Prefatory Note

The attached document represents the most complete and accurate version available based on original files from the FOMC Secretariat at the Board of Governors of the Federal Reserve System.

Please note that some material may have been redacted from this document if that material was received on a confidential basis. Redacted material is indicated by occasional gaps in the text or by gray boxes around non-text content. All redacted passages are exempt from disclosure under applicable provisions of the Freedom of Information Act.

Content last modified 01/08/2021.

Report to the FOMC on Economic Conditions and Monetary Policy

Book A

Economic and Financial Conditions:
Current Situation and Outlook

January 21, 2015

Prepared for the Federal Open Market Committee
by the staff of the Board of Governors of the Federal Reserve System

(This page is intentionally blank.)

Domestic Economic Developments and Outlook

The information we have received since the December Tealbook suggests that economic activity expanded at a strong pace over the second half of last year. Folding in the upward revision to GDP growth in the third quarter and the incoming spending data for the fourth, we now estimate that real GDP rose at an average annual rate of 3¾ percent over those two quarters, ¾ percentage point above the December Tealbook forecast and well above our estimate of potential output growth. Real private domestic final purchases (PDFP), which we judge to be a better indicator of the underlying momentum in the economy, appear to have increased at about the same pace as real GDP. Meanwhile, labor market conditions improved a little more than we had anticipated. Taken together, the positive surprises in labor and product markets suggest that the economy entered 2015 with a little less resource slack than we had previously projected.

In light of the greater momentum suggested by the recent data and the significant boost to household purchasing power implied by the latest declines in oil prices, we have also marked up our projection for economic activity in the first half of this year. Although real GDP growth is expected to slow to an annual rate of 2¾ percent in the first half, real PDFP is now expected to increase at a robust annual rate of 4 percent; both figures are higher than in the December Tealbook. Similarly, we have upgraded our near-term outlook somewhat for the pace of job gains and slightly lowered the projected near-term path for the unemployment rate.

As in previous forecasts, we anticipate that accommodative monetary policy will continue to help support a pace of real GDP growth over the next three years that exceeds the growth rate of potential output. Although we judge the level of GDP to be currently ½ percent higher than in the December Tealbook, our forecast of GDP growth over the next three years is little revised, as the carry-on effects of the positive near-term spending surprises and the support to household spending from lower energy prices are offset by the restraint implied by the recent appreciation of the dollar. (See the box "Reviewing the Effects of Changes in the Dollar and Oil Prices on U.S. GDP."[1]) We now project that

[1] During the intermeeting period, we decided to build into the judgmental projection a somewhat greater boost to real activity from the further decline in oil prices in order to bring these effects closer to the center of the range of estimates from various staff models and other empirical estimates in the research literature.

Reviewing the Effects of Changes in the Dollar and Oil Prices on U.S. GDP

Since the middle of 2014, oil prices have declined dramatically and the dollar has appreciated sharply. In this discussion, we review the estimated effects of the higher dollar and lower oil prices on U.S. GDP. Both the appreciation of the dollar and the fall in oil prices have had large effects on our outlook, with, on net, the negative effect of the higher dollar outweighing the positive effect of lower oil prices.

Table 1 reviews the rules of thumb in the staff judgmental forecast for a 10 percent appreciation of the dollar and a 10 percent decline in the price of oil.[1] The table reports the estimated direct effects of these changes, abstracting from the response of monetary policy and other financial variables. Dollar appreciation lowers exports and increases imports, both of which contribute to a large negative effect on the level of GDP that increases with time. In contrast, lower oil prices boost the level of GDP, as the positive impetus to consumption more than offsets the negative effect on net exports and investment in the oil industry.[2] The positive effect of an oil price decline largely occurs within a year.

Since the July Tealbook, the broad real dollar has appreciated about 10 percent, lowering the level of the staff forecast for U.S. GDP by 1.6 percent by the end of 2017 (as shown in table 2). Over the same period, the spot price of Brent crude oil has declined almost 60 percent, while prices for further-dated futures contracts have fallen about 35 percent. Judging movements in prices that are further out on the futures curve to be more indicative of persistent price changes, the staff estimates that the 35 percent fall in futures prices will boost the level of GDP by about ¾ percent, with most of the increase occurring by the end of this year (also shown in table 2). Thus, on net, the two effects roughly offset one another in 2014 and 2015, but thereafter the negative dollar effect grows to be the larger influence.

The effects reported above are not the only considerations linking changes in the dollar and oil prices to changes in the overall staff outlook. For instance, the estimates do not include the response of monetary policy, which buffers the effects coming through either channel. In addition, the estimated effects do not take into account the underlying factors that might be driving the higher dollar and lower oil prices, which could show up elsewhere in the staff forecast with implications for GDP. Of course, considerable uncertainty also attends these estimates, both for the effects of movements in the dollar and in oil prices.

Table 1: Rules of thumb for the staff judgemental forecast*
Percent deviations from U.S. GDP baseline

	After 1 year	After 2 years	After 3 years
10 percent appreciation of the dollar	-0.7	-1.4	-1.7
10 percent decline in oil prices	0.2	0.2	0.2

* Direct effects not including the response of monetary policy and financial variables.

Table 2: Direct effect on the staff forecast for the level of U.S. GDP since the July Tealbook

	2014	2015	2016	2017
Dollar appreciation	-0.1	-0.8	-1.4	-1.6
Decline in oil prices	0.2	0.7	0.7	0.7

[1] These rules of thumb are inclusive of recent changes in the staff's methodology, including changes adopted in the December Tealbook that lessened the sensitivity of U.S. GDP to exchange rate movements and changes adopted in the January Tealbook that increased the responsiveness of U.S. GDP to oil prices.

[2] For a fuller discussion of the effects of lower oil prices on the U.S. economy and the risks surrounding our estimates, see the January 21, 2015, memorandum to the FOMC, "The Effects of Lower Oil Prices on U.S. Activity: Baseline Assumptions and Risks," by Kimberly Bayard, David Byrne, Gustavo Suarez, and Robert Vigfusson.

real GDP will expand about 2¾ percent per year in both 2015 and 2016. Although the continued normalization of monetary policy is expected to lead to an easing in economic growth in 2017, the level of real GDP is nonetheless expected to be around 1 percent above its potential at the end of that year, a little higher than in our previous projection.

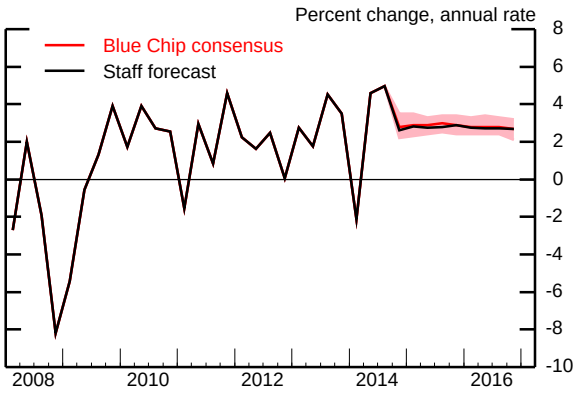
An undershooting of the unemployment rate, relative to our estimate of a 5.2 percent natural rate, remains a feature of the labor market projection. In particular, we expect the unemployment rate to drift down steadily, from 5.6 percent last month to 4.8 percent in the final quarter of 2017. Both of these figures are 0.1 percentage point below the December Tealbook projection. Even so, the decline in the unemployment rate continues to be more gradual than one would infer from the change in the GDP gap, reflecting an unwinding of the current unusual weakness in the labor force participation rate.

The further sharp declines in crude oil prices have had a substantial effect on the near-term forecast for PCE price inflation. We now project that headline PCE prices decreased last quarter and will show an even larger decline this quarter. We have also marked down our near-term outlook for core PCE inflation in response to surprising softness in the incoming price data for November and December. Nevertheless, we still expect core PCE price inflation to step up gradually to 1¾ percent over the medium term, as the extended period of falling import prices comes to an end and resource utilization tightens further. With an upward tilt in the forecast for energy prices beyond the near term, total PCE inflation follows a slightly higher trajectory than core inflation over the medium-term projection.

As always, numerous risks attend our outlook. We view the uncertainty around our projection for real GDP growth, inflation, and the unemployment rate as roughly in line with the average of the past 20 years, a period that includes considerable volatility. We have maintained our assessment that the risks to our GDP projection are tilted somewhat to the downside, largely reflecting our view that neither monetary policy nor fiscal policy appears well positioned to offset substantial adverse shocks to the economy. We also still see the risks around our outlook for the unemployment rate as roughly balanced, as the downside risks to real activity are about offset by the possibility that the unemployment rate could continue to decline more rapidly than we expect. Our downside concerns with respect to inflation have intensified somewhat given the recent

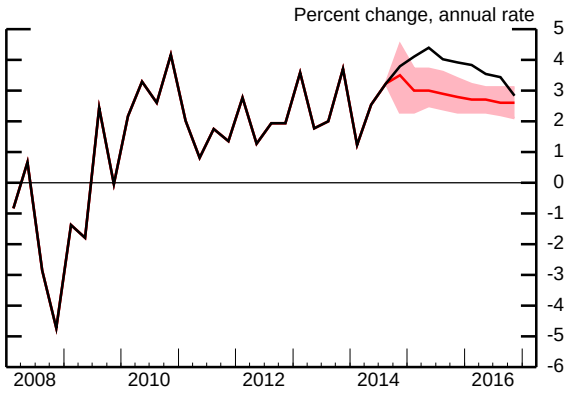
Tealbook Forecast Compared with Blue Chip
(Blue Chip survey released January 10, 2015)

Real GDP

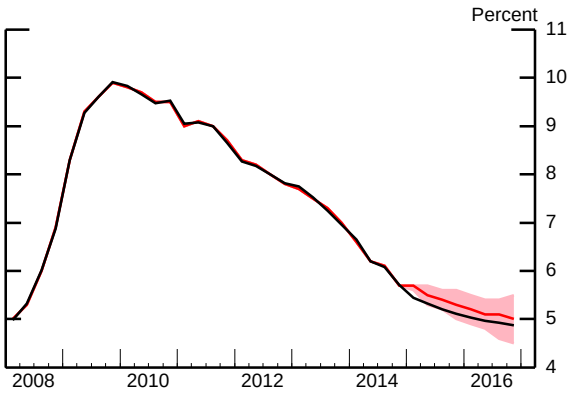


Note: The shaded area represents the area between the Blue Chip top 10 and bottom 10 averages.

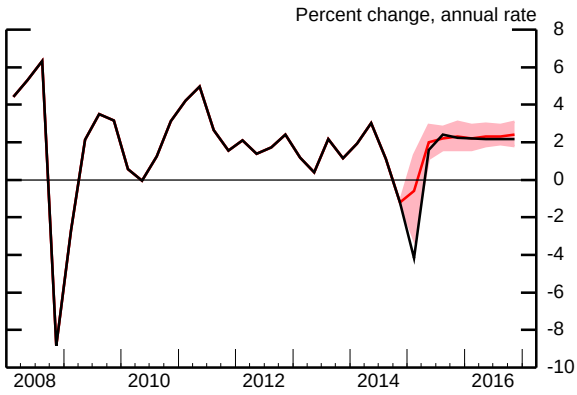
Real PCE



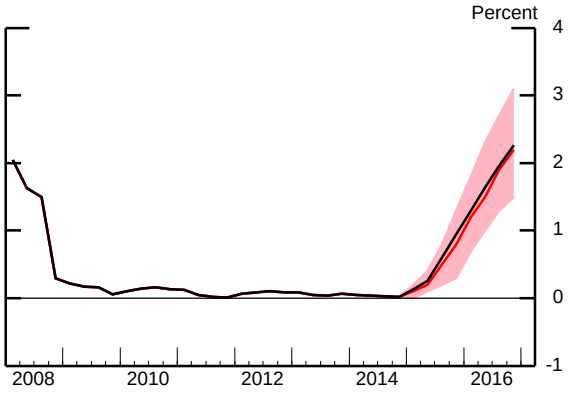
Unemployment Rate



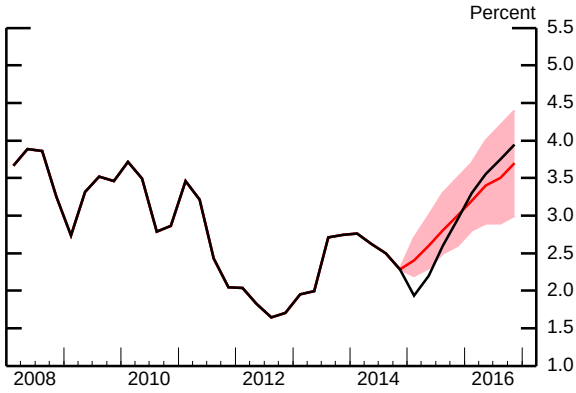
Consumer Price Index



Treasury Bill Rate



10-Year Treasury Yield



Note: The yield is for on-the-run Treasury securities. Over the forecast period, the staff's projected yield is assumed to be 15 basis points below the off-the-run yield.

soft monthly readings on core inflation and the further decline in TIPS-based inflation compensation.

COMPARING THE STAFF PROJECTION WITH OTHER FORECASTS

The staff forecasts of real GDP growth in 2015 and 2016 are essentially the same as the January Blue Chip consensus outlook. Meanwhile, the staff's forecasts of the unemployment rate in the fourth quarter of this year and next are a bit lower than the Blue Chip Consensus. The staff's projection for consumer price inflation in 2015 stands about 1 percentage point below the consensus of the Blue Chip panelists, but, given the recent declines in energy prices, this divergence likely reflects the difference in the timing of the Blue Chip survey and the close of the January Tealbook; the two forecasts are similar in 2016.[2]

Comparison of Tealbook and Outside Forecasts

	2015	2016
GDP (Q4/Q4 percent change)		
January Tealbook	2.8	2.7
Blue Chip (1/10/15)	2.9	2.8
SPF median (11/17/14)	2.9	n.a.
Unemployment rate (Q4 level)		
January Tealbook	5.1	4.9
Blue Chip (1/10/15)	5.3	5.0
SPF median (11/17/14)	5.5	n.a.
Consumer price index (Q4/Q4 percent change)		
January Tealbook	0.5	2.2
Blue Chip (1/10/15)	1.4	2.3
SPF median (11/17/14)	1.9	2.1
PCE price index (Q4/Q4 percent change)		
January Tealbook	0.5	1.7
SPF median (11/17/14)	1.8	1.9

Note: SPF is the Survey of Professional Forecasters. Blue Chip does not provide results for PCE price inflation.

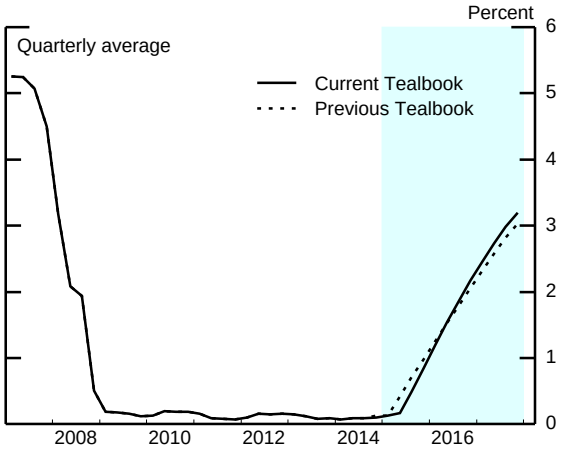
n.a. Not available.

Source: Blue Chip Economic Indicators; Federal Reserve Bank of Philadelphia.

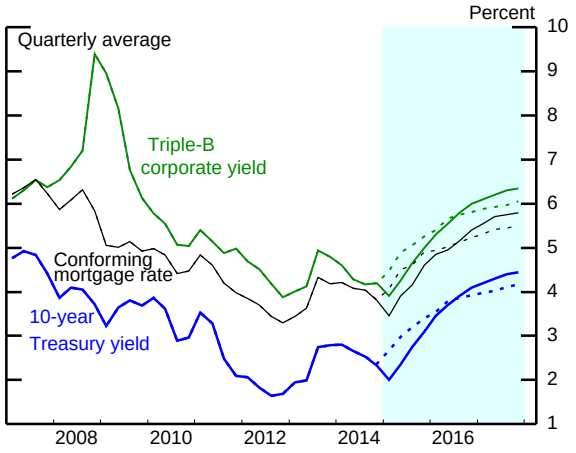
[2] The most recent results from the Survey of Professional Forecasters (which includes some of the same participants as the Blue Chip survey) were released in November, so they predate the encouraging employment reports for November and December, strong recent spending data, and much of the recent decline in oil prices.

Key Background Factors underlying the Baseline Staff Projection

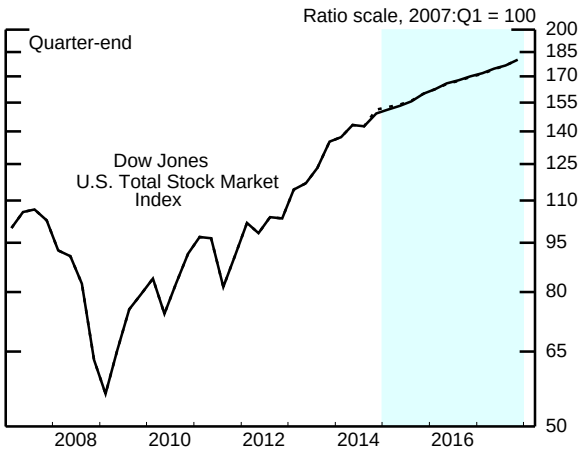
Federal Funds Rate



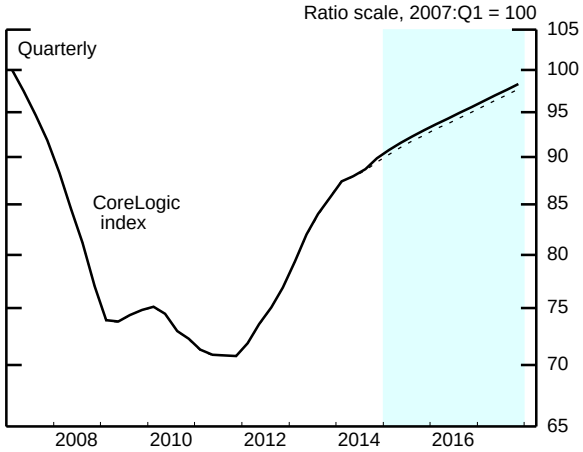
Long-Term Interest Rates



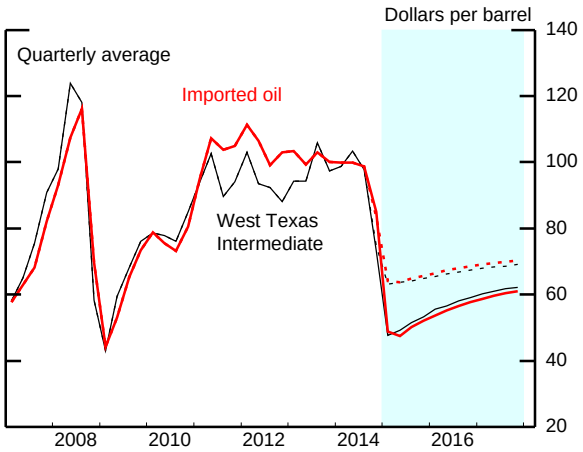
Equity Prices



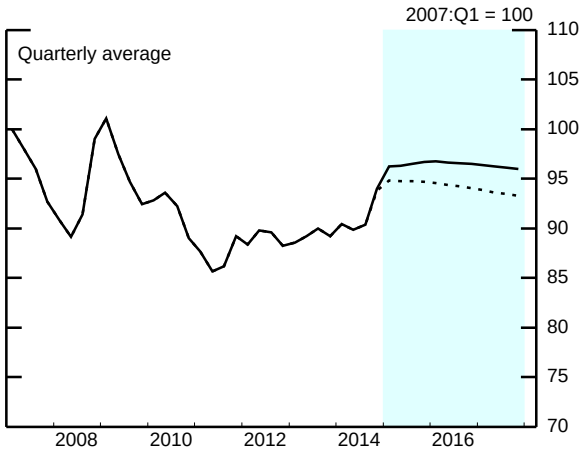
House Prices



Crude Oil Prices



Broad Real Dollar



KEY BACKGROUND FACTORS

Monetary Policy

- We continue to assume that the federal funds rate will lift off from its effective lower bound in the second quarter of 2015. However, taking note of the Committee's statement in December that it "can be patient in beginning to normalize the stance of monetary policy," we now assume more specifically that liftoff does not occur until the June meeting. Following liftoff, the federal funds rate rises at a pace prescribed by an inertial version of the Taylor (1999) policy rule. In the near term, the slight delay of liftoff leaves the projected federal funds rate a little lower than in the previous forecast; by the fourth quarter of 2017, however, the federal funds rate is 18 basis points higher than in the December Tealbook, primarily reflecting the positive revision to the output gap in the medium-term projection.

Other Interest Rates

- The projected trajectory for the 10-year Treasury yield is notably lower in the near term compared with the December Tealbook projection, consistent with the substantial recent declines in market rates. Further out in the forecast period, the path of the 10-year Treasury yield was revised up somewhat to better align it with the predictions of our model. Our medium-term projection continues to call for Treasury yields to rise significantly, primarily because of the movement of the 10-year valuation window through the period of extremely low short-term interest rates as well as an increase in term premiums. The rise in term premiums, in turn, is partly due to a gradual waning of the effects of the FOMC's balance sheet policies.

- Our forecasts for corporate bond yields and mortgage rates in the medium term have been revised essentially in line with the revisions to the path for the Treasury yield.

Equity Prices and Home Prices

- The projected path for equity prices over the medium term is essentially unrevised relative to the December Tealbook.

- Incoming house price data for October and November were close to our December Tealbook forecast, and we continue to project that house price appreciation will slow from roughly 5 percent in 2014 to an average rate of about 3 percent per year from 2015 to 2017.

Fiscal Policy

- We have made no changes to our fiscal policy assumptions in this forecast. We continue to anticipate that the small drag on real GDP growth from fiscal policy actions across all levels of government in 2014 will swing to a small stimulus from 2015 through 2017.

Foreign Economic Activity and the Dollar

- The pace of foreign economic activity appears to have stepped up slightly in the second half of last year, to a still-subdued annual rate of 2½ percent. We expect that economic growth abroad will step up to an annual rate of 3 percent over the medium term, supported in part by lower oil prices, more accommodative monetary policy, and depreciation of foreign currencies against the dollar. Nevertheless, the downside risks to the foreign outlook still appear elevated.

- The broad nominal index for the dollar has appreciated about 2¼ percent since the previous Tealbook, likely reflecting, in part, the continued divergence between the expected paths of monetary policy across countries and the perception of increased risks to economic growth abroad. Looking ahead, we expect the nominal dollar to appreciate at an annual rate of 1 percent this year and then to flatten out over the remainder of the forecast period, as further appreciation against other major currencies is offset by depreciation against the currencies of the emerging market economies. The slope of the medium-term path of the dollar is somewhat flatter in this projection, as we now expect Chinese authorities to put further renminbi appreciation on hold through 2015. All told, the broad real dollar is about 3 percent higher by the end of 2017 than in the previous Tealbook.

Oil and Other Commodity Prices

- The spot price of Brent crude oil declined an additional $19 per barrel since the time of the December Tealbook, reaching $48 per barrel on January 20.

This decline likely reflected increased concerns about global demand and the persistent strength of global production. Prices for futures contracts with delivery at the end of 2017 also fell noticeably, but by less than the drop in the spot price, which increased the upward tilt in the futures curve. We view the projected increase in prices as reflecting expectations of a pickup in global demand accompanied by a slowing in supply growth, as producers respond gradually to the lower path for prices. We expect the price of imported oil to move up from $49 per barrel this quarter to about $61 per barrel by the end of the forecast period. Relative to the December Tealbook, our forecast is $15 per barrel lower this year and $9 per barrel lower at the end of 2017.

- For most of 2014, metals prices remained relatively flat even though oil prices plunged and the dollar appreciated. Since the December Tealbook, however, metals prices have fallen 8 percent, likely indicating heightened concerns about the prospects for global demand, primarily from China.

RECENT DEVELOPMENTS AND THE NEAR-TERM OUTLOOK FOR REAL GDP

The incoming spending data have led us to revise up our estimate of real GDP growth during the second half of last year, to an annual rate of 3¾ percent, substantially above the weak growth rate recorded over the first half of the year and ¾ percentage point above the December Tealbook projection. We expect real GDP growth to slow to a rate of 2¾ percent in the first half of this year, pulled down by both net exports and inventory investment.

- For the most part, we have interpreted the stronger-than-expected increase in aggregate output last year as indicating that resource utilization around the turn of the year was tighter than we had previously thought, an assessment that is corroborated by labor market indicators.

- Upward revisions to the third-quarter estimate of real PCE, coupled with stronger incoming data, on balance, for the fourth quarter, pushed up our estimate of PCE growth in the second half of last year to an annual rate of 3½ percent, ¾ percentage point faster than in the December Tealbook. We took some signal from the higher trajectory, as well as the further decline in oil prices and a notable improvement in consumer sentiment, and revised up PCE growth to a robust annual rate of 4¼ percent in the first half of this year.

Domestic Econ Devel & Outlook

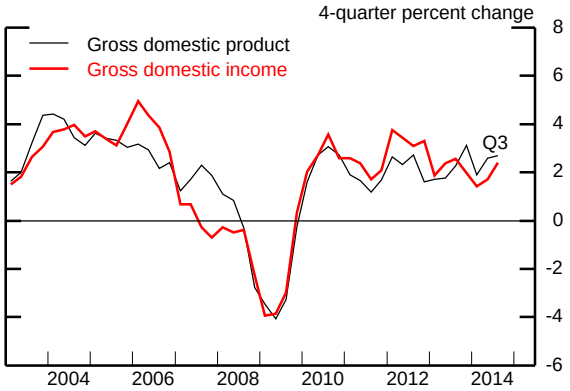
Summary of the Near-Term Outlook
(Percent change at annual rate except as noted)

Measure	2014:Q3		2014:Q4		2015:Q1	
	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook	Previous Tealbook	Current Tealbook
Real GDP	**4.1**	**5.0**	**2.2**	**2.6**	**2.4**	**2.8**
Private domestic final purchases	3.1	4.1	3.4	3.7	3.1	3.9
Personal consumption expenditures	2.2	3.2	3.4	3.8	3.5	4.1
Residential investment	3.0	3.2	6.2	3.7	3.6	7.2
Nonres. private fixed investment	8.0	8.9	3.0	3.5	.9	1.9
Government purchases	4.4	4.4	-2.1	-3.9	-.1	.5
Contributions to change in real GDP						
Inventory investment[1]	-.1	.0	.4	.8	-.1	-.2
Net exports[1]	.8	.8	-.8	-.6	-.1	-.3
Unemployment rate[2]	**6.1**	**6.1**	**5.7**	**5.7**	**5.5**	**5.4**
PCE chain price index	**1.3**	**1.2**	**-.1**	**-.5**	**-.6**	**-2.5**
Ex. food and energy	1.4	1.4	1.6	1.1	1.5	1.1

1. Percentage points.
2. Percent.

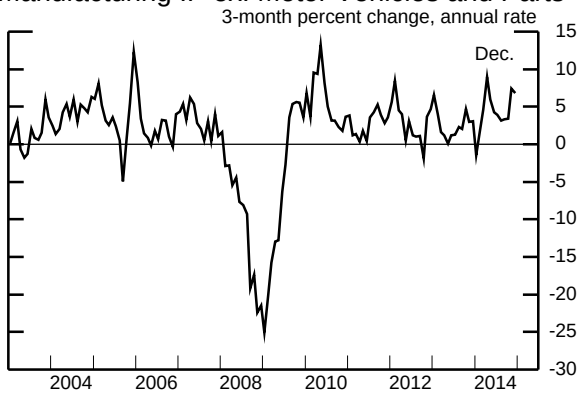
Recent Nonfinancial Developments (1)

Real GDP and GDI



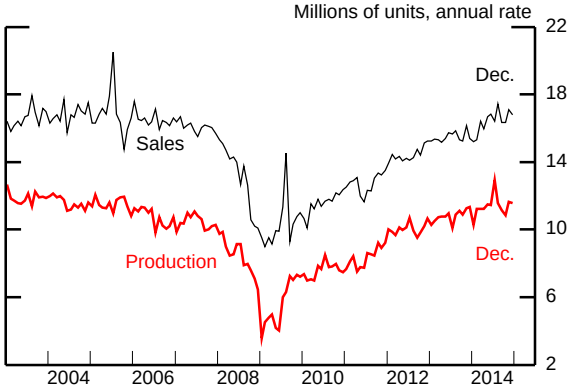
Source: U.S. Dept. of Commerce, Bureau of Economic Analysis.

Manufacturing IP ex. Motor Vehicles and Parts



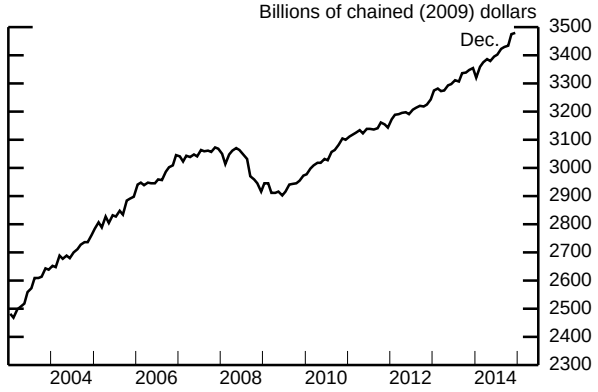
Source: Federal Reserve Board, G.17 Statistical Release, "Industrial Production and Capacity Utilization."

Sales and Production of Light Motor Vehicles



Source: Ward's Communications.

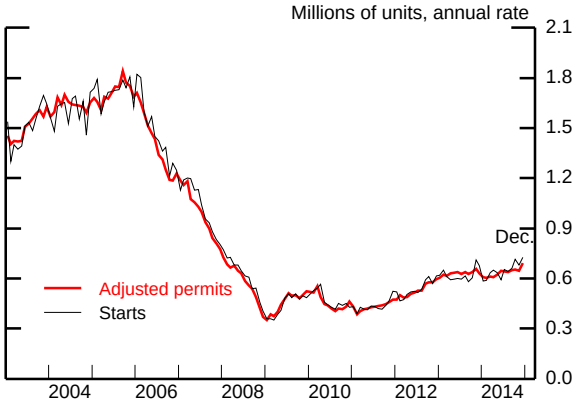
Real PCE Goods ex. Motor Vehicles



Note: Values for October, November, and December 2014 are staff estimates based on available source data.
Source: U.S. Dept. of Commerce, Bureau of Economic Analysis.

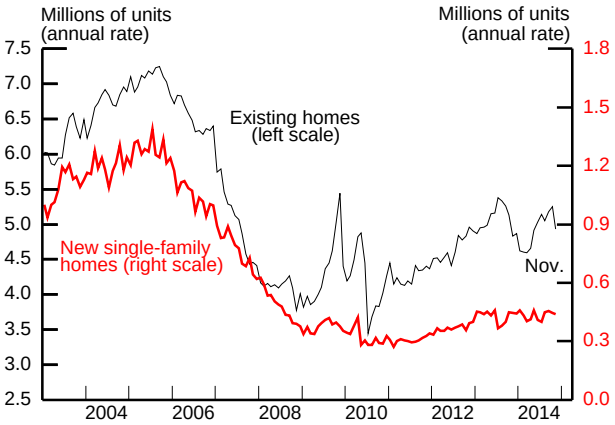
Recent Nonfinancial Developments (2)

Single-Family Housing Starts and Permits



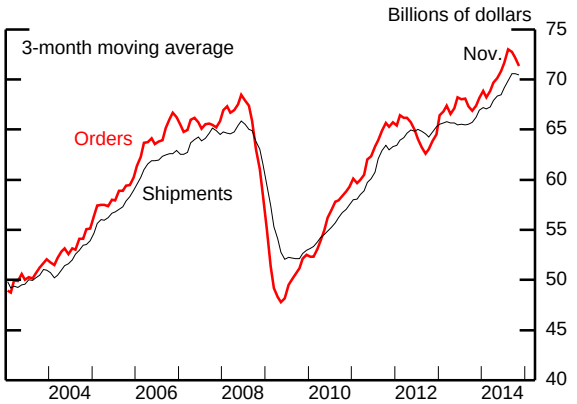
Note: Adjusted permits equal permit issuance plus total starts outside of permit-issuing areas.
Source: U.S. Census Bureau.

Home Sales



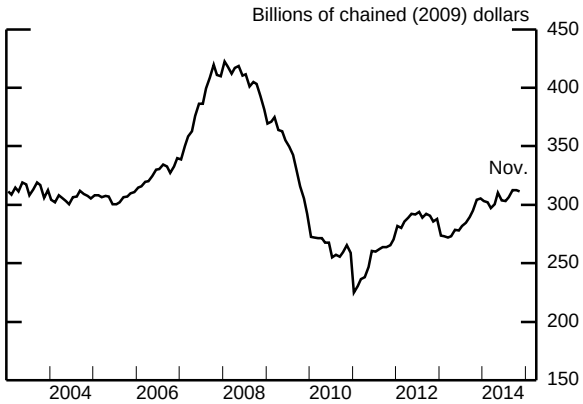
Source: For existing, National Association of Realtors; for new, U.S. Census Bureau.

Nondefense Capital Goods ex. Aircraft



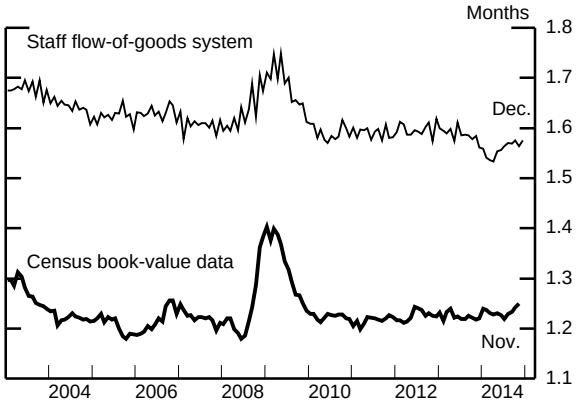
Source: U.S. Census Bureau.

Nonresidential Construction Put in Place



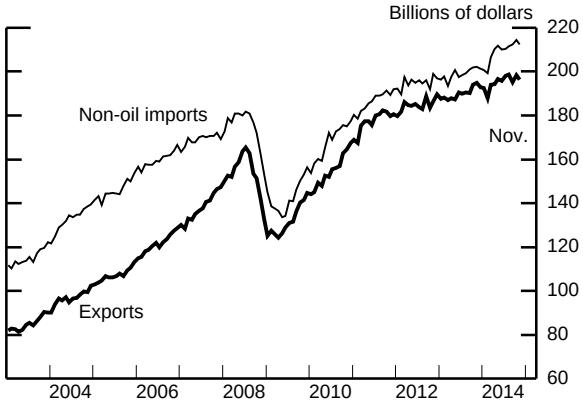
Note: Nominal CPIP deflated by BEA prices through 2014:Q3 and by the staff's estimated deflator thereafter.
Source: U.S. Census Bureau.

Inventory Ratios ex. Motor Vehicles



Note: Flow-of-goods system inventories include manufacturing and mining industries except motor vehicles and parts and are relative to consumption. Census data cover manufacturing and trade ex. motor vehicles and parts, and inventories are relative to sales.
Source: U.S. Census Bureau; staff calculations.

Exports and Non-oil Imports



Source: U.S. Dept. of Commerce, Bureau of Economic Analysis; U.S. Census Bureau.

- Incoming data on housing starts and home sales suggest a moderate upward trajectory for homebuilding in the near term. We project that real residential investment rose only sluggishly in the second half of last year but will increase at a more rapid annual rate of 9 percent in the first half of this year.

- After rising at a solid pace through much of last year, growth in private business fixed investment slowed in the fourth quarter and is expected to weaken further in the first half of this year, as declines in outlays for drilling structures caused by the large drop in crude oil prices largely offset moderate increases in other capital expenditures.

- Weighed down by the drag from previous dollar appreciation, net exports are expected to subtract ½ percentage point from real GDP growth in the first half of this year after exerting a roughly neutral influence on output growth in the second half of last year.

THE MEDIUM-TERM OUTLOOK FOR REAL GDP

We continue to anticipate that real GDP growth will exceed its potential rate of 1¾ percent throughout the medium term. Specifically, real GDP is projected to increase 2¾ percent in both 2015 and 2016 and then slow to about 2 percent in 2017, as economic growth eases with the ongoing normalization of monetary policy.

- Although the projected level of GDP this quarter is ½ percent higher than in the December Tealbook, our forecast of GDP growth over the medium term is little revised. The greater momentum from the positive spending surprises and the support to household spending from lower energy prices are about offset by the restraint implied by the recent appreciation of the dollar.

- The only change we made to our supply-side assumptions was to slightly raise our estimate of potential output growth in 2014. This revision unwound a little more of the downward adjustment we made in the July Tealbook to insulate our estimates of the output gap against what we judge to be statistical noise in the spending data from the first quarter of last year.

- Even with a higher level of potential output, the sizable upward revisions to the projection for actual GDP since the December Tealbook imply that the output gap at the start of this year is somewhat narrower than in the previous

projection. We now expect that GDP will be 1 percent above its potential level by the fourth quarter of 2017, a little wider gap than in the December Tealbook.[3]

THE OUTLOOK FOR THE LABOR MARKET

The December employment report and other incoming indicators showed somewhat more improvement in labor market conditions than we had expected.

- Although the December gain in nonfarm payrolls was in line with our expectations, upward revisions to the October and November figures pushed up the average monthly gain in the fourth quarter to 290,000. In response, we nudged up our forecast for first-quarter payroll gains by 15,000 per month, to 230,000.

- The unemployment rate was 5.6 percent in December, down 0.2 percentage point from November and 0.5 percentage point lower than six months earlier. In the first quarter, we expect the unemployment rate to average 5.4 percent, 0.1 percentage point below our previous forecast.

- The labor force participation rate edged down to 62.7 percent in December, a touch lower than our projection in the previous Tealbook but little changed, on net, over the past several quarters.

- The staff's labor market conditions index, which summarizes the movements in 19 labor market indicators, improved noticeably in December and over the fourth quarter as a whole.

Since the December Tealbook, we have also upgraded our medium-term outlook for the labor market, largely reflecting the more positive outlook for the GDP gap in this projection.

[3] As was noted in the December Tealbook, we intend our estimate of the output gap to provide a more comprehensive gauge of overall resource slack over the projection period than the unemployment rate gap because the former measure also includes the unusual degree of cyclical weakness that we estimate in labor force participation. We project that the so-called Okun's law error will persist over the next several quarters before tapering off over the medium term, eventually bringing the different measures of resource slack into alignment.

- We expect monthly job gains to average about 230,000 this year and next year before slowing to around 150,000 in 2017. These gains are little changed from what we had projected in December.

- We project that the unemployment rate will edge down gradually to 4.8 percent by the end of 2017. The unemployment rate is projected to move below our estimate of 5.2 percent for the natural rate later this year and is anticipated to be nearly ½ percentage point below the natural rate at the end of the projection period.

- At present, we believe that the unemployment rate gap understates the amount of slack remaining in the labor market, reflecting an unusually weak recovery in the labor force participation rate and, we think, an unusually elevated level of involuntary part-time employment. As the economy improves, we expect that wage gains will pick up and that more of the individuals currently not in the labor force will be drawn in. This effect will accelerate the cyclical recovery in the participation rate while attenuating the decline in the unemployment rate. As a result, we expect that the unemployment rate will only edge down during 2016 and 2017 even as GDP continues to increase faster than its potential.

THE OUTLOOK FOR INFLATION

The further sharp declines in crude oil prices have resulted in a substantially lower near-term projection for headline PCE price inflation. We now estimate that total PCE prices decreased at an annual rate of ½ percent last quarter, and we anticipate a further decline of 2½ percent this quarter. In addition, the incoming data on core prices have been softer than we had expected. Nevertheless, we still expect core PCE inflation to reach 1.8 percent by the end of the medium term, as import prices turn up and resource utilization tightens. With consumer energy prices projected to rise faster than core prices beginning later this year, total PCE inflation follows a slightly higher trajectory than core inflation in 2016 and 2017. (Also see the box "Alternative View: A Different Framework for Inflation.")

- After folding in negative surprises for November and December, we now estimate that core PCE inflation was about 1 percent last quarter and expect it to be the same this quarter. Prices for goods other than food and energy,

which are heavily influenced by core import prices, have been especially soft. In light of the ongoing dollar appreciation and further projected declines in import prices in the near term, we carried forward some of the negative surprises and lowered our forecast for core inflation over the first half of this year.

- With crude oil prices continuing to decline, we marked down the near-term projection for consumer energy prices considerably and now expect these prices to fall at an annual rate of more than 50 percent in the first quarter. Our projection assumes that the pass-through from crude to retail gasoline prices will be essentially completed by midyear, and we therefore expect that consumer energy prices will turn up in the second half and rise somewhat faster than core prices in the medium term, consistent with the moderate upward tilt in the futures path for crude oil prices.

- Consumer food price inflation slowed in the fourth quarter from the elevated rates observed in the middle of last year. Given the substantial declines in farm commodity prices observed in recent months, consumer food price inflation is expected to be soft in the next few quarters. In the medium term, we project that consumer food prices will rise at a pace roughly in line with core inflation.

- Core import prices are expected to decline at an average annual rate of nearly 3 percent in the first half of this year, reflecting the appreciation of the dollar and declines in commodity prices. As the dollar flattens out and foreign CPI inflation picks up, core import price inflation is expected to turn positive by the second half of the year and to move up to a 1¼ percent pace in 2016 and 2017.

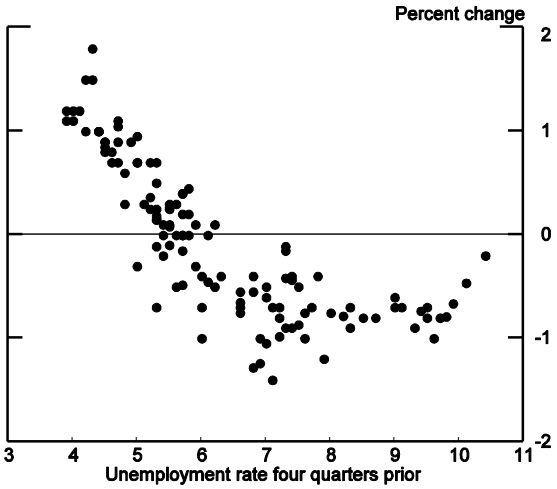
- Survey-based measures of long-run inflation expectations have remained within the narrow range of values seen in recent years. By contrast, TIPS-based measures of inflation compensation have declined further since the time of the December Tealbook. Staff models continue to attribute little of this decline in inflation compensation to lower expected inflation. (Also see the box "An Update on Measures of Longer-Term Inflation Compensation and Inflation Expectations" in the Financial Developments section.)

Alternative View: A Different Framework for Inflation

Traditional Phillips curves generally suggest that inflation should have continuously declined in recent years as low current-period inflation resulting from excess unemployment fed through to lower expected future inflation, which in turn lowered next period's inflation in a repeating cycle (the so-called accelerationist assumption). The staff has relied on anchored inflation expectations—the idea that expected future inflation has been little influenced by observed inflation and instead remained roughly constant over the past 15 years—to explain the lack of continuously declining inflation since the onset of the recession.

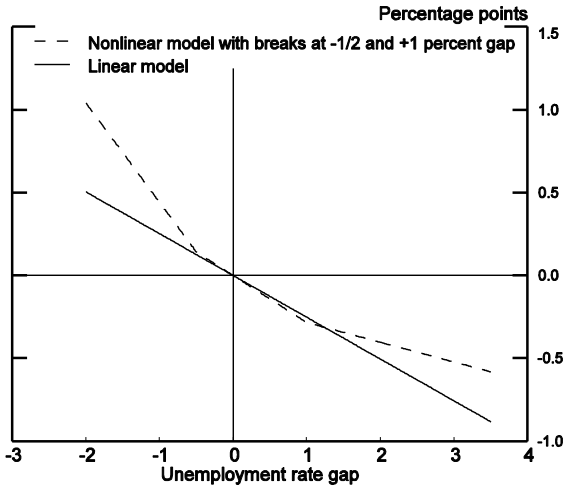
An alternative to this assumption of anchored inflation expectations is a nonlinear Phillips curve. This alternative framework maintains the traditional accelerationist assumption but allows the tradeoff between inflation and unemployment to diminish as unemployment increases.[1] Nonlinearities in the Phillips curve can arise from several factors, including nominal wage rigidities, which could reduce the ability of firms to cut wages and prices, and an elevated share of long-term unemployed workers in deep recessions, which might put less downward pressure on inflation than the usual mix of unemployed workers.[2] Depending on the degree of labor market slack, which is highly uncertain, this alternative nonlinear Phillips curve framework could imply risks either to the upside or the downside of the staff's baseline projection for inflation.

Figure 1. Expected real ECI wage growth and unemployment



Note: The data are 4-quarter percent change in ECI wages and salaries minus lagged SPF median expected 10-year CPI inflation from 1984 to 2014.

Figure 2. Unemployment-inflation tradeoff in an accelerationist Phillips curve



Note: Lines show the effect of unemployment gap on current quarter core PCE inflation.

Note: This alternative view was prepared by Alan Detmeister.

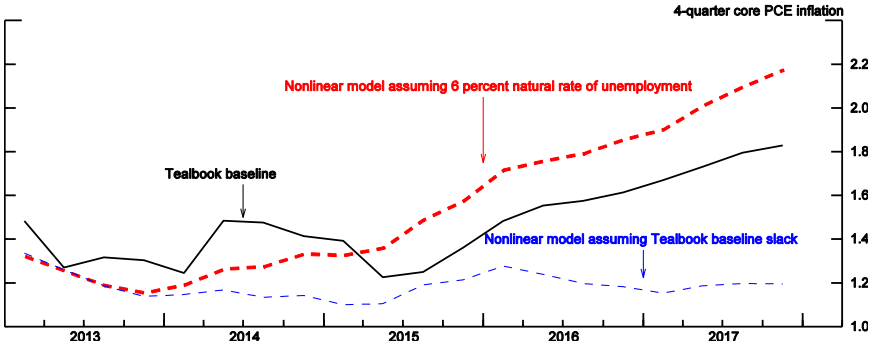
[1] While most empirical Phillips curve models assume a constant tradeoff between inflation and unemployment in the short run, a nonlinear slope in the Phillips curve has a long history in economics, and many introductory textbooks draw the Phillips curve nonlinearly.

[2] Among the large number of recent works on inflation and unemployment duration, see Daniel Aaronson and Andrew Jordan (2014), "Understanding the Relationship between Real Wage Growth and Labor Market Conditions," *Chicago Fed Letter* 327 (October), www.chicagofed.org/publications/chicago-fed-letter/2014/october-327.

Examining data such as those shown in figure 1, recent work on nonlinearities in the Phillips curve has focused on wage inflation.[3] Here, instead, we delve into core PCE price inflation using a Phillips curve that closely approximates Robert Gordon's well-known triangle model.[4] As shown in figure 2, allowing for nonlinearities in this otherwise traditional model suggests that unemployment affects inflation considerably less (that is, the slope is much flatter) when the unemployment rate gap is very high compared with when it is very low. As a result, this nonlinear model explains the relatively small decline in inflation in recent years fairly well without relying on anchored expectations.

Since past inflation feeds through into future inflation in this model and the unemployment rate is projected to be relatively close to the natural rate of unemployment over the next few years, this model suggests no increase in core inflation in the medium term—a projection that is notably *below* the slowly increasing inflation in the current Tealbook baseline (compare the blue dashed line with the black line in figure 3). However, the projection from this framework is much more sensitive to the assumed amount of slack in the unemployment rate gap than the staff's baseline view. For example, if in reality there is considerably less slack than in the Tealbook baseline—such as if the natural rate of unemployment is around 6 percent as suggested by some of the estimates in a recent Cleveland Fed Economic Commentary—the nonlinear model would project inflation roughly ½ percentage point higher than the baseline in 2017 (the red dashed line in figure 3), even though the staff's usual response in the anchored expectations framework would move the projection up only about one-tenth of a percentage point (not shown).[5]

Figure 3. Projected four-quarter core PCE inflation



[3] For example, see Anil Kumar and Pia Orrenius (2014), "A Closer Look at the Phillips Curve Using State Level Data," Working Paper 1409 (Dallas: Federal Reserve Bank of Dallas, October), www.dallasfed.org/assets/documents/research/papers/2014/wp1409.pdf; and Richard W. Fisher and Evan F. Koenig (2014), "Are We There Yet? Assessing Progress toward Full Employment and Price Stability," Federal Reserve Bank of Dallas, *Economic Letter*, vol. 9 (13), pp. 1–4, www.dallasfed.org/assets/documents/research/eclett/2014/el1413.pdf.

[4] The model predicts quarterly core PCE inflation using 24 lags of core PCE inflation, import prices, the change in trend productivity growth, the difference between core and total PCE inflation, and a measure of slack. For slack, we use the staff unemployment rate gap. See Robert J. Gordon (2013), "The Phillips Curve Is Alive and Well: Inflation and the NAIRU during the Slow Recovery," NBER Working Paper No. 19390 (Cambridge, Mass.: National Bureau of Economic Research, August).

[5] The projections, which are fitted values through the end of 2014 and forecast values thereafter, assume a natural rate of unemployment of 6 percent starting in the first quarter of 2012, when the Tealbook baseline natural rate first falls below that threshold, and Tealbook baseline forecasts for the unemployment rate; trend productivity; and food, energy, and import prices. The comparison of natural rate estimates see Murat Tasci and Randal Verbrugge (2014), "How Much Slack Is in the Labor Market? That Depends on What You Mean by Slack," Federal Reserve Bank of Cleveland, Federal Reserve Bank of Cleveland Economic Commentary, 2014-21 (October), clevelandfed.org/Newsroom%20and%20Events/Publications/Economic%20Commentary/2014/How%20Much%20Slack%20Is%20in%20the%20Labor%20Market.aspx.

- We expect core PCE price inflation to edge up gradually from 1½ percent this year to 1¾ percent in 2017, as core import prices turn up and resource slack diminishes in an environment of well-anchored long-run inflation expectations. Although the projection for core inflation last year and for the first half of this year has been revised down somewhat, it is unchanged over the medium term, as the effects of slightly tighter labor and product markets about offset the pass-through of lower core import and energy prices.

- The only piece of information on wages that we have received since the previous Tealbook is the December report on average hourly earnings, which was weaker than expected. Pending corroborating readings from other compensation measures, we have put little weight on the recent average hourly earnings figures. With labor and product markets tightening steadily over the projection, we expect the Productivity and Cost measure of hourly compensation to accelerate to about 3½ percent, over 2016 and 2017.[4]

THE LONG-TERM OUTLOOK

- The federal funds rate continues to be set according to the prescriptions of an inertial version of the Taylor (1999) rule. The policy rule assumes a long-run equilibrium level of the nominal federal funds rate of 3¾ percent.

- The federal funds rate continues to rise after 2017, moving slightly above its long-run level in 2019 and 2020, reflecting the positive output gap.

- Real GDP growth slows to 1.6 percent in 2018 and 2019—a pace below its estimated longer-run potential growth rate of 2 percent—reflecting the less accommodative stance of monetary policy. The unemployment rate gradually edges up from 4¾ percent in early 2018 toward its natural rate of 5¼ percent.

- With the unemployment rate below the natural rate, longer-run inflation expectations gradually return to the Committee's target and PCE price inflation moves up to 2 percent by 2019.

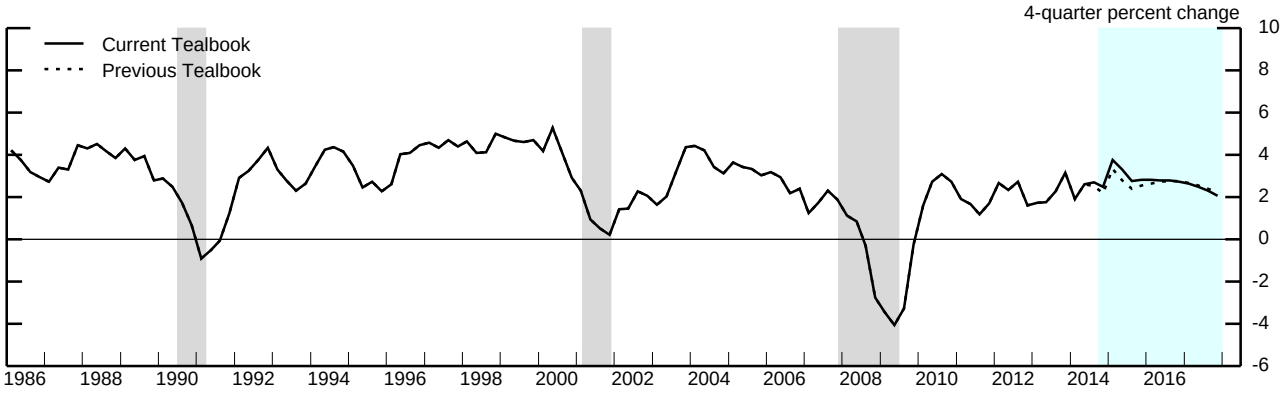
[4] While our projections for hourly compensation and average hourly earnings are essentially unrevised in the medium term, projected increases for the employment cost index (ECI) have been revised down to better reflect the lower cyclical sensitivity, and somewhat lower long-run average growth rate, of this measure compared with the other compensation measures.

Projections of Real GDP and Related Components

(Percent change at annual rate from final quarter of preceding period except as noted)

Measure	2014	2015		2015	2016	2017
		H1	H2			
Real GDP	**2.5**	**2.8**	**2.8**	**2.8**	**2.7**	**2.0**
Previous Tealbook	2.2	2.4	2.7	2.5	2.7	2.2
Final sales	2.2	2.9	2.8	2.8	2.8	2.4
Previous Tealbook	2.0	2.4	2.7	2.5	2.8	2.6
Personal consumption expenditures	2.7	4.2	4.0	4.1	3.4	2.7
Previous Tealbook	2.3	3.5	3.7	3.6	3.3	2.7
Residential investment	2.5	9.1	13.0	11.0	9.2	4.1
Previous Tealbook	3.0	7.4	11.5	9.4	9.9	7.6
Nonresidential structures	6.0	-8.1	-3.0	-5.6	2.4	1.2
Previous Tealbook	4.6	-5.2	-1.4	-3.4	1.6	1.2
Equipment and intangibles	5.9	4.3	5.3	4.8	4.2	2.7
Previous Tealbook	5.8	2.0	3.9	2.9	4.2	2.9
Federal purchases	-.8	-1.5	-2.1	-1.8	-1.3	-1.1
Previous Tealbook	.2	-2.9	-2.8	-2.8	-1.3	-1.1
State and local purchases	1.0	1.4	1.7	1.6	2.0	2.2
Previous Tealbook	1.1	1.5	1.5	1.5	1.8	2.0
Exports	1.9	2.1	2.0	2.0	2.5	3.6
Previous Tealbook	1.9	2.4	2.6	2.5	3.3	4.2
Imports	4.5	5.3	7.2	6.3	5.4	4.0
Previous Tealbook	4.7	3.6	6.0	4.8	5.2	3.9
	Contributions to change in real GDP (percentage points)					
Inventory change	.3	-.1	.1	.0	.0	-.3
Previous Tealbook	.2	.0	.0	.0	-.1	-.4
Net exports	-.5	-.5	-.8	-.7	-.5	-.2
Previous Tealbook	-.5	-.3	-.6	-.4	-.4	-.1

Real GDP



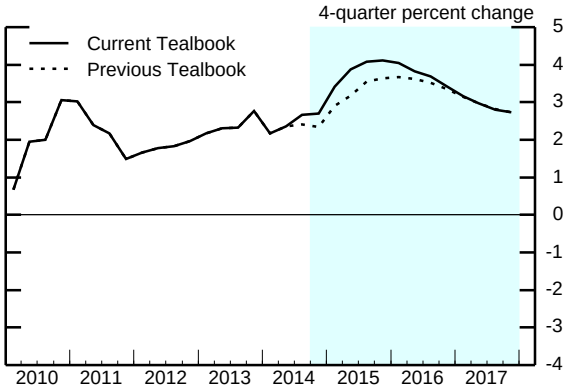
Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

Source: U.S. Department of Commerce, Bureau of Economic Analysis.

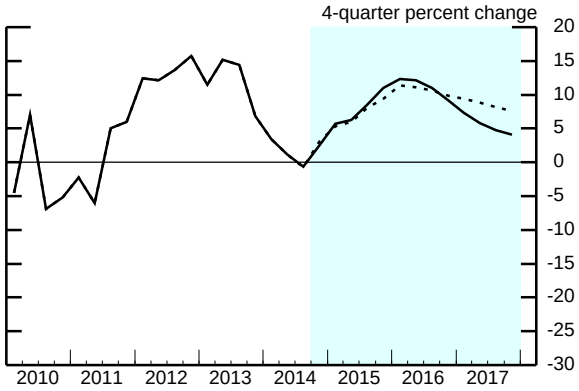
Domestic Econ Devel & Outlook

Components of Final Demand

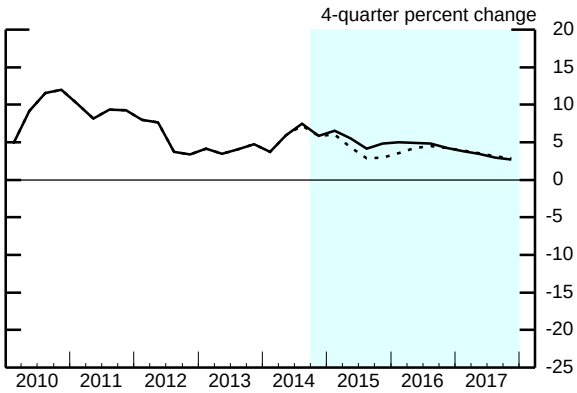
Personal Consumption Expenditures



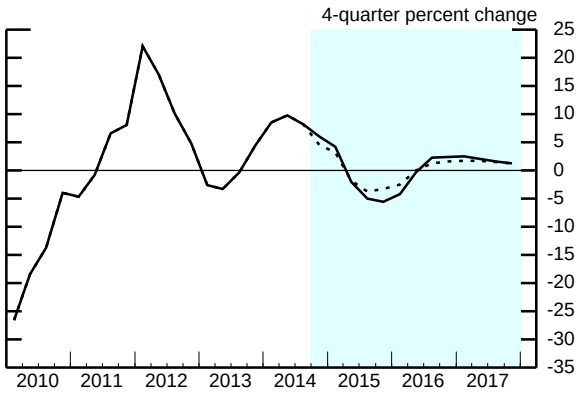
Residential Investment



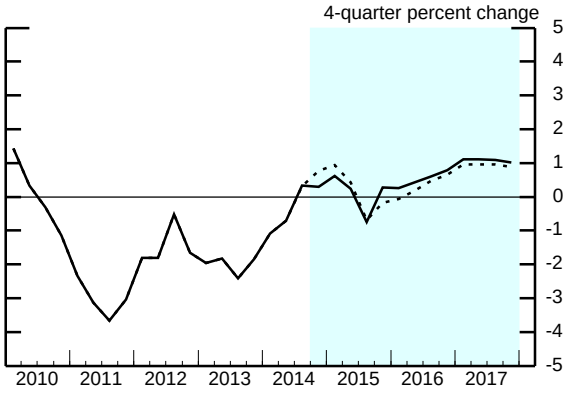
Equipment and Intangibles



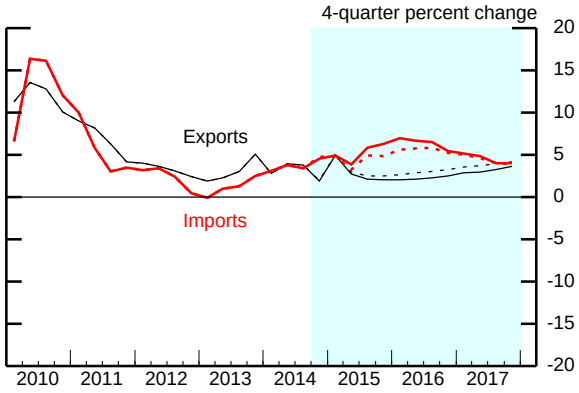
Nonresidential Structures



Government Consumption & Investment



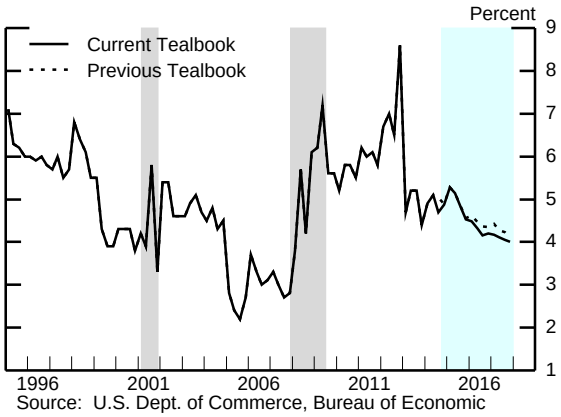
Exports and Imports



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

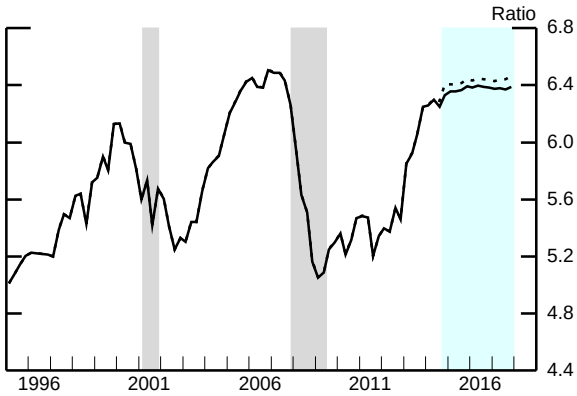
Aspects of the Medium-Term Projection

Personal Saving Rate



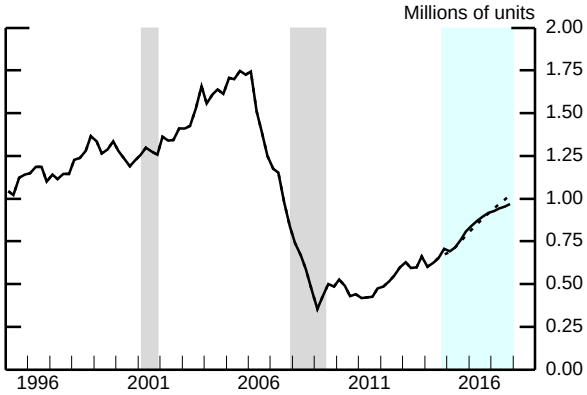
Source: U.S. Dept. of Commerce, Bureau of Economic Analysis.

Wealth-to-Income Ratio



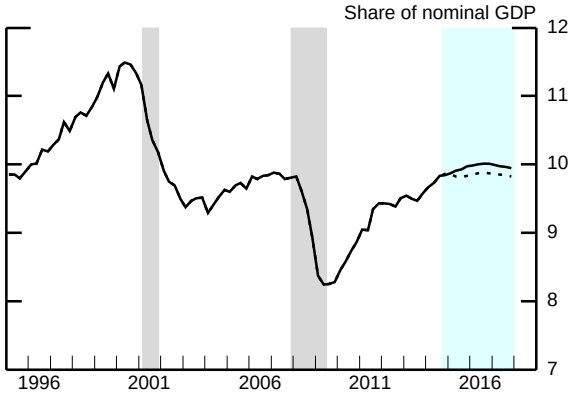
Note: Ratio of household net worth to disposable personal income.
Source: For net worth, Federal Reserve Board, Financial Accounts of the United States; for income, U.S. Dept. of Commerce, Bureau of Economic Analysis.

Single-Family Housing Starts



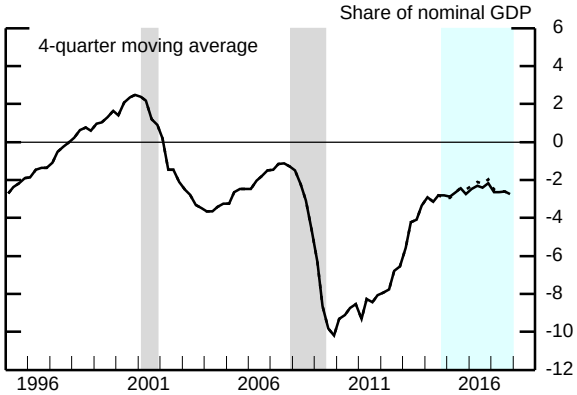
Source: U.S. Census Bureau.

Equipment and Intangibles Spending



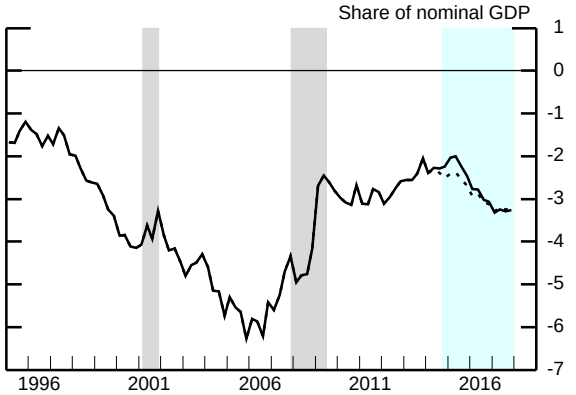
Source: U.S. Dept. of Commerce, Bureau of Economic Analysis.

Federal Surplus/Deficit



Source: *Monthly Treasury Statement.*

Current Account Surplus/Deficit



Source: U.S. Dept. of Commerce, Bureau of Economic Analysis.

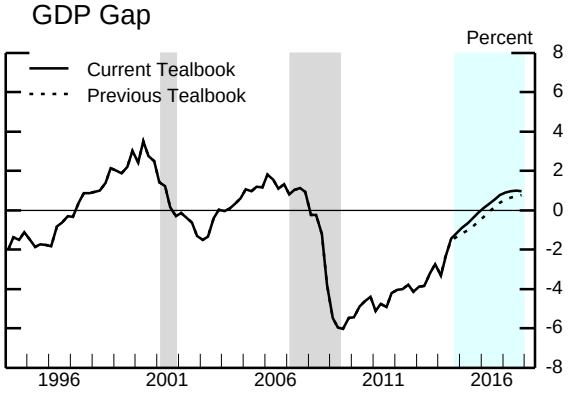
Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

Decomposition of Potential GDP
(Percent change, Q4 to Q4, except as noted)

Measure	1974-95	1996-2000	2001-07	2008-10	2011-13	2014	2015	2016	2017
Potential real GDP	3.1	3.4	2.6	1.7	1.6	.8	1.7	1.8	1.8
Previous Tealbook	3.1	3.4	2.6	1.7	1.6	.7	1.7	1.8	1.8
Selected contributions[1]									
Structural labor productivity[2]	1.6	2.9	2.8	1.5	1.2	.8	1.7	1.7	1.7
Previous Tealbook	1.6	2.9	2.8	1.5	1.2	.8	1.7	1.7	1.7
Capital deepening	.7	1.5	.9	.4	.4	.6	.7	.8	.8
Multifactor productivity	.7	1.1	1.6	.9	.7	.1	.8	.8	.8
Structural hours	1.5	1.0	.7	.2	.7	.7	.3	.3	.3
Previous Tealbook	1.5	1.0	.7	.2	.7	.6	.3	.3	.3
Labor force participation	.4	.0	-.3	-.4	-.5	-.5	-.5	-.5	-.5
Previous Tealbook	.4	.0	-.3	-.4	-.5	-.5	-.5	-.5	-.5
Memo:									
GDP gap[3]	-1.8	2.5	.9	-4.4	-2.8	-1.2	-.1	.8	1.0
Previous Tealbook	-1.8	2.5	.9	-4.4	-2.8	-1.3	-.6	.4	.8

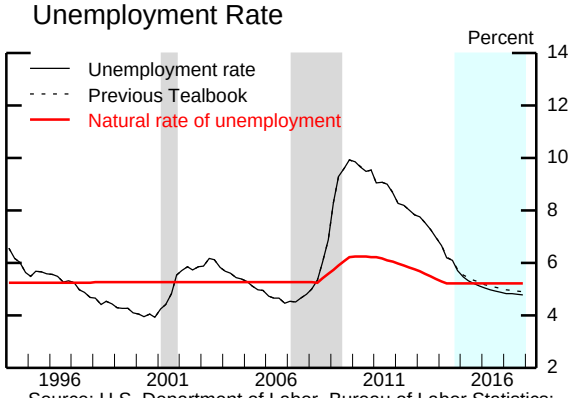
Note: For multiyear periods, the percent change is the annual average from Q4 of the year preceding the first year shown to Q4 of the last year shown.
1. Percentage points.
2. Total business sector.
3. Percent difference between actual and potential GDP in the final quarter of the period indicated. A negative number indicates that the economy is operating below potential.

GDP Gap



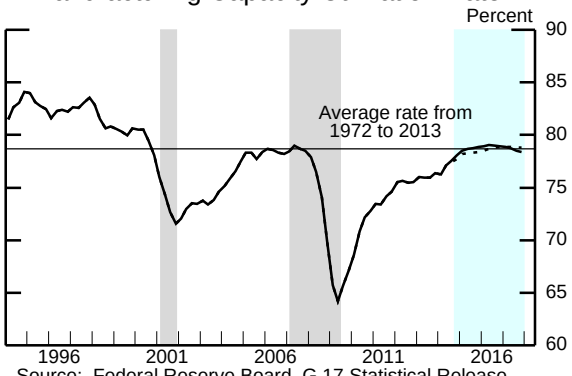
Note: The GDP gap is the percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential.
Source: U.S. Department of Commerce, Bureau of Economic Analysis; staff assumptions.

Unemployment Rate



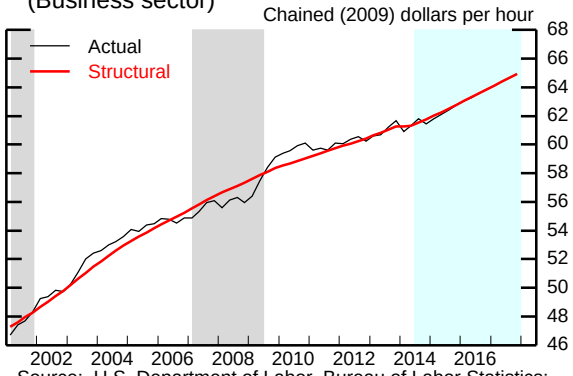
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

Manufacturing Capacity Utilization Rate



Source: Federal Reserve Board, G.17 Statistical Release, "Industrial Production and Capacity Utilization."

Structural and Actual Labor Productivity
(Business sector)



Source: U.S. Department of Labor, Bureau of Labor Statistics; U.S. Department of Commerce, Bureau of Economic Analysis; staff assumptions.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

The Outlook for the Labor Market

Measure	2014	2015		2015	2016	2017
		H1	H2			
Output per hour, business[1]	-.4	2.2	2.1	2.2	1.7	1.7
Previous Tealbook	-.1	2.2	1.7	1.9	1.7	1.7
Nonfarm private employment[2]	238	218	215	216	216	132
Previous Tealbook	234	205	215	210	218	138
Labor force participation rate[3]	62.8	62.7	62.6	62.6	62.6	62.5
Previous Tealbook	62.8	62.6	62.6	62.6	62.5	62.5
Civilian unemployment rate[3]	5.7	5.3	5.1	5.1	4.9	4.8
Previous Tealbook	5.7	5.4	5.2	5.2	5.0	4.9

1. Percent change from final quarter of preceding period at annual rate.
2. Thousands, average monthly changes.
3. Percent, average for the final quarter in the period.
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

Inflation Projections

(Percent change at annual rate from final quarter of preceding period)

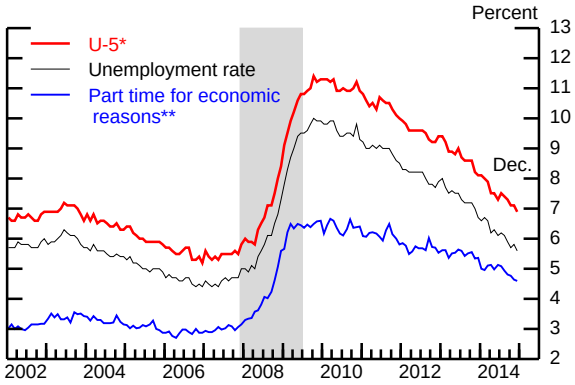
Measure	2014	2015		2015	2016	2017
		H1	H2			
PCE chain-weighted price index	1.1	-.7	1.8	.5	1.7	1.9
Previous Tealbook	1.2	.4	1.6	1.0	1.7	1.8
Food and beverages	2.8	1.1	1.1	1.1	1.6	1.9
Previous Tealbook	2.6	1.3	1.3	1.3	1.6	1.9
Energy	-6.4	-34.6	9.1	-15.5	4.7	3.0
Previous Tealbook	-6.4	-18.9	4.5	-7.9	2.8	1.9
Excluding food and energy	1.4	1.2	1.5	1.4	1.6	1.8
Previous Tealbook	1.6	1.5	1.5	1.5	1.6	1.8
Prices of core goods imports[1]	.5	-2.9	.6	-1.2	1.2	1.3
Previous Tealbook	.4	-1.7	1.0	-.3	1.3	1.3

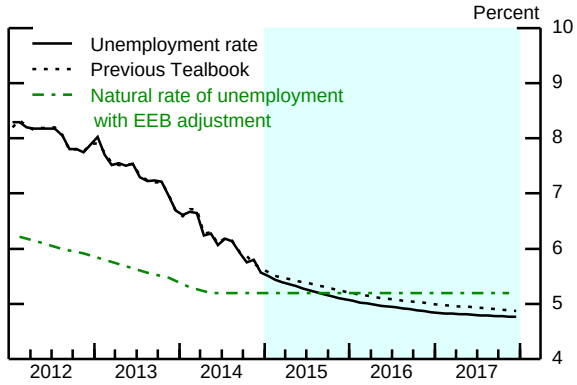
1. Core goods imports exclude computers, semiconductors, oil, and natural gas.
Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Domestic Econ Devel & Outlook

Labor Market Developments and Outlook (1)

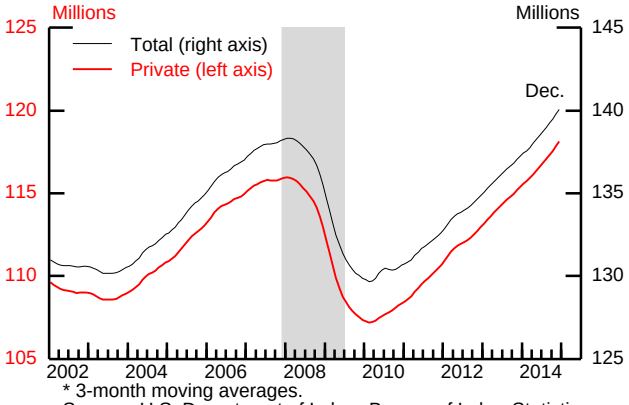
Measures of Labor Underutilization

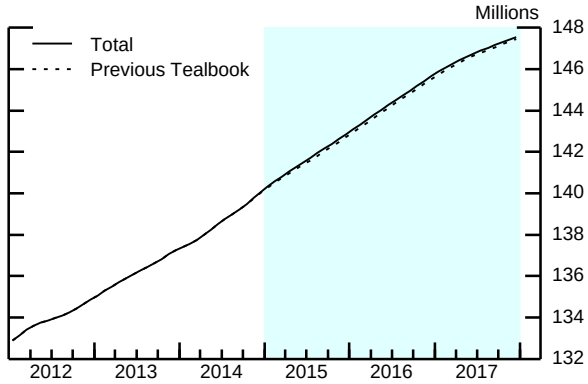




* U-5 measures total unemployed persons plus all marginally attached to the labor force, as a percent of the labor force plus persons marginally attached to the labor force.
** Percent of Current Population Survey employment.
EEB Extended and emergency unemployment benefits.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

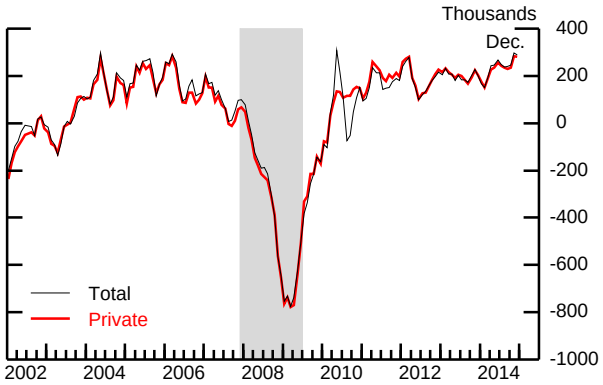
Level of Payroll Employment*

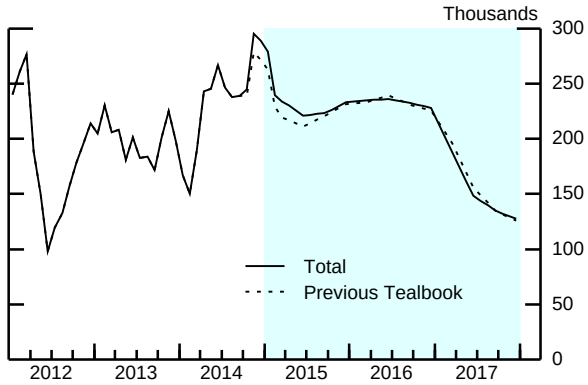




* 3-month moving averages.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

Change in Payroll Employment*



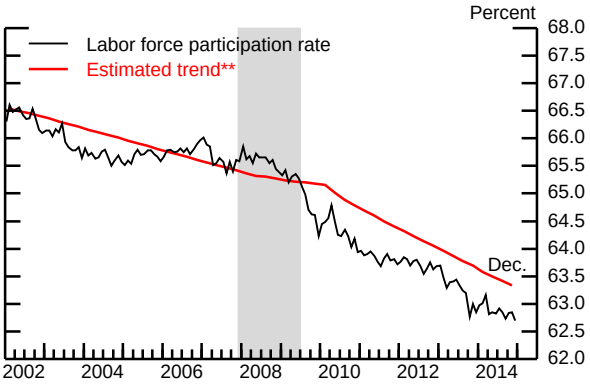


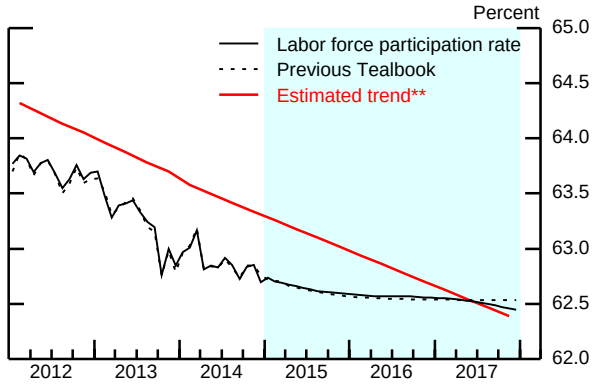
* 3-month moving averages.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

Labor Market Developments and Outlook (2)

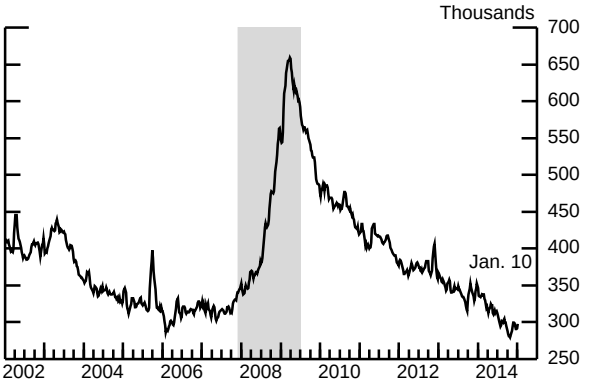
Labor Force Participation Rate*





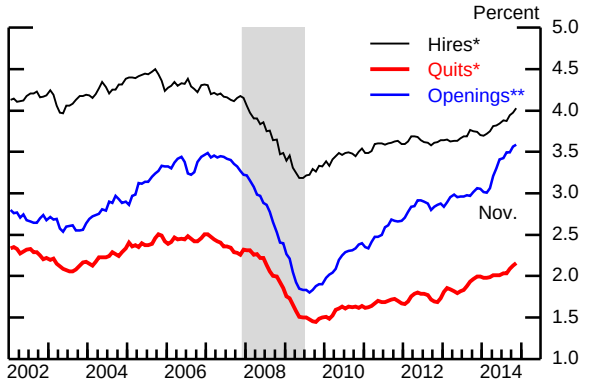
* Published data adjusted by staff to account for changes in population weights.
** Includes staff estimate of the effect of extended and emergency unemployment benefits.
Source: U.S. Department of Labor, Bureau of Labor Statistics; staff assumptions.

Initial Unemployment Insurance Claims*



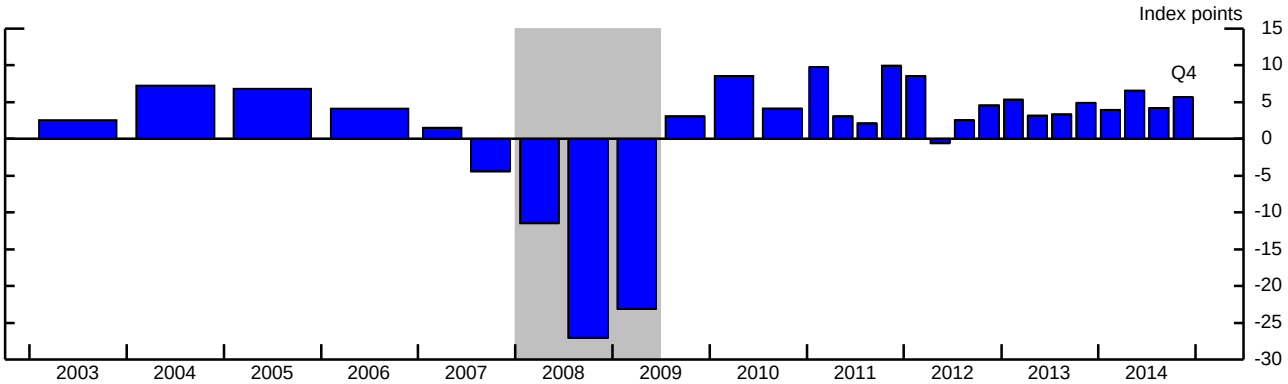
* 4-week moving average.
Source: U.S. Department of Labor, Employment and Training Administration.

Private Hires, Quits, and Job Openings



* Percent of private nonfarm payroll employment, 3-month moving average.
** Percent of private nonfarm payroll employment plus unfilled jobs, 3-month moving average.
Source: Job Openings and Labor Turnover Survey.

Average Monthly Change in Labor Market Conditions Index



Note: Labor market conditions index estimated by staff.

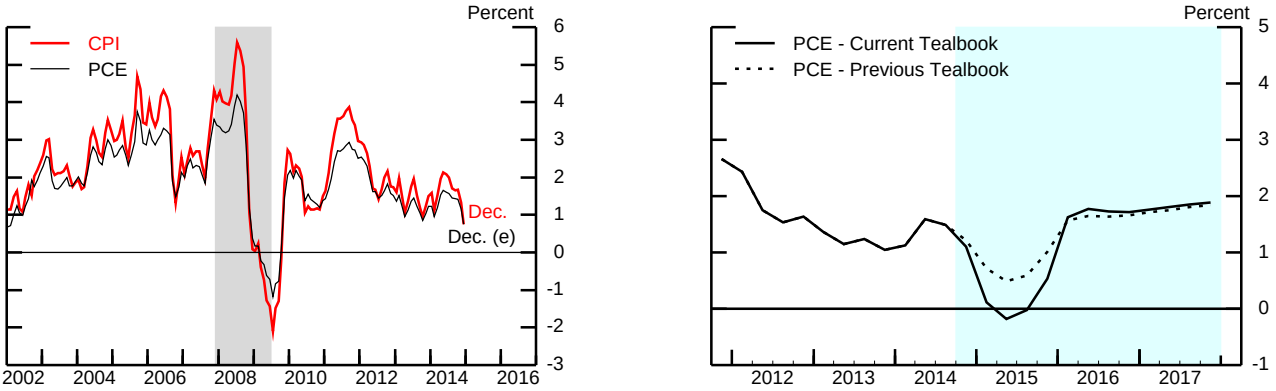
Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

Domestic Econ Devel & Outlook

Inflation Developments and Outlook (1)

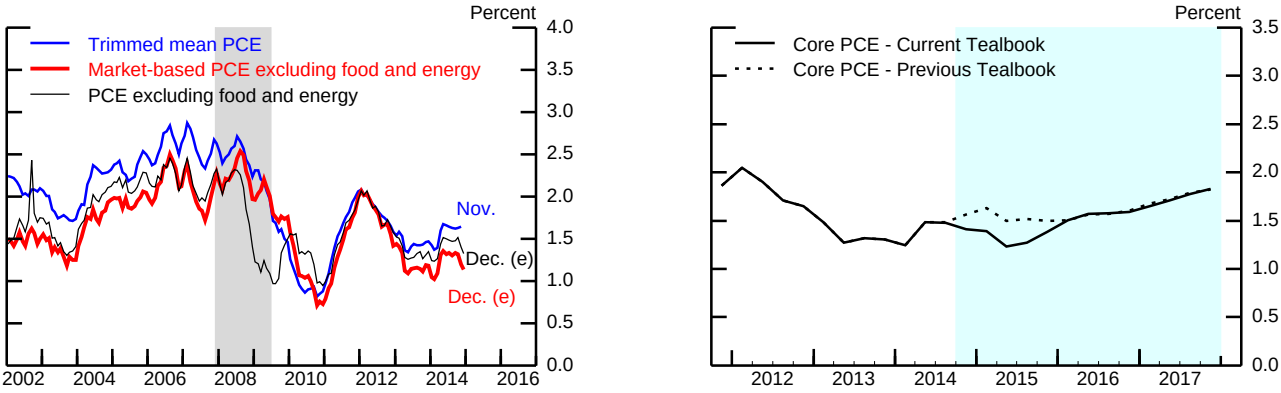
(Percent change from year-earlier period)

Headline Consumer Price Inflation



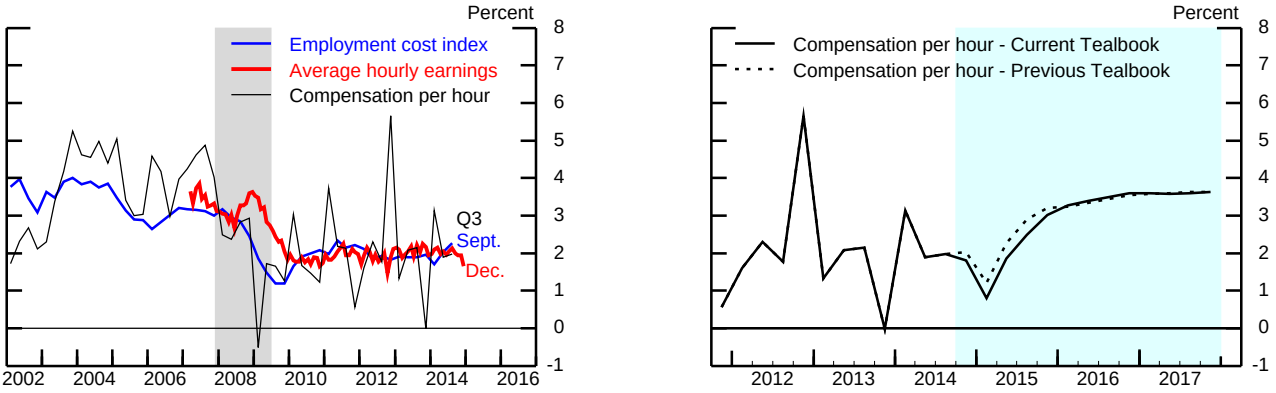
Note: PCE prices from October to December 2014 are staff estimates (e).
Source: For CPI, U.S. Department of Labor, Bureau of Labor Statistics; for PCE, U.S. Department of Commerce, Bureau of Economic Analysis.

Measures of Underlying PCE Price Inflation



Note: Core PCE prices from October to December 2014 are staff estimates (e).
Source: For trimmed mean PCE, Federal Reserve Bank of Dallas; otherwise, U.S. Department of Commerce, Bureau of Economic Analysis.

Labor Cost Growth



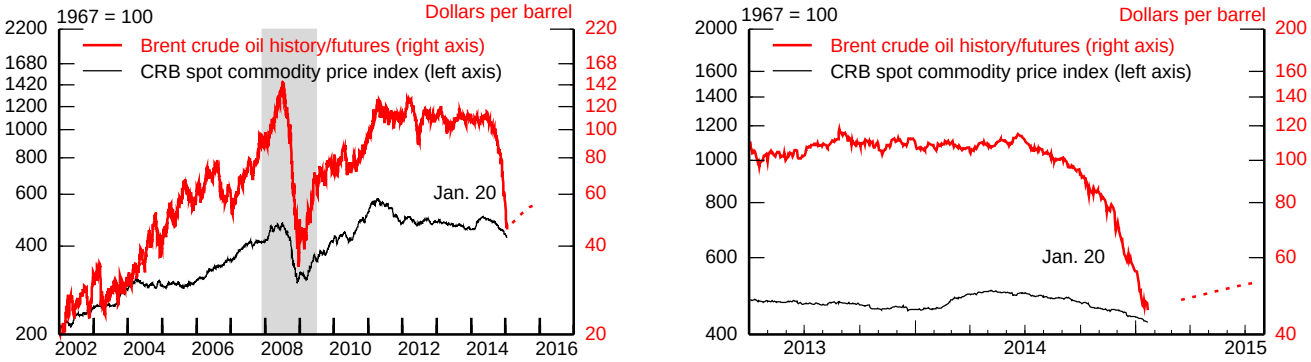
Note: Compensation per hour is for the business sector. Average hourly earnings are for the private nonfarm sector. The employment cost index is for the private sector.
Source: U.S. Department of Labor, Bureau of Labor Statistics.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

Inflation Developments and Outlook (2)

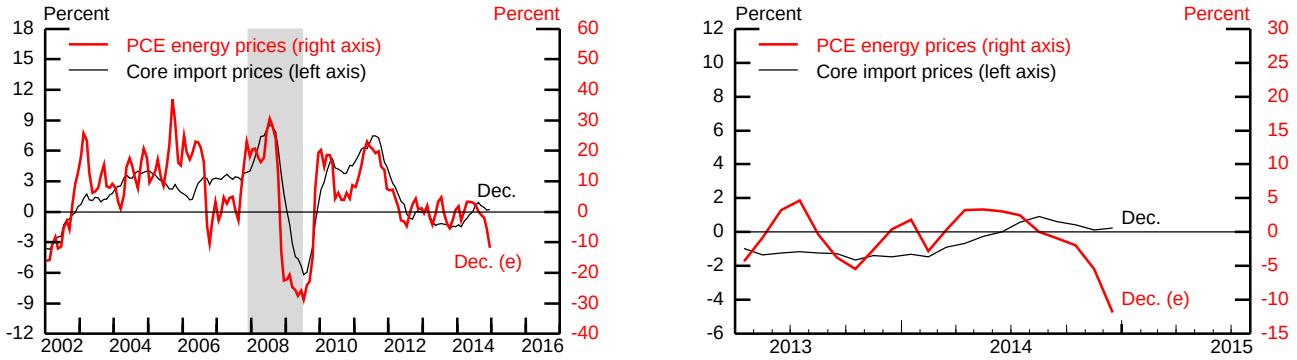
(Percent change from year-earlier period, except as noted)

Commodity and Oil Price Levels



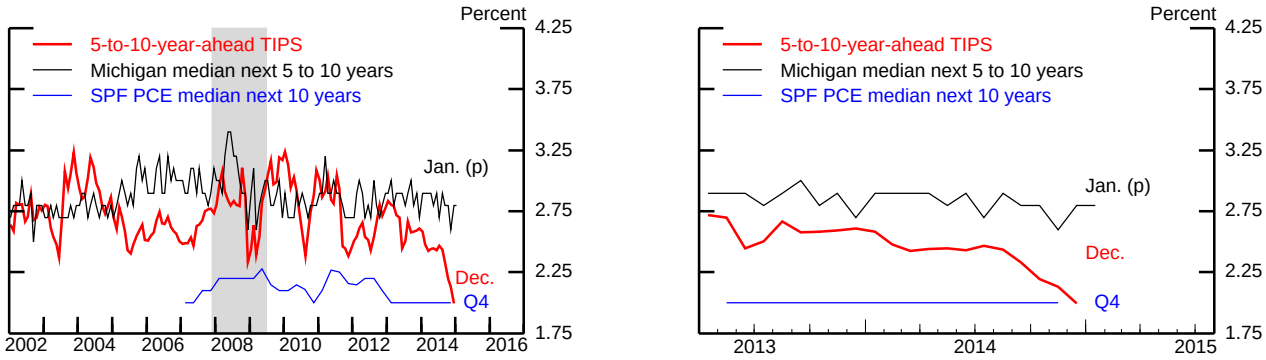
Note: Futures prices (dotted lines) are the latest observations on monthly futures contracts.
Source: For oil prices, U.S. Department of Energy, Energy Information Agency; for commodity prices, Commodity Research Bureau (CRB).

Energy and Import Price Inflation



Note: PCE prices from October to December 2014 are staff estimates (e).
Source: For core import prices, U.S. Dept. of Labor, Bureau of Labor Statistics; for PCE, U.S. Dept. of Commerce, Bureau of Economic Analysis.

Long-Term Inflation Expectations



Note: Based on a comparison of an estimated TIPS (Treasury Inflation-Protected Securities) yield curve with an estimated nominal off-the-run Treasury yield curve, with an adjustment for the indexation-lag effect.
p Preliminary.
SPF Survey of Professional Forecasters.
Source: For Michigan, Thomson Reuters/University of Michigan Surveys of Consumers; for SPF, Federal Reserve Bank of Philadelphia; for TIPS, Federal Reserve Board staff calculations.

Note: The gray shaded bars indicate a period of business recession as defined by the National Bureau of Economic Research.

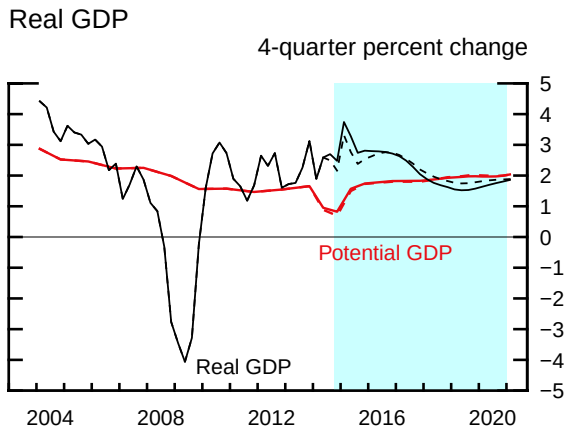
Domestic Econ Devel & Outlook

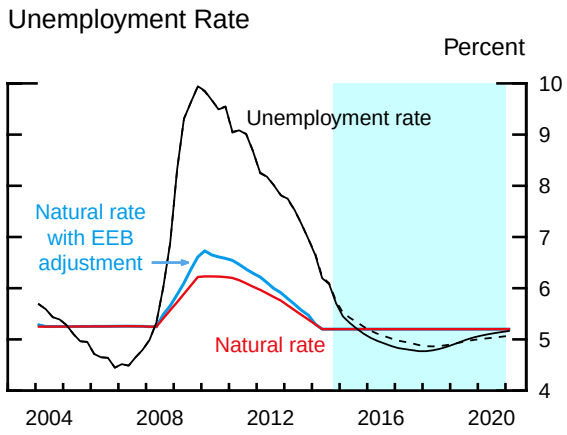
The Long-Term Outlook

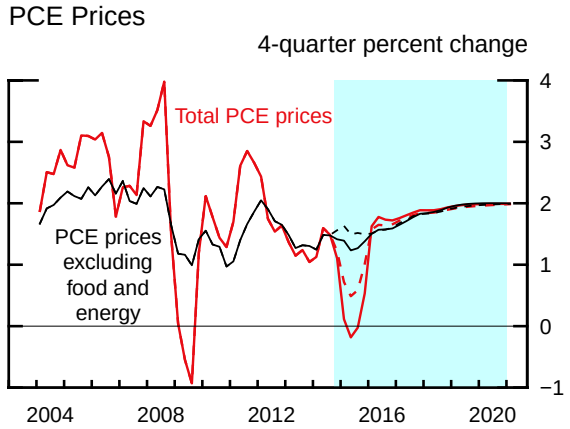
(Percent change, Q4 to Q4, except as noted)

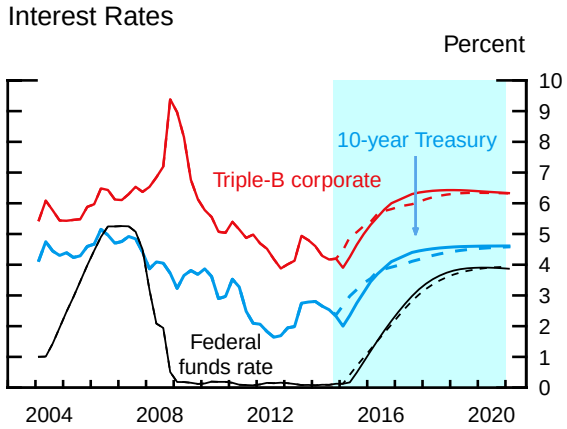
Measure	2014	2015	2016	2017	2018	2019	Longer run
Real GDP	2.5	2.8	2.7	2.0	1.6	1.6	2.0
Previous Tealbook	2.2	2.5	2.7	2.2	1.8	1.8	2.0
Civilian unemployment rate[1]	5.7	5.1	4.9	4.8	4.9	5.0	5.2
Previous Tealbook	5.7	5.2	5.0	4.9	4.9	5.0	5.2
PCE prices, total	1.1	.5	1.7	1.9	1.9	2.0	2.0
Previous Tealbook	1.2	1.0	1.7	1.8	1.9	2.0	2.0
Core PCE prices	1.4	1.4	1.6	1.8	1.9	2.0	2.0
Previous Tealbook	1.6	1.5	1.6	1.8	1.9	2.0	2.0
Federal funds rate[1]	.1	.8	2.2	3.2	3.7	3.9	3.8
Previous Tealbook	.1	1.0	2.1	3.0	3.6	3.8	3.8
10-year Treasury yield[1]	2.3	3.1	4.1	4.4	4.6	4.6	4.6
Previous Tealbook	2.4	3.4	3.9	4.2	4.4	4.5	4.6

1. Percent, average for the final quarter of the period.





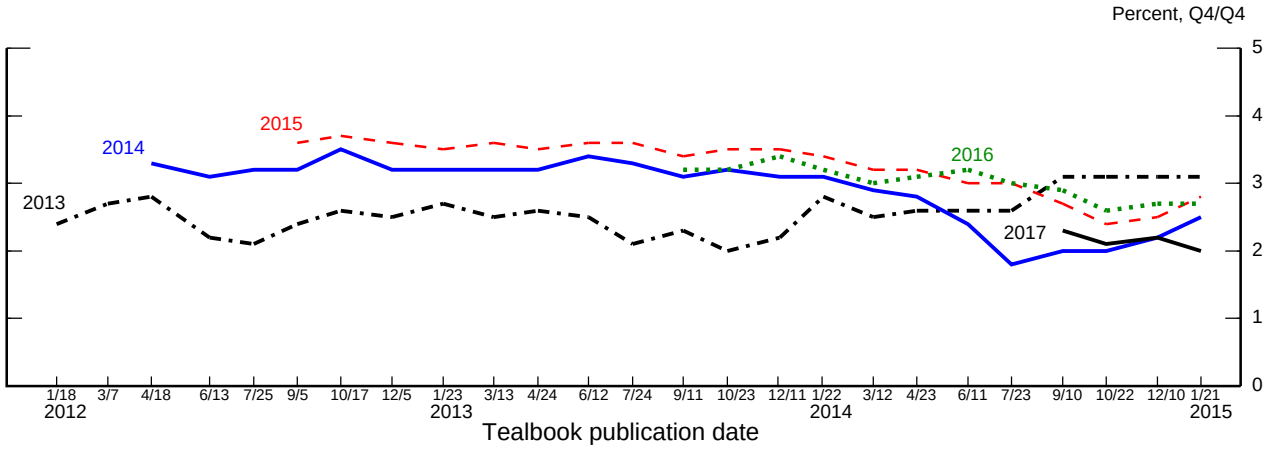




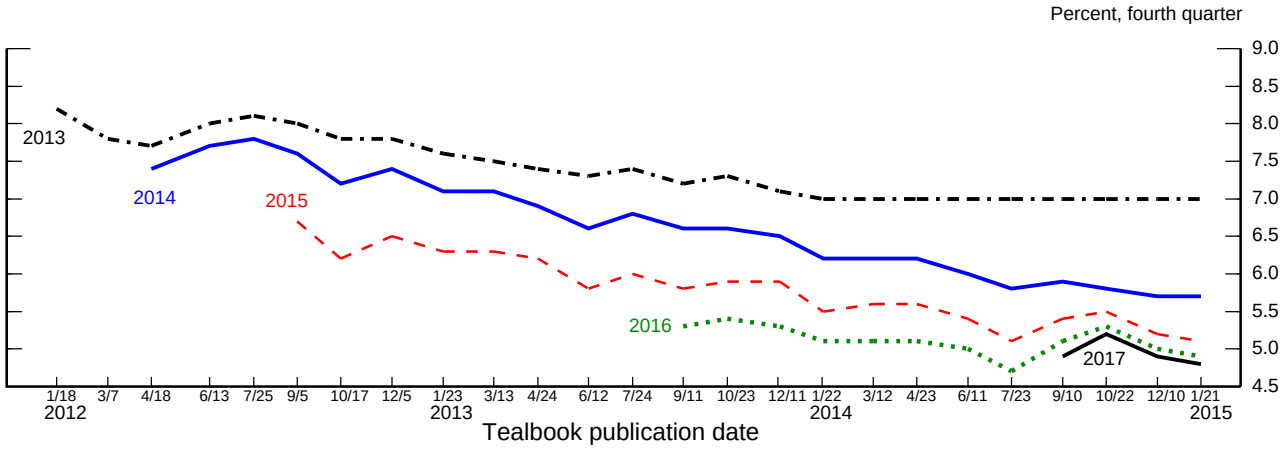
Note: In each panel, shading represents the projection period, and dashed lines are the previous Tealbook.

Evolution of the Staff Forecast

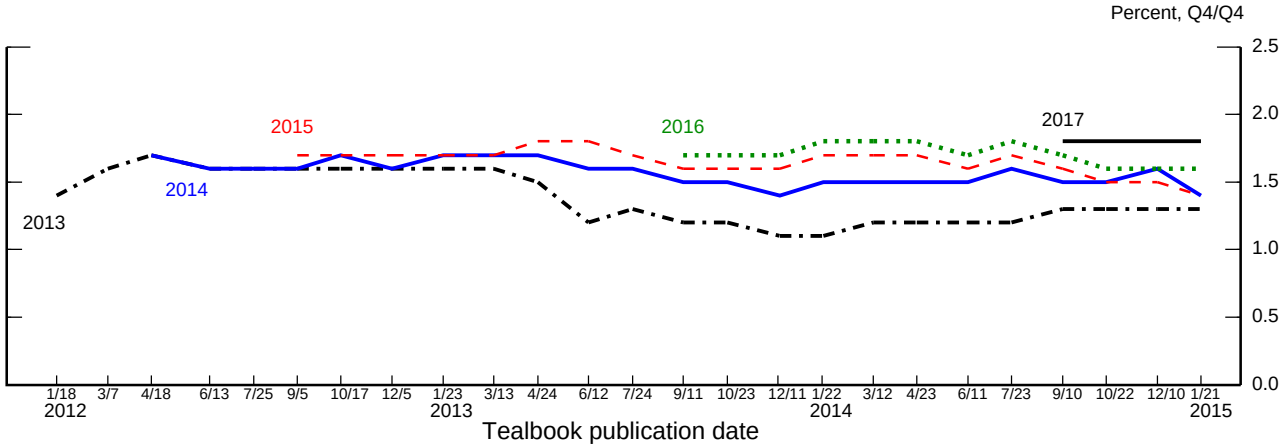
Change in Real GDP



Unemployment Rate



Change in PCE Prices excluding Food and Energy



(This page is intentionally blank.)

International Economic Developments and Outlook

We estimate that economic growth abroad picked up a bit in the fourth quarter of last year to a modest pace of 2¾ percent at an annual rate. Indicators point to a moderate recovery in Japan from its tax-induced recession and to a bounceback in Mexico from surprisingly weak performance in the third quarter, but the pickup in total foreign growth was damped somewhat by a slowing of growth in Canada and China.

Going forward, we project that economic growth abroad will edge up further to its trend pace of 3 percent this year and remain near that pace through 2017. In the advanced foreign economies (AFEs), the acceleration is concentrated in the euro area, where monetary stimulus and diminishing fiscal drag should support the economy. Much of the pickup in growth in the emerging market economies (EMEs) comes as South America recovers from its recent malaise and the Asian economies outside of China, following a soft patch, strengthen. The foreign economies, in aggregate, should benefit from solid U.S. growth, depreciated currencies, and lower oil prices. Relative to the previous Tealbook, our forecast for the level of foreign GDP over the next couple of years is boosted 0.1 percent by the stronger dollar and an additional 0.1 percent by lower oil prices. The oil price decline would provide a greater boost to the foreign outlook, except that benefits to oil-importing countries are offset by markdowns to growth in oil-exporting countries, such as Canada and Mexico, which have high weights in our trade-weighted aggregate for foreign GDP. Moreover, our foreign outlook is a touch weaker than in the December Tealbook, as the boosts from the stronger dollar and the lower oil prices are outweighed by more underlying weakness in some key foreign regions, including China and South America.

Although the forecast is only slightly weaker, significant risks attend the outlook. On the downside, the slump in the property market and ongoing decline in the growth of potential output may result in a more pronounced slowing in China than we currently anticipate. The prospects for the euro area also remain worrisome. Sharp declines in inflation could unhinge inflation expectations and weigh on recovery, while the recent renewal of tensions in Greece may escalate, with greater spillovers to the rest of the euro area, a scenario we explore in the Risks and Uncertainty section of this Tealbook. We also see upside risks. The decline in oil prices may provide a larger boost to global growth than currently projected. In addition, as explored in another scenario in the Risks

and Uncertainty section, solid foreign growth that bolsters investor confidence in the outlook could lead to a lower dollar and higher oil prices, with a net positive effect on the U.S. economy.

Amid rapidly falling energy prices, headline quarterly inflation turned negative in the AFEs at the end of 2014, and we project a further decline to negative 1¼ percent at an annual rate in the current quarter. As oil prices stabilize, we expect AFE inflation to bounce back to slightly above 1 percent by midyear and gradually rise to 1¾ percent by 2017. With growing concerns over persistently low inflation in the euro area, our baseline outlook assumes that the European Central Bank (ECB) will announce a sovereign bond purchase program at its January 22 meeting. Anticipation of that action already has put downward pressure on the euro, contributing to the Swiss National Bank's decision to abandon its exchange rate floor of 1.20 Swiss francs per euro while cutting its LIBOR target rate to negative 0.75 percent. Similar considerations also prompted Denmark's Nationalbank to lower its policy rates. In addition, in a surprise move on January 21, the Bank of Canada (BOC) lowered its target for the overnight rate by ¼ percentage point to 0.75 percent, where we expect it to stay until early 2016. Finally, we now anticipate that the Bank of England (BOE) will lift off at the end of 2015, one quarter later than previously assumed, in response to subdued inflation pressures.

In the EMEs, we estimate that inflation declined from a 3 percent rate in the middle of 2014 to 2½ percent in the fourth quarter. This relatively modest step-down in the face of plunging oil prices partly reflects the prevalence of administered energy sector prices in many EMEs, which lowers the pass-through from changes in oil prices to consumer prices. Moreover, some EMEs have experienced upward price pressure from rapidly depreciating currencies. Against this background, most EME central banks kept monetary policy unchanged since the time of the December Tealbook. Notable exceptions were the Reserve Bank of India and the Central Bank of Turkey, which cut their policy rates in January, citing declining inflation pressures, and the Central Bank of Brazil, which raised its policy rate in response to inflation concerns.

ADVANCED FOREIGN ECONOMIES

- ***Euro area.*** Recent indicators point to a mild pickup of economic activity in the last quarter of 2014. Retail sales, car registrations, and industrial production through November were above their third-quarter averages.

Accordingly, we estimate that real GDP expanded 1 percent in the fourth quarter. We project that growth will strengthen to 1¾ percent in 2015 and increase somewhat further over the next two years. This growth forecast is up almost ¼ percentage point through 2017. Our baseline scenario assumes that the heightened political uncertainty and financial stresses in Greece will persist for some time, but that the spillovers to other countries will be contained, limiting the drag on euro-area growth. (See the box "Recent Developments in Greece.")

Headline inflation declined to negative ¾ percent at an annual rate in the fourth quarter, as energy prices fell. Recent further declines in oil prices are anticipated to push inflation to negative 1½ percent this quarter. As commodity prices stabilize and the output gap narrows, inflation should move up to ½ percent in the second quarter and 1¾ percent by end-2017. Amid weak projected growth and low inflation, we expect the ECB to announce a new asset purchase program at its January 22 policy meeting. We had already assumed the ECB would purchase about €300 billion of asset-backed securities and covered bonds in the next two years through its previously announced program. We now assume the ECB will also purchase €500 billion of sovereign bonds through the new program. Based on our estimates, these new purchases should boost the level of euro-area GDP by ¾ percent and inflation by ¼ percentage point over the next two years.

- ***Japan.*** Following two consecutive quarters of contraction, real GDP rose an estimated 3 percent in the fourth quarter. Data through November indicate that private consumption continued to recover but remained well below its level before April's consumption tax hike. In 2015, we see GDP expanding at a solid 1¾ percent, largely reflecting ongoing monetary stimulus and new fiscal measures. The recovery should continue in 2016 but then grind to a halt in 2017, when a second consumption tax hike is implemented. We estimate that headline inflation declined to negative 1 percent in the fourth quarter. However, core inflation appears to have remained near 1 percent, partly reflecting some pass-through from the yen's depreciation in late 2014. Thus, we expect headline inflation to bounce back to 1 percent in the second half of 2015 and rise to 1½ percent by 2017. With below-target inflation and

Recent Developments in Greece

After more than two years of relative quiet, the financial situation of Greece has reemerged as a significant concern. Sapped by mounting public frustration with fiscal austerity and extraordinarily high unemployment, the Greek government in December failed to muster the parliamentary supermajority required to elect a new president. As prescribed by the Greek constitution, the Greek parliament was subsequently dissolved. Parliamentary elections are scheduled for January 25, 2015. The leading party in most polls is Syriza, a far-left party that has advocated for a tougher approach to negotiations with Greece's official creditors, with the goal of extracting further debt relief and rollbacks of austerity measures.

Negotiations over the terms of Greece's EU-IMF financial assistance program have been deadlocked since last fall because the former Greek government resisted calls by the EU and the IMF for more fiscal austerity. In response, the EU and the IMF have withheld loan disbursements, which the Greek government likely needs in order to avoid default on more than €15 billion worth of debt maturing in 2015. More generally, Greece needs to maintain an EU-IMF financial assistance program in order to qualify for ECB liquidity support, which accounts for roughly 15 percent of the Greek banking system's liabilities.

Hence, financial stability in Greece depends on the country's continuing eligibility for official financing. The prospect of a Syriza-led government has revived fears that discussions with official creditors could break down altogether, thereby depriving Greece of financial support and possibly leading the country to exit from the euro area.

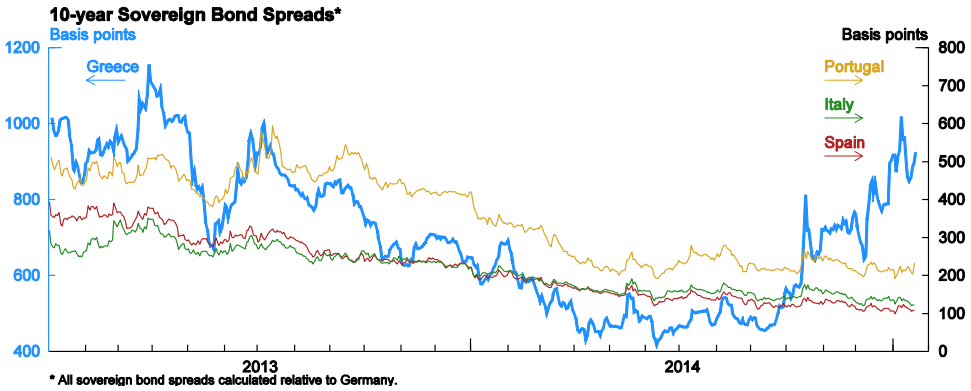
These fears have reportedly triggered deposit flight from Greek banks and prompted at least two Greek banks to request emergency liquidity assistance from the Greek central bank. In addition, spreads on Greek sovereign debt have risen to their highest levels since mid-2013, as shown in the figure on the following page. However, in sharp contrast to previous episodes of Greek financial stress, financial spillovers to other peripheral euro-area countries have thus far been short lived and limited, likely reflecting three factors. First, credible financial backstops for other peripheral countries now exist, particularly the ECB's Outright Monetary Transactions (OMT) program. Second, these peripheral countries are somewhat more resilient, reflecting some strengthened public finances, bank capital, and competitiveness. Finally, private foreign investors are now less exposed to Greece—for example, euro-area bank claims on Greece have fallen from $76 billion in late 2011 to $20 billion in mid-2014.

In our baseline forecast, the Greek situation initially deteriorates further, as political uncertainty persists even after the election, but it eventually stabilizes. Unless the election gives one party a strong majority, there will initially be a

political vacuum while political parties attempt to form a coalition government. If they cannot agree on a new government, then another election will be necessary. Should a Syriza-led government emerge, it would likely demand concessions that its official creditors would find unacceptable. As a result, brinkmanship among Greece, the ECB, the IMF, and other euro-area countries could ensue for a time. Ultimately, however, we expect the new Greek government and its official creditors to compromise, thereby unlocking EU-IMF financial assistance. In this scenario, the gyrations in Greece's situation intensify deposit flight from Greek banks and push up bond spreads in Greece and other peripheral countries for a time. However, spillovers to the rest of the euro area are transitory, and the effect on the United States is minimal.

However, negotiations could prove even more contentious and protracted than in our baseline, intensifying fears of Greece leaving the euro area. Moreover, an aggressive challenge of EU-IMF orthodoxy by Greece could embolden populist and euroskeptic parties elsewhere in Europe, reviving concerns about peripheral countries' debt sustainability or core countries' willingness to provide financial support (including ECB purchases of government debt via the OMT program). As a result, peripheral spreads and financial volatility could return to levels reached during the euro-area crisis in 2012, pushing the euro area back into recession. In turn, the U.S. economy would suffer from reduced demand from the euro area, dollar appreciation in response to safe-haven flows, and significant volatility in global equity and bond markets. (The Risks and Uncertainty section of this Tealbook examines that alternative scenario in more detail.)

In the extreme, a complete breakdown of negotiations and Greece's EU-IMF program could prompt the ECB to terminate its liquidity support to Greek banks, likely triggering the country's exit from the euro area. This exit could cause an even more severe and prolonged euro-area crisis and recession, with significant disruptions to global financial markets. We continue to place a low probability on such a scenario, given the large losses to all sides and the Greek public's continued interest in keeping the euro. That said, much depends on complex political negotiations with outcomes that are difficult to predict.



considerable resource slack, we assume that the Bank of Japan will continue to accumulate assets at the rapid current pace through the end of 2016.

- ***Canada.*** We estimate that real GDP growth moderated from 2.8 percent in the third quarter to 2½ percent in the fourth, consistent with the weaker tone of incoming labor market data. We see growth remaining near its fourth-quarter pace through 2016 and then slowing to a near-potential rate of 2¼ percent in 2017. This forecast has been revised down a bit from 2016 onward on the assumption that lower oil prices will lead to reduced investment in oil extraction. Based on recent declines in energy prices, we now project that inflation will be negative 1½ percent in the first quarter. As oil prices level off, we expect inflation to bounce back to 1½ percent in the second quarter and reach the Bank of Canada's (BOC) 2 percent target in 2017. In response to the expected negative effect of oil price declines on the outlook for growth and inflation, the BOC cut its policy rate to 0.75 percent on January 21. We now expect the first rate hike in the first quarter of 2016.

- ***United Kingdom.*** Recent data, including soft PMI readings and declining industrial production, suggest that real GDP growth dropped from 3 percent in the third quarter to a still-solid 2½ percent in the fourth, a touch lower than projected in the December Tealbook. We expect that growth will hold at about this pace in 2015 and 2016 before moderating to 2¼ percent by 2017. Declines in food and energy prices pushed headline inflation down to negative ¾ percent in the fourth quarter; core inflation also eased. We expect inflation to increase to the BOE's target of 2 percent by 2017, as food and energy prices start rising again and economic slack diminishes. Low inflation readings and BOE communications prompted us to push out by one quarter our estimate of the first rate hike to the fourth quarter of this year.

EMERGING MARKET ECONOMIES

- ***China.*** Chinese real GDP growth edged down from 7¾ percent in the third quarter to just under 7½ percent in the fourth, in line with our forecast in the December Tealbook, partly reflecting further moderation in residential investment. For 2014 as a whole, the growth rate was just under the authorities' target of 7½ percent and was supported by a sizable net export contribution. We expect exports to soften in 2015, given the significant

appreciation of the Chinese renminbi against many of its trading partners in recent months, as the renminbi followed the dollar up. A pickup in domestic demand from lower oil prices and some increase in policy stimulus will provide only a partial offset, and thus we see GDP growth moderating to about 7 percent in 2015 before edging down further to 6¾ percent in 2017. Relative to the December Tealbook, this forecast is down about ¼ percentage point through 2017. The drop in oil prices caused inflation to step down to 1 percent in the fourth quarter, but, as energy prices stabilize, we expect inflation to pick up and settle near 3 percent by the end of the year.

- ***Other Emerging Asia.*** We estimate that real GDP in the rest of emerging Asia expanded at a subdued 3¾ percent pace in the fourth quarter, a slight deceleration from the previous quarter. We see growth in the region rising to 4½ percent, slightly above its trend rate, in 2015 and holding at about that rate over the remainder of the forecast period. The step-up in growth largely reflects the boost from lower oil prices and the projected firming of activity in the advanced economies as well as the dissipation of idiosyncratic factors that restrained growth last year, including social unrest in Hong Kong. The drop in energy prices pushed down inflation in the fourth quarter, although this decline was partially offset by one-off factors, such as the expiration of housing subsidies in Hong Kong and reductions of fuel subsidies in Indonesia and Malaysia. As oil prices level off, inflation is expected to rise from 1¾ percent in the fourth quarter to 3¼ percent by mid-2015 and then stay at about that rate over the remainder of the forecast period.

- ***Latin America.*** Incoming data for **Mexico**, including trade, industrial output, and vehicle sales, are consistent with our view that real GDP growth stepped up to 3¼ percent in the fourth quarter following a disappointing 2 percent pace in the third quarter. We see Mexican growth remaining near 3¼ percent through 2017, supported, in part, by the effect of past economic reforms. This outlook is a bit weaker than in the December Tealbook. Continued declines in oil prices are expected to damp the response of private investment to recent energy reforms and eventually force a tighter fiscal stance. Headline inflation remained elevated at 4¼ percent in the fourth quarter, reflecting higher food prices and little pass-through of lower oil prices into administered fuel prices.

As food prices normalize, we see inflation moving down to 3¼ percent in the current quarter and holding at this rate through 2017.

In **Brazil**, we estimate that real GDP growth edged up in the fourth quarter, but only to a meager ¾ percent pace. Retail sales grew strongly, but business confidence was still depressed and exports contracted. Brazilian inflation remained elevated at 6 percent in the fourth quarter, and we expect it to moderate to 5¾ percent in the current quarter before settling near 5½ percent over the remainder of the forecast period. Elsewhere in South America, **Argentina** and **Venezuela** remained mired in recession, and growth in **Chile** and **Colombia** continued to be below trend. Looking ahead, economic growth in South America is projected to average a subdued 1 percent rate in the first half of the year, restrained by lower commodity prices and, in Brazil, tighter macroeconomic policies. Thereafter, we expect the region's recovery to gradually firm, with growth rising to 2½ percent in 2016 and a trend pace of 2¾ percent in 2017. All told, our outlook for South America is almost ¼ percentage point weaker than in the December Tealbook, reflecting the negative effects of the recent decline in commodity prices and a less accommodative policy stance in Brazil.

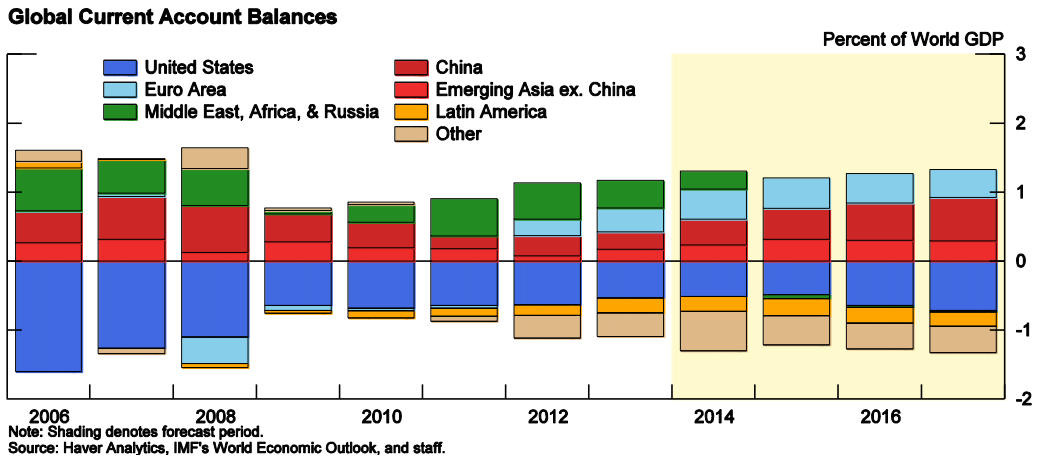
- ***Russia and Ukraine.*** The **Russian** economy continues to struggle with the adverse effects of lower oil prices and Western sanctions. Market doubts over the ability of the authorities to address financial stresses contributed to a free fall in the ruble and a surge in CDS spreads in mid-December. A series of policy actions, notably a whopping 650 basis point increase in the policy rate to 17 percent, and the provision of liquidity and capital support to Russian banks led to an appreciation of the ruble. Since then, the ruble has resumed depreciating and CDS spreads have widened, and both are now back to their mid-December levels. We expect the Russian economy to contract sharply this year and to recover only weakly thereafter.

  In **Ukraine**, a sharp contraction in real GDP last year and plummeting foreign reserves have seriously jeopardized the IMF's Stand-By Arrangement program agreed to last April. This outcome has increased the risk of a sovereign default, and the government is currently in talks with the IMF on a new support package of greater size and longer duration.

GLOBAL IMBALANCES

- With the current account surpluses of oil-producing countries having been an important source of global imbalances, the fall in oil prices might be expected to cause a narrowing in global imbalances. Indeed, the current account surplus of the major oil exporters, including the Middle East, Africa, and Russia (the green bars in the following figure), fell significantly in 2014 from recent years and is expected to turn to a deficit in 2015.

- As the figure shows, however, global current account imbalances widened somewhat in 2014, despite the fall in oil prices, and are projected to remain higher than in recent years. This outcome reflects a number of factors: First, some of the current account surplus economies, such as China, other emerging Asia, and the euro area, are oil-importing countries; the surpluses of these economies increased last year as oil prices fell. Second, despite a decline in the value of oil imports, past appreciation of the U.S. dollar and relatively robust growth result in larger current account deficits for the United States. Finally, as growth strengthens in China's major advanced-economy trading partners, higher demand from these economies should push up China's current account surplus. Nevertheless, we expect global imbalances to remain narrower than in the period preceding the global financial crisis.



The Foreign GDP Outlook

Real GDP*

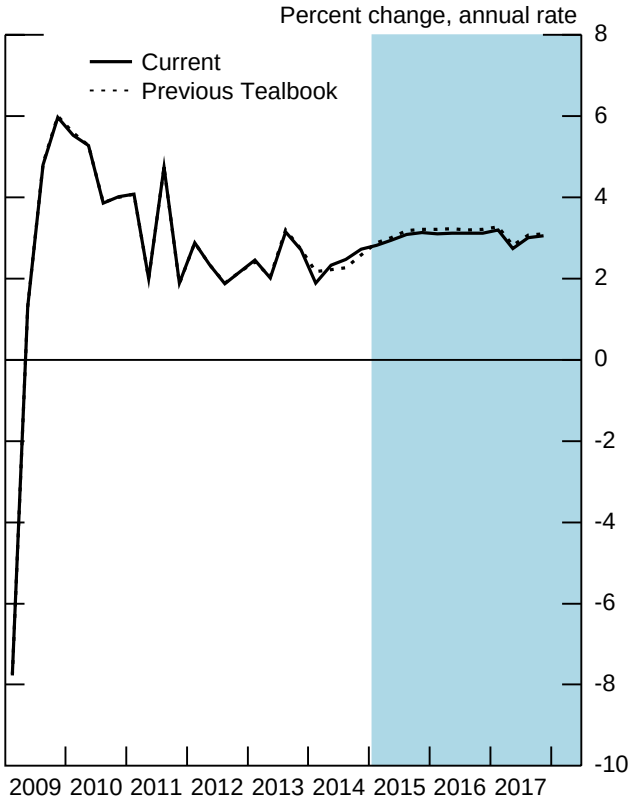
Percent change, annual rate

	2014			2015			2016	2017
	H1	Q3	Q4	Q1	Q2	H2		
1. Total Foreign	**2.1**	**2.5**	**2.7**	**2.8**	**3.0**	**3.1**	**3.1**	**3.0**
Previous Tealbook	*2.2*	*2.3*	*2.6*	*2.9*	*3.0*	*3.2*	*3.2*	*3.1*
2. Advanced Foreign Economies	**1.6**	**1.6**	**2.0**	**2.0**	**2.2**	**2.3**	**2.2**	**2.0**
Previous Tealbook	*1.6*	*1.6*	*1.8*	*2.0*	*2.1*	*2.2*	*2.2*	*1.9*
3. Canada	2.3	2.8	2.4	2.4	2.5	2.6	2.4	2.2
4. Euro Area	0.8	0.6	1.0	1.3	1.7	1.9	2.0	2.3
5. Japan	-0.6	-1.9	3.0	1.9	1.8	1.6	1.3	-0.3
6. United Kingdom	2.9	3.0	2.4	2.6	2.6	2.6	2.5	2.3
7. Emerging Market Economies	**2.6**	**3.4**	**3.4**	**3.6**	**3.7**	**3.9**	**4.1**	**4.0**
Previous Tealbook	*2.8*	*3.0*	*3.3*	*3.8*	*3.9*	*4.2*	*4.2*	*4.2*
8. China	7.0	7.7	7.4	7.1	7.1	7.0	6.9	6.7
9. Emerging Asia ex. China	2.8	3.9	3.7	4.4	4.4	4.5	4.6	4.2
10. Mexico	2.5	2.0	3.2	3.2	3.3	3.4	3.2	3.3
11. Brazil	-1.6	0.3	0.8	1.0	1.4	1.8	2.1	2.3

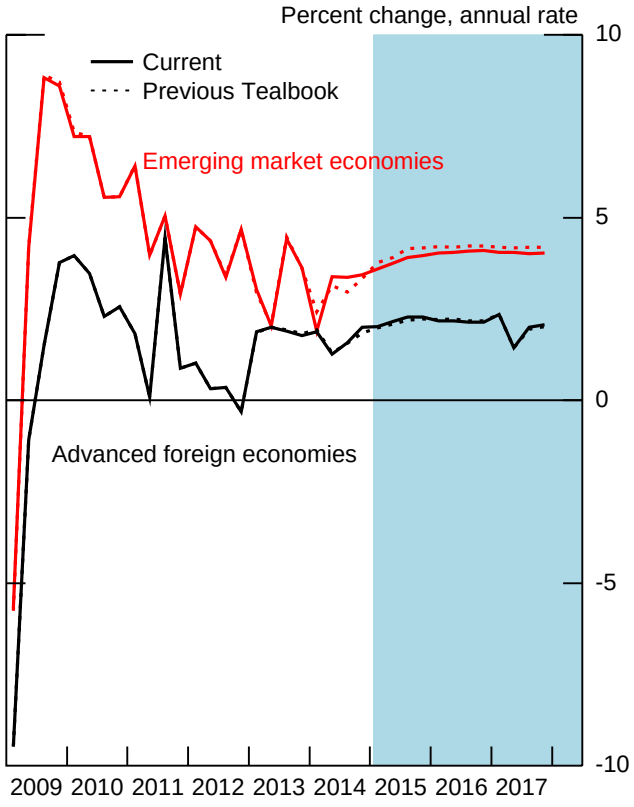
* GDP aggregates weighted by shares of U.S. merchandise exports.

Int'l Econ Devel & Outlook

Total Foreign GDP



Foreign GDP



The Foreign Inflation Outlook

Consumer Prices*

Percent change, annual rate

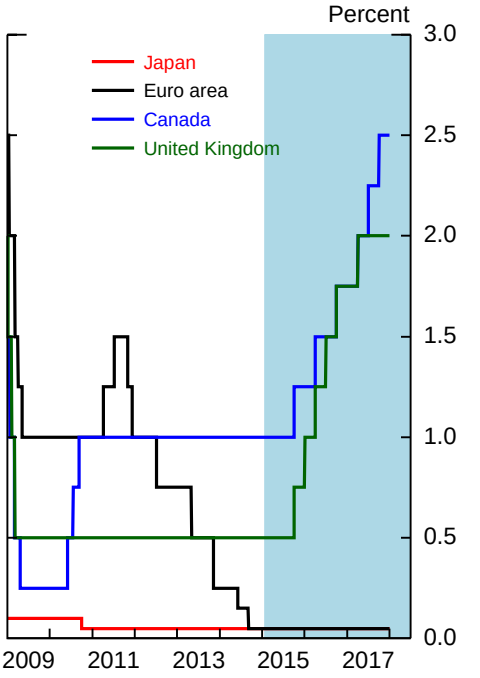
	2014			2015			2016	2017
	H1	Q3	Q4	Q1	Q2	H2		
1. Total Foreign	**2.5**	**2.1**	**1.1**	**0.9**	**2.1**	**2.4**	**2.5**	**2.7**
Previous Tealbook	*2.5*	*2.1*	*1.6*	*2.0*	*2.3*	*2.5*	*2.6*	*2.7*
2. Advanced Foreign Economies	**2.2**	**1.1**	**-0.6**	**-1.3**	**0.9**	**1.4**	**1.6**	**2.0**
Previous Tealbook	*2.2*	*1.1*	*0.0*	*0.6*	*1.1*	*1.4*	*1.6*	*2.0*
3. Canada	3.3	1.3	-0.1	-1.6	1.6	1.7	1.8	2.0
4. Euro Area	0.4	0.6	-0.7	-1.6	0.5	1.3	1.6	1.7
5. Japan	4.8	1.8	-1.1	-0.8	0.5	1.1	1.3	2.8
6. United Kingdom	1.6	1.4	-0.8	-0.8	1.4	1.8	1.8	2.0
7. Emerging Market Economies	**2.8**	**2.9**	**2.4**	**2.6**	**3.0**	**3.2**	**3.3**	**3.3**
Previous Tealbook	*2.8*	*2.9*	*2.9*	*3.1*	*3.2*	*3.4*	*3.3*	*3.3*
8. China	1.4	2.2	1.0	1.4	2.4	2.9	3.0	3.0
9. Emerging Asia ex. China	3.0	1.8	1.7	2.9	3.2	3.2	3.2	3.4
10. Mexico	4.1	4.4	4.2	3.3	3.2	3.3	3.3	3.3
11. Brazil	7.0	6.2	6.0	5.8	5.6	5.6	5.4	5.4

* CPI aggregates weighted by shares of U.S. non-oil imports.

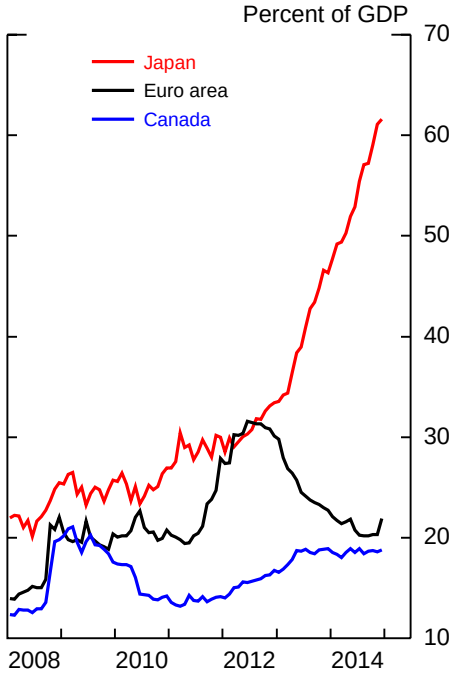
Int'l Econ Devel & Outlook

Foreign Monetary Policy

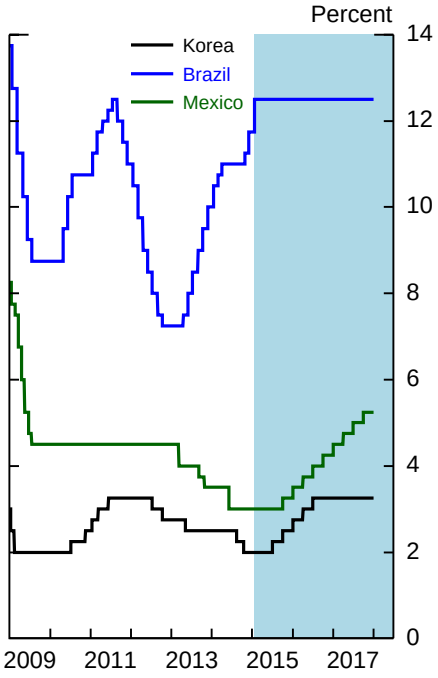
AFE Policy Rates



AFE Central Bank Balance Sheets

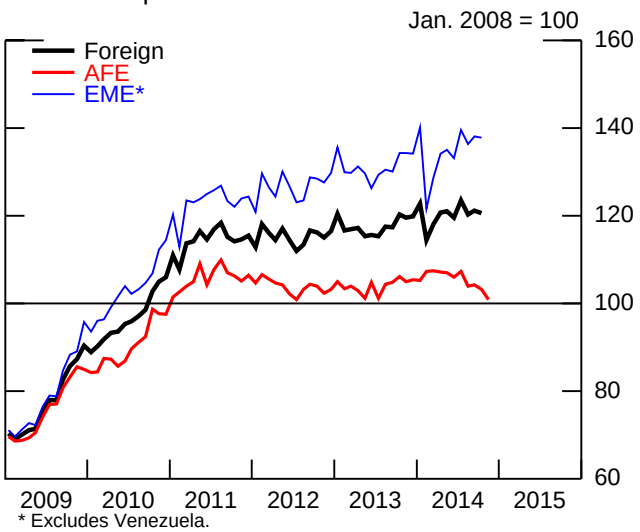


EME Policy Rates



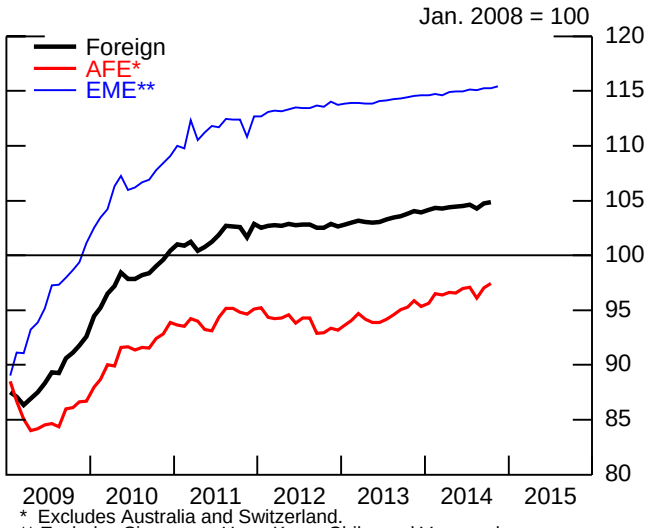
Recent Foreign Indicators

Nominal Exports



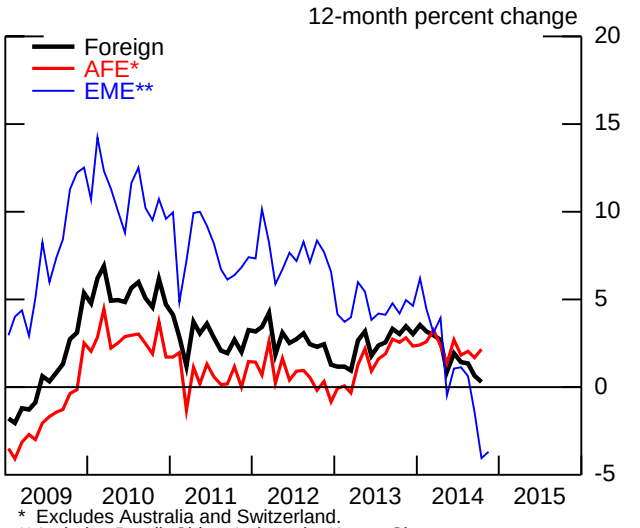
* Excludes Venezuela.

Industrial Production



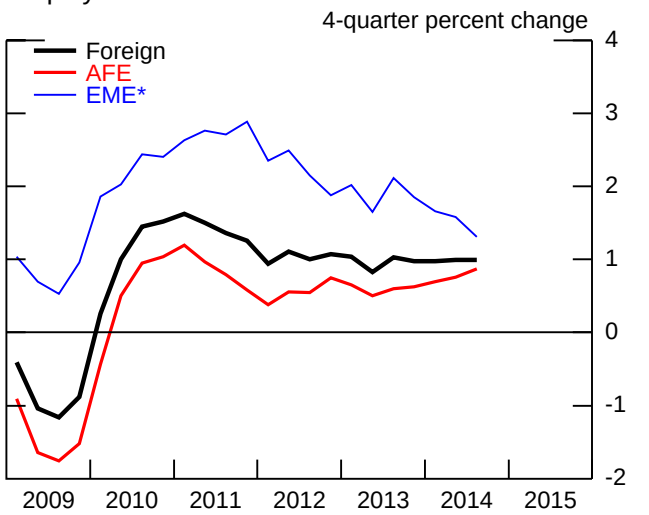
* Excludes Australia and Switzerland.
** Excludes Singapore, Hong Kong, Chile, and Venezuela.

Retail Sales



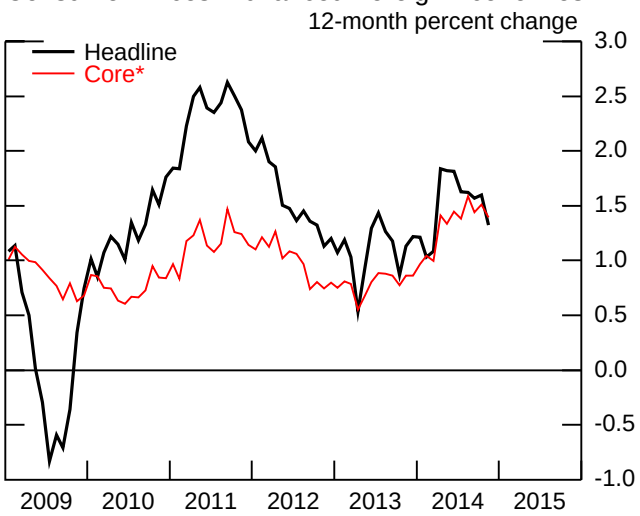
* Excludes Australia and Switzerland.
** Includes Brazil, China, Indonesia, Korea, Singapore.

Employment

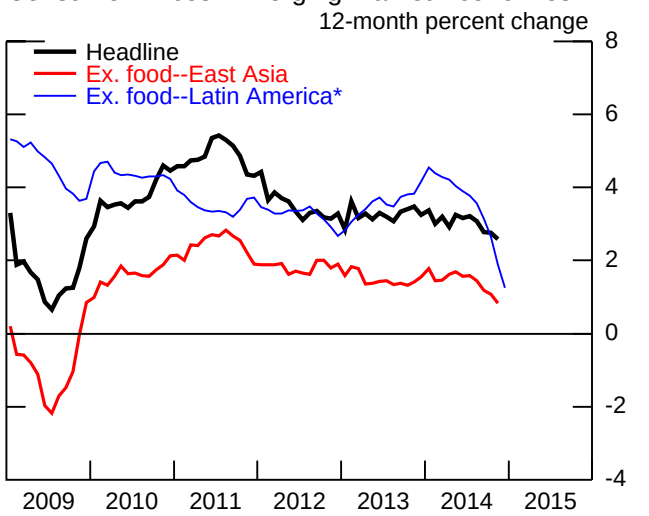


* Excludes Argentina.

Consumer Prices: Advanced Foreign Economies



Consumer Prices: Emerging Market Economies

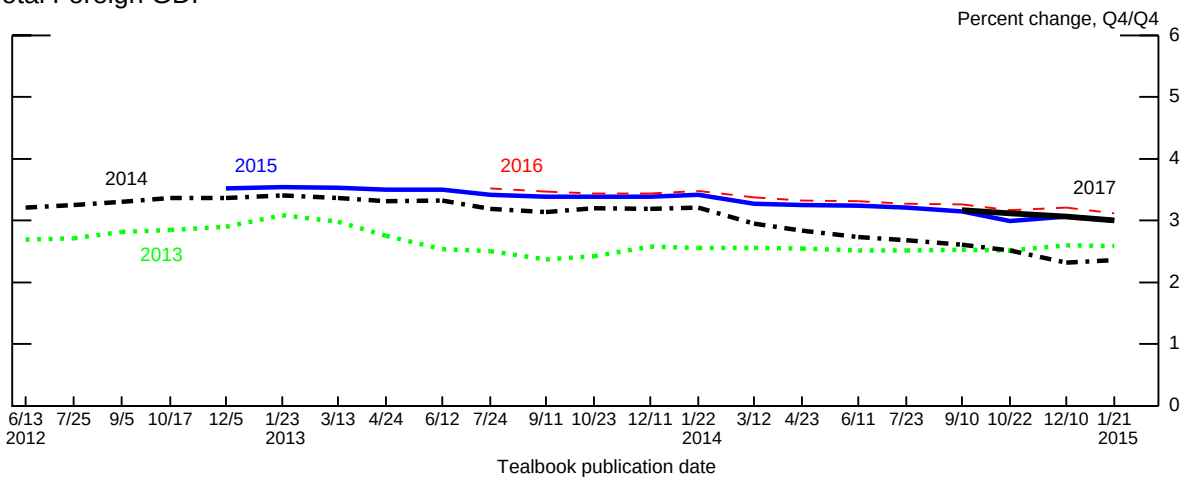


Note: Excludes Australia, Sweden, and Switzerland.
* Excludes all food and energy; staff calculation.
Source: Haver Analytics and CEIC.

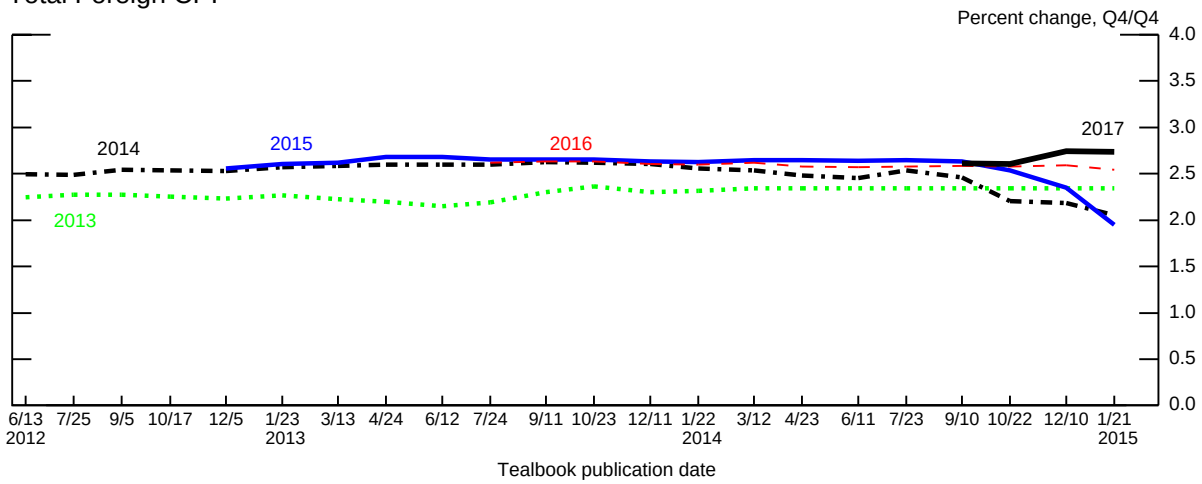
* Excludes Argentina and Venezuela.

Evolution of Staff's International Forecast

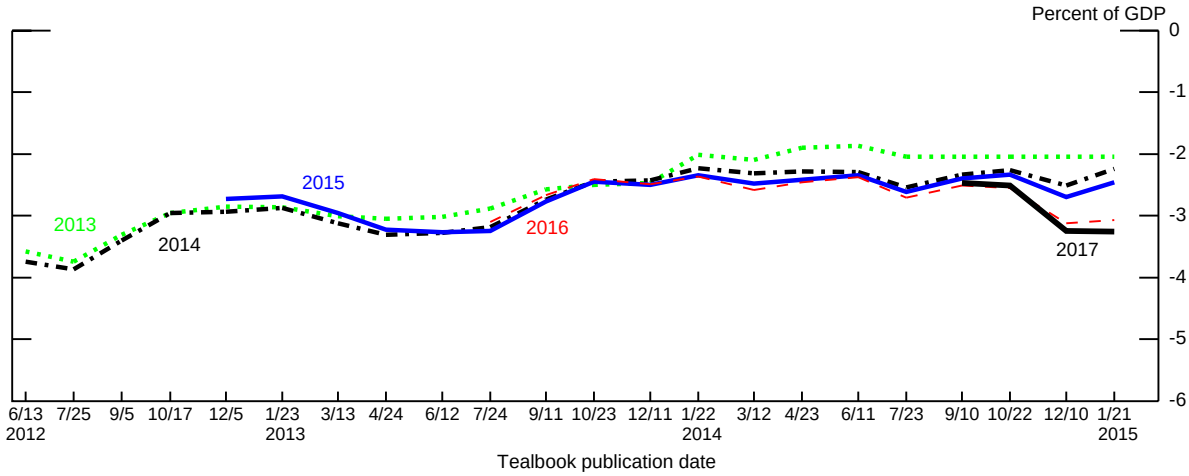
Total Foreign GDP



Total Foreign CPI



U.S. Current Account Balance



Int'l Econ Devel & Outlook

(This page is intentionally blank.)

Financial Developments

Over the intermeeting period, amid trading that was volatile at times, longer-term sovereign yields in the United States and other advanced economies declined and the foreign exchange value of the dollar rose notably. These moves were attributed in part to a deterioration in market sentiment associated with deflationary pressures abroad as well as an increased concern about the global economic outlook, a concern that might have both contributed to and been boosted by further steep declines in oil prices. U.S. economic data releases were viewed by investors as a bit weaker than anticipated, on balance, and the expected path of the federal funds rate declined. The prospect of a near-term announcement of sovereign bond purchases by the ECB as well as the Swiss National Bank's elimination of its exchange rate floor also reportedly contributed to downward pressure on U.S. and foreign longer-term yields. Equity prices in the United States and several foreign economies moved higher, on net, over the period.

- The intermeeting change in the path for the federal funds rate implied by OIS quotes suggested a modest delay in the date of liftoff and a slower pace of tightening; the implied federal funds rate at the end of 2017 declined about 40 basis points to 1.6 percent. Policy expectations of the respondents to the Open Market Desk's surveys of primary dealers and market participants indicated somewhat increased odds of a later liftoff date, but little change in the pace of normalization after liftoff, relative to the December surveys.

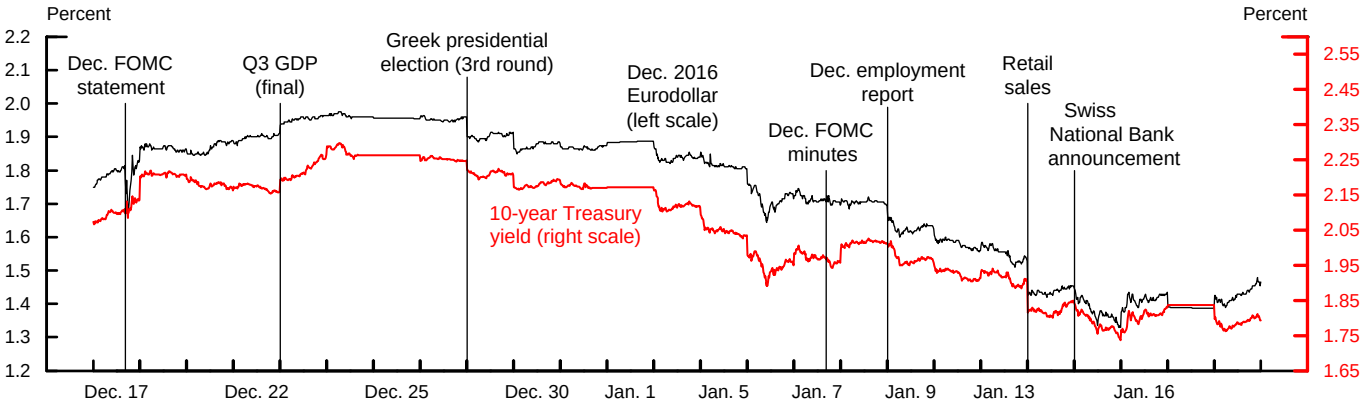
- Yields on inflation-indexed bonds declined, and those on nominal Treasury securities continued to move lower. Longer-term forward measures of inflation compensation fell significantly further to levels at the low ends of their historical ranges.

- Business financing conditions generally remained accommodative despite some pullback in lending to speculative-grade firms; household credit became somewhat more available; and loan demand reportedly strengthened, on balance, in the fourth quarter.[1]

[1] See Vladimir Yankov (2015), "The January 2015 Senior Loan Officer Opinion Survey on Bank Lending Practices," memorandum to the FOMC, January 22.

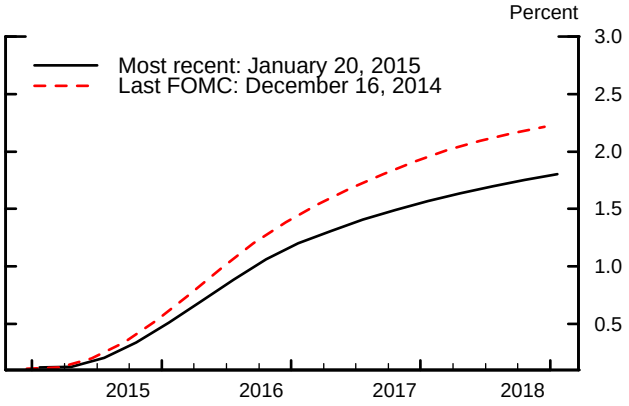
Treasury Yields and Policy Expectations

Selected Interest Rates



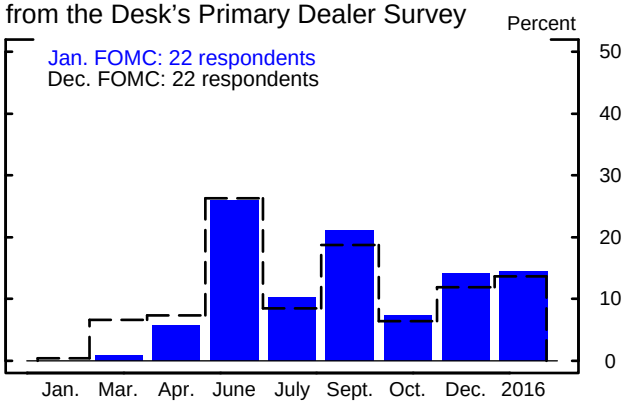
Note: 5-minute intervals. 9:30 a.m. to 4:00 p.m.
Source: Bloomberg.

Implied Federal Funds Rate



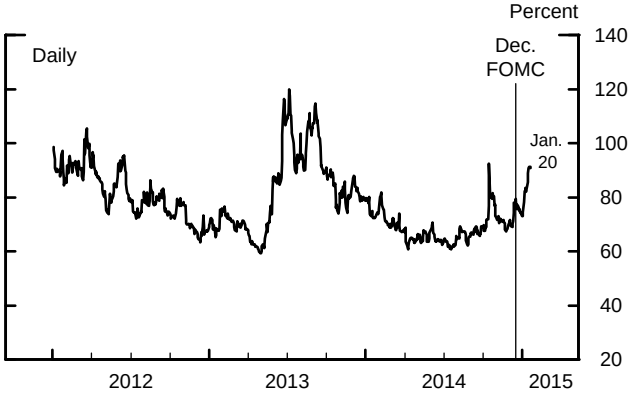
Note: Path is estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.
Source: Bloomberg; staff estimation.

Distribution of Expected Timing of First Rate Increase from the Desk's Primary Dealer Survey



Note: Average across dealers of their individual probabilities attached to the first tightening occurring at a particular meeting. For 2016, expected timing is during or after that year.
Source: Desk's primary dealer survey from January 20, 2015.

10-Year Yield Volatility



Note: Implied volatility on 10-year swap rate 3 months ahead.
Source: Barclays Live.

Inflation Compensation

Note: Estimates based on smoothed nominal and inflation-indexed Treasury yield curves.
* Adjusted for lagged indexation of Treasury Inflation-Protected Securities (carry effect).
Source: Barclays PLC; staff estimates.

Financial Developments

Treasury Yields and Policy Expectations

Federal Reserve communications over the intermeeting period (including the December FOMC statement, the Summary of Economic Projections, the Chair's press conference, and the December FOMC minutes) were characterized as fairly close to expectations on balance. U.S. economic data releases, on net, were a bit weaker than anticipated by market participants, with the lower-than-expected December average hourly earnings and retail sales numbers garnering some attention. Reflecting these perceptions and the deterioration in market sentiment, the path of the federal funds rate implied by a straight read of financial market quotes shifted down. In the Desk's surveys of dealers and market participants, the respondents across the surveys continued to view June as the most likely FOMC meeting for liftoff, although the average probability assigned to liftoff in July or later increased somewhat. Expectations for the pace of tightening following liftoff were generally little changed since the December surveys, and the median expected federal funds rate at the end of 2017 stood near 3 percent across the two surveys.

These downward revisions to market-based policy expectations and declines in foreign benchmark sovereign yields pushed nominal Treasury yields lower. On balance, the Treasury yield curve flattened over the intermeeting period, with the 2-, 5-, and 10-year yields declining 7 basis points, 22 basis points, and 23 basis points, respectively, amid somewhat increased volatility. Longer-term Treasury yields are now near their historically low levels. (See the box "The Decline in Long-Term Treasury Yields over the Past Year" for a discussion of the factors that appeared to have contributed to the drop in yields.) In addition, the TIPS-based 5-to-10-year measure of inflation compensation declined further, falling 19 basis points to 1.8 percent, its lowest level in a decade. (See the box "An Update on Measures of Longer-Term Inflation Compensation and Inflation Expectations.")

Foreign Developments

Since the December FOMC meeting, market participants have focused on actual and anticipated changes in monetary policy abroad coming in response to elevated downside risks to the economic outlook and very low and declining rates of inflation in a number of jurisdictions. Greece reemerged as a concern, while Russian financial markets remained under pressure despite a number of official measures to reduce volatility.

The Decline in Long-Term Treasury Yields over the Past Year

Despite the increased momentum of the U.S. economic expansion and the expected approach of liftoff, longer-term Treasury yields have continued to move down over the past year amid a sharp decline in oil prices and a marked appreciation of the U.S. dollar. The 10-year Treasury yield is currently at the low end of its historical range and is only a bit higher than the level seen just prior to the "taper tantrum" in 2013 (figure 1). Similar declines in longer-term yields to historically low levels have been observed in many advanced foreign economies, continuing the historical pattern of co-movement in longer-term sovereign yields despite sometimes-divergent economic fundamentals and expectations for monetary policy (figure 2).

As can be seen in figure 3, the fall in the 10-year yield since early 2014 mainly reflects decreases in forward rates at horizons of 4 years and beyond. Indeed, the 1-year forward rate 9 years ahead dropped more than 200 basis points over this period to the lowest levels in more than 30 years. By contrast, the 1-year forward rate 1 year ahead increased steadily over the same period, reflecting investor expectations about the timing of liftoff of the federal funds rate.

Over this period, the 10-year TIPS real yield has declined 52 basis points and inflation compensation has fallen substantially, by 65 basis points, while survey-based measures of inflation expectations have remained stable (see the box "An Update on Measures of Longer-Term Inflation Compensation and Inflation Expectations").

Staff models can be used to decompose the 10-year yield into the average of expected future short-term rates over the next 10 years and a term premium that compensates investors for the risks associated with longer-term fixed-income assets. According to these models, the decline in the 10-year yield since the beginning of 2014 primarily reflects reductions in the term premium, while expected short-term interest rates over the next 10 years have also moved down modestly. In contrast, survey respondents and the staff appear to have revised up their projections for the average future federal funds rate over the same period, likely reflecting the expected approach of liftoff and despite frequent market discussions about the possibility of secular stagnation.[1] This upward revision in average expected future short rates would imply an even greater decline in the term premium.

Other than the possibility of somewhat higher concerns about the tail risks of deflation and persistently low interest rates in the United States, market participants have cited three main explanations for the continued decline in term premiums. First, a weaker global economic outlook and deflationary pressures abroad are thought to have led to increased demand for U.S. Treasury securities, putting downward pressure on their yields. While some of this increased demand may reflect safe-haven flows, investors might also have rebalanced their portfolios, increasing the weight of U.S. Treasury securities, as sovereign yields in many advanced economies have been declining and now lie significantly below U.S. Treasury yields. For example, some investors have reportedly engaged in a so-called carry trade by borrowing at

[1] Between December 2013 and December 2014, the expected average federal funds rate over the next 10 years rose about 10 basis points, according to the Desk's Primary Dealer Survey. Over the same period, staff projections for the 40-quarter-ahead average of the federal funds rate increased about 40 basis points.

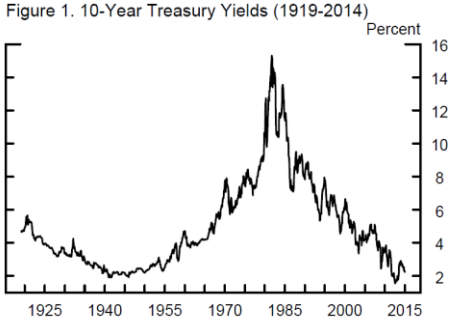
lower rates in other currencies and investing the proceeds in higher-yielding U.S. Treasury securities, thereby putting downward pressure on Treasury yields. However, direct evidence of the magnitude of such carry trades is typically hard to find.

Second, holding U.S. Treasury securities might have become less risky. Market-based measures of the relative risk of outsized increases in long-term rates—such as the swaption-implied skew—came down noticeably over the course of 2014, suggesting that market participants became less concerned about large upside movements in Treasury yields over the year (figure 4).[2] In addition, the CAPM beta, which measures the co-movement between returns on U.S. Treasury bonds and broad equity returns, moved down further in 2014, indicating that Treasury bonds may have become a better hedge against stock market fluctuations (figure 4).

Last, institutional factors could have amplified price movements in Treasury markets. For example, a rapid unwinding of short positions in Treasury securities might have amplified the decline in yields. However, one measure of such behavior, the net long speculative position in 10-year Treasury futures, did not increase significantly over the past year (figure 4).

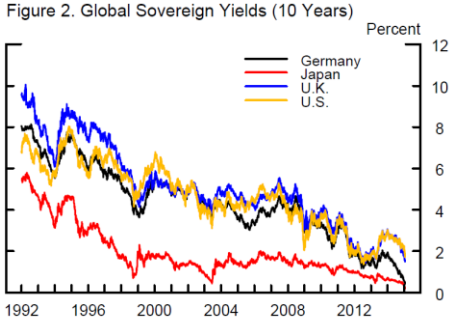
Regression analysis indicates that proxies for these three factors can account for only about one-fourth of the decline in the 10-year term premium over the past year, suggesting that a large portion of the decline in the term premium remains puzzling.[3]

Figure 1. 10-Year Treasury Yields (1919-2014)



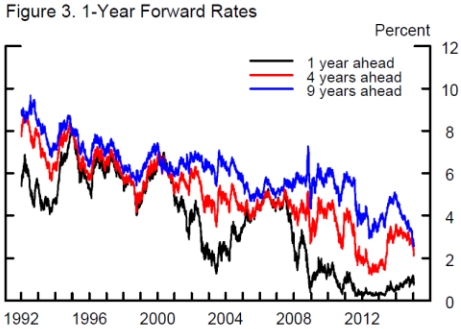
Note: Data before 1953 are an average yield over bonds due or callable after at least 8, 12, or 15 years from Banking and Monetary Statistics.
Source: Treasury Department.

Figure 2. Global Sovereign Yields (10 Years)



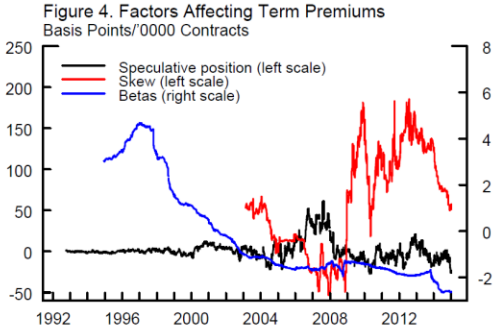
Source: Bloomberg.

Figure 3. 1-Year Forward Rates



Source: Staff calculations from Federal Reserve Bank of New York data.

Figure 4. Factors Affecting Term Premiums
Basis Points/'0000 Contracts



Source: Commodity Futures Trading Commission, J.P. Morgan, and the Center for Research in Security Prices.

[2] The skew is measured as the difference between implied volatilities from swaptions with strike rates 50 basis points above and 50 basis points below the at-the-money rate.

[3] We regress the 10-year yield on net foreign purchases of Treasury coupon securities, the CAPM beta, speculative positions in Treasury futures, and swaption-implied volatility.

An Update on Measures of Longer-Term Inflation Compensation and Inflation Expectations

Measures of longer-term inflation compensation from TIPS and from inflation swaps, such as 5-to-10-year forward inflation compensation, have declined notably since last summer to levels comparable to those last seen during the 2008 financial crisis (figure 1). In contrast, survey-based measures of longer-term inflation expectations have generally remained stable over that period (figure 2). Recent FOMC statements have noted these developments and stated that the Committee would continue to monitor inflation developments closely. This box provides an update on these developments.[1]

Both TIPS- and swaps-based measures of inflation compensation reflect not only expected inflation but also an inflation risk premium, as well as other premiums driven by liquidity differences and shifts in the relative supply and demand of nominal versus inflation-indexed securities. Staff at the Board and the Federal Reserve Banks of Cleveland and New York maintain term structure models that aim to disentangle the various components of inflation compensation and to provide estimates of inflation expectations and risk premiums. Nominal Treasury yields, along with inflation swap rates in the Cleveland Fed model and TIPS yields in the two other models, are modeled as functions of a small number of factors. The Board model has a separate latent factor to capture the potential departure of TIPS yields from the "true" real yields, while the New York Fed model ties the TIPS liquidity premium to several observed liquidity indicators in the TIPS market. In contrast, the Cleveland Fed model does not explicitly account for other premiums that might be associated with inflation swaps. The three models also differ in other aspects of their specifications and in their implementation, which could potentially lead to significant differences in their results.

As shown in figure 3, staff models generate relatively stable estimates of 5-to-10-year inflation expectations and do not indicate notable declines in longer-term inflation expectations since last summer. As seen in figure 4, while the New York Fed model points to notably lower inflation risk premiums over this period, the Board and the Cleveland Fed models show only a modest decline in the inflation risk premium and attribute a large portion of the decline in inflation compensation to changes in other unexplained premiums (not shown).

Figure 1. 5-to-10-Year Forward Inflation Compensation

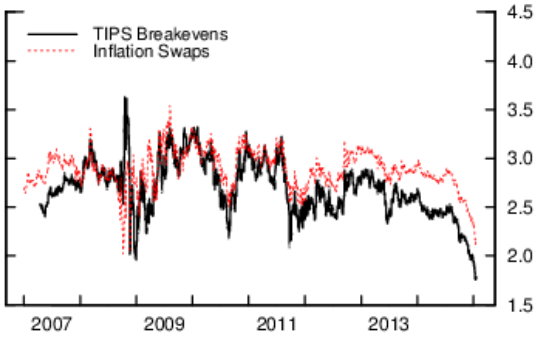
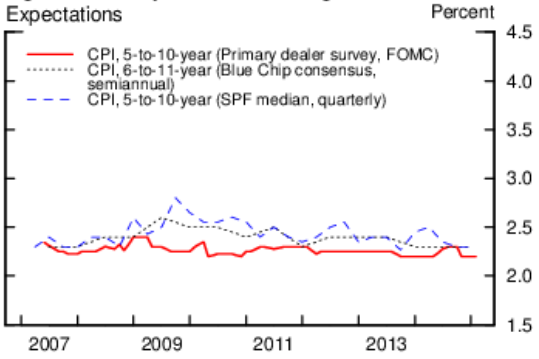


Figure 2. Survey Measures of Longer-Term Inflation Expectations



[1] For a more detailed analysis of this topic, see Yuriy Kitsul, "A Review of Market- and Survey-Based Measures of Medium- and Longer-Term Inflation Expectations," memorandum to the Board of Governors, December 10, 2014.

A decline in inflation risk premiums appears to be consistent with the relative changes in the distributions of future inflation derived from surveys and from inflation caps and floors. Survey-based distributions of 5-to-10-year forward inflation have generally remained stable since last summer (figure 5). In contrast, the *risk-neutral* distribution derived from inflation caps and floors suggests that investors may have become more concerned about lower inflation outcomes and less concerned about higher inflation outcomes since that summer (figure 6).[2] This shift could reflect an increase in the perceived likelihood of low inflation outcomes as well as an increased willingness to pay higher premiums for insurance against such outcomes, perhaps because investors increasingly associate them with poor economic performance.

In summary, despite the recent notable decline in longer-term inflation compensation, surveys and staff models generally continue to point to stable longer-term inflation expectations. Staff models estimate that the inflation risk premium has declined somewhat, and that investors may have become more concerned about the risk of low inflation outcomes, thereby contributing to the decline in inflation compensation. A number of other factors, including increased demand for U.S. nominal Treasury securities in response to an increase in perceived downside risks to economic activity and inflation overseas, may have also placed downward pressure on nominal Treasury yields and hence on inflation compensation (see the box "The Decline in Long-Term Treasury Yields over the Past Year").

Figure 3. 5-to-10-Year Inflation Expectations

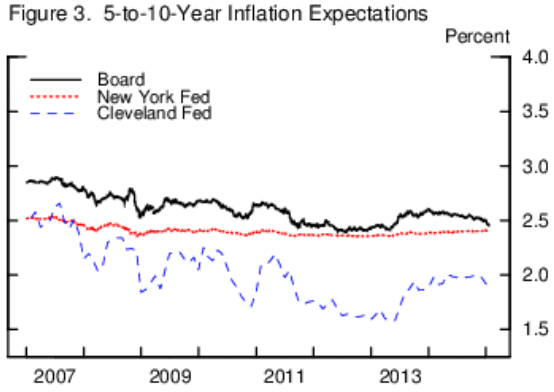


Figure 4. 5-to-10-Year Inflation Risk Premiums

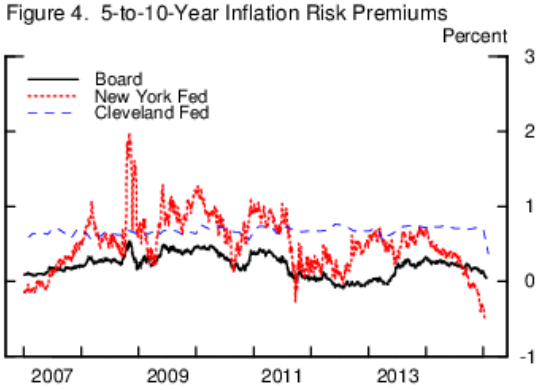


Figure 5. Aggregate PDF of 5-to-10-Year Forward CPI Inflation from the Primary Dealer Survey

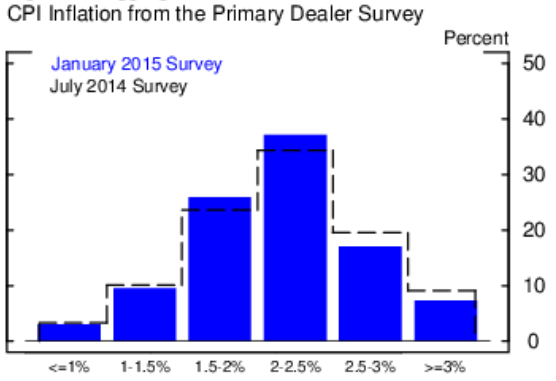
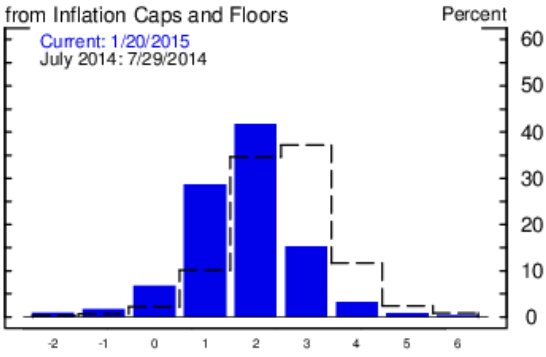


Figure 6. Probability Distribution of Annualized Headline CPI Inflation over the Next 10 Years from Inflation Caps and Floors

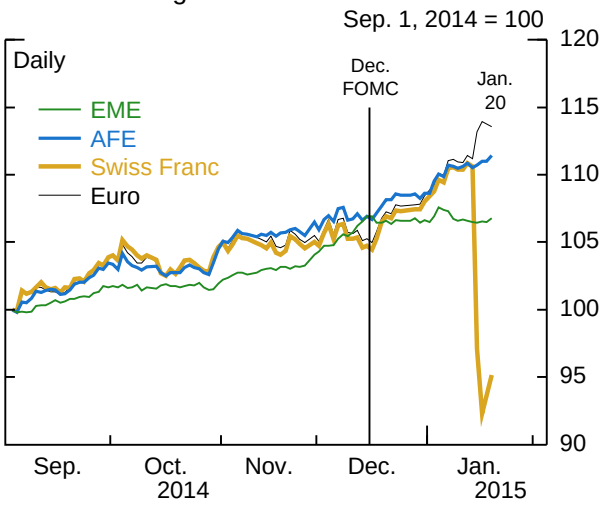


Note: Derived under the assumption that average inflation takes discrete values (for example, the bar for 3 percent covers roughly the area between 2.5 and 3.5 percent).

[2] The inflation caps-and-floors-based distribution is for the average inflation rate *over the next 10 years* because there is no available estimate of the distribution of the 5-to-10-year forward inflation rate.

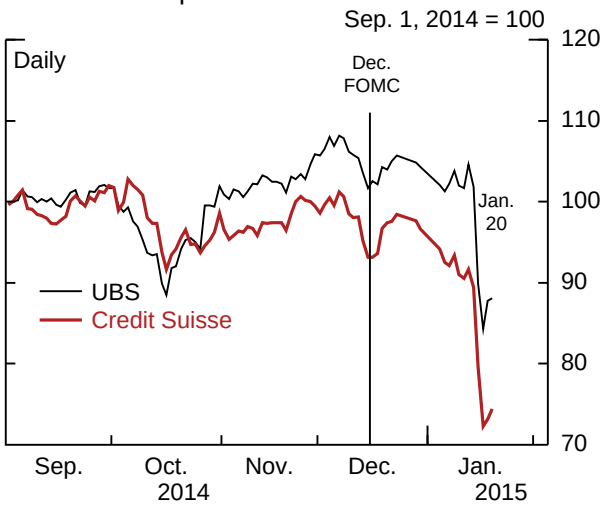
Foreign Developments

Dollar Exchange Rate Indexes



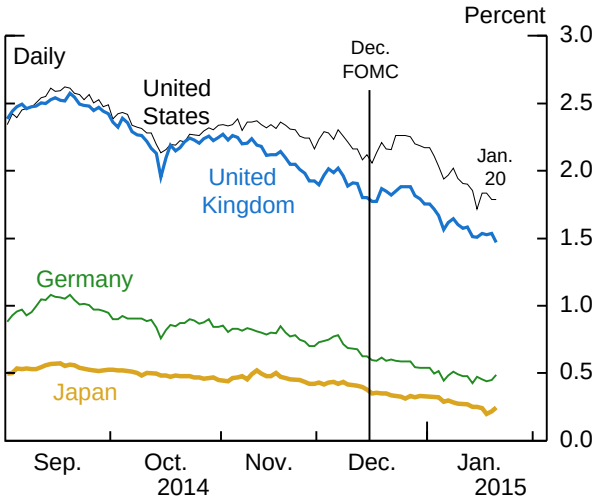
Source: Federal Reserve Board; Bloomberg.

Swiss Bank Equities



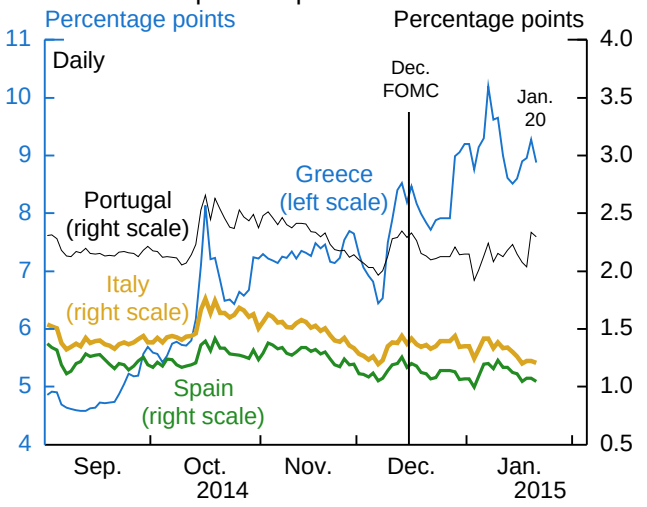
Source: Bloomberg.

AFE 10-Year Nominal Benchmark Yields



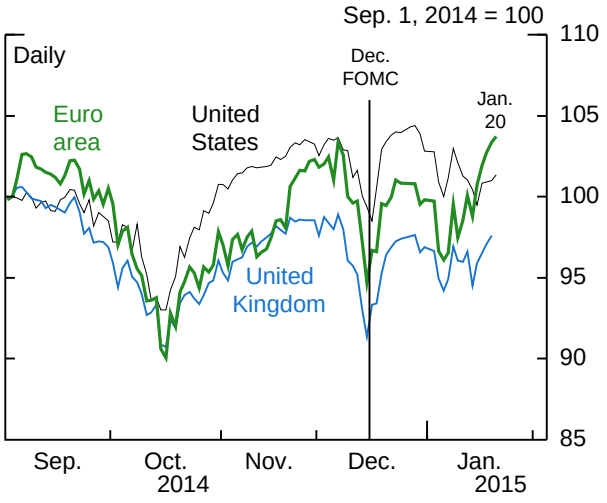
Source: Bloomberg.

10-Year Peripheral Spreads



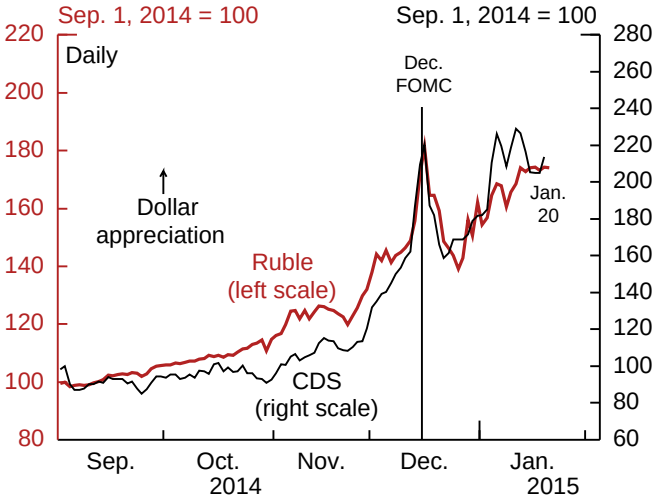
Source: Bloomberg.

AFE Stock Price Indexes



Source: Bloomberg.

Russia



Source: Bloomberg; Markit.

On January 15, the Swiss National Bank (SNB) terminated its policy of defending an exchange rate floor of 1.20 Swiss francs per euro, responding in part to resurgent capital inflows as investors anticipated further easing from the ECB, and lowered the interest rate it pays on sight deposits from negative 0.25 percent to negative 0.75 percent. The Swiss franc appreciated sharply following the announcement and ended the intermeeting period about 9 percent stronger against the dollar. Volatility in foreign exchange markets increased following the move, and Swiss equity prices fell notably, with shares of UBS and Credit Suisse underperforming the broader market. Effects on U.S. large, systemically important financial institutions were reportedly small, while some hedge funds and retail foreign exchange brokers suffered sizable losses.

Advanced foreign economy (AFE) sovereign yields have continued to decline, on net, since the December FOMC meeting. Yields in the United Kingdom fell about 25 basis points over the intermeeting period, and 10-year German yields declined about 15 basis points, reflecting in part the anticipated ECB announcement of sovereign bond purchases. Longer-term market-based measures of inflation compensation in the euro area moved down further over the period. Swiss yields, which fell sharply following the SNB decision to lower its policy rate, recorded negative rates for maturities up to 10 years.

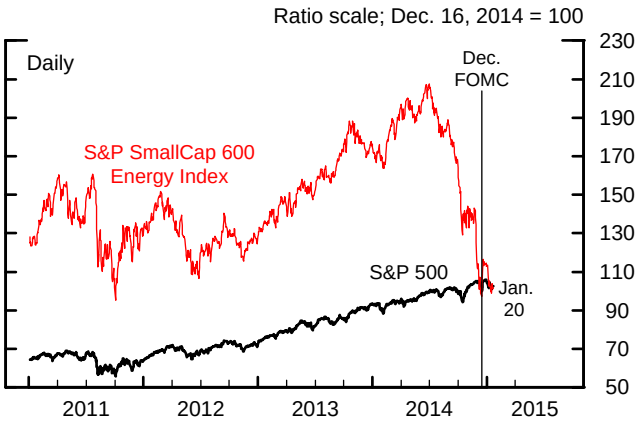
Reflecting the uncertainty associated with upcoming elections, in which the anti-austerity Syriza party may garner a plurality of votes, yields on Greek sovereign bonds climbed to about 9 percentage points above those on comparable-maturity German bonds. (See the box "Recent Developments in Greece" in the International Economic Developments and Outlook section.) However, spreads on Spanish and Italian sovereign debt narrowed slightly.

Foreign equity markets generally moved higher over the period, as stock prices recovered from a mid-December slump, but are largely unchanged, on net, over recent months. Chinese equity markets rose vigorously for most of the intermeeting period but fell sharply on January 19, after Chinese regulators cracked down on margin lending rule violations, ending the period up about 5 percent.

The broad nominal measure of the foreign exchange value of the dollar has increased almost 2 percent since the December FOMC meeting, as the dollar rose against the AFE currency index and was roughly unchanged against the EME index. The dollar

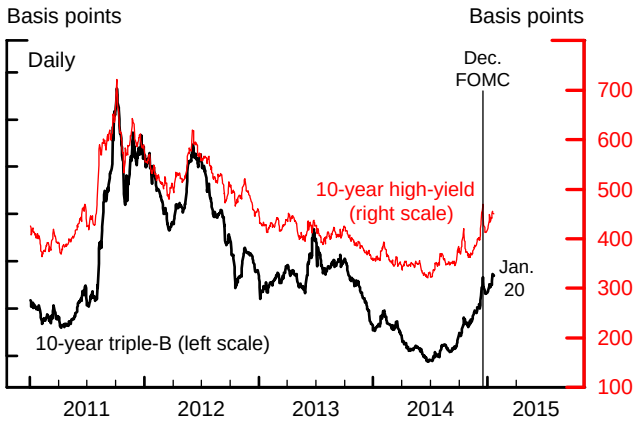
Equity Prices and Business Finance

Equity Price Indexes



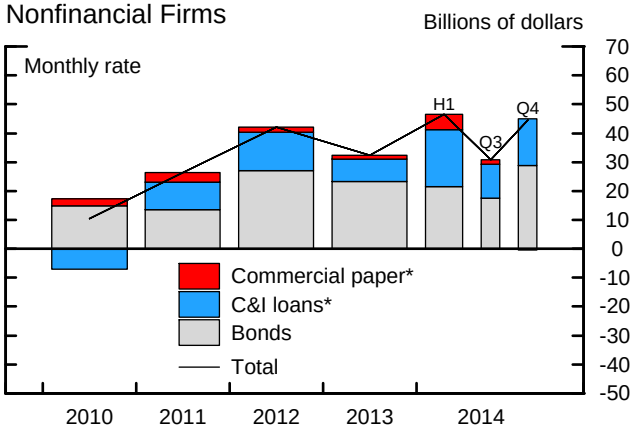
Source: Bloomberg.

Corporate Bond Spreads



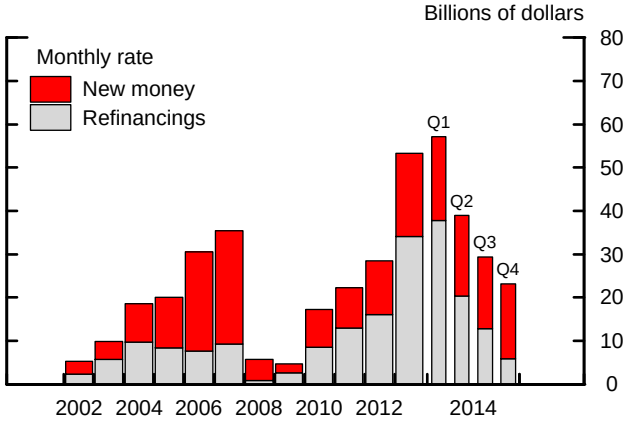
Note: Spreads over 10-year Treasury yield.
Source: Staff estimates of smoothed corporate yield curves based on Merrill Lynch data and smoothed Treasury yield curve.

Selected Components of Net Debt Financing, Nonfinancial Firms



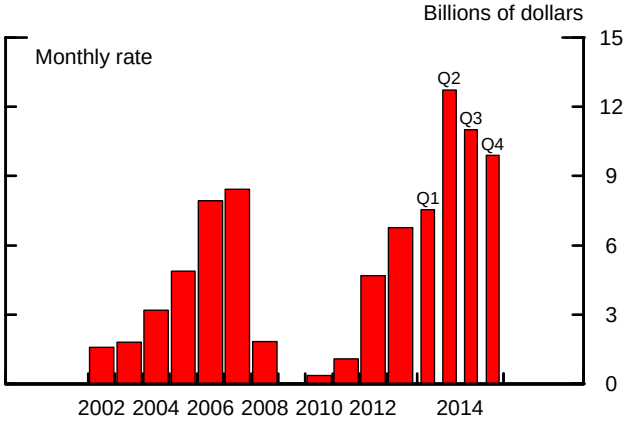
* Period-end basis, seasonally adjusted.
Source: Depository Trust & Clearing Corporation; Mergent Fixed Investment Securities Database; Federal Reserve Board.

Institutional Leveraged Loan Issuance, By Purpose



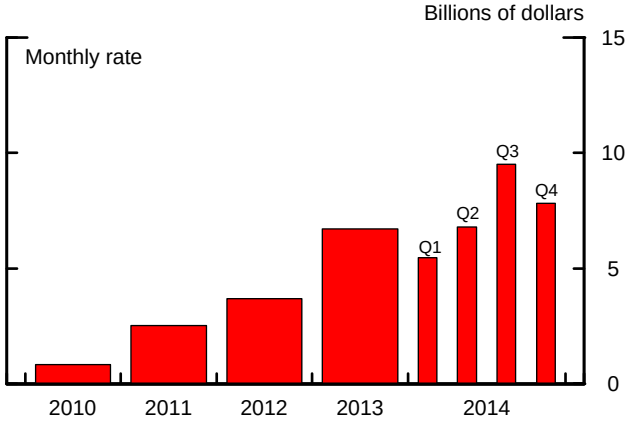
Source: Thomson Reuters LPC LoanConnector.

U.S. CLO Issuance



Source: Thomson Reuters LPC LoanConnector.

CMBS Issuance



Note: CMBS is commercial mortgage-backed securities.
Source: Commercial Mortgage Alert.

Financial Developments

appreciated about 8 percent against the euro, as prospects for sovereign bond purchases by the ECB increased. In a surprise move on January 21, the Bank of Canada cut its policy rate 25 basis points to 0.75 percent, prompting an immediate 2 percent appreciation of the U.S. dollar against the Canadian dollar.

Russian CDS spreads narrowed and the ruble appreciated in late December following steps taken by the central bank and the government to stabilize financial markets and shore up the banking sector. However, since the end of the year, financial market stresses have resumed: CDS spreads and the ruble both returned to near their mid-December levels, and Fitch Ratings and S&P both downgraded Russia's sovereign credit rating to one notch above "junk" status.

EQUITY PRICES AND BUSINESS FINANCE

In recent weeks, U.S. equity markets were volatile, but the major indexes ended the period up about 2½ percent, on net, over the intermeeting period. Stock prices for large energy firms, which had fallen sharply over the previous intermeeting period, increased, on net, about in line with the overall market. The VIX fell back from its mid-December highs but subsequently retraced to end the period down just a touch, on balance, at the high end of its range over the past year.[2]

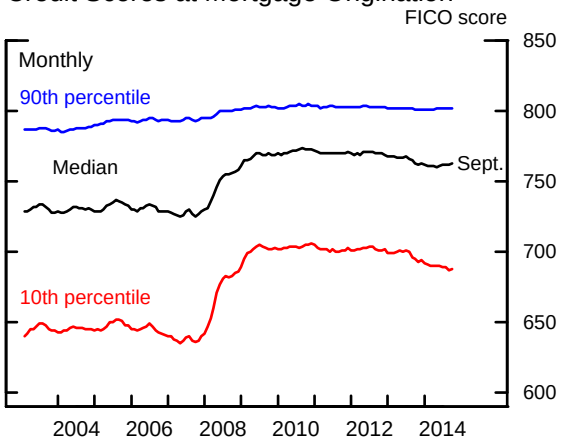
Spreads of 10-year corporate bond yields over those on comparable-maturity Treasury securities also fluctuated over the period but were little changed, on net, for investment-grade issuers and slightly lower for speculative-grade firms. Overall, corporate bond spreads across the credit spectrum remained near their historical median levels. Five-year bond spreads for speculative-grade energy companies narrowed somewhat but stayed close to their highest levels in three years, likely reflecting continuing concerns about the near-term credit outlook for such firms.

After accounting for typical seasonal patterns, credit flows to nonfinancial firms generally remained strong through the last quarter of 2014, though they slowed somewhat for riskier firms. Gross corporate bond issuance continued to be solid, although speculative-grade issuance late in the year dropped more than would be expected based on historical patterns. Early indicators suggest that bond issuance has been subdued this

[2] Relative to the close of the December Tealbook, broad stock price indexes declined about 2 percent, while the VIX moved up a bit. Meanwhile, Treasury yields decreased a bit more than over the intermeeting period.

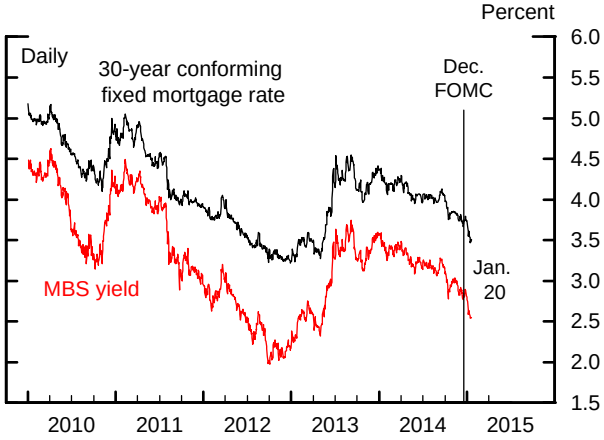
Household Finance

Credit Scores at Mortgage Origination



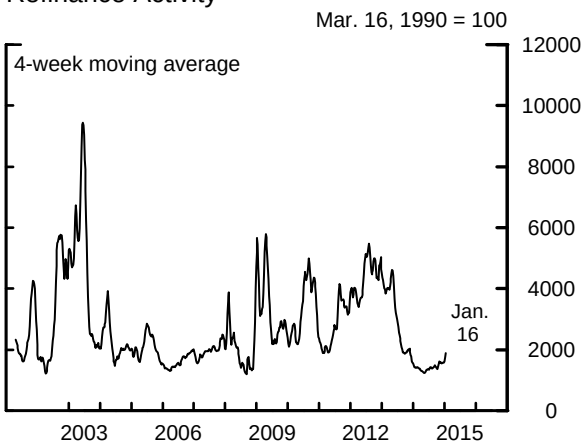
Note: Concerns 30-year GSE-backed purchase mortgages originated in month shown.
Source: LPS Applied Analytics.

Mortgage Rate and MBS Yield



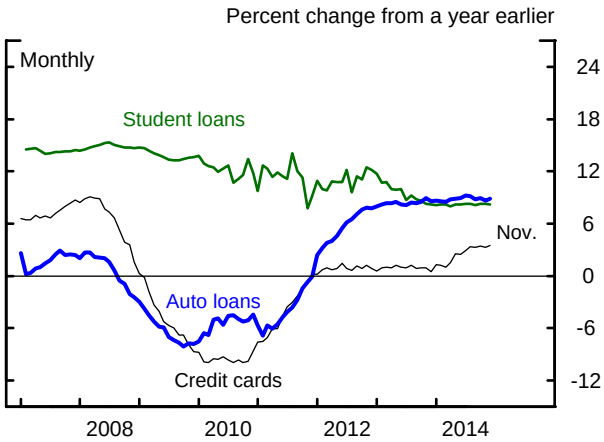
Note: The MBS yield is the Fannie Mae 30-year current-coupon rate.
Source: For MBS yield, Barclays; for mortgage rate, Loansifter.

Refinance Activity



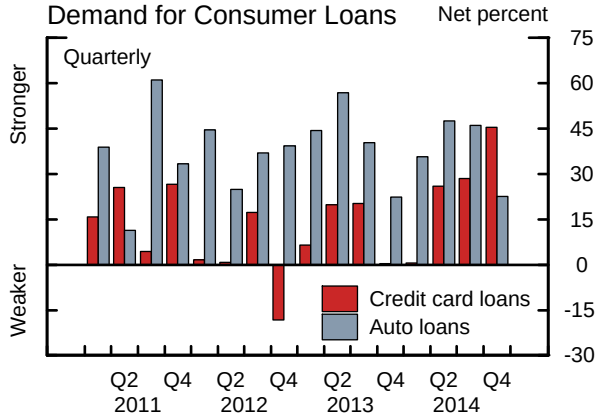
Note: The data are weekly and seasonally adjusted by FRB staff.
Source: Mortgage Bankers Association.

Consumer Credit



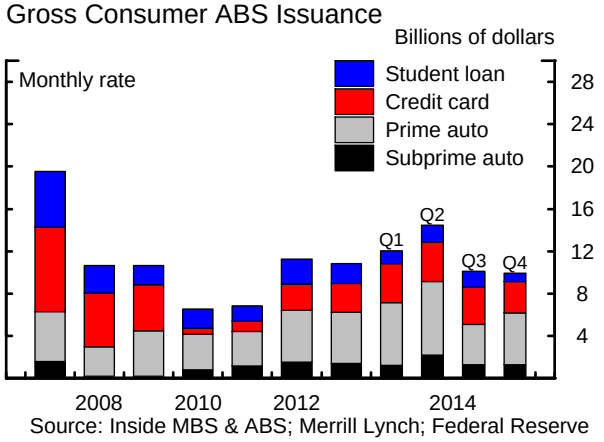
Note: The data are not seasonally adjusted.
Source: Federal Reserve Board.

Net Percentage of Banks Reporting Stronger Demand for Consumer Loans



Note: Responses are weighted by survey respondents' holdings of relevant loan types as reported on Call Reports.
Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices.

Gross Consumer ABS Issuance



Source: Inside MBS & ABS; Merrill Lynch; Federal Reserve Board.

Financial Developments

month, particularly for speculative-grade firms. Nonfinancial commercial paper outstanding was about unchanged in the fourth quarter.

Commercial and industrial loans continued to expand at a robust rate last quarter. According to the January SLOOS, banks reported stronger loan demand from large and middle-market firms. However, several banks reported having tightened standards and terms for oil and gas firms. Moreover, some banks indicated that they expected to see some deterioration in the credit performance of syndicated leveraged loans over this year. Institutional leveraged loan issuance in the fourth quarter was at its slowest pace in two years, as spreads on newly issued loans increased and refinancing activity declined significantly. Origination of new-money loans, however, ran at about the average pace of the past two years, driven by merger and acquisition activity. U.S. CLO issuance declined but remained solid, and 2014 was the strongest year on record for the issuance of such securities.

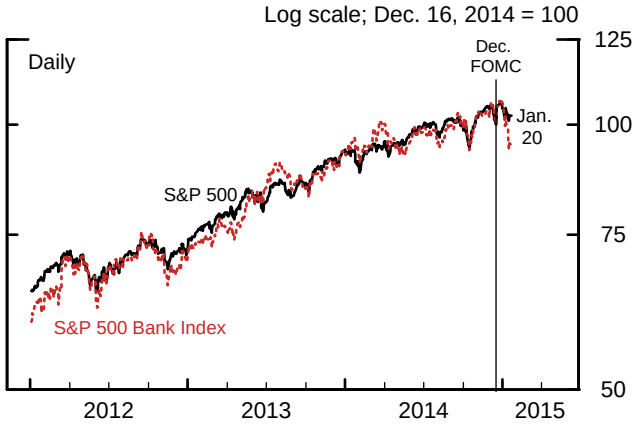
In the fourth quarter, financing for the commercial real estate (CRE) sector stayed accommodative regardless of loan size and property type. In the January SLOOS, banks reported that standards continued to ease, on net, for CRE lending and cited stronger demand for all CRE loan types. The volume of CMBS issuance stayed solid in November and December, supported by low interest rates and steady increases in property values. CMBS spreads remained narrow through the end of December.

HOUSEHOLD FINANCE

There were a few indications over the intermeeting period that the availability of mortgage credit had increased somewhat, although mortgage lending standards continued to be tight for borrowers with less-than-pristine credit histories. Respondents to the January SLOOS indicated that lending standards on GSE-eligible home-purchase loans eased in the fourth quarter, perhaps reflecting in part the GSEs' announcement that they will start purchasing loans with higher loan-to-value ratios. In addition, the announcement that the Federal Housing Administration (FHA) will reduce mortgage insurance premiums by about one-third relative to the level that prevailed during the past four years is expected to make FHA loans more attractive to borrowers. More generally, the price of mortgage credit for qualified borrowers fell further over the intermeeting period: The 30-year fixed mortgage rate declined 16 basis points. Taking a longer perspective, mortgage rates have fallen about 75 basis points over the past year and are not far from their all-time lows reached in 2012. Likely owing to the recent declines in

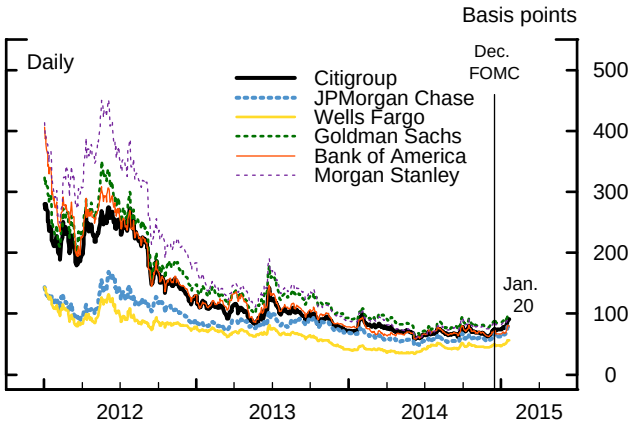
Banking Developments and Money

S&P 500 Stock Price Indexes



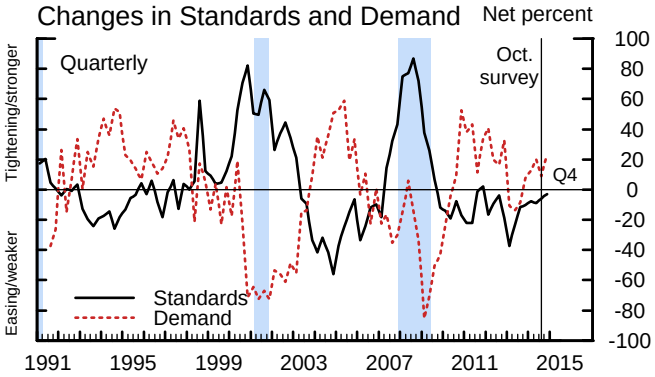
Source: Bloomberg.

CDS Spreads of Large Bank Holding Companies



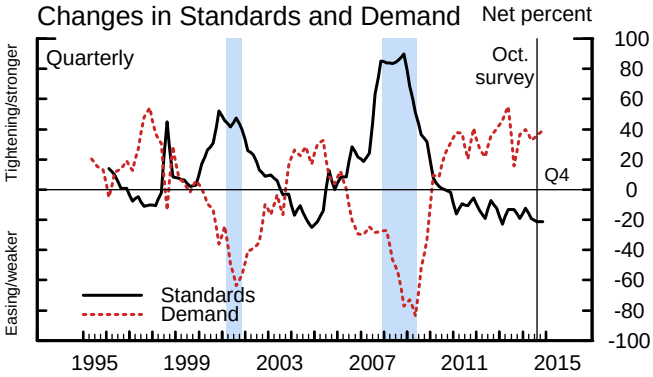
Source: Markit.

Commercial and Industrial Loans Changes in Standards and Demand



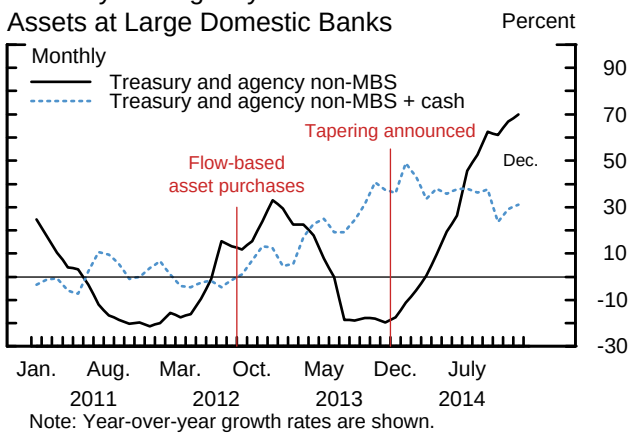
Note: Responses are weighted by survey respondents' holdings of relevant loan types as reported on Call Reports.
Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices.

Commercial Real Estate Loans Changes in Standards and Demand



Note: Responses are weighted by survey respondents' holdings of relevant loan types as reported on Call Reports.
Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices.

Treasury and Agency Securities and Cash Assets at Large Domestic Banks



Note: Year-over-year growth rates are shown.
Source: Federal Reserve Board, FR 2644, Weekly Report of Selected Assets and Liabilities of Domestically Chartered Commercial Banks and U.S. Branches and Agencies of Foreign Banks.

Growth of M2 and Its Components

Percent, s.a.a.r.

	M2	Liquid deposits	Small time deposits	Retail MMFs	Curr.
2013	6.1	7.9	-13.7	1.6	6.6
2014	5.7	7.0	-7.6	-3.2	7.5
2014:Q3	5.8	7.3	-6.3	-4.5	6.0
2014:Q4	4.5	5.5	-9.1	-2.7	6.3
Dec.	6.6	8.1	-7.9	-10.8	10.0

Note: Retail MMFs are retail money market funds.
Source: Federal Reserve Board.

Financial Developments

mortgage rates, applications for refinances rose considerably in the past two weeks, reaching their highest level since the second half of 2013. Nevertheless, refinance applications remain much lower than the level seen in 2012 and the first half of 2013.

Conditions in consumer credit markets stayed largely accommodative over the intermeeting period. Auto and student loan balances continued to post significant growth through November, while the expansion of credit card loans on banks' books remained moderate during the fourth quarter as a whole. Respondents to the January SLOOS indicated that demand for auto and credit card loans had strengthened further in the fourth quarter, while standards and terms for these loans were little changed on net. Issuance of consumer ABS continued to be robust last quarter, and yield spreads on ABS remained tight.

Consumer credit quality stayed strong, on balance, with delinquencies on credit card loans hovering near historical lows. The credit performance of auto loans, however, reportedly deteriorated a bit further for lenders holding sizable amounts of subprime loans, and several banks indicated in the January SLOOS that they expected the performance of subprime auto loans held on their books to worsen this year.

BANKING DEVELOPMENTS AND MONEY

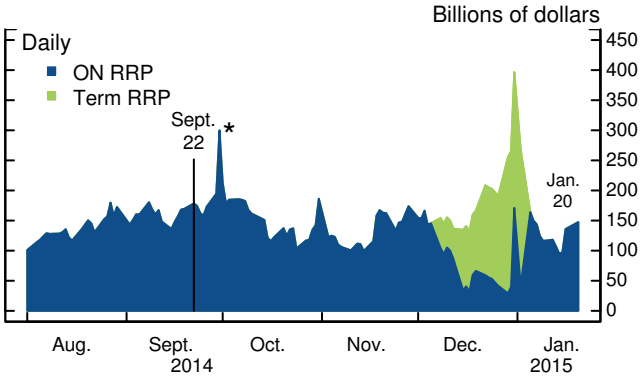
Since the December FOMC meeting, large bank equity prices fell about 4½ percent, on net, and CDS spreads for such institutions increased moderately. Of those large banks that have reported earnings, the majority have missed analysts' profit forecasts for the fourth quarter; large bank profitability declined a bit, reportedly because of continued litigation expenses, a decrease in trading revenue, and pressures on net interest margins from low interest rates.

Bank credit decelerated slightly in the fourth quarter amid somewhat slower growth across the major categories of core loans. Meanwhile, large domestic banks' combined holdings of reserve balances and Treasury securities, which account for the majority of their high-quality liquid assets under the Basel III liquidity requirements, continued to grow at about the robust and relatively stable pace seen since the end of 2013.

M2 expanded at an annual rate of 6.6 percent in December, reflecting strong growth in liquid deposits and U.S. currency. Currency growth picked up, a result of

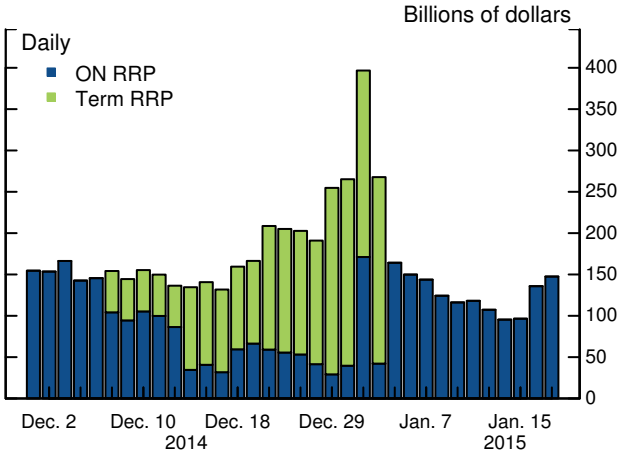
Federal Reserve Operations and Short-Term Funding Markets

ON RRP and Term RRP Take-Up



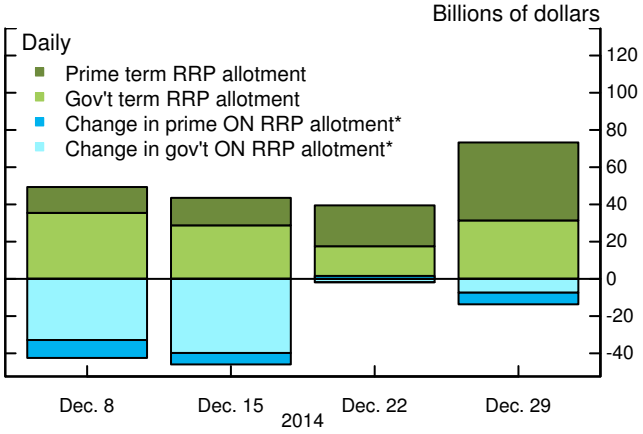
Note: On Sept. 22, the counterparty cap amount was raised to $30 billion, and an operation cap of $300 billion was introduced. RRP is reverse repurchase agreement; ON RRP is overnight reverse repurchase agreement.
* On Sept. 30, ON RRP bids were $407 billion, and allotments were $300 billion.
Source: Federal Reserve Bank of New York.

Intermeeting ON RRP and Term RRP Take-Up



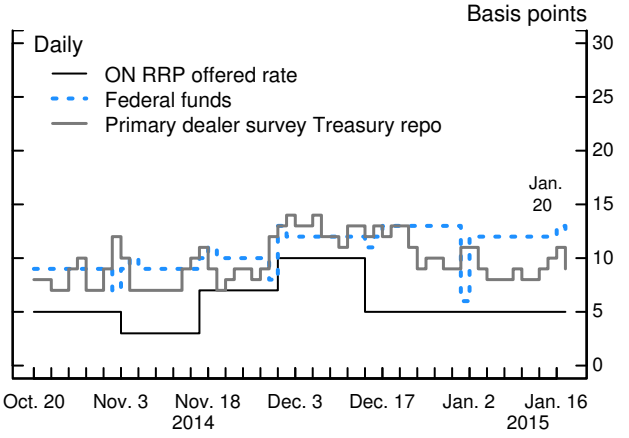
Note: RRP is reverse repurchase agreement; ON RRP is overnight reverse repurchase agreement.
Source: Federal Reserve Bank of New York.

Money Market Fund Substitution between Term RRP and ON RRP



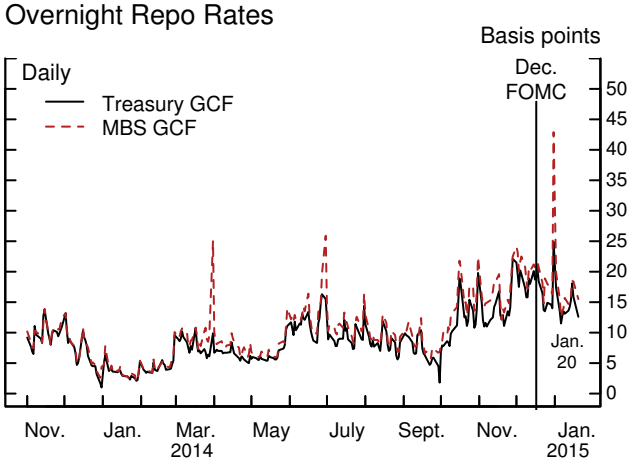
Note: RRP is reverse repurchase agreement; ON RRP is overnight reverse repurchase agreement.
* 1-day change in ON RRP allotment from the previous day.
Source: Federal Reserve Bank of New York.

Money Market Rates



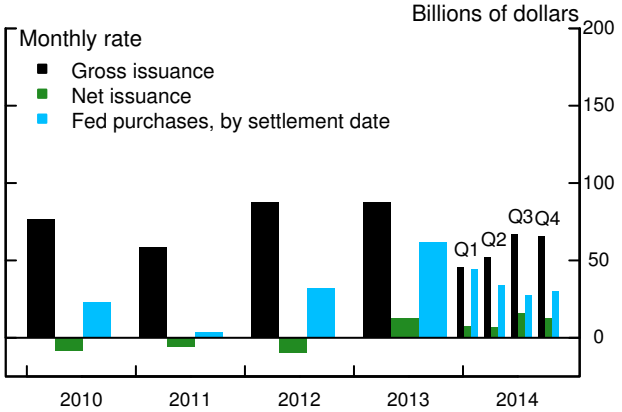
Note: Repo is repurchase agreement.
Source: Depository Trust & Clearning Coporation; Federal Reserve Bank of New York.

Overnight Repo Rates



Note: GCF is general collateral finance.
Source: Bloomberg.

Agency MBS Issuance and Fed Purchases



Note: Issuance and purchases of 30-year fixed-rate agency MBS.
Source: Federal Reserve Bank of New York.

Financial Developments

increased shipments to countries in the former Soviet Union, which reportedly experienced a surge in public demand for U.S. dollars. The monetary base increased at an annual rate of about 32½ percent last month, primarily reflecting the increase in reserve balances associated with the mid-month maturity of nearly $400 billion in term deposits.

FEDERAL RESERVE OPERATIONS AND SHORT-TERM FUNDING MARKETS

Testing of the Federal Reserve's term and overnight reverse repurchase agreement (term RRP and ON RRP) operations continued over the intermeeting period.[3] Although the first two term auctions (conducted prior to the December FOMC meeting) were oversubscribed, the third and fourth term operations were undersubscribed; money market funds accounted for the majority of take-up in all four operations. Term RRP take-up cumulated to $226 billion, and ON RRP take-up on December 31, 2014, climbed to $171 billion. The unwinding of the term operations on January 5, 2015, was orderly, and no market dislocations were reported.

Overall, the ON RRP and term RRP operations appeared to ease downside rate pressures in money markets over year-end.[4] On December 31, the effective federal funds and Eurodollar rates did not fall below the ON RRP offered rate, and the overnight repo rate for Treasury collateral, as surveyed by the Desk, stayed within a range of 9 to 11 basis points through the year-end period.[5] However, some upside pressures emerged in a few money markets. For example, A2/P2 nonfinancial CP rates rose leading into year-end, reportedly reflecting the elevated rates paid by low-credit-quality borrowers amid thin markets at this time; GCF rates also increased.

Liquidity conditions in the Treasury and MBS markets remained relatively stable over the intermeeting period, although some typical deterioration was evident around

[3] On January 16, 2015, the Federal Reserve Bank of New York announced that 25 institutions were being added as RRP counterparties, bringing the total number of counterparties to 164.

[4] For details on the RRP operations and their effect on money markets, see James Egelhof , Elizabeth Klee, Joshua Louria, John McGowan, Zeynep Senyuz, Jacqueline Yen, and Patricia Zobel (forthcoming), "Assessment of Overnight and Term Reverse Repo Testing over Year-End," memorandum to the FOMC.

[5] The effective federal funds rate averaged 12 basis points over the intermeeting period, with the intraday standard deviation averaging about 4 basis points.

year-end.[6] The Desk purchased $22 billion of agency MBS under the reinvestment program and conducted a limited amount of dollar rolls over the period.[7] The ratio of the Desk's MBS settlements to gross issuance of these securities declined to 37 percent in December, partly reflecting an uptick in MBS issuance.

[6] Since the December FOMC meeting, the Treasury auctioned $149 billion of nominal fixed-coupon Treasury securities, $16 billion of TIPS, and $13 billion of Floating Rate Notes.

[7] The Desk conducted four of five scheduled small-value MBS sale operations for the purpose of testing operational readiness over the intermeeting period. MBS sales totaled $315 million in current face value.

Risks and Uncertainty

ALTERNATIVE SCENARIOS

To illustrate some of the risks to the outlook, we construct a number of alternatives to the baseline projection using simulations of staff models. In the first scenario, wage growth is significantly lower than in our baseline outlook, leading to a lower path of headline price inflation in coming years. The next two scenarios explore the implications of misperceptions about potential output. In the second scenario, potential output grows faster than in the baseline, whereas the third scenario features a deeper and more protracted reduction in potential output growth. These two scenarios have opposing implications for the indicated pace of policy tightening. The fourth scenario examines the possibility that the better-than-expected improvements in the labor market and in GDP growth in recent months portend a stronger pace for the economic expansion and higher inflation over the projection period. In the fifth scenario, foreign economic growth is significantly weaker than in our baseline outlook, as spillovers from a reemergence of crisis in Greece trigger a recession in the euro area. The final scenario considers the possibility that faster foreign growth leads investors to reassess the risks to the global economy and push down the dollar.

We generate the first four scenarios using the FRB/US model and the final two using the multicountry SIGMA model. Once the federal funds rate has lifted off from its effective lower bound, its movements are governed—as in the baseline forecast—by an inertial version of the Taylor (1999) rule. The date of liftoff in each scenario is set using a mechanical procedure intended to be broadly consistent with the guidance provided in the Committee's recent statements.[1] In all cases, we assume that the size and composition of the SOMA portfolio follow their baseline paths.

[1]As in the baseline, the inertial Taylor (1999) rule takes over in June 2015. In the discussion of several scenarios, we also consider the implications of introducing an inflation floor to capture the Committee's intention to maintain the current target range for the federal funds rate "especially if projected inflation continues to run below the Committee's 2 percent longer-run goal," as described in the December FOMC statement. For the scenarios run in SIGMA, we assume a broadly similar policy rule to the FRB/US simulations. One key difference relative to the FRB/US simulations is that the policy rule in SIGMA uses a measure of slack equal to the difference between actual output and the model's estimate of the level of output that would occur in the absence of slow adjustment of wages and prices.

Alternative Scenarios

(Percent change, annual rate, from end of preceding period except as noted)

Measure and scenario	2015		2016	2017	2018-19
	H1	H2			
Real GDP					
Extended Tealbook baseline	2.8	2.8	2.7	2.0	1.6
Weaker wage growth	2.7	2.8	2.7	2.1	1.8
Room to grow	3.0	3.2	3.7	3.6	3.1
No room to grow	2.4	2.0	1.7	1.0	.9
Faster recovery with higher inflation	3.4	3.6	3.4	2.4	1.6
Recession in the euro area	1.7	2.2	2.5	2.2	1.9
Greater confidence and weaker dollar	3.2	3.5	2.8	1.9	1.3
Unemployment rate[1]					
Extended Tealbook baseline	5.3	5.1	4.9	4.8	5.0
Weaker wage growth	5.3	5.1	4.9	4.7	4.7
Room to grow	5.3	5.2	4.7	4.2	3.6
No room to grow	5.2	5.0	5.0	5.1	5.4
Faster recovery with higher inflation	5.2	4.9	4.4	4.2	4.7
Recession in the euro area	5.5	5.4	5.4	5.3	5.4
Greater confidence and weaker dollar	5.3	4.9	4.6	4.5	4.9
Total PCE prices					
Extended Tealbook baseline	-.7	1.8	1.7	1.9	2.0
Weaker wage growth	-.7	1.7	1.3	1.2	.9
Room to grow	-.8	1.6	1.4	1.5	1.7
No room to grow	-.7	2.0	2.0	2.1	2.1
Faster recovery with higher inflation	-.6	2.1	2.1	2.4	2.5
Recession in the euro area	-1.3	1.0	1.3	1.7	1.9
Greater confidence and weaker dollar	.3	3.0	2.2	2.1	2.0
Core PCE prices					
Extended Tealbook baseline	1.2	1.5	1.6	1.8	2.0
Weaker wage growth	1.2	1.4	1.2	1.1	.9
Room to grow	1.1	1.3	1.3	1.5	1.7
No room to grow	1.3	1.7	1.8	2.1	2.1
Faster recovery with higher inflation	1.4	1.8	2.0	2.4	2.5
Recession in the euro area	1.0	.9	1.1	1.6	1.8
Greater confidence and weaker dollar	1.3	1.9	2.1	2.1	2.1
Federal funds rate[1]					
Extended Tealbook baseline	.2	.8	2.2	3.2	3.9
Weaker wage growth	.2	.8	1.9	2.7	3.0
Room to grow	.1	.1	.7	1.8	3.6
No room to grow	.2	1.2	2.7	3.6	3.8
Faster recovery with higher inflation	.2	1.0	2.9	4.3	5.3
Recession in the euro area	.2	.6	1.3	2.2	3.3
Greater confidence and weaker dollar	.2	1.0	2.7	3.9	4.2

1. Percent, average for the final quarter of the period.

Weaker Wage Growth

The markup of prices over unit labor costs has been rising steadily since 2000. In the baseline projection, this markup roughly flattens out over the forecast period as gains in hourly labor compensation pick up from around 2 percent in recent years to 3½ percent, on average, during 2016 and 2017. However, little acceleration is yet evident in the data. In this scenario, we assume that hourly compensation rises only 2 percent per year from 2015 to 2019, about the rate observed over the past five years. In the FRB/US model, weak wage growth passes through to lower headline inflation; this pass-through is only partial, however, so the markup continues to rise.

Inflation declines persistently as a result of the lower wage growth, falling below 1 percent in 2018. GDP growth and the unemployment rate remain very close to baseline through 2016 but deviate more significantly after 2017; the unemployment rate is 0.4 percentage point lower than in the baseline at the end of 2019, reflecting a distinctly more accommodative monetary policy.[2]

In light of the large and persistent decline of inflation in this scenario, monetary policymakers might alternatively choose to implement an inflation floor similar to that discussed in note 1. Under this kind of policy, the federal funds rate would stay at its effective lower bound through 2019. The added stimulus would boost real activity and inflation, but inflation would nonetheless remain well below the Committee's long-run objective.

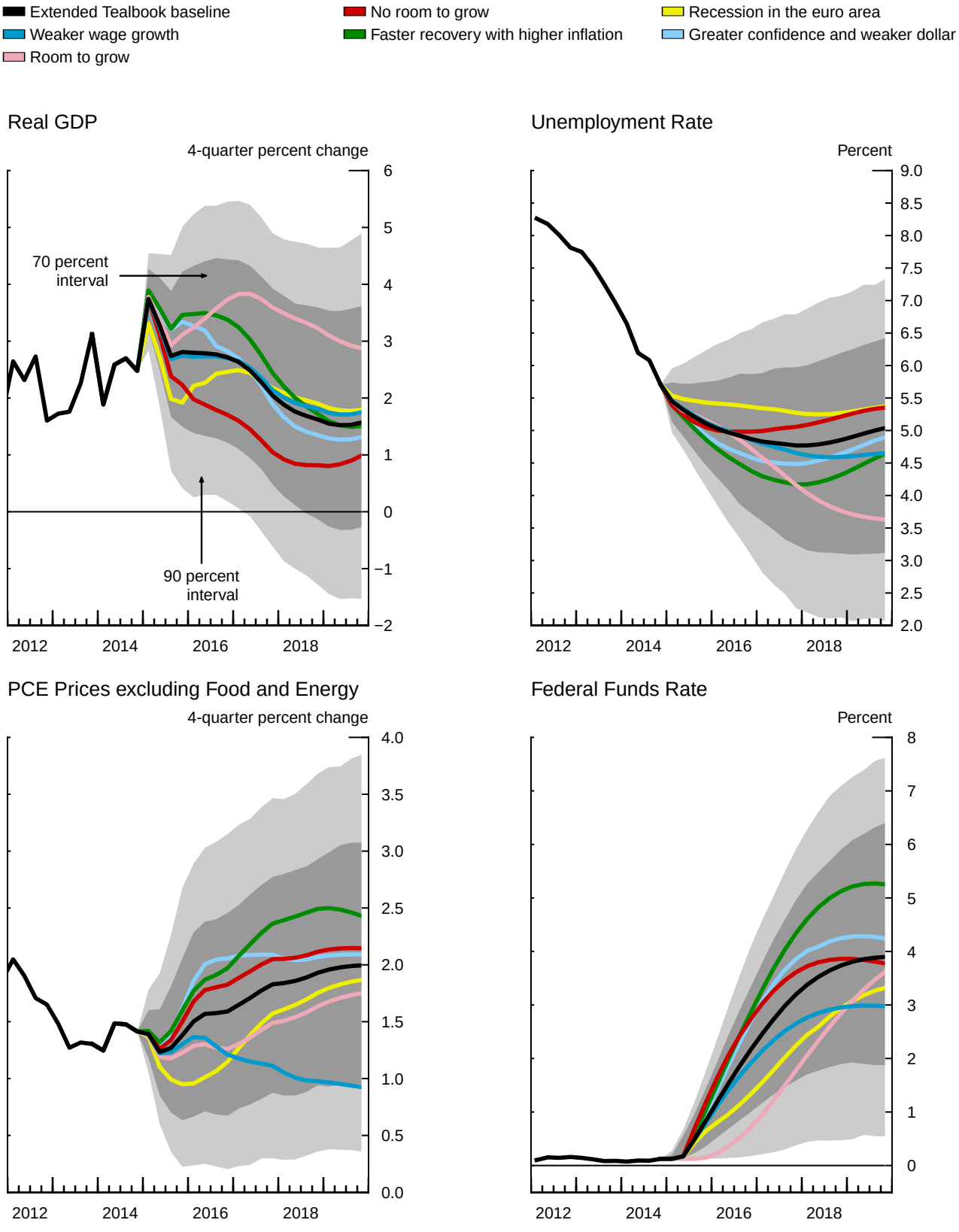
Room to Grow

Both unemployment and inflation have continued to surprise us on the downside. One potential reason why wage and price gains have remained modest despite falling unemployment may be that the staff's estimate for the natural rate of unemployment is too high. In this scenario, we assume that the natural rate of unemployment has been lower in the past five years than assumed by the staff and that it continues to fall, eventually reaching 4.2 percent later this year, 1 percentage point below the current

[2] Given the tenuous nature of the empirical evidence linking labor costs to inflation, we also consider the possibility that there is no pass-through from labor compensation to headline inflation. In this case, the markup rises a touch more steeply than in the scenario reported in the text. As a result of a lower propensity to spend by firms relative to households, GDP growth is about ¼ percentage point lower at the end of 2015 and the beginning of 2016. The unemployment rate is about 0.1 percentage point higher on average. The federal funds rate lifts off in the second quarter of 2015, but rises less steeply, reaching 3½ percent in 2019.

Forecast Confidence Intervals and Alternative Scenarios

Confidence Intervals Based on FRB/US Stochastic Simulations



Risks & Uncertainty

estimate in the baseline. In addition, we assume that structural productivity gains in recent years have been about ¼ percentage point higher than in the baseline. With these assumptions, potential output rises, on average, about ½ percentage point more than in the baseline over the 2015–19 period. The output gap closes only in the middle of 2017.

Inflation stays below the baseline through 2019, reflecting diminished pressures from resource utilization. The federal funds rate remains at its effective lower bound for an additional year, lifting off in the second quarter of 2016. The unemployment rate continues falling after 2016, closing the unemployment gap at the end of 2017 and moving below the assumed natural rate thereafter. Real GDP growth picks up, reaching close to 4 percent in the first half of 2017 before slowing to just below 3 percent by the end of 2019. This acceleration is due not only to higher structural productivity, but also to more accommodative monetary policy.[3]

No Room to Grow

Contrary to the premise of the previous scenario, this one considers the possibility that the natural rate may be higher and structural productivity growth lower than in the baseline, consistent with some of the models we consult. Specifically, we assume that structural productivity gains in recent years have been slower than the staff currently estimates and will continue to be so over the projection period. In addition, we assume that the natural rate of unemployment has been declining more slowly than in the baseline since early 2011 and will reach 5.2 percent only by the end of 2019. With these assumptions, potential output has expanded at an annual rate of 1 percent, on average, since 2011, about 0.4 percentage point below the baseline; looking ahead, it rises at a 1½ percent pace through 2019. As a consequence of this revision to potential output, the output gap is estimated to have closed in the third quarter of 2014 and real GDP currently stands ½ percent above potential.

Compared with the baseline, GDP growth is about 1 percentage point slower in 2016 and 2017, as households and firms condition their spending on lower levels of—and slower anticipated growth in—permanent income and potential output. Inflation is slightly higher than in the baseline, reflecting the effects of both tighter resource

[3] Implementing an inflation floor in this scenario would delay liftoff until the third quarter of 2017. This additional accommodation raises GDP growth in 2016 and 2017 somewhat, decreases unemployment by an additional ¼ percentage point in 2019, and allows inflation to move slightly faster toward the Committee's target.

Selected Tealbook Projections and 70 Percent Confidence Intervals Derived from Historical Tealbook Forecast Errors and FRB/US Simulations

Measure	2014	2015	2016	2017	2018	2019
Real GDP						
(percent change, Q4 to Q4)						
Projection	2.5	2.8	2.7	2.0	1.6	1.6
Confidence interval						
Tealbook forecast errors	2.3–2.6	1.3–4.3	1.0–4.5	. . .	. . .	. . .
FRB/US stochastic simulations	2.3–2.6	1.5–4.2	1.2–4.4	.5–3.9	-.1–3.6	-.3–3.6
Civilian unemployment rate						
(percent, Q4)						
Projection	5.7	5.1	4.9	4.8	4.9	5.0
Confidence interval						
Tealbook forecast errors	5.7–5.7	4.5–5.7	3.9–5.9	. . .	. . .	. . .
FRB/US stochastic simulations	5.6–5.8	4.5–5.7	3.7–5.9	3.2–6.0	3.1–6.2	3.1–6.4
PCE prices, total						
(percent change, Q4 to Q4)						
Projection	1.1	.5	1.7	1.9	1.9	2.0
Confidence interval						
Tealbook forecast errors	1.0–1.2	-.4–1.5	.7–2.8	. . .	. . .	. . .
FRB/US stochastic simulations	1.0–1.2	-.3–1.4	.7–2.7	.8–3.0	.8–3.0	.9–3.2
PCE prices excluding						
food and energy						
(percent change, Q4 to Q4)						
Projection	1.4	1.4	1.6	1.8	1.9	2.0
Confidence interval						
Tealbook forecast errors	1.3–1.5	.8–1.9	.9–2.3	. . .	. . .	. . .
FRB/US stochastic simulations	1.4–1.5	.6–2.1	.7–2.5	.9–2.8	.9–2.9	.9–3.1
Federal funds rate						
(percent, Q4)						
Projection	.1	.8	2.2	3.2	3.7	3.9
Confidence interval						
FRB/US stochastic simulations	.1–.1	.4–1.4	1.0–3.3	1.6–5.0	1.9–5.9	1.9–6.4

Note: Shocks underlying FRB/US stochastic simulations are randomly drawn from the 1969–2013 set of model equation residuals.

Intervals derived from Tealbook forecast errors are based on projections made from 1979 to 2013, except for PCE prices excluding food and energy, where the sample is 1981–2013.

. . . Not applicable. The Tealbook forecast horizon has typically extended about 2 years.

utilization and lower productivity. Inflation reaches the Committee's target by the middle of 2017 and remains just above this level in 2018 and 2019. The unemployment rate begins to move up slowly in 2016 and reaches 5.4 percent in 2019, 0.3 percentage point higher than in the baseline and 0.2 percentage point above its natural rate. The federal funds rate rises more steeply than in the baseline in the first six quarters after liftoff.

Faster Recovery with Higher Inflation

Over the past year, the unemployment rate has continued to move down appreciably. At the same time, lending standards have continued to ease, manufacturing output growth has been solid, oil prices have fallen, and fiscal policy restraint has faded. In this scenario, these favorable developments solidify household and business confidence about the durability of demand going forward; the resulting strong spending growth supports a much more robust economic recovery than in the baseline. We also assume that inflation will be more sensitive to reductions in resource slack than is implicit in the FRB/US model, in line with the larger cyclical effects on inflation in some DSGE models.

Real GDP growth is close to 3½ percent in 2015 and 2016, compared with 2¾ percent in the baseline projection; the unemployment rate falls to about 4¼ percent by the end of 2017. With resource utilization running tighter, inflation rises faster than in the baseline, reaching 2½ percent at the beginning of 2019.[4] The federal funds rate lifts off in the second quarter of 2015, as in the baseline, but rises more steeply thereafter, passing 4 percent in the second half of 2017 and 5 percent at the end of 2018. Given enough time, this path for the federal funds rate would eventually drive the unemployment rate to its assumed natural rate and bring inflation back down to 2 percent.

Recession in the Euro Area

As discussed in the International Economic Developments and Outlook box "Recent Developments in Greece," we assume that the euro area will experience only modest and short-lived spillovers from developments in Greece, reflecting our view that Greece is likely to work out a compromise with its international creditors that gives it renewed access to EU-IMF financial assistance. However, the euro area is clearly

[4] The larger rise in inflation depends importantly on the substantially steeper wage and price Phillips curves used in this scenario. Had we used our standard coefficients in these equations, inflation would have peaked at 2 percent.

vulnerable to much worse outcomes. In this scenario, we consider the possibility that heightened anxiety about an exit of Greece from the euro area—as debt negotiations break down—has much larger adverse spillovers, especially to the periphery, and pushes the euro area back into recession.

Specifically, we assume that ongoing problems in Greece cause periphery sovereign and private borrowing spreads to rise about 250 basis points above baseline by the middle of this year and euro-area consumer and business confidence to decline. These developments in turn prompt the ECB to expand its purchases of euro-area sovereign bonds by €500 billion more than we have already built into the baseline. Notwithstanding this aggressive monetary easing and a 10 percent further depreciation of the euro against the dollar, euro-area GDP contracts 1½ percent in 2015 and only rises about 1 percent in 2016. Our scenario also assumes that the EMEs experience a modest tightening in financial conditions and depreciation of their currencies against the dollar.

U.S. real exports fall relative to baseline in response to the weaker foreign activity and a 5 percent appreciation of the broad real dollar. Nevertheless, given that financial spillovers to economies outside of Europe are assumed to be quite limited in this scenario and that U.S. monetary policy has scope to slow the pace of tightening, the overall effect on the U.S. economy is fairly contained. All told, U.S. real GDP expands roughly 2 percent in 2015, ¾ percentage point less than in the baseline. Lower domestic and imported inflation cause U.S. core inflation to run at about 1 percent in 2015 and 2016. The federal funds rate lifts off at the same time as in the baseline but follows a shallower path after liftoff.

Greater Confidence in Foreign Growth and Weaker Dollar

Some of the dollar's sharp appreciation since June appears to reflect markets' increasing confidence in U.S. growth prospects, even as the outlook for foreign growth has become somewhat more uncertain and the risk of adverse outcomes more pronounced. This scenario assumes that foreign growth runs only modestly higher than in our baseline—about ½ percentage point in 2015—but that the more favorable incoming data gradually increase confidence that growth abroad will be solid and sustained. This more sanguine foreign growth outlook in turn causes the broad real dollar to depreciate about 6 percent relative to baseline by end-2016—undoing about half the dollar's appreciation since June—and helps boost the Brent price of oil about $15 above its baseline path.

Despite the drag from higher oil prices, the weaker dollar and stronger foreign growth boost U.S. real activity by causing U.S. real net exports to expand relative to the baseline. Core PCE inflation runs well above baseline as the weaker dollar puts upward pressure on import prices, resource slack narrows more quickly, and some modest pass-through of higher oil prices occurs. All told, U.S. real GDP expands by about 3¼ percent in 2015, about ½ percentage point more than in the baseline. Core PCE inflation runs above 2 percent in 2016 and 2017, while the unemployment rate falls to about 4½ percent. The federal funds rate lifts off at the same time as in the baseline, but rises more quickly thereafter.

Assessment of Key Macroeconomic Risks (1)

Probability of Inflation Events

(4 quarters ahead—2015:Q4)

Probability that the 4-quarter change in total PCE prices will be ...	Staff	FRB/US	EDO	BVAR
Greater than 3 percent				
Current Tealbook	.01	.01	.09	.03
Previous Tealbook	.02	.03	.12	.04
Less than 1 percent				
Current Tealbook	.74	.67	.32	.27
Previous Tealbook	.51	.41	.27	.19

Probability of Unemployment Events

(4 quarters ahead—2015:Q4)

Probability that the unemployment rate will ...	Staff	FRB/US	EDO	BVAR
Increase by 1 percentage point				
Current Tealbook	.02	.01	.20	.01
Previous Tealbook	.02	.02	.24	.01
Decrease by 1 percentage point				
Current Tealbook	.26	.27	.05	.38
Previous Tealbook	.23	.17	.05	.37

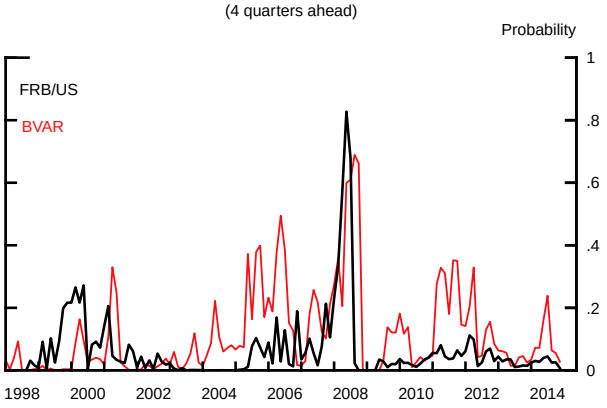
Probability of Near-Term Recession

Probability that real GDP declines in each of 2015:Q1 and 2015:Q2	Staff	FRB/US	EDO	BVAR	Factor Model
Current Tealbook	.03	.02	.01	.02	.08
Previous Tealbook	.03	.03	.02	.02	.03

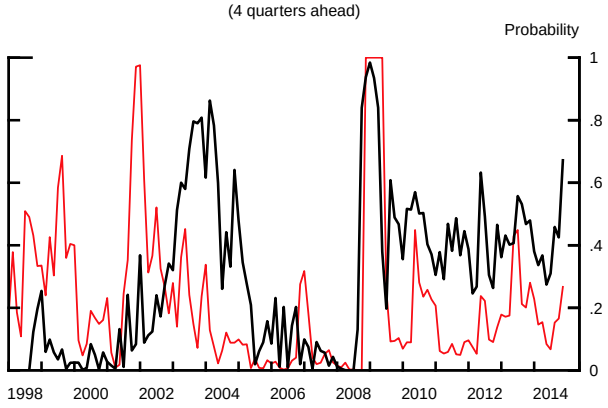
Note: "Staff" represents Tealbook forecast errors applied to the Tealbook baseline; baselines for FRB/US, BVAR, EDO, and the factor model are generated by those models themselves, up to the current-quarter estimate. Data for the current quarter are taken from the staff estimate for the second Tealbook in each quarter; if the second Tealbook for the current quarter has not yet been published, the preceding quarter is taken as the latest historical observation.

Assessment of Key Macroeconomic Risks (2)

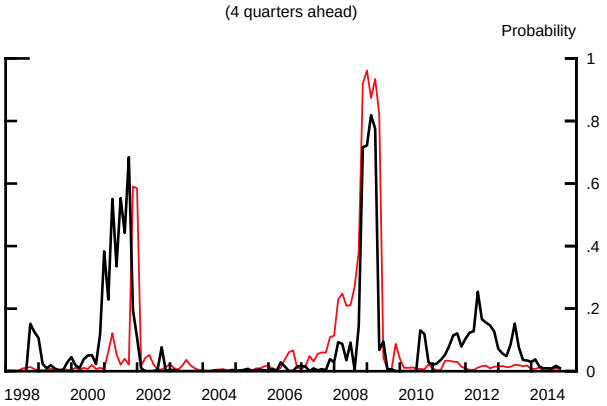
Probability that Total PCE Inflation Is above 3 Percent



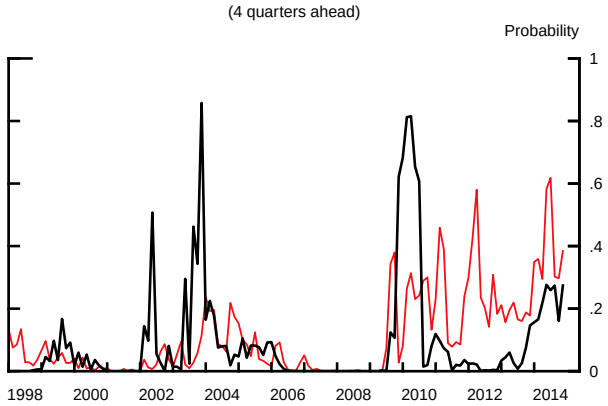
Probability that Total PCE Inflation Is below 1 Percent



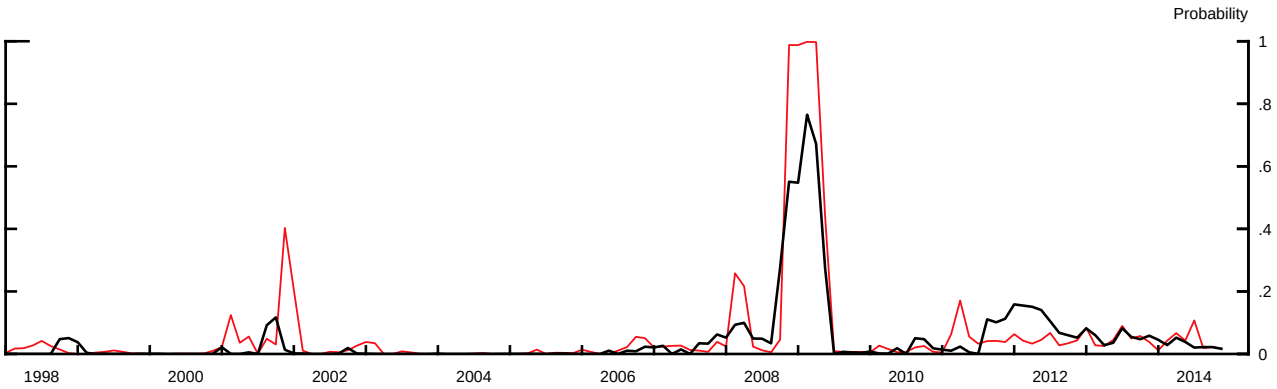
Probability that the Unemployment Rate Increases 1 ppt



Probability that the Unemployment Rate Decreases 1 ppt



Probability that Real GDP Declines in Each of the Next Two Quarters



Note: See notes on facing page. Recession and inflation probabilities for FRB/US and the BVAR are real-time estimates. See Robert J. Tetlow and Brian Ironside (2007), "Real−Time Model Uncertainty in the United States: The Fed, 1996−2003," *Journal of Money, Credit and Banking*, vol. 39 (October), pp. 1533−61.

(This page is intentionally blank.)

Changes in GDP, Prices, and Unemployment
(Percent, annual rate except as noted)

	Nominal GDP		Real GDP		PCE price index		Core PCE price index		Unemployment rate[1]	
Interval	12/10/14	01/21/15	12/10/14	01/21/15	12/10/14	01/21/15	12/10/14	01/21/15	12/10/14	01/21/15
Quarterly										
2014:Q1	-.8	-.8	-2.1	-2.1	1.4	1.4	1.2	1.2	6.7	6.6
Q2	6.8	6.8	4.6	4.6	2.3	2.3	2.0	2.0	6.2	6.2
Q3	5.6	6.4	4.1	5.0	1.3	1.2	1.4	1.4	6.1	6.1
Q4	3.6	3.2	2.2	2.6	-.1	-.5	1.6	1.1	5.7	5.7
2015:Q1	3.6	3.4	2.4	2.8	-.6	-2.5	1.5	1.1	5.5	5.4
Q2	4.0	4.2	2.4	2.7	1.4	1.1	1.4	1.3	5.4	5.3
Q3	4.4	4.6	2.6	2.8	1.7	1.9	1.5	1.5	5.3	5.2
Q4	4.5	4.7	2.8	2.9	1.6	1.7	1.5	1.5	5.2	5.1
2016:Q1	4.6	4.7	2.8	2.8	1.6	1.8	1.5	1.6	5.2	5.0
Q2	4.6	4.5	2.8	2.7	1.7	1.7	1.6	1.6	5.1	5.0
Q3	4.5	4.5	2.7	2.7	1.6	1.7	1.6	1.6	5.1	4.9
Q4	4.5	4.5	2.7	2.7	1.7	1.7	1.7	1.6	5.0	4.9
Two-quarter[2]										
2014:Q2	2.9	2.9	1.2	1.2	1.9	1.9	1.6	1.6	-.8	-.8
Q4	4.6	4.8	3.1	3.8	.6	.4	1.5	1.2	-.5	-.5
2015:Q2	3.8	3.8	2.4	2.8	.4	-.7	1.5	1.2	-.3	-.4
Q4	4.4	4.6	2.7	2.8	1.6	1.8	1.5	1.5	-.2	-.2
2016:Q2	4.6	4.6	2.8	2.7	1.7	1.7	1.6	1.6	-.1	-.1
Q4	4.5	4.5	2.7	2.7	1.7	1.7	1.6	1.6	-.1	-.1
Four-quarter[3]										
2013:Q4	4.6	4.6	3.1	3.1	1.0	1.0	1.3	1.3	-.8	-.8
2014:Q4	3.8	3.9	2.2	2.5	1.2	1.1	1.6	1.4	-1.3	-1.3
2015:Q4	4.1	4.2	2.5	2.8	1.0	.5	1.5	1.4	-.5	-.6
2016:Q4	4.5	4.6	2.7	2.7	1.7	1.7	1.6	1.6	-.2	-.2
2017:Q4	4.1	4.0	2.2	2.0	1.8	1.9	1.8	1.8	-.1	-.1
Annual										
2013	3.7	3.7	2.2	2.2	1.2	1.2	1.3	1.3	7.4	7.4
2014	3.9	3.9	2.3	2.4	1.4	1.3	1.4	1.4	6.2	6.2
2015	4.3	4.3	2.7	3.1	.7	.1	1.5	1.3	5.4	5.3
2016	4.5	4.6	2.7	2.8	1.6	1.7	1.6	1.6	5.1	4.9
2017	4.3	4.3	2.4	2.4	1.8	1.8	1.8	1.7	4.9	4.8

1. Level, except for two-quarter and four-quarter intervals.
2. Percent change from two quarters earlier; for unemployment rate, change is in percentage points.
3. Percent change from four quarters earlier; for unemployment rate, change is in percentage points.

Changes in Real Gross Domestic Product and Related Items
(Percent, annual rate except as noted)

Item	2014			2015				2016							
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2014[1]	2015[1]	2016[1]	2017[1]
Real GDP	4.6	5.0	2.6	2.8	2.7	2.8	2.9	2.8	2.7	2.7	2.7	2.5	2.8	2.7	2.0
Previous Tealbook	4.6	4.1	2.2	2.4	2.4	2.6	2.8	2.8	2.8	2.7	2.7	2.2	2.5	2.7	2.2
Final sales	3.2	5.0	1.8	3.1	2.7	2.7	2.9	2.9	2.9	2.7	2.6	2.2	2.8	2.8	2.4
Previous Tealbook	3.2	4.2	1.7	2.5	2.3	2.6	2.7	2.9	2.9	2.8	2.8	2.0	2.5	2.8	2.6
Priv. dom. final purch.	3.8	4.1	3.7	3.9	4.1	4.0	4.5	4.2	3.9	3.7	3.0	3.2	4.1	3.7	2.7
Previous Tealbook	3.8	3.1	3.4	3.1	3.3	3.7	4.0	3.9	3.8	3.6	3.3	2.8	3.5	3.7	2.9
Personal cons. expend.	2.5	3.2	3.8	4.1	4.4	4.0	3.9	3.8	3.5	3.4	2.8	2.7	4.1	3.4	2.7
Previous Tealbook	2.5	2.2	3.4	3.5	3.6	3.7	3.7	3.6	3.4	3.3	3.0	2.3	3.6	3.3	2.7
Durables	14.1	9.2	7.6	5.6	9.3	8.2	8.6	6.7	6.8	6.4	5.5	8.5	7.9	6.4	4.1
Nondurables	2.2	2.5	3.8	5.3	3.7	3.4	3.2	2.9	2.9	2.9	2.5	2.1	3.9	2.8	2.5
Services	.9	2.5	3.2	3.5	3.9	3.6	3.4	3.7	3.2	3.1	2.5	2.0	3.6	3.1	2.6
Residential investment	8.8	3.2	3.7	7.2	11.1	12.7	13.3	12.4	10.2	8.2	6.1	2.5	11.0	9.2	4.1
Previous Tealbook	8.8	3.0	6.2	3.6	11.4	11.4	11.5	11.2	10.4	9.6	8.4	3.0	9.4	9.9	7.6
Nonres. priv. fixed invest.	9.7	8.9	3.5	1.9	.8	2.0	5.1	4.0	4.2	3.9	3.2	5.9	2.4	3.8	2.3
Previous Tealbook	9.7	8.0	3.0	.9	-.3	1.8	3.6	3.8	3.9	3.7	3.1	5.5	1.5	3.6	2.5
Equipment & intangibles	8.9	10.1	3.4	3.7	4.8	4.6	6.1	4.6	4.4	4.3	3.5	5.9	4.8	4.2	2.7
Previous Tealbook	8.9	9.0	4.2	2.0	1.9	3.3	4.5	4.6	4.5	4.2	3.5	5.8	2.9	4.2	2.9
Nonres. structures	12.6	4.8	3.9	-4.0	-12.1	-7.3	1.5	1.7	3.2	2.7	2.0	6.0	-5.6	2.4	1.2
Previous Tealbook	12.6	4.6	-1.3	-2.7	-7.7	-3.4	.5	.9	1.8	1.9	1.7	4.6	-3.4	1.6	1.2
Net exports[2]	-460	-431	-456	-468	-501	-535	-574	-607	-631	-662	-667	-449	-520	-642	-699
Previous Tealbook[2]	-460	-431	-461	-464	-482	-503	-531	-552	-572	-593	-601	-450	-495	-579	-616
Exports	11.1	4.5	2.2	2.2	2.0	2.0	1.9	2.1	2.3	2.6	2.9	1.9	2.0	2.5	3.6
Imports	11.3	-.9	5.8	3.8	6.9	6.9	7.5	6.7	5.4	6.5	3.1	4.5	6.3	5.4	4.0
Gov't. cons. & invest.	1.7	4.4	-3.9	.5	.1	.4	.1	.4	.9	1.0	.9	.3	.3	.8	1.0
Previous Tealbook	1.7	4.4	-2.1	-.1	-.3	-.2	.0	.3	.7	.9	.7	.8	-.2	.7	.9
Federal	-.9	9.9	-11.1	-1.1	-1.9	-1.7	-2.5	-2.0	-.9	-.7	-1.4	-.8	-1.8	-1.3	-1.1
Defense	.9	16.0	-16.5	-.2	-1.9	-1.8	-2.8	-3.2	-1.5	-1.2	-2.2	-1.6	-1.7	-2.0	-1.8
Nondefense	-3.8	.4	-1.2	-2.5	-1.9	-1.7	-2.0	.0	.0	.0	.0	.4	-2.0	.0	.0
State & local	3.4	1.1	.8	1.4	1.4	1.7	1.7	1.8	1.9	2.1	2.2	1.0	1.6	2.0	2.2
Change in priv. inventories[2]	85	82	112	104	107	111	111	108	100	102	104	79	108	103	87
Previous Tealbook[2]	85	82	99	95	99	99	102	98	93	92	92	75	99	94	60

1. Change from fourth quarter of previous year to fourth quarter of year indicated.
2. Billions of chained (2009) dollars.

Changes in Real Gross Domestic Product and Related Items
(Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise noted)

Item	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Real GDP	-2.8	-.2	2.7	1.7	1.6	3.1	2.5	2.8	2.7	2.0
Previous Tealbook	-2.8	-.2	2.7	1.7	1.6	3.1	2.2	2.5	2.7	2.2
Final sales	-2.1	-.4	2.0	1.5	2.1	2.6	2.2	2.8	2.8	2.4
Previous Tealbook	-2.1	-.4	2.0	1.5	2.1	2.6	2.0	2.5	2.8	2.6
Priv. dom. final purch.	-4.1	-2.4	3.5	2.6	2.6	3.2	3.2	4.1	3.7	2.7
Previous Tealbook	-4.1	-2.4	3.5	2.6	2.6	3.2	2.8	3.5	3.7	2.9
Personal cons. expend.	-2.0	-.2	3.1	1.5	2.0	2.8	2.7	4.1	3.4	2.7
Previous Tealbook	-2.0	-.2	3.1	1.5	2.0	2.8	2.3	3.6	3.3	2.7
Durables	-12.9	2.5	9.3	4.8	7.5	5.9	8.5	7.9	6.4	4.1
Nondurables	-2.7	.2	3.3	.4	1.0	2.5	2.1	3.9	2.8	2.5
Services	.3	-.8	2.0	1.4	1.5	2.4	2.0	3.6	3.1	2.6
Residential investment	-24.3	-10.8	-5.2	6.0	15.8	6.9	2.5	11.0	9.2	4.1
Previous Tealbook	-24.3	-10.8	-5.2	6.0	15.8	6.9	3.0	9.4	9.9	7.6
Nonres. priv. fixed invest.	-8.9	-12.2	8.1	9.0	3.7	4.7	5.9	2.4	3.8	2.3
Previous Tealbook	-8.9	-12.2	8.1	9.0	3.7	4.7	5.5	1.5	3.6	2.5
Equipment & intangibles	-11.8	-6.0	12.0	9.2	3.3	4.8	5.9	4.8	4.2	2.7
Previous Tealbook	-11.8	-6.0	12.0	9.2	3.3	4.8	5.8	2.9	4.2	2.9
Nonres. structures	-1.2	-27.1	-4.0	8.0	4.8	4.4	6.0	-5.6	2.4	1.2
Previous Tealbook	-1.2	-27.1	-4.0	8.0	4.8	4.4	4.6	-3.4	1.6	1.2
Net exports[1]	-558	-395	-459	-459	-452	-420	-449	-520	-642	-699
Previous Tealbook[1]	-558	-395	-459	-459	-452	-420	-450	-495	-579	-616
Exports	-2.8	.8	10.1	4.2	2.4	5.1	1.9	2.0	2.5	3.6
Imports	-6.0	-6.2	12.0	3.5	.4	2.5	4.5	6.3	5.4	4.0
Gov't. cons. & invest.	3.3	2.3	-1.1	-3.0	-1.7	-1.9	.3	.3	.8	1.0
Previous Tealbook	3.3	2.3	-1.1	-3.0	-1.7	-1.9	.8	-.2	.7	.9
Federal	8.4	3.9	3.2	-4.0	-2.6	-6.3	-.8	-1.8	-1.3	-1.1
Defense	9.4	3.6	2.0	-4.1	-4.9	-6.1	-1.6	-1.7	-2.0	-1.8
Nondefense	6.5	4.6	5.5	-3.9	1.4	-6.6	.4	-2.0	.0	.0
State & local	.2	1.3	-4.0	-2.3	-1.0	1.2	1.0	1.6	2.0	2.2
Change in priv. inventories[1]	-34	-148	58	38	57	64	79	108	103	87
Previous Tealbook[1]	-34	-148	58	38	57	64	75	99	94	60

1. Billions of chained (2009) dollars.

Contributions to Changes in Real Gross Domestic Product
(Percentage points, annual rate except as noted)

Item	2014			2015				2016				2014[1]	2015[1]	2016[1]	2017[1]
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Real GDP	4.6	5.0	2.6	2.8	2.7	2.8	2.9	2.8	2.7	2.7	2.7	2.5	2.8	2.7	2.0
Previous Tealbook	4.6	4.1	2.2	2.4	2.4	2.6	2.8	2.8	2.8	2.7	2.7	2.2	2.5	2.7	2.2
Final sales	3.2	5.0	1.8	3.0	2.7	2.7	2.9	2.8	2.9	2.7	2.6	2.2	2.8	2.8	2.3
Previous Tealbook	3.2	4.2	1.7	2.5	2.3	2.6	2.7	2.9	2.9	2.7	2.7	2.0	2.5	2.8	2.6
Priv. dom. final purch.	3.2	3.5	3.1	3.3	3.4	3.4	3.7	3.5	3.3	3.1	2.6	2.6	3.5	3.1	2.3
Previous Tealbook	3.2	2.6	2.9	2.6	2.8	3.1	3.4	3.3	3.2	3.1	2.8	2.4	3.0	3.1	2.5
Personal cons. expend.	1.8	2.2	2.6	2.8	3.0	2.7	2.7	2.6	2.4	2.4	2.0	1.8	2.8	2.3	1.9
Previous Tealbook	1.8	1.5	2.3	2.4	2.4	2.5	2.5	2.4	2.3	2.3	2.1	1.6	2.5	2.3	1.9
Durables	1.0	.7	.6	.4	.7	.6	.6	.5	.5	.5	.4	.6	.6	.5	.3
Nondurables	.3	.4	.6	.8	.5	.5	.5	.4	.4	.4	.4	.3	.6	.4	.4
Services	.4	1.2	1.4	1.6	1.8	1.6	1.6	1.7	1.5	1.5	1.2	.9	1.6	1.5	1.2
Residential investment	.3	.1	.1	.2	.4	.4	.4	.4	.4	.3	.2	.1	.4	.3	.2
Previous Tealbook	.3	.1	.2	.1	.4	.4	.4	.4	.4	.3	.3	.1	.3	.4	.3
Nonres. priv. fixed invest.	1.2	1.1	.4	.2	.1	.2	.6	.5	.5	.5	.4	.7	.3	.5	.3
Previous Tealbook	1.2	1.0	.4	.1	.0	.2	.5	.5	.5	.5	.4	.7	.2	.5	.3
Equipment & intangibles	.8	1.0	.3	.4	.5	.5	.6	.4	.4	.4	.4	.6	.5	.4	.3
Previous Tealbook	.8	.9	.4	.2	.2	.3	.4	.4	.4	.4	.3	.6	.3	.4	.3
Nonres. structures	.4	.1	.1	-.1	-.4	-.2	.0	.0	.1	.1	.1	.2	-.2	.1	.0
Previous Tealbook	.4	.1	.0	-.1	-.2	-.1	.0	.0	.1	.1	.0	.1	-.1	.0	.0
Net exports	-.3	.8	-.6	-.3	-.8	-.8	-.9	-.7	-.5	-.7	-.1	-.5	-.7	-.5	-.2
Previous Tealbook	-.3	.8	-.8	-.1	-.4	-.5	-.6	-.5	-.4	-.5	-.2	-.5	-.4	-.4	-.1
Exports	1.4	.6	.3	.3	.3	.3	.3	.3	.3	.3	.4	.3	.3	.3	.5
Imports	-1.8	.2	-.9	-.6	-1.0	-1.0	-1.1	-1.0	-.8	-1.0	-.5	-.7	-1.0	-.8	-.6
Gov't. cons. & invest.	.3	.8	-.7	.1	.0	.1	.0	.1	.2	.2	.2	.1	.0	.1	.2
Previous Tealbook	.3	.8	-.4	.0	-.1	.0	.0	.1	.1	.2	.1	.1	.0	.1	.2
Federal	-.1	.7	-.8	-.1	-.1	-.1	-.2	-.1	-.1	.0	-.1	-.1	-.1	-.1	-.1
Defense	.0	.7	-.8	.0	-.1	-.1	-.1	-.1	-.1	.0	-.1	-.1	-.1	-.1	-.1
Nondefense	-.1	.0	.0	-.1	.0	.0	.0	.0	.0	.0	.0	.0	-.1	.0	.0
State & local	.4	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.1	.2	.2	.2
Change in priv. inventories	1.4	.0	.8	-.2	.1	.1	.0	-.1	-.2	.0	.1	.3	.0	.0	-.3
Previous Tealbook	1.4	-.1	.4	-.1	.1	.0	.1	-.1	-.1	.0	.0	.2	.0	-.1	-.4

1. Change from fourth quarter of previous year to fourth quarter of year indicated.

Changes in Prices and Costs
(Percent, annual rate except as noted)

Item	2014			2015				2016				2014[1]	2015[1]	2016[1]	2017[1]
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
GDP chain-wt. price index	2.1	1.4	.6	.6	1.4	1.8	1.7	1.9	1.8	1.7	1.8	1.4	1.4	1.8	2.0
Previous Tealbook	2.1	1.4	1.3	1.2	1.6	1.7	1.7	1.8	1.8	1.7	1.7	1.5	1.5	1.8	1.9
PCE chain-wt. price index	2.3	1.2	-.5	-2.5	1.1	1.9	1.7	1.8	1.7	1.7	1.7	1.1	.5	1.7	1.9
Previous Tealbook	2.3	1.3	-.1	-.6	1.4	1.7	1.6	1.6	1.7	1.6	1.7	1.2	1.0	1.7	1.8
Energy	5.2	-4.0	-27.0	-56.1	-2.5	11.1	7.2	5.7	4.7	4.5	3.9	-6.4	-15.5	4.7	3.0
Previous Tealbook	5.2	-4.0	-26.9	-34.9	.9	5.2	3.9	3.2	3.0	2.8	2.3	-6.4	-7.9	2.8	1.9
Food	4.5	3.1	2.1	1.6	.6	1.0	1.3	1.5	1.6	1.7	1.7	2.8	1.1	1.6	1.9
Previous Tealbook	4.5	3.1	1.3	1.3	1.3	1.3	1.3	1.4	1.6	1.7	1.7	2.6	1.3	1.6	1.9
Ex. food & energy	2.0	1.4	1.1	1.1	1.3	1.5	1.5	1.6	1.6	1.6	1.6	1.4	1.4	1.6	1.8
Previous Tealbook	2.0	1.4	1.6	1.5	1.4	1.5	1.5	1.5	1.6	1.6	1.7	1.6	1.5	1.6	1.8
Ex. food & energy, market based	1.8	1.4	.6	1.0	1.3	1.5	1.5	1.6	1.6	1.6	1.6	1.2	1.4	1.6	1.8
Previous Tealbook	1.8	1.3	1.4	1.5	1.4	1.5	1.5	1.5	1.7	1.6	1.7	1.4	1.5	1.6	1.8
CPI	3.0	1.1	-1.2	-4.2	1.6	2.4	2.2	2.2	2.2	2.2	2.2	1.2	.5	2.2	2.2
Previous Tealbook	3.0	1.1	-.8	-1.3	1.8	2.1	2.1	2.1	2.1	2.1	2.1	1.3	1.2	2.1	2.2
Ex. food & energy	2.5	1.3	1.4	1.4	2.0	2.0	2.0	2.0	2.0	2.1	2.1	1.7	1.8	2.0	2.2
Previous Tealbook	2.5	1.3	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.1	1.8	2.0	2.0	2.2
ECI, hourly compensation[2]	3.4	2.7	2.4	2.6	2.6	2.5	2.5	3.0	3.0	3.0	3.0	2.4	2.6	3.0	3.1
Previous Tealbook[2]	3.4	2.7	2.7	2.8	2.8	2.8	2.8	3.4	3.3	3.3	3.3	2.4	2.8	3.3	3.4
Business sector															
Output per hour	2.9	3.2	-2.3	2.3	2.1	2.0	2.3	1.7	1.6	1.7	1.8	-.4	2.2	1.7	1.7
Previous Tealbook	2.9	2.2	-.5	3.0	1.5	1.7	1.6	1.7	1.7	1.7	1.7	-.1	1.9	1.7	1.7
Compensation per hour	-1.1	.6	1.0	2.8	3.1	3.1	3.1	3.8	3.6	3.6	3.5	1.8	3.0	3.6	3.6
Previous Tealbook	-1.1	.6	1.9	3.5	3.1	3.1	3.1	3.7	3.5	3.5	3.5	2.0	3.2	3.5	3.6
Unit labor costs	-3.9	-2.5	3.4	.4	1.0	1.1	.8	2.0	1.9	1.8	1.7	2.2	.8	1.8	1.9
Previous Tealbook	-3.9	-1.6	2.4	.5	1.6	1.4	1.4	1.9	1.8	1.8	1.8	2.2	1.2	1.8	1.9
Core goods imports chain-wt. price index[3]	.2	.5	-1.2	-3.3	-2.5	.4	.8	1.1	1.2	1.2	1.2	.5	-1.2	1.2	1.3
Previous Tealbook[3]	.2	.5	-1.5	-2.8	-.5	.9	1.1	1.2	1.3	1.3	1.3	.4	-.3	1.3	1.3

1. Change from fourth quarter of previous year to fourth quarter of year indicated.
2. Private-industry workers.
3. Core goods imports exclude computers, semiconductors, oil, and natural gas.

Changes in Prices and Costs

(Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise noted)

Item	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
GDP chain-wt. price index	1.9	.4	1.8	1.9	1.8	1.4	1.4	1.4	1.8	2.0
Previous Tealbook	1.9	.4	1.8	1.9	1.8	1.4	1.5	1.5	1.8	1.9
PCE chain-wt. price index	1.5	1.2	1.3	2.7	1.6	1.0	1.1	.5	1.7	1.9
Previous Tealbook	1.5	1.2	1.3	2.7	1.6	1.0	1.2	1.0	1.7	1.8
Energy	-8.2	2.3	6.4	12.0	2.1	-2.6	-6.4	-15.5	4.7	3.0
Previous Tealbook	-8.2	2.3	6.4	12.0	2.1	-2.6	-6.4	-7.9	2.8	1.9
Food	6.9	-1.8	1.3	5.1	1.2	.7	2.8	1.1	1.6	1.9
Previous Tealbook	6.9	-1.8	1.3	5.1	1.2	.7	2.6	1.3	1.6	1.9
Ex. food & energy	1.6	1.4	1.0	1.9	1.6	1.3	1.4	1.4	1.6	1.8
Previous Tealbook	1.6	1.4	1.0	1.9	1.6	1.3	1.6	1.5	1.6	1.8
Ex. food & energy, market based	2.2	1.8	.7	1.9	1.5	1.2	1.2	1.4	1.6	1.8
Previous Tealbook	2.2	1.8	.7	1.9	1.5	1.2	1.4	1.5	1.6	1.8
CPI	1.6	1.5	1.2	3.3	1.9	1.2	1.2	.5	2.2	2.2
Previous Tealbook	1.6	1.5	1.2	3.3	1.9	1.2	1.3	1.2	2.1	2.2
Ex. food & energy	2.0	1.8	.6	2.2	1.9	1.7	1.7	1.8	2.0	2.2
Previous Tealbook	2.0	1.8	.6	2.2	1.9	1.7	1.8	2.0	2.0	2.2
ECI, hourly compensation[1]	2.4	1.2	2.1	2.2	1.8	2.0	2.4	2.6	3.0	3.1
Previous Tealbook[1]	2.4	1.2	2.1	2.2	1.8	2.0	2.4	2.8	3.3	3.4
Business sector										
Output per hour	-.2	5.6	1.7	.0	.3	2.4	-.4	2.2	1.7	1.7
Previous Tealbook	-.2	5.6	1.7	.0	.3	2.4	-.1	1.9	1.7	1.7
Compensation per hour	2.9	1.3	1.2	.6	5.7	.0	1.8	3.0	3.6	3.6
Previous Tealbook	2.9	1.3	1.2	.6	5.7	.0	2.0	3.2	3.5	3.6
Unit labor costs	3.2	-4.2	-.4	.6	5.4	-2.3	2.2	.8	1.8	1.9
Previous Tealbook	3.2	-4.2	-.4	.6	5.4	-2.3	2.2	1.2	1.8	1.9
Core goods imports chain-wt. price index[2]	3.9	-1.9	2.3	4.3	.2	-1.0	.5	-1.2	1.2	1.3
Previous Tealbook[2]	3.9	-1.9	2.3	4.3	.2	-1.0	.4	-.3	1.3	1.3

1. Private-industry workers.
2. Core goods imports exclude computers, semiconductors, oil, and natural gas.

Other Macroeconomic Indicators

Item	2014 Q2	2014 Q3	2014 Q4	2015 Q1	2015 Q2	2015 Q3	2015 Q4	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2014[1]	2015[1]	2016[1]	2017[1]
Employment and production															
Nonfarm payroll employment[2]	.8	.7	.8	.8	.7	.7	.7	.7	.7	.7	.7	2.8	2.8	2.8	1.9
Unemployment rate[3]	6.2	6.1	5.7	5.4	5.3	5.2	5.1	5.0	5.0	4.9	4.9	5.7	5.1	4.9	4.8
Previous Tealbook[3]	6.2	6.1	5.7	5.5	5.4	5.3	5.2	5.2	5.1	5.1	5.0	5.7	5.2	5.0	4.9
Natural rate of unemployment[3]	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
Previous Tealbook[3]	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
GDP gap[4]	-2.3	-1.5	-1.2	-.9	-.7	-.4	-.1	.1	.3	.5	.8	-1.2	-.1	.8	1.0
Previous Tealbook[4]	-2.2	-1.6	-1.3	-1.2	-1.0	-.8	-.6	-.3	-.1	.1	.4	-1.3	-.6	.4	.8
Industrial production[5]	5.7	4.1	5.6	4.5	.9	1.1	1.1	3.0	3.2	2.5	1.4	4.8	1.9	2.5	1.5
Previous Tealbook[5]	5.7	3.3	5.1	4.0	2.0	1.5	1.4	2.8	2.9	2.7	2.5	4.5	2.2	2.7	2.0
Manufacturing industr. prod.[5]	7.0	4.3	5.2	4.5	3.0	2.6	2.8	2.7	2.6	2.1	1.8	4.5	3.2	2.3	1.5
Previous Tealbook[5]	7.0	3.9	3.7	4.6	2.5	2.4	2.6	2.8	3.0	2.7	2.5	4.0	3.0	2.7	2.1
Capacity utilization rate - mfg.[3]	77.1	77.5	78.1	78.5	78.7	78.8	78.9	79.0	79.0	79.0	78.9	78.1	78.9	78.9	78.4
Previous Tealbook[3]	77.1	77.4	77.7	78.2	78.3	78.3	78.4	78.5	78.7	78.8	78.9	77.7	78.4	78.9	78.8
Housing starts[6]	1.0	1.0	1.1	1.1	1.1	1.2	1.3	1.3	1.3	1.4	1.4	1.0	1.2	1.4	1.5
Light motor vehicle sales[6]	16.5	16.7	16.7	16.7	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.4	16.8	16.8	16.6
Income and saving															
Nominal GDP[5]	6.8	6.4	3.2	3.4	4.2	4.6	4.7	4.7	4.5	4.5	4.5	3.9	4.2	4.6	4.0
Real disposable pers. income[5]	3.1	2.0	4.4	6.0	3.8	2.5	2.7	3.6	2.8	2.7	3.0	3.2	3.7	3.0	2.5
Previous Tealbook[5]	3.1	2.3	2.7	5.3	3.0	2.3	2.6	3.8	2.8	2.8	3.0	2.9	3.3	3.1	2.4
Personal saving rate[3]	5.1	4.7	4.9	5.3	5.1	4.8	4.5	4.5	4.3	4.2	4.2	4.9	4.5	4.2	4.0
Previous Tealbook[3]	5.1	5.0	4.9	5.3	5.1	4.8	4.6	4.6	4.5	4.4	4.4	4.9	4.6	4.4	4.1
Corporate profits[7]	38.3	12.8	-7.0	-6.3	.7	.7	.8	.7	-2.3	1.5	2.0	-.6	-1.1	.4	-2.0
Profit share of GNP[3]	12.0	12.2	11.9	11.6	11.5	11.4	11.3	11.2	11.0	10.9	10.9	11.9	11.3	10.9	10.3
Net federal saving[8]	-599	-622	-587	-539	-550	-583	-555	-595	-568	-581	-598	-592	-557	-586	-652
Net state & local saving[8]	-227	-217	-242	-208	-200	-193	-187	-178	-178	-176	-176	-232	-197	-177	-174
Gross national saving rate[3]	17.9	17.9	17.8	18.4	18.2	17.8	17.7	17.5	17.5	17.4	17.4	17.8	17.7	17.4	17.0
Net national saving rate[3]	2.9	3.0	3.1	3.7	3.4	2.9	2.9	2.6	2.6	2.4	2.4	3.1	2.9	2.4	1.7

1. Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise indicated.
2. Change, millions.
3. Percent; annual values are for the fourth quarter of the year indicated.
4. Percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential. Annual values are for the fourth quarter of the year indicated.
5. Percent change, annual rate.
6. Level, millions; annual values are annual averages.
7. Percent change, annual rate, with inventory valuation and capital consumption adjustments.
8. Billions of dollars; annual values are annual averages.

Other Macroeconomic Indicators

(Change from fourth quarter of previous year to fourth quarter of year indicated, unless otherwise noted)

Item	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Employment and production										
Nonfarm payroll employment[1]	-2.8	-5.6	.8	2.0	2.2	2.4	2.8	2.8	2.8	1.9
Unemployment rate[2]	6.9	9.9	9.5	8.7	7.8	7.0	5.7	5.1	4.9	4.8
Previous Tealbook[2]	6.9	9.9	9.5	8.7	7.8	7.0	5.7	5.2	5.0	4.9
Natural rate of unemployment[2]	5.6	6.2	6.2	6.0	5.8	5.4	5.2	5.2	5.2	5.2
Previous Tealbook[2]	5.6	6.2	6.2	6.0	5.8	5.4	5.2	5.2	5.2	5.2
GDP gap[3]	-3.8	-5.5	-4.4	-4.2	-4.1	-2.8	-1.2	-.1	.8	1.0
Previous Tealbook[3]	-3.8	-5.5	-4.4	-4.2	-4.1	-2.8	-1.3	-.6	.4	.8
Industrial production[4]	-8.9	-5.5	6.2	3.2	3.2	3.3	4.8	1.9	2.5	1.5
Previous Tealbook[4]	-8.9	-5.5	6.2	3.2	3.2	3.3	4.5	2.2	2.7	2.0
Manufacturing industr. prod.[4]	-11.6	-6.1	6.4	3.1	3.5	2.9	4.5	3.2	2.3	1.5
Previous Tealbook[4]	-11.6	-6.1	6.4	3.1	3.5	2.9	4.0	3.0	2.7	2.1
Capacity utilization rate - mfg.[2]	70.0	67.1	72.7	74.6	75.5	76.4	78.1	78.9	78.9	78.4
Previous Tealbook[2]	70.0	67.1	72.7	74.6	75.5	76.4	77.7	78.4	78.9	78.8
Housing starts[5]	.9	.6	.6	.6	.8	.9	1.0	1.2	1.4	1.5
Light motor vehicle sales[5]	13.1	10.4	11.5	12.7	14.4	15.5	16.4	16.8	16.8	16.6
Income and saving										
Nominal GDP[4]	-.9	.1	4.6	3.6	3.5	4.6	3.9	4.2	4.6	4.0
Real disposable pers. income[4]	1.1	-.7	2.6	1.7	5.0	-1.9	3.2	3.7	3.0	2.5
Previous Tealbook[4]	1.1	-.7	2.6	1.7	5.0	-1.9	2.9	3.3	3.1	2.4
Personal saving rate[2]	6.1	5.6	5.5	5.8	8.6	4.4	4.9	4.5	4.2	4.0
Previous Tealbook[2]	6.1	5.6	5.5	5.8	8.6	4.4	4.9	4.6	4.4	4.1
Corporate profits[6]	-30.8	53.7	18.0	6.8	3.8	4.7	-.6	-1.1	.4	-2.0
Profit share of GNP[2]	6.9	10.6	12.0	12.3	12.4	12.4	11.9	11.3	10.9	10.3
Net federal saving[7]	-634	-1,249	-1,329	-1,244	-1,079	-649	-592	-557	-586	-652
Net state & local saving[7]	-165	-272	-237	-216	-233	-225	-232	-197	-177	-174
Gross national saving rate[2]	14.9	14.6	15.2	16.1	17.8	17.9	17.8	17.7	17.4	17.0
Net national saving rate[2]	-1.6	-1.7	-.4	.8	2.8	3.0	3.1	2.9	2.4	1.7

1. Change, millions.
2. Percent; values are for the fourth quarter of the year indicated.
3. Percent difference between actual and potential GDP; a negative number indicates that the economy is operating below potential. Values are for the fourth quarter of the year indicated.
4. Percent change.
5. Level, millions; values are annual averages.
6. Percent change, with inventory valuation and capital consumption adjustments.
7. Billions of dollars; values are annual averages.

Staff Projections of Federal Sector Accounts and Related Items
(Billions of dollars except as noted)

Item	Fiscal year				2014				2015				2016			
	2014	2015	2016	2017	Q1[a]	Q2[a]	Q3[a]	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Unified budget					Not seasonally adjusted											
Receipts	3,020	3,228	3,390	3,546	656	938	760	739	664	1,009	815	758	713	1,065	853	790
Outlays	3,504	3,665	3,844	4,060	897	890	877	916	922	935	892	994	930	965	955	984
Surplus/deficit	-483	-437	-454	-514	-241	47	-117	-177	-258	75	-77	-236	-216	100	-102	-194
Previous Tealbook	*-484*	*-432*	*-412*	*-510*	*-241*	*47*	*-117*	*-204*	*-244*	*87*	*-71*	*-228*	*-208*	*118*	*-94*	*-190*
Means of financing:																
Borrowing	798	423	574	634	262	-46	211	240	187	-16	11	266	246	-70	132	224
Cash decrease	-70	88	0	0	20	3	-19	-65	112	-54	95	0	0	0	0	0
Other[1]	-244	-74	-120	-120	-42	-4	-75	1	-42	-4	-30	-30	-30	-30	-30	-30
Cash operating balance, end of period	158	70	70	70	142	139	158	223	111	165	70	70	70	70	70	70
NIPA federal sector					Seasonally adjusted annual rates											
Receipts	3,264	3,407	3,595	3,766	3,243	3,277	3,331	3,325	3,379	3,439	3,485	3,527	3,575	3,616	3,664	3,709
Expenditures	3,844	3,972	4,170	4,400	3,803	3,875	3,953	3,912	3,919	3,989	4,068	4,082	4,170	4,184	4,245	4,307
Consumption expenditures	963	970	974	990	957	956	988	967	972	970	969	967	975	976	978	979
Defense	617	623	625	632	610	610	641	620	625	624	624	623	626	626	627	626
Nondefense	346	347	349	358	347	345	347	347	348	346	345	344	349	350	352	353
Other spending	2,882	3,002	3,196	3,410	2,846	2,920	2,965	2,945	2,946	3,019	3,099	3,115	3,196	3,207	3,267	3,328
Current account surplus	-580	-565	-575	-635	-560	-599	-622	-587	-539	-550	-583	-555	-595	-568	-581	-598
Gross investment	256	240	237	236	251	255	254	241	240	239	239	238	236	236	236	236
Gross saving less gross investment[2]	-563	-525	-525	-576	-539	-580	-600	-551	-501	-509	-540	-509	-546	-516	-528	-542
Fiscal indicators																
High-employment (HEB) surplus/deficit[3]	-405.7	-479.7	-547.7	-646.4	-342.8	-427.0	-494.6	-469.0	-447.2	-478.1	-524.7	-512.0	-559.0	-546.2	-573.7	-602.7
Change in HEB, percent of potential GDP	-1.0	.4	.3	.4	-.1	.5	.4	-.2	-.1	.2	.2	-.1	.2	-.1	.1	.1
Fiscal impetus (FI), percent of GDP[4]	-.2	.2	.2	.2	-.6	.0	.7	-.8	.0	.2	.3	.2	.1	.2	.3	.3
Previous Tealbook	*-.1*	*.1*	*.2*	*.2*	*-.6*	*.0*	*.7*	*-.4*	*-.1*	*.1*	*.2*	*.2*	*.1*	*.2*	*.3*	*.2*
Federal purchases	-.1	-.1	-.1	-.1	.0	-.1	.7	-.8	-.1	-.1	-.1	-.2	-.1	-.1	.0	-.1
State and local purchases	.1	.2	.2	.2	-.1	.4	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2
Taxes and transfers	-.2	.1	.1	.0	-.5	-.3	-.1	-.1	-.1	.2	.2	.2	.0	.1	.1	.1

1. Other means of financing include checks issued less checks paid, accrued items, and changes in other financial assets and liabilities.
2. Gross saving is the current account surplus plus consumption of fixed capital of the general government as well as government enterprises.
3. HEB is gross saving less gross investment (NIPA) of the federal government in current dollars, with cyclically sensitive receipts and outlays adjusted to the staff's measure of potential output and the natural rate of unemployment. The sign on Change in HEB, as a percent of nominal potential GDP, is reversed. Quarterly figures for change in HEB are not at annual rates.
4. Fiscal impetus measures the contribution to growth of real GDP from fiscal policy actions at the general government level (excluding multiplier effects). It equals the sum of the direct contributions to real GDP growth from changes in federal purchases and state and local purchases, plus the estimated contribution from real consumption and investment that is induced by discretionary policy changes in transfers and taxes.
a Actual.

Foreign Real GDP and Consumer Prices: Selected Countries
(Quarterly percent changes at an annual rate)

					----------Projected----------							
	2014				2015				2016			
Measure and country	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Real GDP[1]												
Total foreign	1.9	2.3	2.5	2.7	2.8	3.0	3.1	3.1	3.1	3.1	3.1	3.1
Previous Tealbook	*2.2*	*2.2*	*2.3*	*2.6*	*2.9*	*3.0*	*3.2*	*3.2*	*3.2*	*3.2*	*3.2*	*3.2*
Advanced foreign economies	1.9	1.3	1.6	2.0	2.0	2.2	2.3	2.3	2.2	2.2	2.2	2.1
Canada	1.0	3.6	2.8	2.4	2.4	2.5	2.6	2.6	2.4	2.4	2.3	2.3
Japan	5.8	-6.7	-1.9	3.0	1.9	1.8	1.7	1.6	1.5	1.3	1.2	1.4
United Kingdom	2.5	3.3	3.0	2.4	2.6	2.6	2.6	2.5	2.5	2.5	2.4	2.4
Euro area	1.3	.3	.6	1.0	1.3	1.7	1.9	2.0	2.0	2.0	2.1	2.1
Germany	3.1	-.3	.3	2.0	1.6	1.9	2.1	2.1	2.1	2.1	2.1	2.1
Emerging market economies	1.9	3.4	3.4	3.4	3.6	3.7	3.9	4.0	4.0	4.1	4.1	4.1
Asia	3.8	4.8	5.3	5.0	5.4	5.4	5.4	5.4	5.5	5.5	5.4	5.4
Korea	3.8	2.0	3.7	3.9	4.3	4.3	4.3	4.3	4.2	4.2	4.2	4.2
China	6.2	7.7	7.7	7.4	7.1	7.1	7.0	7.0	7.0	7.0	6.9	6.9
Latin America	.1	2.4	1.9	2.2	2.4	2.6	2.9	2.9	2.9	2.9	3.0	3.0
Mexico	1.4	3.6	2.0	3.2	3.2	3.3	3.4	3.4	3.2	3.2	3.3	3.3
Brazil	-.7	-2.4	.3	.8	1.0	1.4	1.7	1.9	2.1	2.1	2.1	2.1
Consumer prices[2]												
Total foreign	2.0	3.1	2.1	1.1	.9	2.1	2.4	2.5	2.5	2.5	2.6	2.6
Previous Tealbook	*2.0*	*3.1*	*2.1*	*1.6*	*2.0*	*2.3*	*2.5*	*2.6*	*2.6*	*2.6*	*2.6*	*2.6*
Advanced foreign economies	1.2	3.2	1.1	-.6	-1.3	.9	1.3	1.5	1.5	1.6	1.6	1.7
Canada	2.8	3.7	1.3	-.1	-1.6	1.6	1.6	1.8	1.8	1.8	1.9	1.9
Japan	.4	9.4	1.8	-1.1	-.8	.5	1.0	1.2	1.2	1.3	1.3	1.4
United Kingdom	1.3	1.8	1.4	-.8	-.8	1.4	1.7	1.8	1.8	1.8	1.9	1.9
Euro area	.3	.4	.6	-.7	-1.6	.5	1.3	1.4	1.5	1.5	1.6	1.6
Germany	.3	.4	1.7	-.6	-1.3	.9	1.5	1.6	1.7	1.7	1.8	1.8
Emerging market economies	2.6	2.9	2.9	2.4	2.6	3.0	3.2	3.3	3.3	3.3	3.3	3.3
Asia	1.5	2.4	2.1	1.3	2.0	2.6	3.0	3.1	3.1	3.1	3.1	3.1
Korea	1.4	2.2	.6	-.2	2.3	2.7	2.7	2.9	3.1	3.2	3.2	3.2
China	.8	2.0	2.2	1.0	1.4	2.4	2.8	3.0	3.0	3.0	3.0	3.0
Latin America	5.3	4.3	4.9	4.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Mexico	4.8	3.3	4.4	4.2	3.3	3.2	3.3	3.3	3.3	3.3	3.3	3.3
Brazil	6.5	7.4	6.2	6.0	5.8	5.6	5.6	5.5	5.4	5.4	5.4	5.4

[1] Foreign GDP aggregates calculated using shares of U.S. exports.
[2] Foreign CPI aggregates calculated using shares of U.S. non-oil imports.

Foreign Real GDP and Consumer Prices: Selected Countries
(Percent change, Q4 to Q4)

Measure and country	2009	2010	2011	2012	2013	2014	2015	2016	2017
						Projected			
Real GDP[1]									
Total foreign	.9	4.7	3.2	2.3	2.6	2.4	3.0	3.1	3.0
Previous Tealbook	*.9*	*4.7*	*3.2*	*2.3*	*2.6*	*2.3*	*3.1*	*3.2*	*3.1*
Advanced foreign economies	-1.4	3.1	1.8	.3	1.9	1.7	2.2	2.2	2.0
Canada	-1.4	3.6	3.0	1.0	2.7	2.5	2.5	2.4	2.2
Japan	-.6	3.5	.3	.0	2.2	-.1	1.7	1.3	-.3
United Kingdom	-1.5	2.2	1.5	.4	2.4	2.8	2.6	2.5	2.3
Euro area	-2.3	2.3	.6	-.9	.4	.8	1.7	2.0	2.3
Germany	-3.0	4.4	2.4	.1	1.1	1.2	1.9	2.1	2.1
Emerging market economies	3.8	6.4	4.6	4.3	3.3	3.0	3.8	4.1	4.0
Asia	7.8	8.0	4.9	5.6	5.2	4.7	5.4	5.4	5.2
Korea	4.9	6.1	3.0	2.1	3.6	3.3	4.3	4.2	3.9
China	11.3	9.7	8.7	7.7	7.6	7.3	7.0	6.9	6.7
Latin America	.0	4.7	4.0	3.3	1.5	1.7	2.7	3.0	3.1
Mexico	-1.2	4.4	4.1	3.4	1.1	2.6	3.3	3.2	3.3
Brazil	5.3	5.3	1.3	1.8	2.2	-.5	1.5	2.1	2.3
Consumer prices[2]									
Total foreign	1.2	3.2	3.4	2.3	2.3	2.1	1.9	2.5	2.7
Previous Tealbook	*1.2*	*3.2*	*3.4*	*2.3*	*2.3*	*2.2*	*2.3*	*2.6*	*2.7*
Advanced foreign economies	.2	1.7	2.2	1.3	1.0	1.2	.6	1.6	2.0
Canada	.8	2.2	2.7	.9	1.0	1.9	.8	1.8	2.0
Japan	-2.0	-.3	-.3	-.2	1.4	2.6	.5	1.3	2.8
United Kingdom	2.2	3.4	4.6	2.6	2.1	.9	1.0	1.8	2.0
Euro area	.4	2.0	2.9	2.3	.8	.2	.4	1.6	1.7
Germany	.3	1.6	2.6	2.0	1.3	.4	.7	1.7	1.8
Emerging market economies	2.0	4.3	4.3	3.1	3.4	2.7	3.0	3.3	3.3
Asia	1.2	4.3	4.5	2.6	3.1	1.8	2.7	3.1	3.2
Korea	2.4	3.2	3.9	1.7	1.1	1.0	2.6	3.2	3.2
China	.6	4.6	4.6	2.1	2.9	1.5	2.4	3.0	3.0
Latin America	3.9	4.4	4.0	4.3	4.0	4.8	3.7	3.7	3.6
Mexico	4.0	4.3	3.5	4.1	3.7	4.2	3.3	3.3	3.3
Brazil	4.3	5.6	6.7	5.6	5.9	6.5	5.6	5.4	5.4

[1] Foreign GDP aggregates calculated using shares of U.S. exports.
[2] Foreign CPI aggregates calculated using shares of U.S. non-oil imports.

U.S. Current Account

Quarterly Data

	2014				2015				2016			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
	Billions of dollars, s.a.a.r.											
U.S. current account balance	**-408.5**	**-393.7**	**-401.0**	**-398.1**	**-363.4**	**-362.3**	**-410.2**	**-455.4**	**-518.1**	**-525.8**	**-576.0**	**-593.1**
Previous Tealbook	*-408.5*	*-397.9*	*-420.2*	*-445.6*	*-431.3*	*-428.3*	*-463.5*	*-497.3*	*-545.4*	*-545.6*	*-584.8*	*-601.8*
Current account as percent of GDP	-2.4	-2.3	-2.3	-2.2	-2.0	-2.0	-2.2	-2.5	-2.8	-2.8	-3.0	-3.1
Previous Tealbook	*-2.4*	*-2.3*	*-2.4*	*-2.5*	*-2.4*	*-2.4*	*-2.5*	*-2.7*	*-2.9*	*-2.9*	*-3.1*	*-3.1*
Net goods & services	-498.1	-524.9	-497.3	-488.8	-398.7	-414.7	-453.5	-497.2	-537.3	-557.4	-595.5	-606.0
Investment income, net	218.2	228.4	245.1	232.6	189.3	187.6	181.2	177.3	173.2	166.9	157.4	148.3
Direct, net	292.8	292.7	311.6	297.7	258.9	260.2	266.2	276.5	289.7	302.6	314.5	327.4
Portfolio, net	-74.6	-64.3	-66.4	-65.1	-69.6	-72.6	-85.0	-99.2	-116.5	-135.7	-157.1	-179.0
Other income and transfers, net	-128.5	-97.2	-148.8	-141.9	-154.0	-135.3	-137.9	-135.5	-154.0	-135.3	-137.9	-135.5

Annual Data

	2009	2010	2011	2012	2013	2014	2015	2016	2017
	Billions of dollars								
U.S. current account balance	**-380.8**	**-443.9**	**-459.3**	**-460.8**	**-400.3**	**-400.3**	**-397.8**	**-553.3**	**-650.6**
Previous Tealbook	*-380.8*	*-443.9*	*-459.3*	*-460.8*	*-400.3*	*-418.0*	*-455.1*	*-569.4*	*-642.0*
Current account as percent of GDP	-2.6	-3.0	-3.0	-2.9	-2.4	-2.3	-2.2	-2.9	-3.3
Previous Tealbook	*-2.6*	*-3.0*	*-3.0*	*-2.9*	*-2.4*	*-2.4*	*-2.5*	*-3.0*	*-3.2*
Net goods & services	-383.8	-494.7	-548.6	-537.6	-476.4	-502.3	-441.0	-574.0	-642.3
Investment income, net	132.3	185.7	229.0	211.4	208.5	231.1	183.8	161.4	132.4
Direct, net	257.7	288.0	298.6	281.6	290.9	298.7	265.4	308.5	368.9
Portfolio, net	-125.4	-102.3	-69.5	-70.2	-82.3	-67.6	-81.6	-147.1	-236.5
Other income and transfers, net	-129.3	-135.0	-139.8	-134.6	-132.4	-129.1	-140.7	-140.7	-140.7

Abbreviations

ABS	asset-backed securities
AFE	advanced foreign economy
BOC	Bank of Canada
BOE	Bank of England
CDS	credit default swaps
C&I	commercial and industrial
CLO	collateralized loan obligation
CMBS	commercial mortgage-backed securities
CP	commercial paper
CPI	consumer price index
CRE	commercial real estate
Desk	Open Market Desk
DSGE	dynamic stochastic general equilibrium
ECB	European Central Bank
EME	emerging market economy
EU	European Union
FHA	Federal Housing Administration
FOMC	Federal Open Market Committee; also, the Committee
GCF	general collateral finance
GDP	gross domestic product
GSE	government-sponsored enterprise
IMF	International Monetary Fund
M&A	mergers and acquisitions
MBS	mortgage-backed securities
OIS	overnight index swap
ON RRP	overnight reverse repurchase agreement
OPEC	Organization of the Petroleum Exporting Countries
P&C	productivity and cost

PCE	personal consumption expenditures
PDFP	private domestic final purchases
PMI	purchasing managers index
repo	repurchase agreement
RRP	reverse repurchase agreement
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices
SNB	Swiss National Bank
SOMA	System Open Market Account
S&P	Standard & Poor's
TIPS	Treasury Inflation-Protected Securities