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 1/12/2024.

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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 26, 2018

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

Information received since the Committee met in March indicates that the economy is evolving broadly in line with expectations. On balance, the available indicators suggest that the labor market continued to strengthen in the first quarter. The staff estimates that the 12-month change in headline and core PCE prices stepped up to 2.1 and 1.9 percent, respectively, in March, a touch higher than was anticipated at the March meeting. The softness in real GDP growth in the first quarter appears to have been largely transitory, and the staff continues to project above-trend growth and high levels of resource utilization over the medium term.[1]

There are three key questions for the Committee at this meeting. The first is whether the available information warrants raising the target range for the federal funds rate. The second is whether the economic outlook and associated risks indicate that the federal funds rate path suggested by recent FOMC communications remains appropriate. The third question is whether, in light of the evolution of the economic outlook and balance of risks over the past few quarters, some parts of the FOMC statement need to be updated to more clearly express the Committee's expectations and intentions. With these issues in mind, three alternative draft statements are proposed below.

Alternative B characterizes the labor market and spending data similarly to the March statement and notes that both total and core measures of 12-month inflation have moved close to 2 percent. It maintains the current target range for the federal funds rate and updates the inflation outlook in light of the anticipated increase in both measures. In addition, consistent with the update to the inflation language as well as the March Summary of Economic Projections (SEP), in which no participant saw risks to the outlook for inflation as tilted to the downside, the balance of risks statement has been simplified to state: "Risks to the economic outlook appear roughly balanced."

Alternative A is motivated by the view that, although headline inflation has recently moved close to the Committee's 2 percent objective, the level of longer-run inflation expectations might still be too low. It articulates an outlook in which inflation modestly exceeds 2 percent for a time, conditioned on "appropriate monetary policy

[1] The BEA's first estimate of GDP for 2018:Q1 will be released on April 27. PCE inflation data for March will be available on April 30; the staff's current estimate is based on CPI and PPI data through March.

accommodation" rather than on further gradual increases in the federal funds rate. This alternative maintains the current target range for the federal funds rate and removes the current forward guidance language on the grounds that further rate hikes may not be necessary and that a period of inflation modestly above 2 percent would be helpful in getting longer-run inflation expectations up to a level consistent with sustained 2 percent inflation over the medium run.

Alternative C can be viewed in two different ways. By expressing the view that economic conditions and the outlook warrant an immediate hike in the federal funds rate, Alternative C can be seen as the less accommodative counterpart to Alternative B. If the Committee were to increase the federal funds rate at this meeting, that step would likely be taken as a signal that the Committee will pursue a higher path for the federal funds rate than market participants had been expecting. Alternatively, this draft statement could serve as a potential template for the statement that the Committee might release in June if the economy continues to develop roughly as expected. Many FOMC participants have said they see a need to update parts of the policy statement in light of the evolving state of the economy and stance of monetary policy, and Alternative C has been written with this in mind. To facilitate consideration of Alternative C as a possible template for June, this document includes a brief discussion of how the language in Alternative C might be viewed if the Committee adopts Alternative B at the May meeting and if the economy subsequently evolves roughly as expected (see pages 16 and 17).

With regard to the specifics of the language in Alternatives A, B, and C:

- Each alternative removes the statement that "the economic outlook has strengthened in recent months." This text reflected an improved outlook at the March meeting; removing it indicates that the outlook has not strengthened further since March.
- The three alternatives are nearly identical in their assessment of the strength of incoming real-side data, and they all note that inflation has "moved close to 2 percent," while Alternative A adds that this has occurred "recently." The alternatives differ slightly with regard to inflation expectations:
    - Alternative C combines both market-based measures of inflation compensation and survey-based measures of inflation expectations into the broader category "indicators of longer-term inflation expectations." These indicators are little changed, on balance, over the intermeeting period.

- Alternatives A and B describe these two measures separately, noting that measures of inflation compensation remain low.

- Although the three statements project roughly similar outcomes for economic activity and the labor market, they differ in their descriptions of the inflation outlook and the monetary policy upon which the outlook is conditioned:
  - Alternative B states that inflation, having moved close to 2 percent, is expected to "run near the Committee's symmetric 2 percent objective" and continues to condition the outlook on "further gradual adjustments in stance of monetary policy."
  - Alternative C similarly modifies the inflation outlook, but states the Committee's expectation that "further gradual increases in the target range for the federal funds rate will be consistent with sustained expansion of economic activity and employment and with inflation near the Committee's symmetric 2 percent objective over the medium term." In addition, Alternative C removes from paragraph 4 the language about carefully monitoring actual and expected inflation. Dropping this language may be taken as a signal that the Committee currently see the risks to inflation as more evenly balanced.
  - Alternative A projects inflation to modestly exceed 2 percent for a time and then run near the Committee's objective, and notes that "this inflation outcome should help ensure that longer-term inflation expectations rise to a level consistent with the Committee's symmetric objective for 2 percent inflation." The outlook under Alternative A is conditioned on "appropriate monetary policy accommodation" rather than further gradual increases in the federal funds rate.

- Following the update to the inflation outlook under both alternatives, the balance of risks in Alternatives B and C is changed to state that "risks to the economic outlook appear roughly balanced." The balance of risks given in Alternative A is unchanged from the March statement, retaining the statement that the Committee is monitoring inflation developments closely.

- With respect to the current policy decision:
  - Alternatives A and B leave the target range unchanged at 1½ to 1¾ percent.
  - Alternative C raises the target range to 1¾ to 2 percent but continues to note that the stance of monetary policy remains accommodative.

Alternatives

- With respect to the forward guidance language:
  - Alternative B retains the forward guidance language at the end of paragraph 4; Alternatives A and C delete it.
  - In light of the changes in paragraphs 2 and 3 of Alternative A, dropping the final two sentences from paragraph 4 of Alternative A likely would be read as a signal that the Committee is in no hurry to raise the federal funds rate further.
  - In contrast, adopting Alternative C at this meeting likely would be taken as a signal that the Committee now sees a need to raise the federal funds rate somewhat more rapidly than previously anticipated—though still gradually, primarily because the timing of the rate increase would come as a surprise. Alternatively, if adopted in June, a statement along the lines of Alternative C would likely not change market perceptions of the potential pace of rate hikes. As the Committee's expectation for further gradual rate increases has been moved into paragraph 2, dropping the same thought from paragraph 4 should not, by itself, alter the expected path for policy. However, eliminating the clause that the federal funds rate is expected to remain below its longer-run level could increase expectations that the federal funds rate may move to, or possibly above, its estimated longer-run value in the not too distant future.

MARCH 2018 FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in January indicates that the labor market has continued to strengthen and that economic activity has been rising at a moderate rate. Job gains have been strong in recent months, and the unemployment rate has stayed low. Recent data suggest that growth rates of household spending and business fixed investment have moderated from their strong fourth-quarter readings. On a 12-month basis, both overall inflation and inflation for items other than food and energy have continued to run below 2 percent. Market-based measures of inflation compensation have increased in recent months but 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 economic outlook has strengthened in recent months. The Committee expects that, with further gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace in the medium term and labor market conditions will remain strong. Inflation on a 12-month basis is expected to move up in coming months and to stabilize around the Committee's 2 percent objective over the medium term. Near-term risks to the economic outlook appear roughly balanced, but the Committee is monitoring inflation developments closely.

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 1-1/2 to 1-3/4 percent. The stance of monetary policy remains accommodative, thereby supporting strong 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 further 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.

ALTERNATIVE A FOR MAY 2018

1. Information received since the Federal Open Market Committee met in ~~January~~ **March** indicates that the labor market has continued to strengthen and that economic activity has been rising at a moderate rate. Job gains have been strong**, on average,** in recent months, and the unemployment rate has stayed low. Recent data **continue to** suggest that ~~growth rates of~~ household spending and business fixed investment ~~have moderated from their strong fourth-quarter readings~~ **are growing moderately**. On a 12-month basis, both overall inflation and inflation for items other than food and energy ~~have continued to run below~~ **recently have moved close to** 2 percent. Market-based measures of inflation compensation ~~have increased in recent months but~~ 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 economic outlook has strengthened in recent months.~~ The Committee expects that, with ~~further gradual adjustments in the stance of~~ **appropriate** monetary policy **accommodation**, economic activity will expand at a moderate pace in the medium term and labor market conditions will remain strong. Inflation on a 12-month basis is expected to ~~move up in coming months and to stabilize around~~ **modestly exceed 2 percent for a time and then run near** the Committee's **symmetric** 2 percent objective ~~over the medium term~~. Near-term risks to the economic outlook appear roughly balanced, but the Committee is monitoring inflation developments closely.

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** 1-1/2 to 1-3/4 percent. The stance of monetary policy remains accommodative, thereby supporting strong labor market conditions and a ~~sustained return to~~ **period of inflation modestly above 2 percent. This inflation outcome should help ensure that longer-term inflation expectations rise to a level consistent with the Committee's symmetric objective for** 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 further 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.~~

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~~However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.~~

ALTERNATIVE B FOR MAY 2018

1. Information received since the Federal Open Market Committee met in ~~January~~ **March** indicates that the labor market has continued to strengthen and that economic activity has been rising at a moderate rate. Job gains have been strong**, on average,** in recent months, and the unemployment rate has stayed low. Recent data ~~suggest that growth rates of~~ **indicate that** household spending and business fixed investment ~~have moderated from their strong fourth-quarter readings~~ **have been growing at moderate rates**. On a 12-month basis, both overall inflation and inflation for items other than food and energy have ~~continued to run below~~ **moved close to** 2 percent. Market-based measures of inflation compensation ~~have increased in recent months but~~ 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 economic outlook has strengthened in recent months.~~ The Committee expects that, with further gradual adjustments in the stance of monetary policy, economic activity will expand at a moderate pace in the medium term and labor market conditions will remain strong. Inflation on a 12-month basis is expected to ~~move up in coming months and to stabilize around~~ **run near** the Committee's **symmetric** 2 percent objective over the medium term. ~~Near-term~~ Risks to the economic outlook appear roughly balanced~~, but the Committee is monitoring inflation developments closely~~.

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** 1-1/2 to 1-3/4 percent. The stance of monetary policy remains accommodative, thereby supporting strong 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 further 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.

ALTERNATIVE C FOR MAY 2018

1. Information received since the Federal Open Market Committee met in ~~January~~ **March** indicates that the labor market has continued to strengthen and that economic activity has been rising at a moderate rate. Job gains have been strong**, on average,** in recent months, and the unemployment rate has stayed low. Recent data ~~suggest that growth rates of~~ **indicate that** household spending and business fixed investment ~~have moderated from their strong fourth-quarter readings~~ **have been growing at moderate rates**. On a 12-month basis, both overall inflation and inflation for items other than food and energy have ~~continued to run below~~ **moved close to** 2 percent. ~~Market-based measures of inflation compensation have increased in recent months but remain low; survey-based measures~~ **Indicators** 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 economic outlook has strengthened in recent months.~~ The Committee expects that~~, with~~ further gradual ~~adjustments in the stance of monetary policy,~~ **increases in the target range for the federal funds rate will be consistent with sustained expansion of** economic activity **and employment** ~~will expand at a moderate pace in the medium term and labor market conditions will remain strong.~~ **and with** inflation ~~on a 12-month basis is expected to move up in coming months and to stabilize around~~ **near** the Committee's **symmetric** 2 percent objective over the medium term. ~~Near-term~~ Risks to the economic outlook appear roughly balanced~~, but the Committee is monitoring inflation developments closely~~.

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 1-1/2~~ to 1-3/4 **to 2** percent. The stance of monetary policy remains accommodative, thereby supporting strong 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 **objective** and **its symmetric** 2 percent inflation **goal**. 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 further gradual increases in the federal funds rate; the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run. However, the actual path of the federal funds rate will depend on the economic outlook as informed by incoming data.~~

THE CASE FOR ALTERNATIVE B

Economic Conditions and Outlook

- Available data indicate that the labor market has continued to strengthen on balance. Although the March employment report indicated fewer job gains than the staff had expected, and the unemployment rate held at 4.1 percent for the sixth consecutive month, payrolls nevertheless increased an average of about 200,000 per month in the first quarter. The current rate of job growth is well above the pace consistent with an unchanged unemployment rate if the labor force participation rate were declining in line with its estimated trend. However, the participation rate has held roughly steady for the past several years and is projected to continue to do so over the next few years. The wage data that have arrived since the March meeting remain consistent with the picture of moderate wage gains overall.[2]
- Recent data show that inflation has moved close to the Committee's 2 percent goal. The staff projects that inflation will remain near 2 percent in the medium term.
  - Over the 12 months ending in March, the estimated core PCE inflation rate was 1.9 percent while total PCE inflation was 2.1 percent. Both of these estimates are slightly above the staff's projection in March and reflect the extraordinarily low reading from March of last year dropping out of the calculation.
  - The staff projection of core PCE inflation on a 12-month basis rises to 2.0 percent in May and averages 2.1 percent in the third quarter, while the projection for total PCE inflation on a 12-month basis is 2.5 percent at the end of the second quarter and 2.2 percent at the conclusion of the third quarter, slowing to about 2 percent afterward as the effects of recent energy price increases wane.
  - The staff projects that total and core PCE inflation will remain close to 2 percent through 2020.
  - Both market- and survey-based indicators of longer-term inflation expectations have moved little, on balance, since the March Tealbook, and are consistent with the view that these expectations remain stable.
- Real GDP growth is projected to average 2¼ percent at an annual rate over the first half of the year, a little less than projected in the March Tealbook but still higher than its trend pace. The staff estimates that the gap between actual and potential output

[2] ECI data through March will be released on April 27.

will continue to widen over the medium term, with real GDP estimated to reach a level of around 3¼ percent above its potential value by the end of 2020.

- The staff estimates that foreign real GDP growth was 3 percent in the first quarter, a touch higher than in the second half of 2017, and it is projected to stay close to this pace for 2018 before declining slightly toward its potential rate over the medium term.

Policy Strategy

- Policymakers may see economic conditions as continuing to evolve about in line with the Committee's expectations. Given that monetary policy operates with a lag, and following two policy rate increases in the past three meetings, policymakers may see the language in Alternative B as signaling that the strength in the economy continues to call for further gradual increases in the target range but not for an adjustment to the stance of monetary policy at the May meeting.
  - A gradual removal of monetary policy accommodation may continue to be seen as appropriate to balance the risk of the labor market becoming unduly overheated against the risk of inflation failing to return to 2 percent on a sustained basis.
- Policymakers may see recent inflation developments as consistent with the view that inflation expectations are well anchored and that the idiosyncratic factors that held down inflation last year were indeed transitory. If so, they may wish to update the outlook for inflation by stating that inflation will "run near the Committee's symmetric 2 percent objective over the medium term."
- With above-trend growth, positive impetus from fiscal policy, solid growth abroad, continued strengthening of the labor market, and inflation close to their objective, policymakers may perceive that—conditional on further gradual increases in the federal funds rate—the risks to the outlook for both employment and inflation are roughly balanced. If so, they may wish to remove the emphasis on monitoring inflation from their discussion of the balance of risks.
- As shown in the "Monetary Policy Expectations and Uncertainty" box, financial market quotes indicate that market participants regard the odds of a rate hike at the upcoming meeting as negligible but see a high probability that the federal funds rate will be raised at the June meeting. Respondents to the Desk's latest surveys of primary dealers and market participants have broadly similar views. In light of

Monetary Policy Expectations and Uncertainty

Over the intermeeting period, market participants became increasingly confident that the Committee will keep the target range for the federal funds rate unchanged at the upcoming FOMC meeting and announce a 25-basis-point rate increase at the June meeting. As shown in figure 1, a straight read of quotes on federal funds futures contracts suggests that the probability attached to a rate hike at the June meeting has risen from around 75 percent immediately following the March meeting to about 90 percent. On average, respondents to the Desk's May surveys also assigned virtually no odds to a rate hike at the May meeting and high odds to a June rate increase.

The probability distribution for the level of the federal funds rate at the end of 2018, based on options quotes and assuming zero term premiums, has shifted somewhat to the right (figure 2). It continues to suggest that investors place the highest odds on the federal funds rate being in the 2 to 2¼ percent or the 2¼ to 2½ percent range at year-end. Figure 3 shows the corresponding average probability distribution from the Desk's surveys; respondents to those surveys place about the same probability on three additional 25-basis-point rate increases this year as on two such hikes.

Figure 4 shows how different measures of federal funds rate expectations for the end of 2018 have evolved since June 2016. The figure displays market-based metrics (with and without term premium adjustments) derived from quotes on overnight index swap (OIS) contracts, the median projection from FOMC participants' Summary of Economic Projections (SEP) through March 2018, and the median of respondents' modal forecasts in the Desk's surveys as well as the average of those respondents' implied mean forecasts. Of note, the latter two forecasts approximately correspond to the mode and mean, respectively, of the distribution shown in figure 3. The SEP median (the golden squares) has been stable at 2 to 2¼ percent from early 2017 through March of this year, while the market-based measures (the red and blue lines) and the Desk survey implied mean and modal forecasts (the grey and black dots, respectively) have inched up steadily. Although the forecasts implied by the May Desk surveys were little changed relative to the March surveys, the market-based measures ticked up a little further over the intermeeting period. The further narrowing of the gap between the forward rates implied by OIS quotes (the blue line) and the expected path of the federal funds rate with adjustments for term premiums as estimated by a staff term structure model (the red line) reflects, in part, negative term premiums moving toward zero as the end of the projection period nears. The diminution of downside risks as interest rates move further away from the lower bound may also be a factor. Based on the most recent observations, the unadjusted market-implied measure, the March SEP median, and the Desk survey's implied mean forecast are consistent with two additional 25-basis-point rate increases in 2018, while the market measure that adjusts for term premiums

and the Desk survey's latest modal forecast both imply an expectation of three more such hikes.

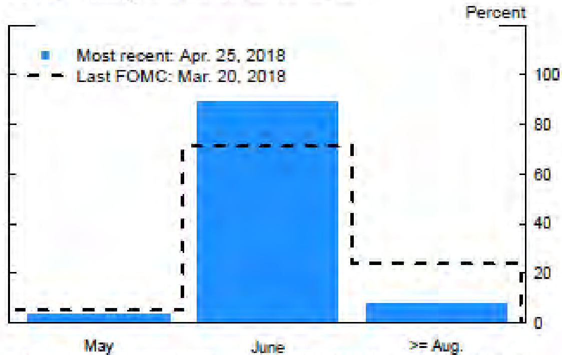
Figure 5 shows market-implied measures of the expected federal funds rate path beyond 2018. The path derived from quotes on OIS and not adjusted for term premiums (the blue line) shifted up modestly over the intermeeting period. The staff's term structure model attributes the near-term increase about equally to a higher term-premium-adjusted path (the solid red line) and to higher (less negative) term premiums. Beyond 2020, the model attributes the increases predominantly to less negative term premiums.

The May Desk surveys asked respondents for their projections for the most likely spread between the interest on excess reserves (IOER) rate and the effective federal funds rate (EFFR), conditional on a range of possible levels of reserve balances. Figure 6 shows that respondents expect the IOER–EFFR spread to narrow as reserve balances decline, with the median projected spread falling to zero when reserve balances reach $500 billion. Respondents were also asked to project the level of the IOER–EFFR spread over time. The median of respondents' modal projections for this spread (not shown) was 5 basis points at the end of 2018, 4 basis points in mid-2019, and 2 basis points at the end of 2019.[1] Figure 6 indicates that the median respondent projects the IOER–EFFR spread to reach 2 basis points when reserve balances have declined to $1 trillion, which according to the Tealbook baseline projection will be the case in early 2020 (see the "Balance Sheet and Income Projections" section of the Tealbook).

[1] Respondents to the May surveys were also asked to rate the importance of several factors in influencing the projected change in the IOER–EFFR spread between now and the end of 2019. Respondents assigned the highest importance to "changes in the level of reserve balances" and to "Treasury securities supply dynamics."

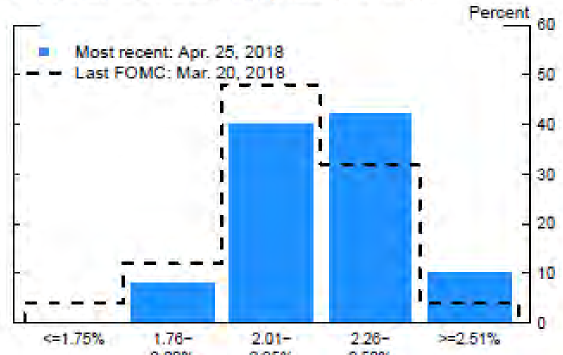
Alternatives

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



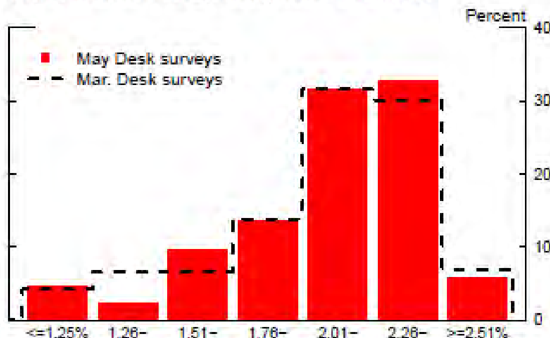
Note: Probabilities implied by a binomial tree fitted to settlement prices on federal funds futures contracts, assuming the next policy action is either no change or a 25 basis point increase in rates and no intermeeting moves. The effective federal funds rate until the next FOMC meeting is assumed to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

Figure 2: Market−Implied Probability Distribution of the Federal Funds Rate, Year−End 2018



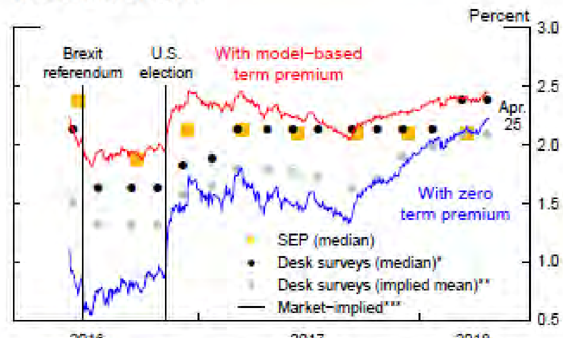
Note: Estimated from federal funds futures options for the average federal funds rate in January 2019 without adjusting for risk premiums.
Source: CME Group; Federal Reserve Board staff estimates.

Figure 3: Desk Survey Average Probability Distribution of the Federal Funds Rate, Year−End 2018



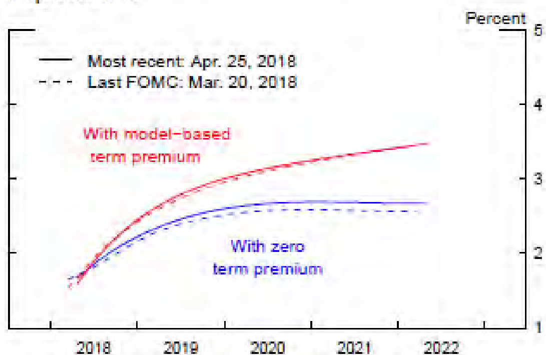
Note: Probabilities are averages of the probabilities assigned by respondents to different ranges of the federal funds rate at the end of 2018.
Source: FRBNY.

Figure 4: Historical Federal Funds Rate Expectations for the End of 2018



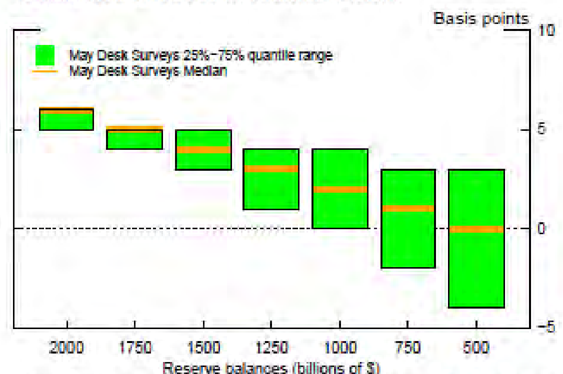
* Median of the respondents' modal forecast for the federal funds rate.
** Estimated from respondents' year−end probability distributions.
*** Zero term premium path is estimated using overnight index swap quotes with a spline approach and no term premium adjustment. Model−based term premium path is estimated using a term structure model maintained by Board staff and corrects for term premiums.
Source: Bloomberg, Blue Chip Financial Forecasts, FRBNY, Federal Reserve Board staff estimates.

Figure 5: Market−Implied Federal Funds Rate Expectations



Note: Zero term premium path is estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points. Model−based term premium path is estimated using a term structure model maintained by Board staff and corrects for term premiums.
Source: Bloomberg; Federal Reserve Board staff estimates.

Figure 6: Estimate of the IOER−EFFR Spread Conditional on Reserve Balance Levels



Note: Based on the combined responses from the Survey of Primary Dealers and Survey of Market Participants.
Source: FRBNY.

current market expectations, a statement along the lines of Alternative B seems unlikely, by itself, to generate an appreciable change in asset prices.

THE CASE FOR ALTERNATIVE C

Economic Conditions and Outlook

- Policymakers may judge that the labor market is operating appreciably beyond full employment and that economic activity—which was already expanding at a faster-than-sustainable rate—will continue to be spurred by the tax cuts and spending legislation enacted over the last two quarters.
    - The unemployment rate remains below each FOMC participant's estimate of its longer-run normal level and the staff projects it will decline further. Other indicators also point to an already tight labor market—including a near-record high job openings rate in February, continued widespread reports of firms having difficulty hiring workers, and near-record-low initial claims for unemployment insurance.
- Policymakers may believe that more concerted upward pressure on both wages and prices is likely to emerge if the economy undergoes a prolonged period of significant labor market tightness. If so, they may project that inflation will soon move persistently above the Committee's 2 percent objective.
- Despite six increases in the target range for the federal funds rate between December 2015 and March 2018 and some recent financial market volatility, financial conditions have eased on net since the Committee first raised the target range for the federal funds rate. On net, broad equity price indexes have increased roughly 30 percent and spreads of investment- and speculative grade corporate bonds to equivalent maturity Treasury securities have declined around 80 and 200 basis points, respectively, since liftoff.
    - Risk spreads on speculative grade debt narrowed even as use of leverage by speculative grade and unrated firms has increased, on balance, over the past several years.

Policy Strategy

- Policymakers may judge that a somewhat faster removal of policy accommodation than market participants currently expect will be needed to avoid severe overheating and an eventual need to tighten policy abruptly. An increase in the target range for

the federal funds rate at the May meeting would signal the Committee's intention to pursue a steeper path for the policy rate than is currently expected.

- Policymakers may be concerned that above-trend economic growth and an already-strong labor market that continues to tighten could soon result in more notable upward pressures on inflation.
- They may also judge that a somewhat faster pace of rate hikes is needed to prevent the unemployment rate from declining significantly further below its normal longer-run value; such a further decline could be seen as making the challenge of engineering a soft landing in the labor market as inflation picks up increasingly difficult.
- Additionally, amid elevated asset valuations and an increased use of debt by nonfinancial corporations, policymakers may see a somewhat faster pace of rate increases as needed to avoid a significant buildup of imbalances in financial markets.

- For the above reasons, policymakers may opt to raise the target range of the federal funds rate to 1¾ to 2 percent.
- Policymakers might also want to update the statement along the lines of Alternative C so that it reflects more clearly the Committee's current expectations for inflation and the federal funds rate.
    - The Committee may choose to remove the language about carefully monitoring actual and expected inflation from paragraph 4. Dropping this language may be taken as a signal that the Committee currently see the risks to inflation as more evenly balanced.
    - In light of the expected path for the policy rate, the Committee may want to delete the statement that "the federal funds rate is likely to remain, for some time, below levels that are expected to prevail in the longer run" and to conclude with a simpler statement of data dependency regarding the timing and size of future adjustments to the target range.
- Federal funds futures quotes and the Desk's latest surveys indicate that market participants anticipate no change in the target range at the May meeting. Consequently, adopting Alternative C likely would surprise market participants considerably.

- Market participants might well read such a statement, if issued in May when no rate hike is expected, as indicating the Committee's intention to raise the federal funds rate more rapidly than previously expected. Medium- and longer-term real interest rates would likely rise, as would the exchange value of the dollar; equity prices and inflation compensation would probably fall.

THE CASE FOR ALTERNATIVE A

Economic Conditions and Outlook

- On a 12-month basis, core PCE inflation is estimated to have moved to 1.9 percent in March, just below the 2 percent objective. However, the staff's estimate of 12-month core PCE inflation including only market-based prices for March is only 1.6 percent even after the extraordinarily low reading from last March dropped out of the calculation. Policymakers may judge that inflation will continue to be held down by persistent factors.
- One factor holding down both core and total inflation may be low expected inflation. Readings on market-based measures of inflation compensation remain substantially below where they were before the middle of 2014, and some survey-based measures of longer-term inflation expectations are still low by historical standards.
- Moreover, the labor market may not yet have reached maximum sustainable employment and may have further room for improvement. While job gains have been solid, the unemployment rate has been unchanged over the past six months and wages have shown little sign of accelerating. The employment-to-population ratio for prime-age workers has been rising but still remains below its pre-recession level, suggesting scope for further labor market strengthening. In addition, the behavior of the labor force participation rate over the past four years suggests that its trend may not be declining as fast as previously estimated.

Policy Strategy

- Policymakers may be concerned that longer-term inflation expectations have declined materially in recent years and could drift down further if inflation continues to run below 2 percent. Policymakers may further judge that removing the statement's emphasis on monitoring inflation as soon as the rate nears 2 percent runs the risk of creating the perception that the Committee sees its longer-run objective as a ceiling rather than as a symmetric objective.

- Against that background, policymakers may favor Alternative A in order to underscore the Committee's commitment to its inflation objective and to ensure that longer term inflation expectations are anchored at a level close to the Committee's 2 percent objective. In addition, policymakers may judge that the past decade's experience of low inflation reduces the likelihood that inflation expectations will rise significantly above 2 percent.

- Policymakers may view the current state of the financial system as sound, the potential for a buildup of risks to financial stability as limited, and may judge that there is scope to address any emerging financial stability concerns through macroprudential policies and supervisory actions that target specific risks.

- Despite the likely stimulative effects of the changes in federal taxes and spending enacted over the past two quarters, other policies—particularly trade policies—pose downside risks. Policymakers may judge that their ability to react to downside outcomes remains limited by proximity of the federal funds rate to the effective lower bound.

- While financial market quotes and the Desk's latest surveys indicate that market participants anticipate no change in the target range at the May meeting, they view an increase at the June meeting as highly likely. Thus, a statement along the lines of Alternative A would likely be regarded as an important change in the Committee's policy outlook and reduce expectations of further rate hikes. If the public saw this statement as primarily reflecting policymakers' resolve to push inflation above 2 percent for a time, then inflation compensation could rise, real longer-term interest rates would probably fall somewhat, and equity prices might rise. Lower real rates and the prospect of higher inflation likely would lead to depreciation of the dollar. Conversely, if investors read the statement as reflecting an unexpectedly downbeat assessment of the economic outlook, equity prices and inflation compensation could fall.

ILLUSTRATIVE DRAFT OF A POTENTIAL STATEMENT FOR JUNE 2018

As noted above, Alternative C has been written with the aim of looking forward to how the FOMC statement might appear in June. The text below shows Alternative C in terms of changes from the current Alternative B. Here ~~strikethrough~~ shows deletions from, and **underlined bold blue text** shows additions to, Alternative B for the May meeting. While the description of incoming data is omitted from paragraph 1 for simplicity, a key assumption is that, between the May and June meetings, the economy evolves roughly in line with the Committee's expectations.

1. Information received since the Federal Open Market Committee met in ~~March~~ **May** indicates that . . .

2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee expects that~~, with~~ further gradual ~~adjustments in the stance of monetary policy,~~ **increases in the target range for the federal funds rate will be consistent with sustained expansion of** economic activity **and employment** ~~will expand at a moderate pace in the medium term and labor market conditions will remain strong.~~ **and with** inflation ~~on a 12-month basis is expected to run~~ near the Committee's symmetric 2 percent objective over the medium term. Risks to the economic outlook appear roughly balanced.

3. In view of realized and expected labor market conditions and inflation, the Committee decided to ~~maintain~~ **raise** the target range for the federal funds rate ~~at 1-1/2~~ to 1-3/4 **to 2** percent. The stance of monetary policy remains accommodative, thereby supporting strong 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 **objective** and **its symmetric** 2 percent inflation **goal**. 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 further 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.~~

As shown above, the principal changes from Alternative B in May would be:

- Raising the target range for the federal funds rate.
- Eliminating the forward guidance language in paragraph 4; this language is becoming more problematic as the federal funds rate approaches its longer-run normal level.
- Also in paragraph 4, removing the sentence on "carefully monitoring actual and expected inflation developments relative to its symmetric inflation goal." To guard against this deletion being interpreted as declaring victory on the inflation objective, the first sentence of the paragraph has been modified to emphasize the symmetric inflation goal.
- Being more concrete about the Committee's monetary policy expectations in paragraph 2 by replacing "…further gradual adjustments in the stance of monetary policy…" with "…further gradual increases in the target range for the federal funds rate…"

These changes reflect an update of the monetary policy expectations and forward guidance portions of the statement. The language changes in the second paragraph are intended to increase clarity and transparency but not to signal a change in the Committee's views about the economic outlook or about the policy path that is likely to prove appropriate if the economy evolves largely as expected. The Committee may soon judge that revisions of this sort are justified by how the economic outlook has evolved over the period since elements of the present statement language were introduced. The changes shown here are intended as a starting point for the Committee's discussion of how best to update its postmeeting statement.

IMPLEMENTATION NOTE

If the Committee decides to maintain the current target range for the federal funds rate, an implementation note that indicates no change to its 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 decides to raise the target range for the federal funds rate, an implementation note that communicates the changes the Federal Reserve decided to make in 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 2018 Alternatives A and B

Release Date: May 2, 2018

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 21~~ **May 2**, 2018:

- 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** 1.75 percent, effective ~~March 22~~ **May 3**, 2018.
- 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 22~~ **May 3**, 2018, 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 1-1/2 to 1-3/4 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 1.50 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of $30 billion per day.
>
> The Committee directs the Desk to continue rolling over at auction ~~the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during March that exceeds $12 billion, and to continue reinvesting in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during March that exceeds $8 billion. Effective in April, the Committee directs the Desk to roll over at auction~~ the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $18 billion, and to reinvest in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $12 billion. Small deviations from these amounts for operational reasons are acceptable.
>
> 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."

- 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** 2.25 percent~~, effective March 22, 2018. 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.

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

Implementation Note for May 2018 Alternative C

Release Date: May 2, 2018

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 21~~ **May 2**, 2018:

- The Board of Governors of the Federal Reserve System voted **[** unanimously **]** to raise the interest rate paid on required and excess reserve balances to ~~1.75~~ **2.00** percent, effective ~~March 22~~ **May 3**, 2018.

- 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 22~~ **May 3**, 2018, 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 ~~1-1/2 to~~ 1-3/4 **to 2** 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 ~~1.50~~ **1.75** 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 at auction ~~the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during March that exceeds $12 billion, and to continue reinvesting in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during March that exceeds $8 billion. Effective in April, the Committee directs the Desk to roll over at auction~~ the amount of principal payments from the Federal Reserve's holdings of Treasury securities maturing during each calendar month that exceeds $18 billion, and to reinvest in agency mortgage-backed securities the amount of principal payments from the Federal Reserve's holdings of agency debt and agency mortgage-backed securities received during each calendar month that exceeds $12 billion. Small deviations from these amounts for operational reasons are acceptable.

  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."

- 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 ~~2.25~~ **2.50** percent, effective ~~March 22~~ **May 3**, 2018. 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.

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

Authorized for Public Release

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Balance Sheet and Income Projections

The staff has prepared projections of the Federal Reserve's balance sheet and elements of the associated income statement that are consistent with the baseline economic outlook presented in Tealbook A. Key features of these projections are described below.

SOMA redemptions and reinvestments. As reported in the exhibit titled "Redemptions and Reinvestments of SOMA Principal Payments," the staff projects that the balance sheet normalization program initiated in October 2017 will lead to the redemption of $54 billion of Treasury securities and $36 billion of agency securities during the second quarter. Over 2018 as a whole, redemptions of Treasury and agency securities are projected to be $229 billion and $146 billion, respectively. During this same period, about $200 billion of Treasury securities and about $65 billion of agency securities will be reinvested.[1] The projections for agency securities are subject to considerable uncertainty because unscheduled prepayments depend on several factors that are difficult to predict, including the realized path of mortgage rates. (See the box "MBS Reinvestment Uncertainty" for additional discussion of MBS prepayments.)

Evolution of the size of the balance sheet. Based on the baseline economic outlook in the April Tealbook, the size of the balance sheet is projected to normalize in the third quarter of 2021, unchanged from the March Tealbook (see the exhibit titled "Total Assets and Selected Balance Sheet Items" and the table that follows the exhibit).[2]

From the start of the balance sheet normalization program in October 2017 to its projected conclusion in 2021, the Federal Reserve's securities holdings are predicted to

[1] Once the cap on monthly reductions in SOMA holdings of Treasury securities has been fully phased in, reinvestments of principal from maturing Treasury securities will primarily take place in the middle month of each quarter. In contrast, under the staff's current baseline forecast of rising longer-term interest rates, the maximum $20 billion cap on monthly redemptions of agency securities is not projected to bind.

[2] Many factors will influence the size of the balance sheet upon normalization, including banks' post-crisis underlying demand for reserves. Generally speaking, the size of the balance sheet is considered to be normalized when the resumption of purchases of Treasury securities is required to maintain the desired longer-run level of reserve balances and accommodate the expansion of other key non-reserve liability items.

MBS Reinvestment Uncertainty

In the staff's baseline Tealbook projection, reinvestments of agency debt and agency MBS cease in August of this year as principal payments fall below the monthly redemption cap set by the FOMC. However, the actual path of prepayments is subject to considerable uncertainty, in part because the future paths of interest rates are highly uncertain. In this box, we illustrate how alternative interest rate paths affect our projections of MBS principal payments and thus the date at which the FOMC's cap on redemptions may cease to bind.[1]

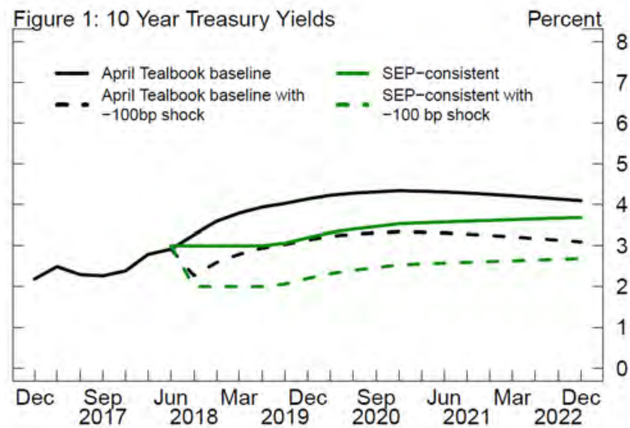


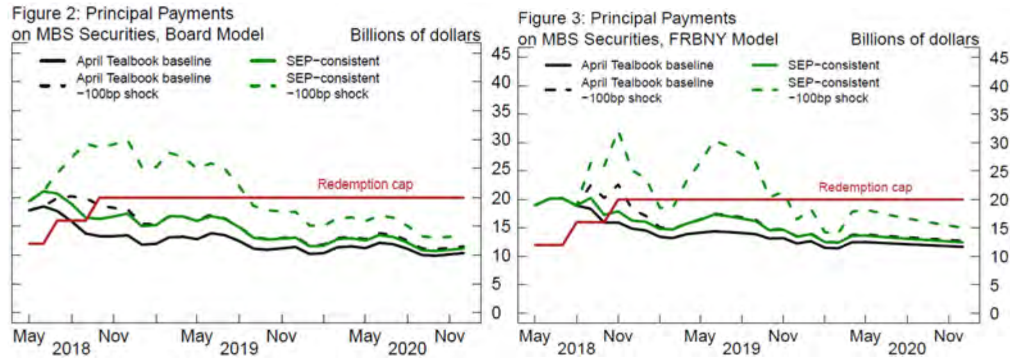
Figure 1 presents various projected paths for the 10-year Treasury yield, a key variable affecting mortgage rates and hence MBS prepayments. The April Tealbook baseline path and the March SEP-consistent path are represented by the solid black and green lines, respectively.[2] Relative to the Tealbook baseline, the SEP-consistent path is, on average, about 70 basis points lower through the end of 2022. The dashed black and green lines denote alternative paths for the 10-year Treasury yield that result from a permanent negative shock of 100 basis points, starting in 2018:Q3, applied to the interest rate paths in the original scenarios.[3] The corresponding paths for the primary

[1] Our projections abstract from prepayment model uncertainty—that is, the fact that models typically overestimate or underestimate realized prepayments even after conditioning on actual interest rate paths.

[2] We project SEP-consistent interest rate paths using the March 2018 Summary of Economic Projections and the staff's FRB/US model. To construct a baseline projection consistent with median SEP responses for the FRB/US model, the staff interpolated annual SEP information to a quarterly frequency subject to a restriction that values do not fall below their March 2018 levels. Beyond 2020 (the final year reported in the March 2018 SEP), the economy is assumed to transition to the longer-run values in a smooth and monotonic way. The 10-year Treasury yield is based on the SEP-consistent federal funds rate path using the expectations hypothesis. We also project an SEP-consistent path for nominal GDP as it is a necessary input for producing our model-based forecasts of prepayments.

[3] The set of interest rates to which the shock is applied includes the federal funds rate, the primary mortgage rate, and the 5-, 10-, and 30-year Treasury yields.

mortgage rate lie, on average, about 160 basis points above those for the 10- year Treasury yield.



Figures 2 and 3 illustrate the associated effects of the various interest rate paths on MBS principal payments using the Board and FRBNY prepayment models.[4] Both models show that lower interest rates induce higher principal payments from SOMA agency MBS holdings. This result reflects the fact that lower interest rates increase refinancing activity, triggering a faster pace of mortgage prepayments.

As shown by the solid black line in figure 2, using the Board model under the Tealbook baseline scenario, MBS principal payments are projected to fall below the redemption cap in August 2018. With interest rates 100 basis points lower than in the Tealbook baseline, principal payments are predicted to fall below the redemption cap two months later (the dashed black line). A similar response of prepayment activity is projected by the FRBNY's prepayment model under both the Tealbook baseline and shocked scenarios (the solid and dashed black lines in figure 3).

As the SEP-consistent interest rate path lies close to the shocked Tealbook path, MBS principal payments are similar in these two cases. In contrast, with the shocked SEP-consistent path, principal payments are notably higher and both the Board and FRBNY models predict that the redemption cap would bind for about one additional year. Under this scenario, the 10-year Treasury yield falls to 2 percent and then rises only gradually to 2½ percent over the projection period. Consequently, mortgage rates also fall appreciably below recent prevailing levels, thereby boosting refinancing activity.

All in all, the scenarios illustrate the considerable uncertainty around projections of MBS principal payments, which in turn reflects the inherent uncertainty in forecasts of longer-term interest rates.

[4] The Board prepayment model is a relatively simple framework using limited inputs. For a discussion of this model, see Brian Bonis, John Kandrac, and Luke Pardue, "Principal Payments on the Federal Reserve's Securities Holdings," FEDS Notes, June 16, 2017. Meanwhile, the FRBNY model includes additional drivers of prepayments but still results in prepayment forecast errors through time as a result of factors that are not considered by either model.

Redemptions and Reinvestments of SOMA Principal Payments

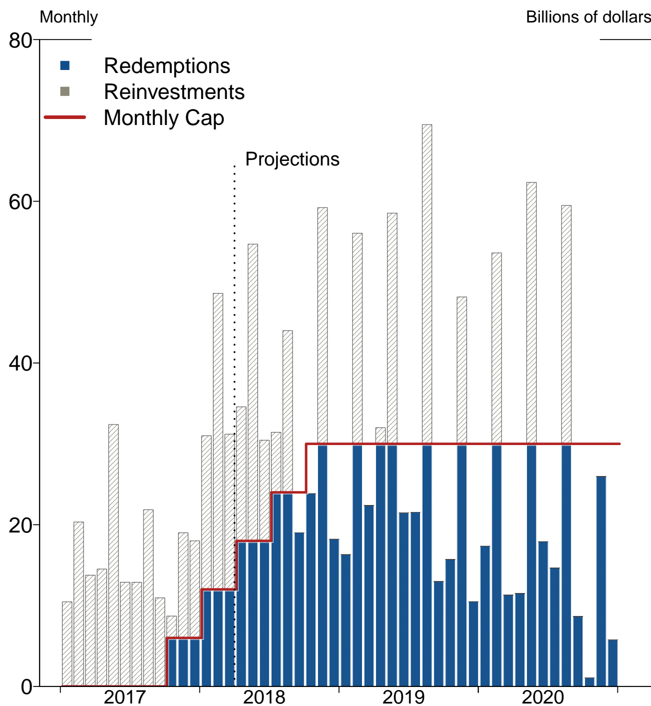
Projections for Treasury Securities
(Billions of dollars)

	Redemptions		Reinvestments	
	Period	Since Oct. 2017	Period	Since Oct. 2017
2018: Q1	36.0	54.0	74.8	102.5
2018: Q2	54.0	108.0	65.7	168.2
2018: Q3	67.0	175.0	27.4	195.7
2018: Q4	72.1	247.1	29.2	224.9
2018	229.1	247.1	197.2	224.9
2019	270.8	517.9	114.2	339.1
2020	204.1	722.0	85.4	424.6

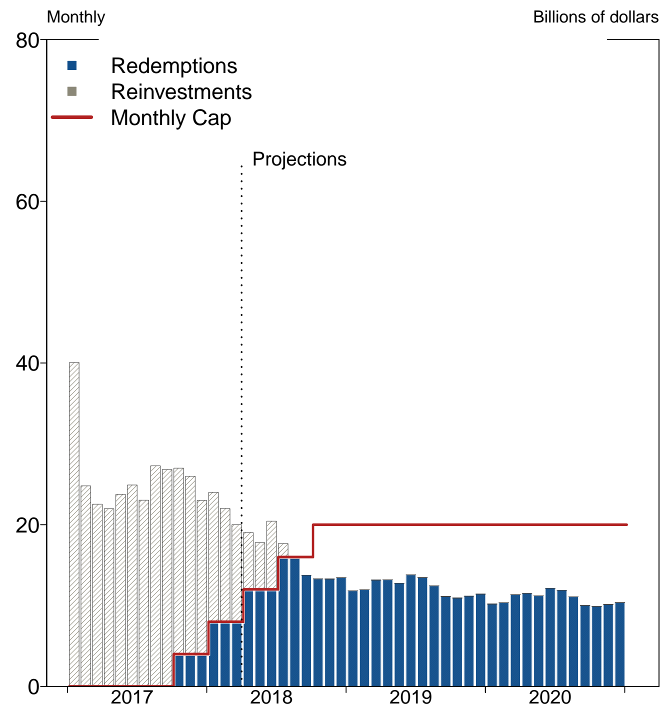
Projections for Agency Securities
(Billions of dollars)

	Redemptions		Reinvestments	
	Period	Since Oct. 2017	Period	Since Oct. 2017
2018: Q1	24.0	36.0	40.7	101.8
2018: Q2	36.0	72.0	21.3	123.1
2018: Q3	45.6	117.6	1.7	124.8
2018: Q4	40.0	157.7	0.0	124.8
2018	145.7	157.7	63.7	124.8
2019	147.2	304.9	0.0	124.8
2020	130.2	435.1	0.0	124.8

Balance Sheet & Income



Note: Projection dependent on assumed distribution of future Treasury issuance.

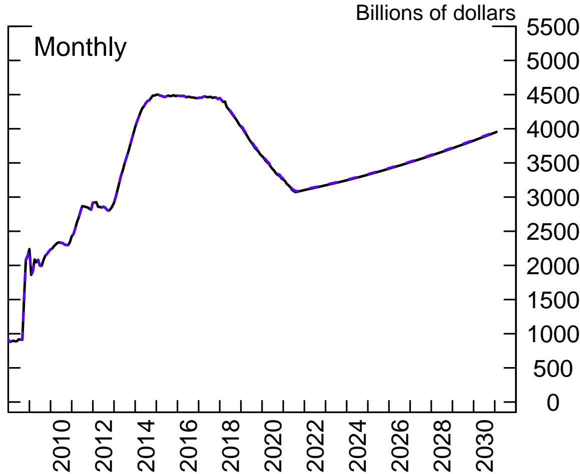


Note: Projection dependent on future interest rates and housing market developments.

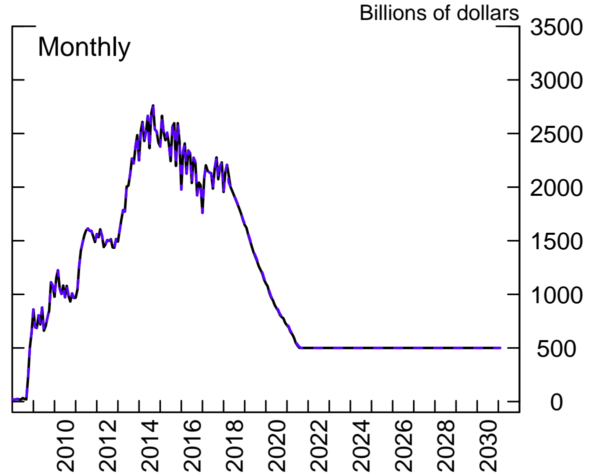
Total Assets and Selected Balance Sheet Items

April Tealbook baseline — March Tealbook baseline

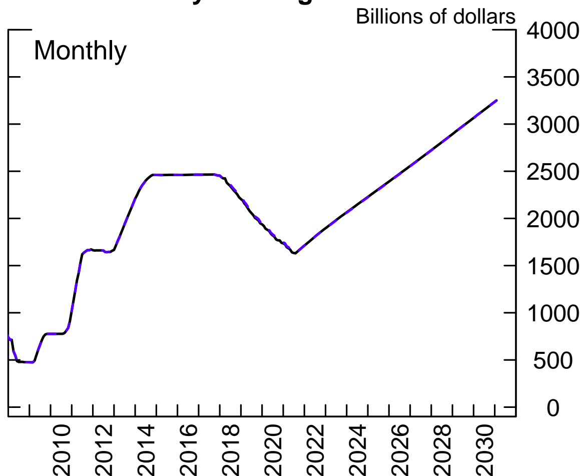
Total Assets



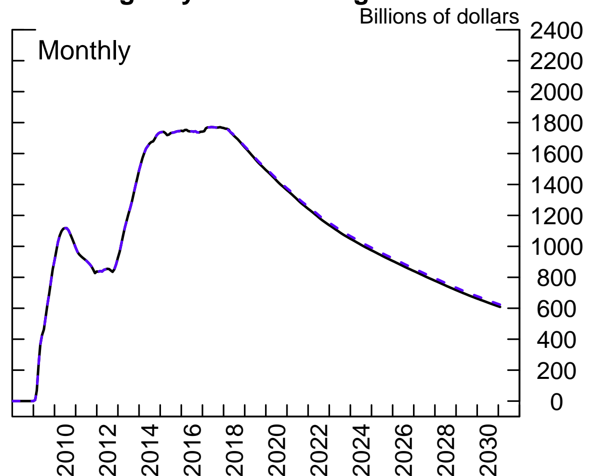
Reserve Balances



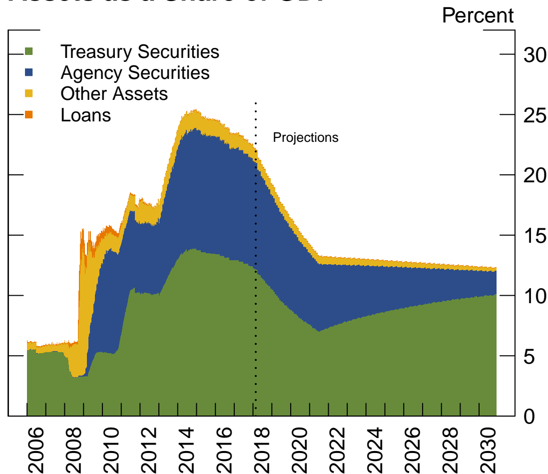
SOMA Treasury Holdings



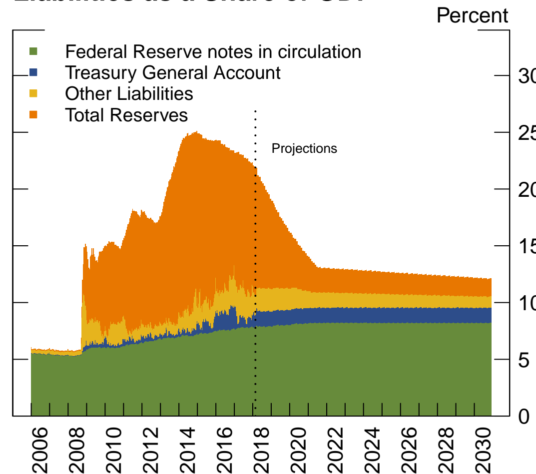
SOMA Agency MBS Holdings



Assets as a Share of GDP



Liabilities as a Share of GDP



Balance Sheet & Income

Balance Sheet & Income

Federal Reserve Balance Sheet
End-of-Year Projections -- April Tealbook
(Billions of dollars)

	Mar 31, 2018	2018	2020	2022	2024	2026	2030
Total assets	4,398	4,030	3,257	3,172	3,327	3,509	3,943
Selected assets							
Loans and other credit extensions*	7	0	0	0	0	0	0
Securities held outright	4,184	3,848	3,102	3,035	3,204	3,399	3,851
U.S. Treasury securities	2,425	2,205	1,736	1,896	2,228	2,556	3,236
Agency debt securities	4	2	2	2	2	2	2
Agency mortgage-backed securities	1,754	1,640	1,363	1,137	974	841	612
Unamortized premiums	154	141	111	91	76	63	43
Unamortized discounts	-14	-13	-10	-8	-7	-6	-4
Total other assets	67	54	54	54	54	54	54
Total liabilities	4,359	3,992	3,217	3,129	3,279	3,457	3,880
Selected liabilities							
Federal Reserve notes in circulation	1,589	1,654	1,864	1,992	2,122	2,275	2,639
Reverse repurchase agreements	261	330	255	230	230	230	230
Deposits with Federal Reserve Banks	2,490	2,003	1,093	902	923	948	1,007
Reserve balances held by depository institutions	2,107	1,647	712	500	500	500	500
U.S. Treasury, General Account	290	276	301	322	343	368	426
Other deposits	93	80	80	80	80	80	80
Earnings remittances due to the U.S. Treasury	2	0	0	0	0	0	0
Total Federal Reserve Bank capital**	39	39	40	44	48	53	63

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.

decline about $1.3 trillion, with holdings of Treasury and agency securities shrinking about $800 billion and $500 billion, respectively. At the time of normalization:

- Reserve balances reach an assumed longer-run level of $500 billion;[3]
- Total assets are projected to stand at roughly $3 trillion, with the SOMA portfolio consisting of about $1.6 trillion in Treasury securities and $1.3 trillion in MBS.

Once these declines in asset holdings have taken place, the size of the balance sheet is projected to stand at roughly 13 percent of nominal GDP, compared with a peak of about 25 percent in late 2014 and a pre-crisis average of about 6 percent. After the size of the balance sheet is normalized, SOMA holdings rise, keeping pace with the projected increases in Federal Reserve liabilities including Federal Reserve notes in circulation, the Treasury General Account (TGA), and Federal Reserve Bank capital. However, when expressed as a share of nominal GDP, Federal Reserve assets and liabilities are projected to edge down, as their pace of expansion is projected to be slightly slower than that of nominal GDP.

Federal Reserve remittances. Remittances to the Treasury are projected to decline to about $57 billion this year (including the transfer of $2.5 billion of surplus) from $80 billion in 2017, (see the "Income Projections" exhibit).[4] This decline primarily reflects the realized and expected increases in the interest rate paid on reserves in 2018.[5] Total interest expense is projected to rise to $50 billion this year, while interest income from SOMA holdings is expected to decline slightly to $110 billion. As the target range for the federal funds rate moves up and the size of the SOMA portfolio decreases, remittances are expected to bottom out at about $33 billion in 2020. Thereafter,

Balance Sheet & Income

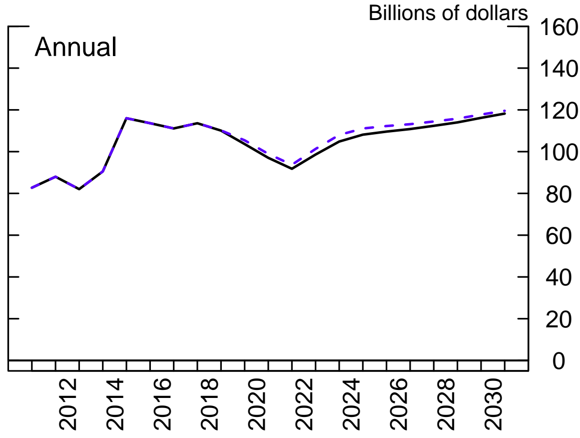
[3] Other noteworthy assumptions about liability items underlying the projections are as follows: The Treasury General Account is assumed to increase in line with nominal GDP; Federal Reserve notes in circulation are assumed to increase at an average annual pace of about 6 percent through 2020 and at the same pace as nominal GDP thereafter; the foreign repo pool and balances in the accounts of designated financial market utilities remain at their March 2018 levels of about $230 billion and $75 billion, respectively; and take-up at the overnight RRP facility is assumed to maintain a value of $100 billion until the level of reserve balances reaches $1 trillion, at which point take-up declines to zero over the course of one year.

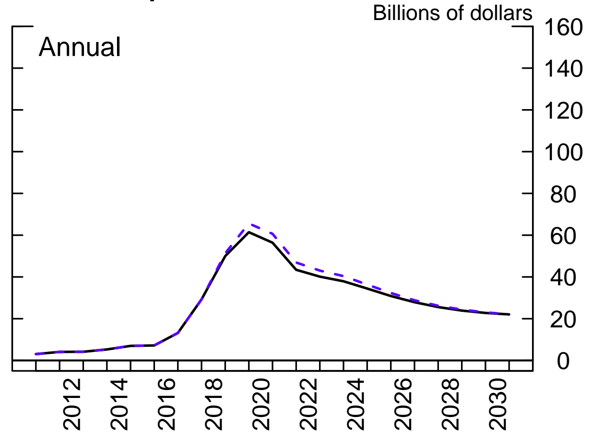
[4] The Federal Reserve Board's public announcement of remittances to the Treasury for 2017 is available at https://www.federalreserve.gov/newsevents/pressreleases/other20180110a.htm.

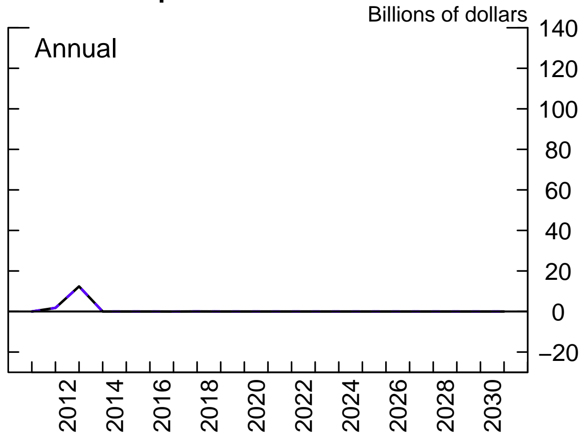
[5] We continue to assume that the FOMC will set a 25 basis-point-wide target range for the federal funds rate throughout the projection period, and that the interest rate paid on excess reserve balances and the offering rate on overnight RRPs will continue to be set at the top and bottom of the range,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

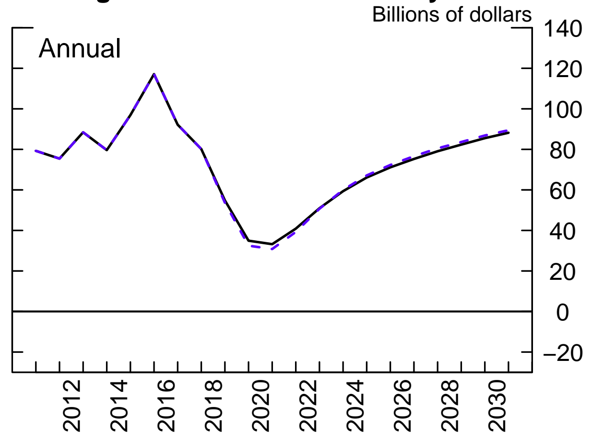
Income Projections

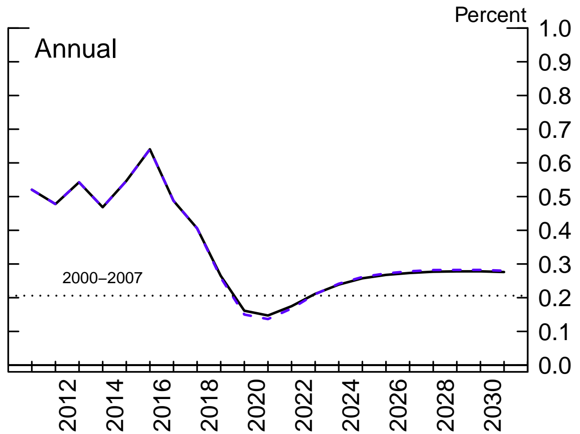
April Tealbook baseline — March Tealbook baseline

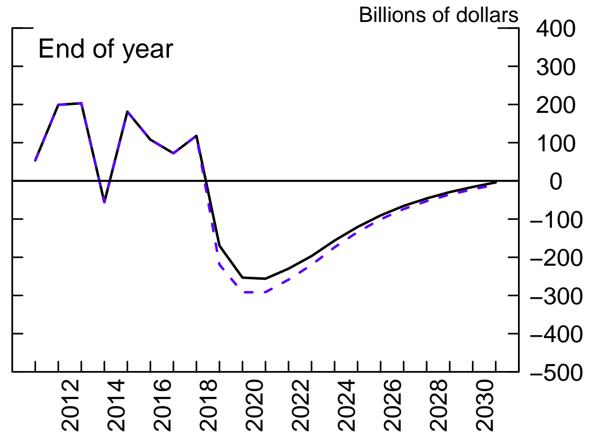












Balance Sheet & Income

remittances begin to increase as the Desk begins adding higher-yielding Treasury securities to the SOMA portfolio.

The projected path for remittances over the next few years is similar to that implied by the March Tealbook baseline. As shown in the bottom left panel of the "Income Projections" exhibit, annual remittances average about 0.25 percent of nominal GDP over the projection period, slightly higher than their pre-crisis average.

Unrealized gains or losses. The staff estimates that the SOMA portfolio will be in a net unrealized loss position of about $20 billion at the end of April. With longer-term interest rates expected to rise further over the next several years, the unrealized loss position is expected to reach $270 billion in 2020:Q2. Of this amount, $110 billion is attributable to Treasury securities and $160 billion to agency MBS. The unrealized loss position subsequently narrows, in large part because the value of securities acquired under the Federal Reserve's large-scale asset purchase programs returns to par as those securities approach maturity. Relative to the March Tealbook, the net unrealized position is projected to be, on average, about $15 billion less negative over the projection horizon, reflecting the lower trajectories of medium- and longer-term interest rates.

Term premium effect. As shown in the table "Projections for the 10-Year Treasury Term Premium Effect," SOMA securities held as a result of the Federal Reserve's asset purchase programs are currently estimated to be reducing the term premium in the 10-year Treasury yield by 82 basis points; this effect is projected to fade gradually over time.[6] This projection is little changed from the previous Tealbook.

SOMA characteristics. As shown in the top panel of the "Projections for the Characteristics of SOMA Treasury Securities Holdings" exhibit, the weighted-average duration of the SOMA Treasury portfolio is currently about six years. This measure is projected to increase throughout the course of balance sheet normalization, as the pace of redemptions picks up and longer-duration securities become a larger share of the portfolio.

After normalization of the size of the balance sheet in 2021, the duration of the SOMA Treasury portfolio is projected to decline as the Desk begins adding to the SOMA

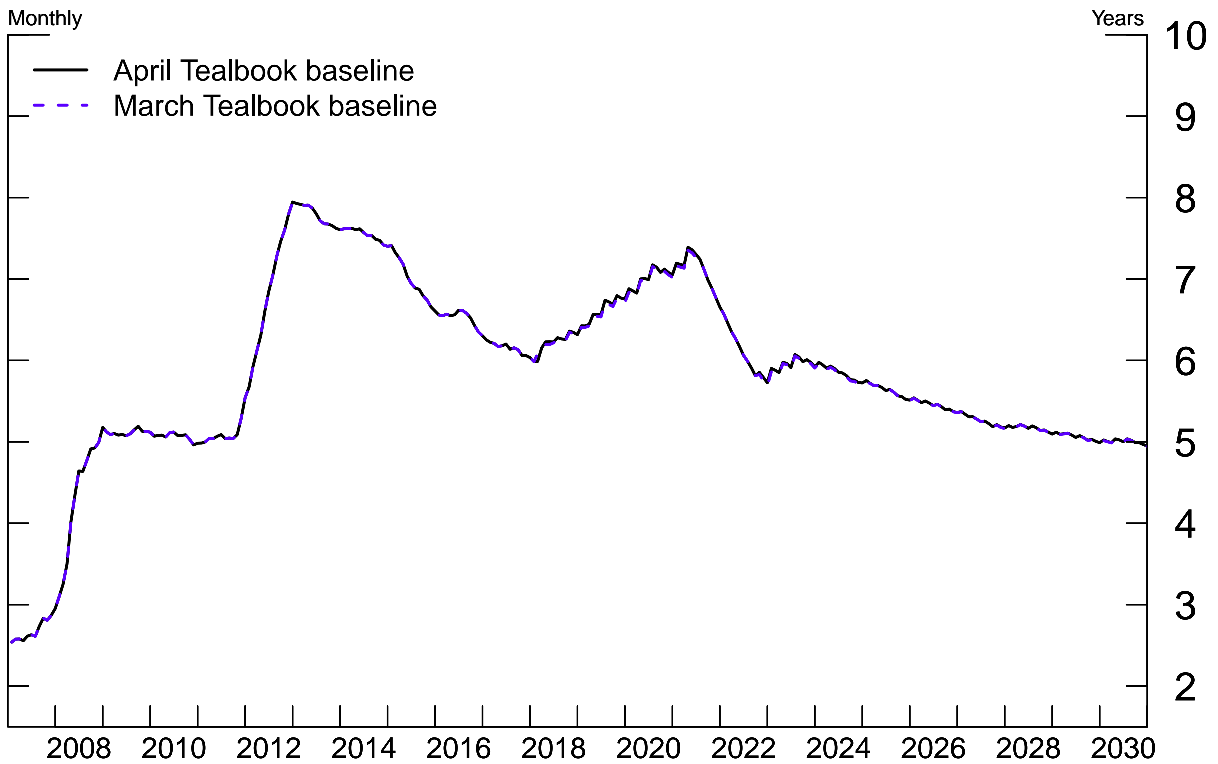
[6] The estimated path of the term premium effect depends on the difference between the expected path of the Federal Reserve's balance sheet over coming years and a benchmark counterfactual projection based on the configuration of the balance sheet that prevailed before the financial crisis of 2007–2008.

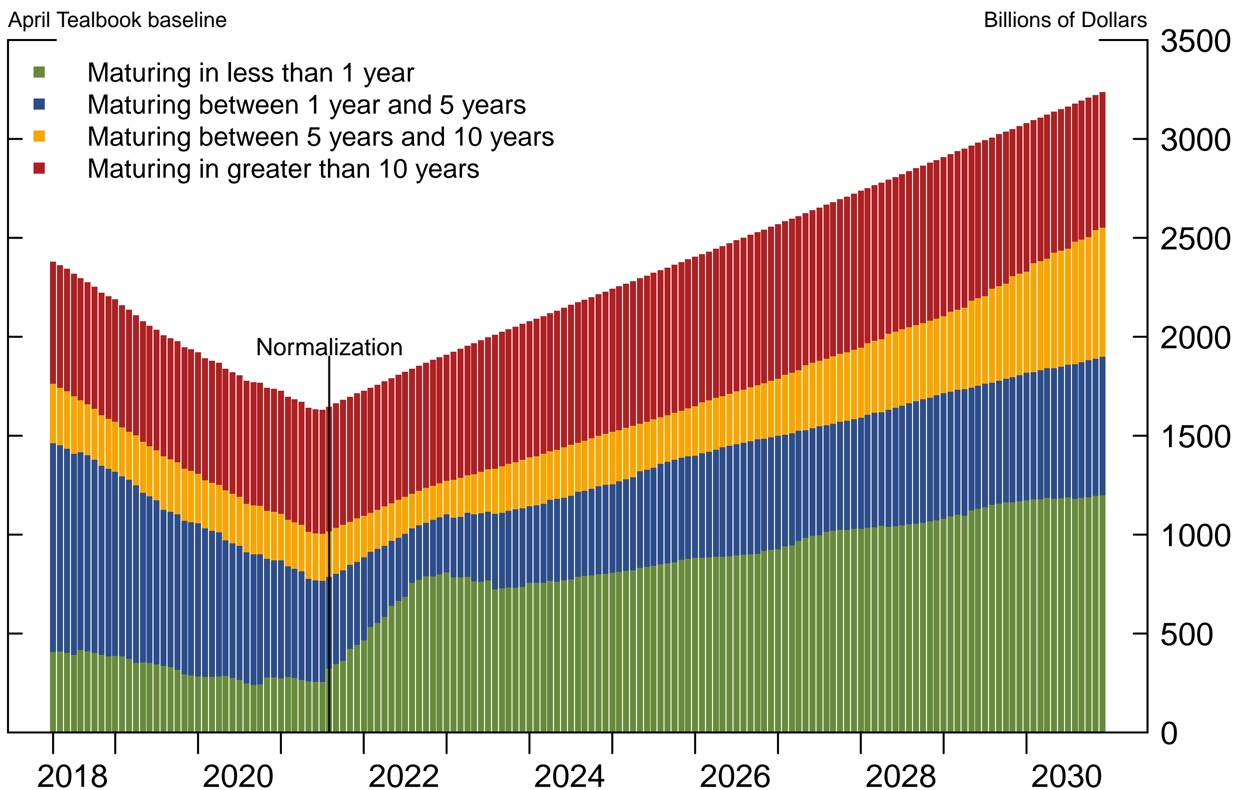
Projections for the 10-Year Treasury Term Premium Effect *
(Basis Points)

Date	April Tealbook	March Tealbook
Quarterly Averages		
2018:Q2	-82	-83
Q3	-79	-80
Q4	-76	-77
2019:Q4	-66	-66
2020:Q4	-58	-58
2021:Q4	-52	-53
2022:Q4	-49	-49
2023:Q4	-46	-46
2024:Q4	-42	-43
2025:Q4	-39	-40
2026:Q4	-37	-37
2027:Q4	-35	-35
2028:Q4	-33	-33
2029:Q4	-31	-31
2030:Q4	-29	-29

* The figures show the estimated effects on the 10-year Treasury term premium resulting from the Federal Reserve's large-scale asset purchases.

Projections for the Characteristics of SOMA Treasury Securities Holdings





Balance Sheet & Income

securities portfolio to keep pace with the expansion in non-reserve liabilities. The initial sharp decline in duration results from the staff's assumption that the Desk will purchase only Treasury bills until they account for one-third of the Federal Reserve's Treasury securities portfolio, close to the pre-crisis composition (currently the SOMA portfolio contains no Treasury bills). Thereafter, purchases of Treasury securities are assumed to be spread across the maturity spectrum (see the bottom panel of the exhibit).

Abbreviations

ABS	asset-backed securities
AFE	advanced foreign economy
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
DFMU	Designated Financial Market Utilities
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
QS	Quantitative Surveillance
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)
TCJA	Tax Cuts and Jobs Act of 2017
TGA	U.S. Treasury's General Account
TIPS	Treasury inflation-protected securities
TPE	Term premium effects
ZLB	zero lower bound