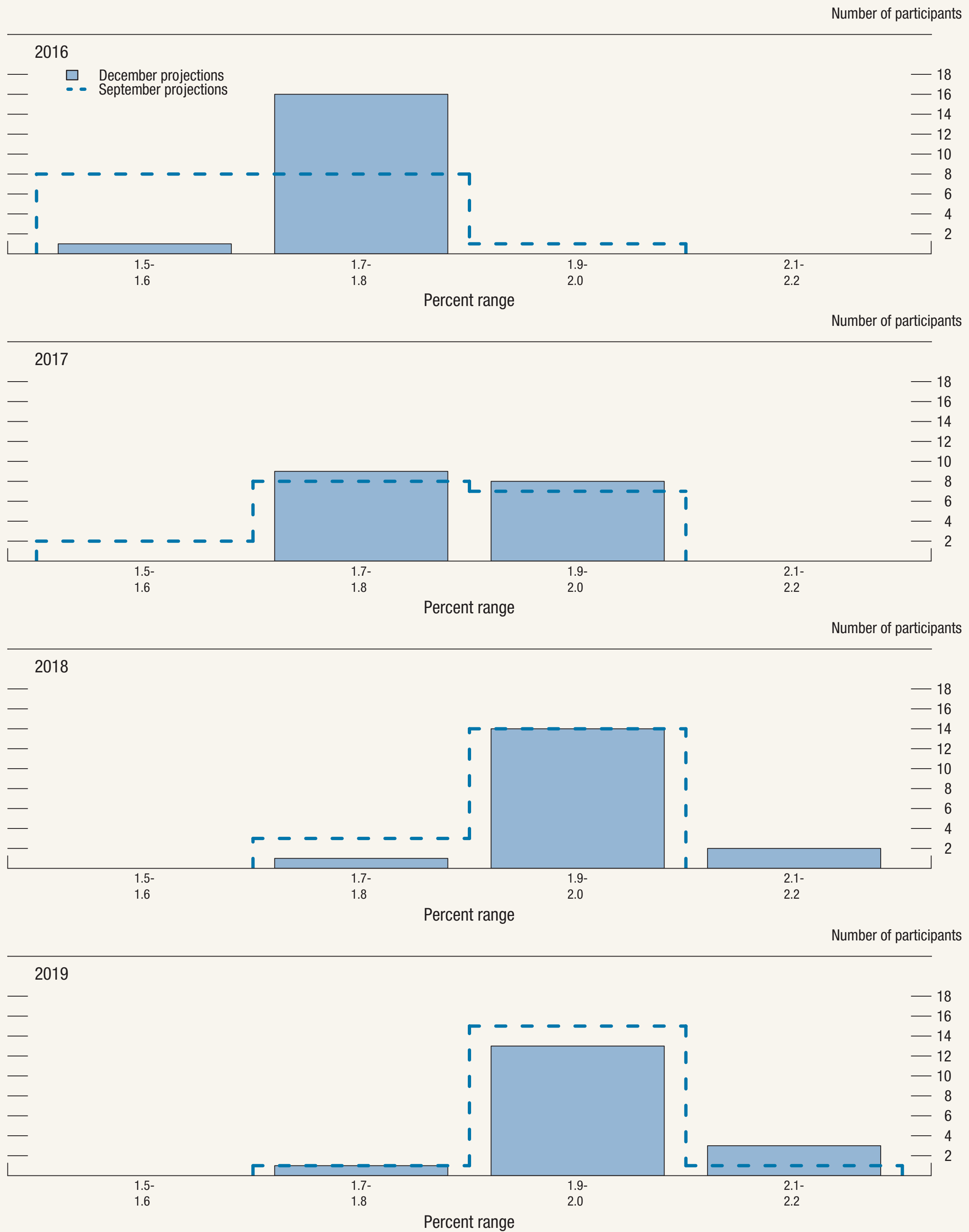
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2016–19 and over the longer run



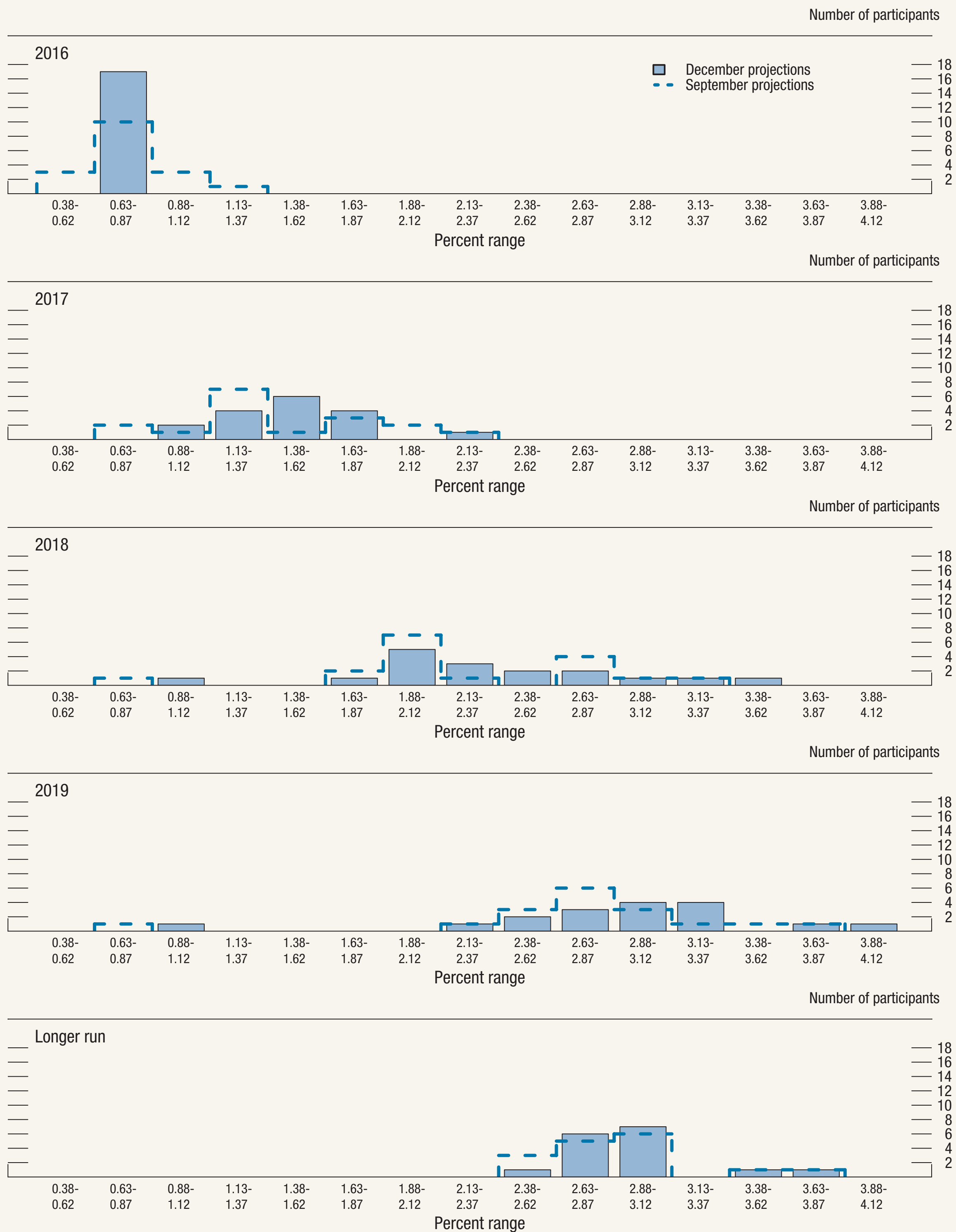
Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2016–19



Note: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2016–19 and over the longer run



Note: Definitions of variables and other explanations are in the notes to table 1.

several participants indicated that recent inflation data and the continued strengthening in labor market conditions increased their confidence that inflation would move toward the 2 percent objective, making a slightly firmer path of monetary policy appropriate.

Uncertainty and Risks

The left-hand column of figure 4 shows that, for each variable, a majority of participants judged the levels of uncertainty associated with their December projections for real GDP growth, the unemployment rate, headline inflation, and core inflation to be broadly similar to the average of the past 20 years.[10] However, more participants than in September saw uncertainty surrounding real GDP growth, the unemployment rate, or inflation as higher than average. Many participants mentioned an increase in uncertainty associated with fiscal, trade, immigration, or regulatory policies as a factor influencing their judgments about the degree of uncertainty surrounding their projections. Participants cited the difficulty of predicting the size, composition, and timing of these policy changes as well as the magnitude and timing of their effects on the economy.

As can be seen in the right-hand column of figure 4, a majority of participants continued to see the risks to real GDP growth, the unemployment rate, headline inflation, and core inflation as broadly balanced; however, fewer participants saw risks to economic growth and inflation as weighted to the downside or saw risks to the unemployment rate as weighted to the upside than in September. A number of participants noted that the prospect of expansionary fiscal policy had increased the upside risks to economic activity and inflation, and a few assessed the possibility of a reduction in regulation as posing upside risks to their forecasts of economic activity. Moreover, some participants judged that the recent rise in market-based measures of inflation compensation suggested that downside risks to inflation had declined. However, many also pointed to various sources of downside risk to economic activity, such as the limited potential for monetary policy to respond to adverse shocks when the federal funds rate is near the effective lower bound, downside risks in Europe and China, a possible increase in trade barriers, and the possibility of a sharp rise in financial market volatility in the event that fiscal and other policy changes diverged from market expectations. In addition, some participants pointed to factors such as global disinflationary trends and downward pressure on import prices from further strengthening of the dollar as sources of downside risk to inflation.

Table 2. Average historical projection error ranges
Percentage points

Variable	2016	2017	2018	2019
Change in real GDP[1]	±0.9	±1.7	±2.1	±2.1
Unemployment rate[1]	±0.1	±0.8	±1.4	±1.9
Total consumer prices[2]	±0.2	±1.0	±1.1	±1.1

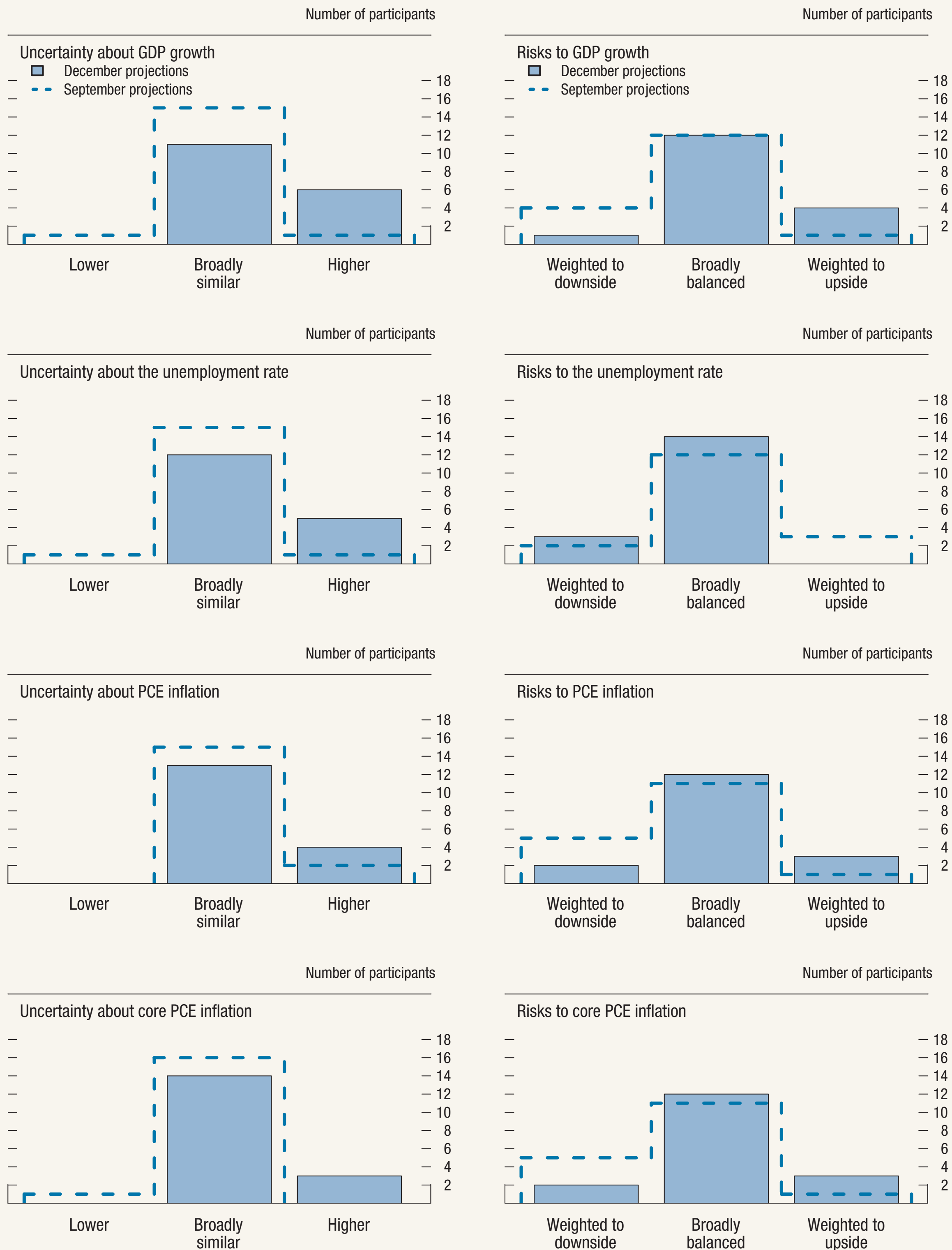
Note: Error ranges shown are measured as plus or minus the root mean squared error of projections for 1996 through 2015 that were released in the winter by various private and government forecasters. (The note to this table that was included in the Summary of Economic Projections for the meeting of September 20–21, 2016, incorrectly stated that the error ranges were based on projections for 1995 through 2015. The correct time period was 1996 through 2015.) As described in the box "Forecast Uncertainty," under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, and consumer prices will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2007), "Gauging the Uncertainty of the Economic Outlook from Historical Forecasting Errors," Finance and Economics Discussion Series 2007-60 (Washington: Board of Governors of the Federal Reserve System, November), available at www.federalreserve.gov/pubs/feds/2007/200760/200760abs.html; and Board of Governors of the Federal Reserve System, Division of Research and Statistics (2014), "Updated Historical Forecast Errors," memorandum, April 9, www.federalreserve.gov/foia/files/20140409-historical-forecast-errors.pdf.

1 Definitions of variables are in the general note to table 1.

2 Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projection is percent change, fourth quarter of the previous year to the fourth quarter of the year indicated.

[10] Table 2 provides estimates of the forecast uncertainty for the change in real GDP, the unemployment rate, and total consumer price inflation over the period from 1996 through 2015. At the end of this summary, the box "Forecast Uncertainty" discusses the sources and interpretation of uncertainty in the economic forecasts and explains the approach used to assess the uncertainty and risks attending the participants' projections.

Figure 4. Uncertainty and risks in economic projections



Note: For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty." Definitions of variables are in the notes to table 1.

Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Reports* and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee. The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 2.1 to 3.9 percent in the current year, 1.3 to 4.7 percent in the second year, and 0.9 to 5.1 percent in the third and fourth years. The corresponding 70 percent confidence intervals for overall inflation would be 1.8 to 2.2 percent in the current year, 1.0 to 3.0 in the second year, and 0.9 to 3.1 percent in the third and fourth years.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty in the past, as shown in table 2. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, participants judge whether each variable is more likely to be above or below their projections of the most likely outcome. These judgments about the uncertainty and the risks attending each participant's projections are distinct from the diversity of participants' views about the most likely outcomes. Forecast uncertainty is concerned with the risks associated with a particular projection rather than with divergences across a number of different projections.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward.

10 Litigation

During 2016, the Board of Governors was a party in 6 lawsuits filed that year and was a party in 10 other cases pending from previous years, for a total of 16 cases. The Board intervened in or initiated one additional case relating to privileged documents or testimony. In 2015, the Board had been a party in a total of 17 cases. As of December 31, 2016, 13 cases were pending.

Pending

Rodriguez v. Bank of America, et al., No. 16-cv-8197 (D. New Jersey, filed November 3, 2016), is an action relating to a mortgage loan foreclosure.

Center for Popular Democracy v. Board of Governors, No. 16-cv-5829 (E.D. New York, filed October 19, 2016), is an action under the Freedom of Information Act.

Hardy v. Yellen, No. 16-cv-1572 (D. District of Columbia, filed August 2, 2016), is an employment discrimination action.

Richardson v. Board of Governors, No. 16-cv-867 (D. District of Columbia, filed May 9, 2016), is a case under the Federal Tort Claims Act, Privacy Act, and Freedom of Information Act, among other claims.

The Colonial BancGroup, Inc. v. PricewaterhouseCoopers LLP, No. 16-cv-653 (N.D. Georgia, filed February 12, 2016), is an action to quash a deposition subpoena to a Federal Reserve Bank examiner.

Burford v. Yellen, No. 15-cv-02074 (D. District of Columbia, filed December 1, 2015), is an employment discrimination claim.

The Loan Syndications and Trading Association v. Board of Governors, No. 14-1240 (D.C. Circuit, petition for review filed November 10, 2014), was a challenge to the credit risk retention rules issued under section 941 of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010. On March 18, 2016, the Court of Appeals transferred the case to the U.S. District Court for the District of Columbia, No. 16-652. On December 22, 2016, the Court granted the Board's and Security and Exchange Commission's motion for summary judgment. On January 5, 2017, the plaintiff filed its notice of appeal.

Richardson v. Yellen, No. 14-cv-01673 (D. District of Columbia, filed October 8, 2014), is an employment discrimination claim.

In re Wilmington Trust Securities Litigation, No. 10-cv-990 (D. Delaware, motion to intervene filed August 20, 2014), is a securities class action against Wilmington Trust Corporation and related entities. On August 22, 2014, the court granted the Board's motion to intervene for the limited purpose of asserting the bank examination privilege. On September 12, 2016, the court adopted the Magistrate's Report and Recommendation granting in part plaintiffs' motion to compel.

Community Financial Services Association of America, Ltd., v. Board of Governors, No. 14-cv-00853 (D. District of Columbia, filed June 11, 2014), is a challenge to actions of the Board, the Federal Deposit Insurance Corporation, and the Office of the Comptroller of the Currency that allegedly disadvantage payday lenders.

Crisman v. Board of Governors et al., No. 12-cv-1871 (D. District of Columbia, filed November 19, 2012), is a Freedom of Information Act case.

Resolved

Perry v. Board of Governors, et al., No. 16-cv-1661 (D. District of Columbia, filed August 16, 2016), was an action by a Board employee relating to long-term disability benefits. On December 1, 2016, the plaintiff voluntarily dismissed the Board as a defendant.

Haase v. Bank of America, et al., No. 16-cv-1567 (S.D. Texas, filed April 25, 2016, removed to federal court June 3, 2016), was an action against 69 defendants including individual Governors, Federal Reserve Banks, and the Federal Reserve System under the Texas Constitution, among other claims. On February 8, 2017, the court dismissed the action.

Ruiz v. Board of Governors, et al., No. 15-cv-547 (D. Rhode Island, filed December 22, 2015), was an action seeking a writ of mandamus and declaratory judgment that the Board failed to perform certain duties under golden parachute regulations. On April 5, 2016, the court entered the plaintiff's notice of voluntary dismissal.

WMI Liquidating Trust v. Board of Governors, No. 13-cv-01706 (W.D. Washington, filed September 20, 2013), is an action for a declaratory judgment regarding golden parachute payments. On July 3, 2014, the action was transferred to the United States Bankruptcy Court for the District of Delaware (Adv. Pro. No. 14-50435-MFW (Bankr. D. Del.)). On February 15, 2017, the district court granted the Board's motion to dismiss all claims.

Artis v. Greenspan, No. 15-5260 (D.C. Circuit, notice of appeal filed September 19, 2015), was an appeal of the dismissal of plaintiffs' Equal Employment Opportunity claims. On December 21, 2015, the Court of Appeals summarily affirmed the district court's dismissal. On March 21, 2016, the Court of Appeals denied plaintiffs' petition for rehearing *en banc*. On October 3, 2016, the Supreme Court denied plaintiffs' petition for a writ of *certiorari*.

Ferrer v. Bernanke, No. 14-15325 (Eleventh Circuit, appeal filed November 25, 2014), was an appeal of the dismissal of an action alleging that plaintiffs received improper relief under the Board's and the Office of the Comptroller of the Currency's financial remediation orders regarding deficient mortgage servicing and foreclosure practices. On August 12, 2016, the Court of Appeals affirmed the district court's dismissal of the action.

11 Statistical Tables

Table 1. Federal Reserve open market transactions, 2016

Millions of dollars

Type of security and transaction	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
U.S. Treasury securities[1]													
Outright transactions[2]													
Treasury bills													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Exchanges	0	0	0	0	0	0	0	0	0	0	0	0	0
For new bills	0	0	0	0	0	0	0	0	0	0	0	0	0
Redemptions	0	0	0	0	0	0	0	0	0	0	0	0	0
Others up to 1 year													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Exchanges	-1,911	-36,707	-23,587	-27,738	-39,269	-13,567	-10,266	-13,326	-6,827	-6,529	-24,110	-11,702	-215,539
Redemptions	0	0	0	0	0	0	0	0	0	0	0	0	0
Over 1 to 5 years													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Exchanges	1,383	21,993	14,296	20,099	20,730	8,753	6,801	7,518	4,450	4,534	11,640	7,978	130,175
Over 5 to 10 years													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Exchanges	528	11,190	9,292	7,582	15,147	4,085	3,258	4,271	2,378	1,693	9,186	3,723	72,333
More than 10 years													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Exchanges	0	3,524	0	84	3,392	729	782	1,536	0	302	3,284	0	13,633
All maturities													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Redemptions	0	0	0	0	0	0	0	0	0	0	0	0	0
Net change in U.S. Treasury securities	0	0	0	0	0	0	0	0	0	0	0	0	0
Federal agency obligations													
Outright transactions[2]													
Gross purchases	0	0	0	0	0	0	0	0	0	0	0	0	0
Gross sales	0	0	0	0	0	0	0	0	0	0	0	0	0
Redemptions	1,626	0	2,061	2,161	2,000	0	2,604	0	2,000	1,999	0	2,313	16,764
Net change in federal agency obligations	-1,626	0	-2,061	-2,161	-2,000	0	-2,604	0	-2,000	-1,999	0	-2,313	-16,764
Mortgage-backed securities[3]													
Net settlements[2]													
Net change in mortgage-backed securities	-3,282	7,648	1,260	-8,261	-1,751	466	-2,439	2,880	-7,105	-1,036	4,833	717	6,071
Total net change in securities holdings[4]	**-4,908**	**7,648**	**-801**	**-10,422**	**-3,751**	**466**	**-5,043**	**2,880**	**-9,105**	**-3,035**	**4,833**	**-1,596**	**-10,693**

(continued on next page)

Table 1.—*continued*

Type of security and transaction	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Temporary transactions													
Repurchase agreements[5]	0	0	0	0	29	0	0	0	0	0	0	3	n/a
Reverse repurchase agreements[5]	321,472	297,221	306,863	274,381	288,951	322,951	319,996	326,186	393,250	430,396	373,944	491,391	n/a
Foreign official and international accounts	219,980	241,735	239,542	239,905	244,119	245,524	250,166	243,605	245,017	238,654	242,630	248,639	n/a
Others	101,492	55,487	67,322	34,476	44,832	77,427	69,829	82,581	148,232	191,742	131,314	242,752	n/a

Note: Purchases of Treasury securities and federal agency obligations increase securities holdings; sales and redemptions of these securities decrease securities holdings. Exchanges occur when the Federal Reserve rolls the proceeds of maturing securities into newly issued securities, and so exchanges do not affect total securities holdings. Positive net settlements of mortgage-backed securities increase securities holdings, while negative net settlements of these securities decrease securities holdings. Components may not sum to totals because of rounding. Please see table 2 of the H.4.1 release (https://www.federalreserve.gov/releases/h41/) for the maturity distribution of the securities.

1 Transactions exclude changes in compensation for the effects of inflation on the principal of inflation-indexed securities. Transactions include the rollover of inflation compensation into new securities. The maturity distributions of exchanged Treasury securities are based on the announced maturity of new securities rather than actual day counts.

2 Excludes the effect of temporary transactions—repurchase agreements and reverse repurchase agreements.

3 Guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae. Monthly net change in the remaining principal balance of the securities, reported at face value.

4 The net change in securities holdings reflects the settlements of purchases, reinvestments, sales, and maturities of portfolio securities.

5 Averages of daily business cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and mortgage-backed securities. For additional details on temporary transactions, see the temporary open market operations historical search available at https://apps.newyorkfed.org/markets/autorates/tomo-search-page.

n/a Not applicable.

Table 2. Federal Reserve Bank holdings of U.S. Treasury and federal agency securities, December 31, 2014–16
Millions of dollars

Description	December 31			Change	
	2016	2015	2014	2015 to 2016	2014 to 2015
U.S. Treasury securities					
Held outright[1]	**2,463,616**	**2,461,552**	**2,461,363**	**2,064**	**189**
By remaining maturity					
Bills					
1–90 days	0	0	0	0	0
91 days to 1 year	0	0	0	0	0
Notes and bonds					
1 year or less	206,822	216,115	3,520	-9,293	212,595
More than 1 year through 5 years	1,224,348	1,118,349	1,112,927	105,999	5,422
More than 5 years through 10 years	399,277	489,226	686,627	-89,949	-197,401
More than 10 years	633,169	637,862	658,289	-4,693	-20,427
By type					
Bills	0	0	0	0	0
Notes	1,638,172	1,634,772	1,634,949	3,400	-177
Bonds	825,444	826,780	826,414	-1,336	366
Federal agency securities					
Held outright[1]	**16,180**	**32,944**	**38,677**	**-16,764**	**-5,733**
By remaining maturity					
Discount notes					
1–90 days	0	0	0	0	0
91 days to 1 year	0	0	0	0	0
Coupons					
1 year or less	11,789	16,764	5,733	-4,975	11,031
More than 1 year through 5 years	2,044	13,833	30,597	-11,789	-16,764
More than 5 years though 10 years	0	0	0	0	0
More than 10 years	2,347	2,347	2,347	0	0
By type					
Discount notes	0	0	0	0	0
Coupons	16,180	32,944	38,677	-16,764	-5,733
By issuer					
Federal Home Loan Mortgage Corporation	8,356	15,711	19,515	-7,355	-3,804
Federal National Mortgage Association	5,401	11,541	13,470	-6,140	-1,929
Federal Home Loan Banks	2,423	5,692	5,692	-3,269	0
Mortgage-backed securities[2]					
Held outright[1]	**1,741,391**	**1,747,461**	**1,736,833**	**-6,070**	**10,628**
By remaining maturity					
1 year or less	0	0	0	0	0
More than 1 year through 5 years	77	467	13	-390	454
More than 5 years though 10 years	10,584	9,014	6,453	1,570	2,561
More than 10 years	1,730,730	1,737,980	1,730,367	-7,250	7,613
By issuer					
Federal Home Loan Mortgage Corporation	506,931	510,463	501,914	-3,532	8,549
Federal National Mortgage Association	836,558	872,113	886,716	-35,555	-14,603
Government National Mortgage Association	397,901	364,885	348,203	33,016	16,682
Temporary transactions					
Repurchase agreements[3]	**0**	**0**	**0**	**0**	**0**
Reverse repurchase agreements[3]	**725,210**	**712,401**	**509,837**	**12,809**	**202,564**
Foreign official and international accounts	256,855	237,809	113,132	19,046	124,677
Primary dealers and expanded counterparties	468,355	474,592	396,705	-6,237	77,887

Note: Components may not sum to totals because of rounding.

1 Excludes the effect of temporary transactions—repurchase agreements and reverse repurchase agreements.

2 Guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae.

3 Cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and mortgage-backed securities.

Table 3. Federal Reserve Bank interest rates on loans to depository institutions, December 31, 2016
Percent

Reserve Bank	Primary credit	Secondary credit	Seasonal credit
All banks	1.25	1.75	0.70

Note: For details on rate changes over the course of 2016, see the section on discount rates in section 8 of this annual report ("Record of Policy Actions of the Board of Governors"). *Primary credit* is available for very short terms as a backup source of liquidity to depository institutions that are in generally sound financial condition in the judgment of the lending Federal Reserve Bank. *Secondary credit* is available in appropriate circumstances to depository institutions that do not qualify for primary credit. *Seasonal credit* is available to help relatively small depository institutions meet regular seasonal needs for funds that arise from a clear pattern of intra-yearly movements in their deposits and loans. The discount rate on seasonal credit takes into account rates charged by market sources of funds and is reestablished on the first business day of each two-week reserve maintenance period.

Table 4. Reserve requirements of depository institutions, December 31, 2016

Type of deposit	Requirements	
	Percentage of deposits	Effective date
Net transaction accounts[1]		
$0 million–$15.5 million[2]	0	1/18/2017
More than $15.5 million–$115.1 million[3]	3	1/18/2017
More than $115.1 million	10	1/18/2017
Nonpersonal time deposits	0	12/27/1990
Eurocurrency liabilities	0	12/27/1990

Note: Required reserves must be held in the form of vault cash and, if vault cash is insufficient, also in the form of a deposit with a Federal Reserve Bank. An institution must hold that deposit directly with a Reserve Bank or with another institution in a pass-through relationship. Reserve requirements are imposed on commercial banks, savings banks, savings and loan associations, credit unions, U.S. branches and agencies of foreign banks, Edge corporations, and agreement corporations.

[1] Total transaction accounts consist of demand deposits, automatic transfer service (ATS) accounts, NOW accounts, share draft accounts, telephone or preauthorized transfer accounts, ineligible acceptances, and affiliate-issued obligations maturing in seven days or less. Net transaction accounts are total transaction accounts less amounts due from other depository institutions and less cash items in the process of collection.

For a more detailed description of these deposit types, see Form FR 2900.

[2] The amount of net transaction accounts subject to a reserve requirement ratio of 0 percent (the "exemption amount") is adjusted each year by statute. The exemption amount is adjusted upward by 80 percent of the previous year's (June 30 to June 30) rate of increase in total reservable liabilities at all depository institutions. No adjustment is made in the event of a decrease in such liabilities.

[3] The amount of net transaction accounts subject to a reserve requirement ratio of 3 percent is the "low reserve tranche." By statute, the upper limit of the low reserve tranche is adjusted each year by 80 percent of the previous year's (June 30 to June 30) rate of increase or decrease in net transaction accounts held by all depository institutions.

Table 5. Banking offices and banks affiliated with bank holding companies in the United States, December 31, 2015 and 2016

Type of office	Total	Commercial banks[1]						State-chartered savings banks
		Total	Member			Nonmember		
			Total	National	State			
All banking offices								
Banks								
Number, Dec. 31, 2015	**5,622**	**5,342**	**1,797**	**982**	**815**	**3,545**		**280**
Changes during 2016								
New banks	12	10	4	2	2	6		2
Banks converted into branches	-206	-200	-63	-37	-26	-137		-6
Ceased banking operations[2]	-39	-36	-10	-4	-6	-26		-3
Other[3]	0	1	-8	-29	21	9		-1
Net change	-233	-225	-77	-68	-9	-148		-8
Number, Dec. 31, 2016	**5,389**	**5,117**	**1,720**	**914**	**806**	**3,397**		**272**
Branches and additional offices								
Number, Dec. 31, 2015	**83,126**	**80,292**	**56,603**	**42,386**	**14,217**	**23,689**		**2,834**
Changes during 2016								
New branches	952	881	464	322	142	417		71
Banks converted to branches	206	201	75	35	40	126		5
Discontinued[2]	-2,429	-2,362	-1,746	-1,283	-463	-616		-67
Other[3]	0	-27	-95	-768	673	68		27
Net change	-1,271	-1,307	-1,302	-1,694	392	-5		36
Number, Dec. 31, 2016	**81,855**	**78,985**	**55,301**	**40,692**	**14,609**	**23,684**		**2,870**
Banks affiliated with bank holding companies								
Banks								
Number, Dec. 31, 2015	**4,652**	**4,523**	**1,602**	**864**	**738**	**2,921**		**129**
Changes during 2016								
BHC-affiliated new banks	57	51	15	6	9	36		6
Banks converted into branches	-160	-158	-55	-30	-25	-103		-2
Ceased banking operations[2]	-33	-31	-10	-4	-6	-21		-2
Other[3]	0	1	-9	-28	19	10		-1
Net change	-136	-137	-59	-56	-3	-78		1
Number, Dec. 31, 2016	**4,516**	**4,386**	**1,543**	**808**	**735**	**2,843**		**130**

Note: Includes banks, banking offices, and bank holding companies in U.S. territories and possessions (affiliated insular areas).

1 For purposes of this table, banks are entities that are defined as banks in the Bank Holding Company Act, as amended, which is implemented by Federal Reserve Regulation Y. Generally, a bank is any institution that accepts demand deposits and is engaged in the business of making commercial loans or any institution that is defined as an insured bank in section 3(h) of the Federal Deposit Insurance Corporation Act.

2 Institutions that no longer meet the Regulation Y definition of a bank.

3 Interclass changes and sales of branches.

Table 6A. Reserves of depository institutions, Federal Reserve Bank credit, and related items, year-end 1984–2016 and month-end 2016

Millions of dollars

Period	Factors supplying reserve funds								
	Federal Reserve Bank credit outstanding						Gold stock	Special drawing rights certificate account	Treasury currency outstanding[5]
	Securities held outright[1]	Repurchase agreements[2]	Loans and other credit extensions[3]	Float	Other Federal Reserve assets[4]	Total[4]			
1984	167,612	2,015	3,577	833	12,347	186,384	11,096	4,618	16,418
1985	186,025	5,223	3,060	988	15,302	210,598	11,090	4,718	17,075
1986	205,454	16,005	1,565	1,261	17,475	241,760	11,084	5,018	17,567
1987	226,459	4,961	3,815	811	15,837	251,883	11,078	5,018	18,177
1988	240,628	6,861	2,170	1,286	18,803	269,748	11,060	5,018	18,799
1989	233,300	2,117	481	1,093	39,631	276,622	11,059	8,518	19,628
1990	241,431	18,354	190	2,222	39,897	302,091	11,058	10,018	20,402
1991	272,531	15,898	218	731	34,567	323,945	11,059	10,018	21,014
1992	300,423	8,094	675	3,253	30,020	342,464	11,056	8,018	21,447
1993	336,654	13,212	94	909	33,035	383,904	11,053	8,018	22,095
1994	368,156	10,590	223	-716	33,634	411,887	11,051	8,018	22,994
1995	380,831	13,862	135	107	33,303	428,239	11,050	10,168	24,003
1996	393,132	21,583	85	4,296	32,896	451,992	11,048	9,718	24,966
1997	431,420	23,840	2,035	719	31,452	489,466	11,047	9,200	25,543
1998	452,478	30,376	17	1,636	36,966	521,475	11,046	9,200	26,270
1999	478,144	140,640	233	-237	35,321	654,100	11,048	6,200	28,013
2000	511,833	43,375	110	901	36,467	592,686	11,046	2,200	31,643
2001	551,685	50,250	34	-23	37,658	639,604	11,045	2,200	33,017
2002	629,416	39,500	40	418	39,083	708,457	11,043	2,200	34,597
2003	666,665	43,750	62	-319	40,847	751,005	11,043	2,200	35,468
2004	717,819	33,000	43	925	42,219	794,007	11,045	2,200	36,434
2005	744,215	46,750	72	885	39,611	831,532	11,043	2,200	36,540
2006	778,915	40,750	67	-333	39,895	859,294	11,041	2,200	38,206
2007	740,611	46,500	72,636	-19	41,799	901,528	11,041	2,200	38,681
2008	495,629	80,000	1,605,848	-1,494	43,553	2,223,537	11,041	2,200	38,674
2009	1,844,838	0	281,095	-2,097	92,811	2,216,647	11,041	5,200	42,691
2010	2,161,094	0	138,311	-1,421	110,255	2,408,240	11,041	5,200	43,542
2011	2,605,124	0	144,098	-631	152,568	2,901,159	11,041	5,200	44,198
2012	2,669,589	0	11,867	-486	218,296	2,899,266	11,041	5,200	44,751
2013	3,756,158	0	2,177	-962	246,947	4,004,320	11,041	5,200	45,493
2014	4,236,873	0	3,351	-555	239,238	4,478,908	11,041	5,200	46,301
2015[r]	4,241,958	0	2,830	-36	221,448	4,466,199	11,041	5,200	47,567
2016	4,221,187	0	7,325	-804	206,551	4,434,259	11,041	5,200	48,536

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Table 6A.—*continued*

Period	Factors supplying reserve funds								
	Federal Reserve Bank credit outstanding						Gold stock	Special drawing rights certificate account	Treasury currency outstanding[5]
	Securities held outright[1]	Repurchase agreements[2]	Loans and other credit extensions[3]	Float	Other Federal Reserve assets[4]	Total[4]			
2016, month-end									
Jan	4,236,807	0	1,929	-128	226,144	4,464,752	11,041	5,200	47,616
Feb	4,244,285	0	1,840	-672	213,330	4,458,783	11,041	5,200	47,651
Mar	4,243,669	0	1,926	-1,178	217,970	4,462,387	11,041	5,200	47,726
Apr	4,233,345	0	2,970	-498	222,705	4,458,523	11,041	5,200	47,815
May	4,229,914	0	2,601	-719	210,106	4,441,902	11,041	5,200	47,923
Jun	4,230,967	0	4,906	-1,287	214,213	4,448,799	11,041	5,200	48,043
Jul	4,226,420	0	2,823	-937	219,199	4,447,504	11,041	5,200	48,184
Aug	4,230,119	0	3,265	-1,149	206,137	4,438,373	11,041	5,200	48,279
Sep	4,220,825	0	8,908	-735	210,151	4,439,149	11,041	5,200	48,370
Oct	4,217,900	0	2,785	-972	213,124	4,432,837	11,041	5,200	48,435
Nov	4,223,028	0	3,087	-1,379	202,067	4,426,803	11,041	5,200	48,478
Dec	4,221,187	0	7,325	-804	206,551	4,434,259	11,041	5,200	48,536

Note: Components may not sum to totals because of rounding.

[1] Includes U.S. Treasury securities, federal agency debt securities, and mortgage-backed securities. U.S. Treasury securities and federal agency debt securities include securities lent to dealers, which are fully collateralized by U.S. Treasury securities, federal agency securities, and other highly rated debt securities.

[2] Cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and agency mortgage-backed securities.

[3] As of 2015, includes only central bank liquidity swaps; primary, seasonal, and secondary credit; and net portfolio holdings of Maiden Lane LLC. For disaggregated loans and other credit extensions from 1984 to 2014, refer to "Table 6B. Loans and other credit extensions, by type, year-end 1984-2014 and month-end 2014" of the *2014 Annual Report.*

[4] As of 2013, unamortized discounts on securities held outright are included as a component of Other Federal Reserve assets. Previously, they were included in Other Federal Reserve liabilities and capital.

[5] Includes currency and coin (other than gold) issued directly by the U.S. Treasury. The largest components are fractional and dollar coins. For details, refer to "U.S. Currency and Coin Outstanding and in Circulation," *Treasury Bulletin.*

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Table 6A. Reserves of depository institutions, Federal Reserve Bank credit, and related items, year-end 1984–2016 and month-end 2016—*continued*

Period	Factors absorbing reserve funds										Reserve balances with Federal Reserve Banks
	Currency in circulation	Reverse repurchase agreements[6]	Treasury cash holdings[7]	Deposits with Federal Reserve Banks, other than reserve balances					Required clearing balances[9]	Other Federal Reserve liabilities and capital[4,10]	
				Term deposits	Treasury general account	Treasury supplementary financing account	Foreign	Other[8]			
1984	183,796	0	513	n/a	5,316	n/a	253	867	1,126	5,952	20,693
1985	197,488	0	550	n/a	9,351	n/a	480	1,041	1,490	5,940	27,141
1986	211,995	0	447	n/a	7,588	n/a	287	917	1,812	6,088	46,295
1987	230,205	0	454	n/a	5,313	n/a	244	1,027	1,687	7,129	40,097
1988	247,649	0	395	n/a	8,656	n/a	347	548	1,605	7,683	37,742
1989	260,456	0	450	n/a	6,217	n/a	589	1,298	1,618	8,486	36,713
1990	286,963	0	561	n/a	8,960	n/a	369	528	1,960	8,147	36,081
1991	307,756	0	636	n/a	17,697	n/a	968	1,869	3,946	8,113	25,051
1992	334,701	0	508	n/a	7,492	n/a	206	653	5,897	7,984	25,544
1993	365,271	0	377	n/a	14,809	n/a	386	636	6,332	9,292	27,967
1994	403,843	0	335	n/a	7,161	n/a	250	1,143	4,196	11,959	25,061
1995	424,244	0	270	n/a	5,979	n/a	386	2,113	5,167	12,342	22,960
1996	450,648	0	249	n/a	7,742	n/a	167	1,178	6,601	13,829	17,310
1997	482,327	0	225	n/a	5,444	n/a	457	1,171	6,684	15,500	23,447
1998	517,484	0	85	n/a	6,086	n/a	167	1,869	6,780	16,354	19,164
1999	628,359	0	109	n/a	28,402	n/a	71	1,644	7,481	17,256	16,039
2000	593,694	0	450	n/a	5,149	n/a	216	2,478	6,332	17,962	11,295
2001	643,301	0	425	n/a	6,645	n/a	61	1,356	8,525	17,083	8,469
2002	687,518	21,091	367	n/a	4,420	n/a	136	1,266	10,534	18,977	11,988
2003	724,187	25,652	321	n/a	5,723	n/a	162	995	11,829	19,793	11,054
2004	754,877	30,783	270	n/a	5,912	n/a	80	1,285	9,963	26,378	14,137
2005	794,014	30,505	202	n/a	4,573	n/a	83	2,144	8,651	30,466	10,678
2006	820,176	29,615	252	n/a	4,708	n/a	98	972	6,842	36,231	11,847
2007	828,938	43,985	259	n/a	16,120	n/a	96	1,830	6,614	41,622	13,986
2008	889,898	88,352	259	n/a	106,123	259,325	1,365	21,221	4,387	48,921	855,599
2009	928,249	77,732	239	n/a	186,632	5,001	2,411	35,262	3,020	63,219	973,814
2010	982,750	59,703	177	0	140,773	199,964	3,337	13,631	2,374	99,602	965,712
2011	1,075,820	99,900	128	0	85,737	0	125	64,909	2,480	72,766	1,559,731
2012	1,169,159	107,188	150	0	92,720	0	6,427	27,476	n/a	66,093	1,491,044
2013	1,241,228	315,924	234	0	162,399	0	7,970	26,181	n/a	63,049	2,249,070
2014	1,342,957	509,837	201	0	223,452	0	5,242	20,320	n/a	61,447	2,377,995
2015[r]	1,424,967	712,401	266	0	333,447	0	5,231	31,212	n/a	45,320	1,977,163
2016	1,509,440	725,210	166	0	399,190	0	5,165	53,248	n/a	46,943	1,759,675

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Table 6A.—*continued*

Period	Factors absorbing reserve funds										Reserve balances with Federal Reserve Banks
	Currency in circulation	Reverse repurchase agreements[6]	Treasury cash holdings[7]	Deposits with Federal Reserve Banks, other than reserve balances					Required clearing balances[9]	Other Federal Reserve liabilities and capital[4,10]	
				Term deposits	Treasury general account	Treasury supplementary financing account	Foreign	Other[8]			
2016, month-end											
Jan	1,412,851	349,749	267	0	370,182	0	5,232	14,789	n/a	46,226	2,329,313
Feb	1,430,504	340,488	240	0	272,359	0	5,240	19,686	n/a	46,787	2,407,370
Mar	1,443,115	550,546	213	0	313,835	0	5,185	41,546	n/a	46,550	2,125,364
Apr	1,447,751	308,240	147	0	339,091	0	5,174	32,662	n/a	47,108	2,342,407
May	1,458,825	347,295	112	0	298,416	0	5,182	31,734	n/a	47,380	2,317,121
Jun	1,464,010	543,850	71	0	363,662	0	5,195	51,549	n/a	46,478	2,038,268
Jul	1,462,142	351,139	73	0	333,748	0	5,197	37,251	n/a	47,832	2,274,548
Aug	1,468,858	422,530	112	0	288,946	0	5,167	40,740	n/a	45,932	2,230,607
Sep	1,470,436	665,045	141	0	353,312	0	5,166	40,099	n/a	46,538	1,923,023
Oct	1,479,891	462,193	181	0	421,567	0	5,169	39,628	n/a	46,656	2,042,227
Nov	1,495,121	462,691	162	0	422,034	0	5,169	45,454	n/a	45,579	2,015,312
Dec	1,509,440	725,210	166	0	399,190	0	5,165	53,248	n/a	46,943	1,759,675

6 Cash value of agreements, which are collateralized by U.S. Treasury securities, federal agency debt securities, and agency mortgage-backed securities.

7 Coin and paper currency held by the Treasury.

8 As of 2014, includes desposits of designated financial market utilites.

9 Required clearing balances were discontinued in July 2012.

10 In 2010, includes funds from American International Group, Inc. asset dispositions, held as agent.

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n/a Not applicable.

Table 6B. Reserves of depository institutions, Federal Reserve Bank credit, and related items, year-end 1918–1983
Millions of dollars

Period	Factors supplying reserve funds									
	Federal Reserve Bank credit outstanding							Gold stock[6]	Special drawing rights certificate account	Treasury currency outstanding[7]
	Securities held outright[1]	Repurchase agreements[2]	Loans	Float[3]	All other[4]	Other Federal Reserve assets[5]	Total			
1918	239	0	1,766	199	294	0	2,498	2,873	n/a	1,795
1919	300	0	2,215	201	575	0	3,292	2,707	n/a	1,707
1920	287	0	2,687	119	262	0	3,355	2,639	n/a	1,709
1921	234	0	1,144	40	146	0	1,563	3,373	n/a	1,842
1922	436	0	618	78	273	0	1,405	3,642	n/a	1,958
1923	80	54	723	27	355	0	1,238	3,957	n/a	2,009
1924	536	4	320	52	390	0	1,302	4,212	n/a	2,025
1925	367	8	643	63	378	0	1,459	4,112	n/a	1,977
1926	312	3	637	45	384	0	1,381	4,205	n/a	1,991
1927	560	57	582	63	393	0	1,655	4,092	n/a	2,006
1928	197	31	1,056	24	500	0	1,809	3,854	n/a	2,012
1929	488	23	632	34	405	0	1,583	3,997	n/a	2,022
1930	686	43	251	21	372	0	1,373	4,306	n/a	2,027
1931	775	42	638	20	378	0	1,853	4,173	n/a	2,035
1932	1,851	4	235	14	41	0	2,145	4,226	n/a	2,204
1933	2,435	2	98	15	137	0	2,688	4,036	n/a	2,303
1934	2,430	0	7	5	21	0	2,463	8,238	n/a	2,511
1935	2,430	1	5	12	38	0	2,486	10,125	n/a	2,476
1936	2,430	0	3	39	28	0	2,500	11,258	n/a	2,532
1937	2,564	0	10	19	19	0	2,612	12,760	n/a	2,637
1938	2,564	0	4	17	16	0	2,601	14,512	n/a	2,798
1939	2,484	0	7	91	11	0	2,593	17,644	n/a	2,963
1940	2,184	0	3	80	8	0	2,274	21,995	n/a	3,087
1941	2,254	0	3	94	10	0	2,361	22,737	n/a	3,247
1942	6,189	0	6	471	14	0	6,679	22,726	n/a	3,648
1943	11,543	0	5	681	10	0	12,239	21,938	n/a	4,094
1944	18,846	0	80	815	4	0	19,745	20,619	n/a	4,131
1945	24,262	0	249	578	2	0	25,091	20,065	n/a	4,339
1946	23,350	0	163	580	1	0	24,093	20,529	n/a	4,562
1947	22,559	0	85	535	1	0	23,181	22,754	n/a	4,562
1948	23,333	0	223	541	1	0	24,097	24,244	n/a	4,589
1949	18,885	0	78	534	2	0	19,499	24,427	n/a	4,598
1950	20,725	53	67	1,368	3	0	22,216	22,706	n/a	4,636
1951	23,605	196	19	1,184	5	0	25,009	22,695	n/a	4,709
1952	24,034	663	156	967	4	0	25,825	23,187	n/a	4,812
1953	25,318	598	28	935	2	0	26,880	22,030	n/a	4,894
1954	24,888	44	143	808	1	0	25,885	21,713	n/a	4,985
1955	24,391	394	108	1,585	29	0	26,507	21,690	n/a	5,008
1956	24,610	305	50	1,665	70	0	26,699	21,949	n/a	5,066
1957	23,719	519	55	1,424	66	0	25,784	22,781	n/a	5,146
1958	26,252	95	64	1,296	49	0	27,755	20,534	n/a	5,234
1959	26,607	41	458	1,590	75	0	28,771	19,456	n/a	5,311
1960	26,984	400	33	1,847	74	0	29,338	17,767	n/a	5,398
1961	28,722	159	130	2,300	51	0	31,362	16,889	n/a	5,585
1962	30,478	342	38	2,903	110	0	33,871	15,978	n/a	5,567
1963	33,582	11	63	2,600	162	0	36,418	15,513	n/a	5,578
1964	36,506	538	186	2,606	94	0	39,930	15,388	n/a	5,405
1965	40,478	290	137	2,248	187	0	43,340	13,733	n/a	5,575
1966	43,655	661	173	2,495	193	0	47,177	13,159	n/a	6,317
1967	48,980	170	141	2,576	164	0	52,031	11,982	n/a	6,784

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Table 6B.—*continued*

Period	Factors supplying reserve funds									
	Federal Reserve Bank credit outstanding							Gold stock[6]	Special drawing rights certificate account	Treasury currency outstanding[7]
	Securities held outright[1]	Repurchase agreements[2]	Loans	Float[3]	All other[4]	Other Federal Reserve assets[5]	Total			
1968	52,937	0	186	3,443	58	0	56,624	10,367	n/a	6,795
1969	57,154	0	183	3,440	64	2,743	63,584	10,367	n/a	6,852
1970	62,142	0	335	4,261	57	1,123	67,918	10,732	400	7,147
1971	69,481	1,323	39	4,343	261	1,068	76,515	10,132	400	7,710
1972	71,119	111	1,981	3,974	106	1,260	78,551	10,410	400	8,313
1973	80,395	100	1,258	3,099	68	1,152	86,072	11,567	400	8,716
1974	84,760	954	299	2,001	999	3,195	92,208	11,652	400	9,253
1975	92,789	1,335	211	3,688	1,126	3,312	102,461	11,599	500	10,218
1976	100,062	4,031	25	2,601	991	3,182	110,892	11,598	1,200	10,810
1977	108,922	2,352	265	3,810	954	2,442	118,745	11,718	1,250	11,331
1978	117,374	1,217	1,174	6,432	587	4,543	131,327	11,671	1,300	11,831
1979	124,507	1,660	1,454	6,767	704	5,613	140,705	11,172	1,800	13,083
1980	128,038	2,554	1,809	4,467	776	8,739	146,383	11,160	2,518	13,427
1981	136,863	3,485	1,601	1,762	195	9,230	153,136	11,151	3,318	13,687
1982	144,544	4,293	717	2,735	1,480	9,890	163,659	11,148	4,618	13,786
1983	159,203	1,592	918	1,605	418	8,728	172,464	11,121	4,618	15,732

Note: For a description of figures and discussion of their significance, see *Banking and Monetary Statistics*, 1941–1970 (Board of Governors of the Federal Reserve System, 1976), pp. 507–23. Components may not sum to totals because of rounding.

1 In 1969 and thereafter, includes securities loaned—fully guaranteed by U.S. government securities pledged with Federal Reserve Banks—and excludes securities sold and scheduled to be bought back under matched sale–purchase transactions. On September 29, 1971, and thereafter, includes federal agency issues bought outright.

2 On December 1, 1966, and thereafter, includes federal agency obligations held under repurchase agreements.

3 In 1960 and thereafter, figures reflect a minor change in concept; refer to *Federal Reserve Bulletin*, vol. 47 (February 1961), p. 164.

4 Principally acceptances and, until August 21, 1959, industrial loans, the authority for which expired on that date.

5 For the period before April 16, 1969, includes the total of Federal Reserve capital paid in, surplus, other capital accounts, and other liabilities and accrued dividends, less the sum of bank premises and other assets, and is reported as "Other Federal Reserve accounts"; thereafter, "Other Federal Reserve assets" and "Other Federal Reserve liabilities and capital" are shown separately.

6 Before January 30, 1934, includes gold held in Federal Reserve Banks and in circulation.

7 Includes currency and coin (other than gold) issued directly by the Treasury. The largest components are fractional and dollar coins. For details refer to "U.S. Currency and Coin Outstanding and in Circulation,'' *Treasury Bulletin*.

n/a Not applicable.

Table 6B. Reserves of depository institutions, Federal Reserve Bank credit, and related items, year-end 1918–1983—*continued*
Millions of dollars

Period	Factors absorbing reserve funds								Member bank reserves[9]			
	Currency in circulation	Treasury cash holdings[8]	Deposits with Federal Reserve Banks, other than reserve balances			Other Federal Reserve accounts[5]	Required clearing balances	Other Federal Reserve liabilities and capital[5]	With Federal Reserve Banks	Currency and coin[10]	Required[11]	Excess[11,12]
			Treasury	Foreign	Other							
1918	4,951	288	51	96	25	118	0	0	1,636	n/a	1,585	51
1919	5,091	385	31	73	28	208	0	0	1,890	n/a	1,822	68
1920	5,325	218	57	5	18	298	0	0	1,781	n/a	n/a	n/a
1921	4,403	214	96	12	15	285	0	0	1,753	n/a	1,654	99
1922	4,530	225	11	3	26	276	0	0	1,934	n/a	n/a	n/a
1923	4,757	213	38	4	19	275	0	0	1,898	n/a	1,884	14
1924	4,760	211	51	19	20	258	0	0	2,220	n/a	2,161	59
1925	4,817	203	16	8	21	272	0	0	2,212	n/a	2,256	-44
1926	4,808	201	17	46	19	293	0	0	2,194	n/a	2,250	-56
1927	4,716	208	18	5	21	301	0	0	2,487	n/a	2,424	63
1928	4,686	202	23	6	21	348	0	0	2,389	n/a	2,430	-41
1929	4,578	216	29	6	24	393	0	0	2,355	n/a	2,428	-73
1930	4,603	211	19	6	22	375	0	0	2,471	n/a	2,375	96
1931	5,360	222	54	79	31	354	0	0	1,961	n/a	1,994	-33
1932	5,388	272	8	19	24	355	0	0	2,509	n/a	1,933	576
1933	5,519	284	3	4	128	360	0	0	2,729	n/a	1,870	859
1934	5,536	3,029	121	20	169	241	0	0	4,096	n/a	2,282	1,814
1935	5,882	2,566	544	29	226	253	0	0	5,587	n/a	2,743	2,844
1936	6,543	2,376	244	99	160	261	0	0	6,606	n/a	4,622	1,984
1937	6,550	3,619	142	172	235	263	0	0	7,027	n/a	5,815	1,212
1938	6,856	2,706	923	199	242	260	0	0	8,724	n/a	5,519	3,205
1939	7,598	2,409	634	397	256	251	0	0	11,653	n/a	6,444	5,209
1940	8,732	2,213	368	1,133	599	284	0	0	14,026	n/a	7,411	6,615
1941	11,160	2,215	867	774	586	291	0	0	12,450	n/a	9,365	3,085
1942	15,410	2,193	799	793	485	256	0	0	13,117	n/a	11,129	1,988
1943	20,449	2,303	579	1,360	356	339	0	0	12,886	n/a	11,650	1,236
1944	25,307	2,375	440	1,204	394	402	0	0	14,373	n/a	12,748	1,625
1945	28,515	2,287	977	862	446	495	0	0	15,915	n/a	14,457	1,458
1946	28,952	2,272	393	508	314	607	0	0	16,139	n/a	15,577	562
1947	28,868	1,336	870	392	569	563	0	0	17,899	n/a	16,400	1,499
1948	28,224	1,325	1123	642	547	590	0	0	20,479	n/a	19,277	1,202
1949	27,600	1,312	821	767	750	706	0	0	16,568	n/a	15,550	1,018
1950	27,741	1,293	668	895	565	714	0	0	17,681	n/a	16,509	1,172
1951	29,206	1,270	247	526	363	746	0	0	20,056	n/a	19,667	389
1952	30,433	1,270	389	550	455	777	0	0	19,950	n/a	20,520	-570
1953	30,781	761	346	423	493	839	0	0	20,160	n/a	19,397	763
1954	30,509	796	563	490	441	907	0	0	18,876	n/a	18,618	258
1955	31,158	767	394	402	554	925	0	0	19,005	n/a	18,903	102
1956	31,790	775	441	322	426	901	0	0	19,059	n/a	19,089	-30
1957	31,834	761	481	356	246	998	0	0	19,034	n/a	19,091	-57
1958	32,193	683	358	272	391	1,122	0	0	18,504	n/a	18,574	-70
1959	32,591	391	504	345	694	841	0	0	18,174	310	18,619	-135
1960	32,869	377	485	217	533	941	0	0	17,081	2,544	18,988	637
1961	33,918	422	465	279	320	1,044	0	0	17,387	2,823	20,114	96
1962	35,338	380	597	247	393	1,007	0	0	17,454	3,262	20,071	645
1963	37,692	361	880	171	291	1,065	0	0	17,049	4,099	20,677	471
1964	39,619	612	820	229	321	1,036	0	0	18,086	4,151	21,663	574
1965	42,056	760	668	150	355	211	0	0	18,447	4,163	22,848	-238
1966	44,663	1,176	416	174	588	-147	0	0	19,779	4,310	24,321	-232
1967	47,226	1,344	1,123	135	653	-773	0	0	21,092	4,631	25,905	-182

(continued on next page)

Table 6B.—*continued*

Period	Factors absorbing reserve funds								Member bank reserves[9]			
	Currency in circulation	Treasury cash holdings[8]	Deposits with Federal Reserve Banks, other than reserve balances			Other Federal Reserve accounts[5]	Required clearing balances	Other Federal Reserve liabilities and capital[5]				
			Treasury	Foreign	Other				With Federal Reserve Banks	Currency and coin[10]	Required[11]	Excess[11,12]
1968	50,961	695	703	216	747	-1,353	0	0	21,818	4,921	27,439	-700
1969	53,950	596	1,312	134	807	0	0	1,919	22,085	5,187	28,173	-901
1970	57,093	431	1,156	148	1,233	0	0	1,986	24,150	5,423	30,033	-460
1971	61,068	460	2,020	294	999	0	0	2,131	27,788	5,743	32,496	1,035
1972	66,516	345	1,855	325	840	0	0	2,143	25,647	6,216	32,044	98
1973	72,497	317	2,542	251	1,149[13]	0	0	2,669	27,060	6,781	35,268	-1,360
1974	79,743	185	3,113	418	1,275[13]	0	0	2,935	25,843	7,370	37,011	-3,798
1975	86,547	483	7,285	353	1,090	0	0	2,968	26,052	8,036	35,197	-1,103[14]
1976	93,717	460	10,393	352	1,357	0	0	3,063	25,158	8,628	35,461	-1,535
1977	103,811	392	7,114	379	1,187	0	0	3,292	26,870	9,421	37,615	-1,265
1978	114,645	240	4,196	368	1,256	0	0	4,275	31,152	10,538	42,694	-893
1979	125,600	494	4,075	429	1,412	0	0	4,957	29,792	11,429	44,217	-2,835
1980	136,829	441	3,062	411	617	0	0	4,671	27,456	13,654	40,558	675
1981	144,774	443	4,301	505	781	0	117	5,261	25,111	15,576	42,145	-1,442
1982	154,908	429	5,033	328	1,033	0	436	4,990	26,053	16,666	41,391	1,328
1983	171,935	479	3,661	191	851	0	1,013	5,392	20,413	17,821	39,179	-945

8 Coin and paper currency held by the Treasury, as well as any gold in excess of the gold certificates issued to the Reserve Bank.

9 In November 1979 and thereafter, includes reserves of member banks, Edge Act corporations, and U.S. agencies and branches of foreign banks. On November 13, 1980, and thereafter, includes reserves of all depository institutions.

10 Between December 1, 1959, and November 23, 1960, part was allowed as reserves; thereafter, all was allowed.

11 Estimated through 1958. Before 1929, data were available only on call dates (in 1920 and 1922 the call date was December 29). Since September 12, 1968, the amount has been based on close-of-business figures for the reserve period two weeks before the report date.

12 For the week ending November 15, 1972, and thereafter, includes $450 million of reserve deficiencies on which Federal Reserve Banks are allowed to waive penalties for a transition period in connection with bank adaptation to Regulation J as amended, effective November 9, 1972. Allowable deficiencies are as follows (beginning with first statement week of quarter, in millions): 1973—Q1, $279; Q2, $172; Q3, $112; Q4, $84; 1974—Q1, $67; Q2, $58. The transition period ended with the second quarter of 1974.

13 For the period before July 1973, includes certain deposits of domestic nonmember banks and foreign-owned banking institutions held with member banks and redeposited in full with Federal Reserve Banks in connection with voluntary participation by nonmember institutions in the Federal Reserve System program of credit restraint. As of December 12, 1974, the amount of voluntary nonmember bank and foreign-agency and branch deposits at Federal Reserve Banks that are associated with marginal reserves is no longer reported. However, two amounts are reported: (1) deposits voluntarily held as reserves by agencies and branches of foreign banks operating in the United States and (2) Eurodollar liabilities.

14 Adjusted to include waivers of penalties for reserve deficiencies, in accordance with change in Board policy, effective November 19, 1975.

n/a Not applicable.

Table 7. Principal assets and liabilities of insured commercial banks, by class of bank, June 30, 2016 and 2015
Millions of dollars, except as noted

Item	Total	Member banks			Nonmember banks
		Total	National	State	
2016					
Assets					
Loans & Investments	11,016,953	8,965,690	7,179,154	1,786,536	2,051,263
Loans, Gross	7,914,584	6,284,631	5,053,250	1,231,381	1,629,953
Net	7,912,801	6,283,468	5,052,321	1,231,147	1,629,332
Investments	3,102,369	2,681,059	2,125,904	555,155	421,310
U.S. Treasury and federal agency securities	568,133	492,132	375,346	116,786	76,000
Other	2,534,236	2,188,926	1,750,557	438,369	345,310
Cash assets, total	1,412,451	1,264,391	991,940	272,451	148,059
Liabilities					
Deposits, total	10,286,750	8,443,807	6,760,151	1,683,655	1,842,943
Interbank	217,855	194,207	152,745	41,461	23,648
Other transactions	1,720,901	1,397,657	1,065,984	331,673	323,244
Other nontransactions	8,347,994	6,851,943	5,541,422	1,310,521	1,496,051
Equity capital	1,732,414	1,453,059	1,173,461	279,598	279,355
Number of banks	5,227	1,755	962	793	3,472
2015					
Assets					
Loans and investments	10,309,367	8,304,925	6,712,153	1,592,771	2,004,443
Loans, gross	7,327,046	5,749,025	4,686,548	1,062,478	1,578,020
Net	7,325,433	5,748,000	4,685,756	1,062,245	1,577,433
Investments	2,982,322	2,555,899	2,025,605	530,294	426,422
U.S. Treasury and federal agency securities	566,996	474,893	367,158	107,735	92,104
Other	2,415,325	2,081,007	1,658,448	422,559	334,319
Cash assets, total	1,470,968	1,323,091	1,025,952	297,139	147,877
Liabilities					
Deposits, total	9,715,921	7,917,606	6,366,937	1,550,669	1,798,314
Interbank	185,331	162,344	119,479	42,865	22,987
Other transactions	1,665,842	1,361,518	998,155	363,363	304,324
Other nontransactions	7,864,747	6,393,744	5,249,303	1,144,441	1,471,003
Equity capital	1,638,288	1,360,457	1,117,295	243,162	277,831
Number of banks	5,463	1,843	1,026	817	3,620

Note: Includes U.S.-insured commercial banks located in the United States but not U.S.-insured commercial banks operating in U.S. territories or possessions. Data are domestic assets and liabilities (except for those components reported on a consolidated basis only). Components may not sum to totals because of rounding. Data for 2015 have been revised.

Table 8. Initial margin requirements under Regulations T, U, and X
Percent of market value

Effective date	Margin stocks	Convertible bonds	Short sales, T only[1]
1934, Oct. 1	25–45	n/a	n/a
1936, Feb. 1	25–55	n/a	n/a
1936, Apr. 1	55	n/a	n/a
1937, Nov. 1	40	n/a	50
1945, Feb. 5	50	n/a	50
1945, July 5	75	n/a	75
1946, Jan. 21	100	n/a	100
1947, Feb. 1	75	n/a	75
1949, Mar. 3	50	n/a	50
1951, Jan. 17	75	n/a	75
1953, Feb. 20	50	n/a	50
1955, Jan. 4	60	n/a	60
1955, Apr. 23	70	n/a	70
1958, Jan. 16	50	n/a	50
1958, Aug. 5	70	n/a	70
1958, Oct. 16	90	n/a	90
1960, July 28	70	n/a	70
1962, July 10	50	n/a	50
1963, Nov. 6	70	n/a	70
1968, Mar. 11	70	50	70
1968, June 8	80	60	80
1970, May 6	65	50	65
1971, Dec. 6	55	50	55
1972, Nov. 24	65	50	65
1974, Jan. 3	50	50	50

Note: These regulations, adopted by the Board of Governors pursuant to the Securities Exchange Act of 1934, limit the amount of credit that may be extended for the purpose of purchasing or carrying margin securities (as defined in the regulations) when the loan is collateralized by such securities. The margin requirement, expressed as a percentage, is the difference between the market value of the securities being purchased or carried (100 percent) and the maximum loan value of the collateral as prescribed by the Board. Regulation T was adopted effective October 1, 1934; Regulation U, effective May 1, 1936; and Regulation X, effective November 1, 1971. The former Regulation G, which was adopted effective March 11, 1968, was merged into Regulation U, effective April 1, 1998.

1 From October 1, 1934, to October 31, 1937, the requirement was the margin "customarily required" by the brokers and dealers.

n/a Not applicable.

Table 9A. Statement of condition of the Federal Reserve Banks, by Bank, December 31, 2016 and 2015
Millions of dollars

Item	Total		Boston		New York		Philadelphia		Cleveland		Richmond	
	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015
Assets												
Gold certificates	11,037	11,037	355	347	3,588	3,709	359	340	586	505	760	783
Special drawing rights certificates	5,200	5,200	196	196	1,818	1,818	210	210	237	237	412	412
Coin	1,873	1,890	47	45	65	72	159	129	139	135	306	301
Loans and securities												
Primary, secondary, and seasonal loans	63	115	-	-	-	-	-	-	-	-	2	-
Treasury securities, bought outright[1]	2,463,616	2,461,552	60,519	62,399	1,401,963	1,477,698	66,892	61,222	73,781	59,182	150,561	133,696
Government-sponsored enterprise debt securities, bought outright[1]	16,180	32,944	397	835	9,207	19,777	439	819	485	792	989	1,789
Federal agency and government-sponsored enterprise mortgage-backed securities, bought outright[2]	1,741,391	1,747,461	42,778	44,297	990,968	1,049,022	47,283	43,462	52,152	42,013	106,423	94,911
Unamortized premiums on securities held outright[3]	172,964	189,486	4,249	4,804	98,428	113,752	4,696	4,713	5,180	4,556	10,570	10,292
Unamortized discounts on securities held outright[3]	-15,078	-16,570	-370	-420	-8,580	-9,947	-409	-411	-452	-399	-922	-900
Total loans and securities	4,379,136	4,414,988	107,573	111,915	2,491,986	2,650,302	118,901	109,805	131,146	106,144	267,623	239,788
Accrued interest receivable - System Open Market Account	25,598	25,418	630	646	14,547	15,241	697	634	770	615	1,577	1,392
Net portfolio holdings of consolidated variable interest entities[4]	1,742	1,778	n/a	n/a	1,742	1,778	n/a	n/a	n/a	n/a	n/a	n/a
Foreign currency denominated investments[5]	19,442	19,567	859	887	6,413	6,306	1,070	1,093	1,481	1,525	4,336	4,490
Central bank liquidity swaps[6]	5,563	997	246	45	1,835	321	306	56	424	78	1,241	229
Other SOMA assets	8	14	-	-	5	9	-	-	-	-	1	1
Other assets												
Items in process of collection	118	210	-	-	-	-	-	-	-	-	-	-
Bank premises	2,213	2,240	118	125	443	438	72	75	108	106	203	212
Deferred asset (accrued liability) - remittances to the Treasury	-	-	-	-	-	-	-	-	-	-	-	-
All other assets[7]	1,407	1,426	68	68	413	304	44	41	49	45	251	245
Interdistrict settlement account	-	-	-3,195	-3,804	-135,654	-265,063	-1,824	17,050	6,880	37,004	1,928	29,869
Total assets	**4,453,337**	**4,484,765**	**106,897**	**110,470**	**2,387,201**	**2,415,235**	**119,994**	**129,433**	**141,820**	**146,394**	**278,638**	**277,722**

(continued on next page)

Table 9A.—*continued*

Item	Total		Boston		New York		Philadelphia		Cleveland		Richmond	
	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015
Liabilities												
Federal Reserve notes outstanding	1,637,993	1,549,750	52,607	49,477	534,619	498,609	51,798	49,312	80,022	82,794	117,238	106,647
Less: Notes held by Federal Reserve Bank	175,054	170,199	5,499	4,871	50,774	64,415	6,254	5,358	8,332	8,137	12,549	10,988
Federal Reserve notes outstanding, net	1,462,939	1,379,551	47,108	44,606	483,845	434,194	45,544	43,954	71,690	74,657	104,689	95,659
Securities sold under agreements to repurchase[8]	725,210	712,401	17,815	18,059	412,693	427,663	19,691	17,719	21,719	17,128	44,320	38,693
Deposits												
Depository institutions	1,759,675	1,977,166	40,012	45,875	1,032,881	1,175,023	52,334	65,374	44,908	51,363	120,052	133,840
Treasury, general account	399,190	333,447	n/a	n/a	399,190	333,447	n/a	n/a	n/a	n/a	n/a	n/a
Foreign, official accounts	5,165	5,231	2	2	5,138	5,204	2	2	3	3	9	9
Other[9]	53,248	31,301	6	2	37,248	23,738	-	2	-	-	155	131
Total deposits	**2,217,278**	**2,347,145**	**40,020**	**45,879**	**1,474,457**	**1,537,412**	**52,336**	**65,378**	**44,911**	**51,366**	**120,216**	**133,980**
Other liabilities												
Accrued remittances to the Treasury[10]	1,725	1,953	51	56	832	1,023	75	56	23	80	236	183
Deferred credit items	922	246	-	-	-	2	-	-	-	-	-	-
Consolidated variable interest entities	33	57	n/a	n/a	33	57	n/a	n/a	n/a	n/a	n/a	n/a
All other liabilities[11]	4,788	3,904	150	124	2,391	1,851	173	152	182	153	437	395
Total liabilities	**4,412,895**	**4,445,257**	**105,144**	**108,724**	**2,374,251**	**2,402,202**	**117,819**	**127,259**	**138,525**	**143,384**	**269,898**	**268,910**
Capital accounts												
Capital paid-in	30,442	29,508	1,320	1,304	9,748	9,734	1,637	1,624	2,480	2,248	6,579	6,582
Surplus (including accumulated other comprehensive loss)	10,000	10,000	433	442	3,202	3,299	538	550	815	762	2,161	2,230
Total liabilities and capital accounts	4,453,337	4,484,765	106,897	110,470	2,387,201	2,415,235	119,994	129,433	141,820	146,394	278,638	277,722

Note: Components may not sum to totals because of rounding.

1 Par value. Includes securities loaned—fully collateralized by U.S. Treasury securities, other investment-grade securities, and collateral eligible for tri-party repurchase agreements pledged with Federal Reserve Banks.

2 The par amount shown is the remaining principal balance of the securities.

3 Reflects the premium or discount, which is the difference between the purchase price and the face value of the securities that has not been amortized. For U.S. Treasury and Federal agency debt securities, amortization is on a straight-line basis. For mortgage-backed securities (MBS), amortization is on an effective-interest basis.

4 The Federal Reserve Bank of New York is the primary beneficiary of Maiden Lane LLC, and, as a result, the accounts and results of operations of Maiden Lane LLC are included in the combined financial statements of the Federal Reserve Banks.

5 Valued daily at market exchange rates.

6 Dollar value of foreign currency held under these agreements valued at the exchange rate to be used when the foreign currency is returned to the foreign central bank. This exchange rate equals the market exchange rate used when the foreign currency was acquired from the foreign central bank.

7 Includes furniture and equipment and depository institution overdrafts.

8 Contract amount of agreements.

9 Includes deposits of government-sponsored enterprises (GSEs), the Consumer Financial Protection Bureau, international organizations, and designated financial market utilities. These deposits are primarily held by the Federal Reserve Banks of New York and Chicago.

10 Represents the estimated weekly remittances to the U.S. Treasury.

11 Includes accrued benefit costs and cash collateral posted by counterparties under commitments to purchase and sell federal agency and GSE MBS.

n/a Not applicable.

Table 9A. Statement of condition of the Federal Reserve Banks, by Bank, December 31, 2016 and 2015—*continued*
Millions of dollars

Item	Atlanta		Chicago		St. Louis		Minneapolis		Kansas City		Dallas		San Francisco	
	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015
Assets														
Gold certificates	1,541	1,600	753	734	360	299	193	171	296	288	875	891	1,371	1,370
Special drawing rights certificates	654	654	424	424	150	150	90	90	153	153	282	282	574	574
Coin	186	184	279	282	29	31	51	49	113	149	190	196	310	316
Loans and securities														
Primary, secondary, and seasonal loans	2	31	44	9	-	35	9	38	5	2	-	-	-	-
Treasury securities, bought outright[1]	137,887	138,615	98,163	91,458	31,093	25,670	18,163	14,970	34,287	31,977	87,692	79,295	302,615	285,369
Government-sponsored enterprise debt securities, bought outright[1]	906	1,855	645	1,224	204	344	119	200	225	428	576	1,061	1,987	3,819
Federal agency and government-sponsored enterprise mortgage-backed securities, bought outright[2]	97,464	98,403	69,386	64,926	21,978	18,223	12,839	10,627	24,236	22,701	61,984	56,291	213,902	202,584
Unamortized premiums on securities held outright[3]	9,681	10,670	6,892	7,040	2,183	1,967	1,275	1,153	2,408	2,461	6,157	6,104	21,246	21,967
Unamortized discounts on securities held outright[3]	-844	-933	-602	-615	-191	-172	-111	-100	-210	-216	-537	-534	-1,852	-1,921
Total loans and securities	245,096	248,641	174,528	164,042	55,267	46,076	32,294	26,888	60,951	57,353	155,872	142,217	537,898	511,818
Accrued interest receivable - System Open Market Account	1,433	1,431	1,019	944	323	265	188	154	356	330	909	818	3,147	2,949
Net portfolio holdings of consolidated variable interest entities[4]	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Foreign currency denominated investments[5]	1,080	1,113	521	526	199	182	83	82	194	206	247	282	2,958	2,873
Central bank liquidity swaps[6]	309	57	149	27	57	9	24	4	55	11	71	14	846	146
Other SOMA assets	-	1	-	1	-	-	-	-	-	-	-	-	1	2
Other assets														
Items in process of collection	118	210	-	-	-	-	-	-	-	-	-	-	-	-
Bank premises	206	207	202	205	114	118	89	92	239	240	223	227	196	197
Deferred asset (accrued liability) - remittances to the Treasury	-	-	91	-	-	-	-	-	-	-	-	-	-	-
All other assets[7]	95	91	60	63	101	97	31	33	70	62	57	56	173	321
Interdistrict settlement account	35,779	27,634	28,502	21,637	5,681	15,633	4,507	8,418	2,811	5,535	31,215	32,425	23,369	73,661
Total assets	**286,497**	**281,823**	**206,528**	**188,885**	**62,281**	**62,860**	**37,550**	**35,981**	**65,238**	**64,327**	**189,941**	**177,408**	**570,843**	**594,227**

(continued on next page)

Table 9A.—*continued*

Item	Atlanta		Chicago		St. Louis		Minneapolis		Kansas City		Dallas		San Francisco	
	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015	2016	2015
Liabilities														
Federal Reserve notes outstanding	225,352	218,998	108,782	103,023	49,409	51,721	28,238	26,791	44,307	40,705	135,738	125,620	209,882	196,054
Less: Notes held by Federal Reserve Bank	24,868	20,469	10,672	9,480	5,135	4,449	2,892	2,512	5,577	4,366	16,288	12,739	26,212	22,417
Federal Reserve notes outstanding, net	200,484	198,529	98,110	93,543	44,274	47,272	25,346	24,279	38,730	36,339	119,450	112,881	183,670	173,637
Securities sold under agreements to repurchase[8]	40,589	40,117	28,896	26,469	9,153	7,429	5,347	4,333	10,093	9,254	25,814	22,949	89,081	82,589
Deposits														
Depository institutions	41,735	40,417	61,763	60,295	8,237	7,506	6,542	6,982	15,865	18,185	43,874	40,767	291,471	331,540
Treasury, general account	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Foreign, official accounts	2	2	1	1	-	-	-	-	-	-	-	1	6	6
Other[9]	7	7	15,805	7,225	20	97	-	1	4	12	1	65	2	24
Total deposits	**41,744**	**40,426**	**77,569**	**67,521**	**8,257**	**7,603**	**6,542**	**6,983**	**15,869**	**18,197**	**43,875**	**40,833**	**291,479**	**331,570**
Other liabilities														
Acrued remittances to the Treasury[10]	115	150	-	75	24	32	20	18	38	41	84	67	320	172
Deferred credit items	921	163	-	-	-	-	-	82	-	-	-	-	-	-
Consolidated variable interest entities	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
All other liabilities[11]	285	244	260	218	131	118	124	117	115	101	201	177	338	248
Total liabilities	**284,138**	**279,629**	**204,835**	**187,826**	**61,839**	**62,454**	**37,379**	**35,812**	**64,845**	**63,932**	**189,424**	**176,907**	**564,888**	**588,216**
Capital accounts														
Capital paid-in	1,776	1,639	1,274	791	333	303	129	126	296	295	389	374	4,483	4,490
Surplus (including accumulated other comprehensive loss)	583	555	419	268	109	103	42	43	97	100	128	127	1,472	1,521
Total liabilities and capital accounts	**286,497**	**281,823**	**206,528**	**188,885**	**62,281**	**62,860**	**37,550**	**35,981**	**65,238**	**64,327**	**189,941**	**177,408**	**570,843**	**594,227**

Note: Components may not sum to totals because of rounding.

[1] Par value. Includes securities loaned—fully collateralized by U.S. Treasury securities, other investment-grade securities, and collateral eligible for tri-party repurchase agreements pledged with Federal Reserve Banks.

[2] The par amount shown is the remaining principal balance of the securities.

[3] Reflects the premium or discount, which is the difference between the purchase price and the face value of the securities that has not been amortized. For U.S. Treasury and Federal agency debt securities, amortization is on a straight-line basis. For mortgage-backed securities (MBS), amortization is on an effective-interest basis.

[4] The Federal Reserve Bank of New York is the primary beneficiary of Maiden Lane LLC, and, as a result, the accounts and results of operations of Maiden Lane LLC are included in the combined financial statements of the Federal Reserve Banks.

[5] Valued daily at market exchange rates.

[6] Dollar value of foreign currency held under these agreements valued at the exchange rate to be used when the foreign currency is returned to the foreign central bank. This exchange rate equals the market exchange rate used when the foreign currency was acquired from the foreign central bank.

[7] Includes furniture and equipment and depository institution overdrafts.

[8] Contract amount of agreements.

[9] Includes deposits of government-sponsored enterprises (GSEs), the Consumer Financial Protection Bureau, international organizations, and designated financial market utilities. These deposits are primarily held by the Federal Reserve Banks of New York and Chicago.

[10] Represents the estimated weekly remittances to the U.S. Treasury.

[11] Includes accrued benefit costs and cash collateral posted by counterparties under commitments to purchase and sell federal agency and GSE MBS.

n/a Not applicable.

Table 9B. Statement of condition of the Federal Reserve Banks, December 31, 2016 and 2015
Supplemental information—collateral held against Federal Reserve notes: Federal Reserve agents' accounts
Millions of dollars

Item	2016	2015
Federal Reserve notes outstanding	1,637,993	1,549,750
Less: Notes held by Federal Reserve Banks not subject to collateralization	175,054	170,199
Collateralized Federal Reserve notes	**1,462,939**	**1,379,551**
Collateral for Federal Reserve notes		
Gold certificates	11,037	11,037
Special drawing rights certificates	5,200	5,200
U.S. Treasury securities[1]	1,446,702	1,363,314
Total collateral	**1,462,939**	**1,379,551**

[1] Face value. Includes compensation to adjust for the effect of inflation on the original face value of inflation-indexed securities.

Table 10. Income and expenses of the Federal Reserve Banks, by Bank, 2016
Thousands of dollars

Item	Total	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City	Dallas	San Francisco
Current income													
Interest income													
Primary, secondary, and seasonal loans	628	4	6	2	4	2	33	77	140	186	57	21	96
Treasury securities	63,844,843	1,582,107	36,879,518	1,693,565	1,808,553	3,782,634	3,579,352	2,496,745	767,356	448,078	872,312	2,213,286	7,721,338
Government-sponsored enterprise debt securities, net	958,708	23,816	556,142	25,259	26,713	56,289	53,774	37,289	11,358	6,631	13,029	32,981	115,426
Federal agency and government-sponsored enterprise mortgage-backed securities, net	46,299,469	1,149,089	26,814,895	1,223,018	1,298,244	2,727,809	2,596,473	1,804,551	551,542	322,034	630,503	1,597,434	5,583,876
Foreign currency denominated investments, net	-6,764	-297	-2,245	-371	-512	-1,497	-373	-181	-71	-29	-67	-83	-1,039
Central bank liquidity swaps[1]	8,932	395	2,944	492	681	1,994	496	239	91	38	89	114	1,357
Total interest income	111,105,815	2,755,115	64,251,259	2,941,965	3,133,684	6,567,232	6,229,756	4,338,721	1,330,416	776,938	1,515,923	3,843,753	13,421,055
Income from priced services	434,082	n/a	109,201	n/a	n/a	n/a	242,534	82,347	n/a	n/a	n/a	n/a	n/a
Compensation received for services provided[2]	166,174	13,726	1,695	2,028	1,752	15,525	703	25,578	2,543	50,595	36,953	7,319	7,757
Securities lending fees	31,822	786	18,262	853	924	1,911	1,783	1,255	391	228	438	1,116	3,875
Other income	6,104	79	4,595	92	100	205	197	147	77	27	53	126	406
Total other income	638,182	14,591	133,752	2,973	2,776	17,642	245,217	109,327	3,012	50,850	37,444	8,562	12,038
Total current income	**111,743,998**	**2,769,706**	**64,385,011**	**2,944,938**	**3,136,460**	**6,584,873**	**6,474,973**	**4,448,048**	**1,333,427**	**827,787**	**1,553,367**	**3,852,314**	**13,433,092**
Net expenses													
Personnel													
Salaries and other personnel expenses	2,330,028	140,868	532,672	100,938	103,266	336,068	182,562	186,346	143,200	101,018	167,282	119,559	216,248
Retirement and other benefits	719,414	36,900	161,174	30,142	32,032	102,488	65,206	55,165	43,074	34,135	47,488	45,930	65,682
Administrative													
Fees	212,555	4,306	41,041	10,259	4,533	89,567	17,532	14,728	12,794	3,025	3,582	2,245	8,943
Travel	94,771	4,665	12,112	3,563	5,433	12,209	9,151	11,021	6,047	3,485	8,318	5,578	13,190
Postage and other shipping costs	12,499	232	1,121	147	1,221	419	2,309	156	637	263	970	2,365	2,658
Communications	41,709	1,075	5,474	610	570	26,126	1,351	2,139	1,096	360	928	847	1,134
Materials and supplies	68,895	4,080	24,123	6,599	2,879	5,480	4,731	5,453	2,748	1,567	3,499	3,446	4,290
Building													
Taxes on real estate	51,033	7,288	16,155	1,044	1,817	2,524	3,223	3,989	772	3,572	3,265	2,972	4,412
Property depreciation	142,635	13,443	30,728	7,291	7,181	14,904	10,453	15,553	8,249	4,461	8,761	9,149	12,463
Utilities	37,175	4,111	9,270	1,628	1,472	4,022	2,967	2,317	1,662	1,809	2,361	2,777	2,779
Rent	31,737	390	2,135	888	981	21,239	294	1,025	2,781	193	760	835	216
Other building	64,836	6,277	12,964	4,500	4,362	6,045	4,224	8,335	2,198	2,885	2,274	5,246	5,527
Equipment/software													
Purchases	27,690	1,496	3,946	1,135	1,248	6,693	1,811	2,025	1,387	1,508	2,576	1,536	2,328
Rentals	3,630	315	1,359	189	362	413	234	585	37	70	14	39	13
Depreciation	76,979	4,362	6,600	2,060	2,282	41,537	3,622	3,352	1,726	1,366	2,419	2,928	4,725
Repairs and maintenance	66,573	5,434	5,855	1,892	2,186	27,497	5,369	3,621	1,517	1,300	2,091	3,444	6,368
Software	226,702	8,879	47,556	8,648	7,344	71,213	15,819	7,071	10,334	7,563	16,220	10,720	15,334
Other expenses													
Compensation paid for service costs incurred[2]	166,174	n/a	43,104	n/a	n/a	n/a	113,260	9,810	n/a	n/a	n/a	n/a	n/a
Other expenses	85,209	11,010	78,367	17,587	8,810	-366,248	29,537	65,345	130,100	31,658	19,544	26,194	33,306
Recoveries	-180,790	-19,104	-22,729	-6,083	-6,195	-51,514	-15,837	-10,854	-4,537	-2,906	-12,524	-15,456	-13,052

(continued on next page)

Table 10.—*continued*

Item	Total	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City	Dallas	San Francisco
Expenses capitalized[3]	-75,179	-6,058	-22,296	-6,554	-6,101	-158	-949	-4,264	-2,388	-1,191	-11,131	-2,856	-11,234
Total operating expenses before pension expense and reimbursements	**4,204,276**	**229,968**	**990,728**	**186,482**	**175,683**	**350,525**	**456,871**	**382,920**	**363,434**	**196,142**	**268,696**	**227,498**	**375,330**
Net periodic pension expense[4]	565,053	3,859	529,112	1,884	1,118	4,995	2,631	5,472	3,311	1,585	2,361	3,782	4,944
Reimbursements	-676,891	-45,762	-166,862	-23,750	-37,062	-30,277	-25,146	-5,995	-208,818	-34,085	-60,863	-18,758	-19,513
Operating expenses	4,092,438	188,065	1,352,978	164,615	139,739	325,243	434,355	382,397	157,926	163,642	210,194	212,522	360,761
Interest expense on securities sold under agreements to repurchase	1,122,457	27,790	647,399	29,846	31,981	66,716	62,918	43,980	13,560	7,918	15,365	39,018	135,966
Interest on reserves[5]	12,019,878	179,468	7,828,922	313,882	226,474	710,612	220,182	359,679	45,452	31,643	103,749	217,528	1,782,285
Interest on term deposits[6]	23,594	15	10,438	6,505	151	2	61	2,107	2	-	1,044	14	3,253
Other expenses	4,253	105	2,448	113	122	254	238	167	52	30	58	148	516
Net expenses	17,262,620	395,444	9,842,185	514,962	398,467	1,102,828	717,754	788,331	216,993	203,233	330,412	469,230	2,282,781
Current net income	94,481,378	2,374,262	54,542,826	2,429,976	2,737,993	5,482,046	5,757,219	3,659,717	1,116,435	624,554	1,222,955	3,383,084	11,150,312
Additions to (+) and deductions from (-) current net income													
Loss on sales of Treasury securities	-15,224	-374	-8,664	-413	-456	-930	-852	-607	-192	-112	-212	-542	-1,870
Profit on sales of federal agency and government-sponsored enterprise mortgage-backed securities	19,012	472	11,010	502	533	1,120	1,066	741	227	132	259	656	2,293
Foreign currency translation gains (losses)	-103,228	-3,278	-42,604	-4,716	-5,855	-15,791	-4,185	-2,706	-2,121	-529	-430	632	-21,646
Net income from consolidated variable interest entities[7]	-11,679	n/a	-11,679	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other additions	61	-	-105	39	-	4	11	-	-	-	80	26	4
Other deductions	-3,194	6	-2,154	39	-7	-825	-49	85	-68	6	-2	-64	-161
Net deductions to (-) current net income	-114,252	-3,173	-54,196	-4,549	-5,783	-16,422	-4,010	-2,486	-2,153	-503	-305	707	-21,380
Cost of unreimbursed Treasury services	-3	n/a	-3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Assessments by Board													
Board expenditures[8]	709,000	31,107	233,183	38,618	53,853	156,937	39,297	22,613	7,329	3,024	7,008	8,998	107,035
Cost of currency	700,728	31,966	136,476	30,697	44,743	59,367	105,900	61,850	22,614	14,691	21,205	60,544	110,674
Consumer Financial Protection Bureau[9]	596,200	26,064	195,722	32,417	45,196	131,422	32,962	20,547	6,280	2,528	5,872	7,573	89,618
Assessments by the Board of Governors	2,005,928	89,135	565,381	101,732	143,792	347,726	178,158	105,011	36,223	20,244	34,085	77,114	307,327
Net income before providing for remittances to the Treasury	92,361,199	2,281,953	53,923,252	2,323,696	2,588,417	5,117,898	5,575,051	3,552,221	1,078,059	603,807	1,188,565	3,306,677	10,821,605
Earnings remittances to the Treasury, as required by the Federal Reserve Act	91,466,545	2,252,651	53,595,287	2,300,414	2,480,527	5,050,935	5,508,629	3,369,052	1,058,281	604,229	1,176,146	3,300,129	10,770,267
Net loss after providing for remittances to the Treasury	894,654	29,302	327,965	23,282	107,890	66,963	66,422	183,168	19,778	-421	12,420	6,548	51,338
Other comprehensive income (loss)	-183,232	-7,870	-210,978	2,190	-3,413	9,095	7,085	-354	1,005	5,547	-2,358	11,678	5,143

(continued on next page)

Table 10.—*continued*

Item	Total	Boston	New York	Philadelphia	Cleveland	Richmond	Atlanta	Chicago	St. Louis	Minneapolis	Kansas City	Dallas	San Francisco
Comprehensive income	711,423	21,432	116,986	25,472	104,477	76,058	73,507	182,815	20,783	5,125	10,062	18,225	56,481
Distribution of comprehensive income													
Dividends on capital stock	711,423	29,870	213,767	38,032	51,614	145,449	45,428	32,269	14,011	5,650	12,801	17,182	105,350
Transferred to/from surplus and change in accumulated other comprehensive income	-	-8,438	-96,781	-12,560	52,863	-69,391	28,079	150,546	6,772	-525	-2,739	1,043	-48,869
Earnings remittances to the Treasury	91,466,545	2,252,651	53,595,287	2,300,414	2,480,527	5,050,935	5,508,629	3,369,052	1,058,281	604,229	1,176,146	3,300,129	10,770,267
Total distribution of net income	**92,177,968**	**2,274,082**	**53,712,273**	**2,325,886**	**2,585,004**	**5,126,993**	**5,582,136**	**3,551,867**	**1,079,063**	**609,354**	**1,186,208**	**3,318,354**	**10,826,748**

Note: Components may not sum to totals because of rounding.

[1] Represents interest income recognized on swap agreements with foreign central banks.

[2] The Federal Reserve Bank of Atlanta (FRBA) has overall responsibility for managing the Reserve Banks' provision of check and automated clearinghouse (ACH) services and recognizes total System revenue for these services. The Federal Reserve Bank of New York (FRBNY) has overall responsibility for managing the Reserve Banks' provision of Fedwire funds transfer and securities transfer services, and recognizes the total System revenue for these services. The Federal Reserve Bank of Chicago (FRBC) has overall responsibility for managing the Reserve Banks' provision of electronic access services to depository institutions, and recognizes the total System revenue for these services. The FRBA, the FRBNY, and the FRBC compensate the other Reserve Banks for the costs incurred in providing these services.

[3] Includes expenses for labor and materials capitalized and depreciated or amortized as charges to activities in the periods benefited.

[4] Reflects the effect of the Financial Accounting Standards Board's Codification Topic (ASC 715) Compensation-Retirement Benefits. Net pension expense for the System Retirement Plan of $504,879 thousand is recorded on behalf of the System in the books of the FRBNY. The Retirement Benefit Equalization Plan and the Supplemental Employee Retirement Plan are recorded by each Federal Reserve Bank.

[5] In October 2008, the Reserve Banks began to pay interest to depository institutions on qualifying balances held at the Federal Reserve Banks.

[6] In April 2010, the Reserve Banks began to pay interest on term deposits under the Term Deposit Facility.

[7] Represents the portion of the consolidated variable interest entities' net income recorded by the FRBNY. The amount includes interest income, interest expenses, realized and unrealized gains and losses, and professional fees.

[8] For additional details, see the "Board of Governors Financial Statements" in section 12.

[9] The Board of Governors assesses the Reserve Banks to fund the operations of the Consumer Financial Protection Bureau. These assessments are allocated to each Reserve Bank based on each Reserve Bank's capital and surplus balances as of the most recent quarter.

n/a Not applicable.

Table 11. Income and expenses of the Federal Reserve Banks, 1914–2016

Thousands of dollars

Federal Reserve Bank and period	Current income	Net expenses	Net additions or deductions (-)[1]	Assessments by the Board of Governors			Other compre-hensive income (loss)	Dividends paid	Distributions to the U.S. Treasury		Trans-ferred to/from surplus[4]	Transferred to/from surplus and change in accumulated other compre-hensive income[5]
				Board expenditures	Costs of currency	Consumer Financial Protection Bureau and Office of Financial Research[2]			Statutory transfers[3]	Interest on Federal Reserve notes		
All banks												
1914–15	2,173	2,018	6	302	n/a	n/a	n/a	217	n/a	n/a	n/a	n/a
1916	5,218	2,082	-193	192	n/a	n/a	n/a	1,743	n/a	n/a	n/a	n/a
1917	16,128	4,922	-1,387	238	n/a	n/a	n/a	6,804	1,134	n/a	n/a	1,134
1918	67,584	10,577	-3,909	383	n/a	n/a	n/a	5,541	n/a	n/a	n/a	48,334
1919	102,381	18,745	-4,673	595	n/a	n/a	n/a	5,012	2,704	n/a	n/a	70,652
1920	181,297	27,549	-3,744	710	n/a	n/a	n/a	5,654	60,725	n/a	n/a	82,916
1921	122,866	33,722	-6,315	741	n/a	n/a	n/a	6,120	59,974	n/a	n/a	15,993
1922	50,499	28,837	-4,442	723	n/a	n/a	n/a	6,307	10,851	n/a	n/a	-660
1923	50,709	29,062	-8,233	703	n/a	n/a	n/a	6,553	3,613	n/a	n/a	2,546
1924	38,340	27,768	-6,191	663	n/a	n/a	n/a	6,682	114	n/a	n/a	-3,078
1925	41,801	26,819	-4,823	709	n/a	n/a	n/a	6,916	59	n/a	n/a	2,474
1926	47,600	24,914	-3,638	722	1,714	n/a	n/a	7,329	818	n/a	n/a	8,464
1927	43,024	24,894	-2,457	779	1,845	n/a	n/a	7,755	250	n/a	n/a	5,044
1928	64,053	25,401	-5,026	698	806	n/a	n/a	8,458	2,585	n/a	n/a	21,079
1929	70,955	25,810	-4,862	782	3,099	n/a	n/a	9,584	4,283	n/a	n/a	22,536
1930	36,424	25,358	-93	810	2,176	n/a	n/a	10,269	17	n/a	n/a	-2,298
1931	29,701	24,843	311	719	1,479	n/a	n/a	10,030	n/a	n/a	n/a	-7,058
1932	50,019	24,457	-1,413	729	1,106	n/a	n/a	9,282	2,011	n/a	n/a	11,021
1933	49,487	25,918	-12,307	800	2,505	n/a	n/a	8,874	n/a	n/a	n/a	-917
1934	48,903	26,844	-4,430	1,372	1,026	n/a	n/a	8,782	n/a	n/a	-60	6,510
1935	42,752	28,695	-1,737	1,406	1,477	n/a	n/a	8,505	298	n/a	28	607
1936	37,901	26,016	486	1,680	2,178	n/a	n/a	7,830	227	n/a	103	353
1937	41,233	25,295	-1,631	1,748	1,757	n/a	n/a	7,941	177	n/a	67	2,616
1938	36,261	25,557	2,232	1,725	1,630	n/a	n/a	8,019	120	n/a	-419	1,862
1939	38,501	25,669	2,390	1,621	1,356	n/a	n/a	8,110	25	n/a	-426	4,534
1940	43,538	25,951	11,488	1,704	1,511	n/a	n/a	8,215	82	n/a	-54	17,617
1941	41,380	28,536	721	1,840	2,588	n/a	n/a	8,430	141	n/a	-4	571
1942	52,663	32,051	-1,568	1,746	4,826	n/a	n/a	8,669	198	n/a	50	3,554
1943	69,306	35,794	23,768	2,416	5,336	n/a	n/a	8,911	245	n/a	135	40,327
1944	104,392	39,659	3,222	2,296	7,220	n/a	n/a	9,500	327	n/a	201	48,410
1945	142,210	41,666	-830	2,341	4,710	n/a	n/a	10,183	248	n/a	262	81,970
1946	150,385	50,493	-626	2,260	4,482	n/a	n/a	10,962	67	n/a	28	81,467
1947	158,656	58,191	1,973	2,640	4,562	n/a	n/a	11,523	36	75,284	87	8,366
1948	304,161	64,280	-34,318	3,244	5,186	n/a	n/a	11,920	n/a	166,690	n/a	18,523
1949	316,537	67,931	-12,122	3,243	6,304	n/a	n/a	12,329	n/a	193,146	n/a	21,462
1950	275,839	69,822	36,294	3,434	7,316	n/a	n/a	13,083	n/a	196,629	n/a	21,849
1951	394,656	83,793	-2,128	4,095	7,581	n/a	n/a	13,865	n/a	254,874	n/a	28,321
1952	456,060	92,051	1,584	4,122	8,521	n/a	n/a	14,682	n/a	291,935	n/a	46,334
1953	513,037	98,493	-1,059	4,100	10,922	n/a	n/a	15,558	n/a	342,568	n/a	40,337
1954	438,486	99,068	-134	4,175	6,490	n/a	n/a	16,442	n/a	276,289	n/a	35,888
1955	412,488	101,159	-265	4,194	4,707	n/a	n/a	17,712	n/a	251,741	n/a	32,710
1956	595,649	110,240	-23	5,340	5,603	n/a	n/a	18,905	n/a	401,556	n/a	53,983
1957	763,348	117,932	-7,141	7,508	6,374	n/a	n/a	20,081	n/a	542,708	n/a	61,604
1958	742,068	125,831	124	5,917	5,973	n/a	n/a	21,197	n/a	524,059	n/a	59,215
1959	886,226	131,848	98,247	6,471	6,384	n/a	n/a	22,722	n/a	910,650	n/a	-93,601
1960	1,103,385	139,894	13,875	6,534	7,455	n/a	n/a	23,948	n/a	896,816	n/a	42,613
1961	941,648	148,254	3,482	6,265	6,756	n/a	n/a	25,570	n/a	687,393	n/a	70,892

(continued on next page)

Table 11.—*continued*

Federal Reserve Bank and period	Current income	Net expenses	Net additions or deductions (-)[1]	Assessments by the Board of Governors			Other compre-hensive income (loss)	Dividends paid	Distributions to the U.S. Treasury		Trans-ferred to/from surplus[4]	Transferred to/from surplus and change in accumulated other compre-hensive income[5]
				Board expenditures	Costs of currency	Consumer Financial Protection Bureau and Office of Financial Research[2]			Statutory transfers[3]	Interest on Federal Reserve notes		
1962	1,048,508	161,451	-56	6,655	8,030	n/a	n/a	27,412	n/a	799,366	n/a	45,538
1963	1,151,120	169,638	615	7,573	10,063	n/a	n/a	28,912	n/a	879,685	n/a	55,864
1964	1,343,747	171,511	726	8,655	17,230	n/a	n/a	30,782	n/a	1,582,119	n/a	-465,823
1965	1,559,484	172,111	1,022	8,576	23,603	n/a	n/a	32,352	n/a	1,296,810	n/a	27,054
1966	1,908,500	178,212	996	9,022	20,167	n/a	n/a	33,696	n/a	1,649,455	n/a	18,944
1967	2,190,404	190,561	2,094	10,770	18,790	n/a	n/a	35,027	n/a	1,907,498	n/a	29,851
1968	2,764,446	207,678	8,520	14,198	20,474	n/a	n/a	36,959	n/a	2,463,629	n/a	30,027
1969	3,373,361	237,828	-558	15,020	22,126	n/a	n/a	39,237	n/a	3,019,161	n/a	39,432
1970	3,877,218	276,572	11,442	21,228	23,574	n/a	n/a	41,137	n/a	3,493,571	n/a	32,580
1971	3,723,370	319,608	94,266	32,634	24,943	n/a	n/a	43,488	n/a	3,356,560	n/a	40,403
1972	3,792,335	347,917	-49,616	35,234	31,455	n/a	n/a	46,184	n/a	3,231,268	n/a	50,661
1973	5,016,769	416,879	-80,653	44,412	33,826	n/a	n/a	49,140	n/a	4,340,680	n/a	51,178
1974	6,280,091	476,235	-78,487	41,117	30,190	n/a	n/a	52,580	n/a	5,549,999	n/a	51,483
1975	6,257,937	514,359	-202,370	33,577	37,130	n/a	n/a	54,610	n/a	5,382,064	n/a	33,828
1976	6,623,220	558,129	7,311	41,828	48,819	n/a	n/a	57,351	n/a	5,870,463	n/a	53,940
1977	6,891,317	568,851	-177,033	47,366	55,008	n/a	n/a	60,182	n/a	5,937,148	n/a	45,728
1978	8,455,309	592,558	-633,123	53,322	60,059	n/a	n/a	63,280	n/a	7,005,779	n/a	47,268
1979	10,310,148	625,168	-151,148	50,530	68,391	n/a	n/a	67,194	n/a	9,278,576	n/a	69,141
1980	12,802,319	718,033	-115,386	62,231	73,124	n/a	n/a	70,355	n/a	11,706,370	n/a	56,821
1981	15,508,350	814,190	-372,879	63,163	82,924	n/a	n/a	74,574	n/a	14,023,723	n/a	76,897
1982	16,517,385	926,034	-68,833	61,813	98,441	n/a	n/a	79,352	n/a	15,204,591	n/a	78,320
1983	16,068,362	1,023,678	-400,366	71,551	152,135	n/a	n/a	85,152	n/a	14,228,816	n/a	106,663
1984	18,068,821	1,102,444	-412,943	82,116	162,606	n/a	n/a	92,620	n/a	16,054,095	n/a	161,996
1985	18,131,983	1,127,744	1,301,624	77,378	173,739	n/a	n/a	103,029	n/a	17,796,464	n/a	155,253
1986	17,464,528	1,156,868	1,975,893	97,338	180,780	n/a	n/a	109,588	n/a	17,803,895	n/a	91,954
1987	17,633,012	1,146,911	1,796,594	81,870	170,675	n/a	n/a	117,499	n/a	17,738,880	n/a	173,771
1988	19,526,431	1,205,960	-516,910	84,411	164,245	n/a	n/a	125,616	n/a	17,364,319	n/a	64,971
1989	22,249,276	1,332,161	1,254,613	89,580	175,044	n/a	n/a	129,885	n/a	21,646,417	n/a	130,802
1990	23,476,604	1,349,726	2,099,328	103,752	193,007	n/a	n/a	140,758	n/a	23,608,398	n/a	180,292
1991	22,553,002	1,429,322	405,729	109,631	261,316	n/a	n/a	152,553	n/a	20,777,552	n/a	228,356
1992	20,235,028	1,474,531	-987,788	128,955	295,401	n/a	n/a	171,763	n/a	16,774,477	n/a	402,114
1993	18,914,251	1,657,800	-230,268	140,466	355,947	n/a	n/a	195,422	n/a	15,986,765	n/a	347,583
1994	20,910,742	1,795,328	2,363,862	146,866	368,187	n/a	n/a	212,090	n/a	20,470,011	n/a	282,122
1995	25,395,148	1,818,416	857,788	161,348	370,203	n/a	n/a	230,527	n/a	23,389,367	n/a	283,075
1996	25,164,303	1,947,861	-1,676,716	162,642	402,517	n/a	n/a	255,884	5,517,716	14,565,624	n/a	635,343
1997	26,917,213	1,976,453	-2,611,570	174,407	364,454	n/a	n/a	299,652	20,658,972	0	n/a	831,705
1998	28,149,477	1,833,436	1,906,037	178,009	408,544	n/a	n/a	343,014	17,785,942	8,774,994	n/a	731,575
1999	29,346,836	1,852,162	-533,557	213,790	484,959	n/a	n/a	373,579	n/a	25,409,736	n/a	479,053
2000	33,963,992	1,971,688	-1,500,027	188,067	435,838	n/a	n/a	409,614	n/a	25,343,892	n/a	4,114,865
2001	31,870,721	2,084,708	-1,117,435	295,056	338,537	n/a	n/a	428,183	n/a	27,089,222	n/a	517,580
2002	26,760,113	2,227,078	2,149,328	205,111	429,568	n/a	n/a	483,596	n/a	24,495,490	n/a	1,068,598
2003	23,792,725	2,462,658	2,481,127	297,020	508,144	n/a	n/a	517,705	n/a	22,021,528	n/a	466,796
2004	23,539,942	2,238,705	917,870	272,331	503,784	n/a	n/a	582,402	n/a	18,078,003	n/a	2,782,587
2005	30,729,357	2,889,544	-3,576,903	265,742	477,087	n/a	n/a	780,863	n/a	21,467,545	n/a	1,271,672
2006	38,410,427	3,263,844	-158,846	301,014	491,962	n/a	n/a	871,255	n/a	29,051,678	n/a	4,271,828
2007	42,576,025	3,510,206	198,417	296,125	576,306	n/a	324,481	992,353	n/a	34,598,401	n/a	3,125,533
2008	41,045,582	4,870,374	3,340,628	352,291	500,372	n/a	-3,158,808	1,189,626	n/a	31,688,688	n/a	2,626,053
2009	54,463,121	5,978,795	4,820,204	386,400	502,044	n/a	1,006,813	1,428,202	n/a	47,430,237	n/a	4,564,460
2010	79,300,937	6,270,420	9,745,562	422,200	622,846	42,286	45,881	1,582,785	n/a	79,268,124	n/a	883,724

(continued on next page)

Table 11.—*continued*

Federal Reserve Bank and period	Current income	Net expenses	Net additions or deductions (-)[1]	Assessments by the Board of Governors			Other compre-hensive income (loss)	Dividends paid	Distributions to the U.S. Treasury		Trans-ferred to/from surplus[4]	Transferred to/from surplus and change in accumulated other compre-hensive income[5]
				Board expenditures	Costs of currency	Consumer Financial Protection Bureau and Office of Financial Research[2]			Statutory transfers[3]	Interest on Federal Reserve notes		
2011	85,241,366	7,316,643	2,015,991	472,300	648,798	281,712	-1,161,848	1,577,284	n/a	75,423,597	n/a	375,175
2012	81,586,102	7,798,353	18,380,835	490,001	722,301	387,279	-52,611	1,637,934	n/a	88,417,936	n/a	460,528
2013	91,149,953	9,134,656	-1,029,750	580,000	701,522	563,200	2,288,811	1,649,277	n/a	79,633,271	n/a	147,088
2014	116,561,512	10,714,872	-2,718,283	590,000	710,807	563,000	-1,611,569	1,685,826	n/a	96,901,695	n/a	1,064,952
2015	114,233,676	11,139,956	-1,305,513	705,000	689,288	489,700	366,145	1,742,745	25,955,921	91,143,493	n/a	-18,571,798
2016	111,743,998	17,262,620	-114,255	709,000	700,728	596,200	-183,232	711,423	91,466,545	n/a	n/a	0
Total 1914–2016	**1,528,791,914**	**137,344,151**	**37,375,632**	**9,708,117**	**15,207,023**	**2,923,377**	**-2,135,937**	**22,936,232**	**161,536,424**	**1,198,433,402**	**-4**	**15,942,389[6]**
Aggregate for each Bank, 1914–2016												
Boston	59,322,069	5,902,870	283,942	418,052	829,977	129,974	4,774	1,006,117	5,853,485	44,842,511	135	627,664
New York	673,266,184	50,735,953[7]	25,882,929	2,692,936	4,086,210	937,390	-2,317,559	6,450,306	81,218,628	545,077,826	-433	5,632,731
Philadelphia	49,618,684	5,364,164	731,503	609,537	700,231	206,534	10,153	1,621,142	4,846,681	36,308,189	291	703,566
Cleveland	66,063,146	5,462,998	605,765	720,030	866,056	225,900	15,685	1,707,865	6,966,104	49,612,575	-10	1,123,074
Richmond	114,408,349	10,724,691	2,025,449	1,816,740	1,302,165	623,529	52,365	4,632,115	12,849,681	81,295,580	-72	3,241,739
Atlanta	101,628,636	13,169,459	1,662,144	657,612	1,590,129	165,782	17,706	1,495,653	9,709,535	75,616,315	5	903,996
Chicago	132,442,441	11,228,280	1,858,033	682,014	1,587,769	84,305	25,920	1,377,438	8,722,465	109,806,844	12	837,271
St. Louis	39,287,288	4,137,624	422,727	161,297	529,019	26,569	20,940	343,685	3,149,904	31,149,772	-27	233,118
Minneapolis	21,487,918	4,181,705	424,031	198,910	295,986	17,646	3,505	439,435	1,145,349	15,436,029	65	200,336
Kansas City	43,726,765	5,720,431	577,928	196,804	544,387	29,638	-5,115	394,406	2,717,715	34,476,668	-9	219,532
Dallas	62,451,529	6,233,254	1,080,221	293,377	907,895	44,494	20,929	573,200	5,314,787	49,889,286	55	295,840
San Francisco	165,088,908	14,482,717	1,820,965	1,260,813	1,967,197	431,619	14,760	2,894,871	19,042,093	124,921,807	-17	1,923,525
Total	**1,528,791,914**	**137,344,151**	**37,375,632**	**9,708,117**	**15,207,023**	**2,923,377**	**-2,135,937**	**22,936,232**	**161,536,424**	**1,198,433,402**	**-4**	**15,942,389**

Note: Components may not sum to totals because of rounding.

[1] For 1987 and subsequent years, includes the cost of services provided to the Treasury by Federal Reserve Banks for which reimbursement was not received.

[2] Starting in 2010, as required under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, the Board of Governors began assessing the Reserve Banks to fund the operations of the Consumer Financial Protection Bureau and, for a two-year period beginning July 21, 2010, the Office of Financial Research. These assessments are allocated to the Reserve Banks based on each Reserve Bank's capital and surplus balances as of the most recent quarter.

[3] Represents transfers made as a franchise tax from 1917 through 1932; transfers made under section 13b of the Federal Reserve Act from 1935 through 1947; transfers made under section 7 of the Federal Reserve Act for 1996, 1997, 2015, and 2016.

[4] Transfers are made under section 13b of the Federal Reserve Act.

[5] Transfers are made under section 7 of the Federal Reserve Act. Beginning in 2006, accumulated other comprehensive income is reported as a component of surplus.

[6] The $15,942,389 thousand transferred to surplus was reduced by direct charges of $500 thousand for charge-off on Bank premises (1927); $139,300 thousand for contributions to capital of the Federal Deposit Insurance Corporation (1934); $4 thousand net upon elimination of section 13b surplus (1958); $106,000 thousand (1996), $107,000 thousand (1997), $3,752,000 thousand (2000) transferred to the Treasury as statutorily required; and $1,848,716 thousand related to the implementation of SFAS No. 158 (2006) and was increased by a transfer of $11,131 thousand from reserves for contingencies (1955), leaving a balance of $10,000,000 thousand on December 31, 2016.

[7] This amount is reduced by $7,212,457 thousand for expenses of the System Retirement Plan. See note 4, "Table 10. Income and expenses of the Federal Reserve Banks, by Bank, 2016."

n/a Not applicable.

Table 12. Operations in principal departments of the Federal Reserve Banks, 2013–16

Operation	2016	2015	2014	2013
Millions of pieces				
Currency processed	31,504	32,596	33,372	33,219
Currency destroyed	4,837	5,212	5,622	5,564
Coin received	58,223	55,921	55,401	56,806
Checks handled				
U.S. government checks[1]	58	60	63	83
Postal money orders	88	92	95	101
Commercial	5,241	5,452	5,741	5,987
Securities transfers[2]	17	17	17	19
Funds transfers[3]	148	143	135	134
Automated clearinghouse transactions				
Commercial	12,960	12,298	11,620	11,143
Government	1,594	1,558	1,516	1,467
Millions of dollars				
Currency processed	596,053	604,391	638,245	638,237
Currency destroyed	118,199	139,833	198,525	206,998
Coin received	5,563	5,394	5,363	5,481
Checks handled				
U.S. government checks[1]	152,392	143,764	141,396	154,584
Postal money orders	20,672	20,761	20,902	22,262
Commercial	8,088,569	8,109,457	8,108,895	7,960,028
Securities transfers[2]	286,671,689	295,755,612	287,104,205	295,186,170
Funds transfers[3]	766,961,537	834,630,440[r]	884,551,876	713,310,354
Automated clearinghouse transactions				
Commercial	21,772,168	20,564,724	19,891,274	19,689,431
Government	5,192,786	5,054,219	4,872,536	4,714,428

1 Includes government checks handled electronically (electronic checks).
2 Data on securities transfers do not include reversals.
3 Data on funds transfers do not include non-value transfers.
r Revised.

Table 13. Number and annual salaries of officers and employees of the Federal Reserve Banks, December 31, 2016

Federal Reserve Bank (including branches)	President[1]	Other officers[1]		Employees			Total	
	Annual salary (dollars)[2]	Number	Annual salaries (dollars)[2]	Number		Annual salaries (dollars)[2]	Number	Annual salaries (dollars)[2]
				Full time	Part time			
Boston	400,300	73	17,622,794	978	24	104,564,395	1,076	122,587,489
New York	469,500	592	145,881,956	2,528	35	308,570,268	3,156	454,921,724
Philadelphia	386,600	62	12,777,990	801	19	73,669,839	883	86,834,429
Cleveland	380,700	65	13,189,000	852	21	75,386,406	939	88,956,106
Richmond	384,700	83	16,854,658	1,360	18	124,036,714	1,462	141,276,072
Atlanta	359,400	94	20,057,540	1,579	24	143,972,586	1,698	164,389,526
Chicago	400,300	125	27,830,010	1,370	45	140,690,640	1,541	168,920,950
St. Louis	359,100	99	20,611,400	1,186	32	104,587,640	1,318	125,558,140
Minneapolis	386,700	63	13,066,800	903	34	73,560,927	1,001	87,014,427
Kansas City	359,300	97	18,665,800	1,653	13	127,938,685	1,764	146,963,785
Dallas	391,600	72	14,478,670	1,140	11	92,084,829	1,224	106,955,099
San Francisco	468,600	98	22,474,983	1,588	17	166,594,714	1,704	189,538,297
Federal Reserve Information Technology	n/a	73	16,089,285	1,134	1	131,004,046	1,208	147,093,331
Office of Employee Benefits	n/a	11	2,941,185	38	0	4,454,840	49	7,396,025
Total	**4,746,800**	**1,607**	**362,542,071**	**17,110**	**294**	**1,671,116,529**	**19,023**	**2,038,405,400**

Note: Components may not sum to totals because of rounding.

[1] In 2014, the Board implemented a new compensation policy for Reserve Bank presidents and officer salary ranges for each Reserve Bank reflecting the cost of labor in each head-office city. The Board reviews Reserve Bank officer salary ranges annually and may adjust those ranges based on market information. Total cash compensation for all Reserve Bank officers is limited by compensation caps established for each Reserve Bank. The 2016 compensation caps were $469,500 for Boston, New York, and San Francisco; $435,500 for Philadelphia, Cleveland, Richmond, Atlanta, Chicago, St. Louis, Minneapolis, and Dallas; and $419,900 for Kansas City. Under the Board's policy, a president's initial appointment salary normally will be set at 95 percent of the salary-range midpoint (a 95 compa-ratio), with the exception of the president of the New York Reserve Bank, whose appointment salary normally will be set at 105 compa-ratio, reflecting that position's additional responsibilities and broader scope. The Board has discretion to approve an appointment salary greater than those noted above at the request of a Reserve Bank's board of directors. Under the policy, all presidents will normally receive annual salary increases on January 1, based upon the Board-approved average Reserve Bank officer merit percentage for that year. In addition, presidents, as applicable, received an adjustment to their 2016 compensation to reflect the transition from the previous president compensation policy, in which each president received an annual salary increase to maintain his or her compa-ratio and an additional increase triennially to his or her compa-ratio. The previous policy was suspended from 2011 through 2013 due to the Board's application of the pay freeze to Reserve Bank officers. The adjustments take into consideration tenure as president and position within the relevant salary range.

[2] Annualized salary liability (excluding outside agency costs) based on salaries in effect on December 31, 2016.

n/a Not applicable.

Table 14. Acquisition costs and net book value of the premises of the Federal Reserve Banks and Branches, December 31, 2016
Thousands of dollars

Federal Reserve Bank or Branch	Acquisition costs				Net book value	Other real estate
	Land	Buildings (including vaults)[1]	Building machinery and equipment	Total[2]		
Boston	27,293	192,438	46,277	266,008	117,839	n/a
New York	68,209	568,098	120,727	757,034	442,854	n/a
Philadelphia	8,146	116,847	28,746	153,739	72,215	n/a
Cleveland	4,219	140,639	27,111	171,969	92,683	n/a
Cincinnati	3,075	29,511	16,779	49,365	15,486	n/a
Richmond	32,044	169,490	59,844	261,378	137,484	n/a
Baltimore	7,916	41,382	13,963	63,262	30,330	n/a
Charlotte	7,884	45,633	13,861	67,378	35,477	n/a
Atlanta	23,159	160,435	21,520	205,114	137,866	n/a
Birmingham	5,347	13,056	1,465	19,868	9,685	n/a
Jacksonville	1,848	25,677	7,440	34,965	18,119	n/a
New Orleans	3,785	15,396	6,732	25,913	11,943	n/a
Miami	4,507	34,190	12,223	50,920	28,148	n/a
Chicago	7,357	247,396	33,421	288,174	126,462	n/a
Detroit	12,328	74,655	13,101	100,085	75,130	n/a
St. Louis	9,377	146,125	16,765	172,267	105,854	n/a
Memphis	2,472	16,375	5,308	24,155	7,782	n/a
Minneapolis	15,037	110,807	17,739	143,583	81,561	n/a
Helena	2,906	10,327	1,584	14,817	7,861	n/a
Kansas City	38,691	212,103	26,033	276,827	226,043	n/a
Denver	3,694	9,873	5,890	19,457	6,748	n/a
Omaha	3,605	7,753	1,896	13,254	5,720	n/a
Dallas	38,100	132,336	33,021	203,457	111,956	n/a
El Paso	262	4,753	2,377	7,392	2,040	n/a
Houston	32,323	104,169	9,209	145,701	109,121	n/a
San Francisco	20,988	131,797	31,501	184,286	83,894	n/a
Los Angeles	6,306	80,866	25,586	112,758	55,027	n/a
Salt Lake City	1,294	5,570	1,700	8,564	2,485	n/a
Seattle	13,101	49,970	6,849	69,920	54,862	n/a
Total	**405,273**	**2,897,667**	**608,668**	**3,911,610**	**2,212,675**	**n/a**

[1] Includes expenditures for construction at some offices, pending allocation to appropriate accounts.
[2] Excludes charge-offs of $17,699 thousand before 1952.
n/a Not applicable.

12 Federal Reserve System Audits

The Board of Governors, the Federal Reserve Banks, and the Federal Reserve System as a whole are all subject to several levels of audit and review.

The Board's financial statements and internal controls over financial reporting are audited annually by an independent outside auditor retained by the Board's Office of Inspector General (OIG). The outside auditor also tests the Board's compliance with certain provisions of laws, regulations, and contracts affecting those statements.

The Reserve Banks' financial statements are audited annually by an independent outside auditor retained by the Board of Governors. In addition, the Reserve Banks are subject to annual examination by the Board. As discussed in section 6, "Federal Reserve Banks," the Board's examination includes a wide range of ongoing oversight activities conducted on site and off site by staff of the Board's Division of Reserve Bank Operations and Payment Systems.

In addition, the OIG conducts audits, investigations, and other reviews relating to the Board's programs and operations as well as to Board functions delegated to the Reserve Banks. Certain aspects of Federal Reserve operations are also subject to review by the Government Accountability Office.

Board of Governors Financial Statements

The financial statements of the Board of Governors were audited by KPMG LLP, independent auditors, for the years ended December 31, 2016 and 2015.

BOARD OF GOVERNORS
OF THE
FEDERAL RESERVE SYSTEM
WASHINGTON, D.C. 20551

March 6, 2017

Management's Report on Internal Control over Financial Reporting

To the Committee on Board Affairs:

The management of the Board of Governors of the Federal Reserve System (the Board) is responsible for the preparation and fair presentation of the balance sheet as of December 31, 2016 and 2015, and the statement of operations and cash flows for the years then ended (the financial statements). The financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America, and, as such, include some amounts that are based on management judgments and estimates. To our knowledge, the financial statements are, in all material respects, fairly presented in conformity with generally accepted accounting principles and include all disclosures necessary for such fair presentation.

The management of the Board is responsible for establishing and maintaining effective internal control over financial reporting as it relates to the financial statements. The Board's internal control over financial reporting is designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external reporting purposes in accordance with accounting principles generally accepted in the United States of America. The Board's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that in reasonable detail accurately and fairly reflect the transactions and dispositions of the Board's assets; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that the Board's receipts and expenditures are being made only in accordance with authorizations of its management and directors; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the Board's assets that could have a material effect on its financial statements.

Even effective internal control, no matter how well designed, has inherent limitations, including the possibility of human error, and therefore can provide only reasonable assurance with respect to the preparation of reliable financial statements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

The management of the Board assessed its internal control over financial reporting based upon the criteria established in the *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. Based on this assessment, we believe that the Board maintained effective internal control over financial reporting.

Donald V. Hammond
Chief Operating Officer

William L. Mitchell
Chief Financial Officer

INDEPENDENT AUDITORS' REPORT

To the Board of Governors of the Federal Reserve System:

We have audited the accompanying balance sheets of the Board of Governors of the Federal Reserve System (the "Board") as of December 31, 2016 and 2015, and the related statements of operations and cash flows for the years then ended. We also have audited the Board's internal control over financial reporting as of December 31, 2016, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission. The Board's management is responsible for these financial statements, for maintaining effective internal control over financial reporting, and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on these financial statements and an opinion on the Board's internal control over financial reporting based on our audits.

We conducted our audits in accordance with the standards of the Public Company Accounting Oversight Board (United States), in accordance with auditing standards generally accepted in the United States of America, and in accordance with the standards applicable to financial audits contained in *Government Auditing Standards* issued by the Comptroller General of the United States. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement and whether effective internal control over financial reporting was maintained in all material respects. Our audits of the financial statements included examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, and evaluating the overall financial statement presentation. Our audit of internal control over financial reporting included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, and testing and evaluating the design and operating effectiveness of internal control based on the assessed risk. Our audits also included performing such other procedures as we considered necessary in the circumstances. We believe that our audits provide a reasonable basis for our opinions.

An entity's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. An entity's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the entity; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the entity are being made only in accordance with authorizations of management and directors of the entity; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the entity's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Board as of December 31, 2016 and 2015, and the results of its operations and its cash flows for the years, in conformity with U.S. generally accepted accounting principles. Also in our opinion, the Board maintained, in all material respects, effective internal control over financial reporting as of December 31, 2016, based on criteria established in *Internal Control—Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

In accordance with *Government Auditing Standards*, we have also issued a report dated March 6, 2017, on our tests of the Board's compliance with certain provisions of laws, regulations, contracts, and other matters. The purpose of that report is to describe the scope of our testing of compliance and the results of that testing, and not to provide an opinion on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Board's compliance.

KPMG LLP

Washington, DC
March 6, 2017

Board of Governors of the Federal Reserve System Balance Sheets

	As of December 31,	
	2016	2015
Assets		
Current assets:		
Cash	$148,254,554	$121,678,242
Accounts receivable – net	3,668,675	3,032,839
Prepaid expenses and other assets	6,439,080	5,261,594
Total current assets	158,362,309	129,972,675
Noncurrent assets:		
Property, equipment, and software – net	249,778,925	259,267,021
Other assets	886,914	1,184,136
Total noncurrent assets	250,665,839	260,451,157
Total	$409,028,148	$390,423,832
Liabilities and cumulative results of operations		
Current liabilities:		
Accounts payable and accrued liabilities	$ 16,758,668	$ 16,314,721
Accrued payroll and related taxes	34,327,731	29,000,736
Accrued annual leave	39,291,409	36,796,477
Capital lease payable	53,892	155,241
Unearned revenues and other liabilities	3,047,005	2,477,966
Total current liabilities	93,478,705	84,745,141
Long-term liabilities:		
Capital lease payable	114,041	–
Retirement benefit obligation	73,943,482	54,691,940
Postretirement benefit obligation	14,202,446	13,291,034
Postemployment benefit obligation	7,215,147	8,620,208
Deferred rent	39,311,002	40,315,439
Other liabilities	688,047	–
Total long-term liabilities	135,474,165	116,918,621
Total liabilities	228,952,870	201,663,762
Cumulative results of operations:		
Fund balance	211,493,395	209,353,299
Accumulated other comprehensive loss	(31,418,117)	(20,593,229)
Total cumulative results of operations	180,075,278	188,760,070
Total	$409,028,148	$390,423,832

See notes to financial statements.

Board of Governors of the Federal Reserve System Statements of Operations

	For the years ended December 31,	
	2016	2015
Board operating revenues:		
Assessments levied on Federal Reserve Banks for Board operating expenses and capital expenditures	$709,000,000	$705,000,000
Other revenues	18,468,177	19,139,153
Total operating revenues	727,468,177	724,139,153
Board operating expenses:		
Salaries	416,636,315	385,055,415
Retirement, insurance, and benefits	94,826,495	88,462,323
Contractual services and professional fees	49,176,932	49,570,438
Depreciation, amortization, and net gains or losses on disposals	39,487,196	41,343,515
Travel	15,338,072	16,793,617
Non-capital furniture, equipment, postage, and supplies	7,268,471	12,458,662
Data, news, and research	30,607,031	16,839,166
Utilities	9,174,260	10,232,994
Software	14,838,146	14,606,064
Rentals of space	28,852,005	25,227,322
Repairs and maintenance	8,100,370	6,923,745
Other expenses	11,022,788	11,193,024
Total operating expenses	725,328,081	678,706,285
Net income	2,140,096	45,432,868
Currency costs:		
Assessments levied or to be levied on Federal Reserve Banks for currency costs	700,713,295	689,198,549
Expenses for costs related to currency	700,713,295	689,198,549
Currency assessments over (under) expenses	–	–
Bureau of Consumer Financial Protection (Bureau):		
Assessments levied on the Federal Reserve Banks for the Bureau	596,200,000	489,700,000
Transfers to the Bureau	596,200,000	489,700,000
Bureau assessments over (under) transfers	–	–
Total net income	2,140,096	45,432,868
Other comprehensive income:		
Pension and other postretirement benefit plans:		
Amortization of prior service cost	$ 605,483	605,483
Amortization of net actuarial loss	1,832,267	2,046,251
Net actuarial loss arising during the year	(13,262,638)	(3,720,294)
Total other comprehensive loss	(10,824,888)	(1,068,560)
Comprehensive income (loss)	(8,684,792)	44,364,308
Cumulative results of operations – beginning of year	188,760,070	144,395,762
Cumulative results of operations – end of year	$180,075,278	$188,760,070

See notes to financial statements.

Board of Governors of the Federal Reserve System Statements of Cash Flows

	For the years ended December 31,	
	2016	2015
Cash flows from operating activities:		
Net income	$ 2,140,096	$ 45,432,868
Adjustments to reconcile results of operations to net cash provided by (used in) operating activities:		
Depreciation and amortization	38,082,839	34,688,752
Net loss on disposal of property and equipment	1,404,357	6,654,763
Other additional non-cash adjustments to results of operations	(207,215)	(237,927)
(Increase) decrease in assets:		
Accounts receivable	(635,836)	1,767,837
Prepaid expenses	(1,177,486)	1,782,269
Other assets	297,222	300,434
Increase (decrease) in liabilities:		
Accounts payable and accrued liabilities	1,788,402	(3,089,920)
Accrued payroll and related taxes	5,326,995	6,301,607
Accrued annual leave	2,494,932	2,529,538
Unearned revenues and other liabilities	40,574	500,292
Net retirement benefit obligation	8,799,235	8,292,457
Net postretirement benefit obligation	538,831	191,392
Net postemployment benefit obligation	(1,405,061)	(230,102)
Deferred rent	(2,013,269)	(1,316,365)
Other long-term liabilities	–	(253,938)
Net cash provided by operating activities	55,474,616	103,313,957
Cash flows from investing activities:		
Capital expenditures	(28,723,996)	(50,591,423)
Net cash used in investing activities	(28,723,996)	(50,591,423)
Cash flows from financing activities:		
Capital lease payments	(174,308)	(287,563)
Net cash used in financing activities	(174,308)	(287,563)
Net increase (decrease) in cash	26,576,312	52,434,971
Cash balance – beginning of year	121,678,242	69,243,271
Cash balance – end of year	$148,254,554	$121,678,242

See notes to financial statements.

Board of Governors of the Federal Reserve System Notes to Financial Statements as of and for the Years Ended December 31, 2016 and 2015

(1) Structure

The Federal Reserve System (the System) was established by Congress in 1913 and consists of the Board of Governors (the Board), the Federal Open Market Committee (FOMC), the twelve regional Federal Reserve Banks (Reserve Banks), the Federal Advisory Council, and the private commercial banks that are members of the System. The Board, unlike the Reserve Banks, was established as a federal government agency and is located in Washington, D.C. The Board has established two other committees that directly provide perspectives and input from various sectors of the economy: the Community Advisory Council and the Community Depository Institutions Advisory Council.

The Board is required by the Federal Reserve Act (the Act) to report its operations to the Speaker of the House of Representatives. The Act also requires the Board, each year, to order a financial audit of each Reserve Bank and to publish each week a statement of the financial condition of each Reserve Bank and a combined statement for all of the Reserve Banks. Accordingly, the Board believes that the best financial disclosure consistent with law is achieved by issuing separate financial statements for the Board and for the Reserve Banks. Therefore, the accompanying financial statements include only the results of operations and activities of the Board. Combined financial statements for the Reserve Banks are included in the Board's annual report to the Speaker of the House of Representatives and weekly statements are available on the Board's public website.

The Dodd-Frank Wall Street Reform and Consumer Financial Protection Act of 2010 (Dodd-Frank Act) established the Bureau of Consumer Financial Protection (Bureau) as an independent bureau within the System and designated the Board's Office of Inspector General (OIG) as the OIG for the Bureau. As required by the Dodd-Frank Act, the Board transferred certain responsibilities to the Bureau. The Dodd-Frank Act requires the Board to fund the Bureau from the combined earnings of the System. Section 1017 of the Dodd-Frank Act provides that the financial statements of the Bureau are not to be consolidated with those of the Board or the System. Accordingly, the Board's financial statements do not include financial data of the Bureau other than the funding that the Board is required by the Dodd-Frank Act to provide.

(2) Operations and Services

The Board's responsibilities require thorough analysis of domestic and international financial and economic developments. The Board carries out those responsibilities in conjunction with the Reserve Banks and the FOMC. The Board also exercises general oversight of the operations of the Reserve Banks and exercises broad responsibility in the nation's payments system. Policy regarding open market operations is established by the FOMC. However, the Board has sole authority over changes in reserve requirements, and it must approve any change in the discount rate initiated by a Reserve Bank. The Board also plays a major role in the supervision and regulation of the U.S. financial system. It has supervisory responsibilities for state-chartered banks that are members of the System, bank holding companies, savings and loan holding companies, foreign activities of member banks, U.S. activities of foreign banks, and any nonbank financial companies the Financial Stability Oversight Council (FSOC) has determined should be super-

vised by the Board. Although the Dodd-Frank Act gave the Bureau general rule-writing responsibility for federal consumer financial laws, the Board retains rule-writing responsibility under the Community Reinvestment Act and other specific statutory provisions. The Board also enforces the requirements of federal consumer financial laws for state member banks with assets of $10 billion or less. In addition, the Board enforces certain other consumer laws at all state member banks, regardless of size.

The Dodd-Frank Act directs the Board to collect assessments, fees, or other charges equal to the total expenses the Board estimates are necessary or appropriate to carry out the supervisory and regulatory responsibilities of the Board for bank holding companies and savings and loan holding companies with total consolidated assets of $50 billion or more and nonbank financial companies designated for Board supervision by the FSOC. As an agent, the Board does not recognize the supervision and regulation assessments as revenue nor does the Board use the collections to fund Board expenses; the funds are transferred to the United States Treasury (Treasury).

Beginning in December 2015, the Fixing America's Surface Transportation Act (FAST Act) requires that any amount of surplus funds of the Reserve Banks that exceed or would exceed $10 billion be transferred to the Treasury via the Board. As an intermediary transfer agent, the Board does not recognize the remittances as revenue nor does the Board use the remittances to fund Board expenses. Additional information and disclosures regarding these remittances to the Treasury can be found in the combined financial statements of the Federal Reserve Banks.

(3) Significant Accounting Policies

Basis of Accounting — The Board prepares its financial statements in accordance with accounting principles generally accepted in the United States (GAAP) on an accrual basis of accounting.

Assessments to Fund the Board — The Federal Reserve Act authorizes the Board to levy an assessment on the Reserve Banks to fund its operations. The Board allocates the assessment to each Reserve Bank based on the Reserve Bank's capital and surplus balances. The Board recognizes the assessment in the period in which it is assessed.

Assessments to Fund the Bureau — The Board assesses the Reserve Banks for the funds transferred to the Bureau based on each Reserve Bank's capital and surplus balances. The Board recognizes the assessment in the period in which it is assessed. These assessments and transfers are reported separately from the Board's operating activities in the Board's Statements of Operations.

Assessments for Currency Costs — The Board issues the nation's currency (in the form of Federal Reserve notes), and the Reserve Banks distribute currency through depository institutions. The Board incurs expenses and assesses the Reserve Banks for the expenses related to producing, issuing, and retiring Federal Reserve notes as well as providing educational services. The assessment is allocated based on each Reserve Bank's share of the number of notes comprising the System's net liability for Federal Reserve notes on December 31 of the prior year. The Board recognizes the assessment in the year in which the associated expenses are incurred. These expenses and assessments are reported separately from the Board's operating activities in the Board's Statements of Operations.

Civil Money Penalties — The Board has enforcement authority over the financial institutions it supervises and their affiliated parties, including the authority to assess civil money penalties. As directed by statute, all civil money penalties that are assessed and collected by the Board are remitted to either the Treasury or the Federal Emergency Management Agency (FEMA). As an agent, the Board does not recognize civil money penalties as revenue nor does the Board use civil money penalties to fund Board expenses. Civil money penalties whose collection is contingent upon fulfillment of certain conditions in the enforcement action are not recorded in the Board's financial records. Checks for civil money penalties made payable to the National Flood Insurance Program are forwarded to FEMA and are not recorded in the Board's financial records.

Accounts Receivable and Allowance for Doubtful Accounts — Accounts receivable are recorded when amounts are billed but not yet received and are shown net of the allowance for doubtful accounts. Accounts receivable considered uncollectible are charged against the allowance account in the year they are deemed uncollectible. The allowance for doubtful accounts is adjusted monthly, based upon a review of outstanding receivables.

Prepaid Expenses — The Board recognizes expenses as prepaid for costs paid in advance that will be expensed with the passage of time or upon the occurrence of a triggering event in future periods.

Property, Equipment, and Software — The Board's property, equipment, and software are stated at cost less accumulated depreciation and amortization. Depreciation and amortization are calculated on a straight-line basis over the estimated useful lives of the assets, which range from three to ten years for furniture and equipment, ten to fifty years for building equipment and structures, and two to five years for software. Upon the sale or other disposition of a depreciable asset, the cost and related accumulated depreciation or amortization are removed and any gain or loss is recognized. Construction in process includes costs incurred for short-term and long-term projects that have not been placed into service; the majority of the balance represents long-term building enhancement projects.

Art Collections — The Board has collections of works of art, historical treasures, and similar assets. These collections are maintained and held for public exhibition in furtherance of public service. Proceeds from any sales of collections are used to acquire other items for collections. The cost of collections purchased by the Board is charged to expense in the year purchased and donated collection items are not recorded. The value of the Board's collections has not been determined.

Deferred Rent — Leases for certain space contain scheduled rent increases over the term of the lease. Along with rent abatements and lease incentives, the scheduled rent increases are spread on a straight-line basis over the term of the lease in determining the annual rent expense to be recognized. The deferred rent represents the difference between the actual lease payments and the rent expense recognized. Lease incentives impact deferred rent and are noncash transactions.

Benefit Obligations — The Board records annual amounts relating to its nonqualified retirement, postretirement, and postemployment plans based on calculations that incorporate various actuarial and other assumptions, including discount rates, mortality, compensation increases, and health-care cost trends. The Board reviews the assumptions on an annual basis and makes modifications to the assumptions based on a variety of factors. The effect of the modifications is

recorded in accumulated other comprehensive income and amortized to net periodic cost over future periods, which is presented in the accumulated other comprehensive income (loss) footnote.

Estimates — The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. Significant items subject to such estimates include useful lives of property, equipment, and software; allowance for doubtful accounts receivable; accounts payable; benefit obligations; and commitments and contingencies.

Commitments and Contingencies — Liabilities for loss contingencies arising from claims, assessments, litigation, and other sources are recorded when it is probable that a liability has been incurred and the amount can be reasonably estimated. Legal costs incurred in connection with loss contingencies are expensed as incurred.

Tax Exempt Status — The Board, as a federal government entity, is not subject to state or local income taxes. Federal income tax on corporations does not apply to the Board.

Recently Issued Accounting Standards — In April 2015, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) 2015-05, *Intangibles—Goodwill and Other—Internal-Use Software* (Subtopic 350-40). This update provides guidance to customers about whether a cloud computing arrangement includes a software license. If a cloud computing arrangement includes a software license, then the customer should account for the software license element of the arrangement consistent with the acquisition of other software licenses. If a cloud computing arrangement does not include a software license, the customer should account for the arrangement as a service contract. Consequently, all software licenses within the scope of subtopic 350-40 will be accounted for consistent with other licenses of intangible assets. This update is effective for the Board for the year ended December 31, 2016, and did not have a material effect on the Board's financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases* (Topic 842). This update revises the model to assess how a lease should be classified and provides guidance for lessees, requiring lessees to present right-of-use assets and lease liabilities on the balance sheet. The update is effective no later than the year ended December 31, 2020, although earlier adoption is permitted. The Board will evaluate the effect of this new guidance on its financial statements.

In May 2014, the FASB issued ASU 2014-09, *Revenue from Contracts with Customers* (Topic 606). This update was issued to create common revenue recognition guidance for U.S. GAAP and International Financial Reporting Standards. The guidance is applicable to all contracts for the transfer of goods or services regardless of industry or type of transaction. This update requires recognition of revenue in a manner that reflects the consideration that the entity expects to receive in return for the transfer of goods or services to customers. In August 2015, the FASB issued ASU 2015-14, *Revenue from Contracts with Customers* (Topic 606): *Deferral of the Effective Date*, which delayed the required effective date of this accounting by one year. In March 2016, the FASB issued ASU 2016-08, *Revenue*

from Contracts with Customers (Topic 606): *Principle versus Agent Considerations (Reporting Revenue Gross versus Net),* which provided clarity regarding what constitutes the transfer of a good or service. In April 2016, the FASB issued ASU 2016-10, *Revenue from Contracts with Customers* (Topic 606): *Identifying Performance Obligations and Licensing.* This update provides further criteria to help identify whether goods or services within a contract are separately identifiable and, consequently, should be deemed distinct revenue streams. In May 2016, the FASB issued ASU 2016-12, *Revenue from Contracts with Customers* (Topic 606): *Narrow-Scope Improvements and Practical Expedients*, which provides guidance on assessing collectibility, noncash consideration, and how contract modifications and completed contracts should be treated during the transition to new accounting guidance. This revenue recognition accounting guidance is effective for the Board for the year ending December 31, 2019, and is not expected to have a material effect on the Board's financial statements since the Board reports annually and satisfies all material performance obligations prior to year-end.

In August 2016, the FASB issued ASU 2016-15, *Statement of Cash Flows* (Topic 230). The update unifies in practice how certain cash receipts and cash payments are presented and classified in the statement of cash flows by requiring eight specific cash flow rule-based changes that need to be considered and applied. This Statement of Cash Flows guidance is effective for the Board for the year ending December 31, 2017. This update is not expected to have a material effect on the Board's financial statements since the Board is rarely involved with the eight specific cash flow classification changes.

(4) Property, Equipment, and Software

The following is a summary of the components of the Board's property, equipment, and software, at cost, less accumulated depreciation and amortization as of December 31, 2016 and 2015:

	As of December 31,	
	2016	2015
Land	$ 18,640,314	$ 18,640,314
Buildings and improvements	309,910,316	300,166,433
Construction in process	12,106,227	10,920,879
Furniture and equipment	76,735,612	82,888,372
Software in use	47,862,713	40,987,546
Software in process	6,686,732	5,275,429
Vehicles	2,337,638	2,098,155
Subtotal	474,279,552	460,977,128
Less accumulated depreciation and amortization	(224,500,627)	(201,710,107)
Property, equipment, and software – net	$ 249,778,925	$ 259,267,021

Construction in process include costs incurred in the current or prior years for long-term projects and building enhancements. In 2015, the Board recognized a loss of $6 million related to changes in an ongoing capital project; the loss is reflected on the Statements of Operations and the Statements of Cash Flows.

(5) Leases

Capital Leases — The Board entered into capital leases for copier equipment in 2012 that terminated in May 2016. The Board entered into new capital leases in 2016 with lease terms that extend through 2020. Furniture and equipment includes capitalized leases of $187,000 and $1,258,000 as of 2016 and 2015, respectively. Accumulated depreciation includes $27,000 and $1,170,000 related to assets under capital leases as of 2016 and 2015, respectively. The depreciation expense for leased equipment is $116,000 and $315,000 for 2016 and 2015, respectively.

The future minimum lease payments required under the capital leases and the present value of the net minimum lease payments as of December 31, 2016, are as follows:

Years Ended December 31,	Amount
2017	$ 47,895
2018	47,895
2019	47,895
2020	19,956
Total minimum lease payments	163,641
Less amount representing maintenance	–
Net minimum lease payments	163,641
Less amount representing interest	(3,360)
Present value of net minimum lease payments	160,281
Less current maturities of capital lease payments	(46,239)
Long-term capital lease obligations	$114,042

Operating Leases — The Board has entered into operating leases for copier equipment and to secure office, training, data center, and warehouse space. Several of the leases are with Reserve Banks and other governmental agencies. Minimum annual payments under the multiyear operating leases having an initial or remaining noncancelable lease term in excess of one year at December 31, 2016, are as follows:

Years Ended December 31,	
2017	$ 30,277,070
2018	30,575,985
2019	35,514,573
2020	35,833,891
After 2020	133,117,267
	$265,318,786

Space rental expenses under the multiyear operating leases were $27,765,000 and $24,291,000 for the years ended December 31, 2016 and 2015, respectively. Copier equipment rental expenses under the multiyear operating leases were $1,235,000 and $985,000 for the years ended December 31, 2016 and 2015, respectively.

Deferred Rent — The Board recorded noncash lease incentives of $1,009,000 and $1,480,000 for the years ended December 31, 2016 and 2015, respectively.

(6) Retirement Benefits

Substantially all of the Board's employees participate in the Retirement Plan for Employees of the Federal Reserve System (the System Plan). The System Plan provides retirement benefits to employees of the Board, the Reserve Banks, the Office of Employee Benefits of the Federal Reserve System (OEB), and certain employees of the Bureau. The Federal Reserve Bank of New York (FRBNY), on behalf of the System, recognizes the net assets and costs associated with the System Plan in its financial statements; costs associated with the System Plan are not redistributed to the Board.

Employees of the Board who became employed prior to 1984 are covered by a contributory defined benefits program under the System Plan. Employees of the Board who became employed after 1983 are covered by a non-contributory defined benefits program under the System Plan. FRBNY, on behalf of the System, funded $580 million and $480 million during each of the years ended December 31, 2016 and 2015, respectively. The Board was not assessed a contribution for 2016 or 2015.

In October 2014, the Society of Actuaries released new mortality tables (RP-2014) and in 2016, 2015, and 2014 new mortality projection scales (MP-2016, MP-2015, and MP-2014, respectively) for use in the valuation of benefits liabilities. The System analyzed each of these updates to the mortality tables and compared them to the System's actual mortality experience, which includes the Board's population. Based on these analyses, the System adopted the RP-2014 mortality tables and MP-2014 mortality projection scales.

Benefits Equalization Plan — Board employees covered under the System Plan are also covered under a Benefits Equalization Plan (BEP). Benefits paid under the BEP are limited to those benefits that cannot be paid from the System Plan due to

limitations imposed by the Internal Revenue Code. Activity for the BEP as of December 31, 2016 and 2015, is summarized in the following tables:

	2016	2015
Change in projected benefit obligation:		
Benefit obligation – beginning of year	$ 27,995,628	$ 20,727,400
Service cost	2,844,118	2,409,059
Interest cost	1,652,323	1,245,933
Plan participants' contributions	–	–
Actuarial loss	9,371,473	3,653,624
Gross benefits paid	(30,638)	(40,388)
Benefit obligation – end of year	$ 41,832,904	$ 27,995,628
Accumulated benefit obligation – end of year	$ 6,436,909	$ 3,651,148
Weighted-average assumptions used to determine benefit obligation as of December 31:		
Discount rate	4.32 %	4.67 %
Rate of compensation increase	4.00 %	4.00 %
Change in plan assets:		
Fair value of plan assets – beginning of year	$ –	$ –
Employer contributions	30,638	40,388
Plan participants' contributions	–	–
Gross benefits paid	(30,638)	(40,388)
Fair value of plan assets – end of year	$ –	$ –
Funded status:		
Reconciliation of funded status – end of year:		
Fair value of plan assets	$ –	$ –
Benefit obligation (current)	114,021	55,947
Benefit obligation (noncurrent)	41,718,883	27,939,681
Funded status	(41,832,904)	(27,995,628)
Amount recognized – end of year	$(41,832,904)	$(27,995,628)
Amounts recognized in the balance sheets consist of:		
Asset	$ –	$ –
Liability – current	(114,021)	(55,947)
Liability – noncurrent	(41,718,883)	(27,939,681)
Net amount recognized	$(41,832,904)	$(27,995,628)
Amounts recognized in accumulated other comprehensive income consist of:		
Net actuarial loss	$ 16,312,103	$ 7,727,778
Prior service cost	222,454	322,032
Net amount recognized	$ 16,534,557	$ 8,049,810

Expected cash flows:	
Expected employer contributions – 2017	$ 114,021
Expected benefit payments:*	
2017	$ 114,021
2018	$ 151,058
2019	$ 191,161
2020	$ 238,388
2021	$ 314,870
2022–2026	$3,089,877

* Expected benefit payments to be made by the Board.

	2016	2015
Components of net periodic benefit cost:		
Service cost	$ 2,844,118	$2,409,059
Interest cost	1,652,323	1,245,933
Expected return on plan assets	–	–
Amortization:		
Actuarial (gain) loss	$ 787,148	$ 695,315
Prior service cost	99,578	99,578
Net periodic benefit cost	$ 5,383,167	$4,449,885
Weighted-average assumptions used to determine net periodic benefit cost:		
Discount rate	4.67 %	4.25 %
Rate of compensation increase	4.00 %	4.00 %
Other changes in plan assets and benefit obligations recognized in other comprehensive income:		
Current year actuarial loss	$ 9,371,473	$3,653,624
Amortization of prior service cost	(99,578)	(99,578)
Amortization of actuarial gain (loss)	(787,148)	(695,315)
Total recognized in other comprehensive loss	$ 8,484,747	$2,858,731
Total recognized in net periodic benefit cost and other comprehensive income	$13,867,914	$7,308,616

Estimated amounts that will be amortized from accumulated other comprehensive income into net periodic benefit cost (credit) in 2017 are shown below:

Net actuarial loss	$1,040,451
Prior service cost	99,578
Total	$1,140,029

Pension Enhancement Plan — The Board also provides another non-qualified plan for officers of the Board. The retirement benefits covered under the Pension Enhancement Plan (PEP) increase the pension benefit calculation from 1.8 percent

above the Social Security integration level to 2.0 percent. Activity for the PEP as of December 31, 2016 and 2015, is summarized in the following tables:

	2016	2015
Change in projected benefit obligation:		
Benefit obligation – beginning of year	$ 26,876,261	$ 24,857,488
Service cost	1,063,168	1,037,235
Interest cost	1,326,009	1,178,955
Plan participants' contributions	–	–
Actuarial loss	3,371,408	22,672
Gross benefits paid	(258,042)	(220,089)
Benefit obligation – end of year	$ 32,378,804	$ 26,876,261
Accumulated benefit obligation – end of year	$ 25,242,076	$ 21,116,567
Weighted-average assumptions used to determine benefit obligation as of December 31:		
Discount rate	4.22%	4.52%
Rate of compensation increase	4.00%	4.00%
Change in plan assets:		
Fair value of plan assets – beginning of year	$ –	$ –
Employer contributions	258,042	220,089
Plan participants' contributions	–	–
Gross benefits paid	(258,042)	(220,089)
Fair value of plan assets – end of year	$ –	$ –
Funded status:		
Reconciliation of funded status – end of year:		
Fair value of plan assets	$ –	$ –
Benefit obligation – current	363,216	316,841
Benefit obligation – noncurrent	32,015,588	26,559,420
Funded status	(32,378,804)	(26,876,261)
Amount recognized – end of year	$(32,378,804)	$(26,876,261)
Amounts recognized in the balance sheets consist of:		
Asset	$ –	$ –
Liability – current	(363,216)	(316,841)
Liability – noncurrent	(32,015,588)	(26,559,420)
Net amount recognized	$(32,378,804)	$(26,876,261)
Amounts recognized in accumulated other comprehensive income consist of:		
Net actuarial loss	$ 12,018,247	$ 9,519,292
Prior service cost	54,908	586,303
Net amount recognized	$ 12,073,155	$ 10,105,595

Expected cash flows:	
Expected employer contributions – 2017	$ 363,216
Expected benefit payments:*	
2017	$ 363,216
2018	$ 482,975
2019	$ 618,930
2020	$ 760,606
2021	$ 909,204
2022–2026	$7,049,926

* Expected benefit payments to be made by the Board.

	2016	2015
Components of net periodic benefit cost:		
Service cost	$1,063,168	$ 1,037,235
Interest cost	1,326,009	1,178,955
Expected return on plan assets	–	–
Amortization:		
Actuarial loss	872,453	1,150,920
Prior service cost	531,395	531,395
Net periodic benefit cost	$3,793,025	$ 3,898,505
Weighted-average assumptions used to determine net periodic benefit cost:		
Discount rate	4.52 %	4.12 %
Rate of compensation increase	4.00 %	4.00 %
Other changes in plan assets and benefit obligations recognized in other comprehensive income:		
Current year actuarial loss	$3,371,408	$ 22,672
Amortization of prior service cost	(531,395)	(531,395)
Amortization of actuarial loss	(872,453)	(1,150,920)
Total recognized in other comprehensive (income) loss	$1,967,560	$(1,659,643)
Total recognized in net periodic benefit cost and other comprehensive income	$5,760,585	$ 2,238,862

Estimated amounts that will be amortized from accumulated other comprehensive income into net periodic benefit cost (credit) in 2017 are shown below:

Net actuarial loss	$923,668
Prior service cost	54,908
Total	$978,576

The total accumulated retirement benefit obligation includes a liability for a supplemental retirement agreement and a benefits equalization plan under the System's Thrift Plan. The total obligation as of December 31, 2016 and 2015, is summarized in the following table:

	2016	2015
Retirement benefit obligation:		
Benefit obligation – BEP	$41,832,904	$27,995,628
Benefit obligation – PEP	32,378,804	26,876,261
Additional benefit obligations	209,011	192,839
Total accumulated retirement benefit obligation	$74,420,719	$55,064,728

A relatively small number of Board employees participate in the Civil Service Retirement System or the Federal Employees' Retirement System. These defined benefit plans are administered by the U.S. Office of Personnel Management, which determines the required employer contribution levels. The Board's contributions to these plans totaled $939,000 and $913,000 in 2016 and 2015, respectively. The Board has no liability for future payments to retirees under these programs and is not accountable for the assets of the plans.

Employees of the Board may also participate in the System's Thrift Plan or Roth 401(k). Board contributions to members' accounts were $25,985,000 and $24,170,000 in 2016 and 2015, respectively.

(7) Postretirement Benefits

The Board provides certain life insurance programs for its active employees and retirees. Activity as of December 31, 2016 and 2015, is summarized in the following tables:

	2016	2015
Change in benefit obligation:		
Benefit obligation – beginning of year	$ 13,777,546	$ 13,384,294
Service cost	167,045	177,332
Interest cost	605,975	549,919
Plan participants' contributions	–	–
Actuarial loss	519,758	43,998
Gross benefits paid	(359,339)	(377,997)
Benefit obligation – end of year	$ 14,710,985	$ 13,777,546
Weighted-average assumptions used to determine benefit obligation as of December 31 – discount rate	4.14 %	4.41 %
Change in plan assets:		
Fair value of plan assets – beginning of year	$ –	$ –
Employer contributions	359,339	377,997
Gross benefits paid	(359,339)	(377,997)
Fair value of plan assets – end of year	$ –	$ –
Funded status:		
Reconciliation of funded status – end of year:		
Fair value of plan assets	$ –	$ –
Benefit obligation – current	508,539	486,512
Benefit obligation – noncurrent	14,202,446	13,291,034
Funded status	(14,710,985)	(13,777,546)
Amount recognized – end of year	$(14,710,985)	$(13,777,546)
Amounts recognized in the balance sheets consist of:		
Asset	$ –	$ –
Liability – current	(508,539)	(486,512)
Liability – noncurrent	(14,202,446)	(13,291,034)
Net amount recognized	$(14,710,985)	$(13,777,546)
Amounts recognized in accumulated other comprehensive income consist of:		
Net actuarial loss	$ 2,934,000	$ 2,586,908
Prior service credit	(123,594)	(149,084)
Net amount recognized	$ 2,810,406	$ 2,437,824

Expected cash flows:	
Expected employer contributions – 2017	$ 508,539
Expected benefit payments:*	
2017	$ 508,539
2018	$ 536,151
2019	$ 559,495
2020	$ 584,913
2021	$ 625,880
2022–2026	$3,532,025

* Expected benefit payments to be made by the Board.

	2016	2015
Components of net periodic benefit cost:		
Service cost	$ 167,045	$ 177,332
Interest cost	605,975	549,919
Expected return on plan assets	–	–
Amortization:		
Actuarial loss	172,666	200,016
Prior service credit	(25,490)	(25,490)
Net periodic benefit cost	$ 920,196	$ 901,777
Weighted-average assumptions used to determine net periodic benefit cost – discount rate	4.41 %	4.05 %
Other changes in plan assets and benefit obligations recognized in other comprehensive income:		
Current year actuarial loss	$ 519,758	$ 43,998
Amortization of prior service credit	25,490	25,490
Amortization of actuarial loss	(172,666)	(200,016)
Total recognized in other comprehensive (income) loss	$ 372,582	$(130,528)
Total recognized in net periodic benefit cost and other comprehensive income	$1,292,778	$ 771,249

Estimated amounts that will be amortized from accumulated other comprehensive income into net periodic benefit cost (credit) in 2017 are shown below:

Net actuarial loss	$204,275
Prior service credit	(15,877)
Total	$188,398

(8) Postemployment Benefits

The Board provides certain postemployment benefits to eligible former or inactive employees and their dependents. Postemployment costs were actuarially determined using a December 31 measurement date and discount rates of 2.78 percent and 2.70 percent as of December 31, 2016 and 2015, respectively. The net periodic postemployment benefit cost recognized by the Board as of December 31, 2016 and 2015, was ($569,000) and $740,000, respectively.

(9) Accumulated Other Comprehensive Income (Loss)

A reconciliation of beginning and ending balances of accumulated other comprehensive income (loss) for the years ended December 31, 2016 and 2015, is as follows:

	Amount Related to Defined Benefit Retirement Plans	Amount Related to Postretirement Benefits Other Than Pensions	Total Accumulated Other Comprehensive Income (Loss)
Balance – January 1, 2015	$(16,956,317)	$(2,568,352)	$(19,524,669)
Change in accumulated other comprehensive income (loss):			
Net actuarial loss arising during the year	(3,676,296)	(43,998)	(3,720,294)
Other comprehensive income before reclassifications	(3,676,296)	(43,998)	(3,720,294)
Amortization of prior service (credit) costs[a][b]	630,973	(25,490)	605,483
Amortization of net actuarial loss[a][b]	1,846,235	200,016	2,046,251
Amounts reclassified from accumulated other comprehensive income	2,477,208	174,526	2,651,734
Change in accumulated other comprehensive loss	(1,199,088)	130,528	(1,068,560)
Balance – December 31, 2015	(18,155,405)	(2,437,824)	(20,593,229)
Change in accumulated other comprehensive income (loss):			
Net actuarial loss arising during the year[a]	(12,742,881)	(519,757)	(13,262,638)
Other comprehensive income before reclassifications	(12,742,881)	(519,757)	(13,262,638)
Amortization of prior service (credit) costs[a][b]	630,973	(25,490)	605,483
Amortization of net actuarial loss[a][b]	1,659,601	172,666	1,832,267
Amounts reclassified from accumulated other comprehensive income	2,290,574	147,176	2,437,750
Change in accumulated other comprehensive income (loss)	(10,452,307)	(372,581)	(10,824,888)
Balance – December 31, 2016	$(28,607,712)	$(2,810,405)	$(31,418,117)

[a] These components of accumulated other comprehensive income are included in the computation of net periodic pension cost (see Notes 6 and 7 for additional details).

[b] These components of accumulated other comprehensive income are reflected in the "Retirement, insurance, and benefits" line on the Statements of Operations.

(10) Selected Transactions with the Reserve Banks

The Board performs certain functions for the Reserve Banks in conjunction with its responsibilities for the System, and the Reserve Banks provide certain administrative functions for the Board. The Board assesses the Reserve Banks for its operations, to include expenses related to its currency responsibilities, as well as for the funding the Board is required to provide to the Bureau. Activity related to the Board and Reserve Banks is summarized in the following table:

	2016	2015
For the years ended December 31:		
Assessments levied or to be levied on Reserve Banks for:		
Currency expenses	$ 700,713,295	$ 689,198,549
Board operations	709,000,000	705,000,000
Transfers of funds to the Bureau	596,200,000	489,700,000
Total assessments levied or to be levied on Reserve Banks	$2,005,913,295	$1,883,898,549
Board expenses charged to the Reserve Banks for data processing	$ 226,699	$ 326,953
Reserve Bank costs charged to the Board:		
Data processing and communication	$ 643,975	$ 1,226,875
Data center	841,574	858,985
Office space	1,348,018	206,167
Contingency site	1,475,701	1,281,688
Total Reserve Bank costs charged to the Board	$ 4,309,268	$ 3,573,715
As of December 31:		
Accounts receivable due from the Reserve Banks	$ 343,483	$ 283,072
Accounts payable due to the Reserve Banks	$ 1,169,205	$ 356,937

The Board contracted for audit services on behalf of entities that are included in the combined financial statements of the Reserve Banks. The entities reimburse the Board for the cost of the audit services.

The OEB administers certain System benefit plans on behalf of the Board and the Reserve Banks, and costs associated with the OEB's activities are assessed to the Board and Reserve Banks. The Board was assessed $2,471,000 and $2,615,000 for the years ended December 31, 2016 and 2015, respectively. Activity related to the Board and the OEB is summarized in the following table:

	2016	2015
As of December 31:		
Accounts receivable due from the Office of Employee Benefits	$897,363	$1,068,126
Accounts payable due to the Office of Employee Benefits	$ –	$ 110,659

(11) Federal Financial Institutions Examination Council

The Board is one of the five member agencies of the Federal Financial Institutions Examination Council (the Council), and performs certain administrative functions for the Council. The five agencies that are represented on the Council are the Board, the Federal Deposit Insurance Corporation, the National Credit Union Administration, the Office of the Comptroller of the Currency, and the Bureau.

The Board's financial statements do not include financial data for the Council. Activity related to the Board and Council is summarized in the following table:

	2016	2015
For the years ended December 31:		
Council expenses charged to the Board:		
Assessments for operating expenses	$ 212,600	$ 163,987
Examiner education expenses	1,466,842	1,228,101
Central Data Repository	1,028,560	1,049,087
Home Mortgage Disclosure Act/Community Reinvestment Act	613,524	874,584
Uniform Bank Performance Report	177,662	211,247
Total Council expenses charged to the Board	$3,499,188	$3,527,006
Board expenses charged to the Council:		
Data processing related services	$3,249,186	$3,997,421
Other administrative services	552,000	303,000
Total Board expenses charged to the Council	$3,801,186	$4,300,421
As of December 31:		
Accounts receivable due from the Council	$ 185,341	$ 223,553
Accounts payable due to the Council	$ 98,233	$ 297,539

(12) The Bureau of Consumer Financial Protection

Beginning July 2011, section 1017 of the Dodd-Frank Act requires the Board to fund the Bureau from the combined earnings of the System, in an amount determined by the Director of the Bureau to be reasonably necessary to carry out the authorities of the Bureau under federal consumer financial law, taking into account such other sums made available to the Bureau from the preceding year (or quarter of such year). The Dodd-Frank Act limits the amount to be transferred each fiscal year to a fixed percentage of the System's total operating expenses. The Bureau transfers funds to the Board to fund their share of OIG operations. The Board recorded revenue of $12,900,000 during calendar years 2016 and 2015 related to OIG funding.

(13) Currency Costs

The Bureau of Engraving and Printing (BEP) is the sole supplier for currency printing and also provides currency retirement and meaningful access services. The Board contracts for other services associated with currency, such as shipping, education, and quality assurance. The currency costs incurred by the Board for the years ended December 31, 2016 and 2015, are reflected in the following table:

	2016	2015
Expenses related to BEP:		
Printing	$659,958,550	$637,346,480
Retirement	3,819,263	3,922,414
Meaningful access program	1,685,269	2,679,698
New facility	63,025	–
Subtotal related to BEP	$665,526,107	$643,948,592
Other currency expenses:		
Shipping	$ 20,404,946	$ 23,357,229
Research and development	5,215,244	4,988,654
Quality assurance services	8,630,562	14,575,554
Education services	936,436	2,328,520
Subtotal other currency expenses	$ 35,187,188	$ 45,249,957
Total currency expenses	$700,713,295	$689,198,549

(14) Commitments and Contingencies

Commitments — The Board has entered into an agreement with the Federal Deposit Insurance Corporation and the Office of the Comptroller of the Currency, through the Council, to fund a portion of the enhancements and maintenance fees for a central data repository project that requires maintenance through 2020 which includes option periods.

In late 2015, the Board entered into an agreement with the other Council members to fund the development of a new Home Mortgage Disclosure Act processing system by the Bureau.

Litigation and Contingent Liabilities — The Board is subject to contingent liabilities which arise from litigation cases and various business contracts. These contingent liabilities arise in the normal course of operations and their ultimate disposition is unknown. Based on information currently available to management, it is management's opinion that the expected outcome of these matters, in the aggregate, will not have a material adverse effect on the financial statements.

(15) Subsequent Events

There were no subsequent events that require adjustments to or disclosures in the financial statements as of December 31, 2016. Subsequent events were evaluated through March 6, 2017, which is the date the financial statements were available to be issued.

INDEPENDENT AUDITORS' REPORT ON COMPLIANCE AND OTHER MATTERS BASED ON AN AUDIT OF FINANCIAL STATEMENTS PERFORMED IN ACCORDANCE WITH *GOVERNMENT AUDITING STANDARDS*

To the Board of Governors of the Federal Reserve System:

We have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), auditing standards generally accepted in the United States of America, and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States, the financial statements of the Board of Governors of the Federal Reserve System (the "Board"), which comprise the balance sheet as of December 31, 2016, and the related statements of operations and cash flows for the year then ended, and the related notes to the financial statements. We have issued our report thereon dated March 6, 2017.

Compliance and Other Matters

As part of obtaining reasonable assurance about whether the Board's financial statements are free from material misstatement, we performed tests of its compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of financial statement amounts. However, providing an opinion on compliance with those provisions was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards*.

Purpose of this Report

The purpose of this report is solely to describe the scope of our testing of compliance and the results of that testing, and not to provide an opinion on the Board's compliance. This report is an integral part of an audit performed in accordance with *Government Auditing Standards* in considering the Board's compliance. Accordingly, this communication is not suitable for any other purpose. This report is intended solely for the information and use of the Board of Governors of the Federal Reserve System and is not intended to be and should not be used by anyone other than this specified party.

KPMG LLP

Washington, DC
March 6, 2017

Federal Reserve Banks Combined Financial Statements

The combined financial statements of the Federal Reserve Banks were audited by KPMG LLP, independent auditors, for the years ended December 31, 2016 and 2015.

Independent Auditors' Report

To the Board of Governors of the Federal Reserve System and the Boards of Directors of the Federal Reserve Banks:

We have audited the accompanying combined statements of condition of the Federal Reserve Banks (the "Reserve Banks") as of December 31, 2016 and 2015, and the related combined statements of operations and changes in capital for the years then ended. These combined financial statements are the responsibility of the Division of Reserve Bank Operations and Payment Systems' management. Our responsibility is to express an opinion on these combined financial statements based on our audits.

We conducted our audits in accordance with the auditing standards of the Public Company Accounting Oversight Board (United States) and in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As described in Note 3 to the combined financial statements, the Division of Reserve Bank Operations and Payment Systems has prepared these combined financial statements in conformity with the accounting principles established by the Board of Governors of the Federal Reserve System (the "Board"), as set forth in the *Financial Accounting Manual for Federal Reserve Banks*, which is a basis of accounting other than U.S. generally accepted accounting principles.

In our opinion, the combined financial statements referred to above present fairly, in all material respects, the financial position of the Reserve Banks as of December 31, 2016 and 2015, and the results of its operations for the years then ended, on the basis of accounting described in Note 3.

KPMG LLP

Washington, DC
March 8, 2017

Federal Reserve Banks

Abbreviations

ASC	Accounting Standards Codification
BEP	Benefit Equalization Retirement Plan
Bureau	Bureau of Consumer Financial Protection
CDS	Credit default swaps
CFE	Collateralized financing entity
CIP	Committee on Investment Performance (related to System Retirement Plan)
CMBS	Commercial mortgage-backed securities
DFMU	Designated financial market utility
FAM	*Financial Accounting Manual for Federal Reserve Banks*
FASB	Financial Accounting Standards Board
FAST Act	Fixing America's Surface Transportation Act
FOMC	Federal Open Market Committee
FRBC	Federal Reserve Bank of Cleveland
FRBKC	Federal Reserve Bank of Kansas City
FRBNY	Federal Reserve Bank of New York
FRBSL	Federal Reserve Bank of St. Louis
GAAP	Accounting principles generally accepted in the United States of America
GSE	Government-sponsored enterprise
IMF	International Monetary Fund
JPMC	JPMorgan Chase & Co.
LLC	Limited liability company
MAPD	Medicare Advantage and Prescription Drug
MBS	Mortgage-backed securities
ML	Maiden Lane LLC
MTM	Mark-to-market
RMBS	Residential mortgage-backed securities
OEB	Office of Employee Benefits of the Federal Reserve System
SDR	Special drawing rights
SERP	Supplemental Retirement Plan for Select Officers of the Federal Reserve Banks
SOMA	System Open Market Account
STRIPS	Separate Trading of Registered Interest and Principal of Securities
TBA	To be announced
TDF	Term Deposit Facility
TRS	Total return swap
VIE	Variable interest entity

Combined Statements of Condition
As of December 31, 2016 and December 31, 2015
(in millions)

		2016	2015
ASSETS			
Gold certificates		$ 11,037	$ 11,037
Special drawing rights certificates		5,200	5,200
Coin		1,873	1,890
Loans	Note 4	63	115
System Open Market Account:	Note 5		
Treasury securities, net (of which $25,195 and $18,960 is lent as of December 31, 2016 and 2015, respectively)		2,567,422	2,580,676
Government-sponsored enterprise debt securities, net (of which $44 and $146 is lent as of December 31, 2016 and 2015, respectively)		16,648	33,748
Federal agency and government-sponsored enterprise mortgage-backed securities, net		1,795,003	1,800,449
Foreign currency denominated investments, net		19,442	19,567
Central bank liquidity swaps		5,563	997
Accrued interest receivable		25,598	25,418
Other assets		8	14
Investments held by consolidated variable interest entity (of which $1,742 and $1,778 is measured at fair value as of December 31, 2016 and 2015, respectively)	Note 6	1,742	1,778
Bank premises and equipment, net	Note 7	2,564	2,603
Items in process of collection		118	210
Other assets		1,056	1,063
Total assets		$4,453,337	$4,484,765
LIABILITIES AND CAPITAL			
Federal Reserve notes outstanding, net		$1,462,939	$1,379,551
System Open Market Account:	Note 5		
Securities sold under agreements to repurchase		725,210	712,401
Other liabilities		1,012	508
Liabilities of consolidated variable interest entity (of which $32 and $21 is measured at fair value as of December 31, 2016 and 2015, respectively)	Note 6	33	57
Deposits:			
Depository institutions		1,759,675	1,977,166
Treasury, general account		399,190	333,447
Other deposits		58,413	36,532
Interest payable to depository institutions and others		403	252
Accrued benefit costs	Notes 9 and 10	3,118	2,892
Deferred credit items		922	246
Accrued remittances to the Treasury		1,725	1,953
Other liabilities		255	252
Total liabilities		4,412,895	4,445,257
Capital paid-in		30,442	29,508
Surplus (including accumulated other comprehensive loss of $3,985 and $3,802 at December 31, 2016 and 2015, respectively)		10,000	10,000
Total capital		40,442	39,508
Total liabilities and capital		$4,453,337	$4,484,765

The accompanying notes are an integral part of these combined financial statements.

Combined Statements of Operations
For the years ended December 31, 2016 and December 31, 2015
(in millions)

		2016	2015
INTEREST INCOME			
Loans	Note 4	$ 1	$ -
System Open Market Account:	Note 5		
Treasury securities, net		63,845	63,317
Government-sponsored enterprise debt securities, net		959	1,330
Federal agency and government-sponsored enterprise mortgage-backed securities, net		46,299	48,931
Foreign currency denominated investments, net		(7)	31
Central bank liquidity swaps		9	1
Investments held by consolidated variable interest entity	Note 6	9	4
Total interest income		111,115	113,614
INTEREST EXPENSE			
System Open Market Account:	Note 5		
Securities sold under agreements to repurchase		1,122	248
Other		4	2
Deposits:			
Depository institutions and others		12,020	6,846
Term Deposit Facility		24	89
Total interest expense		13,170	7,185
Net interest income		97,945	106,429
NON-INTEREST INCOME (LOSS)			
System Open Market Account:	Note 5		
Treasury securities losses, net		(15)	-
Federal agency and government-sponsored enterprise mortgage-backed securities gains, net		19	43
Foreign currency translation losses, net		(103)	(1,382)
Other		35	16
Investments held by consolidated variable interest entity (losses) gains, net	Note 6	(19)	35
Income from services		434	429
Reimbursable services to government agencies		677	650
Other		64	63
Total non-interest income (loss)		1,092	(146)
OPERATING EXPENSES			
Salaries and benefits		2,979	2,847
Occupancy		327	326
Equipment		175	182
Net periodic pension expense	Note 9	565	563
Other		624	577
Assessments:			
Board of Governors operating expenses and currency costs		1,410	1,394
Bureau of Consumer Financial Protection		596	490
Total operating expenses		6,676	6,379
Net income before providing for remittances to the Treasury		92,361	99,904
Earnings remittances to the Treasury:	Note 13		
Interest on Federal Reserve notes		-	91,143
Required by the Federal Reserve Act	Note 3o	91,467	25,956
Total earnings remittances to the Treasury		91,467	117,099
Net income (loss) after providing for remittances to the Treasury		894	(17,195)
Change in prior service costs related to benefit plans	Note 9 and 10	231	86
Change in actuarial (losses) gains related to benefit plans	Note 9 and 10	(414)	280
Total other comprehensive (loss) income		(183)	366
Comprehensive income (loss)		$ 711	$ (16,829)

The accompanying notes are an integral part of these combined financial statements.

Combined Statements of Changes in Capital

For the years ended December 31, 2016 and December 31, 2015

(in millions, except share data)

	Capital paid-in	Surplus			Total capital
		Net income retained	Accumulated other comprehensive income (loss)	Total surplus	
Balance at December 31, 2014 (571,435,966 shares)	$28,572	$ 32,740	$(4,168)	$ 28,572	$ 57,144
Net change in capital stock issued (redeemed) (18,730,089 shares)	936	-	-	-	936
Comprehensive income:					
Net loss	-	(17,195)	-	(17,195)	(17,195)
Other comprehensive income	-	-	366	366	366
Dividends on capital stock	-	(1,743)	-	(1,743)	(1,743)
Net change in capital	936	(18,938)	366	(18,572)	(17,636)
Balance at December 31, 2015 (590,166,055 shares)	$29,508	$ 13,802	$(3,802)	$ 10,000	$ 39,508
Net change in capital stock issued (redeemed) (18,682,206 shares)	934	-	-	-	934
Comprehensive income:					
Net income	-	894	-	894	894
Other comprehensive loss	-	-	(183)	(183)	(183)
Dividends on capital stock	-	(711)	-	(711)	(711)
Net change in capital	934	183	(183)	-	934
Balance at December 31, 2016 (608,848,261 shares)	$30,442	$ 13,985	$(3,985)	$ 10,000	$ 40,442

The accompanying notes are an integral part of these combined financial statements.

(1) Structure

The Federal Reserve Banks (Reserve Banks) are part of the Federal Reserve System (System) created by Congress under the Federal Reserve Act of 1913 (Federal Reserve Act), which established the central bank of the United States. The Reserve Banks are chartered by the federal government and possess a unique set of governmental, corporate, and central bank characteristics.

In accordance with the Federal Reserve Act, supervision and control of each Reserve Bank is exercised by a board of directors. The Federal Reserve Act specifies the composition of the board of directors for each of the Reserve Banks. Each board is composed of nine members serving three-year terms: three directors, including those designated as chairman and deputy chairman, are appointed by the Board of Governors of the Federal Reserve System (Board of Governors) to represent the public, and six directors are elected by member banks. Banks that are members of the System include all nationally-chartered banks and any state-chartered banks that apply and are approved for membership. Member banks are divided into three classes according to size. Member banks in each class elect one director representing member banks and one director representing the public. In any election of directors, each member bank receives one vote, regardless of the number of shares of Reserve Bank stock it holds.

In addition to the 12 Reserve Banks, the System also consists, in part, of the Board of Governors and the Federal Open Market Committee (FOMC). The Board of Governors, an independent federal agency, is charged by the Federal Reserve Act with a number of specific duties, including general supervision over the Reserve Banks. The FOMC is composed of members of the Board of Governors, the president of the Federal Reserve Bank of New York (FRBNY), and, on a rotating basis, four other Reserve Bank presidents.

(2) Operations and Services

The Reserve Banks perform a variety of services and operations. These functions include participating in formulating and conducting monetary policy; participating in the payment system, including transfers of funds, automated clearinghouse operations, and check collection; distributing coin and currency; performing fiscal agency functions for the U.S. Department of the Treasury (Treasury), certain federal agencies, and other entities; serving as the federal government's bank; providing short-term loans to depository institutions; providing loans to participants in programs or facilities with broad-based eligibility in unusual and exigent circumstances; serving consumers and communities by providing educational materials and information regarding financial consumer protection rights and laws and information on community development programs and activities; and supervising bank holding companies, state member banks, savings and loan holding companies, U.S. offices of foreign banking organizations, edge and agreement corporations, and certain financial market utilities that have been designated as systemically important. Certain services are provided to foreign official and international account holders, primarily by the FRBNY.

The FOMC, in conducting monetary policy, establishes policy regarding domestic open market operations and oversees these operations. The FOMC has selected the FRBNY to execute open market transactions for the System Open Market Account (SOMA) as provided in its annual authorization. The FOMC authorizes and directs the FRBNY to conduct operations in domestic markets, including the direct purchase and sale of Treasury securities, government-sponsored enterprise

(GSE) debt securities, and federal agency and GSE mortgage-backed securities (MBS); the purchase of these securities under agreements to resell; and the sale of these securities under agreements to repurchase. The FRBNY holds the resulting securities and agreements in a portfolio known as the SOMA. The FRBNY is authorized and directed to lend the Treasury securities and GSE debt securities that are held in the SOMA.

To be prepared to meet the needs specified by the FOMC to carry out the System's central bank responsibilities, the FOMC has authorized and directed the FRBNY to execute standalone spot and forward foreign exchange transactions in the resultant foreign currencies, to hold balances in those currencies, and to invest such foreign currency holdings, while maintaining adequate liquidity. The FRBNY holds these securities and agreements in the SOMA. The FOMC has also authorized and directed the FRBNY to maintain reciprocal currency arrangements with the Bank of Canada and the Bank of Mexico in the maximum amounts of $2 billion and $3 billion, respectively, and to warehouse foreign currencies for the Treasury and the Exchange Stabilization Fund in the maximum amount of $5 billion.

Because of the global character of bank funding markets, the System has, at times, coordinated with other central banks to provide liquidity. The FOMC authorized and directed the FRBNY to maintain standing U.S. dollar liquidity swap arrangements and standing foreign currency liquidity swap arrangements with the Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, and the Swiss National Bank. The FRBNY holds amounts outstanding under these swap lines in the SOMA. These swap lines, which were originally established as temporary arrangements, were converted to standing arrangements on October 31, 2013, and will remain in place until further notice.

The FOMC has authorized and directed the FRBNY to conduct small-value exercises periodically for the purpose of testing operational readiness.

Although the Reserve Banks are separate legal entities, they collaborate on the delivery of certain services to achieve greater efficiency and effectiveness. This collaboration takes the form of centralized operations and product or function offices that have responsibility for the delivery of certain services on behalf of the Reserve Banks. Various operational and management models are used and are supported by service agreements between the Reserve Banks. In some cases, costs incurred by a Reserve Bank for services provided to other Reserve Banks are not shared; in other cases, the Reserve Banks are reimbursed for costs incurred in providing services to other Reserve Banks.

(3) Significant Accounting Policies

Accounting principles for entities with the unique powers and responsibilities of the nation's central bank have not been formulated by accounting standard-setting bodies. The Board of Governors has developed specialized accounting principles and practices that it considers to be appropriate for the nature and function of a central bank. These accounting principles and practices are documented in the *Financial Accounting Manual for Federal Reserve Banks* (FAM), which is issued by the Board of Governors. The Reserve Banks are required to adopt and apply accounting policies and practices that are consistent with the FAM. The combined financial statements and associated disclosures have been prepared in accordance with the FAM.

Due to the unique nature of the Reserve Banks' powers and responsibilities as part of the nation's central bank and given the System's unique responsibility to conduct monetary policy, the Board has adopted accounting principles and practices in the FAM that differ from accounting principles generally accepted in the United States of America (GAAP). The more significant differences are the presentation of all SOMA securities holdings at amortized cost, adjusted for credit impairment, if any, the recording of all SOMA securities on a settlement-date basis, and the use of straight-line amortization of premiums and discounts for Treasury securities, GSE debt securities, and foreign currency denominated investments. Amortized cost, rather than the fair value presentation, more appropriately reflects the financial position associated with the Reserve Banks' securities holdings given the System's unique responsibility to conduct monetary policy. Although the application of fair value measurements to the securities holdings may result in values substantially greater or less than their carrying values, these unrealized changes in value have no direct effect on the quantity of reserves available to the banking system or on the ability of the Reserve Banks, as the central bank, to meet their financial obligations and responsibilities. Both the domestic and foreign components of the SOMA portfolio may involve transactions that result in gains or losses when holdings are sold before maturity. Decisions regarding securities and foreign currency transactions, including their purchase and sale, are primarily motivated by monetary policy and financial stability objectives rather than profit. Accordingly, fair values, earnings, and gains or losses resulting from the sale of such securities and currencies are incidental to open market operations and do not motivate decisions related to policy or open market activities. Accounting for these securities on a settlement-date basis, rather than the trade-date basis required by GAAP, better reflects the timing of the transaction's effect on the quantity of reserves in the banking system. The cost bases of Treasury securities, GSE debt securities, and foreign government debt instruments are adjusted for amortization of premiums or accretion of discounts on a straight-line basis, rather than using the interest method required by GAAP.

In addition, the Reserve Banks do not present a Combined Statement of Cash Flows as required by GAAP because the liquidity and cash position of the Reserve Banks are not a primary concern given the Reserve Banks' unique powers and responsibilities as a central bank. Other information regarding the Reserve Banks' activities is provided in, or may be derived from, the Combined Statements of Condition, Operations, and Changes in Capital, and the accompanying notes to the combined financial statements. Other than those described above, the accounting policies described in the FAM are generally consistent with those in GAAP and the references to GAAP in the notes to the combined financial statements highlight those areas where the FAM is consistent with GAAP.

Preparing the combined financial statements in conformity with the FAM requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities, the disclosure of contingent assets and liabilities at the date of the combined financial statements, and the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates.

The Combined Statements of Operations have been renamed to better reflect the underlying nature of the activity reported and, in the prior year, had been titled the Combined Statements of Income and Comprehensive Income. Certain amounts relating to the prior year have been reclassified to conform to the current year presentation.

Significant accounts and accounting policies are explained below.

a. Consolidation

The combined financial statements include the accounts and results of operations of the Reserve Banks as well as a variable interest entity (VIE), Maiden Lane Limited Liability Company (LLC) (ML). The consolidation of the VIE was assessed in accordance with Financial Accounting Standards Board (FASB) Accounting Standards Codification (ASC) Topic 810 (ASC 810), *Consolidation*, which requires a VIE to be consolidated by its controlling financial interest holder. Intercompany balances and transactions have been eliminated in consolidation. See Note 6 for additional information on the VIE. The combined financial statements of the Reserve Banks also include accounts and results of operations of Maiden and Nassau LLC, a Delaware LLC wholly-owned by the FRBNY, which was formed to own and operate the FRBNY-owned 33 Maiden Lane building.

A Reserve Bank consolidates a VIE if it has a controlling financial interest, which is defined as the power to direct the significant economic activities of the entity and the obligation to absorb losses or the right to receive benefits of the entity that could potentially be significant to the VIE. To determine whether it is the controlling financial interest holder of a VIE, the Reserve Bank evaluates the VIE's design, capital structure, and relationships with the variable interest holders. The Reserve Bank reconsiders whether it has a controlling financial interest in a VIE, as required by ASC 810, at each reporting date or if there is an event that requires consideration.

The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act) established the Bureau of Consumer Financial Protection (Bureau) as an independent bureau within the System that has supervisory authority over some institutions previously supervised by the Reserve Banks in connection with those institutions' compliance with consumer protection statutes. Section 1017 of the Dodd-Frank Act provides that the financial statements of the Bureau are not to be consolidated with those of the Board of Governors or the System. The Board of Governors funds the Bureau through assessments on the Reserve Banks as required by the Dodd-Frank Act. The Reserve Banks reviewed the law and evaluated the design of and their relationship to the Bureau and determined that it should not be consolidated in the Reserve Banks' combined financial statements.

b. Gold and Special Drawing Rights Certificates

The Secretary of the Treasury is authorized to issue gold certificates to the Reserve Banks. Upon authorization, the Reserve Banks acquire gold certificates by crediting equivalent amounts in dollars to the account established for the Treasury. The gold certificates held by the Reserve Banks are required to be backed by the gold owned by the Treasury. The Treasury may reacquire the gold certificates at any time, and the Reserve Banks must deliver them to the Treasury. At such time, the Treasury's account is charged, and the Reserve Banks' gold certificate accounts are reduced. The value of gold for purposes of backing the gold certificates is set by law at $42 2/9 per fine troy ounce. Gold certificates are recorded by the Reserve Banks at original cost. The Board of Governors allocates the gold certificates among the Reserve Banks once a year based on each Reserve Bank's average Federal Reserve notes outstanding during the preceding 12 months.

Special drawing rights (SDR) are issued by the International Monetary Fund (IMF) to its members in proportion to each member's quota in the IMF at the

time of issuance. SDRs serve as a supplement to international monetary reserves and may be transferred from one national monetary authority to another. Under the law providing for U.S. participation in the SDR system, the Secretary of the Treasury is authorized to issue SDR certificates to the Reserve Banks. When SDR certificates are issued to the Reserve Banks, equivalent amounts in U.S. dollars are credited to the account established for the Treasury and the Reserve Banks' SDR certificate accounts are increased. The Reserve Banks are required to purchase SDR certificates, at the direction of the Treasury, for the purpose of financing SDR acquisitions or for financing exchange-stabilization operations. At the time SDR certificate transactions occur, the Board of Governors allocates the SDR certificates among the Reserve Banks based upon each Reserve Bank's Federal Reserve notes outstanding at the end of the preceding calendar year. SDR certificates are recorded by the Reserve Banks at original cost.

c. Coin

The amount reported as coin in the Combined Statements of Condition represents the face value of all United States coin held by the Reserve Banks. The Reserve Banks buy coin at face value from the U.S. Mint in order to fill depository institution orders.

d. Loans

Loans to depository institutions are reported at their outstanding principal balances and interest income is recognized on an accrual basis.

Loans are impaired when current information and events indicate that it is probable that the Reserve Bank will not receive the principal and interest that are due in accordance with the contractual terms of the loan agreement. Impaired loans are evaluated to determine whether an allowance for loan loss is required. The Reserve Banks have developed procedures for assessing the adequacy of any allowance for loan losses using all available information to identify incurred losses. This assessment includes monitoring information obtained from banking supervisors, borrowers, and other sources to assess the credit condition of the borrowers and, as appropriate, evaluating collateral values. Generally, the Reserve Banks would discontinue recognizing interest income on impaired loans until the borrower's repayment performance demonstrates principal and interest would be received in accordance with the terms of the loan agreement. If the Reserve Banks discontinue recording interest on an impaired loan, cash payments are first applied to principal until the loan balance is reduced to zero; subsequent payments are applied as recoveries of amounts previously deemed uncollectible, if any, and then as interest income.

e. Securities Purchased Under Agreements to Resell, Securities Sold Under Agreements to Repurchase, and Securities Lending

The FRBNY may engage in purchases of securities under agreements to resell (repurchase agreements) with primary dealers. Transactions under these repurchase agreements are typically settled through a tri-party arrangement. In the United States, there are currently two commercial custodial banks that provide these services. In a tri-party arrangement, a commercial custodial bank manages the collateral clearing, settlement, pricing, and pledging, and provides cash and securities custodial services for and on behalf of the FRBNY and counterparty. The collateral pledged must exceed the principal amount of the transaction by a margin determined by the FRBNY for each class and maturity of acceptable collateral. Collateral designated by the FRBNY as acceptable under repurchase agreements primarily includes Treasury securities (including Treasury Inflation-

Protected Securities, Separate Trading of Registered Interest and Principal of Securities (STRIPS) Treasury securities, and Treasury Floating Rate Notes); direct obligations of several federal and GSE-related agencies, including Federal National Mortgage Association, Federal Home Loan Mortgage Corporation, and Federal Home Loan Banks; and pass-through federal agency and GSE MBS. The repurchase agreements are accounted for as financing transactions with the associated interest income recognized over the life of the transaction. These repurchase agreements are reported at their contractual amounts as "System Open Market Account: Securities purchased under agreements to resell" and the related accrued interest receivable is reported as a component of "System Open Market Account: Accrued interest receivable" in the Combined Statements of Condition.

The FRBNY may engage in sales of securities under agreements to repurchase (reverse repurchase agreements) with primary dealers and with a set of expanded counterparties that includes banks, savings associations, GSEs, and domestic money market funds. Transactions under these reverse repurchase agreements are designed to have a margin of zero and are settled through a tri-party arrangement, similar to repurchase agreements. Reverse repurchase agreements may also be executed with foreign official and international account holders as part of a service offering. Reverse repurchase agreements are collateralized by a pledge of an amount of Treasury securities, GSE debt securities, or federal agency and GSE MBS that are held in the SOMA. Reverse repurchase agreements are accounted for as financing transactions, and the associated interest expense is recognized over the life of the transaction. These reverse repurchase agreements are reported at their contractual amounts as "System Open Market Account: Securities sold under agreements to repurchase" and the related accrued interest payable is reported as a component of "System Open Market Account: Other liabilities" in the Combined Statements of Condition.

Treasury securities and GSE debt securities held in the SOMA may be lent to primary dealers, typically overnight, to facilitate the effective functioning of the domestic securities markets. The amortized cost basis of securities lent continues to be reported as "System Open Market Account: Treasury securities, net" and "System Open Market Account: Government-sponsored enterprise debt securities, net," as appropriate, in the Combined Statements of Condition. Securities lending transactions are fully collateralized by Treasury securities based on the fair values of the securities lent increased by a margin determined by the FRBNY. The FRBNY charges the primary dealer a fee for borrowing securities, and these fees are reported as a component of "Non-interest income (loss): System Open Market Account: Other" in the Combined Statements of Operations.

Activity related to repurchase agreements, reverse repurchase agreements, and securities lending is allocated to each of the Reserve Banks on a percentage basis derived from an annual settlement of the interdistrict settlement account that occurs in the second quarter of each year.

f. Treasury Securities, Government-Sponsored Enterprise Debt Securities, Federal Agency and Government-Sponsored Enterprise Mortgage-Backed Securities, and Foreign Currency Denominated Investments

Interest income on Treasury securities, GSE debt securities, and foreign currency denominated investments included in the SOMA is recorded when earned and includes amortization of premiums and discounts on the straight-line method. Interest income on federal agency and GSE MBS is accrued using the interest method and includes amortization of premiums, accretion of discounts, and gains

or losses associated with principal paydowns. Premiums and discounts related to federal agency and GSE MBS are amortized or accreted over the term of the security to stated maturity, and the amortization of premiums and accretion of discounts are accelerated when principal payments are received. Gains and losses resulting from sales of securities are determined by specific issue based on average cost. Treasury securities, GSE debt securities, and federal agency and GSE MBS are reported net of premiums and discounts in the Combined Statements of Condition and interest income on those securities is reported net of the amortization of premiums and accretion of discounts in the Combined Statements of Operations.

In addition to outright purchases of federal agency and GSE MBS that are held in the SOMA, the FRBNY enters into dollar roll transactions (dollar rolls), which primarily involve an initial transaction to purchase or sell "to be announced" (TBA) MBS for delivery in the current month combined with a simultaneous agreement to sell or purchase TBA MBS on a specified future date. During the years ended December 31, 2016 and 2015, the FRBNY executed dollar rolls to facilitate settlement of outstanding purchases of federal agency and GSE MBS. The FRBNY accounts for dollar rolls as individual purchases and sales, on a settlement-date basis. Accounting for these transactions as purchases and sales, rather than as financing transactions, is appropriate because the purchase or sale component of the MBS TBA dollar roll is paired off or assigned prior to settlement and, as a result, there is no transfer and return of securities. Net gains (losses) resulting from MBS transactions are reported as a component of "Non-interest income (loss): System Open Market Account: Federal agency and government-sponsored enterprise mortgage-backed securities gains (losses), net" in the Combined Statements of Operations.

Foreign currency denominated investments, which can include foreign currency deposits, repurchase agreements, and government debt instruments, are revalued daily at current foreign currency market exchange rates in order to report these assets in U.S. dollars. Any negative interest associated with these foreign currency denominated investments is included as a component of "Interest income: System Open Market Account: Foreign currency denominated investments, net" in the Combined Statements of Operations. Foreign currency translation gains and losses that result from the daily revaluation of foreign currency denominated investments are reported as "Non-interest income (loss): System Open Market Account: Foreign currency translation losses, net" in the Combined Statements of Operations.

Because the FRBNY enters into commitments to buy Treasury securities, federal agency and GSE MBS, and foreign government debt instruments and records the related securities on a settlement-date basis in accordance with the FAM, the related outstanding commitments are not reflected in the Combined Statements of Condition.

Activity related to Treasury securities, GSE debt securities, and federal agency and GSE MBS, including the premiums, discounts, and realized gains and losses, is allocated to each Reserve Bank on a percentage basis derived from an annual settlement of the interdistrict settlement account that occurs in the second quarter of each year. Activity related to foreign currency denominated investments, including the premiums, discounts, and realized and unrealized gains and losses, is allocated to each Reserve Bank based on the ratio, generally updated in the first quarter of the year, of each Reserve Bank's capital and surplus to the Reserve Banks' aggregate capital and surplus at the preceding December 31.

The FRBNY is authorized to hold foreign currency working balances and execute foreign exchange contracts to facilitate international payments and currency transactions it makes on behalf of foreign central bank and U.S. official institution customers. These foreign currency working balances and contracts are not related to the FRBNY's monetary policy operations. Foreign currency working balances are reported as a component of "Other assets" in the Combined Statements of Condition and the related foreign currency translation gains and losses that result from the daily revaluation of the foreign currency working balances and contracts are reported as a component of "Non-interest income (loss): Other" in the Combined Statements of Operations.

g. Central Bank Liquidity Swaps

Central bank liquidity swaps, which are transacted between the FRBNY and a foreign central bank, can be structured as either U.S. dollar or foreign currency liquidity swap arrangements.

Central bank liquidity swaps activity, including the related income and expense, is generally allocated in the first quarter of each year to each Reserve Bank based on the ratio, updated in the first quarter of the year, of each Reserve Bank's capital and surplus to the Reserve Banks' aggregate capital and surplus at the preceding December 31.

U.S. dollar liquidity swaps

At the initiation of each U.S. dollar liquidity swap transaction, the foreign central bank transfers a specified amount of its currency to a restricted account for the FRBNY in exchange for U.S. dollars at the prevailing market exchange rate. Concurrent with this transaction, the FRBNY and the foreign central bank agree to a second transaction that obligates the foreign central bank to return the U.S. dollars and the FRBNY to return the foreign currency on a specified future date at the same exchange rate as the initial transaction. The foreign currency amounts that the FRBNY acquires are reported as "System Open Market Account: Central bank liquidity swaps" in the Combined Statements of Condition. Because the swap transaction will be unwound at the same U.S. dollar amount and exchange rate that were used in the initial transaction, the recorded value of the foreign currency amounts is not affected by changes in the market exchange rate.

The foreign central bank compensates the FRBNY based on the amount outstanding and the rate under the swap agreement. The Reserve Banks recognize compensation during the term of the swap transaction, which is reported as "Interest income: System Open Market Account: Central bank liquidity swaps" in the Combined Statements of Operations.

Foreign currency liquidity swaps

Foreign currency liquidity swap transactions involve the transfer by the FRBNY, at the prevailing market exchange rate, of a specified amount of U.S. dollars to an account for the foreign central bank in exchange for its currency. The foreign currency amounts that the FRBNY receives are recorded as a liability.

h. Consolidated VIE – Investments and Liabilities

The investments held by the consolidated VIE consist primarily of short-term investments with maturities of greater than three months and less than one year, cash and cash equivalents, and swap contracts. Swap contracts consist of credit default swaps (CDS). Investments are reported as "Investments held by consolidated variable interest entity" in the Combined Statements of Condition. Changes

in fair value of the investments are recorded in "Non-interest income (loss): Investments held by consolidated variable interest entity (losses) gains, net" in the Combined Statements of Operations.

Investments in debt securities are accounted for in accordance with FASB ASC Topic 320, *Investments – Debt and Equity Securities*, and the VIE elected the fair value option for all eligible assets and liabilities in accordance with FASB ASC Topic 825 (ASC 825), *Financial Instruments*. Other financial instruments, including swap contracts, are recorded at fair value in accordance with FASB ASC Topic 815 (ASC 815), *Derivatives and Hedging*.

The liabilities of the consolidated VIE consist primarily of swap contracts, cash collateral on swap contracts, and accruals for operating expenses. Swap contracts are recorded at fair value in accordance with ASC 815. Liabilities are reported as "Liabilities of consolidated variable interest entity" in the Combined Statements of Condition. Changes in fair value of the liabilities are recorded in "Non-interest income (loss): Investments held by consolidated variable interest entity (losses) gains, net" in the Combined Statements of Operations.

i. Bank Premises, Equipment, and Software

Reserve Bank premises and equipment are stated at cost less accumulated depreciation. Depreciation is calculated on a straight-line basis over the estimated useful lives of the assets, which range from 2 to 50 years. Major alterations, renovations, and improvements are capitalized at cost as additions to the asset accounts and are depreciated over the remaining useful life of the asset or, if appropriate, over the unique useful life of the alteration, renovation, or improvement. Maintenance, repairs, and minor replacements are charged to operating expense in the year incurred. Reserve Banks may transfer assets to other Reserve Banks or may lease property of other Reserve Banks.

Costs incurred to acquire software are capitalized based on the purchase price. Costs incurred during the application development stage to develop internal-use software are capitalized based on the cost of direct services and materials associated with designing, coding, installing, and testing the software. Capitalized software costs are amortized on a straight-line basis over the estimated useful lives of the software applications, which generally range from two to five years. Maintenance costs and minor replacements related to software are charged to operating expense in the year incurred. Leased assets that meet the criteria of FASB ASC Topic 840, *Leases* are capitalized and amortized over the shorter of the useful life of the asset or the term of the lease.

Capitalized assets, including software, buildings, leasehold improvements, furniture, and equipment, are impaired and an adjustment is recorded when events or changes in circumstances indicate that the carrying amount of assets or asset groups is not recoverable and significantly exceeds the assets' fair value.

j. Federal Reserve Notes

Federal Reserve notes are the circulating currency of the United States. These notes, which are identified as issued to a specific Reserve Bank, must be fully collateralized. All of the Reserve Banks' assets are eligible to be pledged as collateral. The collateral value is equal to the book value of the collateral tendered with the exception of securities, for which the collateral value is equal to the par value of the securities tendered. The par value of reverse repurchase agreements is deducted from the eligible collateral value.

The Board of Governors may, at any time, call upon a Reserve Bank for additional security to adequately collateralize outstanding Federal Reserve notes. To satisfy the obligation to provide sufficient collateral for outstanding Federal Reserve notes, the Reserve Banks have entered into an agreement that provides for certain assets of the Reserve Banks to be jointly pledged as collateral for the Federal Reserve notes issued to all Reserve Banks. In the event that this collateral is insufficient, the Federal Reserve Act provides that Federal Reserve notes become a first and paramount lien on all the assets of the Reserve Banks. Finally, Federal Reserve notes are obligations of the United States government.

"Federal Reserve notes outstanding, net" in the Combined Statements of Condition represents the Reserve Banks' Federal Reserve notes outstanding, reduced by the Reserve Banks' currency holdings of $175 billion and $170 billion at December 31, 2016 and 2015, respectively.

At December 31, 2016 and 2015, all Federal Reserve notes outstanding, net, were fully collateralized. At December 31, 2016, all gold certificates, all SDR certificates, and $1,447 billion of domestic securities held in the SOMA were pledged as collateral. At December 31, 2016, no investments denominated in foreign currencies were pledged as collateral.

k. Deposits

Depository Institutions

Depository institutions' deposits represent the reserve and service-related balances in the accounts that depository institutions hold at the Reserve Banks. Required reserve balances are those that a depository institution must hold to satisfy its reserve requirement. Reserve requirements are the amount of funds that a depository institution must hold in reserve against specified deposit liabilities. Excess reserves are those held by the depository institutions in excess of their required reserve balances. The interest rates paid on required reserve balances and excess balances are determined by the Board of Governors, based on an FOMC-established target range for the federal funds rate. Interest expense on depository institutions' deposits is accrued daily at the appropriate rate. Interest payable is reported as a component of "Interest payable to depository institutions and others" in the Combined Statements of Condition.

The Term Deposit Facility (TDF) consists of deposits with specific maturities held by eligible institutions at the Reserve Banks. The Reserve Banks pay interest on these deposits at interest rates determined by auction. Interest expense on depository institutions' deposits is accrued daily at the appropriate rate. Interest payable is reported as a component of "Interest payable to depository institutions and others" in the Combined Statements of Condition. There were no deposits held by the Reserve Bank under the TDF at December 31, 2016 and 2015.

Treasury

The Treasury general account is the primary operational account of the Treasury and is held at the FRBNY.

Other

Other deposits include foreign central bank and foreign government deposits held at the FRBNY. Other deposits also include cash collateral, deposits of designated financial market utilities (DFMUs), and GSE deposits held by the Reserve Banks. The Reserve Banks pay interest on deposits held by DFMUs at the rate paid on

balances maintained by depository institutions or another rate determined by the Board from time to time, not to exceed the general level of short term interest rates. Interest payable is reported as a component of "Interest payable to depository institutions and others" in the Combined Statements of Condition.

l. Items in Process of Collection and Deferred Credit Items

Items in process of collection primarily represents amounts attributable to checks that have been deposited for collection and that, as of the balance sheet date, have not yet been presented to the paying bank. Deferred credit items represents the counterpart liability to items in process of collection. The amounts in this account arise from deferring credit for deposited items until the amounts are collected.

m. Capital Paid-in

The Federal Reserve Act requires that each member bank subscribe to the capital stock of the Reserve Bank in an amount equal to 6 percent of the capital and surplus of the member bank. These shares are nonvoting, with a par value of $100, and may not be transferred or hypothecated. As a member bank's capital and surplus changes, its holdings of Reserve Bank stock must be adjusted. Currently, only one-half of the subscription is paid in, and the remainder is subject to call. A member bank is liable for Reserve Bank liabilities up to twice the par value of stock subscribed by it.

The Fixing America's Surface Transportation Act (FAST Act), which was enacted on December 4, 2015, amended section 7 of the Federal Reserve Act related to Reserve Bank surplus and the payment of dividends to member banks. Until January 1, 2016, each Reserve Bank was required by law to pay each member bank an annual dividend of 6 percent on the paid-in capital stock. Effective January 1, 2016, the FAST Act changed the dividend rate for member banks with more than $10 billion of consolidated assets to the smaller of 6 percent or the rate equal to the high yield of the 10-year Treasury note auctioned at the last auction held prior to the payment of the dividend. The FAST Act did not change the 6 percent dividend rate for member banks with $10 billion or less of total consolidated assets. The dividend is paid semiannually and is cumulative.

n. Surplus

Before the enactment of the FAST Act, the Board of Governors required the Reserve Banks to maintain a surplus equal to the amount of capital paid-in. On a daily basis, surplus was adjusted to equate the balance to capital paid-in. Effective December 4, 2015, the FAST Act limits aggregate Reserve Bank surplus to $10 billion. Reserve Bank surplus is allocated among the Reserve Banks based on the ratio of each Bank's capital paid-in to total Reserve Bank capital paid-in as of December 31 of each year. The amount reported as surplus by the Reserve Bank as of December 31, 2016 and 2015 represents the Reserve Bank's allocated portion of surplus.

Accumulated other comprehensive income is reported as a component of "Surplus" in the Combined Statements of Condition and the Combined Statements of Changes in Capital. Additional information regarding the classifications of accumulated other comprehensive income is provided in Notes 9, 10, and 11.

o. Earnings Remittances to the Treasury

Before the enactment of the FAST Act, the Board of Governors required the Reserve Banks to transfer excess earnings to the Treasury as interest on Federal Reserve notes after providing for the costs of operations, payment of dividends,

and reservation of an amount necessary to equate surplus with capital paid-in. The Federal Reserve Act, as amended by the FAST Act effective December 4, 2015, requires that any amounts of the surplus funds of the Reserve Banks that exceed, or would exceed, the aggregate surplus limitation of $10 billion shall be transferred to the Board of Governors for transfer to the Treasury. The Reserve Banks remit excess earnings to the Treasury after providing for the cost of operations, payment of dividends, and reservation of an amount necessary to maintain surplus at the Bank's allocated portion of the $10 billion aggregate surplus limitation. Remittances to the Treasury are made on a weekly basis. The amount of the remittances to the Treasury that were required under the Board of Governor's policy is reported as "Earnings remittances to the Treasury: Interest on Federal Reserve notes" in the Combined Statements of Operations. The amount of the remittances to the Treasury that are required by the FAST Act is reported as "Earnings remittances to the Treasury: Required by the Federal Reserve Act" in the Combined Statements of Operations. The amount due to the Treasury is reported as "Accrued remittances to the Treasury" in the Combined Statements of Condition. See Note 13 for additional information on earnings remittances to the Treasury.

Under the previous Board of Governor's policy, if earnings during the year were not sufficient to provide for the costs of operations, payment of dividends, and equating surplus and capital paid-in, remittances to the Treasury were suspended, and under the FAST Act, if earnings during the year are not sufficient to provide for the costs of operations, payment of dividends, and maintaining surplus at an amount equal to the Bank's allocated portion of the $10 billion aggregate surplus limitation, remittances to the Treasury are suspended. This decrease in earnings remittances to the Treasury results in recording a deferred asset that represents the amount of net earnings a Reserve Bank will need to realize before remittances to the Treasury resume.

p. Income and Costs Related to Treasury Services

When directed by the Secretary of the Treasury, the Reserve Banks are required by the Federal Reserve Act to serve as fiscal agent and depositary of the United States Government. By statute, the Treasury has appropriations to pay for these services. During the years ended December 31, 2016 and 2015, the Reserve Banks were reimbursed for all services provided to the Treasury as its fiscal agent.

q. Assessments

The Board of Governors assesses the Reserve Banks to fund its operations and the operations of the Bureau. These assessments are allocated to each Reserve Bank based on each Reserve Bank's capital and surplus balances. The Board of Governors also assesses each Reserve Bank for expenses related to producing, issuing, and retiring Federal Reserve notes based on each Reserve Bank's share of the number of notes comprising the System's net liability for Federal Reserve notes on December 31 of the prior year.

The Dodd-Frank Act requires that, after the transfer of its responsibilities to the Bureau on July 21, 2011, the Board of Governors fund the Bureau in an amount not to exceed a fixed percentage of the total operating expenses of the System as reported in the Board of Governor's 2009 annual report, which totaled $4.98 billion. After 2013, the amount will be adjusted annually in accordance with the provisions of the Dodd-Frank Act. The percentage of total operating expenses of the System for the years ended December 31, 2016 and 2015 was 12.68 percent ($631.7 million) and 12.42 percent ($618.7 million), respectively. The Reserve

Banks' assessment for Bureau funding is reported as "Assessments: Bureau of Consumer Financial Protection" in the Combined Statements of Operations.

r. Fair Value

Investments and liabilities of the consolidated VIE and assets of the Retirement Plan for Employees of the System are measured at fair value in accordance with FASB ASC Topic 820 (ASC 820), *Fair Value Measurement*. ASC 820 defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. ASC 820 establishes a three-level fair value hierarchy that distinguishes between assumptions developed using market data obtained from independent sources (observable inputs) and the Reserve Banks' assumptions developed using the best information available in the circumstances (unobservable inputs). The three levels established by ASC 820 are described as follows:

- Level 1 – Valuation is based on quoted prices for identical instruments traded in active markets.
- Level 2 – Valuation is based on quoted prices for similar instruments in active markets, quoted prices for identical or similar instruments in markets that are not active, and model-based valuation techniques for which all significant assumptions are observable in the market.
- Level 3 – Valuation is based on model-based techniques that use significant inputs and assumptions not observable in the market. These unobservable inputs and assumptions reflect the Reserve Banks' estimates of inputs and assumptions that market participants would use in pricing the assets and liabilities. Valuation techniques include the use of option pricing models, discounted cash flow models, and similar techniques.

The inputs or methodology used for valuing assets and liabilities are not necessarily an indication of the risk associated with those assets and liabilities.

s. Taxes

The Reserve Banks are exempt from federal, state, and local taxes, except for taxes on real property. The Reserve Banks' real property taxes were $51 million for the years ended December 31, 2016 and 2015, respectively, and are reported as a component of "Operating expenses: Occupancy" in the Combined Statements of Operations.

t. Restructuring Charges

The Reserve Banks recognize restructuring charges for exit or disposal costs incurred as part of the closure of business activities in a particular location, the relocation of business activities from one location to another, or a fundamental reorganization that affects the nature of operations. Restructuring charges may include costs associated with employee separations, contract terminations, and asset impairments. Expenses are recognized in the period in which the Reserve Banks commit to a formalized restructuring plan or execute the specific actions contemplated in the plan and all criteria for financial statement recognition have been met.

In 2014, the Treasury announced plans to consolidate the provision of substantially all fiscal agent services for the U.S. Treasury at the Federal Reserve Bank of Cleveland (FRBC), the Federal Reserve Bank of Kansas City (FRBKC), the

FRBNY, and the Federal Reserve Bank of St. Louis (FRBSL). The consolidation is expected to be completed in future years.

Note 12 describes the Reserve Banks' restructuring initiatives and provides information about the costs and liabilities associated with employee separations and contract terminations. Costs and liabilities associated with enhanced pension benefits in connection with the restructuring activities for all of the Reserve Banks are recorded on the books of the FRBNY and discussed in Note 9. Costs and liabilities associated with enhanced postretirement benefits are discussed in Note 10.

u. Accounting Policy Change and Recently Issued Accounting Standards

The Board of Governors approved, effective January 2017, accounting for Treasury securities, GSE debt securities, and foreign government debt instruments held in the SOMA using the effective interest method. Previously the cost bases of these securities were adjusted for amortization of premiums or accretion of discounts on a straight-line basis. This change will be applied prospectively. This update is not expected to have a material effect on the Reserve Banks' combined financial statements for the year ended December 31, 2017.

Other than the significant differences described in Note 3, the accounting policies described in the FAM are generally consistent with those in GAAP. The following items represent recent GAAP accounting standards and describe how the FAM was or will be revised to be consistent with these standards.

In May 2014, the FASB issued Accounting Standards Update (ASU) 2014-09, *Revenue from Contracts with Customers (Topic 606)*. This update was issued to create common revenue recognition guidance for U.S. GAAP and International Financial Reporting Standards. The guidance is applicable to all contracts for the transfer of goods or services regardless of industry or type of transaction. This update requires recognition of revenue in a manner that reflects the consideration that the entity expects to receive in return for the transfer of goods or services to customers. In August 2015, the FASB issued ASU 2015-14, *Revenue from Contracts with Customers (Topic 606): Deferral of the Effective Date*, which delayed the required effective date of this accounting by one year. In March 2016, the FASB issued ASU 2016-08, *Revenue from Contracts with Customers (Topic 606): Principal versus Agent Considerations (Reporting Revenue Gross versus Net),* which provided clarity regarding what constitutes the transfer of a good or service. In April 2016, the FASB issued ASU 2016-10, *Revenue from Contracts with Customers (Topic 606): Identifying Performance Obligations and Licensing.* This update provides further criteria to help identify whether goods or services within a contract are separately identifiable and, consequently, should be deemed distinct revenue streams. In May 2016, the FASB issued ASU 2016-12, *Revenue from Contracts with Customers (Topic 606): Narrow-Scope Improvements and Practical Expedients*, which provides guidance on assessing collectability, noncash consideration, and how contract modifications and completed contracts should be treated during the transition to new accounting guidance. This revenue recognition accounting guidance is effective for the Reserve Banks for the year ending December 31, 2019, although the Reserve Banks may elect to adopt the guidance earlier. The Reserve Banks are continuing to evaluate the effect of this new guidance on the combined financial statements.

In August 2014, the FASB issued ASU 2014-13, *Consolidation (Topic 810): Measuring the Financial Assets and the Financial Liabilities of a Consolidated Collateralized Financing Entity*. This update provides guidance for the measurement of the

financial assets and financial liabilities of a collateralized financing entity (CFE). A reporting entity that consolidates a CFE may elect to measure the financial assets and financial liabilities of that CFE using either the fair value or a measurement alternative as prescribed in the accounting pronouncement. This update is effective for the Reserve Banks for the year ended December 31, 2016, and did not have a material effect on the Reserve Banks' combined financial statements.

In February 2015, the FASB issued ASU 2015-02, *Consolidation (Topic 810): Amendments to the Consolidation Analysis*. This update revised the consolidation model for reporting entities that are required to evaluate whether they should consolidate certain legal entities. More specifically, the update modified the evaluation of whether LLCs are VIEs or voting interest entities, and revised the consolidation analysis of reporting entities involved with VIEs, particularly those with fee arrangements and related party relationships. This update is effective for the Reserve Banks for the year ended December 31, 2016, and did not have a material effect on the Reserve Banks' combined financial statements.

In April 2015, the FASB issued ASU 2015-05, *Intangibles - Goodwill and Other - Internal Use Software (Subtopic 350-40)*. The amendments in this update provide guidance to customers about whether a cloud computing arrangement includes a software license. If a cloud computing arrangement includes a software license, then the customer should account for the software license element of the arrangement consistent with the acquisition of other software licenses. If a cloud computing arrangement does not include a software license, the customer should account for the arrangement as a service contract. Consequently, all software licenses within the scope of subtopic 350-40 will be accounted for consistent with other licenses of intangible assets. This update is effective prospectively for the Reserve Banks for the year ended December 31, 2016, and did not have a material effect on the Reserve Banks' combined financial statements.

In May 2015, the FASB issued ASU 2015-07, *Fair Value Measurement (Topic 820): Disclosure for Investments in Certain Entities that Calculate Net Asset Value per Share (or Its Equivalent)*. This update removes the requirement to categorize investments that are measured using net asset value within the fair value hierarchy. This update also changes disclosure requirements for investments measured using net asset value. Some of the investments held in the defined benefit retirement plans (Note 9) are currently measured using net asset value. This update is effective for the Reserve Banks for the year ending December 31, 2016, and did not have a material effect on the Reserve Banks' combined financial statements.

In June 2015, the FASB issued ASU 2015-10, *Technical Corrections and Improvements*. This update covers a wide range of topics in the accounting standard codification and addresses differences between original guidance and the codification. It provides clarification of certain guidance including reference corrections and makes minor improvements to accounting standards. As part of ASU 2015-10 the disclosures for the Retirement Plan's investments in collective trusts and certain real estate investments were reclassified in the fair value hierarchy in Note 9 of the financial statements. This update is effective for the Reserve Banks for the year ended December 31, 2016. This reclassification did not have an impact on Retirement Plan assets and did not have a material effect on the Reserve Banks' combined financial statements. The relevant disclosures have been included in Note 9.

In January 2016, the FASB issued ASU 2016-01, *Financial Instruments – Overall (Subtopic 825-10): Recognition and Measurement of Financial Assets and Financial*

Liabilities. The amendments in this update eliminate the requirement to disclose methods and significant assumptions used to estimate the fair value for financial instruments measured at amortized cost on the balance sheet. This update is effective for the Reserve Banks for the year ending December 31, 2019. The Reserve Banks are continuing to evaluate the effect of this new guidance on the Reserve Banks' combined financial statements.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. This update revises the model to assess how a lease should be classified and provides guidance for lessees, requiring lessees to present right-of-use assets and lease liabilities on the balance sheet. The update is effective for the Reserve Banks for the year ended December 31, 2020, although earlier adoption is permitted. The Reserve Banks are continuing to evaluate the effect of this new guidance on the Reserve Banks' combined financial statements.

In June 2016, the FASB issued ASU 2016-13, *Financial Instruments – Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments*. This update revises the methodology for assessing expected credit losses and requires consideration of reasonable and supportable information to inform credit loss estimates. The update is effective for the Reserve Banks for the year ending December 31, 2021, although earlier adoption is permitted. The Reserve Banks are continuing to evaluate the effect of this new guidance on the Reserve Banks' combined financial statements.

(4) Loans

Loans to Depository Institutions

The Reserve Banks offer primary, secondary, and seasonal loans to eligible borrowers (depository institutions that maintain reservable transaction accounts or nonpersonal time deposits and have established discount window borrowing privileges). Each program has its own interest rate and interest is accrued using the applicable interest rate established at least every 14 days by the Reserve Banks' board of directors, subject to review and determination by the Board of Governors. Primary and secondary loans are extended on a short-term basis, typically overnight, whereas seasonal loans may be extended for a period of up to nine months.

Primary, secondary, and seasonal loans are collateralized to the satisfaction of each Reserve Bank to reduce credit risk. Assets eligible to collateralize these loans include consumer, business, and real estate loans; Treasury securities; GSE debt securities; foreign sovereign debt; municipal, corporate, and state and local government obligations; asset-backed securities; corporate bonds; commercial paper; and bank-issued assets, such as certificates of deposit, bank notes, and deposit notes. Collateral is assigned a lending value that is deemed appropriate by the Reserve Bank, which is typically fair value reduced by a margin. Loans to depository institutions are monitored daily to ensure that borrowers continue to meet eligibility requirements for these programs. If a borrower no longer qualifies for these programs, the Reserve Bank will generally request full repayment of the outstanding loan or, for primary or seasonal loans, may convert the loan to a secondary credit loan. Collateral levels are reviewed daily against outstanding obligations, and borrowers that no longer have sufficient collateral to support outstanding loans are required to provide additional collateral or to make partial or full repayment.

The remaining maturity distribution of loans to depository institutions outstanding as of December 31, 2016 and 2015 was as follows (in millions):

	Within 15 days	16 days to 90 days	Total
December 31, 2016	$ 58	$ 5	$ 63
December 31, 2015	$104	$11	$115

At December 31, 2016 and 2015, the Reserve Banks did not have any loans that were impaired, restructured, past due, or on non-accrual status, and no allowance for loan losses was required. There were no impaired loans during the years ended December 31, 2016 and 2015. Interest income attributable to loans to depository institutions was $1 million during the year ended December 31, 2016. Interest income attributable to loans to depository institutions was immaterial during the year ended December 31, 2015.

(5) System Open Market Account

a. Domestic Securities Holdings

The FRBNY conducts domestic open market operations and, on behalf of the Reserve Banks, holds the resulting securities in the SOMA.

Pursuant to FOMC directives, the FRBNY has continued to reinvest principal payments from its holdings of GSE debt securities and federal agency and GSE MBS in federal agency and GSE MBS and to roll over maturing Treasury securities at auction. During the years ended December 31, 2016 and 2015, the FRBNY continued the reinvestments and rollovers.

The total of Treasury securities, GSE debt securities, and federal agency and GSE MBS, net, excluding accrued interest, held in the SOMA at December 31, 2016 and 2015 was as follows (in millions):

	2016			
	Par	Unamortized premiums	Unaccreted discounts	Total amortized cost
Treasury securities				
Notes	$1,638,172	$ 14,782	$ (5,615)	$1,647,339
Bonds	825,444	103,708	(9,069)	920,083
Total Treasury securities	$2,463,616	$118,490	$(14,684)	$2,567,422
GSE debt securities	$ 16,180	$ 468	$ -	$ 16,648
Federal agency and GSE MBS	$1,741,391	$ 54,006	$ (394)	$1,795,003

	2015			
	Par	Unamortized premiums	Unaccreted discounts	Total amortized cost
Treasury securities				
Notes	$1,634,772	$ 20,937	$ (6,481)	$1,649,228
Bonds	826,780	114,015	(9,347)	931,448
Total Treasury securities	$2,461,552	$134,952	$(15,828)	$2,580,676
GSE debt securities	$ 32,944	$ 804	$ -	$ 33,748
Federal agency and GSE MBS	$1,747,461	$ 53,730	$ (742)	$1,800,449

There were no material transactions related to repurchase agreements during the years ended December 31, 2016 and 2015.

During the years ended December 31, 2015 and 2016, the FRBNY entered into reverse repurchase agreements as part of its monetary policy activities. From September 23, 2013 through December 16, 2015, these operations were for the purpose of further assessing the appropriate structure of such operations in supporting the implementation of monetary policy during normalization. Since then these operations have been undertaken as necessary to maintain the federal funds rate in a target range. In addition, reverse repurchase agreements are entered into as part of a service offering to foreign official and international account holders. Financial

information related to reverse repurchase agreements for the years ended December 31, 2016 and 2015 was as follows (in millions):

	2016	2015
Primary dealers and expanded counterparties:		
Contract amount outstanding, end of year	$468,355	$474,592
Average daily amount outstanding, during the year	105,648	125,656
Maximum balance outstanding, during the year	474,592	474,592
Securities pledged (par value), end of year	443,799	437,961
Securities pledged (fair value), end of year	469,282	475,422
Foreign official and international accounts:		
Contract amount outstanding, end of year	$256,855	$237,809
Average daily amount outstanding, during the year	241,848	157,929
Maximum balance outstanding, during the year	265,041	237,809
Securities pledged (par value), end of year	249,417	230,333
Securities pledged (fair value), end of year	256,897	237,825
Total contract amount outstanding, end of year	$725,210	$712,401
Supplemental information - interest expense:		
Primary dealers and expanded counterparties	$ 303	$ 84
Foreign official and international accounts	819	164
Total interest expense - securities sold under agreements to repurchase	$ 1,122	$ 248

Securities pledged as collateral, at December 31, 2016 and 2015, consisted solely of Treasury securities. The contract amount outstanding as of December 31, 2016 of reverse repurchase agreements that were transacted with primary dealers and expanded counterparties had a term of one business day and matured on January 3, 2017. The contract amount outstanding as of December 31, 2016 of reverse repurchase agreements that were transacted with foreign official and international account holders had a term of one business day and matured on January 3, 2017.

The remaining maturity distribution of Treasury securities, GSE debt securities, federal agency and GSE MBS bought outright, and reverse repurchase agreements at December 31, 2016 and 2015 was as follows (in millions):

	Within 15 days	16 days to 90 days	91 days to 1 year	Over 1 year to 5 years	Over 5 years to 10 years	Over 10 years	Total
December 31, 2016:							
Treasury securities (par value)	$ 14,807	$41,249	$150,766	$1,224,348	$399,277	$ 633,169	$2,463,616
GSE debt securities (par value)	-	2,851	8,938	2,044	-	2,347	16,180
Federal agency and GSE MBS (par value)[1]	-	-	-	77	10,584	1,730,730	1,741,391
Securities sold under agreements to repurchase (contract amount)	725,210	-	-	-	-	-	725,210
December 31, 2015:							
Treasury securities (par value)	$ -	$38,619	$177,496	$1,118,349	$489,226	$ 637,862	$2,461,552
GSE debt securities (par value)	-	3,687	13,077	13,833	-	2,347	32,944
Federal agency and GSE MBS (par value)[1]	-	-	-	467	9,014	1,737,980	1,747,461
Securities sold under agreements to repurchase (contract amount)	712,401	-	-	-	-	-	712,401

[1] The par amount shown for federal agency and GSE MBS is the remaining principal balance of the securities.

Federal agency and GSE MBS are reported at stated maturity in the table above. The estimated weighted-average life of these securities, which differs from the stated maturity primarily because it factors in scheduled payments and prepayment assumptions, was approximately 7.2 and 6.5 years as of December 31, 2016 and 2015, respectively.

The amortized cost and par value of Treasury securities and GSE debt securities that were loaned from the SOMA under securities lending agreements at December 31, 2016 and 2015 were as follows (in millions):

	2016	2015
Treasury securities (amortized costs)	$25,195	$18,960
Treasury securities (par value)	24,698	18,055
GSE debt securities (amortized cost)	44	146
GSE debt securities (par value)	44	137

Securities pledged as collateral by the counterparties in the securities lending arrangements at December 31, 2016 and 2015 consisted solely of Treasury securities. The securities lending agreements outstanding as of December 31, 2016 had a term of one business day and matured on January 3, 2017.

The FRBNY enters into commitments to buy and sell Treasury securities and records the related securities on a settlement-date basis. As of December 31, 2016, the total purchase price of the Treasury securities under outstanding commitments was $11,679 million. These commitments had contractual settlement dates extending through January 3, 2017.

The FRBNY enters into commitments to buy and sell federal agency and GSE MBS and records the related securities on a settlement-date basis. As of December 31, 2016, the total purchase price of the federal agency and GSE MBS under outstanding purchase commitments was $35,787 million, none of which was related to dollar rolls. These commitments, which had contractual settlement dates extending through January 2017, are for the purchase of TBA MBS for which the number and identity of the pools that will be delivered to fulfill the commitment are unknown at the time of the trade. As of December 31, 2016, there were no outstanding sales commitments for federal agency and GSE MBS. MBS commitments are subject to varying degrees of off-balance-sheet market risk and counterparty credit risk that result from their future settlement. The FRBNY requires the posting of cash collateral for MBS commitments as part of its risk management practices used to mitigate the counterparty credit risk.

Other assets consists primarily of cash and short-term investments related to the federal agency and GSE MBS portfolio. Other liabilities, which are primarily related to federal agency and GSE MBS purchases and sales, includes the FRBNY's obligation to return cash margin posted by counterparties as collateral under commitments to purchase and sell federal agency and GSE MBS. In addition, other liabilities includes obligations that arise from the failure of a seller to deliver MBS to the FRBNY on the settlement date. Although the FRBNY has ownership of and records its investments in the MBS as of the contractual settlement date, it is not obligated to make payment until the securities are delivered, and the amount included in other liabilities represents the FRBNY's obligation to pay for the securities when delivered. The amount of other assets and other liabilities held in the SOMA at December 31, 2016 and 2015 was as follows (in millions):

	2016	2015
Other assets:		
MBS portfolio related cash and short term investments	$ 7	$ 13
Other	1	1
Total other assets	$ 8	$ 14
Other liabilities:		
Cash margin	$ 983	$486
Obligations from MBS transaction fails	9	16
Other	20	6
Total other liabilities	$1,012	$508

Accrued interest receivable on domestic securities holdings held in the SOMA was $25,517 million and $25,354 million as of December 31, 2016 and 2015, respectively. These amounts are reported as a component of "System Open Market Account: Accrued interest receivable" in the Combined Statements of Condition.

Information about transactions related to Treasury securities, GSE debt securities, and federal agency and GSE MBS held in the SOMA during the years ended December 31, 2016 and 2015, is summarized as follows (in millions):

	Notes	Bonds	Total Treasury securities	GSE debt securities	Federal agency and GSE MBS
Balance December 31, 2014	$1,654,901	$941,340	$2,596,241	$ 39,990	$1,789,083
Purchases[1]	2,736	761	3,497	-	356,976
Sales[1]	-	-	-	-	(464)
Realized gains (losses), net[2]	-	-	-	-	16
Principal payments and maturities	(2,977)	(543)	(3,520)	(5,733)	(333,441)
Amortization of premiums and accretion of discounts, net	(5,485)	(10,253)	(15,738)	(509)	(11,721)
Inflation adjustment on inflation-indexed securities	53	143	196	-	-
Balance at December 31, 2015	$1,649,228	$931,448	$2,580,676	$ 33,748	$1,800,449
Purchases[1]	190,992	13,882	204,874	-	387,210
Sales[1]	(534)	(62)	(596)	-	(213)
Realized gains (losses), net[2]	(22)	7	(15)	-	6
Principal payments and maturities	(187,843)	(16,597)	(204,440)	(16,764)	(379,065)
Amortization of premiums and accretion of discounts, net	(5,049)	(10,033)	(15,082)	(336)	(13,384)
Inflation adjustment on inflation-indexed securities	567	1,438	2,005	-	-
Balance at December 31, 2016	$1,647,339	$920,083	$2,567,422	$ 16,648	$1,795,003
Year-ended December 31, 2015					
Supplemental information—par value of transactions:					
Purchases[3]	$ 2,747	$ 766	$ 3,513	$ -	$ 344,505
Sales	-	-	-	-	(435)
Year-ended December 31, 2016					
Supplemental information—par value of transactions:					
Purchases[3]	$ 191,231	$ 13,868	$ 205,099	$ -	$ 373,197
Sales	(555)	(45)	(600)	-	(203)

1 Purchases and sales may include payments and receipts related to principal, premiums, discounts, and inflation compensation adjustments to the basis of inflation-indexed securities. The amount reported as sales includes the realized gains and losses on such transactions. Purchases and sales exclude MBS TBA transactions that are settled on a net basis.

2 Realized gains (losses), net is the offset of the amount of realized gains and losses included in the reported sales amount.

3 Includes inflation compensation.

b. Foreign Currency Denominated Investments

The FRBNY conducts foreign currency operations and, on behalf of the Reserve Banks, holds the resulting foreign currency denominated investments in the SOMA.

The FRBNY holds foreign currency deposits with foreign central banks and the Bank for International Settlements and invests in foreign government debt instruments of France, Germany, the Netherlands, and Japan. These foreign government debt instruments are backed by the full faith and credit of the issuing foreign governments. In addition, the FRBNY may enter into repurchase agreements to purchase government debt securities for which the accepted collateral is the debt instruments issued by a foreign government.

At December 31, 2016 and 2015, there were no repurchase agreements outstanding and, consequently, no related foreign securities held as collateral.

Information about foreign currency denominated investments recorded at amortized cost and valued at foreign currency market exchange rates held in the SOMA at December 31, 2016 and 2015 was as follows (in millions):

	2016	2015
Euro:		
Foreign currency deposits	$ 4,205	$ 6,218
French government debt instruments	3,892	3,325
German government debt instruments	1,884	2,261
Dutch government debt instruments	1,462	-
Japanese yen:		
Foreign currency deposits	4,668	2,568
Japanese government debt instruments	3,331	5,195
Total	$19,442	$19,567

Net interest income earned on foreign currency denominated investments held in the SOMA for the years ended December 31, 2016 and 2015 was as follows (in millions):

	2016	2015
Net interest income:[1]		
Euro	$(11)	$24
Japanese yen	4	7
Total net interest income	$ (7)	$31

[1] As a result of negative interest rates in certain foreign currency denominated investments held in the SOMA, interest income on foreign currency denominated investments, net contains negative interest of $32 million and $13 million for the years ended December 31, 2016 and 2015, respectively.

Accrued interest receivable on foreign currency denominated investments, net was $79 million and $64 million as of December 31, 2016 and 2015. These amounts are reported as a component of "System Open Market Account: Accrued interest receivable" in the Combined Statements of Condition.

The remaining maturity distribution of foreign currency denominated investments at December 31, 2016 and 2015 was as follows (in millions):

	Within 15 days	16 days to 90 days	91 days to 1 year	Over 1 year to 5 years	Over 5 years to 10 years	Total
December 31, 2016:						
Euro	$4,253	$ 334	$1,170	$3,174	$2,512	$11,443
Japanese yen	4,840	342	1,341	1,476	-	7,999
Total	$9,093	$ 676	$2,511	$4,650	$2,512	$19,442
December 31, 2015:						
Euro	$2,136	$4,440	$1,051	$3,824	$ 353	$11,804
Japanese yen	2,734	350	1,604	3,075	-	7,763
Total	$4,870	$4,790	$2,655	$6,899	$ 353	$19,567

There were no foreign exchange contracts related to foreign currency operations outstanding as of December 31, 2016.

The FRBNY enters into commitments to buy foreign government debt instruments and records the related securities on a settlement-date basis. As of December 31, 2016, there were no outstanding commitments to purchase foreign government debt instruments. During 2016, there were purchases and maturities of for-

eign government debt instruments of $3,524 million, and $3,767 million, respectively. There were no sales of foreign government debt instruments in 2016.

In connection with its foreign currency activities, the FRBNY may enter into transactions that are subject to varying degrees of off-balance-sheet market risk and counterparty credit risk that result from their future settlement. The FRBNY controls these risks by obtaining credit approvals, establishing transaction limits, receiving collateral in some cases, and performing monitoring procedures.

Foreign currency working balances held and foreign exchange contracts executed by the Reserve Banks to facilitate international payments and currency transactions made on behalf of foreign central banks and U.S. official institution customers were immaterial as of December 31, 2016 and 2015.

c. Central Bank Liquidity Swaps

U.S. Dollar Liquidity Swaps

The total foreign currency held under U.S. dollar liquidity swaps held in the SOMA at December 31, 2016 and 2015 was $5,563 million and $997 million, respectively.

The remaining maturity distribution of U.S. dollar liquidity swaps that were allocated to the Reserve Banks at December 31, 2016 and 2015 was as follows (in millions):

	2016	2015
	Within 15 days	Within 15 days
Euro	$4,340	$925
Japanese yen	1,223	72
Total	$5,563	$997

Foreign Currency Liquidity Swaps

At December 31, 2016 and 2015, there was no balance outstanding related to foreign currency liquidity swaps.

d. Fair Value of SOMA Assets and Liabilities

The fair value amounts below are presented solely for informational purposes and are not intended to comply with the fair value disclosures required by ASC 820. Although the fair value of SOMA security holdings can be substantially greater than or less than the recorded value at any point in time, these unrealized gains or losses have no effect on the ability of the Reserve Banks, as the central bank, to meet their financial obligations and responsibilities. Because SOMA securities are recorded at amortized cost, cumulative unrealized gains (losses) are not recognized in the Combined Statements of Condition and the changes in cumulative unrealized gains (losses) are not recognized in the Combined Statements of Operations.

The fair value of the Treasury securities, GSE debt securities, federal agency and GSE MBS, and foreign government debt instruments held in the SOMA is subject to market risk, arising from movements in market variables such as interest rates and credit risk. The fair value of federal agency and GSE MBS is also affected by the expected rate of prepayments of mortgage loans underlying the securities. The fair value of foreign government debt instruments is also affected by currency risk.

Based on evaluations performed as of December 31, 2016 and 2015, there are no credit impairments of SOMA securities holdings.

The following table presents the amortized cost, fair value, and cumulative unrealized gains (losses) on the Treasury securities, GSE debt securities, and federal agency and GSE MBS held in the SOMA at December 31, 2016 and 2015 (in millions):

	2016			2015		
	Amortized cost	Fair value	Cumulative unrealized gains (losses), net	Amortized cost	Fair value	Cumulative unrealized gains (losses), net
Treasury securities:						
Notes	$ 1,647,339	$ 1,657,026	$ 9,687	$1,649,228	$1,669,395	$ 20,167
Bonds	920,083	983,680	63,597	931,448	1,006,514	75,066
Total Treasury securities	2,567,422	2,640,706	73,284	2,580,676	2,675,909	95,233
GSE debt securities	16,648	17,442	794	33,748	35,165	1,417
Federal agency and GSE MBS	1,795,003	1,787,484	(7,519)	1,800,449	1,810,256	9,807
Total domestic SOMA portfolio securities holdings	$ 4,379,073	$ 4,445,632	$ 66,559	$4,414,873	$4,521,330	$106,457
Memorandum–Commitments for:						
Purchases of Treasury securities	$ 11,679	$ 11,719	$ 40	$ -	$ -	$ -
Purchases of federal agency and GSE MBS	35,787	35,974	187	22,187	22,170	(17)
Sales of federal agency and GSE MBS	-	-	-	-	-	-

The fair value of Treasury securities and GSE debt securities was determined using pricing services that provide market consensus prices based on indicative quotes from various market participants. The fair value of federal agency and GSE MBS was determined using a pricing service that utilizes a model-based approach that considers observable inputs for similar securities.

The cost bases of repurchase agreements, reverse repurchase agreements, central bank liquidity swaps, and other investments held in the SOMA portfolio approximate fair value. Due to the short-term nature of these agreements and the defined amount that will be received upon settlement, the cost basis is estimated to approximate fair value.

At December 31, 2016 and 2015, the fair value of foreign currency denominated investments held in the SOMA was $19,510 million and $19,630 million, respectively. The fair value of foreign government debt instruments was determined using pricing services that provide market consensus prices based on indicative quotes from various market participants. The fair value of foreign currency deposits was determined by reference to market interest rates.

The following table provides additional information on the amortized cost and fair values of the federal agency and GSE MBS portfolio held in the SOMA at December 31, 2016 and 2015 (in millions):

Distribution of MBS holdings by coupon rate	2016		2015	
	Amortized cost	Fair value	Amortized cost	Fair value
Total SOMA:				
2.0%	$ 10,556	$ 10,243	$ 11,198	$ 10,993
2.5%	121,326	118,641	116,527	115,018
3.0%	693,524	676,572	554,430	543,270
3.5%	561,271	560,510	579,403	581,940
4.0%	275,650	279,877	361,149	368,576
4.5%	86,351	92,111	115,914	124,043
5.0%	36,708	39,159	48,931	52,523
5.5%	8,298	8,939	11,138	11,989
6.0%	1,155	1,253	1,542	1,666
6.5%	164	179	217	238
Total	$1,795,003	$1,787,484	$1,800,449	$1,810,256

The following table presents the realized gains (losses) and the change in the cumulative unrealized gains (losses) related to SOMA domestic securities holdings during the years ended December 31, 2016 and 2015 (in millions):

	2016		2015	
	Realized gains (losses), net[1 2]	Change in cumulative unrealized gains (losses)[3]	Realized gains (losses), net[1, 2]	Change in cumulative unrealized gains (losses)[3]
Treasury securities	$(15)	$(21,949)	$ -	$(44,819)
GSE debt securities	-	(623)	-	(1,092)
Federal agency and GSE MBS	19	(17,326)	43	(21,654)
Total	$ 4	$(39,898)	$43	$(67,565)

1 Realized losses for Treasury securities are reported in "Non-interest income (loss): System Open Market Account: Treasury Securities losses, net" in the Combined Statements of Operations.

2 Realized gains for federal agency and GSE MBS are reported in "Non-interest income (loss): System Open Market Account: Federal Agency and government-sponsored enterprise mortgage-backed securities gains, net" in the Combined Statements of Operations.

3 Because SOMA securities are recorded at amortized cost, the change in the cumulative unrealized gains (losses) is not reported in the Combined Statements of Operations.

The amount of change in cumulative unrealized gains (losses) position, net related to foreign currency denominated investments was a gain of $5 million and a loss of $33 million for the years ended December 31, 2016 and 2015, respectively.

Treasury securities, GSE debt securities, federal agency and GSE MBS, and foreign government debt instruments are classified as Level 2 within the ASC 820 hierarchy because the fair values are based on indicative quotes and other observable inputs obtained from independent pricing services. The fair value hierarchy level of SOMA financial assets is not necessarily an indication of the risk associated with those assets.

(6) Consolidated Variable Interest Entity

a. Description of Consolidated VIE

To facilitate the merger of The Bear Stearns Companies, Inc. (Bear Stearns) and JPMorgan Chase & Co. (JPMC), the FRBNY extended credit to ML in June 2008. ML is a Delaware LLC formed by the FRBNY to acquire certain assets of Bear Stearns and to manage those assets. The assets acquired by ML were valued at $29.9 billion as of March 14, 2008, the date that the FRBNY committed to the transaction, and largely consisted of federal agency and GSE MBS, non-agency residential mortgage-back securities (RMBS), commercial and residential mortgage loans, and derivatives and associated hedges.

The Bank extended a senior loan of approximately $28.8 billion and JPMC extended a subordinated loan of $1.15 billion to finance the acquisition of the assets, both of which were repaid in full plus interest in 2012. The FRBNY has continued and will continue to sell the remaining assets from the ML portfolio as market conditions warrant and if the sales represent good value for the public. In accordance with the ML agreements, proceeds from future asset sales will be distributed to the FRBNY as contingent interest after all derivative instruments in ML have been terminated and paid or sold from the portfolio.

b. Summary Information for Consolidated VIE

The classification of significant assets and liabilities of ML at December 31, 2016 and 2015 is summarized in the following table (in millions):

	2016	2015
Assets:		
Short-term investments	$1,618	$1,496
Swap contracts	28	56
Other investments	17	13
Subtotal	1,663	1,565
Cash, cash equivalents, accrued interest receivable, and other receivables	79	213
Total investments held by consolidated VIE	$1,742	$1,778
Liabilities:		
Swap contracts	$ 32	$ 21
Cash collateral on swap contracts	1	36
Total liabilities of consolidated VIE	$ 33	$ 57

The FRBNY's approximate maximum exposure to loss at December 31, 2016 and 2015 was $1,663 million and $1,565 million, respectively. These estimates incorporate potential losses associated with the investments recorded on the FRBNY's balance sheet. Additionally, information concerning the notional exposure on swap contracts is contained in the derivatives instruments section of this Note.

The net income (loss) attributable to ML for the year ended December 31, 2016 and 2015 was as follows (in millions):

	2016	2015
Interest income: Investments held by consolidated VIEs	$ 9	$ 4
Non-interest income:		
Realized portfolio holdings gains, net	13	32
Unrealized portfolio holdings (losses) gains, net	(32)	3
Non-interest income (loss): Consolidated VIEs (losses) gains, net	(19)	35
Total net interest income and non-interest (loss) income	(10)	39
Less: Professional fees	2	3
Net (loss) income attributable to consolidated VIEs	$ (12)	$ 36

i. Debt Securities

ML has investments in short-term instruments with maturities of greater than three months and less than one year when acquired. As of December 31, 2016 and 2015, ML's short-term instruments consisted of U.S. Treasury bills.

Other investments primarily consist of non-agency RMBS and commercial mortgage-backed securities (CMBS).

ii. Derivative Instruments

Derivative contracts are instruments, such as swap contracts, that derive their value from underlying assets, indexes, reference rates, or a combination of these factors. The ML portfolio is composed of derivative financial instruments included in a total return swap (TRS) agreement with JPMC. ML and JPMC entered into the TRS with reference obligations representing CDS primarily on CMBS and RMBS, with various market participants, including JPMC.

On an ongoing basis, ML pledges collateral for credit or liquidity related shortfalls. Separately, ML and JPMC engage in bilateral posting of collateral to cover the net mark-to-market (MTM) variations in the swap portfolio. ML only nets the collateral received from JPMC from the bilateral MTM posting for the reference obligations for which JPMC is the counterparty.

The values of ML's cash and cash equivalents include cash collateral associated with the TRS of $12 million and $72 million as of December 31, 2016 and 2015, respectively. In addition, ML has pledged $46 million and $52 million of U.S. Treasury bills to JPMC as of December 31, 2016 and 2015, respectively.

ML has entered into an International Swaps and Derivatives Association, Inc. master netting agreement with JPMC in connection with the TRS. This agreement provides ML with the right to liquidate securities held as collateral and to offset receivables and payables with JPMC in the event of default. This agreement also establishes the method for determining the net amount of receivables and payables that ML is entitled to receive from and required to pay to the counterparties of the swaps that underlie the TRS based upon the fair value of the relevant CDS.

For the derivative balances reported in the Combined Statements of Condition, ML offsets its asset and liability positions held with the same counterparty. In addition, ML offsets the cash collateral held with JPMC against any net liabilities of JPMC with ML under the TRS. As of December 31, 2016 and 2015, there were

no amounts subject to an enforceable master netting agreement that were not offset in the Combined Statements of Condition.

The maximum potential amount of future payments the seller of credit protection could be required to make to the buyer of credit protection under a CDS is equal to the notional amount of the contract. For ML, the maximum potential payout (notional) associated with credit protection sold was $143 million and $162 million as of December 31, 2016 and 2015, respectively, and the maximum potential recovery (notional) associated with credit protection bought was $124 million and $195 million as of December 31, 2016 and 2015, respectively. The change in notional amounts is representative of the volume of activity for the year ended December 31, 2016.

There were 98 and 128 CDS contracts outstanding in the ML portfolio as of December 31, 2016 and 2015, respectively. Substantially all of the CDS held by ML had remaining maturities of greater than five years and reference obligations with non-investment grade (BB+ or lower) credit ratings as of December 31, 2016 and 2015.

c. Fair Value Measurement

ML has adopted ASC 820 and ASC 825 and has elected the fair value option for all holdings. The accounting and classification of these investments appropriately reflect ML's and the FRBNY's intent with respect to the purpose of the investments and most closely reflect the amount of the assets available to liquidate the entity's obligations.

Determination of Fair Value

ML values its investments and cash equivalents on the basis of last available bid prices or current market quotations provided by dealers or pricing services selected under the supervision of the FRBNY's designated investment manager. To determine the value of a particular investment, pricing services may use certain information with respect to market transactions in such investments or comparable investments, various relationships observed in the market between investments, quotations from dealers, and pricing metrics and calculated yield measures based on valuation methodologies commonly employed in the market for such investments. The fair value of swap contracts is provided by JPMC as calculation agent and is reviewed by the investment manager.

Market quotations may not represent fair value in certain instances in which the investment manager and the VIE believe that facts and circumstances applicable to an issuer, a seller, a purchaser, or the market for a particular investment cause such market quotations to not reflect the fair value of an investment. In such cases or when market quotations are unavailable, the investment manager applies proprietary valuation models that use collateral performance scenarios and pricing metrics derived from the reported performance of investments with similar characteristics as well as available market data to determine fair value.

Due to the uncertainty inherent in determining the fair value of investments that do not have a readily available fair value, the fair value of these investments may differ from the values that may ultimately be realized and paid.

The following tables present the financial instruments recorded in the VIE at fair value as of December 31, 2016 by ASC 820 hierarchy (in millions):

	Level 1[1]	Level 2[1]	Level 3[1]	Netting[2]	Total fair value
Assets:					
Short-term investments	$1,618	$ -	$ -	$ -	$1,618
Cash equivalents [3]	79	-	-	-	79
Swap contracts	-	-	72	(44)	28
Other investments	-	11	6	-	17
Total assets	$1,697	$11	$78	$(44)	$1,742
Liabilities:					
Swap contracts	$ -	$ -	$64	$(32)	$ 32

[1] There were no transfers between Level 1 and Level 2 and no material transfers between Levels 2 and 3 during the year ended December 31, 2016

[2] Derivative receivables and payables and the related cash collateral received and paid are shown net when a master netting agreement exists.

[3] Cash equivalents consist primarily of money market funds.

The following tables present the financial instruments recorded in the VIE at fair value as of December 31, 2015 by ASC 820 hierarchy (in millions):

	Level 1[1]	Level 2[1]	Level 3[1]	Netting[2]	Total fair value
Assets:					
Short-term investments	$1,496	$ -	$ -	$ -	$1,496
Cash equivalents [3]	213	-	-	-	213
Swap contracts	-	-	130	(74)	56
Other investments	-	12	1	-	13
Total assets	$1,709	$12	$131	$(74)	$1,778
Liabilities:					
Swap contracts	$ -	$ -	$ 59	$(38)	$ 21

[1] There were no transfers between Level 1 and Level 2 and no material transfers between Levels 2 and 3 during the year ended December 31, 2015.

[2] Derivative receivables and payables and the related cash collateral received and paid are shown net when a master netting agreement exists.

[3] Cash equivalents consist primarily of money market funds.

As of December 31, 2016 and 2015, both the Level 3 assets and liabilities held in the Combined Statements of Condition as “Investments held by consolidated variable interest entity” and “Liabilities of consolidated variable interest entity,” respectively, and the associated unrealized gains and losses related to those assets and liabilities are immaterial.

(7) Bank Premises, Equipment, and Software

Bank premises and equipment at December 31, 2016 and 2015 were as follows (in millions):

	2016	2015
Bank premises and equipment:		
Land and land improvements	$ 405	$ 404
Buildings	2,861	2,811
Building machinery and equipment	609	578
Construction in progress	37	39
Furniture and equipment	1,053	1,048
Subtotal	4,965	4,880
Accumulated depreciation	(2,401)	(2,277)
Bank premises and equipment, net	$ 2,564	$ 2,603
Depreciation expense, for the years ended December 31	$ 220	$ 217

Bank premises and equipment at December 31, 2016 and 2015 included the following amounts for capitalized leases (in millions):

	2016	2015
Leased premises and equipment under capital leases	$ 31	$ 25
Accumulated depreciation	(24)	(21)
Leased premises and equipment under capital leases, net	$ 7	$ 4
Depreciation expense related to leased premises and equipment under capital leases, for the years ended December 31	$ 3	$ 4

The Reserve Banks lease space to outside tenants with remaining lease terms ranging from 1 to 11 years. Rental income from such leases was $40 million and $39 million for the years ended December 31, 2016 and 2015, respectively, and is reported as a component of "Non-interest income: Other" in the Combined Statements of Operations. Future minimum lease payments that the Reserve Banks will receive under non-cancelable lease agreements in existence at December 31, 2016, are as follows (in millions):

2017	$ 34
2018	30
2019	27
2020	24
2021	19
Thereafter	54
Total	$188

The Reserve Banks had capitalized software assets, net of amortization, of $440 million and $416 million at December 31, 2016 and 2015, respectively. Amortization expense was $110 million and $95 million for the years ended December 31, 2016 and 2015, respectively. Capitalized software assets are reported as a component of "Other assets" in the Combined Statements of Condition and the related amortization is reported as a component of "Operating expenses: Other" in the Combined Statements of Operations.

(8) Commitments and Contingencies

In conducting its operations, the Reserve Banks enter into contractual commitments, normally with fixed expiration dates or termination provisions, at specific rates and for specific purposes.

At December 31, 2016, the Reserve Banks were obligated under non-cancelable leases for premises and equipment with remaining terms ranging from 1 to approximately 13 years. These leases provide for increased lease payments based upon increases in real estate taxes, operating costs, or selected price indexes.

Rental expense under operating leases for certain operating facilities, warehouses, and data processing and office equipment (including taxes, insurance, and maintenance when included in rent), net of sublease rentals, was $14 million and $15 million for the years ended December 31, 2016 and 2015, respectively.

Future minimum lease payments under non-cancelable operating leases , net of sublease rentals, with remaining terms of one year or more, at December 31, 2016, are as follows (in millions):

	Operating Leases
2017	$ 5
2018	5
2019	5
2020	3
2021	3
Thereafter	11
Future minimum lease payments	$32

At December 31, 2016, the Reserve Banks, had unrecorded unconditional purchase commitments and long-term obligations extending through the year 2022 with a remaining fixed commitment of $126 million. Purchases of $26 million and $31 million were made against these commitments during 2016 and 2015, respectively. These commitments are for maintenance of currency processing machines and have variable and/or fixed components. The variable portion of the commitments is for additional services above the fixed contractual service limits. The fixed payments for the next five years under these commitments are as follows (in millions):

2017	$ -
2018	24
2019	25
2020	25
2021	26

The Reserve Banks are involved in certain legal actions and claims arising in the ordinary course of business. Although it is difficult to predict the ultimate outcome of these actions, in management's opinion, based on discussions with counsel, the legal actions and claims will be resolved without material adverse effect on the financial position or results of operations of the Reserve Banks.

(9) Retirement and Thrift Plans

Retirement Plans

The Reserve Banks currently offer three defined benefit retirement plans to its employees, based on length of service and level of compensation. Substantially all of the employees of the Reserve Banks, Board of Governors, and Office of Employee Benefits of the Federal Reserve System (OEB) participate in the Retirement Plan for Employees of the Federal Reserve System (System Plan).[1] Under the

[1] The OEB was established by the System to administer selected System benefit plans.

Dodd-Frank Act, newly hired Bureau employees are eligible to participate in the System Plan and, during the years ended December 31, 2016 and 2015, certain costs associated with the System Plan were reimbursed by the Bureau. In addition, employees at certain compensation levels participate in the Benefit Equalization Retirement Plan (BEP) and certain Reserve Bank officers participate in the Supplemental Retirement Plan for Select Officers of the Federal Reserve Banks (SERP).

The FRBNY on behalf of the System, recognizes the net asset or net liability and costs associated with the System Plan in its consolidated financial statements. The net costs related to the System Plan, as well as the costs related to the BEP and SERP, are reported as a component of “Operating expenses: Net periodic pension expense” in its Consolidated Statements of Operations. Accrued pension benefit costs are reported as a component of “Prepaid pension benefit costs” if the funded status is a net asset or “Accrued benefit costs” if the funded status is a net liability in the Combined Statements of Condition.

Following is a reconciliation of the beginning and ending balances of the System Plan benefit obligation for the years ended December 31, 2016 and 2015 (in millions):

	2016	2015
Estimated actuarial present value of projected benefit obligation at January 1	$13,270	$13,641
Service cost-benefits earned during the period	475	487
Interest cost on projected benefit obligation	604	571
Actuarial loss (gain)	698	(1,044)
Contributions by plan participants	3	5
Special termination benefits	4	6
Benefits paid	(412)	(396)
Estimated actuarial present value of projected benefit obligation at December 31	$14,642	$13,270

In October 2014, the Society of Actuaries released new mortality tables (RP-2014) and in 2016, 2015, and 2014 new mortality projection scales (MP-2016, MP-2015, and MP-2014, respectively) for use in the valuation of benefits liabilities. The System analyzed each of these updates to the mortality tables and compared them to the System’s actual mortality experience. Based on these analyses, the System adopted the RP-2014 mortality tables and MP-2014 mortality projection scales, adjusted for the System’s recent mortality experience and the retirement rates of System retirees in 2015. The adjusted tables and scales resulted in an estimated net decrease of the System Plan projected benefit obligation of approximately $471 million in 2015. The System’s most recent mortality and retirement experience was also reviewed and no adjustments were made in 2016.

Following is a reconciliation showing the beginning and ending balance of the System Plan assets, the funded status, and the accrued pension benefit costs for the years ended December 31, 2016 and 2015 (in millions):

	2016	2015
Estimated plan assets at January 1 (of which $12,477 and $12,608 is measured at fair value as of January 1, 2016 and 2015, respectively)	$12,500	$12,669
Actual return on plan assets	992	(258)
Contributions by the employer	616	480
Contributions by plan participants	3	5
Benefits paid	(412)	(396)
Estimated plan assets at December 31 (of which $13,671 and $12,477 is measured at fair value as of December 31, 2016 and 2015, respectively)	$13,699	$12,500
Funded status and accrued pension benefit costs	$ (943)	$ (770)
Amounts included in accumulated other comprehensive loss are shown below:		
Prior service cost	$ (170)	$ (263)
Net actuarial loss	(3,674)	(3,333)
Total accumulated other comprehensive loss	$ (3,844)	$ (3,596)

The FRBNY on behalf of the System, funded $580 million and $480 million during the years ended December 31, 2016 and 2015, respectively. The Bureau is required by the Dodd-Frank Act to fund the System plan for each Bureau employee based on an established formula. During the year ended December 31, 2016, the FRBNY received contributions from the Bureau of $36 million, which were related to service costs for the years ended December 31, 2016 and 2015.

The accumulated benefit obligation for the System Plan, which differs from the estimated actuarial present value of projected benefit obligation because it is based on current rather than future compensation levels, was $12,869 million and $11,727 million at December 31, 2016 and 2015, respectively.

The weighted-average assumptions used in developing the accumulated pension benefit obligation for the System Plan as of December 31 were as follows:

	2016	2015
Discount rate	4.15%	4.42%
Rate of compensation increase	4.00%	4.00%

Net periodic benefit expenses for the years ended December 31, 2016 and 2015 were actuarially determined using a January 1 measurement date. The weighted-average assumptions used in developing net periodic benefit expenses for the System Plan for the years were as follows:

	2016	2015
Discount rate	4.42%	4.05%
Expected asset return	6.75%	6.75%
Rate of compensation increase	4.00%	4.00%

Discount rates reflect yields available on high-quality corporate bonds that would generate the cash flows necessary to pay the System Plan's benefits when due. The expected long-term rate of return on assets is an estimate that is based on a combination of factors, including the System Plan's asset allocation strategy and historical returns; surveys of expected rates of return for other entities' plans and for various asset classes; a projected return for equities and fixed income investments

based on real interest rates, inflation expectations, and equity risk premiums; and surveys of expected returns in equity and fixed income markets.

The components of net periodic pension benefit expense (credit) for the System Plan for the years ended December 31, 2016 and 2015 are shown below (in millions):

	2016	2015
Service cost - benefits earned during the period	$ 475	$ 487
Interest cost on projected benefit obligation	604	571
Amortization of prior service cost	93	93
Amortization of net loss	211	223
Expected return on plan assets	(847)	(857)
Net periodic pension benefit expense	536	517
Special termination benefits	4	6
Bureau of Consumer Financial Protection contributions	(36)	-
Total periodic pension benefit expense	$ 504	$ 523

Estimated amounts that will be amortized from accumulated other comprehensive loss into net periodic pension benefit expense in 2017 are shown below (in millions):

Prior service cost	$ 88
Net actuarial loss	217
Total	$305

The recognition of special termination benefits is primarily the result of enhanced retirement benefits provided to employees during the restructuring described in Note 12. Following is a summary of expected benefit payments, excluding enhanced retirement benefits (in millions):

2017	$ 468
2018	503
2019	536
2020	571
2021	607
2022–2026	3,589
Total	$6,274

The System's Committee on Plan Administration is responsible for oversight of the operations of the Retirement Plan, which includes the Retirement Plan trust and for determining the amounts necessary to maintain the Retirement Plan on an actuarially sound basis and the amounts that employers must contribute to pay the expenses of OEB and the Retirement Plan.

The System's Committee on Investment Performance (CIP) is responsible for establishing investment policies, selecting investment managers, and monitoring the investment managers' compliance with its policies. At December 31, 2016, the System Plan's assets were held in 20 investment vehicles: 3 actively-managed long-duration fixed income portfolios, a passively-managed long-duration fixed income portfolio, an indexed U.S. equity fund, an indexed non-U.S. developed-markets equity fund, an indexed emerging-markets equity fund, 4 private equity limited partnerships, a private equity separate account, 3 core real estate funds, 4 real estate limited partnerships, and a money market fund.

The diversification of the System Plan's investments is designed to limit concentration of risk and the risk of loss related to an individual asset class. The three actively-managed long-duration fixed income portfolios are separate accounts benchmarked to a custom benchmark of 55 percent Barclays Long Credit Index and 45 percent Citigroup 15+ years U.S. Treasury STRIPS Index. This custom benchmark was selected as a proxy to match the liabilities of the Plan and the guidelines for these portfolios are designed to limit portfolio deviations from the benchmark. The passively-managed long-duration fixed-income portfolio is invested in 2 commingled funds and is benchmarked to 55 percent Barclays Long Credit Index and 45 percent Barclays 20+ STRIPS Index. The indexed U.S. equity fund is intended to track the overall U.S. equity market across market capitalizations and is benchmarked to the CRSP U.S. Total Market Index. The indexed non-U.S. developed-markets equity fund is intended to track the Morgan Stanley Capital International (MSCI) World ex-US Investible Markets Index (IMI), which includes stocks from 23 markets deemed by MSCI to be "developed markets." The indexed emerging-markets equity fund is intended to track the MSCI Emerging Markets IMI Index, which includes stocks from 21 markets deemed by MSCI to be "emerging markets." The 3 indexed equity funds include stocks from across the market capitalization spectrum (i.e., large-, mid- and small-cap stocks). The 4 private equity limited partnership invest globally across various private equity strategies and the private equity separate account invests in various private equity investments globally across various strategies. The private equity separate account invests in various private equity funds (both primary and secondary interest) and co-investment opportunities globally in private companies and targets returns in excess of public markets over a complete market cycle. The 3 core real estate funds invest in high quality, well leased, low leverage commercial real estate throughout the U.S. The 4 real estate limited partnership invests in non-core U.S. and international commercial real estate including development and repositioning of assets. Finally, the money market fund, which invests in short term Treasury and agency debt and repurchase agreements backed by Treasury and agency debt, is the repository for cash balances and adheres to a constant dollar methodology.

Permitted and prohibited investments, including the use of derivatives, are defined in either the trust agreement (for the passively-managed long-duration fixed income portfolio) or the investment guidelines (for the remaining investments). The CIP reviews the trust agreement and approves all investment guidelines as part of the selection of each investment to ensure that they are consistent with the CIP's investment objectives for the System Plan's assets.

The System Plan's policy weight and actual asset allocations at December 31, 2016 and 2015 by asset category, are as follows:

	2016 Policy weight	Actual asset allocations	
		2016	2015
Fixed income	50.0%	48.9%	48.6%
U.S. equities	24.0%	24.6%	25.4%
International equities	16.0%	16.3%	17.8%
Emerging markets equities	4.6%	4.7%	4.5%
Private equity	2.7%	2.4%	1.3%
Real estate	2.7%	2.6%	1.7%
Cash	0.0%	0.5%	0.7%
Total	100.0%	100.0%	100.0%

Employer contributions to the System Plan may be determined using different assumptions than those required for financial reporting. The System Plan's anticipated funding level for 2017 is $720 million. In 2017, the FRBNY plans to make monthly contributions of $60 million and will reevaluate the monthly contributions upon completion of the 2017 actuarial valuation. The Reserve Banks' projected benefit obligation, funded status, and net pension expenses for the BEP and the SERP at December 31, 2016 and 2015, and for the years then ended, were immaterial.

Determination of Fair Value

The System Plan's publicly available investments are valued on the basis of the last available bid prices or current market quotations provided by dealers, or pricing services. To determine the value of a particular investment, pricing services may use information on transactions in such investments, quotations from dealers, pricing metrics, market transactions in comparable investments, relationships observed in the market between investments, and calculated yield measures based on valuation methodologies commonly employed in the market for such investments.

Collective trust funds are valued using the net asset value, calculated daily, based on the fair value of the underlying investments. Private equity and certain real estate investments are valued using the net asset value, as a practical expedient, which is based on the fair value of the underlying investments. The net asset value is adjusted for contributions, distributions, and both realized and unrealized gains and losses incurred during the period. The realized and unrealized gains and losses are based on reported valuation changes.

Because of the uncertainty inherent in determining the fair value of investments that do not have a readily available fair value, the fair value of these investments may differ significantly from the values that would have been reported if a readily available fair value had existed for these investments and may differ materially from the values that may ultimately be realized.

The following tables present the financial instruments recorded at fair value as of December 31, 2016 and 2015 by ASC 820 hierarchy (in millions)

Description	2016			
	Level 1	Level 2	Level 3	Total [1]
Short-term investments	$ 101	$ -	$ -	$ 101
Treasury and Federal agency securities	40	2,232	-	2,272
Corporate bonds	-	2,469	-	2,469
Other fixed income securities	-	353	-	353
Collective trusts	7,749	-	-	7,749
Investments measured at net asset value[2]	-	-	-	724
Total investments at fair value[3]	$7,890	$5,054	$ -	$13,668

1 There were no transfers between Level 1 and Level 2 and no material transfers between Level 2 and 3 during the year ended December 31, 2016.

2 Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been categorized in the fair value hierarchy.

3 In addition to the total investments at fair value, the System Plan holds future margin receivable of $1 million and future margin payables of $2 million at December 31, 2016.

Description	2015			
	Level 1	Level 2	Level 3	Total [1]
Short-term investments[2]	$ 152	$ -	$-	$ 152
Treasury and Federal agency securities	64	2,182	-	2,246
Corporate bonds	-	2,130	-	2,130
Other fixed income securities	-	373	-	373
Collective trusts	7,205	-	-	7,205
Investments measured at net asset value[2,3]	-	-	-	371
Total investments at fair value[4]	$7,421	$4,685	$-	$12,477

1 There were no transfers between Level 1 and Level 2 and no material transfers between Level 2 and 3 during the year ended December 31, 2015.

2 Certain short-term investments, collective trusts, private equity, and real estate investments have been reclassified to conform with current year presentation, in accordance with the adoption of ASU 2015-07 and ASU 2015-10.

3 Certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been categorized in the fair value hierarchy. Commingled funds have been renamed to collective trusts for current year presentation.

4 In addition to the total investments at fair value, the System Plan holds future margin receivable of $1 million at December 31, 2015.

The System Plan enters into futures contracts, traded on regulated exchanges, to manage certain risks and to maintain appropriate market exposure in meeting the investment objectives of the System Plan. The System Plan bears the market risk that arises from any unfavorable changes in the value of the securities or indexes underlying these futures contracts. The use of futures contracts involves, to varying degrees, elements of market risk in excess of the amount recorded in the Combined Statements of Condition. The guidelines established by the CIP further reduce risk by limiting the net futures positions, for most fund managers, to 15 percent of the market value of the advisor's portfolio.

At December 31, 2016 and 2015, a portion of short-term investments was available for futures trading. There were $7 million and $3 million of Treasury securities pledged as collateral for the years ended December 31, 2016 and 2015, respectively.

Thrift Plan

Employees of the Reserve Banks participate in the defined contribution Thrift Plan for Employees of the Federal Reserve System (Thrift Plan). The Reserve Banks match 100 percent of the first 6 percent of employee contributions from the date of hire and provides an automatic employer contribution of 1 percent of eligible pay. The Reserve Banks' Thrift Plan contributions totaled $129 million and $121 million for the years ended December 31, 2016 and 2015, respectively, and are reported as a component of "Operating expenses: Salaries and benefits" in the Combined Statements of Operations.

(10) Postretirement Benefits Other Than Retirement Plans and Postemployment Benefits

Postretirement Benefits Other Than Retirement Plans

In addition to the Reserve Banks' retirement plans, employees who have met certain age and length-of-service requirements are eligible for both medical and life insurance benefits during retirement.

The Reserve Banks and plan participants fund benefits payable under the medical and life insurance plans as due and the plans have no assets.

Following is a reconciliation of the beginning and ending balances of the benefit obligation for the years ended December 31, 2016 and 2015 (in millions):

	2016	2015
Accumulated postretirement benefit obligation at January 1	$1,744	$1,769
Service cost benefits earned during the period	72	76
Interest cost on accumulated benefit obligation	75	72
Net actuarial loss (gain)	86	(105)
Curtailment (gain)	(8)	-
Special termination benefits	1	-
Contributions by plan participants	27	23
Benefits paid	(104)	(93)
Medicare Part D subsidies	5	5
Plan amendments	(147)	(3)
Accumulated postretirement benefit obligation at December 31	$1,751	$1,744

At December 31, 2016 and 2015, the weighted-average discount rate assumptions used in developing the postretirement benefit obligation were 4.07 percent and 4.31 percent, respectively.

Discount rates reflect yields available on high-quality corporate bonds that would generate the cash flows necessary to pay the plan's benefits when due. The System Plan discount rate assumption setting convention uses an unrounded rate.

Following is a reconciliation of the beginning and ending balance of the plan assets, and the unfunded postretirement benefit obligation and accrued postretirement benefit costs for the years ended December 31, 2016 and 2015 (in millions):

	2016	2015
Fair value of plan assets at January 1	$ -	$ -
Contributions by the employer	72	65
Contributions by plan participants	27	23
Benefits paid	(104)	(93)
Medicare Part D subsidies	5	5
Fair value of plan assets at December 31	$ -	$ -
Unfunded obligation and accrued postretirement benefit cost	$1,751	$1,744
Amounts included in accumulated other comprehensive loss are shown below:		
Prior service cost	$ 158	$ 20
Net actuarial (loss)	(300)	(227)
Deferred curtailment gain	1	1
Total accumulated other comprehensive loss	$ (141)	$ (206)

Accrued postretirement benefit costs are reported as a component of "Accrued benefit costs" in the Combined Statements of Condition.

For measurement purposes, the assumed health-care cost trend rates at December 31, 2016 and 2015 are provided in the table below. The current health-care cost trend rate for next year is expected to decline ratably each year until achieving the ultimate trend rate in 2022:

	2016	2015
Health-care cost trend rate assumed for next year	6.60%	7.00%
Rate to which the cost trend rate is assumed to decline (the ultimate trend rate)	4.75%	4.75%
Year that the rate reaches the ultimate trend rate	2022	2022

Assumed health-care cost trend rates have a significant effect on the amounts reported for health-care plans. A one percentage point change in assumed health-care cost trend rates would have the following effects for the year ended December 31, 2016 (in millions):

	One percentage point increase	One percentage point decrease
Effect on aggregate of service and interest cost components of net periodic postretirement benefit costs	$ 27	$ (22)
Effect on accumulated postretirement benefit obligation	234	(199)

The following is a summary of the components of net periodic postretirement benefit expense for the years ended December 31, 2016 and 2015 (in millions):

	2016	2015
Service cost-benefits earned during the period	$ 72	$ 76
Interest cost on accumulated benefit obligation	75	72
Amortization of prior service cost	(9)	(10)
Amortization of net actuarial loss	5	24
Total periodic expense	143	162
Special termination benefits loss	1	-
Net periodic postretirement benefit expense	$144	$162

Estimated amounts that will be amortized from accumulated other comprehensive loss into net periodic postretirement benefit expense in 2017 are shown below:

Prior service credit	$(33)
Net actuarial loss	17
Total	$(16)

Net postretirement benefit costs are actuarially determined using a January 1 measurement date. At January 1, 2016 and 2015, the weighted-average discount rate assumptions used to determine net periodic postretirement benefit costs were 4.31 percent and 3.96 percent, respectively.

Net periodic postretirement benefit expense is reported as a component of "Operating expenses: Salaries and benefits" in the Combined Statements of Operations.

A curtailment gain was recorded in 2016 related to the employees who transferred employment from the Federal Reserve Bank of Minneapolis to the Federal Reserve Bank of Atlanta. This curtailment gain is recorded to accumulated other comprehensive loss and offsets previously recorded actuarial losses.

The Medicare Prescription Drug, Improvement and Modernization Act of 2003 established a prescription drug benefit under Medicare (Medicare Part D) and a federal subsidy to sponsors of retiree health-care benefit plans that provide benefits that are at least actuarially equivalent to Medicare Part D. The benefits provided under the Bank's plan to certain participants are at least actuarially equivalent to the Medicare Part D prescription drug benefit. The estimated effects of the subsidy are reflected in actuarial (gain)/loss in the accumulated postretirement benefit obligation and net periodic postretirement benefit expense.

During 2016, the Reserve Banks adopted an amendment to their health benefits program that added a Medicare Advantage and Prescription Drug (MAPD) plan to the program effective January 1, 2017. The MAPD plan is a fully insured product that combines into one integrated benefit Medicare and Medicare Supplement coverages, as well as prescription drug coverage. The plan amendment resulted in a decrease in the Bank's accumulated postretirement benefit obligation in the amount of $155 million as of December 31, 2016, with an equivalent change in the prior service component of accumulated other comprehensive income.

Federal Medicare Part D subsidy receipts were $5 million and $4 million in the years ended December 31, 2016 and 2015, respectively. Expected receipts in 2017, related to benefits paid in the years ended December 31, 2016 and 2015, are $2 million and $3 million, respectively.

Following is a summary of expected postretirement benefit payments (in millions):

	Without subsidy	With subsidy
2017	$ 74	$ 72
2018	81	80
2019	86	84
2020	90	88
2021	94	92
2022 - 2026	540	529
Total	$965	$945

Postemployment Benefits

The Reserve Banks offer benefits to former qualifying or inactive employees. Postemployment benefit costs are actuarially determined using a December 31 measurement date and include the cost of providing disability; medical, dental, and vision insurance; and survivor income benefits. The accrued postemployment benefit costs recognized by the Reserve Banks at December 31, 2016 and 2015 were $136 million and $148 million, respectively. This cost is included as a component of "Accrued benefit costs" in the Combined Statements of Condition. Net periodic postemployment benefit expense (credit) included in 2016 and 2015 operating expenses were $9 million and $12 million, respectively, and are recorded as a component of "Operating expenses: Salaries and benefits" in the Combined Statements of Operations.

(11) Accumulated Other Comprehensive Income and Other Comprehensive Income

Following is a reconciliation of beginning and ending balances of accumulated other comprehensive income (loss) as of December 31, 2016 and 2015 (in millions):

	2016			2015		
	Amount related to defined benefit retirement plan	Amount related to postretirement benefits other than retirement plans	Total accumulated other comprehensive income (loss)	Amount related to defined benefit retirement plan	Amount related to postretirement benefits other than retirement plans	Total accumulated other comprehensive income (loss)
Balance at January 1	$(3,596)	$(206)	$(3,802)	$(3,840)	$(328)	$(4,168)
Change in funded status of benefit plans:						
Prior service costs arising during the year	-	147	147	-	3	3
Amortization of prior service cost	93[1]	(9)[2]	84	93[1]	(10)[2]	83
Change in prior service costs related to benefit plans	93	138	231	93	(7)	86
Net actuarial gain (loss) arising during the year	(552)	(86)	(638)	(72)	105	33
Curtailment effect actuarial gain	-	8	8	-	-	-
Amortization of net actuarial (loss) gain	211[1]	5[2]	216	223[1]	24[2]	247
Change in actuarial (losses) gains related to benefit plans	(341)	(73)	(414)	151	129	280
Change in funded status of benefit plans—other comprehensive (loss) income	(248)	65	(183)	244	122	366
Balance at December 31	$(3,844)	$(141)	$(3,985)	$(3,596)	$(206)	$(3,802)

[1] Reclassification is reported as a component of "Operating expenses: Net periodic pension expense" in the Combined Statements of Operations.

[2] Reclassification is reported as a component of "Operating expenses: Salaries and benefits" in the Combined Statements of Operations.

Additional detail regarding the classification of accumulated other comprehensive loss is included in Notes 9 and 10.

(12) Business Restructuring Charges

In 2014, the Treasury announced a plan to consolidate the number of Reserve Banks providing fiscal agent services to the Treasury from 10 to 4. The new infrastructure will involve consolidation of substantially all operations to the FRBC, the FRBKC, the FRBNY, and the FRBSL.

Following is a summary of financial information related to the restructuring plans (in millions):

	2014 and prior restructuring plans	Total
Information related to restructuring plans as of December 31, 2016:		
Total expected costs related to restructuring activity	$ 19	$19
Estimated future costs related to restructuring activity	1	1
Expected completion date	2020	
Reconciliation of liability balances:		
Balance at December 31, 2014	$ 16	$16
Employee separation costs	3	3
Other costs	2	2
Adjustments	(3)	(3)
Payments	(2)	(2)
Balance at December 31, 2015	$ 16	$16
Employee separation costs	1	1
Other costs	1	1
Adjustments	(3)	(3)
Payments	(3)	(3)
Balance at December 31, 2016	$ 12	$12

Employee separation costs are primarily severance costs for identified staff reductions associated with the announced restructuring plans. Separation costs that are provided under terms of ongoing benefit arrangements are recorded based on the accumulated benefit earned by the employee. Separation costs that are provided under the terms of one-time benefit arrangements are generally measured based on the expected benefit as of the termination date and recorded ratably over the period to termination. Restructuring costs related to employee separations are reported as a component of "Operating expenses: Salaries and benefits" in the Combined Statements of Operations.

Other costs include retention pay and are shown as a component of "Operating Expenses: Salaries and benefits" in the Combined Statements of Operations.

Adjustments to the accrued liability are primarily due to changes of the appropriate expense category in the Combined Statements of Operations.

Costs associated with enhanced pension benefits for all Reserve Banks are recorded on the books of the as discussed in Note 9. Costs associated with enhanced postretirement benefits are disclosed in Note 10.

(13) Distribution of Comprehensive Income

The following table presents the distribution of the Bank's comprehensive income for the years ended December 31, 2016 and 2015 (in millions):

	2016	2015
Dividends on capital stock	$ 711	$ 1,743
Transfer to (from) surplus	-	(18,572)
Earnings remittances to the Treasury:		
Interest on Federal Reserve notes	-	91,143
Required by the Federal Reserve Act	91,467	25,956
Total distribution	$92,178	$100,270

Before the enactment of the FAST Act, the amount reported as transfer to (from) surplus represented the amount necessary to equate surplus with capital paid-in, in accordance with the Board of Governor's policy. Subsequent to the enactment of the FAST Act, the amount reported as transfer to (from) surplus represents the amount necessary to maintain surplus at an amount equal to each Reserve Bank's allocated portion of the aggregate surplus limitation.

On December 28, 2015, the Reserve Banks reduced the aggregate surplus to the $10 billion limit in the FAST Act by remitting $19.3 billion to the Treasury, which is reported as a component of "Earnings remittances to the Treasury: Required by the Federal Reserve Act" in the Reserve Banks' Combined Statements of Operations, and in the table above.

(14) Subsequent Events

There were no subsequent events that require adjustments to or disclosures in the combined financial statements as of December 31, 2016. Subsequent events were evaluated through March 8, 2017, which is the date that the combined financial statements were available to be issued.

Office of Inspector General Activities

The Office of Inspector General (OIG) for the Federal Reserve Board, which is also the OIG for the Consumer Financial Protection Bureau (CFPB), operates in accordance with the Inspector General Act of 1978, as amended. The OIG conducts activities and makes recommendations to promote economy and efficiency; enhance policies and procedures; and prevent and detect waste, fraud, and abuse in Board programs and operations, including functions that the Board has delegated to the Federal Reserve Banks. Accordingly, the OIG plans and conducts audits, inspections, evaluations, investigations, and other reviews relating to Board and Board-delegated programs and operations. It also retains an independent public accounting firm to annually audit the Board's and the Federal Financial Institutions Examination Council's financial statements. In addition, the OIG keeps the Congress and the Board of Governors fully informed about serious abuses and deficiencies.

During 2016, the OIG issued 18 audit, inspection, and evaluation reports (table 1) to the Board and the CFPB and conducted a number of follow-up reviews to evaluate action taken on prior recommendations. Due to the sensitive nature of some of the material, one of the reports was only issued internally to the Board, as indicated. Regarding the OIG's investigative work related to the Board and the CFPB, 32 investigations were opened and 26 investigations were closed during the year. OIG investigative work resulted in 4 arrests, 7 indictments, and 12 convictions, as well as $2,228,116 in criminal fines and restitution. The OIG also issued its listings of major management challenges facing the Board and the CFPB. Further, the OIG issued two *Semiannual Report*s *to Congress* and performed approximately 50 reviews of legislation and regulations related to the operations of the Board, the CFPB, or the OIG.

For more information and to view OIG reports, visit the OIG's website at https://oig.federalreserve.gov. Specific details about the OIG's body of work also may be found in the OIG's *Work Plan* and *Semiannual Report*s *to Congress*.

Table 1. OIG audit, inspection, and evaluation reports issued in 2016

Report title	Month issued
The CFPB's Civil Penalty Fund Victim Identification Process Is Generally Effective but Can Be Enhanced	January
Collecting Additional Information Can Help the CFPB Manage Its Future Space-Planning Activities	February
Federal Financial Institutions Examination Council Financial Statements as of and for the Years Ended December 31, 2015 and 2014, and Independent Auditors' Reports	March
Board of Governors of the Federal Reserve System Financial Statements as of and for the Years Ended December 31, 2015 and 2014, and Independent Auditors' Reports	March
Review of the Failure of NBRS Financial	March
The Board Should Strengthen Controls to Safeguard Embargoed Sensitive Economic Information Provided to News Organizations	April
The CFPB's Civil Penalty Fund Is in Compliance With the Improper Payments Information Act of 2002, as Amended	May
Security Control Review of the Board's Active Directory Implementation (internal report)	May
The CFPB Should Continue to Enhance Controls for Its Government Travel Card Program	June
The Board's Protective Services Unit Is Operating Effectively and Efficiently	July
The CFPB's Coordination for Targeted Consumer Financial Education Aligns With Best Practices and Can Benefit From Federal Partner Insights	July
OIG Report on the CFPB's Information Security Management Practices Pursuant to Section 406 of the Cybersecurity Act of 2015	August
OIG Report on the Board's Information Security Management Practices Pursuant to Section 406 of the Cybersecurity Act of 2015	August
2016 Audit of the Board's Information Security Program	November
2016 Audit of the CFPB's Information Security Program	November
Opportunities Exist to Increase Employees' Willingness to Share Their Views About Large Financial Institution Supervision Activities	November
Evaluation of the CFPB's Implementation of the Digital Accountability and Transparency Act of 2014	November
The CFPB's Advisory Committees Help Inform Agency Activities, but Advisory Committees' Administration Should Be Enhanced	November

Government Accountability Office Reviews

The Federal Banking Agency Audit Act (Pub. L. No. 95–320) authorizes the Government Accountability Office (GAO) to audit certain aspects of Federal Reserve System operations. The Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (Dodd-Frank Act) directs the GAO to conduct additional audits with respect to these operations. In 2016, the GAO completed 17 projects that involved the Federal Reserve (table 1). Sixteen projects were ongoing as of December 31, 2016 (table 2).

Table 1. Reports completed during 2016

Report title	Report number	Month issued (2016)
Dodd-Frank Regulations: Agencies' Efforts to Analyze and Coordinate Their Recent Final Rules	GAO-17-188	December
Permanent Funding Authorities: Some Selected Entities Should Review Financial Management, Oversight, and Transparency Policies	GAO-17-59	December
Federal Reserve: Additional Actions Could Help Ensure the Achievement of Stress Test Goals	GAO-17-48	November
Financial Institutions: Penalty and Settlement Payments for Mortgage-Related Violations in Selected Cases	GAO-17-11R	November
Financial Audit: Bureau of the Fiscal Service's Fiscal Years 2016 and 2015 Schedules of Federal Debt	GAO-17-104	November
Federal Reserve: Observations on Regulation D and the Use of Reserve Requirements	GAO-17-117	October
Payment Services: Federal Reserve's Competition with Other Providers Benefits Customers, but Additional Reviews Could Increase Assurance of Cost Accuracy	GAO-16-614	September
Mortgage Servicing: Community Lenders Remain Active under New Rules, but CFPB Needs More Complete Plans for Reviewing Rules	GAO-16-448	July
Flood Insurance: Potential Barriers Cited to Increased Use of Private Insurance	GAO-16-611	July
Federal Real Property: Actions Needed to Enhance Information on and Coordination among Federal Entities with Leasing Authority	GAO-16-648	July
Management Report: Areas for Improvement in the Federal Reserve Banks' Information Systems Controls	GAO-16-601R	June
Financial Institutions: Fines, Penalties, and Forfeitures for Violations of Financial Crimes and Sanctions Requirements	GAO-16-297	April
Resolution Plans: Regulators Have Refined Their Review Processes but Could Improve Transparency and Timeliness	GAO-16-341	April
Financial Regulation: Complex and Fragmented Structure Could Be Streamlined to Improve Effectiveness	GAO-16-175	March
International Remittances: Actions Needed to Address Unreliable Official U.S. Estimate	GAO-16-60	February
International Remittances: Money Laundering Risks and Views on Enhanced Customer Verification and Recordkeeping Requirements	GAO-16-65	February
Banking: Federal Agencies' Compliance with Section 302 of the Riegle Community Development and Regulatory Improvement Act	GAO-16-213R	January

Table 2. Projects active at year-end 2016

Subject of project	Month initiated	Status
Office of Financial Research	March 2015	Open
Community Reinvestment Act	September 2015	Open
Self-directed retirement savings arrangements	November 2015	Closed 1/9/2017
Federal Reserve Bank stock purchases	February 2016	Closed 2/24/2017
Regulatory capture in financial supervision	February 2016	Open
Swaps restrictions	April 2016	Open
Impact of regulations on community banks and credit unions	April 2016	Open
Branch closings along the Southwest border	May 2016	Open
Narcotics-related money laundering	June 2016	Open
Use of minority and women-owned asset management firms in federal retirement plans and endowments	July 2016	Open
Impact of de-risking on U.S. remittances to fragile countries	September 2016	Open
Financial technology and marketplace lending	September 2016	Open
Federal Housing Administration's mutual mortgage insurance fund	September 2016	Open
Alternative payment technologies	October 2016	Open
Impact of de-risking on money transmitters	October 2016	Open
Effect of regulations on community banks and credit unions	December 2016	Open

13 Federal Reserve System Budgets

The Federal Reserve Board of Governors and the Federal Reserve Banks prepare annual budgets as part of their efforts to ensure appropriate stewardship and accountability.[1] This section presents information on the 2016 budget performance of the Board and Reserve Banks, and on their 2017 budgets, budgeting processes, and trends in expenses and employment. This section also presents information on the costs of new currency.

[1] Before 2013, information about the budgeted expenses of the Board and Reserve Banks was presented in a separate report titled *Annual Report: Budget Review*. Copies of that report are available at www.federalreserve.gov/publications/budget-review/default.htm.

Each budget covers one calendar year.

System Budgets Overview

Tables 1 and 2 summarize the Federal Reserve Board of Governors' and Federal Reserve Banks' 2016 budgeted and actual and 2017 budgeted operating expenses and employment.[2]

[2] Substantially all employees of the Board and Reserve Banks participate in the Retirement Plan for Employees of the Federal Reserve System (System Plan). Reserve Bank employees at certain compensation levels participate in the Benefit Equalization Plan, and certain Reserve Bank officers participate in the Supplemental Retirement Plan for Select Officers of the Reserve Banks. The operating expenses of the Reserve Banks presented in this section do not include expenses related to the retirement plans; however, the 2016 claims for reimbursement include the allocated portion of the pension. Additional information about these expenses can be found in section 11, "Statistical Tables"

Table 1. Total operating expenses of the Federal Reserve System, net of receipts and claims for reimbursement, 2016–17

Millions of dollars, except as noted

Item	2016 budget	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Board	709.5	688.6	-20.9	-2.9	744.6	55.9	8.1
Office of Inspector General	31.8	31.2	-0.6	-1.9	34.3	3.1	9.9
Reserve Banks[1]	4,116.6	4,032.1	-84.5	-2.1	4,312.4	280.4	7.0
Currency	737.4	700.7	-36.7	-5.0	726.0	25.3	3.6
Total System operating expenses[2]	**5,595.3**	**5,452.6**	**-142.7**	**-2.6**	**5,817.3**	**364.7**	**6.7**
Revenue from priced services	426.9	434.2	7.3	1.7	439.4	5.1	1.2
Claims for reimbursement[3]	652.6	676.9	24.3	3.7	677.3	0.5	0.1
Other income[4]	2.5	2.8	0.3	12.7	2.5	-0.3	-10.1
Revenue and claims for reimbursement[5]	1,082.0	1,113.9	32.0	3.0	1,119.2	5.3	0.5
Total System operating expenses, net of revenue and claims for reimbursement	**4,513.3**	**4,338.6**	**-174.7**	**-3.9**	**4,698.1**	**359.4**	**8.3**

Note: Here and in subsequent tables, components may not sum to totals and may not yield percentages shown because of rounding.

[1] Excludes Reserve Bank capital outlays as well as assessments by the Board of Governors for costs related to currency and the operations of the Board of Governors, Office of Inspector General, and the Consumer Financial Protection Bureau (CFPB).

[2] Includes total operating expenses of the Federal Reserve Information Technology (FRIT) support function and the System's Office of Employee Benefits (OEB), the majority of which are in the Reserve Banks.

[3] Reimbursable claims include the expenses of fiscal agency. In 2016 actual, the fiscal agency allocated portion of the pension is also included but is not included for the budget.

[4] Fees that depository institutions pay for the settlement component of the Fedwire Securities Service transactions for Treasury securities transfers.

[5] Excludes annual assessments for the supervision of large financial companies pursuant to Regulation TT, which are not recognized as revenue or used to fund Board expenses. (See section 4, "Supervision and Regulation," for more information.)

Table 2. Employment in the Federal Reserve System, 2016–17

Item	2016 budget	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Board[1]	2,789	2,789	0	0.0	2,847	58	2.1
Office of Inspector General[1]	130	130	0	0.0	132	2	1.5
Reserve Banks[2]	19,424	19,330	-94	-0.5	19,822	492	2.5
Total System employment	**22,343**	**22,249**	**-94**	**-0.4**	**22,801**	**552**	**2.5**

Note: Employment numbers presented include authorized position counts for the Board and average number of personnel (ANP) for the Reserve Banks. ANP is the average number of employees expressed in terms of full-time positions for the period and includes outside agency help.

[1] Budget represents authorized position count at the beginning of the year and actual represents authorized position count at year-end.

[2] Includes employment of the FRIT support function and the OEB.

2016 Budget Performance

In carrying out its responsibilities in 2016, the Federal Reserve System incurred $4,338.6 million in net expenses. Total System operating expenses of $5,452.6 million were offset by $1,113.9 million in revenue from priced services, claims for reimbursement, and other income. Total 2016 System operating expenses were $142.7 million, or 2.6 percent, less than the amount budgeted for 2016.

2017 Operating Expense Budget

Budgeted 2017 System operating expenses, net of revenue and reimbursements, are $359.4 million, or 8.3 percent, higher than 2016 actual expenses. The Reserve Bank budgets comprise almost three-quarters of the System budget (figure 1). Budgeted 2017 revenue from priced services and claims for reimbursements are expected to remain relatively stable in 2017.

Trends in Expenses and Employment

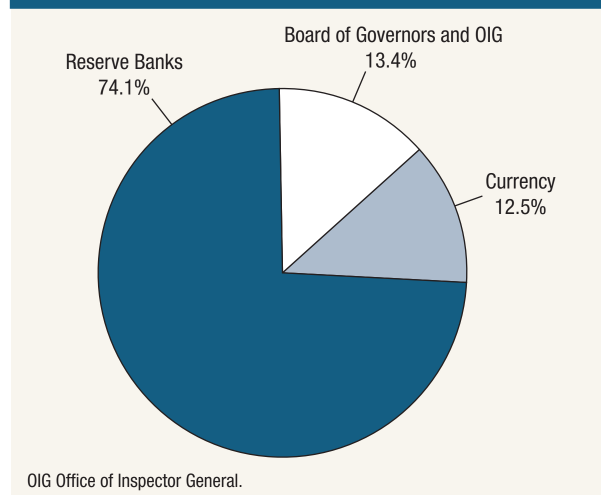
From the actual 2007 level to the budgeted 2017 amount, the total operating expenses of the Federal Reserve System have increased an average of 4.1 percent per year (figure 2). Over the same period, nondefense discretionary spending by the federal government has increased an average of 2.4 percent per year (figure 3). Federal Reserve System employment declined from 2007 through 2010 because of continued efforts to reduce the size of the System's check service and because of efficiency improvements in cash and support functions. Staffing has subsequently increased in information technology (IT) to support large application-development projects, information security efforts, end user services, and the central computing environment. Supervision resource levels were augmented to meet requirements of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act) and to support portfolio growth (figure 4).

Growth in supervision expenses over the past 10 years has been driven by additional supervisory resources needed to respond to the financial crisis, to continue to implement expanded responsibilities mandated by the Dodd-Frank Act, to build out the cybersecurity supervision program, and to support

(see "Table 10. Income and expenses of the Federal Reserve Banks, by Bank").

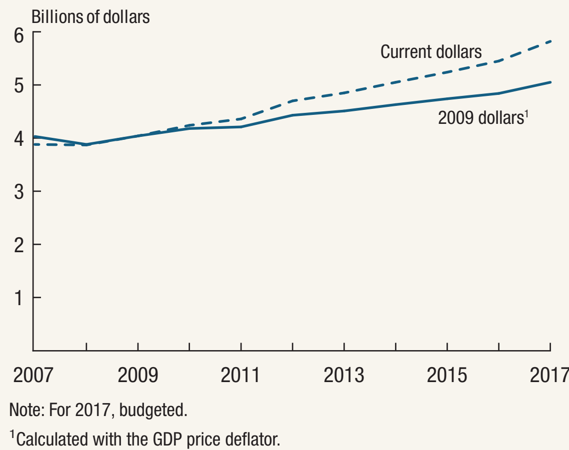
Board employees also participate in the Benefit Equalization Plan, and Board officers participate in the Pension Enhancement Plan for Officers of the Board of Governors of the Federal Reserve System (PEP). The operating expenses of the Board presented in this section include expenses related to Board participants in the Benefit Equalization Plan and PEP but do not include expenses related to the System Plan.

Figure 1. Distribution of budgeted expenses of the Federal Reserve System, 2017



OIG Office of Inspector General.

Figure 2. Total expenses of the Federal Reserve System, 2007–17



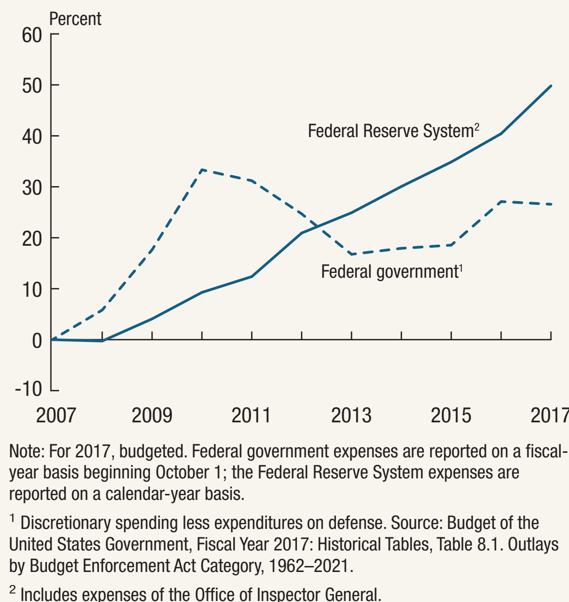
Note: For 2017, budgeted.

[1] Calculated with the GDP price deflator.

other strategic national initiatives. Expense growth in the monetary policy area during the financial crisis has been followed by a focus on enhancing financial stability monitoring and dedicating additional resources to regional economic research.

Federal Reserve Bank expenses in the cash area have increased as a result of a multiyear effort to modernize the cash-processing and inventory-tracking infrastructure. These increases have been partially offset by lower expenses because of efficiency improvements in cash operations. Treasury services expenses have increased to meet evolving needs, including the automation of the Treasury's collection and payment services, the addition of Treasury applications to the Treasury Web Application Infrastructure (TWAI), and other requested projects.[3]

Figure 3. Cumulative change in Federal Reserve System expenses and federal government expenses, 2007–17

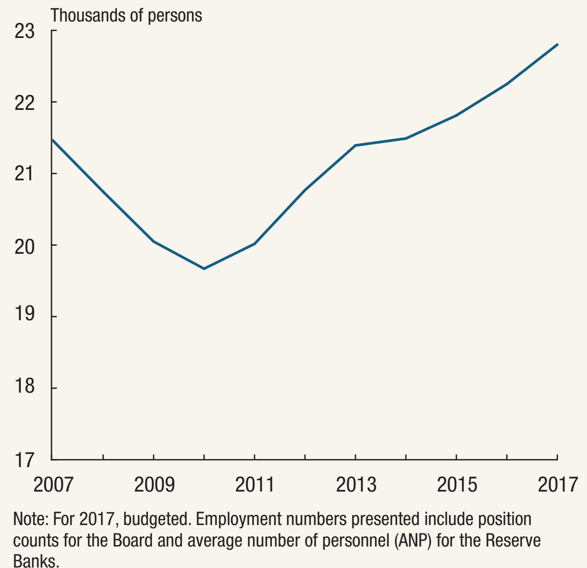


Note: For 2017, budgeted. Federal government expenses are reported on a fiscal-year basis beginning October 1; the Federal Reserve System expenses are reported on a calendar-year basis.

[1] Discretionary spending less expenditures on defense. Source: Budget of the United States Government, Fiscal Year 2017: Historical Tables, Table 8.1. Outlays by Budget Enforcement Act Category, 1962–2021.

[2] Includes expenses of the Office of Inspector General.

Figure 4. Employment in the Federal Reserve System, 2007–17



Note: For 2017, budgeted. Employment numbers presented include position counts for the Board and average number of personnel (ANP) for the Reserve Banks.

2017 Capital Budgets

The capital budgets for the Board and Reserve Banks total $72.5 million and $416.6 million, respectively.[4] As in previous years, the capital budgets in 2017 include funding for projects that support the strategic direction outlined by the Board and each Reserve Bank. These strategic goals emphasize investments that continue to improve operational efficiencies, enhance services to Bank customers, and ensure a safe and productive work environment.

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[3] TWAI is a dedicated, distributed computing environment that houses multiple Treasury applications.

In April 2014, the Treasury announced the consolidation of the fiscal agent services provided by the Federal Reserve Banks as part of its effort to increase operational efficiency and effectiveness. The Treasury anticipates long-term savings, once services are transitioned from 10 sites to four consolidated sites. As of year-end 2016, 11 of the 15 business line transitions had been completed.

[4] The capital budget reported for the Board includes single-year outlays and 2017 outlays from multiyear projects of the Board and the Office of Inspector General. The capital budget reported for the Reserve Banks includes the amounts budgeted for the Federal Reserve Information Technology (FRIT) support function and the Office of Employee Benefits (OEB).

Board of Governors Budget

Board of Governors

The Board's budget is grounded in the principles established by the *Strategic Plan 2016–19* (www.federalreserve.gov/publications/gpra/files/2016-2019-gpra-strategic-plan.pdf) and provides funding to advance the plan's goals, objectives, and initiatives.[5] The budget is structured by division, office, or special account.

The Board's budget process is as follows:

- At the start of the budget process, the chief operating officer and chief financial officer meet with the Committee on Board Affairs (CBA) to recommend a specific growth target for the Board's operating budget. The recommended growth target includes known changes in the run-rate of the Board's ongoing operations, constraining growth for additional positions, and targeted increases in select goods and services accounts. Board members and the Executive Committee, comprising directors of each division, were briefed on the targets.
- To achieve the CBA's growth target, divisions review their resource requirements, reallocate funding to support mission-critical activities and strategic priorities, and submit initial budget requests, including proposed initiatives and potential savings.
- Division of Financial Management staff review initial budget requests submitted by divisions and collaborate with all divisions to achieve the growth target. In addition, division directors collaborate and adjust their requested positions to align with the CBA's guidance.
- The chief operating officer and chief financial officer subsequently meet with the Executive Committee and the CBA to further review and refine the budget submissions. Once the budget has been finalized, the administrative governor submits the budget to the full Board for review and final approval.
- Expenses are monitored throughout the year. Quarterly financial forecasts provide insights into budgetary pressures. Variances are analyzed and reported to senior management.

Tables 3 and 4 summarize the Board's 2016 budgeted and actual expenses and its 2017 budgeted expenses by division, office, or special account and by account classification, respectively. Table 5 summarizes the Board's budgeted and actual authorized position count for 2016 and 2017. Table 6 summarizes the Board's budgeted and actual capital outlays for 2016 and 2017. Each table includes a line item for the Office of Inspector General (OIG), which is discussed later in this section.

2016 Budget Performance

Total expenses for Board operations were $688.6 million, which was $20.9 million, or 2.9 percent, less than the approved 2016 budget of $709.5 million. The Board's 2016 single-year capital spending was less than budgeted by $2.3 million, or 25.5 percent, and multiyear capital projects remained within their project budgets, with actual spending in 2016 less than budgeted by $39.2 million, or 64.8 percent, driven by less-than-planned spending for building improvement projects.

Personnel services expenses were $4.6 million less than the budget primarily due to higher-than-planned labor capitalization for software projects and reimbursements from other agencies; amount and timing of compensation actions; lower-than-expected health insurance premiums; and lower costs for centrally-managed benefits, which fluctuate because of changes in actuarial and demographic assumptions. Goods and services expenses were $16.3 million less than the budget primarily due to lower use of contractual services; lower-than-expected expenses for data purchases, software renewals, and travel; and lower depreciation expenses due to delays in several capital projects.

2017 Operating Expense Budget

The 2017 budget for Board operations is $744.6 million, which is $55.9 million, or 8.1 percent, higher than 2016 actual expenses and 4.9 percent higher than the 2016 budget. The operating budget includes amounts to fund the Board's ongoing operations and to support the six overarching pillars identified in the Board's *Strategic Plan 2016–19*.

For 2017, authorized positions for Board operations total 2,847, an increase of 58 positions, or 2.1 per-

[5] *The Strategic Plan 2016–19*, which was approved by the Board in July 2015, continues the work of the *Strategic Framework 2012–15*. In addition to investing in ongoing operations, the Board is prioritizing investments and dedicating resources to six pillars over 2016–19 so that the Board can advance its mission and respond to continuing and evolving challenges. The six pillars are project development and resource allocation, workforce, physical infrastructure, technology, data, and public engagement and accountability.

Table 3. Operating expenses of the Board of Governors, by division, office, or special account, 2016–17
Millions of dollars, except as noted

Division, office, or special account	2016 budget[1]	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Research and Statistics	72.4	73.3	0.9	1.2	80.1	6.8	9.3
International Finance	31.3	30.6	-0.8	-2.4	33.4	2.8	9.2
Monetary Affairs	37.9	37.2	-0.7	-1.9	41.1	3.9	10.4
Financial Stability	9.5	10.2	0.8	7.9	12.7	2.5	24.1
Supervision and Regulation	139.6	135.2	-4.4	-3.2	143.4	8.2	6.1
Consumer and Community Affairs	31.8	31.1	-0.7	-2.1	35.3	4.1	13.2
Reserve Bank Operations and Payment Systems	41.2	42.2	1.0	2.5	44.7	2.5	5.9
Board Members	27.9	26.0	-2.0	-7.0	28.4	2.4	9.3
Secretary	10.6	10.7	0.1	0.9	11.3	0.7	6.3
Legal	28.7	27.6	-1.1	-3.9	32.1	4.5	16.2
Chief Operating Officer	15.9	14.0	-1.9	-12.1	17.7	3.7	26.1
Financial Management	12.2	11.9	-0.3	-2.1	12.8	0.9	7.8
Information Technology	102.5	101.5	-1.0	-0.9	116.0	14.4	14.2
IT income	-45.0	-45.5	-0.5	1.2	-48.3	-2.8	6.1
Management	121.6	119.0	-2.5	-2.1	137.0	18.0	15.1
Centrally managed benefits	14.1	12.6	-1.4	-10.3	13.9	1.3	10.0
Special projects	17.0	13.5	-3.6	-21.0	16.4	2.9	21.5
Savings and reallocations	0.0	0.0	0.0	562.0	0.0	0.0	-100.0
Extraordinary items[2]	40.3	37.5	-2.7	-6.8	16.7	-20.8	-55.5
Total, Board operations	**709.5**	**688.6**	**-20.9**	**-2.9**	**744.6**	**55.9**	**8.1**
Office of Inspector General	31.8	31.2	-0.6	-1.9	34.3	3.1	9.9

1 The 2016 budget figures do not reflect internal transfers among divisions and accounts during the year.

2 Ongoing operational costs related to the data center relocation project have been reallocated to Research and Statistics, Information Technology, and Management as part of the 2017 budget.

cent, from 2016 actual levels. The increase is in line with the overall position growth target set by the CBA and provides additional resources to advance initiatives that support the Strategic Plan's pillars related to project development and resource allocation, data, and technology. The positions are aligned with the Strategic Plan, and over 80 percent of the new positions support the monetary policy, public programs, and supervision and regulation functions.

Risks in the 2017 Budget

The 2017 operating budget follows the steps taken in recent years to better align budget requests with historic hiring trends and spending patterns, while ensuring the funding of the Board's highest priorities. Meeting the approved growth targets required all divisions to make tradeoffs and prioritize resources to fund mission-critical activities for 2017.

During the budget process, many divisions noted the potential impact that reducing their budget requests would have on meeting demands. Staff from the Division of Financial Management will work closely with all divisions throughout the year to mitigate potential budget overruns by closely monitoring spending. Building improvements projects will continue to be an area of focus, from both a budget and project management perspective, given their size, complexity, and strategic importance.

2017 Capital Budgets

The Board's 2017 single-year capital budget totals $14.0 million, which represents an increase of $5.0 million from the 2016 budget. The increase is driven primarily by the reclassification of data center funding from the multiyear capital budget to the single-year capital budget. The change reflects completion of the data center's relocation and the move to steady-state operation of the new facility.

The Board's multiyear capital budget totals $412.2 million, which includes 2017 expected outlays of $58.3 million. The budget includes increases to the Martin Building renovation project due to updated construction cost estimates, additional improvements

Table 4. Operating expenses of the Board of Governors, by account classification, 2016–17
Millions of dollars, except as noted

Account classification	2016 budget[1]	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Personnel services							
Salaries	401.0	397.8	-3.2	-0.8	433.9	36.2	9.1
Retirement/Thrift plans[2]	52.3	53.2	1.0	1.9	56.5	3.2	6.1
Employee insurance and other benefits	39.4	37.1	-2.3	-5.9	42.3	5.2	14.0
Subtotal, personnel services	492.7	488.1	-4.6	-0.9	532.7	44.6	9.1
Goods and services							
Postage and shipping	0.4	0.3	-0.1	-35.8	0.4	0.1	54.4
Travel	16.4	14.6	-1.8	-11.0	17.5	2.9	19.7
Telecommunications	7.2	6.1	-1.0	-14.5	8.3	2.2	35.4
Printing and binding	2.2	1.8	-0.4	-18.9	2.2	0.4	19.3
Publications	0.6	0.5	0.0	-2.8	0.6	0.1	11.2
Stationery and supplies	1.4	1.3	-0.2	-12.5	1.7	0.4	31.5
Software	16.6	14.6	-2.0	-12.3	17.1	2.5	17.4
Furniture and equipment (F&E)	6.6	5.5	-1.0	-15.8	11.1	5.6	100.7
Rentals	27.0	26.9	-0.2	-0.7	30.6	3.7	13.8
News, data, and research[3]	32.9	30.5	-2.3	-7.1	14.7	-15.8	-51.7
Utilities	3.3	2.9	-0.4	-12.8	2.8	-0.1	-2.5
Repairs and alterations—building	2.2	3.2	0.9	42.0	2.7	-0.5	-16.0
Repairs and maintenance—F&E	5.6	4.5	-1.1	-19.5	5.4	0.9	19.2
Contractual professional services	53.6	48.6	-5.0	-9.3	53.9	5.3	10.9
Interest	*	*	*	-48.2	*	*	13.0
Tuition/registration/memberships	3.1	2.7	-0.5	-15.7	4.8	2.2	82.6
Subsidies and contributions	0.9	0.9	*	-2.9	0.9	*	5.6
All other	3.3	3.5	0.1	4.3	3.6	0.2	5.4
Depreciation	40.3	38.2	-2.1	-5.2	40.3	2.1	5.5
IT user charge	44.7	45.1	0.5	1.1	47.5	2.3	5.2
IT income	-45.0	-45.5	-0.5	1.2	-48.3	-2.8	6.1
Income	-6.5	-5.5	1.0	-15.4	-5.9	-0.3	6.3
Subtotal, goods and services	216.9	200.5	-16.3	-7.5	211.9	11.3	5.7
Total, Board operations	**709.5**	**688.6**	**-20.9**	**-2.9**	**744.6**	**55.9**	**8.1**
Office of Inspector General							
Personnel services	23.9	23.4	-0.5	-2.2	25.8	2.4	10.3
Goods and services	7.9	7.8	-0.1	-1.0	8.5	0.7	8.8
Total, Office of Inspector General operations	**31.8**	**31.2**	**-0.6**	**-1.9**	**34.3**	**3.1**	**9.9**

[1] Budget figures for 2016 do not reflect internal transfers among divisions and accounts during the year.

[2] Includes expenses related to Board participants in the Benefit Equalization Plan and Pension Enhancement Plan.

[3] The Survey of Consumer Finances occurred in 2016; therefore, the news, data, and research budget for 2017 has been significantly reduced.

* Less than $50,000.

at the New York Avenue Building, modernization of the financial data repository application, and additional automation funding for a supervision and regulation data architecture used throughout the Federal Reserve System.

Office of Inspector General

The budget for the OIG is grounded in its *Strategic Plan 2013–16* and *Strategic Plan 2017–20* (https://oig.federalreserve.gov/strategic-plan.htm) to enhance its oversight of the Board and the Consumer Financial Protection Bureau (CFPB). The OIG's *Strategic Plan 2017–20* includes goals and objectives to deliver results that promote agency excellence; promote a diverse, skilled, and engaged workforce and foster an inclusive, collaborative environment; optimize external stakeholder engagement; and advance organiza-

Table 5. Positions authorized by the Board of Governors, by division, office, or special account, 2016–17

Division, office, or special account	2016 budget	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Research and Statistics	346	346	0	0.0	356	10	2.9
International Finance	152	152	0	0.0	154	2	1.3
Monetary Affairs	167	168	1	0.6	172	4	2.4
Financial Stability	50	50	0	0.0	55	5	10.0
Supervision and Regulation	486	480	-6	-1.2	493	13	2.7
Consumer and Community Affairs	123	123	0	0.0	131	8	6.5
Reserve Bank Operations and Payment Systems	176	176	0	0.0	183	7	4.0
Board Members	121	121	0	0.0	121	0	0.0
Secretary	53	53	0	0.0	53	0	0.0
Legal	123	123	0	0.0	125	2	1.6
Chief Operating Officer	65	64	-1	-1.5	68	4	6.3
Financial Management	66	66	0	0.0	68	2	3.0
Information Technology	412	412	0	0.0	413	1	0.2
Management	449	455	6	1.3	455	0	0.0
Total, Board operations[1]	**2,789**	**2,789**	**0**	**0.0**	**2,847**	**58**	**2.1**
Office of Inspector General	130	130	0	0.0	132	2	1.5

[1] Budget represents authorized position count at the beginning of the year, and actual represents authorized position count at year-end.

tional effectiveness and model a culture of continuous improvement.

In keeping with its statutory independence, the OIG prepares its proposed budget apart from the Board's budget. The OIG presents its budget directly to the Board for approval.

2016 Budget Performance

Total expenses for OIG operations were $31.2 million, which was $0.6 million, or 1.9 percent, less than the approved 2016 operating budget. Personnel services expenses were $0.5 million less than budgeted because of higher-than-budgeted vacancy rates.

Table 6. Capital outlays of the Board of Governors, by capital type, 2016–17
Millions of dollars, except as noted

Item	2016 budget	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Board							
Single-year capital outlays	9.0	6.7	-2.3	-25.5	14.0	7.3	109.4
Multiyear capital outlays	60.5	21.3	-39.2	-64.8	58.3	37.0	173.9
Total capital outlays	**69.5**	**28.0**	**-41.5**	**-59.8**	**72.3**	**44.3**	**158.5**
Office of Inspector General							
Single-year capital outlays	0.0	0.0	0.0	n/a	0.0	0.0	n/a
Multiyear capital outlays	0.3	1.0	0.7	229.6	0.2	-0.8	-78.5
Total capital outlays	**0.3**	**1.0**	**0.7**	**229.6**	**0.2**	**-0.8**	**-78.5**
Board and Office of Inspector General total capital outlays	**69.8**	**28.9**	**-40.8**	**-58.6**	**72.5**	**43.5**	**150.6**

Note: The amount reported for the multiyear capital budget represents the expected expenditure for the budget year.
n/a Not applicable.

Goods and services expenses were $0.1 million less than budgeted because of less-than-anticipated spending in several areas, partially offset by an office space reconfiguration. The OIG did not have single-year capital spending in 2016. Multiyear capital projects remained within their project budgets, with actual spending in 2016 higher than planned because of the buildout of the OIG's New York regional office.

2017 Operating Expense Budget

The 2017 budget for OIG operations is $34.3 million, which is $3.1 million, or 9.9 percent, higher than 2016 actual expenses and 7.8 percent higher than the OIG's 2016 budget. For 2017, authorized positions for the OIG total 132, an increase of 2 positions, or 1.5 percent, from 2016 actual levels. The additional funding and positions will assist the OIG in implementing the goals, objectives, and activities identified in its strategic plan.

2017 Capital Budget

The OIG's multiyear capital budget totals $3.2 million, which includes 2017 expected cash outlays of $0.2 million for the continued buildout of the San Francisco regional office.

Federal Reserve Banks Budgets

Each Reserve Bank establishes major operating goals for the coming year, devises strategies for attaining those goals, estimates required resources, and monitors results. The Reserve Banks' budgets are structured by functional area, with attributable support and overhead charged to each area. The budgets are formulated to ensure alignment with each Reserve Bank's and the System's strategic priorities, including

- promoting financial stability through effective monitoring, analysis, and policy development
- promoting safety and soundness of financial institutions through effective supervision
- contributing to the formulation of monetary policy and enhancing monetary policy implementation to become more effective, flexible, and resilient
- leading efforts to enhance the security, resiliency, functionality, and efficiency of financial services

The Reserve Bank budget process is as follows:

- Reserve Bank and Board governance bodies provide budget guidance for major functional areas for the upcoming budget year.
- The Reserve Banks develop budgets that incorporate this guidance, and senior leadership in the Reserve Banks reviews the budgets for alignment with Reserve Bank and System priorities.
- The Reserve Banks submit preliminary budget information to the Board for review, including documentation to support the budget request.
- Board staff analyzes the Banks' budgets, both individually and in the context of System initiatives.
- The Board's Committee on Federal Reserve Bank Affairs (BAC) reviews the Bank budgets.
- The Reserve Banks make any needed changes, and the BAC chair submits the revised budgets to Board members for review and final action.
- Throughout the year, Reserve Bank and Board staffs monitor actual performance and compare it to approved budgets and forecasts.

In addition to the budget approval process, the Reserve Banks must submit proposals for certain capital expenditures to the Board for further review and approval.

Tables 7, 8, and 9 summarize the Reserve Banks' 2016 budgeted and actual expenses and 2017 budgeted expenses by Reserve Bank, functional area, and account classification.[6] Table 10 shows the Reserve Banks' budgeted and actual employment for 2016 and budgeted employment for 2017. In addition, table 11 shows the Reserve Banks' budgeted and actual capital outlays for 2016 and budgeted capital for 2017.

2016 Budget Performance

Total 2016 operating expenses for the Reserve Banks were $4,032.1 million, which is $84.5 million, or 2.1 percent, less than the approved 2016 budget of $4,116.6 million. The actual average number of personnel (ANP) was less than the 2016 budget, largely because of changes in project plans, turnover, and hiring delays. The Reserve Banks' 2016 capital spending was less than budgeted by $86.5 million, or 21.4 percent, because of changes in timing and scope for numerous initiatives.

The 2016 operating budget underrun was primarily driven by updated benefits assumptions and revised

[6] Additional information about the operating expenses of each of the Reserve Banks can be found in section 11, "Statistical Tables" (see "Table 10. Income and expenses of the Federal Reserve Banks, by Bank").

Table 7. Operating expenses of the Federal Reserve Banks, by District, 2016–17
Millions of dollars, except as noted

District	2016 budget	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Boston	236.5	230.0	-6.5	-2.8	230.5	0.5	0.2
New York	969.2	947.6	-21.6	-2.2	992.1	44.5	4.7
Philadelphia	194.0	186.4	-7.6	-3.9	191.4	5.0	2.7
Cleveland	183.9	175.7	-8.2	-4.5	196.8	21.1	12.0
Richmond	352.3	351.3	-1.1	-0.3	450.6	99.4	28.3
Atlanta	335.8	343.7	7.8	2.3	407.4	63.7	18.5
Chicago	369.5	373.0	3.5	0.9	383.3	10.2	2.7
St. Louis	374.2	363.5	-10.7	-2.9	399.1	35.6	9.8
Minneapolis	214.1	196.1	-17.9	-8.4	165.1	-31.0	-15.8
Kansas City	277.3	268.7	-8.6	-3.1	285.0	16.3	6.1
Dallas	231.1	227.6	-3.5	-1.5	229.1	1.6	0.7
San Francisco	378.6	368.5	-10.1	-2.7	381.9	13.5	3.7
Total Reserve Bank operating expenses	**4,116.6**	**4,032.1**	**-84.5**	**-2.1**	**4,312.4**	**280.4**	**7.0**

Note: Includes expenses of the FRIT support function and the OEB and reflects all redistributions for support and allocation for overhead. Excludes Reserve Bank capital outlays as well as assessments by the Board of Governors for costs related to currency and the operations of the Board of Governors and the CFPB.

An accounting change implemented in 2017 results in cost shifts in all Districts.

In 2016, the Retail Payments Office transferred 129 ANP from Minneapolis to Atlanta, resulting in a significant expense shift between the two Banks.

project plans in the Treasury, cash, and fee-based services functions. Revised project plans include evolving Treasury requests, the implementation of the evolving operations procedural changes and lower-than-expected costs for the CashForward initiative, and delays in development efforts for Fedwire enhancements.[7] The underrun was partially offset by increased expenses for the TWAI and increased expenses for the automated clearinghouse (ACH) modernization project.[8]

Total 2016 actual employment for the Reserve Banks, the Federal Reserve Information Technology (FRIT), and the Office of Employee Benefits (OEB) was 19,330 ANP, an underrun of 94 ANP, or 0.5 percent, from 2016 budgeted staffing levels. The underruns

[7] The CashForward initiative will replace legacy software applications, automate some additional business processes, and employ technologies to meet current and future needs for the cash function. Phase 1 was completed in 2010, and Phase 2 was completed in July 2012. The project's planned completion date is in 2017.

[8] The ACH Modernization initiative involves the transition of the ACH application from the legacy mainframe environment to a distributed platform.

Table 8. Operating expenses of the Federal Reserve Banks, by operating area, 2016–17
Millions of dollars, except as noted

Operating area	2016 budget	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Monetary and economic policy	663.8	655.1	-8.6	-1.3	697.7	42.6	6.5
Services to the U.S. Treasury and other government agencies	605.6	569.9	-35.7	-5.9	625.7	55.8	9.8
Services to financial institutions and the public	1,112.3	1,088.8	-23.5	-2.1	1,151.2	62.4	5.7
Supervision and regulation	1,311.6	1,309.9	-1.7	-0.1	1,389.6	79.7	6.1
Fee-based services to financial institutions	423.3	408.3	-14.9	-3.5	448.2	39.9	9.8
Total Reserve Bank operating expenses[1]	**4,116.6**	**4,032.1**	**-84.5**	**-2.1**	**4,312.4**	**280.4**	**7.0**

[1] Operating expenses exclude pension costs, reimbursements, and operating expense of the Board of Governors (see table 4).

Table 9. Operating expenses of the Federal Reserve Banks, by account classification, 2016–17
Millions of dollars, except as noted

Account classification	2016 budget	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Salaries and other benefits[1]	3,085.8	3,037.2	-48.7	-1.6	3,238.4	201.2	6.6
Building	329.2	329.1	-0.1	0.0	330.6	1.5	0.5
Software costs	239.6	227.0	-12.6	-5.2	250.8	23.7	10.5
Equipment	187.6	175.5	-12.1	-6.4	189.1	13.6	7.8
Recoveries[2]	-172.0	-184.6	-12.6	7.3	-183.5	1.1	-0.6
Expenses capitalized	-106.2	-87.7	18.5	-17.4	-93.0	-5.3	6.1
All other[3]	552.6	535.5	-17.0	-3.1	580.1	44.5	8.3
Total Reserve Bank operating expenses	**4,116.6**	**4,032.1**	**-84.5**	**-2.1**	**4,312.4**	**280.4**	**7.0**

1 Includes salaries, other personnel expense, and retirement and other employment benefit expenses. It does not include pension expenses related to all the participants in the Retirement Plan for Employees of the Federal Reserve System and the Reserve Bank participants in the Benefit Equalization Plan and the Supplemental Retirement Plan for Select Officers of the Federal Reserve Banks. These expenses are recorded as a separate line item in the financial statements; see "Table 10. Income and expenses of the Federal Reserve Banks, by Bank" in section 11, "Statistical Tables."

2 Includes tenant rent recoveries.

3 Includes fees, materials and supplies, travel, communications, and shipping.

are primarily in the Treasury and cash business lines and in support services, reflecting operational efficiencies, hiring delays, and updated project plans. These underruns are partially offset by lower-than-budgeted turnover and lag in supervision and by unbudgeted resource needs for national programs in supervision, for IT, and for the ACH modernization initiative. Other adjustments reflect updated project plans, turnover, and hiring delays across most other areas.

2017 Operating Expense Budget

The 2017 operating budgets of the Reserve Banks total $4,312.4 million, which is $280.4 million, or 7.0 percent, higher than 2016 actual expenses. The

Table 10. Employment at the Federal Reserve Banks, by District, and at FRIT and OEB, 2016–17

District	2016 budget	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Boston	1,130	1,108	-22	-2.0	1,131	23	2.1
New York	3,311	3,248	-63	-1.9	3,319	71	2.2
Philadelphia	892	897	4	0.5	914	18	2.0
Cleveland	1,010	958	-52	-5.2	995	37	3.9
Richmond	1,475	1,491	16	1.1	1,499	8	0.6
Atlanta	1,573	1,674	101	6.4	1,762	88	5.3
Chicago	1,551	1,537	-14	-0.9	1,600	63	4.1
St. Louis	1,356	1,327	-29	-2.1	1,416	89	6.7
Minneapolis	1,105	1,032	-72	-6.6	1,008	-24	-2.3
Kansas City	1,722	1,754	32	1.9	1,850	96	5.5
Dallas	1,280	1,256	-23	-1.8	1,294	38	3.0
San Francisco	1,695	1,706	11	0.6	1,697	-9	-0.5
Total, all Districts	**18,101**	**17,988**	**-113**	**-0.6**	**18,487**	**499**	**2.8**
Federal Reserve Information Technology	1,268	1,291	24	1.9	1,277	-14	-1.1
Office of Employee Benefits	55	50	-5	-8.4	58	7	14.3
Total	**19,424**	**19,330**	**-94**	**-0.5**	**19,822**	**492**	**2.5**

Note: In 2016, the Retail Payments Office transferred 129 ANP from Minneapolis to Atlanta.

Table 11. Capital outlays of the Federal Reserve Banks, by District, and of FRIT and OEB, 2016–17
Millions of dollars, except as noted

District	2016 budget	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
Boston	21.6	14.2	-7.4	-34.1	26.6	12.4	87.2
New York	81.1	69.3	-11.8	-14.6	100.8	31.5	45.5
Philadelphia	22.2	14.9	-7.3	-33.0	20.9	6.0	40.5
Cleveland	18.1	18.5	0.3	1.9	32.8	14.3	77.6
Richmond	15.6	9.2	-6.4	-41.0	21.3	12.0	130.7
Atlanta	33.8	23.8	-10.0	-29.7	25.8	2.0	8.5
Chicago	26.1	22.0	-4.1	-15.7	29.2	7.2	33.0
St. Louis	10.2	9.8	-0.4	-3.9	6.8	-3.0	-31.0
Minneapolis	4.4	4.4	*	0.3	4.4	*	0.9
Kansas City	29.7	21.9	-7.8	-26.3	25.3	3.4	15.5
Dallas	18.1	13.0	-5.0	-27.9	19.3	6.2	48.0
San Francisco	57.5	30.2	-27.3	-47.5	36.2	6.0	20.0
Total, all Districts	**338.4**	**251.2**	**-87.3**	**-25.8**	**349.4**	**98.3**	**39.1**
Federal Reserve Information Technology	65.4	66.1	0.8	1.2	67.2	1.0	1.5
Office of Employee Benefits	*	*	*	678.0	*	*	-10.0
Total	**403.8**	**317.3**	**-86.5**	**-21.4**	**416.6**	**99.3**	**31.3**

* Less than $50,000.

largest increase is in the supervision function to support the cybersecurity supervision program, the continued buildout to meet the requirements of the Dodd-Frank Act, and other strategic national initiatives. In the monetary policy and public programs areas, several Reserve Banks plan to fill research and policy positions. Allocated expenses to monetary policy for law enforcement and expenses in the open market function for automation efforts are also projected to increase.

Budgeted expenses for services to the Treasury, which are fully reimbursable, are increasing primarily to support the full implementation of Navy Cash, the TWAI, the Invoice Processing Platform (IPP), and the Post Payment System initiative.[9] Increases in cash expenses are related to the implementation of the CashForward initiative and program planning expenses of the next-generation currency-processing machines, as well as increases in allocated support and overhead expenses. Expenses related to fee-based services are increasing to fund the ACH platform modernization initiative and development efforts for Fedwire enhancements.

Total 2017 budgeted employment for the Reserve Banks, FRIT, and OEB is 19,822 ANP, an increase of 492 ANP, or 2.5 percent, from 2016 actual employment levels. The increase is primarily driven by support and overhead, Treasury services, IT, fee-based services, and monetary policy functions. Support and overhead is increasing as Reserve Banks strengthen human resources capabilities; expand enterprise risk-management capabilities; enhance facilities maintenance; and address a need for increased resources in multimedia, corporate planning, and internal audit. In the Treasury services function, ANP increases are due to updated requirements for ongoing projects, including Stored Value Card efforts, retail securities, collection services, and fiscal collateral monitoring

[9] Navy Cash is a cash-management tool designed to support the Navy and Marine Corps personnel assigned to ships in the Navy fleet.

The IPP is part of the Treasury's all-electronic initiative—an electronic invoicing and payment information system that allows vendors to enter invoice data electronically, through either a web-based portal or electronic submission. The IPP accepts, processes, and presents data from supplier systems related to all stages of a payment transaction, including the purchase order, invoice, and other payment information.

The Post Payment System initiative is a multiyear effort to modernize several of the Treasury's legacy post-payment processing systems into a single application to enhance operations, reduce expenses, improve data analytics capabilities, and provide a centralized and standardized set of payment data.

services.[10] IT staff is increasing to support application development projects, primarily for the national supervision initiatives and Treasury programs. Staff is also increasing in the fee-based services for the ACH platform modernization initiative and Fedwire enhancements and in monetary policy to support regional economic research.

Reserve Bank officer and staff personnel expenses for 2017 total $3,238.4 million, an increase of $201.2 million, or 6.6 percent, from 2016 actual expenses. The increase reflects expenses associated with additional staff and budgeted salary adjustments, including merit increases, equity adjustments, promotions, and funding for variable pay.

The 2017 Reserve Bank budgets include a 3.0 percent merit program for eligible officers, senior professionals, and staff totaling $62.2 million and a variable pay program totaling $196.5 million. Budgeted equity adjustments and promotions total $7.1 million for officers and senior professionals and $25.0 million for staff.

Risks in the 2017 Budget

The most significant risks in the 2017 budget are related to personnel costs. Changes in assumptions and updated demographic information that are used to determine benefit expense affect Reserve Bank budgets. Reserve Banks are concerned about their ability to retain, hire, and replace staff, particularly those with specialized skills and experience in monetary policy, supervision, or IT. The increased focus on cybersecurity and application modernization may affect IT spending decisions. Mergers and acquisitions in the banking industry and potential changes in regulations with the new administration could shift supervisory responsibilities and influence Reserve Bank resource levels. The Bureau of the Fiscal Service's Fiscal Agent Consolidation effort will continue to affect projects in 2017 and over a longer-term planning horizon as business-line transition timelines are refined.

[10] The Stored Valued Card program comprises three military cash-management programs: EagleCash, EZPay, and Navy Cash. These programs provide electronic payment methods for goods and services on military bases and Navy ships, both domestic and overseas, to reduce costs and increase convenience for the military and service members. The Reserve Banks, as fiscal agent, currently operate EagleCash and EZpay and will assume responsibility for Navy Cash in 2017.

2017 Capital Budgets

The 2017 capital budgets for the Reserve Banks, FRIT, and OEB total $416.6 million. The increase in the 2017 capital budget is $99.3 million, or 31.3 percent, more than the 2016 actual levels of $317.3 million, largely reflecting ongoing multiyear building and information technology projects. Initiatives in the 2017 capital budget include supporting workspace renovations, addressing aging building infrastructure, replacing the Treasury auction system, and providing application upgrades and releases.

Capital Expenditures Designated for Conditional Approval

The BAC chair designated projects with an aggregate cost of $85.6 million in 2017 for conditional approval, requiring additional review and approval by the Board's director of the Division of Reserve Bank Operations and Payment Systems.[11] The expenditures designated for conditional approval by the chair of the BAC include large-scale building projects to renovate conference centers, cafeteria spaces, cash vault, and executive office spaces; mechanical and electrical infrastructure upgrades; and the migration of major applications off of the mainframe.[12]

Other Capital Expenditures

Significant capital expenditures (typically expenditures exceeding $1 million) that are not designated for conditional approval include total multiyear budgeted expenditures of $571.1 million for 2017 and future years, of which the single-year 2017 budgeted expenditures are $252.3 million. Expenditures in this category include IT support for Treasury, supervision, and monetary policy initiatives and building expenditures for office space renovations, security enhancements, and elevator upgrades.

Capital initiatives that are individually of less than $1 million are budgeted at an aggregate amount of $78.7 million for 2017 and include building maintenance expenditures, equipment and furniture replace-

[11] Generally, capital expenditures that are designated for conditional approval include certain building projects, District expenditures that substantially affect or influence future System direction or the manner in which significant services are performed, expenditures that may be inconsistent with System direction or vary from previously negotiated purchasing agreements, and local expenditures that duplicate national efforts.

[12] The Reserve Bank migration strategy involves moving a majority of applications from the mainframe to alternate processing environments. Budgeted projects for 2017 include the migration of the statistics and reserves application and the ACH processing platform.

ments, and scheduled software and equipment upgrades.

Currency Budget

On an annual basis, Board staff develops a print order for the Bureau of Engraving and Printing (BEP) based on staff's assessment of currency demand and other factors. Staff estimates the number of Federal Reserve notes the Board will order from the BEP to meet demand based on monthly monitoring of payments to and receipts of currency from circulation, forecasts of growth rates for payments to and receipts of currency from circulation, operational factors, and other policy considerations. The Board reimburses the BEP for all costs related to the production of currency.[13] Historically, about 90 percent of the notes that the Board orders each year replace unfit currency that Reserve Banks receive from circulation and destroy.

The annual currency budget process is as follows:

- Each August, based on Board staff's assessment of currency demand and other factors, the Board's director of the Division of Reserve Bank Operations and Payment Systems submits a fiscal year print order for currency to the director of the BEP.
- Each December, Board staff estimates expenses for the calendar-year currency budget, including printing expenses (based on estimated production costs provided by the BEP); certain other BEP initiatives; and expenses for currency transportation, quality assurance, counterfeit-deterrence and analysis, education, outreach, research, and depreciation.[14]
- The BAC reviews the proposed currency budget.
- The BAC chair submits the proposed currency budget to Board members for review and final action.

[13] The BEP does not receive federal appropriations; all operations of the BEP are financed by a revolving fund that is reimbursed through product sales, virtually all of which are sales of Federal Reserve notes to the Board to fulfill its annual print order. Section 16 of the Federal Reserve Act requires that all costs incurred for the issuing of notes shall be paid for by the Board and included in its assessments to Reserve Banks. Customer billings are the BEP's only means of recovering costs of operations and generating funds necessary for capital investment.

[14] Other BEP expenses include costs to reimburse the BEP for expenses incurred by its Destruction Standards and Compliance Division of the Office of Compliance and Mutilated Currency Division of the Office of Financial Management and for work performed in 2016 toward a new facility to replace the existing facility in Washington, D.C.

2016 Budget Performance

The Board's 2016 actual expenses for new currency were $700.7 million, a decrease of $36.7 million, or 5.0 percent, from the 2016 budget. More than half of the budget underrun is attributable to lower-than-budgeted BEP expenses because the BEP purchased fewer currency readers than budgeted, encountered significant delays with the new building project, and delivered fewer notes than budgeted.[15] The remainder of the budget underrun is attributable to lower-than-projected costs for transporting new and fit notes from the BEP to Reserve Banks and among the Reserve Banks, and delays in awarding contracts for activities related to counterfeit deterrence and currency education.

2017 Operating Expense Budget

The 2017 operating budget for currency is $726.0 million, which is $25.3 million, or 3.6 percent, higher than 2016 actual expenses (figure 5). Printing costs for notes are about 93 percent of the operating budget. Expenses for currency transportation; quality assurance; counterfeit deterrence and analysis; currency education, outreach, and research; other BEP initiatives; and depreciation make up the remaining 7 percent (table 12).

Printing of Federal Reserve Notes

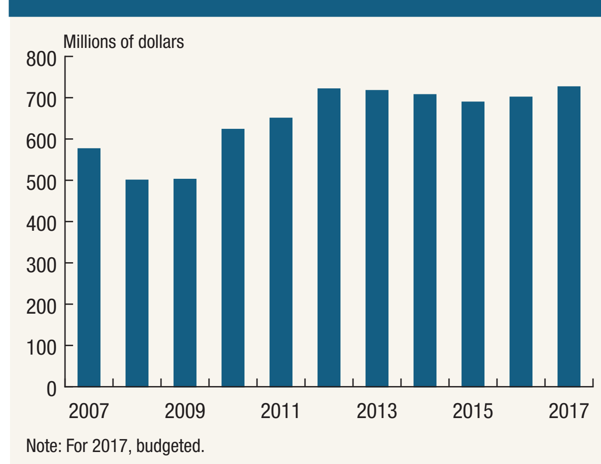
The currency budget includes $673.8 million in printing costs for calendar-year 2017, an increase of 2.1 percent from 2016 actual expenses. The increase is primarily attributable to the BEP's additional funding to support the acceleration of the next-design family of notes.

[15] The 2016 budget reflected the BEP's estimate that it would procure and distribute 130,000 readers in 2016; however, the BEP procured and distributed only about 10,000 readers to meet demand. The difference is partly because some potential users downloaded the BEP's smartphone currency-reader application, instead of ordering a currency reader.

In 2016, the BEP entered into an interagency agreement with the General Services Administration to evaluate potential sites for a new facility but made significantly less progress on this project than it expected.

The BEP operates on a fiscal year that begins on October 1 and ends September 30, and the Board operates on a calendar year that begins on January 1. This difference in timing requires that staff estimates the Board's calendar-year budget for new currency by eliminating the estimated volume and associated printing costs of notes that the BEP will produce in the first quarter of its fiscal year and estimating the volume and associated printing costs of notes staff projects the BEP will produce in the fourth quarter of the calendar year. The BEP, however, fulfilled the Board's fiscal year 2016 print order.

Figure 5. Federal Reserve costs for currency, 2007–17



Note: For 2017, budgeted.

Currency Reader Program

The 2017 currency reader budget is approximately $1.7 million, which is $30,000 higher than 2016 actual expenses. The budget includes $0.5 million to purchase and distribute nearly 8,500 currency readers to qualified blind or visually impaired individuals at no cost to the user. The BEP expects to distribute fewer readers in 2017 than it did in 2016 because it believes that a majority of qualified individuals have either received a reader or downloaded the BEP's smartphone currency reader application. In addition, the budget includes nearly $1.2 million to reimburse the Library of Congress for administering the currency reader program through the existing infrastructure of its book reader program, which is managed by the National Library Service, and other administrative and outreach expenses.

Other Reimbursements to the Bureau of Engraving and Printing

The 2017 budget includes $4.0 million to reimburse the BEP for expenses incurred by its Destruction Standards and Compliance Division of the Office of Compliance (OC) and Mutilated Currency Division (MCD) of the Office of Financial Management. The OC develops standards for cancellation and destruction of unfit currency and for note accountability at the Reserve Banks, and reviews Reserve Banks' cash operations for compliance with its standards. As a public service, the MCD also processes claims for the redemption of damaged or mutilated currency.

Currency Transportation

The 2017 currency transportation budget is $21.2 million, which is nearly $0.8 million, or 3.9 percent, higher than 2016 actual expenses. The budget includes the cost of shipping new currency from the BEP to Reserve Banks, of intra-System shipments of fit and unprocessed currency, and of returning currency pallets from the Reserve Banks to the BEP. The majority of the increase is attributable to a growth in

Table 12. Federal Reserve currency budget, 2016 and 2017
Thousands of dollars, except as noted

Item	2016 budget	2016 actual	Variance 2016 actual to 2016 budget		2017 budget	Variance 2017 budget to 2016 actual	
			Amount	Percent		Amount	Percent
BEP-related expenses							
Printing Federal Reserve notes	670,422	659,959	-10,463	-1.6	673,799	13,840	2.1
Currency reader	8,478	1,685	-6,793	-80.1	1,715	30	1.8
Other	4,232	3,819	-413	-9.8	4,000	181	4.7
New BEP facility	5,000	63	n/a	n/a	0	-63	-100.0
Board expenses							
Currency transportation	26,400	20,405	-5,995	-22.7	21,200	795	3.9
Currency quality assurance	9,200	8,631	-569	-6.2	12,500	3,869	44.8
Currency counterfeit deterrence and analysis	9,995	5,215	-4,780	-47.8	8,100	2,884	55.3
Currency education, outreach, and research	3,650	936	-2,714	-74.4	4,645	3,709	396.4
Depreciation	0	0	n/a	n/a	71	71	n/a
Total expenses	**737,377**	**700,713**	**-36,665**	**-5.0**	**726,030**	**25,317**	**3.6**
Capital expenses							
Single cycle capital	0	0	n/a	n/a	600	600	n/a

BEP Bureau of Engraving and Printing.
n/a Not applicable.

armored carrier rates between 2016 and 2017, rates that are associated with new contracts.

Quality Assurance

The 2017 budget for the quality assurance program is $12.5 million, which is about $3.9 million, or 44.8 percent, higher than 2016 actual expenses. The budget will allow the currency quality assurance consultants to continue facilitating the implementation of the new quality system at the BEP; support the research, technology, and product development required for the next-design family of notes; and continue providing temporary resources to the BEP to sustain critical programs that have been implemented for the quality system. The budget also includes funding for the Board to contract for the research and development necessary to develop a new optical currency sensor.

Counterfeit Deterrence and Analysis

The 2017 budget for counterfeit deterrence and analysis is $8.1 million, which is nearly $2.9 million, or 55.3 percent, higher than 2016 actual expenses. The budget includes about $5.9 million for membership in the Central Bank Counterfeit Deterrence Group (CBCDG). The CBCDG operates under the auspices of the G-10 central bank governors to combat digital counterfeiting and includes 35 central banks. The budget also includes nearly $2.2 million to contract with commercial vendors and national labs to research, develop, test, and evaluate new or existing security features.

Currency Education, Outreach, and Research

The 2017 budget for currency education, outreach, and research is $4.6 million, which is $3.7 million, or 396.4 percent, higher than 2016 actual expenses. The budget includes nearly $3.1 million to fund the Board's currency education program (CEP), $1.0 million to contract for research in support of the next-design family of notes, and $0.5 million to conduct cognitive and perception studies.

The CEP is designed to protect and maintain confidence in U.S. currency worldwide by providing information on all circulating designs of Federal Reserve notes to the global public and key stakeholder groups. In 2017, the CEP will continue to conduct outreach to domestic and international businesses and retailers and to maintain the uscurrency.gov educational website.

2017 Capital Budget

The 2017 capital budget includes $0.6 million to purchase commercial evaluation tools and equipment similar to those used by the casual counterfeiter, which staff will use to assess the threat to potential security features using less-sophisticated techniques. This work will facilitate more advanced adversarial analysis at a shared laboratory funded and used by 14 participating central banks. This initiative involves the purchase of commercial evaluation tools, equipment, and materials similar to those used by the casual counterfeiter to assess the threat to potential new security features using less-sophisticated techniques.

2017 Budget Risks

Test equipment

In order to support its role as issuing authority and to facilitate the Treasury Department's and BEP's plan to accelerate a new-design family of notes, the Board is assessing with the BEP the need to equip an adversarial analysis test facility to assess the counterfeiting threat from the professional counterfeiter using commercial printing equipment. The test facility would be located at the BEP and use specialized, scientific staff from the Board and BEP to conduct the analysis. To advance this initiative, the Board and BEP may require additional test equipment to analyze potential new security features and ensure that security features can be integrated effectively into the new-design family of notes. This capability would provide more comprehensive information about threats to our notes and support the acceleration of the new-design family of notes. The BEP has developed requests for proposals for this additional test equipment and has included the associated capital costs in its billing rates. If, however, the BEP is unable to acquire this equipment in 2017, it may request that the Board purchase this equipment, which could cost between $7 million and $14 million.

New BEP Facility

The BEP received Treasury approval in 2015 to pursue a new building in the metropolitan Washington, D.C., area. The BEP continues to pursue strategies with the Government Services Administration that will facilitate necessary approvals to move the project forward. There is, however, no impact on the currency budget for 2017.

14 Federal Reserve System Organization

Congress designed the Federal Reserve System to give it a broad perspective on the economy and on economic activity in all parts of the nation. As such, the System is composed of a central, governmental agency—the Board of Governors—in Washington, D.C., and 12 regional Federal Reserve Banks. This section lists key officials across the System, including the Board of Governors, its officers, Federal Open Market Committee members, several System councils, and Federal Reserve Bank and Branch directors and officers.

Board of Governors

Members

The Board of Governors of the Federal Reserve System is composed of seven members, who are nominated by the President and confirmed by the Senate. The Chair and the Vice Chairman of the Board are also named by the President from among the members and are confirmed by the Senate. This section lists Board members who served in 2016. For a full listing of Board members from 1914 through the present, visit www.federalreserve.gov/aboutthefed/bios/board/boardmembership.htm.

Janet L. Yellen
Chair

Stanley Fischer
Vice Chairman

Daniel K. Tarullo

Jerome H. Powell

Lael Brainard

Divisions and Officers

Fifteen divisions support and carry out the mission of the Board of Governors, which is based in Washington, D.C.

Office of Board Members

Michelle A. Smith
Director

Linda L. Robertson
Assistant to the Board

Lucretia M. Boyer
Assistant to the Board

David W. Skidmore
Assistant to the Board

Jennifer C. Gallagher
Special Assistant to the Board for Congressional Liaison

William B. English
Senior Special Adviser to the Board

Trevor A. Reeve
Senior Special Adviser to the Chair

Legal Division

Scott G. Alvarez
General Counsel

Richard M. Ashton
Deputy General Counsel

Stephanie Martin
Associate General Counsel

Laurie S. Schaffer
Associate General Counsel

Katherine H. Wheatley
Associate General Counsel

Jean C. Anderson
Assistant General Counsel

Patrick M. Bryan
Assistant General Counsel

Alicia S. Foster
Assistant General Counsel

Benjamin W. McDonough
Assistant General Counsel

Alison M. Thro
Assistant General Counsel

Cary K. Williams
Assistant General Counsel

Office of the Secretary

Robert deV. Frierson
Secretary

Margaret M. Shanks
Deputy Secretary

Yao-Chin Chao
Assistant Secretary

Michele T. Fennell
Assistant Secretary

Division of International Finance

Steven B. Kamin
Director

Thomas A. Connors
Deputy Director

Michael P. Leahy
Deputy Director

Beth Anne Wilson
Deputy Director

Christopher J. Erceg
Senior Associate Director

Shaghil Ahmed
Associate Director

David H. Bowman
Associate Director

Mark S. Carey
Associate Director

Brian M. Doyle
Associate Director

Joseph W. Gruber
Associate Director

Charles P. Thomas
Associate Director

James A. Dahl
Deputy Associate Director

Carol C. Bertaut
Assistant Director

Paul R. Wood
Assistant Director

Constantijn A. Claessens
Senior Adviser

Sally M. Davies
Senior Adviser

John H. Rogers
Senior Adviser

Office of Financial Stability Policy and Research

Andreas W. Lehnert
Director

Michael T. Kiley
Senior Associate Director

William F. Bassett
Deputy Associate Director

Rochelle M. Edge
Deputy Associate Director

Luca Guerrieri
Assistant Director

Jennifer E. Roush
Assistant Director

John W. Schindler
Assistant Director

Skander J. Van den Heuvel
Assistant Director

J. Nellie Liang
Senior Adviser

Division of Monetary Affairs

Heinrich T. Laubach
Director

James A. Clouse
Deputy Director

Brian F. Madigan
Deputy Director

Stephen A. Meyer
Deputy Director

Fabio M. Natalucci
Senior Associate Director

Gretchen C. Weinbach
Senior Associate Director

Margaret G. DeBoer
Associate Director

Jane E. Ihrig
Associate Director

J. David Lopez-Salido
Associate Director

Mary T. Hoffman
Deputy Associate Director

Matthew M. Luecke
Deputy Associate Director

Min Wei
Deputy Associate Director

Christopher J. Gust
Assistant Director

Elizabeth C. Klee
Assistant Director

Jason J. Wu
Assistant Director

Antulio Bomfim
Senior Adviser

Ellen E. Meade
Senior Adviser

Robert J. Tetlow
Senior Adviser

Egon Zakrajsek
Senior Adviser

Joyce K. Zickler
Senior Adviser

Don H. Kim
Adviser

Division of Research and Statistics

David W. Wilcox
Director

Jeffrey C. Campione
Deputy Director

Daniel M. Covitz
Deputy Director

William L. Wascher III
Deputy Director

Eric M. Engen
Senior Associate Director

Joshua H. Gallin
Senior Associate Director

Diana Hancock
Senior Associate Director

David E. Lebow
Senior Associate Director

Michael G. Palumbo
Senior Associate Director

Elizabeth K. Kiser
Associate Director

John J. Stevens
Associate Director

Stacey Tevlin
Associate Director

Timothy A. Mullen
Deputy Associate Director

Steven A. Sharpe
Deputy Associate Director

Stephanie R. Aaronson
Assistant Director

Andrew M. Cohen
Assistant Director

Burcu Duygan-Bump
Assistant Director

Glenn R. Follette
Assistant Director

Song Han
Assistant Director

Erik A. Heitfield
Assistant Director

Norman J. Morin
Assistant Director

John M. Roberts
Assistant Director

John E. Sabelhaus
Assistant Director

Shane M. Sherlund
Assistant Director

Lillian Shewmaker
Assistant Director

Paul A. Smith
Assistant Director

Kristin M. Vajs
Assistant Director

S. Wayne Passmore
Senior Adviser

Robin A. Prager
Senior Adviser

Jeremy Rudd
Senior Adviser

Eric C. Engstrom
Adviser

John A. Figura
Adviser

Arthur B. Kennickell
Adviser

Patrick C. McCabe
Adviser

Karen M. Pence
Adviser

Division of Banking Supervision and Regulation

Michael S. Gibson
Director

Timothy P. Clark
Deputy Director

Maryann F. Hunter
Deputy Director

Mark E. Van Der Weide
Deputy Director

Barbara J. Bouchard
Senior Associate Director

Jack P. Jennings II
Senior Associate Director

Arthur W. Lindo
Senior Associate Director

Todd A. Vermilyea
Senior Associate Director

Mary L. Aiken
Associate Director

Kevin M. Bertsch
Associate Director

Sean D. Campbell
Associate Director

Nida Davis
Associate Director

Christopher Finger
Associate Director

Anna L. Hewko
Associate Director

Michael J. Hsu
Associate Director

Steven P. Merriett
Associate Director

Ann E. Misback
Associate Director

Richard A. Naylor II
Associate Director

Lisa H. Ryu
Associate Director

Michael J. Sexton
Associate Director

Michael D. Solomon
Associate Director

Thomas R. Sullivan
Associate Director

Jeffery W. Gunther
Deputy Associate Director

Ryan P. Lordos
Deputy Associate Director

David K. Lynch
Deputy Associate Director

Molly E. Mahar
Deputy Associate Director

Catherine A. Piche
Deputy Associate Director

Richard C. Watkins
Deputy Associate Director

Suzanne L. Williams
Deputy Associate Director

Robert T. Ashman
Assistant Director

James Ray Diggs
Assistant Director

Constance M. Horsley
Assistant Director

Kathleen W. Johnson
Assistant Director

Keith A. Ligon
Assistant Director

Susan E. Motyka
Assistant Director

Thomas K. Odegard
Assistant Director

Laurie F. Priest
Assistant Director

Steven M. Spurry
Assistant Director

Catherine Ann Tilford
Assistant Director

Joanne Wakim
Assistant Director

Donna Webb
Assistant Director

Norah M. Barger
Senior Adviser

John Beebe
Adviser

Fang Du
Adviser

William F. Treacy
Adviser

Sarkis D. Yoghourtdjian
Adviser

Division of Consumer and Community Affairs

Eric S. Belsky
Director

V. Nicole Bynum
Deputy Director

Anna Alvarez Boyd
Senior Associate Director

Suzanne G. Killian
Senior Associate Director

Carol A. Evans
Associate Director

Allen J. Fishbein
Associate Director

Phyllis L. Harwell
Associate Director

James A. Michaels
Associate Director

David E. Buchholz
Deputy Associate Director

Joseph A. Firschein
Deputy Associate Director

Marisa A. Reid
Deputy Associate Director

Division of Reserve Bank Operations and Payment Systems

Matthew J. Eichner
Director

Jeffrey C. Marquardt
Deputy Director

David Sidari
Deputy Director

Marta E. Chaffee
Senior Associate Director

Gregory L. Evans
Senior Associate Director

Susan V. Foley
Senior Associate Director

Michael J. Lambert
Associate Director

Lawrence E. Mize
Associate Director

Bajinder N. Paul
Associate Director

Jennifer K. Chang
Deputy Associate Director

Jennifer A. Lucier
Deputy Associate Director

David C. Mills
Deputy Associate Director

Stuart E. Sperry
Deputy Associate Director

Timothy W. Maas
Assistant Director

Travis D. Nesmith
Assistant Director

Lorelei W. Pagano
Assistant Director

Jeffrey D. Walker
Assistant Director

Paul W. Bettge
Senior Adviser

Office of the Chief Operating Officer

Donald V. Hammond
Chief Operating Officer

Michael J. Kraemer
Chief Data Officer

Sheila Clark
Diversity and Inclusion Programs Director

Philip C. Daher
Assistant Director

Jeffrey A. Monica
Assistant Director

Todd A. Glissman
Senior Adviser

Division of Financial Management

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Director and Chief Financial Officer

Stephen J. Bernard
Deputy Director

Christine M. Fields
Associate Director

Jeffrey R. Peirce
Deputy Associate Director

Karen L. Vassallo
Deputy Associate Director

Christopher J. Suma
Assistant Director

Management Division

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Director

David J. Capp
Deputy Director

Steven A. Miranda
Deputy Director

Marie S. Savoy
Senior Associate Director

Tara Tinsley-Pelitere
Associate Director

Tameika L. Pope
Associate Director

Keith F. Bates
Assistant Director

Patricia Ann Buckingham
Assistant Director

Curtis B. Eldridge
Assistant Director and Chief

Timothy E. Markey
Assistant Director

Jeffrey A. Martin
Assistant Director

Stephen E. Pearson
Assistant Director

Reginald V. Roach
Assistant Director

Carol A. Sanders
Assistant Director

Theresa A. Trimble
Assistant Director

Division of Information Technology

Sharon L. Mowry
Director

Wayne A. Edmondson
Deputy Director

Lisa M. Bell
Senior Associate Director

Raymond Romero
Senior Associate Director

Kofi A. Sapong
Senior Associate Director

Glenn S. Eskow
Associate Director

Kassandra Arana Quimby
Associate Director

Sheryl Lynn Warren
Associate Director

Rajasekhar R. Yelisetty
Associate Director

William Dennison
Deputy Associate Director

Marietta Murphy
Deputy Associate Director

Theresa C. Palya
Deputy Associate Director

Charles B. Young II
Deputy Associate Director

Can Xuan Nguyen
Assistant Director

Deborah Prespare
Assistant Director

Jonathan F. Shrier
Assistant Director

Eric C. Turner
Assistant Director

Virginia M. Wall
Assistant Director

Edgar Wang
Assistant Director

Ivan K. Wun
Assistant Director

Tillena G. Clark
Adviser

Office of Inspector General

Mark Bialek
Inspector General

James A. Ogden
Deputy Inspector General

Jacqueline M. Becker
Associate Inspector General

Alberto Rivera-Fournier
Associate Inspector General

Melissa M. Heist
Associate Inspector General

Lawrence K. Valett
Associate Inspector General

Peter J. Sheridan
Assistant Inspector General

Federal Open Market Committee

The Federal Open Market Committee is made up of the seven members of the Board of Governors; the president of the Federal Reserve Bank of New York; and four of the remaining eleven Federal Reserve Bank presidents, who serve one-year terms on a rotating basis. During 2016, the Federal Open Market Committee held eight regularly scheduled meetings (see section 9, "Minutes of Federal Open Market Committee Meetings").

Members

Janet L. Yellen
Chair, Board of Governors

William C. Dudley
Vice Chairman, President, Federal Reserve Bank of New York

Lael Brainard
Member, Board of Governors

James Bullard
President, Federal Reserve Bank of St. Louis

Stanley Fischer
Member, Board of Governors

Esther L. George
President, Federal Reserve Bank of Kansas City

Loretta J. Mester
President, Federal Reserve Bank of Cleveland

Jerome H. Powell
Member, Board of Governors

Eric Rosengren
President, Federal Reserve Bank of Boston

Daniel K. Tarullo
Member, Board of Governors

Alternate Members

Charles L. Evans
First Vice President, Federal Reserve Bank of Chicago

Patrick Harker
President, Federal Reserve Bank of Philadelphia

Robert S. Kaplan
President, Federal Reserve Bank of Dallas

Neel Kashkari
President, Federal Reserve Bank of Minneapolis

Michael Strine
First Vice President, Federal Reserve Bank of New York

Officers

Brian F. Madigan
Secretary

Matthew M. Luecke
Deputy Secretary

David W. Skidmore
Assistant Secretary

Michelle A. Smith
Assistant Secretary

Scott G. Alvarez
General Counsel

Thomas C. Baxter
Deputy General Counsel (through July 1, 2016)

Michael Held
Deputy General Counsel (as of September 20, 2016)

Richard M. Ashton
Assistant General Counsel

Steven B. Kamin
Economist

Heinrich T. Laubach
Economist

David W. Wilcox
Economist

David Altig
Associate Economist

Thomas A. Connors
Associate Economist

Troy Davig
Associate Economist

Michael P. Leahy
Associate Economist

David E. Lebow
Associate Economist

Jonathan P. McCarthy
Associate Economist

Stephen A. Meyer
Associate Economist

Ellis W. Tallman
Associate Economist

Geoffrey Tootell
Associate Economist

Christopher J. Waller
Associate Economist

William Wascher
Associate Economist

Simon Potter
Manager, System Open Market Account

Lorie K. Logan
Deputy Manager, System Open Market Account

Board of Governors Advisory Councils

The Federal Reserve Board uses advisory committees in carrying out its varied responsibilities. To learn more, visit www.federalreserve.gov/aboutthefed/advisorydefault.htm.

Federal Advisory Council

The Federal Advisory Council—a statutory body established under the Federal Reserve Act—consults with and advises the Board of Governors on all matters within the Board's jurisdiction. It is composed of one representative from each Federal Reserve District, chosen by the Reserve Bank in that District. The president and vice president of the council are selected from amongst council members. The Federal Reserve Act requires the council to meet in Washington, D.C., at least four times a year. In 2016, the council met on February 2–3, May 3–4, September 6–7, and November 29–30. The council met with the Board on February 3, May 4, September 7, and November 30, 2016.

Members

District 1
Richard E. Holbrook
Chairman and Chief Executive Officer, Eastern Bank Corporation, Boston, MA

District 2
Michael L. Corbat
Chief Executive Officer, Citigroup, New York, NY

District 3
Mark A. Turner
President and Chief Executive Officer, WSFS Bank, Wilmington, DEA

District 4
Paul G. Greig
Chairman, President, and Chief Executive Officer, FirstMerit Corporation, Akron, OH

District 5
Kelly S. King
Chairman and Chief Executive Officer, BB&T Corporation,Winston-Salem, NC

District 6
O.B. Grayson Hall Jr.
Chairman, President, and Chief Executive Officer, Regions Financial Corporation, Birmingham, AL

District 7
Frederick H. Waddell
Chairman and Chief Executive Officer, Northern Trust Corporation and The Northern Trust Company, Chicago, IL

District 8
Ronald J. Kruszewski
Chairman, President, and Chief Executive Officer, Stifel Financial Corp., St. Louis, MO

District 9
Kenneth J. Karels
President and Chief Executive Officer, Great Western Bank, Sioux Falls, SD

District 10
Leslie R. Andersen
President and Chief Executive Officer, Bank of Bennington, Bennington, NE

District 11
Ralph W. Babb Jr.
Chairman and Chief Executive Officer, Comerica Inc. and Comerica Bank, Dallas, TX

District 12
John G. Stumpf
Chairman, President, and CEO, Wells Fargo & Company, San Francisco, CA (resigned September 22, 2016)

Officers

Kelly S. King
President

Paul G. Grieg
Vice President

Herb Taylor
Secretary

Community Depository Institutions Advisory Council

The Community Depository Institutions Advisory Council advises the Board of Governors on the economy, lending conditions, and other issues of interest to community depository institutions. Members are selected from among representatives of banks, thrift institutions, and credit unions who are serving on local advisory councils at the 12 Federal Reserve Banks. One member of each of the Reserve Bank councils serves on the Community Depository Institutions Advisory Council. The president and vice president are selected from amongst council members. The council usually meets with the Board twice a year in Washington, D.C. In 2016, the council met on April 8 and November 18.

Members

District 1
Gilda M. Nogueira
President and Chief Executive Officer, East Cambridge Savings Bank, Cambridge, MA

District 2
Michael J. Castellana
President and Chief Executive Officer, SEFCU, Albany, NY

District 3
Christopher D. Maher
President and Chief Executive Officer, OceanFirst Financial Corporation and OceanFirst Bank, Toms River, NJ

District 4
Robert J. Seiffert
President and Chief Executive Officer, DCB Financial Corporation and The Delaware County Bank and Trust Company, Lewis Center, OH

District 5
Robert A. DeAlmeida
President and Chief Executive Officer, Hamilton Bank, Baltimore, MD

District 6
Douglas L. Williams
President and Chief Executive Officer, Atlantic Capital Bank, Atlanta, GA

District 7
Jeffrey Plagge
President and Chief Executive Officer, Northwest Financial Corp., Arnolds Park, IA

District 8
Glenn D. Barks
President and Chief Executive Officer, First Community Credit Union, Chesterfield, MO

District 9
Brian L. Johnson
Chief Executive Officer, Choice Financial Group, Grand Forks, ND

District 10
Kyle Heckman
President and Chairman of the Board, Flatirons Bank, Boulder, CO

District 11
S. Boyce Brown
Chairman, President and Chief Executive Officer, Extraco Corporation, Waco, TX

District 12
Janet Garufis
President and Chief Executive Officer, Montecito Bank & Trust, Santa Barbara, CA

Officers

Michael J. Castellana
President

Janet A. Garufis
Vice President

Community Advisory Council

The Community Advisory Council was formed in 2015 to advise the Board of Governors on the economic circumstances and financial services needs of consumers and communities, with a particular focus on the concerns of low- and moderate-income populations. The council is composed of a diverse group of experts and representatives of consumer and community development organizations and interests, including from such fields as affordable housing, community and economic development, employment and labor, financial services and technology, small business, and asset and wealth building. One member of the council serves as its chair. The council first met with the Board on November 2015, and meets with the Board twice each year. In 2016, the council met with the Board on May 13 and October 21.

Members

Roberto Barragan
Senior Managing Director, Manhattan West Asset Management, Manhattan Beach, CA

Angela Glover Blackwell
Founder and Chief Executive Officer, PolicyLink, Oakland, CA

Patrick Dujakovich
President, Greater Kansas City AFL-CIO, Kansas City, MO

Benjamin Dulchin
Executive Director, Association for Neighborhood & Housing Development, New York, NY

Brian Fogle
President and Chief Executive Officer, Community Foundation of the Ozarks, Springfield, MO

Ben Mangan
Executive Director and Lecturer, Haas School of Business, U.C. Berkeley, Center for Social Sector Leadership, Berkeley, CA

Rodrick Miller
President and Chief Executive Officer, Detroit Economic Growth Corporation, Detroit, MI

Noel Poyo
Executive Director, National Association for Latino Community Asset Builders, San Antonio, TX

Michael Rubinger
President and Chief Executive Officer, Local Initiatives Support Corporation (LISC), New York, NY

Arden Shank
President and Chief Executive Officer, Neighborhood Housing Services of South Florida, Miami, FL

Adrienne Smith
President and Chief Executive Officer, New Mexico Direct Caregivers Coalition, Placitas, NM

Sue Taoka
Executive Vice President, Craft3, Seattle, WA

Mary Tingerthal
Commissioner, Minnesota Housing Finance Agency, St. Paul, MN

Raul Vazquez
Chief Executive Officer, Oportun, Redwood City, CA

Catherine Wilson
Professor, University of Nebraska–Lincoln College of Law, Lincoln, NE

Officer

Michael Rubinger
Chair (*through July 2016*)

Raul Vazquez
Chair (*as of August 2016*)

Roberto Barragan
Vice Chair (*as of August 2016*)

Model Validation Council

The Model Validation Council was established in 2012 by the Board of Governors to provide expert and independent advice on its process to rigorously assess the models used in stress tests of banking institutions. The Dodd-Frank Wall Street Reform and Consumer Protection Act required the Federal Reserve to conduct annual stress tests of large bank holding companies and systemically important, nonbank financial institutions supervised by the Board. The Model Validation Council provides input on the Board's efforts to assess the effectiveness of the models used in the stress tests. The council is intended to improve the quality of the Federal Reserve's model assessment program and to strengthen the confidence in the integrity and independence of the program.

Members

Philip Strahan, *Chair*
Professor, Boston College

Gregory Duffee
Professor, John Hopkins University

M. Suresh Sundaresan
Professor, Columbia University

Monika Piazzesi
Professor, Stanford University

Jennie Bai
Assistant Professor, Georgetown University

Robert Stine
Professor, University of Pennsylvania

Federal Reserve Banks and Branches

To carry out the day-to-day operations of the Federal Reserve System, the nation has been divided into 12 Federal Reserve Districts, each with a Reserve Bank. The majority of Reserve Banks also have at least one Branch.

Reserve Bank and Branch Directors

As required by the Federal Reserve Act, each Federal Reserve Bank is supervised by a nine-member board with three different classes of three directors each: Class A directors, who are nominated and elected by the member banks in that District to represent the stockholding banks; Class B directors, who are nominated and elected by the member banks to represent the public; and Class C directors, who are appointed by the Board of Governors to represent the public. Class B and Class C directors are selected with due, but not exclusive, consideration to the interests of agriculture, commerce, industry, services, labor, and consumers. Each Federal Reserve Bank Branch also has a board with either five or seven directors. A majority of the directors on each Branch board are appointed by the Federal Reserve Bank, with the remaining directors appointed by the Board of Governors.

For more information on Reserve Bank and Branch directors, see www.federalreserve.gov/aboutthefed/directors/about.htm.

Reserve Bank and Branch directors are listed below. For each director, the class of directorship, the director's principal place of business, and the expiration date of the director's current term are shown.

District 1–Boston

Class A

Joseph L. Hooley, 2016
Chairman and Chief Executive Officer, State Street Corporation, Boston, MA

Michael E. Tucker, 2017
President and Chief Executive Officer, Greenfield Co-operative Bank, Greenfield, MA

Peter L. Judkins, 2018
President and Chief Executive Officer, Franklin Savings Bank, Farmington, ME

Class B

Laura J. Sen, 2016
Chairman, BJ's Wholesale Club, Inc., Westborough, MA

Christina Hull Paxson, 2017
President, Brown University, Providence, RI

Roger S. Berkowitz, 2018
President and Chief Executive Officer, Legal Sea Foods, LLC, Boston, MA

Class C

John F. Fish, 2016
Chairman and Chief Executive Officer, Suffolk Construction Company, Inc., Boston, MA

Gary L. Gottlieb, MD, 2017
Chief Executive Officer, Partners In Health, Boston, MA

Phillip L. Clay, 2018
Professor, Massachusetts Institute of Technology (MIT), Cambridge, MA

District 2–New York

Class A

Gerald H. Lipkin, 2016
Chairman, President, and Chief Executive Officer, Valley National Bank, Wayne, NJ

Paul P. Mello, 2017
President and Chief Executive Officer, Solvay Bank, Solvay, NY

James P. Gorman, 2018
Chairman and Chief Executive Officer, Morgan Stanley, New York, NY

Class B

David M. Cote, 2016
Chairman and Chief Executive Officer, Honeywell International Inc., Morristown, NJ

Terry J. Lundgren, 2017
Chairman and Chief Executive Officer, Macy's, Inc., New York, NY

Glenn H. Hutchins, 2018
Co-Founder, Silver Lake, New York, NY

Class C

Denise Scott, 2016
Executive Vice President, Local Initiatives Support Corporation, New York, NY

Emily K. Rafferty, 2017
President Emerita, The Metropolitan Museum of Art, New York, NY

Sara Horowitz, 2018
Executive Director, Freelancers Union, Brooklyn, NY

District 3–Philadelphia

Class A

William S. Aichele, 2016
Chairman, Univest Corporation of Pennsylvania, Souderton, PA

Jon Evans, 2017
President and Chief Executive Officer, Atlantic Community Bankers Bank, Camp Hill, PA

David R. Hunsicker, 2018
Chairman, President, and Chief Executive Officer, New Tripoli Bank, New Tripoli, PA

Class B

Edward J. Graham, 2016
Retired Chairman and Chief Executive Officer, South Jersey Industries, Folsom, NJ

Patricia Hasson, 2017
President and Executive Director, Clarifi, Philadelphia, PA

Carol J. Johnson, 2018
Retired President and Chief Operating Officer, AlliedBarton Security Services, Conshohocken, PA

Class C

Brian McNeill, 2016
President and Chief Executive Officer, TouchPoint, Inc., Concordville, PA

Michael J. Angelakis, 2017
Chairman and Chief Executive Officer, Atairos, Bryn Mawr, PA

Phoebe Haddon, 2018
Chancellor, Rutgers University–Camden, Camden, NJ

District 4–Cleveland

Class A

Beth E. Mooney, 2016
Chairman and Chief Executive Officer, KeyCorp, Cleveland, OH

Todd A. Mason, 2017
President and Chief Executive Officer, First National Bank of Pandora, Pandora, OH

Claude E. Davis, 2018
Chief Executive Officer, First Financial Bancorp, Cincinnati, OH

Class B

Hal Keller, 2016
President, Ohio Capital Corporation for Housing, Columbus, OH

Charles H. Brown, 2017
Vice President and Secretary, Toyota Motor Engineering & Manufacturing North America, Erlanger, KY

George S. Barrett, 2018
Chairman and Chief Executive Officer, Cardinal Health, Inc., Dublin, OH

Class C

Christopher M. Connor, 2016
Executive Chairman, The Sherwin-Williams Company, Cleveland, OH

John P. Surma, 2017
Retired Chairman and Chief Executive Officer, United States Steel Corporation, Pittsburgh, PA

Dawne S. Hickton, 2018
President and Founding Partner, Cumberland Highstreet Partners, Sewickley, PA

Cincinnati Branch

Appointed by the Federal Reserve Bank

Austin W. Keyser, 2016
Midwest Regional Director, AFL-CIO, McDermott, OH

Amos L. Otis, 2017
Founder, President, and Chief Executive Officer, SoBran, Inc., Dayton, OH

Dwight Eric Smith, 2017
President and Chief Executive Officer, Sophisticated Systems, Inc., Columbus, OH

Tucker Ballinger, 2018
President and Chief Executive Officer, Forcht Bank, N.A., Lexington, KY

Appointed by the Board of Governors

Valarie L. Sheppard, 2016
Senior Vice President, Comptroller, and Treasurer, The Procter & Gamble Company, Cincinnati, OH

Deborah A. Feldman, 2017
President and Chief Executive Officer, Dayton Children's Hospital, Dayton, OH

Christopher C. Cole, 2018
Chairman and General Manager, Intelligrated, Inc., Mason, OH

Pittsburgh Branch

Appointed by the Federal Reserve Bank

Robert P. Oeler, 2016
Chairman, Dollar Bank, Pittsburgh, PA

Audrey Dunning, 2017
Chief Executive Officer, Summa, Pittsburgh, PA

Robert I. Glimcher, 2017
President, Glimcher Group, Inc., Pittsburgh, PA

Dmitri D. Shiry, 2018
Managing Partner, Deloitte LLP, Pittsburgh, PA

Appointed by the Board of Governors

Doris Carson Williams, 2016
President and Chief Executive Officer, African American Chamber of Commerce of Western Pennsylvania, Pittsburgh, PA

Charles L. Hammel III, 2017
President, PITT OHIO, Pittsburgh, PA

Stefani Pashman, 2018
Chief Executive Officer, Three Rivers Workforce Investment Board, Pittsburgh, PA

District 5–Richmond

Class A

C. Richard Miller, Jr., 2016
President and Chief Executive Officer, Woodsboro Bank, Woodsboro, MD

Robert R. Hill, Jr., 2017
Chief Executive Officer, South State Corporation and South State Bank, Columbia, SC

Susan K. Still, 2018
President and Chief Executive Officer, HomeTown Bankshares Corporation and HomeTown Bank, Roanoke, VA

Class B

Charles R. Patton, 2016
President and Chief Operating Officer, Appalachian Power Company, Charleston, WV

Thomas C. Nelson, 2017
Chairman, President and Chief Executive Officer, National Gypsum Company, Charlotte, NC

Catherine A. Meloy, 2018
President and Chief Executive Officer, Goodwill of Greater Washington/Goodwill Excel Center, Washington, DC

Class C

Margaret G. Lewis, 2016
Retired President, HCA Capital Division, Richmond, VA

Kathy J. Warden, 2017
Corporate Vice President and President, Mission Systems, Northrop Grumman Corporation, Linthicum, MD

Russell C. Lindner, 2018
Executive Chairman and Chief Executive Officer, The Forge Company, Washington, DC

Baltimore Branch

Appointed by the Federal Reserve Bank

Mary Ann Scully, 2016
Chairman, President, and Chief Executive Officer, Howard Bancorp, Ellicott City, MD

Austin J. Slater, Jr., 2017
President and Chief Executive Officer, Southern Maryland Electric Cooperative, Inc., Hughesville, MD

Christopher J. Estes, 2018
President and Chief Executive Officer, National Housing Conference, Washington, DC

Laura L. Gamble, 2018
Regional President Greater Maryland, PNC, Baltimore, MD

Appointed by the Board of Governors

Samuel L. Ross, MD, 2016
Chief Executive Officer, Bon Secours Baltimore Health System, Baltimore, MD

Susan J. Ganz, 2017
Chief Executive Officer, Lion Brothers Company, Inc., Owings Mills, MD

Kenneth R. Banks, 2018
President and Chief Executive Officer, Banks Contracting Company, Greenbelt, MD

Charlotte Branch

Appointed by the Federal Reserve Bank

Michael C. Crapps, 2016
President and Chief Executive Officer, First Community Bank, Lexington, SC

Vacancy, 2017

Jerry L. Ocheltree, 2018
President and Chief Executive Officer, Carolina Trust Bank, Lincolnton, NC

Vacancy, 2018

Appointed by the Board of Governors

Elizabeth A. Fleming, 2016
Past President, Converse College, Spartanburg, SC

Claude Z. Demby, 2017
Vice President Business Development, Cree, Inc., Durham, NC

Laura Y. Clark, 2018
Executive Director, Renaissance West Community Initiative, Charlotte, NC

District 6–Atlanta

Class A

T. Anthony Humphries, 2016
President and Chief Executive Officer, NobleBank & Trust, Anniston, AL

William H. Rogers, Jr., 2017
Chairman and Chief Executive Officer, SunTrust Banks, Inc., Atlanta, GA

Gerard R. Host, 2018
President and Chief Executive Officer, Trustmark Corporation, Jackson, MS

Class B

José S. Suquet, 2016
Chairman, President, and Chief Executive Officer, Pan-American Life Insurance Group, New Orleans, LA

Jonathan T.M. Reckford, 2017
Chief Executive Officer, Habitat for Humanity International, Atlanta, GA

Elizabeth A. Smith, 2018
Chairman and Chief Executive Officer, Bloomin' Brands, Inc., Tampa, FL

Class C

Michael J. Jackson, 2016
Chairman, Chief Executive Officer, and President, AutoNation, Inc., Ft. Lauderdale, FL

Myron A. Gray, 2017
President, U.S. Operations, United Parcel Service, Atlanta, GA

Thomas A. Fanning, 2018
Chairman, President, and Chief Executive Officer, Southern Company, Atlanta, GA

Birmingham Branch

Appointed by the Federal Reserve Bank

Robert W. Dumas, 2016
President and Chief Executive Officer, AuburnBank, Auburn, AL

Herschell L. Hamilton, 2017
Managing Partner, BLOC Global Group, Birmingham, AL

David M. Benck, 2018
Vice President and General Counsel, Hibbett Sports, Birmingham, AL

Michael Case, 2018
President and Chief Executive Officer, The Westervelt Company, Tuscaloosa, AL

Appointed by the Board of Governors

Brandon W. Bishop, 2016
International Representative, Southern Region, International Union of Operating Engineers, Birmingham, AL

Nancy C. Goedecke, 2017
Chairman and Chief Executive Officer, Mayer Electric Supply Company, Inc., Birmingham, AL

Pamela B. Hudson, MD, 2018
Chief Executive Officer, Crestwood Medical Center, Huntsville, AL

Jacksonville Branch

Appointed by the Federal Reserve Bank

Michael J. Grebe, 2016
Advisory Director, Berkshire Partners, Jacksonville, FL

Dana S. Kilborne, 2017
Co-President and Chief Commercial Officer, Sunshine Bank, Orlando, FL

John Hirabayashi, 2018
President and Chief Executive Officer, Community First Credit Union of Florida, Jacksonville, FL

Dawn Lockhart, 2018
Director of Strategic Partnerships, City of Jacksonville, Jacksonville, FL

Appointed by the Board of Governors

Carolyn M. Fennell, 2016
Senior Director of Public Affairs and Community Relations, Greater Orlando Aviation Authority, Orlando International Airport, Orlando, FL

David L. Brown, 2017
Chairman, Chief Executive Officer, and President, Web.com, Jacksonville, FL

Harold Mills, 2018
Vice Chairman, ZeroChaos, Orlando, FL

Miami Branch

Appointed by the Federal Reserve Bank

Gary L. Tice, 2016
Chairman and Chief Executive Officer, First Florida Integrity Bank, Naples, FL

Victoria E. Villalba, 2017
President and Chief Executive Officer, Victoria & Associates Career Services, Inc., Miami, FL

Carol C. Lang, 2017
President, HealthLink Enterprises, Inc., Miami Beach, FL

Millar Wilson, 2018
Vice Chairman and Chief Executive Officer, Mercantil Commercebank, Coral Gables, FL

Appointed by the Board of Governors

Rolando Montoya, 2016
Provost, Miami Dade College, Miami, FL

Thomas W. Hurley, 2017
Chairman and Chief Executive Officer, Becker Holding Corporation, Vero Beach, FL

Michael A. Wynn, 2018
Board Chairman and President, Sunshine Ace Hardware, Bonita Springs, FL

Nashville Branch

Appointed by the Federal Reserve Bank

William Y. Carroll Jr., 2016
President and Chief Executive Officer, SmartBank, Pigeon Forge, TN

R. Craig Holley, 2017
Chattanooga Chairman, Pinnacle Financial Partners, Chattanooga, TN

Beth R. Chase, 2018
Chief Executive Officer, c3/Consulting, Nashville, TN

Kent M. Adams, 2018
President and Chief Executive Officer, Caterpillar Financial Services Corporation, Nashville, TN

Appointed by the Board of Governors

Kathleen Calligan, 2016
Chief Executive Officer, Better Business Bureau Middle Tennessee, Nashville, TN

Scott McWilliams, 2017
Executive Vice President of Strategic Development, GEODIS, Brentwood, TN

Richard D. Holder, 2018
President and Chief Executive Officer, NN, Inc., Johnson City, TN

New Orleans Branch

Appointed by the Federal Reserve Bank

Elizabeth A. Ardoin, 2016
Senior Executive Vice President – Director of Communications, IBERIABANK, Lafayette, LA

Lampkin Butts, 2017
President and Chief Operating Officer, Sanderson Farms, Inc., Laurel, MS

Phillip R. May, 2018
President and Chief Executive Officer, Entergy Louisiana, LLC and Entergy Gulf States Louisiana, L.L.C., New Orleans, LA

Suzanne T. Mestayer, 2018
Managing Principal, ThirtyNorth Investments, LLC, New Orleans, LA

Appointed by the Board of Governors

Terrie P. Sterling, 2016
Executive Vice President and Chief Operating Officer, Our Lady of the Lake Regional Medical Center, Baton Rouge, LA

Fred T. Stimpson III, 2017
President, U.S. South Operations, Canfor Scotch Gulf, Mobile, AL

Art E. Favre, 2018
President and Chief Executive Officer, Performance Contractors, Inc., Baton Rouge, LA

District 7–Chicago

Class A

Abram A. Tubbs, 2016
Chairman and Chief Executive Officer, Ohnward Bank & Trust, Cascade, IA

David W. Nelms, 2017
Chairman and Chief Executive Officer, Discover Financial Services, Riverwoods, IL

William M. Farrow III, 2018
President and Chief Executive Officer, Urban Partnership Bank, Chicago, IL

Class B

Jorge Ramirez, 2016
President, Chicago Federation of Labor, Chicago, IL

Nelda J. Connors, 2017
Chairwoman and Chief Executive Officer, Pine Grove Holdings, LLC, Chicago, IL

Susan M. Collins, 2018
Joan and Sanford Weill Dean of Public Policy, University of Michigan, Ann Arbor, MI

Class C

Anne R. Pramaggiore, 2016
President and Chief Executive Officer, ComEd, Chicago, IL

E. Scott Santi, 2017
Chairman and Chief Executive Officer, Illinois Tool Works Inc., Glenview, IL

Greg Brown, 2018
Chairman and Chief Executive Officer, Motorola Solutions, Inc., Schaumburg, IL

Detroit Branch

Appointed by the Federal Reserve Bank

Joseph B. Anderson, Jr., 2016
Chairman and Chief Executive Officer, TAG Holdings, LLC, Wixom, MI

Sandra Pierce, 2017
Chairman and Senior Vice President, Private Client Group and Regional Banking Director, Huntington Michigan, Southfield, MI

Fernando Ruiz, 2017
Corporate Vice President and Treasurer, The Dow Chemical Company, Midland, MI

Rip Rapson, 2018
President and Chief Executive Officer, The Kresge Foundation, Troy, MI

Appointed by the Board of Governors

Douglas W. Stotlar, 2016
Former President and Chief Executive Officer, Con-way Inc., Ann Arbor, MI

Michael L. Seneski, 2017
Director, Corporate Strategy, Ford Motor Company, Dearborn, MI

Wright L. Lassiter III, 2018
President, Henry Ford Health System, Detroit, MI

District 8–St. Louis

Class A

D. Bryan Jordan, 2016
Chairman, President, and Chief Executive Officer, First Horizon National Corporation, Memphis, TN

Susan S. Stephenson, 2017
Co-Chairman and President, Independent Bank, Memphis, TN

Patricia L. Clarke, 2018
President and Chief Executive Officer, First National Bank of Raymond, Raymond, IL

Class B

Cal McCastlain, 2016
Partner, Dover Dixon Horne PLLC, Little Rock, AR

John N. Roberts III, 2017
President and Chief Executive Officer, J.B. Hunt Transport Services, Inc., Lowell, AR

Daniel J. Ludeman, 2018
President and Chief Executive Officer, Concordance Academy of Leadership, St. Louis, MO

Class C

Kathleen M. Mazzarella, 2016
Chairman, President and Chief Executive Officer, Graybar Electric Company, Inc., St. Louis, MO

Vacancy, 2017

Suzanne Sitherwood, 2018
President and Chief Executive Officer, Spire Inc., St. Louis, MO

Little Rock Branch

Appointed by the Federal Reserve Bank

Michael A. Cook, 2016
Senior Vice President and Assistant Treasurer, Wal-Mart Stores, Inc., Bentonville, AR

Karama Neal, 2017
Chief Operating Officer, Southern Bancorp Community Partners, Little Rock, AR

Keith Glover, 2017
President and Chief Executive Officer, Producers Rice Mill, Inc., Stuttgart, AR

Charles G. Morgan, Jr., 2018
President and Chief Executive Officer, Relyance Bank, N.A., Pine Bluff, AR

Appointed by the Board of Governors

P. Mark White, 2016
President and Chief Executive Officer, Arkansas Blue Cross and Blue Shield, Little Rock, AR

Ray C. Dillon, 2017
President and Chief Executive Officer, Deltic Timber Corporation, El Dorado, AR

Robert Martinez, 2018
Owner, Rancho La Esperanza, DeQueen, AR

Louisville Branch

Appointed by the Federal Reserve Bank

David P. Heintzman, 2016
Chairman and Chief Executive Officer, Stock Yards Bank & Trust Company, Louisville, KY

Mary K. Moseley, 2017
President and Chief Executive Officer, Al J. Schneider Company, Louisville, KY

Malcolm Bryant, 2017
President, The Malcolm Bryant Corporation, Owensboro, KY

Ben Reno-Weber, 2018
Project Director, The Greater Louisville Project, Louisville, KY

Appointed by the Board of Governors

Randy W. Schumaker, 2016
President and Chief Management Officer, Logan Aluminum, Inc., Russellville, KY

Alice K. Houston, 2017
President, Houston-Johnson, Inc., Louisville, KY

Susan E. Parsons, 2018
Chief Financial Officer, Secretary, and Treasurer, Koch Enterprises, Inc., Evansville, IN

Memphis Branch

Appointed by the Federal Reserve Bank

J. Brice Fletcher, 2016
Chairman and Chief Executive Officer, First National Bank of Eastern Arkansas, Forrest City, AR

Michael E. Cary, 2017
President and Chief Executive Officer, Carroll Bank and Trust, Huntingdon, TN

R. Molitor Ford, Jr., 2017
Vice Chairman and Chief Executive Officer, Commercial Bank and Trust Company, Memphis, TN

Julianne Goodwin, 2018
Owner, Express Employment Professionals, Tupelo, MS

Appointed by the Board of Governors

Carolyn Chism Hardy, 2016
President and Chief Executive Officer, Chism Hardy Investments, LLC, Collierville, TN

David T. Cochran, Jr., 2017
Partner, CoCo Planting Co., Avon, MS

Eric D. Robertson, 2018
President, Community LIFT, Memphis, TN

District 9–Minneapolis

Class A

Catherine T. Kelly, 2016
President and Chief Executive Officer, Minnesota Bank & Trust, Edina, MN

Thomas W. Armstrong, 2017
President, The First National Bank of Park Falls, Park Falls, WI

Randy L. Newman, 2018
Chairman and Chief Executive Officer, Alerus Financial, NA and Alerus Financial Corporation, Grand Forks, ND

Class B

Lawrence R. Simkins, 2016
President and Chief Executive Officer, The Washington Companies, Missoula, MT

Kathleen Neset, 2017
President, Neset Consulting Service, Tioga, ND

Christine Hamilton, 2018
Managing Partner, Christiansen Land and Cattle, Ltd., Kimball, SD

Class C

Kendall J. Powell, 2016
Chairman and Chief Executive Officer, General Mills, Inc., Minneapolis, MN

MayKao Y. Hang, 2017
President and Chief Executive Officer, Amherst H. Wilder Foundation, St. Paul, MN

Harry Melander, 2018
President, Minnesota Building and Construction Trades Council, St. Paul, MN

Helena Branch

Appointed by the Federal Reserve Bank

Thomas R. Swenson, 2016
President and Chief Executive Officer, Bank of Montana and Bancorp of Montana Holding Company, Missoula, MT

Duane Kurokawa, 2017
President, Western Bank of Wolf Point, Wolf Point, MT

Barbara Stiffarm, 2018
Executive Director, Opportunity Link, Inc., Havre, MT

Appointed by the Board of Governors

Sarah Walsh, 2017
Chair, PayneWest Insurance, Helena, MT

Marsha Goetting, 2018
Professor and Extension Family Economics Specialist, Montana State University, Bozeman, MT

District 10–Kansas City

Class A

Max T. Wake, 2016
President, Jones National Bank & Trust Co., Seward, NE

Paul J. Thompson, 2017
President and Chief Executive Officer, Country Club Bank, Kansas City, MO

Mark A. Zaback, 2018
President and Chief Executive Officer, Jonah Bank of Wyoming, Casper, WY

Class B

Len C. Rodman, 2016
Former Chairman, President, and Chief Executive Officer, Black & Veatch, Overland Park, KS

Lilly Marks, 2017
Vice President for Health Affairs, University of Colorado and Anschutz Medical Campus, Aurora, CO

Brent A. Stewart, Sr., 2018
President and Chief Executive Officer, United Way of Greater Kansas City, Kansas City, MO

Class C

Rose Washington, 2016
Executive Director, Tulsa Economic Development Corporation, Tulsa, OK

James C. Farrell, 2017
President and Chief Executive Officer, Farmers National Company, Omaha, NE

Steve Maestas, 2018
Chief Executive Officer, Maestas Development Group, Albuquerque, NM

Gary DeFrange, 2017
President and Chief Operating Officer, Winter Park Resort, Winter Park, CO

Richard L. Lewis, 2018
President and Chief Executive Officer, RTL Networks Inc., Denver, CO

Denver Branch

Appointed by the Federal Reserve Bank

Jeffrey C. Wallace, 2016
Chief Executive Officer, Wyoming Bank & Trust, Cheyenne, WY

Ashley J. Burt, 2017
President, The Gunnison Bank and Trust Company, Gunnison, CO

Edmond Johnson, 2018
President and Owner, Premier Manufacturing Inc., Frederick, CO

Katharine W. Winograd, 2018
President, Central New Mexico Community College, Albuquerque, NM

Appointed by the Board of Governors

Margaret M. Kelly, 2016
Former Chief Executive Officer, RE/MAX, LLC, Denver, CO

Oklahoma City Branch

Appointed by the Federal Reserve Bank

Jane Haskin, 2016
President and Chief Executive Officer, First Bethany Bank & Trust, Bethany, OK

Charles R. Hall, 2016
Chairman and Chief Executive Officer, Exchange Bank and Trust Company, Perry, OK

Tina Patel, 2017
Chief Financial Officer, Promise Hotels, Inc., Tulsa, OK

Michael C. Coffman, 2018
President and Chief Executive Officer, Panhandle Oil and Gas, Inc., Oklahoma City, OK

Appointed by the Board of Governors

Clint D. Abernathy, 2016
President, Abernathy Farms, Inc., Altus, OK

Douglas J. Stussi, 2017
Executive Vice President and Chief Financial Officer, Love's Travel Stops & Country Stores, Oklahoma City, OK

Peter B. Delaney, 2018
Former Chairman and Chief Executive Officer, OGE Energy Corporation, Oklahoma City, OK

Omaha Branch

Appointed by the Federal Reserve Bank

Anne Hindery, 2016
Chief Executive Officer, Nonprofit Association of the Midlands, Omaha, NE

Jeff W. Krejci, 2017
President and Director, Cornerstone Bank, York, NE

Brian D. Esch, 2018
President and Chief Executive Officer, McCook National Bank, McCook, NE

Thomas J. Henning, 2018
President and Chief Executive Officer, Cash-Wa Distributing Co., Kearney, NE

Appointed by the Board of Governors

John F. Bourne, 2016
International Representative, International Brotherhood of Electrical Workers, Omaha, NE

Eric L. Butler, 2017
Executive Vice President-Marketing and Sales, Union Pacific Railroad, Omaha, NE

Kimberly A. Russel, 2018
President and Chief Executive Officer, Bryan Health, Lincoln, NE

District 11–Dallas

Class A

J. Russell Shannon, 2016
President and Chief Executive Officer, National Bank of Andrews, Andrews, TX

Christopher C. Doyle, 2017
President and Chief Executive Officer, Texas First Bank, Texas City, TX

Allan James "Jimmy" Rasmussen, 2018
President and Chief Executive Officer, HomeTown Bank, N.A., Galveston, TX

Class B

Curtis V. Anastasio, 2016
Executive Chairman, GasLog Partners L.P., New York, NY

Jorge A. Bermudez, 2017
President and Chief Executive Officer, The Byebrook Group, LLC, College Station, TX

Ann B. Stern, 2018
President and Chief Executive Officer, Houston Endowment, Inc., Houston, TX

Class C

Matthew K. Rose, 2016
Executive Chairman, BNSF Railway Company, Fort Worth, TX

Renu Khator, 2017
Chancellor, University of Houston System, *President*, University of Houston, Houston, TX

Greg L. Armstrong, 2018
Chairman and Chief Executive Officer, Plains All American Pipeline L.P., Houston, TX

El Paso Branch

Appointed by the Federal Reserve Bank

Paul L. Foster, 2016
Executive Chairman, Western Refining, Inc., El Paso, TX

Jerry Pacheco, 2017
President, Global Perspectives Integrated, Inc., Santa Teresa, NM

Teresa O. Molina, 2017
President, First New Mexico Bank, Deming, NM

Mary E. Kipp, 2018
Chief Executive Officer, El Paso Electric Company, El Paso, TX

Appointed by the Board of Governors

J. Eric Evans, 2016
President of Hospital Operations, Tenet Healthcare Corp., Texas Region, Dallas, TX

Richard D. Folger, 2017
Managing General Partner, Colbridge Partners Ltd., Midland, TX

Renard U. Johnson, 2018
President and Chief Executive Officer, Management & Engineering Technologies International Inc. (METI), El Paso, TX

Houston Branch

Appointed by the Federal Reserve Bank

Gerald B. Smith, 2016
Chairman and Chief Executive Officer, Smith, Graham & Company Investment Advisors, L.P., Houston, TX

Albert Chao, 2017
President and Chief Executive Officer, Westlake Chemical Corp., Houston, TX

R.A. "Al" Walker, 2017
Chairman, President, and Chief Executive Officer, Anadarko Petroleum Corporation, Houston, TX

David Zalman, 2018
Chairman and Chief Executive Officer, Prosperity Bancshares, Houston, TX

Appointed by the Board of Governors

Marcus A. Watts, 2016
President, The Friedkin Group, Houston, TX

Robert C. Robbins, MD, 2017
President and Chief Executive Officer, Texas Medical Center, Houston, TX

Ellen Ochoa, 2018
Government Executive, Director, NASA Johnson Space Center, Houston, TX

San Antonio Branch

Appointed by the Federal Reserve Bank

Charles E. Amato, 2016
Chairman and Co-founder, Southwest Business Corp. (SWBC), San Antonio, TX

Janie Barrera, 2017
President and Chief Executive Officer, LiftFund, San Antonio, TX

Robert L. Lozano, 2017
Franchisee Owner and Operator, Dairy Queen, Pharr, TX

Alfred B. Jones, 2018
President and Director, American Bank Holding Corp., Corpus Christi, TX

Appointed by the Board of Governors

James "Rad" Conrad Weaver, 2016
Chief Executive Officer, McCombs Partners, San Antonio, TX

Manoj Saxena, 2017
Managing Director, The Entrepreneurs' Fund, Austin, TX

Jesús Garza, 2018
President and Chief Executive Officer, Seton Healthcare Family, Austin, TX

District 12–San Francisco

Class A

Steven R. Gardner, 2016
President and Chief Executive Officer, Pacific Premier Bank, Irvine, CA

Megan F. Clubb, 2017
Chairman of the Board, Baker Boyer National Bank, Walla Walla, WA

Peter S. Ho, 2018
Chairman, President, and Chief Executive Officer, Bank of Hawaii and Bank of Hawaii Corporation, Honolulu, HI

Class B

Nicole C. Taylor, 2016
Associate Vice Provost for Student Affairs and Dean of Community Engagement and Diversity, Stanford University, Stanford, CA

Richard A. Galanti, 2017
Executive Vice President and Chief Financial Officer, Costco Wholesale Corporation, Issaquah, WA

Steven E. Bochner, 2018
Partner, Wilson, Sonsini, Goodrich, & Rosati, P.C., Palo Alto, CA

Class C

Barry M. Meyer, 2016
Retired Chairman and Chief Executive Officer, Warner Brothers Entertainment, Burbank, CA

Chairman and Founder, North Ten Mile Associates, Burbank, CA

Roy A. Vallee, 2017
Retired Chairman and Chief Executive Officer, Avnet, Inc., Phoenix, AZ

Alexander R. Mehran, 2018
Chairman and Chief Executive Officer, Sunset Development Company, San Ramon, CA

Los Angeles Branch

Appointed by the Federal Reserve Bank

David I. Rainer, 2016
Chairman and Chief Executive Officer, California United Bank, Encino, CA

Peggy Tsiang Cherng, 2017
Co-Chair and Co-Chief Executive Officer, Panda Restaurant Group, Inc., Rosemead, CA

Ilyanne Morden Kichaven, 2018
Executive Director, Los Angeles, SAG-AFTRA, Los Angeles, CA

Luis Faura, 2018
President and Chief Executive Officer, C&F Foods, Inc., City of Industry, CA

Appointed by the Board of Governors

James A. Hughes, 2016
Former Director and Chief Executive Officer, First Solar, Inc., Tempe, AZ

Robert H. Gleason, 2017
President and Chief Executive Officer, Evan Hotels, San Diego, CA

Anita V. Pramoda, 2018
Chief Executive Officer, Owned Outcomes, Las Vegas, NV

Portland Branch

Appointed by the Federal Reserve Bank

Steven J. Zika, 2016
Chief Executive Officer, Hampton Affiliates, Portland, OR

Robert C. Hale, 2017
Chief Executive Officer, Hale Companies, Hermiston, OR

Charles A. Wilhoite, 2017
Managing Director, Willamette Management Associates, Portland, OR

S. Randolph Compton, 2018
President, Chief Executive Officer, and Co-Chairperson of the Board, Pioneer Trust Bank, N.A., Salem, OR

Appointed by the Board of Governors

Joseph E. Robertson Jr., MD, 2016
President, Oregon Health & Science University, Portland, OR

Tamara L. Lundgren, 2017
President and Chief Executive Officer, Schnitzer Steel Industries, Inc., Portland, OR

Román D. Hernández, 2018
Partner, K&L Gates, Portland, OR

Salt Lake City Branch

Appointed by the Federal Reserve Bank

Albert T. Wada, 2016
Chairman, Wada Farms, Inc., Pingree, ID

Josh England, 2017
President, C.R. England, Inc., Salt Lake City, UT

Park Price, 2017
Chief Executive Officer Emeritus and Chairman, Bank of Idaho, Idaho Falls, ID

Susan D. Mooney Johnson, 2018
President, Futura Industries, Clearfield, UT

Appointed by the Board of Governors

Peter R. Metcalf, 2016
Founder, Brand Advocate and CEO Emeritus, Black Diamond, Inc., Salt Lake City, UT

Patricia R. Richards, 2017
President and Chief Executive Officer, SelectHealth, Inc., Murray, UT

Arthur F. (Skip) Oppenheimer, 2018
Chairman and Chief Executive Officer, Oppenheimer Companies, Inc., Boise, ID

Seattle Branch

Appointed by the Federal Reserve Bank

Nicole W. Piasecki, 2016
Vice President and General Manager, Propulsion Systems Division, Boeing Commercial Airplanes, Seattle, WA

Craig Dawson, 2017
President and Chief Executive Officer, Retail Lockbox, Inc., Seattle, WA

Carol K. Nelson, 2017
Pacific Region Sales Executive and Seattle Market President, KeyBank, Seattle, WA

West Mathison, 2018
President, Stemilt Growers, LLC, Wenatchee, WA

Appointed by the Board of Governors

Sophie Minich, 2016
President and Chief Executive Officer, Cook Inlet Region, Inc., Anchorage, AK

Scott L. Morris, 2017
Chairman, President and Chief Executive Officer, Avista Corporation, Spokane, WA

Greg C. Leeds, 2018
President and Chief Executive Officer, Wizards of the Coast, Hasbro, Inc., Renton, WA

Reserve Bank and Branch Leadership

Each year, the Board of Governors designates one Class C director to serve as chair, and one Class C director to serve as deputy chair, of each Reserve Bank board. Reserve Banks also have a president and first vice president who are appointed by the Bank's Class C, and certain Class B, directors, subject to approval by the Board of Governors. Each Reserve Bank selects a chair for every Branch in its District from among the directors on the Branch board who were appointed by the Board of Governors. For each Branch, an officer from its Reserve Bank is also charged with the oversight of Branch operations.

Boston

John F. Fish, *Chair*

Gary L. Gottlieb, MD, *Deputy Chair*

Eric S. Rosengren, *President and Chief Executive Officer*

Kenneth C. Montgomery, *First Vice President and Chief Operating Officer*

New York

Emily K. Rafferty, *Chair*

Sara Horowitz, *Deputy Chair*

William C. Dudley, *President*

Michael Strine, *First Vice President*

Additional office at East Rutherford, NJ

Philadelphia

Michael J. Angelakis, *Chair*

Brian McNeill, *Deputy Chair*

Patrick T. Harker, *President*

James D. Narron, *First Vice President*

Cleveland

Christopher M. Connor, *Chair*

John P. Surma, *Deputy Chair*

Loretta J. Mester, *President*

Gregory Stefani, *First Vice President*

Cincinnati

Valarie L. Sheppard, *Chair*

Toby Trocchio, *Senior Regional Officer*

Pittsburgh

Doris Carson Williams, *Chair*

Guhan Venkatu, *Senior Regional Officer*

Richmond

Russell C. Lindner, *Chair*

Margaret G. Lewis, *Deputy Chair*

Jeffrey M. Lacker, *President*

Mark L. Mullinix, *First Vice President*

Baltimore

Samuel L. Ross, MD, *Chair*

David E. Beck, *Senior Vice President and Baltimore Regional Executive*

Charlotte

Laura Y. Clark, *Chair*

Matthew A. Martin, *Senior Vice President and Charlotte Regional Executive*

Atlanta

Thomas A. Fanning, *Chair*

Michael J. Jackson, *Deputy Chair*

Dennis P. Lockhart, *President*

Marie C. Gooding, *First Vice President*

Birmingham

Pamela B. Hudson, MD, *Chair*

Lesley McClure, *Vice President and Regional Executive*

Jacksonville

Carolyn M. Fennell, *Chair*

Christopher L. Oakley, *Vice President and Regional Executive*

Miami

Rolando Montoya, *Chair*

Karen Gilmore, *Vice President and Regional Executive*

Nashville

Kathleen Calligan, *Chair*

Lee Jones, *Vice President and Regional Executive*

New Orleans

Art E. Favre, *Chair*

Adrienne C. Slack, *Vice President and Regional Executive*

Chicago

Greg Brown, *Chair*

Anne R. Pramaggiore, *Deputy Chair*

Charles L. Evans, *President*

Ellen J. Bromagen, *First Vice President and Chief Operating Officer*

Additional office at Des Moines, IA

Detroit

Douglas W. Stotlar, *Chair*

Robert Wiley, *Senior Vice President, Chief Information Officer, District Operations and Detroit Branch Manager*

St. Louis

Kathleen M. Mazzarella, *Chair*

Suzanne Sitherwood, *Deputy Chair*

James B. Bullard, *President*

David A. Sapenaro, *First Vice President and Chief Operating Officer*

Little Rock

Ray C. Dillon, *Chair*

Robert A. Hopkins, *Regional Executive and Vice President*

Louisville

Susan E. Parsons, *Chair*

Nikki R. Jackson, *Regional Executive and Vice President*

Memphis

Carolyn Chism Hardy, *Chair*

Douglas G. Scarboro, *Regional Executive and Vice President*

Minneapolis

MayKao Y. Hang, *Chair*

Kendall J. Powell, *Deputy Chair*

Neel T. Kashkari, *President*

James M. Lyon, *First Vice President*

Helena

Sarah Walsh, *Chair*

Susan Woodrow, *Assistant Vice President and Branch Executive*

Kansas City

Steve Maestas, *Chair*

Rose Washington, *Deputy Chair*

Esther L. George, *President*

Kelly J. Dubbert, *First Vice President*

Denver

Margaret M. Kelly, *Chair*

Alison Felix, *Vice President and Branch Executive*

Oklahoma City

Peter B. Delaney, *Chair*

Chad R. Wilkerson, *Vice President and Branch Executive*

Omaha

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Nathan Kauffman, *Assistant Vice President and Branch Executive*

Dallas

Renu Khator, *Chair*

Matthew K. Rose, *Deputy Chair*

Robert S. Kaplan, *President*

Helen E. Holcomb, *First Vice President*

El Paso

Richard D. Folger, *Chair*

Roberto A. Coronado, *Officer in Charge*

Houston

Ellen Ochoa, *Chair*

Daron D. Peschel, *Officer in Charge*

San Antonio

Manoj Saxena, *Chair*

Blake Hastings, *Officer in Charge*

San Francisco

Roy A. Vallee, *Chair*

Alexander R. Mehran, *Deputy Chair*

John C. Williams, *President*

Mark A. Gould, *First Vice President*

Additional office at Phoenix, AZ

Los Angeles

James A. Hughes, *Chair*

Roger W. Replogle, *Regional Executive*

Portland

Joseph E. Robertson, Jr., MD, *Chair*

Lynn Jorgensen, *Regional Executive*

Salt Lake City

Peter R. Metcalf, *Chair*

Robin A. Rockwood, *Officer in Charge*

Seattle

Scott L. Morris, *Chair*

Darlene Wilczynski, *Regional Executive*

Leadership Conferences

Conference of Chairs

The chairs of the Federal Reserve Banks are organized into the Conference of Chairs, which meets to consider matters of common interest and to consult with and advise the Board of Governors. Such meetings, also attended by the deputy chairs, were held in Washington, D.C., on May 17–18 and November 15–16, 2016. The conference's executive committee members for 2016 are listed below.[1]

Conference of Chairs Executive Committee—2016

Roy A. Vallee, *Chair*, Federal Reserve Bank of San Francisco

Thomas A. Fanning, *Vice Chair*, Federal Reserve Bank of Atlanta

Steve Maestas, *Member*, Federal Reserve Bank of Kansas City

Conference of Presidents

The presidents of the Federal Reserve Banks are organized into the Conference of Presidents, which meets periodically to identify, define, and deliberate issues of strategic significance to the Federal Reserve System; to consider matters of common interest; and to consult with and advise the Board of Governors. The chief executive officer of each Reserve Bank was originally labeled governor and did not receive the title of president until the passage of the Banking Act of 1935. Consequently, when the Conference was first established in 1914 it was known as the Conference of Governors. Conference officers for 2016 are listed below.

Conference of Presidents—2016

Dennis P. Lockhart, *Chair*, Federal Reserve Bank of Atlanta

Eric S. Rosengren, *Vice Chair*, Federal Reserve Bank of Boston

Maria R. Smith, *Secretary*, Federal Reserve Bank of Atlanta

Joel W. Werkema, *Assistant Secretary*, Federal Reserve Bank of Boston

[1] On November 16, 2016, the Conference of Chairs elected Thomas A. Fanning, chair of the Federal Reserve Bank of Atlanta, as chair of the conference's executive committee for 2017. The conference also elected Rose Washington, deputy chair of the Federal Reserve Bank of Kansas City for 2017 as vice chair, and Margaret G. Lewis, deputy chair of the Federal Reserve Bank of Richmond for 2017, as the executive committee's third member.

Conference of First Vice Presidents

The Conference of First Vice Presidents of the Federal Reserve Banks was organized in 1969 to meet periodically for the consideration of operations and other matters. Conference officers for 2016 are listed below.[2]

Conference of First Vice Presidents—2016

Gregory Stefani, *Chair*, Federal Reserve Bank of Cleveland

Kelly J. Dubbert, *Vice Chair*, Federal Reserve Bank of Kansas City

Terri Bialowas, *Secretary*, Federal Reserve Bank of Cleveland

Erika Ramirez, *Assistant Secretary*, Federal Reserve Bank of Kansas City

[2] On November 4, 2015, the conference elected Gregory Stefani as chair for 2016–17 and Kelly Dubbert, Federal Reserve Bank of Kansas City, as vice chair. The conference also elected Terri Bialowas as secretary and Erika Ramirez, Federal Reserve Bank of Kansas City, as assistant secretary.

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