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.

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Class I FOMC – Restricted Controlled (FR)

Report to the FOMC on Economic Conditions and Monetary Policy

Book B

Monetary Policy Alternatives

April 27, 2017

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

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Alternatives

Monetary Policy Alternatives

Two key questions for the Committee as it makes its policy decisions at this meeting are: first, whether the available information warrants raising the federal funds rate; and second, whether the recent data call for repeating views about the economic outlook, associated risks, and likely path for the federal funds rate contained in recent FOMC statements or, instead, call for signaling a somewhat different economic outlook and policy path. Averaging through recent fluctuations in the monthly data, information received since the Committee met in March indicates that the labor market has continued to strengthen in the first quarter even as growth in economic activity slowed. Measured on a 12-month basis, all-items PCE inflation has been running close to 2 percent in recent months, but core PCE inflation has continued to run somewhat below 2 percent. The headline CPI registered a surprising decline in March, as did the index excluding food and energy. The advance GDP report for 2017:Q1 will be released on April 28, and data on personal income and outlays in March—along with the PCE price indexes—will be issued on May 1. Consequently, the first paragraph of each draft statement may need to be updated ahead of the FOMC meeting.

- The draft statements for each Alternative offer somewhat different characterizations of the most recent information on inflation, labor market conditions, and economic activity.
    - All three Alternatives report that the 12-month change in consumer prices has recently been running close to the Committee's 2 percent objective. All three also report that, excluding energy and food, "inflation continued to run somewhat below 2 percent." Alternative A, unlike the others, emphasizes that although overall inflation has increased in recent quarters, the rise "largely reflected the temporary effects of higher energy prices." While Alternative C makes no mention of the surprising drop in core consumer prices in March, Alternatives A and B refer to it explicitly. Both Alternatives A and B also drop the reference to core inflation being "little changed" that appeared in the March statement. In describing longer-term inflation expectations, Alternatives A and B characterize market-based measures of inflation compensation as remaining low, while Alternative C states that such measures are little changed. All three Alternatives note that survey-based measures of expected inflation are little changed.

  - Alternatives A and B indicate that the labor market "has continued to strengthen," while Alternative C notes that the labor market "has continued to tighten in recent months." Moreover, Alternative A—in contrast to the statements in Alternatives B and C—downplays the decline in the unemployment rate while emphasizing that job gains slowed and that wage pressures remained subdued.
  - All of the Alternatives recognize that growth in economic activity and in consumer spending has slowed. Alternatives B and C suggest that the slowing may be transitory by observing that some key determinants of consumer spending—household income and wealth, and consumer sentiment—remain favorable. Alternative A instead observes that growth of real PCE "weakened" and does not mention positive fundamentals. All three alternatives acknowledge that business fixed investment firmed somewhat; alternative C adds that housing investment expanded strongly.

- The description of the Committee's view of the medium-term outlook is little changed from the March statement: Each Alternative again states that economic activity will expand at a moderate pace, labor market conditions will strengthen somewhat further, and inflation will stabilize around 2 percent in the medium term. Alternatives A and B continue to condition this outlook on "gradual adjustments" to the stance of monetary policy. Alternative C incorporates an immediate increase in the target range for the federal funds rate and conditions the economic outlook on "further" gradual adjustments. Following the acknowledgement of mixed incoming data in paragraph 1, Alternatives B and C emphasize that the Committee "views the slowing in growth during the first quarter as likely to be transitory" and Alternative B reports that the Committee "continues to expect" the stated outlook and policy rate path; this language was not in the March statement. The formulations in Alternatives B and C are intended to indicate that the Committee views the recent data as not having appreciably changed the likelihood of an increase in the target range in June.
- All of the draft statements retain the assessment that near-term risks to the economic outlook "appear roughly balanced."
- Under Alternatives A and B, the Committee would maintain the current ¾ to 1 percent target range for the federal funds rate. Under Alternative C, the Committee would raise the target range to 1 to 1¼ percent. The three draft statements continue to indicate that the stance of monetary policy "remains accommodative" thereby supporting "a sustained return to 2 percent inflation."

- In broad terms, the Alternatives provide similar descriptions of the prospects for future increases in the federal funds rate. However, while Alternatives A and B note that the Committee expects that economic conditions will warrant "gradual increases" in the federal funds rate, Alternative C uses, instead, "additional gradual increases," suggesting a somewhat steeper path for the federal funds rate.
- None of the three draft statements incorporates a change in the description of the Committee's reinvestment policy. Should the Committee prefer to indicate that it anticipates changing its reinvestment policy in the near future, it could draw on illustrative language contained in the memos on reinvestment that were distributed on April 21.

MARCH 2017 FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in February indicates that the labor market has continued to strengthen and that economic activity has continued to expand at a moderate pace. Job gains remained solid and the unemployment rate was little changed in recent months. Household spending has continued to rise moderately while business fixed investment appears to have firmed somewhat. Inflation has increased in recent quarters, moving close to the Committee's 2 percent longer-run objective; excluding energy and food prices, inflation was little changed and continued to run somewhat below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace, labor market conditions will strengthen somewhat further, and inflation will stabilize around 2 percent over the medium term. Near-term risks to the economic outlook appear roughly balanced. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

3. In view of realized and expected labor market conditions and inflation, the Committee decided to raise the target range for the federal funds rate to 3/4 to 1 percent. The stance of monetary policy remains accommodative, thereby supporting some further strengthening in labor market conditions and a sustained return to 2 percent inflation.

4. In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

5. The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

MAY 2017 ALTERNATIVE A

1. Information received since the Federal Open Market Committee met in ~~February~~ **March** indicates that the labor market has continued to strengthen ~~and~~ **but** that **growth in** economic activity ~~has continued to expand at a moderate pace~~ **slowed**. ~~Job gains remained solid and~~ **While** the unemployment rate ~~was little changed~~ ~~in recent months~~ **declined, job gains slowed and wage pressures remained subdued**. **Growth of** household spending ~~has continued to rise moderately while~~ **weakened even as** business fixed investment ~~appears to have~~ firmed somewhat. **Although** inflation has increased in recent quarters, moving close to the Committee's 2 percent longer-run objective**, the rise largely reflected the temporary effects of higher energy prices**; excluding energy and food**, consumer** prices **declined in March and** inflation ~~was little changed and~~ continued to run somewhat below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace, labor market conditions will strengthen somewhat further, and inflation will stabilize around 2 percent over the medium term. Near-term risks to the economic outlook appear roughly balanced. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

3. In view of ~~realized and expected~~ **the mixed readings on economic activity,** labor market conditions**,** and inflation, the Committee decided to ~~raise~~ **maintain** the target range for the federal funds rate ~~to~~ **at** 3/4 to 1 percent. The stance of monetary policy remains accommodative, thereby supporting some further strengthening in labor market conditions and a sustained return to 2 percent inflation.

4. In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

5. The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-

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term securities at sizable levels, should help maintain accommodative financial conditions.

MAY 2017 ALTERNATIVE B

1. Information received since the Federal Open Market Committee met in ~~February~~ **March** indicates that the labor market has continued to strengthen ~~and that~~ **even as growth in** economic activity ~~has continued to expand at a moderate pace~~ **slowed**. Job gains ~~remained~~ **were** solid**, on average, in recent months,** and the unemployment rate ~~was little changed in recent months~~ **declined**. Household spending ~~has continued to rise moderately~~ **rose only modestly, but households' real income and wealth continued to rise and consumer sentiment remained high.** ~~while~~ Business fixed investment ~~appears to have~~ firmed somewhat. Inflation ~~has increased in recent quarters, moving~~ **measured on a 12-month basis recently has been running** close to the Committee's 2 percent longer-run objective~~;~~**.** Excluding energy and food**,** **consumer** prices **declined in March and** inflation ~~was little changed and~~ continued to run somewhat below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed, on balance.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee **views the slowing in growth during the first quarter as likely to be transitory and continues to** expect~~s~~ that, with gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace, labor market conditions will strengthen somewhat further, and inflation will stabilize around 2 percent over the medium term. Near-term risks to the economic outlook appear roughly balanced. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

3. In view of realized and expected labor market conditions and inflation, the Committee decided to ~~raise~~ **maintain** the target range for the federal funds rate ~~to~~ **at** 3/4 to 1 percent. The stance of monetary policy remains accommodative, thereby supporting some further strengthening in labor market conditions and a sustained return to 2 percent inflation.

4. In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

5. The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at

auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

MAY 2017 ALTERNATIVE C

1. Information received since the Federal Open Market Committee met in ~~February~~ **March** indicates that the labor market has continued to ~~strengthen and that~~ **tighten in recent months even as growth in** economic activity ~~has continued to expand at a moderate pace~~ **slowed**. Job gains ~~remained~~ **were** solid**, on average, in recent months,** and the unemployment rate ~~was little changed in recent months~~ **declined**. **Although growth in** household spending ~~has continued to rise moderately~~ **slowed, restraining growth in economic activity, households' real income and wealth continued to rise and consumer sentiment remained high.** ~~while~~ Business fixed investment ~~appears to have~~ firmed somewhat **and housing investment expanded strongly**. Inflation has increased in recent quarters, moving close to the Committee's 2 percent longer-run objective; excluding energy and food prices, inflation was little changed and continued to run somewhat below 2 percent. Market-based measures of inflation compensation ~~remain low;~~ **and** survey-based measures of longer-term inflation expectations are little changed, on balance.

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee **views the slowing in growth during the first quarter as likely to be transitory and** expects that, with **further** gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace, labor market conditions will strengthen somewhat further, and inflation will stabilize around 2 percent over the medium term. Near-term risks to the economic outlook appear roughly balanced. The Committee continues to closely monitor inflation indicators and global economic and financial developments.

3. In view of realized and expected labor market conditions and inflation, the Committee decided to raise the target range for the federal funds rate ~~to 3/4~~ to 1 **to 1-1/4** percent. The stance of monetary policy remains accommodative, thereby supporting some further strengthening in labor market conditions and a sustained return to 2 percent inflation.

4. In determining the timing and size of future adjustments to the target range for the federal funds rate, the Committee will assess realized and expected economic conditions relative to its objectives of maximum employment and 2 percent inflation. This assessment will take into account a wide range of information, including measures of labor market conditions, indicators of inflation pressures and inflation expectations, and readings on financial and international developments. The Committee will carefully monitor actual and expected inflation developments relative to its symmetric inflation goal. The Committee expects that economic conditions will evolve in a manner that will warrant **additional** gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.

5. The Committee is maintaining its existing policy of reinvesting principal payments from its holdings of agency debt and agency mortgage-backed securities in agency mortgage-backed securities and of rolling over maturing Treasury securities at

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auction, and it anticipates doing so until normalization of the level of the federal funds rate is well under way. This policy, by keeping the Committee's holdings of longer-term securities at sizable levels, should help maintain accommodative financial conditions.

THE CASE FOR ALTERNATIVE B

Economic Conditions and Outlook

- Although data released during the intermeeting period were mixed, the staff and private sector forecasters have generally not made large changes to their medium-term economic projections.
- Available data indicate that the labor market has continued to strengthen. Payroll growth slowed in March after a large increase in February. Unusually mild weather boosted the gains in February and held them down in March; the increase in March was further restrained by unusually severe weather during the March survey's reference period. The three-month average of total payroll gains for the first quarter was 178,000 per month, above the staff's estimate of trend growth in the labor force. The labor force participation rate has held steady, despite the downward pressure associated with the aging of the population. The unemployment rate declined in March and lies below most participants' estimates of its longer-run normal level reported in the March SEP.
- Real GDP growth for the first quarter of 2017 is estimated by the staff to be around 1 percent. Notably, growth of personal consumption expenditures slowed substantially in the first quarter, but households' real income and wealth continued to increase and consumer sentiment remained elevated. Consequently, the staff expects growth of personal consumption expenditures and real GDP to bounce back in the current quarter.
- Total PCE price inflation is still projected to stabilize around 2 percent in the medium term. Twelve-month headline PCE inflation, at 2.1 percent in February, moved a bit above the FOMC's 2 percent objective. However, as the increase over recent quarters in large part reflects a temporary rise in consumer energy prices, the increase of total inflation above 2 percent may be short-lived. If upcoming data are in line with the staff's projections, the 12-month change in PCE prices will move down to 1.9 percent in March and then average around 1.8 percent over the next six months as energy prices level off. The staff projects headline inflation to slowly rise to 1.9 percent in 2019 and to 2 percent thereafter.
- The staff projects that the 12-month change in core PCE prices, which has been running close to 1.75 percent recently, will move down to 1.6 percent in March and April, reflecting the recent surprise decline in total and core CPI inflation. The staff

expects 12-month core PCE inflation to run near 1.7 percent from June through September and to move up to 2 percent by 2019.

- Market-based measures of longer-term inflation compensation remain low by historical standards, with 5-year, 5-year-forward CPI inflation compensation a bit below 2 percent, essentially the same as at the time of the March FOMC meeting. Survey-based measures of longer-term inflation expectations are mixed: Although the median 10-year inflation projection for PCE prices reported in the latest reading of the Survey of Professional Forecasters ticked up 0.1 percentage point in February, it has been essentially flat at 2 percent since early 2013. The 3-year-ahead measure of inflation expectations in the Federal Reserve Bank of New York's Survey of Consumer Expectations decreased by ¼ percentage point to 2.7 percent in March, after a series of increases since October 2016. Median 5-year inflation expectations in the Michigan survey declined from 2.6 percent in January to 2.5 percent in February and to 2.4 percent in March, then held steady in the preliminary April reading.[1]

Policy Strategy

- If policymakers viewed the softer spending and inflation data received over the intermeeting period as primarily reflecting transitory factors, they may prefer to indicate no appreciable change in their outlook for the economy or in their assessment of the appropriate path for monetary policy. Alternatively, if policymakers are uncertain about the reasons for the unexpected weakness in consumer spending and inflation, they may decide that it is premature to reach or express a judgment about the implications for the outlook.
- The continuing uncertainty about the timing, size, and composition of prospective changes in fiscal policy is another reason policymakers may still consider it premature to communicate that they see an appreciable change in the path of the federal funds rate that would be consistent with achieving their statutory goals.
- Even if they judge that the appropriate path for the federal funds rate has steepened, participants may still see the pace of likely rate increases as gradual by historical standards, although faster than observed in 2016.

[1] The final reading of the Survey of Consumers of the University of Michigan will be available on April 28, after publication of Tealbook B.

- Reflecting an expectation that the neutral rate of interest will rise only gradually toward its longer-run level, policymakers might expect that the appropriate pace of further increases in the target range will continue to be gradual.
- Accordingly, policymakers may prefer a statement like Alternative B in which they leave unchanged, for now, both the target range for the federal funds rate and their communications about the likely future path of that rate. Issuing a statement like Alternative B likely would keep the option of a rate hike at the June meeting firmly on the table.
- As shown in figure 1 of the box "Monetary Policy Expectations and Uncertainty," financial market quotes embed a zero probability that the Committee will raise the target range at the May meeting and about a 70 percent probability of a rate hike at the June meeting (figure 1). Respondents to the Desk's latest Surveys of Primary Dealers and Market Participants largely concur with this assessment and assign a probability of about 60 percent to a rate increase in June (figure 2).
  - Given current expectations, the decision to leave the target range unchanged in this Alternative is unlikely to generate appreciable reactions in financial markets.
- Some respondents to the Desk Surveys indicated that they expect the Committee to acknowledge slowing growth in economic activity in the first quarter but to also point to transitory factors. Some also expect the statement to note further improvement in labor market conditions, reflecting the decline in the unemployment rate in the March employment report. Respondents do not expect material change to the language on forward guidance or the Committee's reinvestment policy. Respondents broadly expect the Committee to maintain its characterization of risks to the economic outlook.

THE CASE FOR ALTERNATIVE C

Economic Conditions and Outlook

- Labor market conditions, already tight at the time of the March meeting, have continued to tighten. The unemployment rate declined to 4.5 percent in March—below most participants' estimates of its longer-run normal level. The three-month moving average of total payroll gains remains well above estimates of the pace needed to maintain a constant unemployment rate over time.

Monetary Policy Expectations and Uncertainty

Market participants appear to see negligible probability of a rate hike at the May FOMC meeting and more than even odds on the next rate increase occurring at the June meeting. The market-implied probability of a June rate hike declined earlier in the period, but moved up following the first round of the French presidential elections to about 70 percent, a little over 10 percentage points higher than at the time of the March meeting (figure 1). The Desk's May Surveys of Primary Dealers and Market Participants show a similar distribution for the timing of the next rate hike (figure 2).

Looking further ahead, the probability distribution of the federal funds rate at the end of 2017 implied by quotes on Eurodollar futures options under the assumption of zero term premiums shifted to the left; it now shows about equal odds of one or two more 25-basis-point rate hikes this year (figure 3). The distribution from the May Desk Surveys also shifted slightly to the left but still attaches the highest odds to two more rate hikes by year-end (figure 4). Beyond the current year, the median of survey respondents' modal expectations (not shown) continues to imply three rate hikes in 2018 and two in 2019 as the most likely outcome.

On net over the intermeeting period, the federal funds rate path through the end of 2020 implied by a straight read of OIS quotes (the blue lines in figure 5) rotated down by 38 basis points, contributing to the about 30 basis point decline in five- and ten-year nominal Treasury yields over the same period. Prior to the March meeting, investors had marked up their policy expectations, reportedly in response to the strong February employment report and FOMC communications in early March that were read as signaling more near-term rate increases than had been expected. The FOMC's communications following the March meeting were interpreted as more accommodative than expected, however, and the market-based policy path flattened. Subsequently, the implied path declined further, reflecting waning investor optimism about potential expansionary fiscal policy and rising concerns about geopolitical risks, although the implied path rebounded somewhat following the first round of the French presidential elections.

Assuming zero term premiums, market-implied forward rates currently indicate that the target rate will reach around 1.3 and 1.6 percent by the end of 2017 and 2018, respectively, and 1.9 percent by the end of 2020. The staff's OIS-based term structure model, which takes the effective lower bound into account and incorporates information from Blue Chip survey forecasts of the federal funds rate, attributes about half of the decline in the market-implied rates over the intermeeting period to more negative term premiums. The expected path from that model (the black lines in figure 5) suggests that the federal funds rate will rise at a somewhat faster pace, with the funds rate reaching 1.6 and 2.3 percent by the end of 2017 and 2018, and 3 percent by the end of 2020. The expected rates unadjusted and adjusted for term premiums at the end of 2020 remain up to 65 and 34 basis points higher than their pre-U.S.-election levels, respectively, on net.

As shown in figure 6, the model-based path for the federal funds rate (the black line) is roughly consistent with the modal path from the Desk Surveys (in red) and the Committee's March median SEP projections through 2019 (the golden dots).

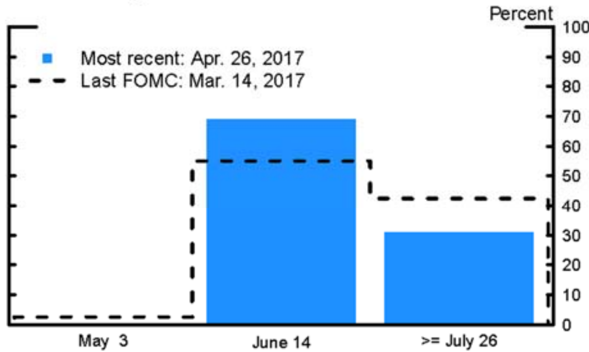
Results from the model and the surveys also shed light on market participants' expectations of the longer-run level of the federal funds rate (the far-right dots in figure 6). The staff's term structure model continues to estimate that the federal funds rate will reach about 3¾ percent over the next five to ten years, ¾ and 1 percentage points above the median projections for the longer-run federal funds rate from the March SEP and from the May Desk Surveys, respectively. The gap between the estimates from the model and from the Desk Surveys widened a bit compared with March, as the median survey projection declined 25 basis points while the model estimate remained unchanged.

The Desk's May Surveys also asked respondents about their assessment of the current level of the neutral real federal funds rate, as well as its levels at the end of the next three years. Compared with the results of the December surveys which last included this question, the median estimate of the current level and the levels at the end of 2017 and 2019 were unchanged at ¼, ½, and 1 percent, respectively, while the level for the end of 2018 was revised down by 17½ basis points to ¾ percent.

With respect to reinvestment policy, respondents generally pulled forward their expected timing when the Committee first announces a policy change and revised down the level of the federal funds rate that is expected to prevail at the time of the announcement. Compared with the March surveys, respondents on average attached higher probabilities to an announcement of a policy change before the end of this year, and lower probabilities to an announcement in the second quarter of next year or beyond. The fourth quarter of 2017 was seen as the most likely time for such an announcement, with an average probability of nearly 40 percent, up from just below 25 percent in the March surveys. In addition, the probability distribution for the level of the federal funds rate at the time of the announcement (not shown) shifted slightly to the left and became a bit less diffuse, with respondents on average attaching the highest probability, at 40 percent, to the federal funds rate being between 1.26 and 1.50 percent when a change in reinvestment policy is announced.

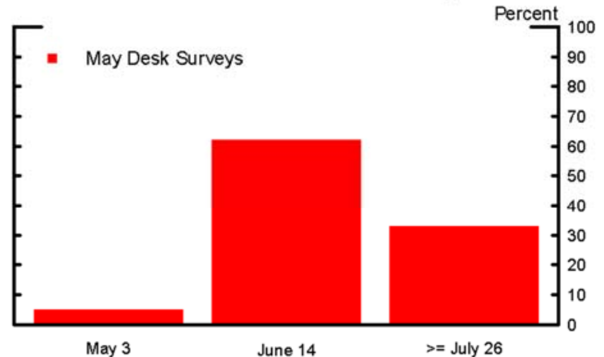
Respondents on average attached a 75 percent probability to reinvestments being phased out rather than stopped all at once or left unchanged, a bit higher than in the March surveys, and the median estimate suggested that survey respondents view 12 months as the most likely length of the phaseout period for both Treasury securities and MBS, unchanged from the March surveys.

Figure 1: Market−Implied Probability Distribution of the Timing of Next Rate Increase



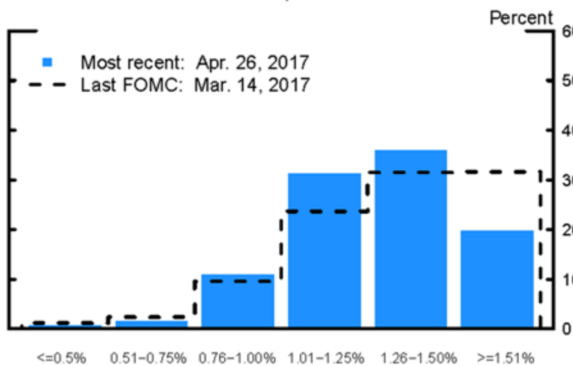
Note: Probabilities implied by a binomial tree fitted to settlement prices on fed funds futures contracts, assuming the next policy action is either no change or a 25 basis point increase in rates and no intermeeting moves. The effective federal funds rate until the next FOMC meeting is assumed to be equal to the observed rate on the previous non−month−end business day. The dashed line shows the probability distribution of the next rate hike after the March meeting.
Source: CME Group; Federal Reserve Board staff estimates.

Figure 2: Probability Distribution of the Timing of Next Rate Increase from the Desk Surveys



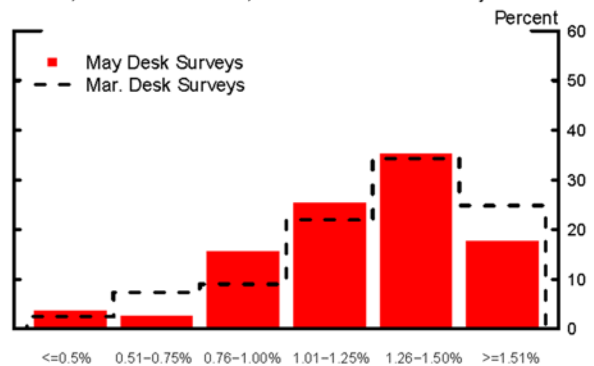
Note: Average probabilities across the surveys of primary dealers and market participants, conditional on the next policy action being an increase in rates.
Source: FRBNY.

Figure 3: Market−Implied Probability Distribution of the Federal Funds Rate, Year−End 2017



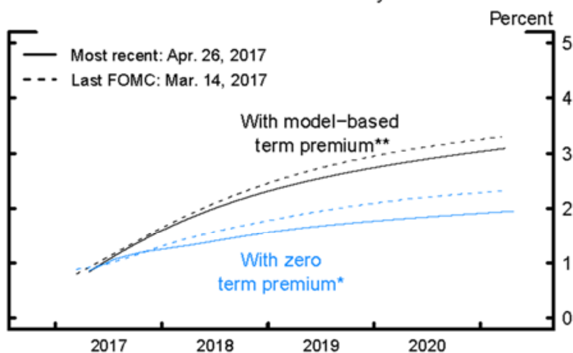
Note: Estimated from Eurodollar futures options, accounting for the differences in the levels and option−implied volatilities of LIBOR and the federal funds rate, but not adjusted for risk premiums.
Source: CME Group; Federal Reserve Board staff estimates.

Figure 4: Probability Distribution of the Federal Funds Rate, Year−End 2017, from the Desk Surveys



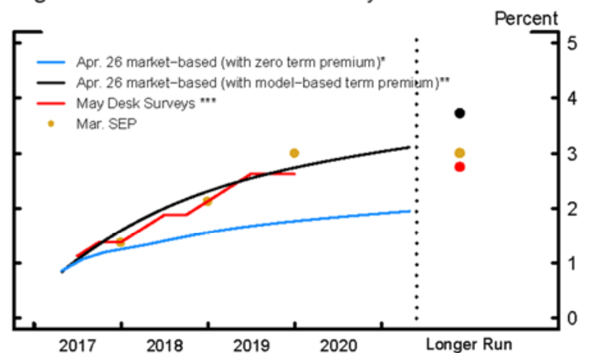
Note: Average unconditional probabilities across the surveys of primary dealers and market participants for different ranges of the federal funds rate at the end of 2017.
Source: FRBNY.

Figure 5: Market−Implied Rate Expectations with and without Term Premium Adjustment



* Estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.
** Estimated using a term structure model maintained by Board staff and adjusted for term premiums.
Source: Bloomberg; Blue Chip Financial Forecasts; Federal Reserve Board staff estimates.

Figure 6: Federal Funds Rate Projections



* Estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.
** Estimated using a term structure model maintained by Board staff and adjusted for term premiums. The longer−run model−implied forecast is for the expected federal funds rate 5 to 10 years ahead.
*** Median of the respondents' modal paths for the federal funds rate.
Source: Bloomberg; Blue Chip Financial Forecasts; Federal Reserve Board staff estimates; FRBNY.

- The staff estimates growth in real GDP in the first quarter of 2017 to be around 1 percent, largely reflecting slower-than-expected growth in personal consumption expenditures. The staff sees the slowing as transitory and projects strong growth of personal consumption expenditures for the rest of the year. Accordingly, real GDP is expected to grow at 2.1 percent on average this year, a rate that is in excess of growth in potential output as estimated by the staff and FOMC participants.

- Housing investment has been expanding at a rapid pace and business fixed investment has firmed. Moreover, indicators of business sentiment continue to send an upbeat signal.

- Twelve-month headline PCE inflation has risen in recent quarters and lately has been running close to the FOMC's 2 percent objective. While the staff projections for headline and core inflation are a touch lower than in the March Tealbook—in part due to the transitory effect of a drop in the price of wireless telephone services—headline PCE inflation is still expected to run close to 2 percent in the near term. Furthermore, the trimmed mean PCE inflation measure published by the Federal Reserve Bank of Dallas stands at 1.9 percent for February.

Policy Strategy

- Policymakers may conclude that the information accumulated since the March meeting, in combination with earlier data, provides ample evidence that the labor market is tightening more rapidly than had been expected, and that inflation has reached 2 percent sooner than had been anticipated, so that a further removal of policy accommodation at next week's meeting is appropriate. They might judge that with house and equity prices, and thus household wealth, having climbed substantially in the past few months, and with business and consumer confidence at elevated levels, there is an increasing risk of policymakers "falling behind the curve" if policy firming does not proceed promptly.

- In addition, policymakers might regard it as prudent for the Committee's statement to include language signaling that the federal funds rate may rise more quickly than previously expected, though still at a gradual pace. To that end, the draft statement for Alternative C contains additions to the March statement's description of the gradual adjustments in the federal funds rate: the word "further" in paragraph 2 and the word "additional" in paragraph 4.

- Policymakers may be concerned that, with an economy projected to be operating above its longer-run potential, inflation might well increase more than the staff expects. This view is consistent with the possibility of a nonlinear response of inflation to the output gap—a possibility that is explored in the alternative scenario "Steeper Wage Phillips Curve and More Sensitive Long-Run Inflation Expectations" in the "Risks and Uncertainty" section of Tealbook A. Policymakers may also note that when the wage Phillips curve is assumed to be steeper than under the Tealbook baseline, a more rapid pace of policy tightening can limit the undershooting of unemployment below its natural rate and thereby forestall the rise in inflation, as described in the "Monetary Policy Strategies" section of Tealbook A.
- Policymakers may also be worried that maintaining the federal funds rate at its current low level, or raising it too slowly, will lead to excessive risk-taking in financial markets and that this could pose risks to financial stability.
- Respondents to the Desk's latest surveys perceive no material odds that the Committee will change the target range at this meeting, and so a decision to increase the target range would be very surprising.
  - Signaling that the federal funds rate may rise more quickly, as is done in this Alternative, could induce financial market participants to expect a somewhat more rapid removal of policy accommodation, which in turn might trigger an increase in medium- and longer-term yields, a drop in stock prices and inflation compensation as well as a strengthening of the dollar.
  - If the statement is primarily interpreted as signaling a more upbeat assessment of the economic outlook, equity prices could rise.

The Case for Alternative A

Economic Conditions and Outlook

- The unemployment rate has decreased further, and the labor force participation rate has held steady, on net, since 2013 even as the population ages. Meanwhile, measures of labor compensation have shown hardly any acceleration in recent years. These readings, taken together, suggest that there might be more "room to run" in the labor market.
- The staff estimates GDP to have increased at an annual rate of only 1 percent in the first quarter of 2017, about ½ percentage point lower than projected in the March Tealbook, because of an unexpected slowdown in growth of real personal

consumption expenditures. Although the slowing in consumer spending may be attributed in part to transitory factors, non-auto retail sales were especially weak in February and failed to fully reverse the disappointment in March.

- Although total PCE price inflation increased in recent months, the increase largely reflected rising consumer energy prices; core inflation has been essentially constant at 1.7 percent. In addition, the CPI release for March showed softness in components other than wireless telephone services, including some that may carry over into coming months. Total PCE inflation is now projected to remain below the Committee's 2 percent objective this year.
- Survey measures of longer-run inflation expectations and readings on longer-term inflation compensation are still low by historical standards.

Policy Strategy

- Policymakers may view information received since the March FOMC meeting as indicating that opportunities remain for further improvement in labor market outcomes, particularly for those marginally attached to the workforce. Moreover, in light of how long inflation has been running below 2 percent, they might elect to defer any additional increases in the federal funds rate until more evidence emerges of sustained progress toward the Committee's inflation objective. They might view this approach as helpful in maintaining the credibility of the Committee's symmetric 2 percent inflation goal.
- Policymakers may also prefer to delay any additional increase in the policy rate until it has been firmly established that the recent weakness in job gains, real activity, and inflation is temporary. Moreover, they may be concerned that this weakness in job gains and real activity persists in light of the recent slowdown in bank credit and lending.
- Policymakers may also judge that inflation dynamics in recent decades demonstrate that the Phillips curve is fairly flat, implying that greater resource utilization will generate only a muted response of inflation and allowing ample time to adopt a policy response if one is needed.
- Policymakers may be concerned that if forecasts of a pickup in inflation prove too optimistic, longer-run inflation expectations could decrease. If this were to occur now, after a lengthy period of inflation running below 2 percent, the credibility of the Committee's commitment to its inflation objective could suffer.

- Policymakers may estimate that the neutral federal funds rate is currently well below its longer-run level, reflecting restraint on U.S. economic activity from economic and financial developments abroad, a sustained period of low productivity growth, or borrowing conditions that remain tight for some households and businesses. Policymakers may see such headwinds as unlikely to subside quickly.
- Some policymakers may regard the prospects of legislative passage of a fiscal-stimulus program, as well as the composition of such a program, as still highly uncertain. They might therefore think that the optimism built into asset prices following the election is overdone and likely to be reversed, at least in part, along the lines described in the alternative scenario "Broad Policy Disappointment" in the "Risks and Uncertainty" section of Tealbook A.
- A decision to maintain the target range for the federal funds rate would be consistent with the expectations of market participants, but the downbeat characterization of the recent data offered by Alternative A might come as a surprise: Responses to the Desk's latest surveys, like financial market quotes, indicate that market participants now see no material odds that the Committee will raise the target range at this meeting. With respect to language, while respondents generally do not expect significant changes to the FOMC statement, some expect that the Committee will acknowledge a temporary slowing in economic activity in the first quarter.
  - Financial market participants would likely push further into the future the expected date of the next rate increase, the expected path for the federal funds rate would likely flatten, and longer-term yields would likely decline.
  - If the statement is primarily interpreted as signaling a more accommodative stance than anticipated, equity prices and inflation compensation would likely rise, and the dollar would depreciate. Conversely, if investors read the statement as reflecting an unexpectedly downbeat assessment of the economic outlook, equity prices and inflation compensation could fall.

IMPLEMENTATION NOTE

If the Committee decides to maintain the current target range for the federal funds rate, an implementation note that indicates no change in the Federal Reserve's administered rates—the interest rates on required and excess reserves, the offering rate on overnight reverse repurchase agreements, and the primary credit rate—would be issued. If the Committee instead decides to raise the target range for the federal funds rate, an implementation note that communicates the changes the Federal Reserve decided to make to these three policy tools would be issued. Draft implementation notes that correspond to these two cases appear on the following pages; struck-out text indicates language deleted from the March directive and implementation note, bold red underlined text indicates added language, and blue underlined text indicates text that links to websites.

Implementation Note for May 2017 Alternatives A and B

*Release Date: ~~March 15~~ **May 3**, 2017*

Decisions Regarding Monetary Policy Implementation

The Federal Reserve has made the following decisions to implement the monetary policy stance announced by the Federal Open Market Committee in its statement on ~~March 15~~ **May 3**, 2017:

- The Board of Governors of the Federal Reserve System voted unanimously to ~~raise~~ **maintain** the interest rate paid on required and excess reserve balances ~~to~~ **at** 1.00 percent~~, effective March 16, 2017~~.

- As part of its policy decision, the Federal Open Market Committee voted to authorize and direct the Open Market Desk at the Federal Reserve Bank of New York, until instructed otherwise, to execute transactions in the System Open Market Account in accordance with the following domestic policy directive:

  > "Effective ~~March 16~~ **May 4**, 2017, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of 3/4 to 1 percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of 0.75 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
  >
  > The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

  More information regarding open market operations may be found on the Federal Reserve Bank of New York's website.

- In a related action, the Board of Governors of the Federal Reserve System voted unanimously to approve ~~a 1/4 percentage point increase in~~ **the establishment of** the primary credit rate ~~to~~ **at the existing level of** 1.50 percent~~, effective March 16, 2017. In taking this action, the Board approved requests to establish that rate submitted by the Boards of Directors of the Federal Reserve Banks of Boston, Philadelphia, Cleveland, Richmond, Atlanta, Chicago, Kansas City, Dallas, and San Francisco~~.

This information will be updated as appropriate to reflect decisions of the Federal Open Market Committee or the Board of Governors regarding details of the Federal Reserve's operational tools and approach used to implement monetary policy.

Alternatives

Implementation Note for May 2017 Alternative C

*Release Date: ~~March 15~~ **May 3**, 2017*

Decisions Regarding Monetary Policy Implementation

The Federal Reserve has made the following decisions to implement the monetary policy stance announced by the Federal Open Market Committee in its statement on ~~March 15~~ **May 3**, 2017:

- The Board of Governors of the Federal Reserve System voted unanimously to raise the interest rate paid on required and excess reserve balances to ~~1.00~~ **1.25** percent, effective ~~March 16~~ **May 4**, 2017.

- As part of its policy decision, the Federal Open Market Committee voted to authorize and direct the Open Market Desk at the Federal Reserve Bank of New York, until instructed otherwise, to execute transactions in the System Open Market Account in accordance with the following domestic policy directive:

  > "Effective ~~March 16~~ **May 4**, 2017, the Federal Open Market Committee directs the Desk to undertake open market operations as necessary to maintain the federal funds rate in a target range of ~~3/4 to~~ 1 **to 1-1/4** percent, including overnight reverse repurchase operations (and reverse repurchase operations with maturities of more than one day when necessary to accommodate weekend, holiday, or similar trading conventions) at an offering rate of ~~0.75~~ **1.00** percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
  >
  > The Committee directs the Desk to continue rolling over maturing Treasury securities at auction and to continue reinvesting principal payments on all agency debt and agency mortgage-backed securities in agency mortgage-backed securities. The Committee also directs the Desk to engage in dollar roll and coupon swap transactions as necessary to facilitate settlement of the Federal Reserve's agency mortgage-backed securities transactions."

  More information regarding open market operations may be found on the Federal Reserve Bank of New York's website.

- In a related action, the Board of Governors of the Federal Reserve System voted unanimously to approve a 1/4 percentage point increase in the primary credit rate to ~~1.50~~ **1.75** percent, effective ~~March 16~~ **May 4**, 2017. In taking this action, the Board approved requests to establish that rate submitted by the Boards of Directors of the Federal Reserve Banks of **. . .**

This information will be updated as appropriate to reflect decisions of the Federal Open Market Committee or the Board of Governors regarding details of the Federal Reserve's operational tools and approach used to implement monetary policy.

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Projections

Balance Sheet and Income

The staff has prepared projections of the Federal Reserve's balance sheet and key elements of the associated income statement under a baseline scenario and an alternative that are consistent with the paths for the federal funds rate and longer-term interest rates incorporated in the staff's baseline economic outlook presented in Tealbook A.[1]

The two scenarios have different key assumptions about the nature of the change in reinvestment policy and the level of longer-run reserve balances:

- As in the March Tealbook, under the baseline balance sheet scenario the staff assumes that reinvestments of principal repayments of securities will cease all at once and that the longer-run level of reserve balances is $100 billion.[2]
- In the alternative scenario—labeled "18-month phaseout"—it is assumed that reinvestments are gradually reduced over an 18-month period and that the longer-run level of reserve balances is $500 billion.[3,4]

The key policy assumptions common to both projections are highlighted below:

- ***Reinvestment policy:*** We continue to assume that the FOMC will change its reinvestment policy when the target range for the federal funds rate reaches 1¼ to

[1] In these scenarios, the response of the federal funds rate to deviations of inflation and the output gap from their baseline values is determined by the inertial Taylor (1999) policy rule.

[2] "Principal repayments of securities" refers to maturing Treasury securities and agency debt as well as principal repayments of MBS in the System Open Market Account.

[3] The phaseout scenario is consistent with the plan outlined in the memo "Reinvestment Proposal," distributed to the FOMC on April 21, 2017. Under this plan, the share of maturing Treasury securities and agency debt as well as principal repayments of MBS that are reinvested is reduced through decrements of 15 percentage points every three months, before a final reduction of 10 percentage points, with all reinvestments ceasing in April 2019.

[4] As indicated in the box "Monetary Policy Expectations and Uncertainty," respondents to the May Desk Surveys of Primary Dealers and Market Participants attached, on average, a 75 percent probability to outcomes in which the FOMC chooses to phaseout reinvestments over time. The median expectation for the most likely length of a phaseout period was 12 months, six months shorter than assumed in the phaseout scenario. About one third of the respondents indicated 12 months as the most likely phaseout duration, whereas another one third of them expected the phaseout to last longer than one year.

1½ percent. As in the previous Tealbook, the change in policy is assumed to occur in October of this year.[5]

- ***Use of policy normalization tools:*** We continue to assume that take-up of overnight reverse repurchase agreements (ON RRPs) runs at $100 billion until the level of reserve balances is within $500 billion of its assumed longer-run level. Once that occurs, ON RRP take-up declines to zero over the course of one year.[6]

Key features of the two scenarios are described below:

- ***Balance sheet.*** In the baseline scenario, normalization of the size of the balance sheet occurs in the first quarter of 2022, when reserve balances reach $100 billion (see the exhibit titled "Total Assets and Selected Balance Sheet Items" and the table that follows the exhibit).[7] At that point, total assets are projected to stand at roughly $2.4 trillion, with about $2.3 trillion in total SOMA securities holdings composed of $1.1 trillion of Treasury securities and $1.2 trillion of MBS. Total assets and SOMA holdings rise thereafter, keeping pace with the projected increases in Federal Reserve notes in circulation and Federal Reserve Bank capital.

  Under the phaseout scenario, the size of the portfolio is normalized in the third quarter of 2021, about two quarters *earlier* than projected in the baseline scenario (see the dotted red lines and the corresponding table that follows). This feature reflects the net effect of two assumptions that pull the timing of normalization in opposite directions—the higher assumed level of longer-run reserve balances that pulls the timing of normalization forward more than offsets the delay in normalization implied

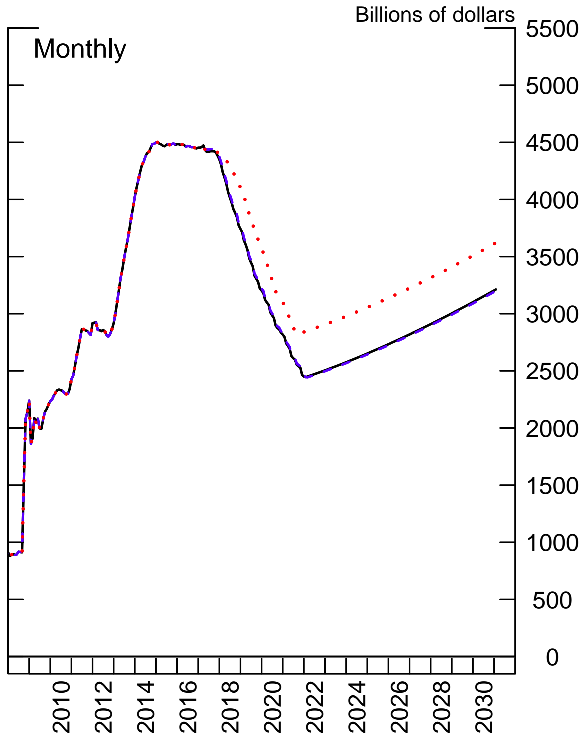
[5] In the May Desk Surveys, the median respondent's modal expectation is that the change in reinvestment policy will be announced when the federal funds rate reaches the target range of 1¼ to 1½ percent, which is the same as the target range assumed in both scenarios considered here. Respondents also placed the highest probability, on average, of a change being announced in the fourth quarter of 2017.

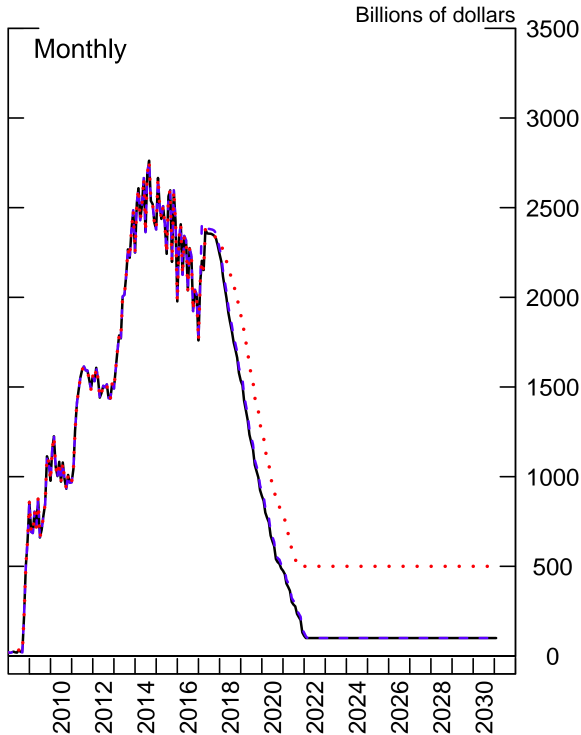
[6] The use of ON RRPs results in a shift in the composition of Federal Reserve liabilities—a decline in reserve balances and a corresponding increase in RRPs—but does not produce an overall change in the size of the balance sheet unless ON RRP take-up continues after the size of the balance sheet is normalized. Separately, we assume that RRPs associated with foreign official and international accounts remain throughout the projection period near their March 31, 2017, level of $253 billion.

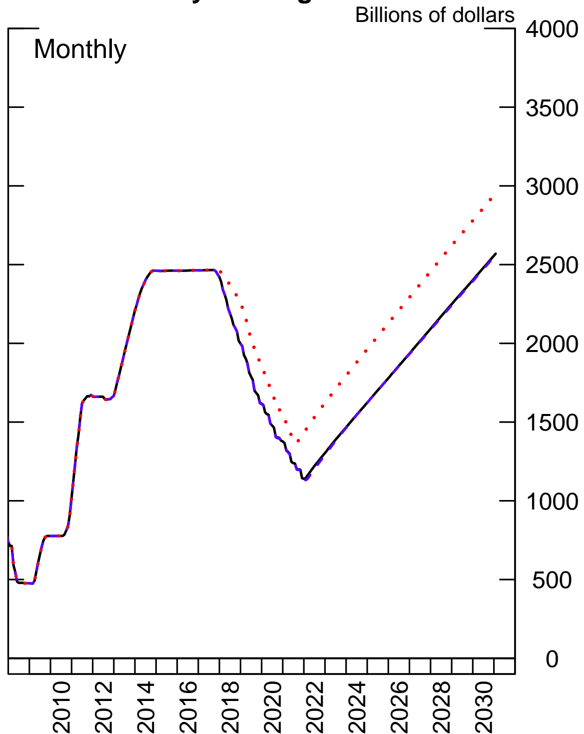
[7] The size of the balance sheet is assumed to be normalized at the point when maintaining the desired longer-run level of reserve balances and accommodating the expansion of other key non-reserve liability items such as currency in circulation, the Treasury General Account, and the foreign RP pool requires the resumption of purchases of Treasury securities.

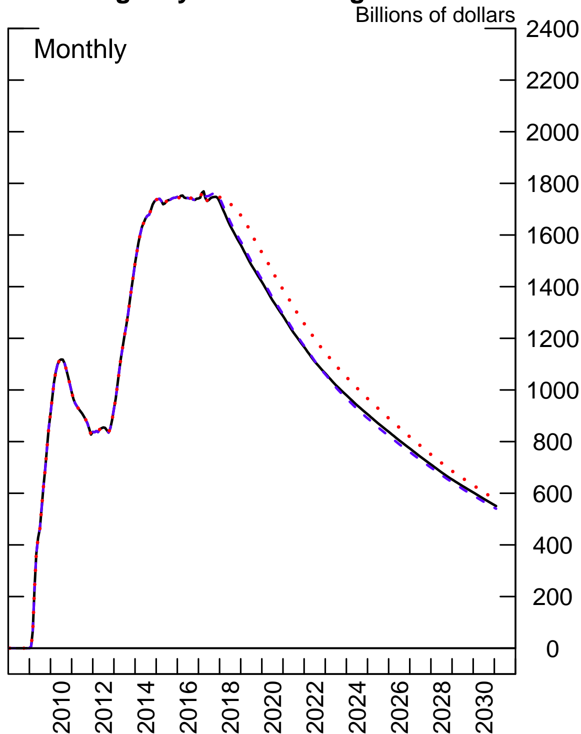
Total Assets and Selected Balance Sheet Items

April Tealbook baseline (LR RB $100 B)
18–month phaseout (LR RB $500 B)
March Tealbook baseline









Balance Sheet & Income

Federal Reserve Balance Sheet
End-of-Year Projections -- April Tealbook baseline (LR RB $100 B)
(Billions of dollars)

	Mar 31, 2017	2017	2019	2021	2023	2025	2030
Total assets	4,473	4,351	3,202	2,451	2,575	2,733	3,203
Selected assets							
Loans and other credit extensions*	7	0	0	0	0	0	0
Securities held outright	4,247	4,155	3,038	2,309	2,448	2,619	3,113
U.S. Treasury securities	2,464	2,421	1,617	1,140	1,466	1,778	2,556
Agency debt securities	13	4	2	2	2	2	2
Agency mortgage-backed securities	1,769	1,729	1,419	1,167	980	838	555
Unamortized premiums	169	156	122	97	80	67	41
Unamortized discounts	-15	-14	-11	-8	-7	-6	-4
Total other assets	45	47	47	47	47	47	47
Total liabilities	4,432	4,310	3,159	2,403	2,523	2,676	3,133
Selected liabilities							
Federal Reserve notes in circulation	1,489	1,556	1,752	1,877	2,010	2,163	2,619
Reverse repurchase agreements	600	353	353	253	253	253	253
Deposits with Federal Reserve Banks	2,336	2,396	1,048	268	255	255	255
Reserve balances held by depository institutions	2,152	2,241	893	112	100	100	100
U.S. Treasury, General Account	92	150	150	150	150	150	150
Other deposits	92	5	5	5	5	5	5
Earnings remittances due to the U.S. Treasury	2	0	0	0	0	0	0
Total capital**	41	41	44	47	52	56	71

Source: Federal Reserve H.4.1 statistical releases and staff calculations.
Note: Components may not sum to totals due to rounding.
*Loans and other credit extensions includes primary, secondary, and seasonal credit; central bank liquidity swaps; and net portfolio holdings of Maiden Lane LLC.
**Total capital includes capital paid-in and capital surplus accounts.

Federal Reserve Balance Sheet
End-of-Year Projections -- 18-month phaseout (LR RB $500 B)
(Billions of dollars)

	Mar 31, 2017	2017	2019	2021	2023	2025	2030
Total assets	4,473	4,408	3,562	2,840	2,977	3,137	3,611
Selected assets							
Loans and other credit extensions*	7	0	0	0	0	0	0
Securities held outright	4,247	4,210	3,392	2,693	2,847	3,020	3,520
U.S. Treasury securities	2,464	2,460	1,857	1,434	1,795	2,127	2,940
Agency debt securities	13	4	2	2	2	2	2
Agency mortgage-backed securities	1,769	1,746	1,532	1,257	1,050	891	578
Unamortized premiums	169	158	127	101	84	69	42
Unamortized discounts	-15	-14	-11	-8	-7	-6	-4
Total other assets	45	47	47	47	47	47	47
Total liabilities	4,432	4,367	3,518	2,792	2,926	3,080	3,541
Selected liabilities							
Federal Reserve notes in circulation	1,489	1,556	1,752	1,879	2,012	2,167	2,627
Reverse repurchase agreements	600	353	353	253	253	253	253
Deposits with Federal Reserve Banks	2,336	2,453	1,408	655	655	655	655
Reserve balances held by depository institutions	2,152	2,297	1,253	500	500	500	500
U.S. Treasury, General Account	92	150	150	150	150	150	150
Other deposits	92	5	5	5	5	5	5
Earnings remittances due to the U.S. Treasury	2	0	0	0	0	0	0
Total capital**	41	41	44	47	52	56	71

Source: Federal Reserve H.4.1 statistical releases and staff calculations.
Note: Components may not sum to totals due to rounding.
*Loans and other credit extensions includes primary, secondary, and seasonal credit; central bank liquidity swaps; and net portfolio holdings of Maiden Lane LLC.
**Total capital includes capital paid-in and capital surplus accounts.

by the gradual cessation of reinvestments.[8] At the time of normalization, total assets are projected to be about $2.8 trillion—about $400 billion larger than in the baseline scenario mostly in light of the assumed higher level of reserve balances in the alternative scenario. Total SOMA securities holdings at the time of normalization stand at nearly $2.7 trillion, consisting of $1.4 trillion in Treasury securities and $1.3 trillion in agency MBS.[9]

- ***Federal Reserve remittances.*** In both scenarios, remittances are projected to decline from $92 billion in 2016 to about $75 billion this year (see the "Income Projections" exhibit). The step-down reflects increased interest expense resulting from the increase in the target range for the federal funds rate in March and the assumption of further increases later this year.[10] Under the baseline, remittances are projected to continue to decline in coming years, reaching a low of about $30 billion in 2019 as the size of the SOMA portfolio falls and the target range for the federal funds rate increases further. Subsequently, remittances gradually increase as higher-yielding Treasury securities are added to the SOMA portfolio. The path for remittances implied by the alternative scenario is broadly similar, even as underlying interest income and expense differ after 2020. No deferred asset is projected under either scenario.[11]

- ***Unrealized gains or losses.*** The staff estimates that the SOMA portfolio was in a net unrealized gain position of about $70 billion at the end of March.[12] The net

[8] Under a scenario with cessation all at once and a level of longer-run reserves of $500 billion, the size of the balance sheet is normalized about four quarters earlier than in the baseline.

[9] The May Desk Survey of Primary Dealers asked a new question about the most likely size and composition of the Federal Reserve's balance sheet, on average, in 2025 (and conditional on not returning to the zero lower bound before the end of 2025). The median estimate across dealers for the size of the balance sheet in 2025 is $3.1 trillion, while the median estimate for the level of reserves was $600 billion. For assets, the median estimate for the portfolio share of Treasury securities is 75 percent, while the share for agency MBS is 20 percent. In the phaseout scenario, the size of the Federal Reserve's balance sheet in 2025 is also $3.1 trillion, while the portfolio shares for Treasury securities and MBS are about 70 and 30 percent, respectively.

[10] We continue to assume that the FOMC will set a 25 basis-point-wide target range for the effective federal funds rate. We also continue to assume that the interest rate paid on excess reserve balances and the offering rate on ON RRPs will be set at the top and the bottom of the range, respectively.

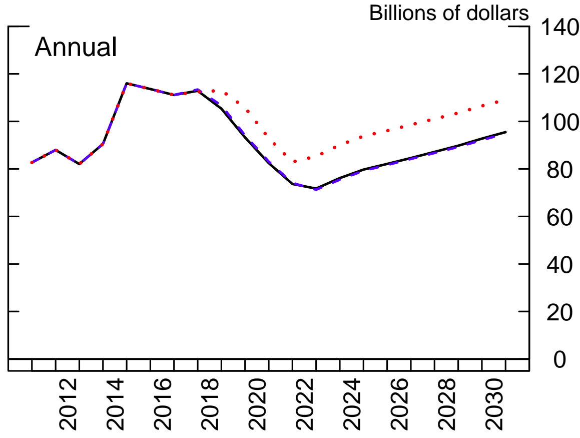
[11] In the event that a Federal Reserve Bank's earnings fall short of the amount necessary to cover its operating costs and pay dividends, a deferred asset would be recorded as a claim against future earnings remittances due to the U.S. Treasury.

[12] The Federal Reserve reports the quarter-end net unrealized gain/loss position of the SOMA portfolio to the public in the "Federal Reserve Banks Combined Quarterly Financial Reports," available on the Board's website at http://www.federalreserve.gov/monetarypolicy/bst_fedfinancials.htm#quarterly.

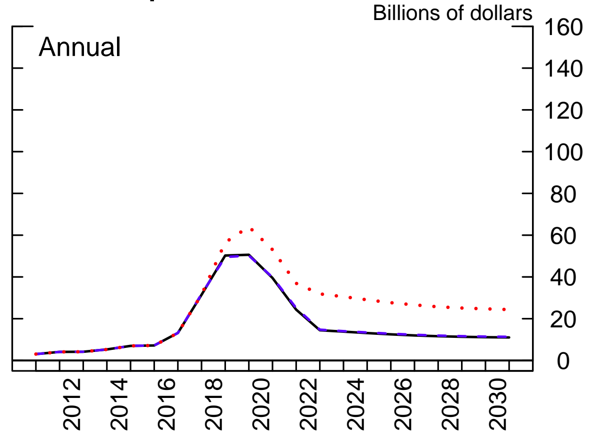
Income Projections

April Tealbook baseline (LR RB $100 B) · · · 18–month phaseout (LR RB $500 B)
March Tealbook baseline

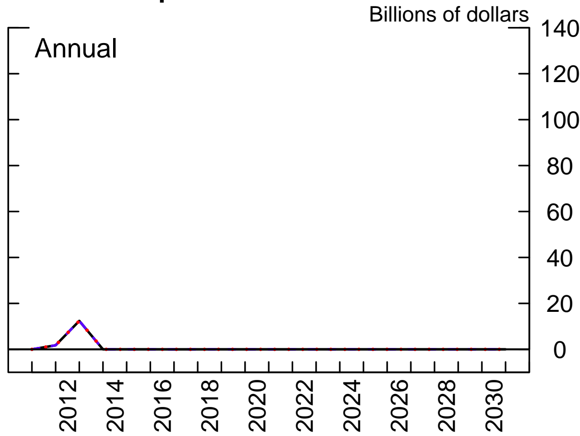
Interest Income



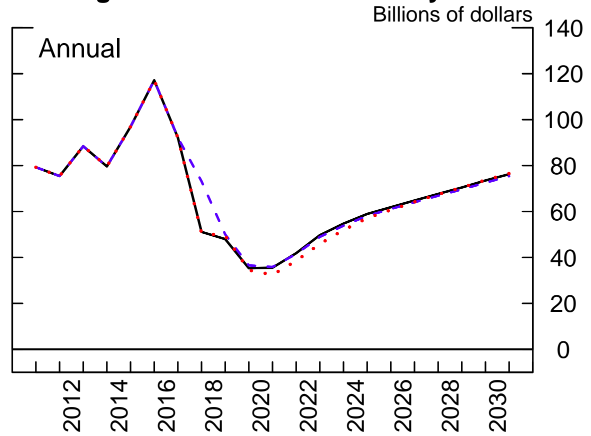
Interest Expense



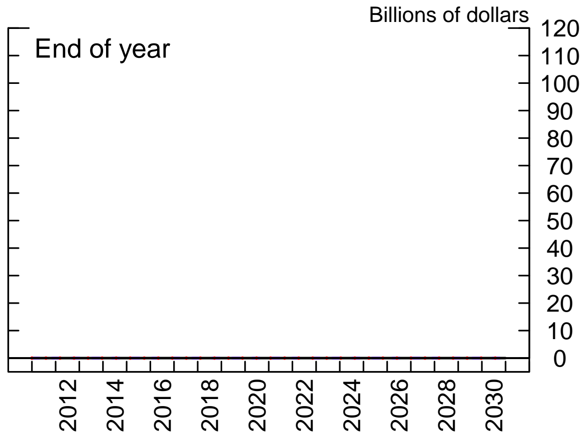
Realized Capital Gains



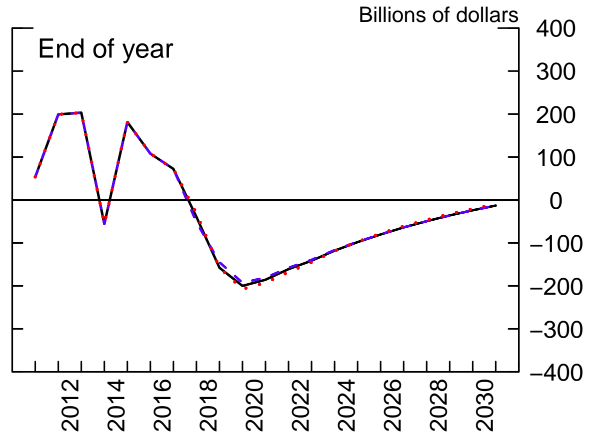
Earnings Remittances to Treasury



Deferred Asset



Memo: Unrealized Gains/Losses



Balance Sheet & Income

unrealized gain or loss position of the portfolio going forward will depend primarily on the path of longer-term interest rates. In both scenarios, it is assumed that these rates will rise over the next several years, and as a result, the portfolio is projected to shift to an unrealized loss position at the end of this year. The portfolio is expected to record a peak unrealized loss of roughly $200 billion at the end of 2019, about $70 billion of which is attributable to holdings of Treasury securities and $130 billion to holdings of agency MBS. The unrealized loss position then narrows through the remainder of the projection period, as the value of securities previously acquired under the large-scale asset purchase programs (LSAPs) returns to par with those securities approaching maturity.

- ***Term premium effects.*** As shown in the table "Projections for the 10-Year Treasury Term Premium Effect," under the baseline scenario, the securities held in the SOMA portfolio as a result of the Federal Reserve's LSAPs and reinvestments are estimated to be depressing the term premium embedded in the 10-year nominal Treasury yield by 83 basis points in the current quarter. The evolution of the estimated term premium effect depends importantly on how the expected path of the Federal Reserve's balance sheet in coming years departs from a benchmark counterfactual projection for the balance sheet that excludes the effects of asset purchases. The term premium effect gradually fades over time, reflecting the convergence of the balance sheet to the path implied by the counterfactual projection.

  Under the phaseout scenario, the estimated term premium effect is about 9 basis points more negative throughout the projection period than under the baseline projection, with the difference reflecting two factors that depress the term premium embedded in longer-term Treasury securities. First, the securities portfolio declines at a slower pace if reinvestments are phased out. Second, relative to the baseline scenario, the Federal Reserve permanently holds a larger securities portfolio after the size of the balance sheet normalizes.

  SOMA redemptions. In both scenarios, the value of Treasury securities maturing each month varies over time, with large maturities occurring during mid-quarter refunding months; the value of maturing Treasury securities is known by the public and the Federal Reserve with certainty. MBS paydowns are projected to run at a fairly steady monthly pace, given the assumed path of longer-term interest rates.

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Projections for the 10-Year Treasury Term Premium Effect
(Basis Points)

Date	April Tealbook baseline (LR RB $100 B)	March Tealbook baseline	18-month phaseout (LR RB $500 B)
Quarterly Averages			
2017:Q2	-83	-83	-91
Q3	-79	-79	-88
Q4	-75	-75	-84
2018:Q4	-61	-61	-71
2019:Q4	-50	-50	-59
2020:Q4	-42	-41	-51
2021:Q4	-36	-36	-45
2022:Q4	-33	-32	-42
2023:Q4	-30	-29	-38
2024:Q4	-26	-26	-35
2025:Q4	-24	-23	-32
2026:Q4	-21	-21	-30
2027:Q4	-19	-18	-27
2028:Q4	-17	-16	-25
2029:Q4	-15	-15	-23
2030:Q4	-14	-13	-21

However, realized MBS paydowns reflect the evolution of interest rates and other factors and thus could differ significantly from projected values.

A key difference across the two scenarios, by construction, is the amount of redemptions of Treasury securities and agency MBS through the medium term. These differences are illustrated in the "Redemptions" exhibit. The top panel shows maturing Treasury securities and projected principal repayments of MBS for the baseline scenario in which reinvestments are assumed to cease all at once, while the bottom panel shows redemptions for the phaseout scenario.

Under the baseline scenario, a total of $426 billion of Treasury securities is projected to mature in 2018, while in the phaseout scenario redemptions are almost half that level over the same period. Similarly, projected MBS redemptions next year are nearly twice as large in the baseline scenario as in the phaseout scenario. Reinvestments decline to zero in the phaseout scenario in April 2019; after that, redemptions are slightly *higher* under the phaseout scenario than under the baseline, reflecting the principal repayments of securities that were rolled over between October 2017 and March 2019.

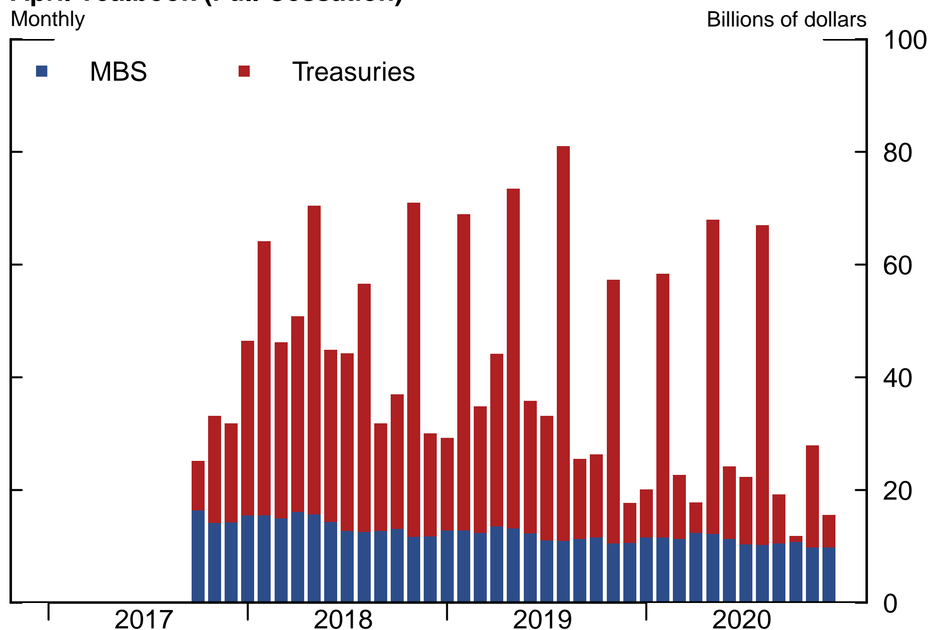
- ***SOMA characteristics.*** The weighted-average duration of the SOMA Treasury portfolio is currently about 6¼ years (see the top panel of "Projections for the Characteristics of SOMA Holdings" exhibit). In the baseline scenario, the weighted-average duration is projected to decline slightly this year as the securities in the portfolio approach maturity, and to rise subsequently until late 2021.[13] Under the phaseout scenario, the projected weighted-average duration follows a similar path but at a lower level than in the baseline scenario, reflecting reinvestments into some shorter-tenor securities during the 18-month phaseout period.[14]

  After reaching its peak in both the baseline and phaseout scenarios, duration is projected to resume its decline as the Desk restarts open market purchases of Treasury securities to keep pace with the increase in Federal Reserve notes in

[13] The rise in portfolio duration starts in 2018 when the pace of roll-offs picks up and longer-tenor securities account for a larger share of the remaining portfolio, causing duration to increase until the size of the balance sheet is normalized.

[14] As in the baseline scenario, portfolio duration under the phaseout scenario rises starting in 2018. However, since a portion of the maturing securities is reinvested in 2-, 5-, and 7-year Treasury securities, the resulting larger holdings of these shorter-tenor securities than in the baseline imply a lower duration path.

Redemptions

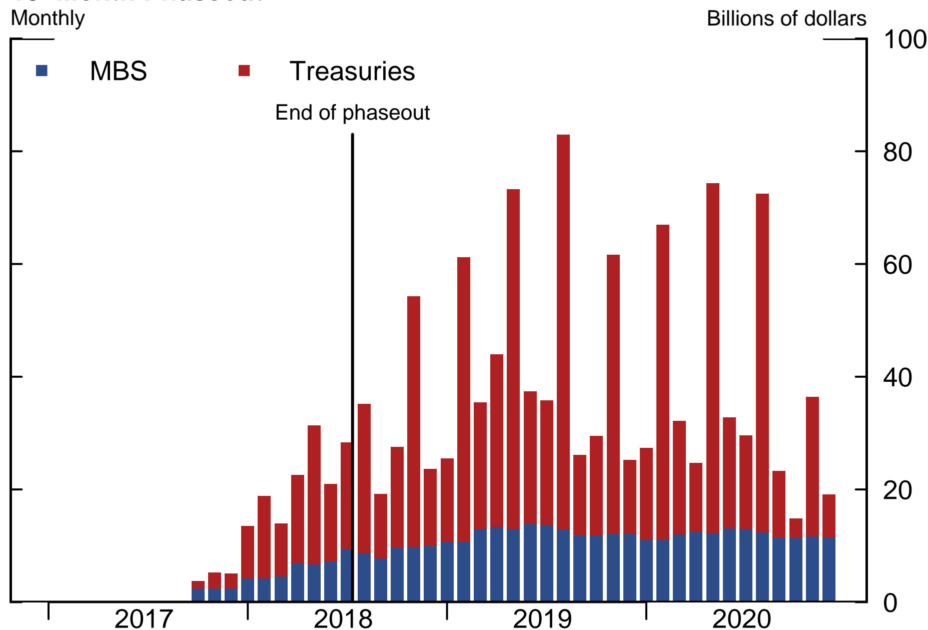


Redemptions ($ bil)

Year	MBS	TSY
2018	167	426
2019	144	384
2020	132	243

Rollovers ($ bil)

Year	MBS	TSY
2018	0	0
2019	0	0
2020	0	0



Redemptions ($ bil)

Year	MBS	TSY
2018	89	220
2019	150	388
2020	143	310

Rollovers ($ bil)

Year	MBS	TSY
2018	83	207
2019	2	7
2020	0	0

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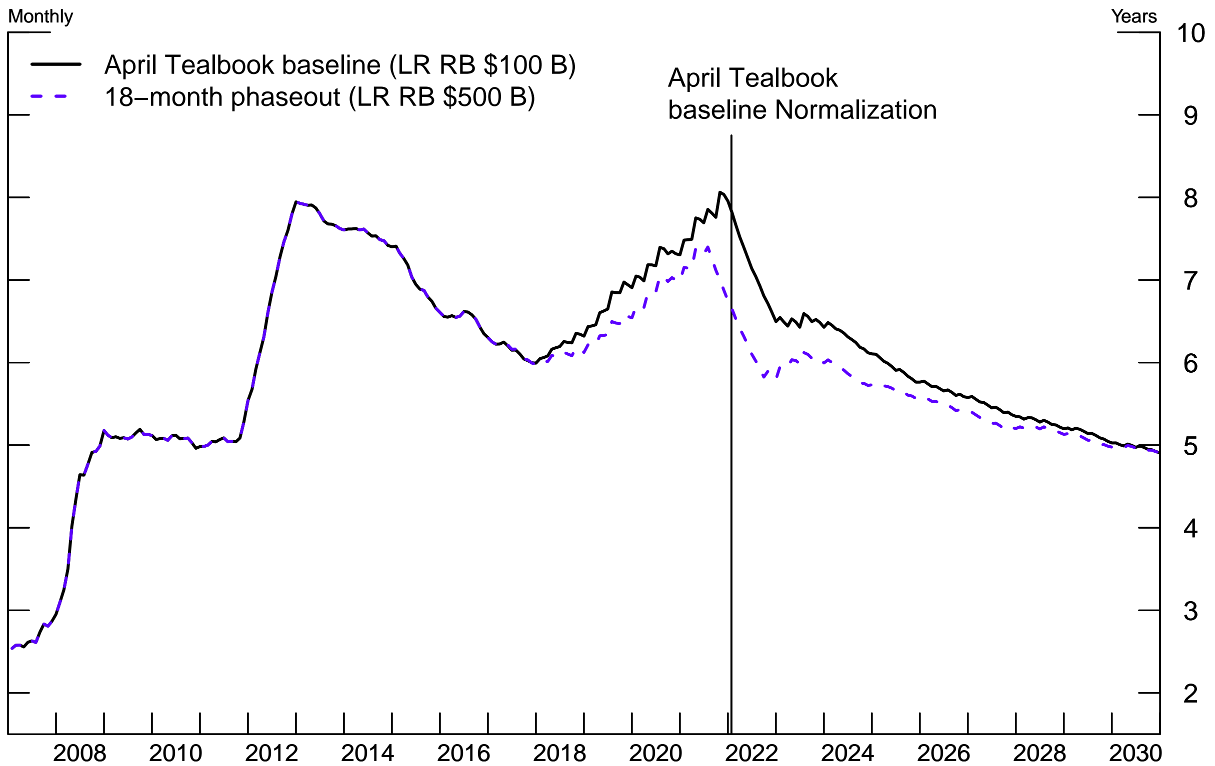
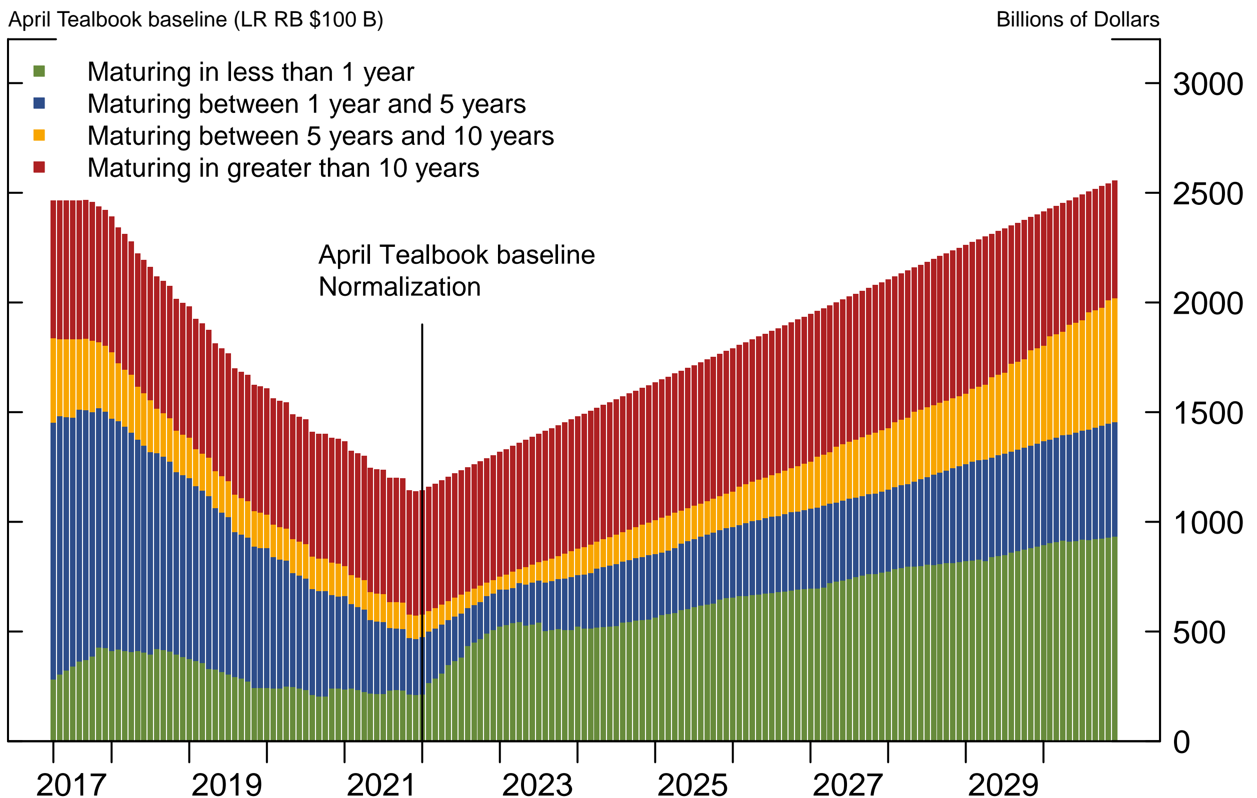
circulation and Federal Reserve Bank capital. The duration contour in this latter portion of each projection is based on the assumption that the Federal Reserve will limit its purchases to Treasury bills until they account for one-third of the Treasury portfolio, similar to its pre-crisis composition (currently SOMA holds no Treasury bills). Thereafter, purchases of Treasury securities are assumed to be spread across the maturity spectrum (see the bottom panel, "Maturity Composition of SOMA Treasury Portfolio").[15]

[15] We assume zero purchases of agency MBS after reinvestments of such securities fully cease.

Projections for the Characteristics of SOMA Holdings





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Abbreviations

ABS	asset-backed securities
BEA	Bureau of Economic Analysis, Department of Commerce
BHC	bank holding company
CDS	credit default swaps
CFTC	Commodity Futures Trading Commission
C&I	commercial and industrial
CLO	collateralized loan obligation
CMBS	commercial mortgage-backed securities
CPI	consumer price index
CRE	commercial real estate
DEDO	section in Tealbook A, “Domestic Economic Developments and Outlook”
Desk	Open Market Desk
ECB	European Central Bank
ELB	effective lower bound
EME	emerging market economy
EU	European Union
FAST Act	Fixing America’s Surface Transportation Act
FDIC	Federal Deposit Insurance Corporation
FOMC	Federal Open Market Committee; also, the Committee
GCF	general collateral finance
GDI	gross domestic income
GDP	gross domestic product
GSIBs	globally systemically important banking organizations
HQLA	high-quality liquid assets
IOER	interest on excess reserves
ISM	Institute for Supply Management
LIBOR	London interbank offered rate

LSAPs	large-scale asset purchases
MBS	mortgage-backed securities
MMFs	money market funds
NBER	National Bureau of Economic Research
NI	nominal income
NIPA	national income and product accounts
OIS	overnight index swap
ON RRP	overnight reverse repurchase agreement
PCE	personal consumption expenditures
repo	repurchase agreement
RMBS	residential mortgage-backed securities
RRP	reverse repurchase agreement
SCOOS	Senior Credit Officer Opinion Survey on Dealer Financing Terms
SEP	Summary of Economic Projections
SFA	Supplemental Financing Account
SLOOS	Senior Loan Officer Opinion Survey on Bank Lending Practices
SOMA	System Open Market Account
TBA	to be announced (for example, TBA market)
TGA	U.S. Treasury's General Account
TIPS	Treasury inflation-protected securities
TPE	Term premium effects