

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

March 12, 2020

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

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Monetary Policy Alternatives

The coronavirus outbreak has roiled global financial markets, materially altered the near-term U.S. economic outlook, and greatly intensified downside risks. In response, the FOMC announced a $\frac{1}{2}$ percentage point reduction in the target range for the federal funds rate on March 3 and indicated that it would “use its tools and act as appropriate to support the economy.” The key question facing the Committee at its upcoming meeting is how much additional policy action is warranted, in light of the economic disruptions and intensified risks arising from the outbreak.

The three alternative policy statements presented below offer a range of options for the setting of the target range for the federal funds rate and for communicating the likely near-term stance of monetary policy. All three alternatives begin by acknowledging the coronavirus outbreak. The alternatives share a common description of the incoming data, but note that most of the economic data predate the period since the escalation of coronavirus concerns. Alternatives A and B note that, according to the Committee’s contacts from around the country, “the outbreak is affecting economic activity in some sectors.” These two alternatives also acknowledge that “global financial conditions have also been significantly affected.”

With Alternative B, the Committee would lower the target range for the federal funds rate by $\frac{1}{2}$ percentage point, as “the effects of the coronavirus will weigh on economic activity in the near term and pose risks to the economic outlook.” Alternative B states that the stance of monetary policy “will help” support sustained expansion of economic activity, strong labor market conditions, and inflation returning to 2 percent.

The drafts of Alternatives A and C differ from Alternative B in the degree of concern they convey about the outlook, and in the policy decision taken at this meeting. In the draft of Alternative A, the Committee lowers the target range by 1 percentage point and states that “the effects of the coronavirus will weigh on economic activity and pose risks to the economic outlook for some time.” In contrast, in the draft of Alternative C, the Committee lowers the target range for the federal funds rate by $\frac{1}{4}$ percentage point and states that the “economic effects of the coronavirus remain uncertain.”

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

- The assessment of the incoming data:
 - All three alternatives start with a new sentence describing “the coronavirus outbreak” as having “harmed communities and disrupted economic activity in many countries.”
 - The next sentence states that available data “largely predate the global spread of the virus,” while making the point that such data show that the U.S. economy’s “underlying fundamentals...remain strong.”
 - The three alternatives share the same depiction of the aforementioned incoming data. The alternatives state that the labor market remained strong through February and that economic activity rose at a moderate pace. The alternatives continue to note that inflation is running below 2 percent, and they all indicate that measures of inflation compensation “have declined.”
 - As mentioned above, Alternatives A and B cite “information from contacts around the country” as indicating that “the outbreak is affecting economic activity in some sectors,” and they note that “global financial conditions have also been significantly affected.”
- The outlook and risks to the outlook for economic activity, labor market conditions, and inflation:
 - The alternatives differ in their characterization of the risks to the outlook related to the coronavirus outbreak. Alternative A indicates that the coronavirus outbreak will “pose risks to the economic outlook for some time.” Alternative B omits the mention of “for some time” from the characterization of risks. Alternative C states that “the economic effects of the coronavirus remain uncertain.”
 - The alternatives differ in their characterization of the modal outlook and the role that the monetary policy will play in guiding the economy to the desired outcomes, perhaps because other factors and policies figure heavily in shaping the outlook. Alternative B acknowledges that the effects of the coronavirus will weigh on economic activity in the near term and pose risks to the economic outlook. Alternative A sees the effects of the coronavirus on economic activity and associated risks as lasting “for

some time”. In contrast, Alternative C sees the coronavirus posing “near-term risks to the economic outlook.”

- The current policy decision and the outlook for policy:
 - In Alternative B, the Committee would lower the target range for the federal funds rate by $\frac{1}{2}$ percentage point. The alternative states that “the current stance of monetary policy will help support” the Committee’s objectives under its current economic outlook. The second paragraph of Alternative B also indicates that the Committee will continue to monitor the implications of “information related to public health” for the economic outlook, and incorporates language from the March 3 statement, in which the Committee notes that it “will use its tools and act as appropriate to support the economy.”
 - Alternative A lowers the target range for the federal funds rate by 1 percentage point, bringing that rate to the effective lower bound. As already noted, in this alternative the Committee expects that the two easing measures undertaken in March “will provide support to economic activity and promote strong labor market conditions and inflation returning to the Committee’s symmetric 2 percent objective.” As in the March 3 FOMC statement, this alternative notes that the Committee “will use its tools and act as appropriate to support the economy.”
 - Alternative C lowers the target range for the federal funds rate by $\frac{1}{4}$ percentage point. In this alternative, the Committee judges that the current stance of policy is “accommodative” and appropriate to achieve its objectives but adds that “the economic effects of the coronavirus remain uncertain.” As in the January postmeeting statement, this alternative notes that “the Committee will continue to monitor the implications of incoming information for the economic outlook, including global developments and muted inflation pressures, as it assesses the appropriate path of the target range for the federal funds rate.”

JANUARY 2020 FOMC STATEMENT

1. Information received since the Federal Open Market Committee met in December indicates that the labor market remains strong and that economic activity has been rising at a moderate rate. Job gains have been solid, on average, in recent months, and the unemployment rate has remained low. Although household spending has been rising at a moderate pace, business fixed investment and exports remain weak. On a 12-month basis, overall inflation and inflation for items other than food and energy are running below 2 percent. Market-based measures of inflation compensation remain low; survey-based measures of longer-term inflation expectations are little changed.
2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. The Committee decided to maintain the target range for the federal funds rate at 1-1/2 to 1-3/4 percent. The Committee judges that the current stance of monetary policy is appropriate to support sustained expansion of economic activity, strong labor market conditions, and inflation returning to the Committee's symmetric 2 percent objective. The Committee will continue to monitor the implications of incoming information for the economic outlook, including global developments and muted inflation pressures, as it assesses the appropriate path of the target range for the federal funds rate.
3. 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 maximum employment objective and its symmetric 2 percent inflation objective. 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.

ALTERNATIVE A FOR MARCH 2020

1. **The coronavirus outbreak has harmed communities and disrupted economic activity in many countries. Available economic data, which largely predate the global spread of the virus, show that the underlying fundamentals of the U.S. economy remain strong.** Information received since the Federal Open Market Committee met in December **January** indicates that the labor market remained strong **through February** and that economic activity has been **rising** **rose** at a moderate rate. Job gains have been solid, on average, in recent months, and the unemployment rate has remained low. Although household spending has been **rising** **rose** at a moderate pace, business fixed investment and exports remained weak. On a 12-month basis, overall inflation and inflation for items other than food and energy are running below 2 percent. Market-based measures of inflation compensation remain **low** **have declined**; survey-based measures of longer-term inflation expectations are little changed. **Information from contacts around the country indicates that the outbreak is affecting economic activity in some sectors. Global financial conditions have also been significantly affected.**
2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. **The effects of the coronavirus will weigh on economic activity and pose risks to the economic outlook for some time. In light of these developments,** the Committee decided to maintain **lower** the target range for the federal funds rate at 1-1/2 to 1-3/4 **to 0 to 1/4** percent. The Committee judges that the current stance of monetary policy is appropriate to support sustained expansion of **This action and the reduction in the target range earlier this month will provide support to** economic activity; **and promote** strong labor market conditions; and inflation returning to the Committee's symmetric 2 percent objective. The Committee will continue to monitor the implications of incoming information for the economic outlook, including **information related to public health, as well as** global developments and muted inflation pressures, as it assesses the appropriate path of the target range for the federal funds rate **and will use its tools and act as appropriate to support the economy.**
3. 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 maximum employment objective and its symmetric 2 percent inflation objective. 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.

ALTERNATIVE B FOR MARCH 2020

1. **The coronavirus outbreak has harmed communities and disrupted economic activity in many countries. Available economic data, which largely predate the global spread of the virus, show that the underlying fundamentals of the U.S. economy remain strong.** Information received since the Federal Open Market Committee met in December **January** indicates that the labor market remained strong **through February** and that economic activity has been **rising** **rose** at a moderate rate. Job gains have been solid, on average, in recent months, and the unemployment rate has remained low. Although household spending has been **rising** **rose** at a moderate pace, business fixed investment and exports remained weak. On a 12-month basis, overall inflation and inflation for items other than food and energy are running below 2 percent. Market-based measures of inflation compensation remain **low** **have declined**; survey-based measures of longer-term inflation expectations are little changed. **Information from contacts around the country indicates that the outbreak is affecting economic activity in some sectors. Global financial conditions have also been significantly affected.**
2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. **The effects of the coronavirus will weigh on economic activity in the near term and pose risks to the economic outlook. In light of these developments,** the Committee decided to maintain **lower** the target range for the federal funds rate at 1-1/2 to 1-3/4 **to 1/2 to 3/4** percent. The Committee judges that the current stance of monetary policy is appropriate to **will help** support sustained expansion of economic activity, strong labor market conditions, and inflation returning to the Committee's symmetric 2 percent objective. The Committee will continue to monitor the implications of incoming information for the economic outlook, including **information related to public health, as well as** global developments and muted inflation pressures, as it assesses the appropriate path of the target range for the federal funds rate **and will use its tools and act as appropriate to support the economy.**
3. 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 maximum employment objective and its symmetric 2 percent inflation objective. 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.

ALTERNATIVE C FOR MARCH 2020

1. **The coronavirus outbreak has harmed communities and disrupted economic activity in many countries. Available economic data, which largely predate the global spread of the virus, show that the underlying fundamentals of the U.S. economy remain strong.** Information received since the Federal Open Market Committee met in December **January** indicates that the labor market **remained** strong **through February** and that economic activity **has been rising** **rose** at a moderate rate. Job gains have been solid, on average, in recent months, and the unemployment rate has remained low. Although household spending **has been rising** **rose** at a moderate pace, business fixed investment and exports **remained** weak. On a 12-month basis, overall inflation and inflation for items other than food and energy are running below 2 percent. Market-based measures of inflation compensation **remain low** **have declined**; survey-based measures of longer-term inflation expectations are little changed.
2. Consistent with its statutory mandate, the Committee seeks to foster maximum employment and price stability. **In light of near-term risks to the economic outlook**, the Committee decided to **maintain lower** the target range for the federal funds rate at 1 1/2 to 1 3/4 **to 3/4 to 1** percent. **With this action and the reduction in the target range earlier this month**, the Committee judges that the current **accommodative** stance of monetary policy is appropriate to support sustained expansion of economic activity, strong labor market conditions, and inflation returning to the Committee's symmetric 2 percent objective, **but the economic effects of the coronavirus remain uncertain**. The Committee will continue to monitor the implications of incoming information for the economic outlook, including global developments and muted inflation pressures, as it assesses the appropriate path of the target range for the federal funds rate.
3. 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 maximum employment objective and its symmetric 2 percent inflation objective. 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.

ECONOMIC CONDITIONS AND OUTLOOK

- The economic data received since the Committee met in January largely pertain to the period before the global spread of the coronavirus began to significantly affect U.S. economic activity. The earlier data suggested that economic activity continued to expand at a moderate pace. Real GDP expanded at a 2.1 percent annual rate in the fourth quarter, with moderate growth in household spending and weak business fixed investment and exports. More recent news and financial market reactions associated with the coronavirus outbreak, as well as the sharp decline in oil prices, have led to a significant downgrade in the staff's near-term forecast, even since the close of Tealbook A.
 - After incorporating an additional downgrade to the forecast following the close of Tealbook A, the staff now projects GDP to decline at a 0.3 percent pace in the first half of this year, roughly 2.6 percentage points lower than in the January Tealbook forecast. In the second half of the year, the staff expects GDP growth to step up to 2.4 percent, as the negative effects of the coronavirus outbreak wane and economic activity normalizes.
 - After a notable slowdown in the fourth quarter of 2019, consumer spending is expected to slow further in the near term. The expected slowing reflects softer incoming retail spending data and the expected decline in consumer sentiment in response to the spread of the virus and the adoption of social distancing measures.
 - Business fixed investment declined in the second half of 2019 and is expected to continue declining through the third quarter of this year, in part due to the sharp decline in oil prices that occurred after the close of Tealbook A. The staff expects business fixed investment to step up significantly in the fourth quarter, as conditions normalize.
 - In contrast, housing market activity has continued to strengthen, and residential investment is expected to rise in the first half of this year. The staff attributes the robust housing market to the sharp decline in mortgage rates since late 2018.
 - Exports are expected to decline in the first half of the year, reflecting an expected decline in aggregate foreign GDP and coronavirus-related production disruptions abroad.

- As noted in the Risks and Uncertainty section of Tealbook A, the staff's confidence that it has correctly assessed the severity of the situation is low, and it currently views the uncertainty associated with its projection as greater than usual, with risks skewed to the downside.
- The labor market remained strong through February.
 - Total nonfarm payroll employment increased at a rapid clip since the start of the year, averaging 273,000 per month. The staff expects that the anticipated reduction in output associated with the coronavirus outbreak will weigh on employment growth in coming months, with payrolls expected to decline by about 40,000 per month on average through the third quarter.
 - The unemployment rate was 3.5 percent in February. After incorporating the downgrade to the outlook following the close of Tealbook A, the staff now expects the unemployment rate to rise to 4.1 percent over the next two quarters—as the effects of the coronavirus outbreak affect labor markets—before declining again next year.
 - The labor force participation rate (LFPR) was 63.4 percent in February, 0.3 percentage point above its level one year ago, and again above the staff's previous projection. In light of the string of positive surprises to LFPR over the past months, the staff raised their estimate of trend LFPR, and also lowered its estimate of the natural rate of unemployment.
 - The incoming data suggest that labor compensation continues to rise at a moderate rate, and the staff expects the 12-month growth rate of total compensation to average 2.75 percent per year over 2020 and 2021.
- Inflation has continued to run below 2 percent, despite the sustained low levels of the unemployment rate.
 - Total PCE prices rose 1.7 percent over the 12 months ending in January, and core PCE prices rose 1.6 percent. Given the recent sharp decline in oil prices, the staff projects total PCE inflation to fall to 0.8 percent and core PCE inflation to fall to 1.4 percent by the middle of this year. Both are expected to move up gradually, reaching 1.9 percent by the middle of next year. This projection is lower than in January, as the staff views both the net macroeconomic effects of the coronavirus and the recent decline in oil prices as reducing inflation in 2020.

- Market-based measures of inflation compensation fell steeply in mid-February and again after the collapse of oil prices on March 9. The 5-year, 5-year forward measure fell to 1.1 percent, an all-time record low. Staff models attribute a significant part of this decline to a fall in inflation expectations, although changes in liquidity and risk premiums also play a prominent role. Survey-based measures of longer-term inflation expectations are little changed so far, and remain near the low end of their range of recent years.
- Escalating concerns over the coronavirus outbreak, the large decline in oil prices, and tightened financial conditions weighed significantly on investor sentiment, as registered in a massive drop in equity prices and strong safe-haven demands that pushed down Treasury yields and bid up the exchange value of the dollar.
 - Market-based measures of the expected path of the federal funds rate plummeted in the past month, declining by about 130 basis points throughout 2020, and now imply a level of about 15 basis points by the middle of the year. Nominal Treasury yields plunged about 75 basis points across long maturities, sending the 10- and 30-year yields to all-time record low levels (see the “Monetary Policy Expectations and Uncertainty” box, presented elsewhere in this Tealbook.)
 - Aggregate measures of financial conditions have tightened markedly since the January meeting. As of March 11, equity price indices have dropped by about 15 percentage points, while equity volatility increased more than 35 percentage points. Corporate bond spreads increased significantly, since the January meeting, with 10-year high-yield bond spreads increasing about 160 basis points. In particular, along with the decline in oil prices, spreads on speculative-grade energy bonds widened especially sharply—more than 450 basis points.
 - Financing conditions for businesses were strained starting in late February, coinciding with the increase in market volatility.
- The staff estimates that foreign economic growth in the fourth quarter of 2019—prior to the global spread of the coronavirus outbreak—was only 0.8 percent at an annual rate, its lowest level since the Global Financial Crisis. Due to the effects of the coronavirus outbreak, the staff expects foreign growth to be negative in the first quarter—a significant downward revision from the January Tealbook. The staff

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Monetary Policy Expectations and Uncertainty

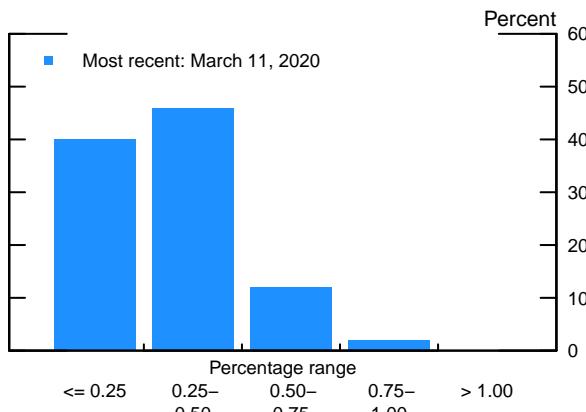
Expectations for the path of the federal funds rate fell sharply over the intermeeting period, amid escalating concern about the effects of the COVID-19 outbreak on global economic activity, an intermeeting 50-basis-point reduction in the target range for the federal funds rate on March 3, and a breakdown in OPEC+ talks. Financial market prices, as well as results from the Desk's March surveys, currently suggest a high likelihood of an additional reduction in the target range at the March FOMC meeting, and a high probability of returning to the lower bound by the middle of the year.

Market expectations for the federal funds rate over the period before the March FOMC meeting, as implied by a straight read of federal funds futures prices, have fluctuated since the March 3 rate cut, but currently suggest that investors place a fairly high probability on a further cut before the meeting. Figure 1 shows the probability distribution of the level of the federal funds rate immediately following the March meeting, based on options quotes and assuming zero risk premiums. A straight read of the option prices suggests that investors assign the highest odds, of about 45 percent, on the federal funds rate falling in the 0.25 to 0.50 percent range and about 10 and 40 percent odds on the 0.50 to 0.75 and below 0.25 percent ranges, respectively. The corresponding average probability distribution from the March Desk surveys, taken over the period from March 4 to March 9, (figure 2) suggests the 0.50 to 0.75 percent range is the most likely outcome. Respondents assign about 35 percent odds to the federal funds rate falling in this range and about 40 percent odds on lower outcomes. Both the option- and survey-implied probability distributions are unusually wide this close to an upcoming FOMC meeting.

The option-implied probability distribution shifted rapidly after the intensification of coronavirus concerns in late February and early March, as shown in figure 3. Until about February 21, investors priced in high odds of the federal funds target range remaining at 1.50 to 1.75 percent after the March meeting. However, the probability of a reduction in the target range increased sharply over the week beginning February 24, amid escalating concerns about the global economic growth effects of COVID-19. By the time of the March 3 intermeeting cut, the probability of a reduction in the target range had approached 100 percent, albeit with notable dispersion in the expected magnitude of the reduction. After the intermeeting cut, the probability distribution continued to shift toward lower outcomes.

Looking further ahead, figure 4 shows the probability distributions of the level of the federal funds rate, again based on a straight read of options quotes, following each of the remaining scheduled FOMC meetings through the end of the year. The distributions suggest that investors assign notable odds on additional reductions in the federal funds target range later this year. The option-implied distributions suggest that investors place about 90 percent odds on the federal funds rate falling below 0.50 percent, and about 60 percent odds on returning to the lower bound, following the April FOMC meeting. The distributions for subsequent meetings are

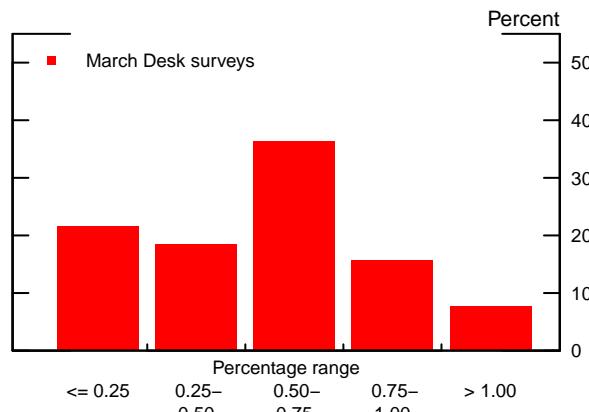
Figure 1: Market-Implied Probability Distribution of the Federal Funds Rate After March FOMC



Note: Estimated from federal funds futures options, not adjusted for risk premiums. The distribution for April 2020 is used to provide a read on the distribution following the March FOMC meeting.

Source: CME Group; Board staff calculations.

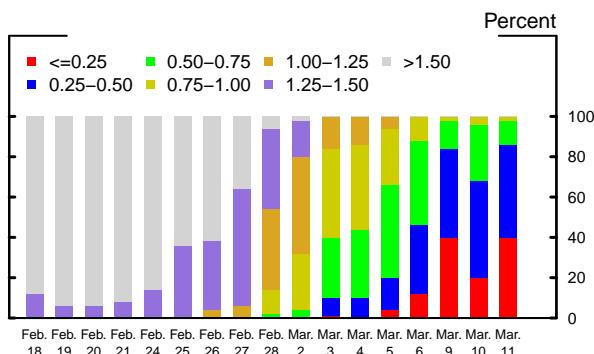
Figure 2: Desk Surveys Probability Distribution of the Federal Funds Rate After March FOMC



Note: Probabilities are the averages of the probabilities assigned by respondents to the Survey of Market Participants and Survey of Primary Dealers to different ranges of the federal funds rate after the March FOMC.

Source: FRBNY.

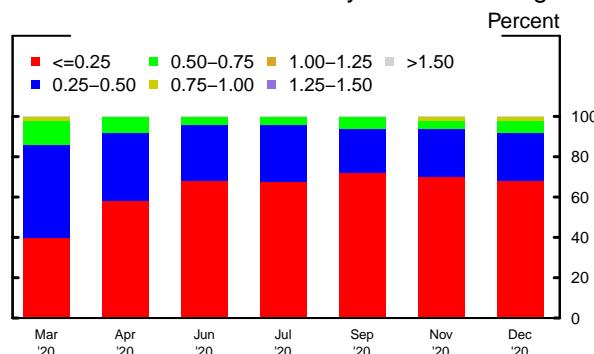
Figure 3: Time Series of Market-Implied Probability Distribution of the Federal Funds Rate After March FOMC



Note: Estimated from federal funds futures options, not adjusted for risk premiums. The distribution for April 2020 is used to provide a read on the distribution following the March FOMC meeting.

Source: CME Group; Board staff calculations.

Figure 4: Market-Implied Probability Distribution of the Federal Funds Rate By FOMC Meeting



Note: Estimated from federal funds futures options, not adjusted for risk premiums. The read on the distribution for each FOMC meeting is based on the distribution for the following month's contract.

Source: CME Group; Board staff calculations.

broadly similar. For comparison, the average respondent to the March Desk surveys assigns about 65 percent odds to the federal funds rate falling below 0.50 percent, and about 45 percent odds on returning to the lower bound, immediately following the April FOMC meeting (not shown).

Figure 5 shows the probability distribution for the level of the federal funds rate at the end of 2020, as reported by the average respondent to the March Desk surveys. The average respondent places the highest probability, of about 45 percent, on the federal funds rate returning to the lower bound, and about 20 percent odds to each of the 0.25 to 0.50 and 0.50 to 0.75 percent ranges.

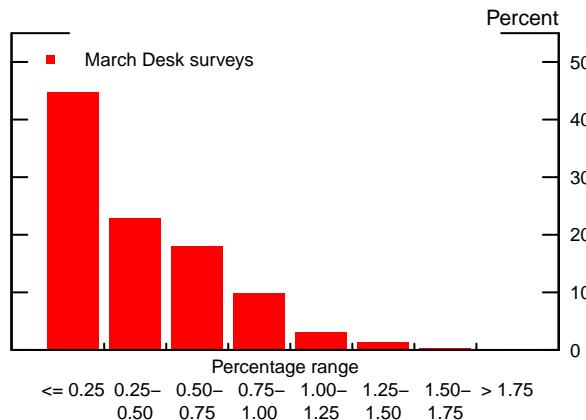
The probability of the federal funds rate being at the lower bound at horizons beyond 2020 has also risen. Figure 6 shows that the option-implied probability of the three-month LIBOR being negative in one and two years' time increased sharply, to levels last seen in early 2016.¹ In addition, the average respondent to the March Desk surveys now assigns about 40 percent odds on the federal funds rate falling below 0.50 percent at the end of 2021 and about 70 percent odds on moving to the lower bound at some point between now and the end of 2022 (not shown).

Looking further ahead, financial market measures of the expected federal funds rate over the next few years also fell sharply over the intermeeting period. The blue line in figure 7 shows the intermeeting change in the expected federal funds rate path implied by quotes on overnight index swaps (OIS), under the assumption of zero term premiums. Since the January FOMC meeting, the end-2020, -2021, and -2022 forward rates have fallen 113, 84, and 64 basis points, respectively. A staff term structure model that adjusts for term premiums attributes most of the decline in forward rates to a lower expected rate path: model-implied expectations (the purple line) declined 128, 97, and 60 basis points for end-2020, -2021, and -2022, respectively. Respondents to the Desk's March surveys (the black crosses) also revised down their estimates for the most likely outcomes for the federal funds rate, with the median responses for end-2020, -2021, and -2022 declining 150, 100, and 38 basis points, respectively.

Figure 8 shows the level of the expected federal funds rate over the next several years. A straight read of the market-implied forward rates (the blue line) now suggests that investors expect the federal funds rate to decline about 100 basis points below its current level by the end of 2020, before rising only slowly over the subsequent few years. The modal path reported by the median respondent to the Desk's March surveys (the black crosses) now points to a 100-basis-point decline by the end of 2020, and a gradually rising path at a pace of about 50 basis points per year

¹ The average spread between the three-month LIBOR and three-month OIS rates has been about 25 basis points over the last year, but it has fluctuated between 12 and 53 basis points. Looking back further, this spread was larger during the 2008 financial crises, in part due to the credit risk embedded in LIBOR, and was on average about 100 basis points between December 2007 and June 2009.

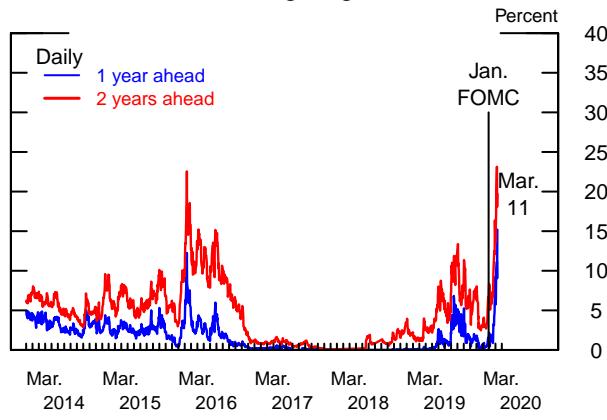
Figure 5: Desk Surveys Probability Distribution of the Federal Funds Rate, Year-End 2020



Note: Probabilities are the averages of the probabilities assigned by respondents to the Survey of Market Participants and Survey of Primary Dealers to different ranges of the federal funds rate at the end of 2020.

Source: FRBNY.

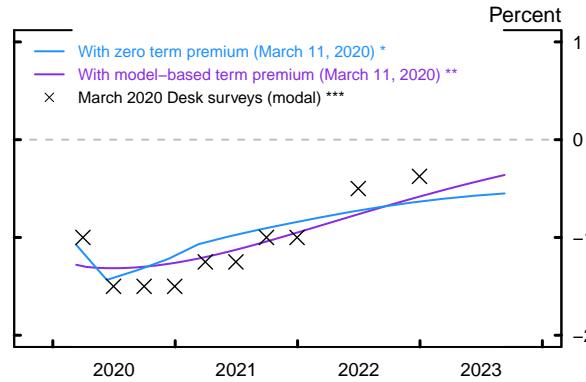
Figure 6: Market-Based Probability of the 3-Month LIBOR Turning Negative



Note: Estimated from options on Eurodollar futures using a model based on a mixture of normal distributions.

Source: CME Group; Board staff calculations.

Figure 7: Changes in Federal Funds Rate Projections Since January FOMC



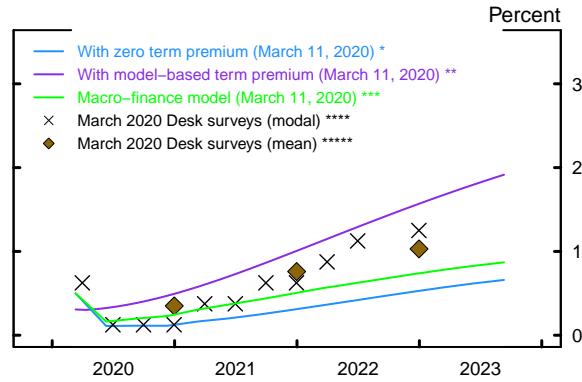
* Estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.

** Adjusting for premiums using a term structure model maintained by Board staff.

*** Median of respondents' modal paths for the federal funds rate.

Source: Bloomberg; Federal Reserve Board staff estimates; FRBNY.

Figure 8: Federal Funds Rate Projections



* Estimated using overnight index swap quotes with a spline approach and a term premium of zero basis points.

** Adjusting for premiums using a term structure model maintained by Board staff.

*** Macro-finance model path is estimated by averaging over regressions of term premiums on covariances between real and nominal variables based on Dierckx and Carl (2019)..

**** Median of respondents' modal paths for the federal funds rate.

***** Estimated from respondents' unconditional year-end probability distributions.

Source: Bloomberg; Federal Reserve Board staff estimates; FRBNY.

thereafter. The mean expected path implied by the average respondent (the brown diamonds) falls close to the modal path, while the staff's macro-finance model (the green line) remains close to the unadjusted forward rate path.² In contrast, the staff term structure model that adjusts OIS forward rates with the model-based estimates of term premiums (the purple line) suggests that the federal funds rate is expected to decline about 60 basis points by end-2020, before rising gradually over the next few years.

² The survey mean path is estimated from respondents' unconditional probability distributions for the year-end federal funds rate.

expects that the increasingly adverse economic effects of the coronavirus outbreak will weigh on foreign growth and pose grave risks to the international outlook. In the baseline projection, the staff assumes that the disruptions associated with the coronavirus outbreak will unwind later this year and into next year, and that economic activity will return to near its pre-coronavirus path by the end of 2021. However, as discussed in the Risks and Uncertainty section of the Tealbook, the uncertainty associated with this baseline scenario is significantly higher than usual.

- When considering the balance of risks, the staff judges that even after incorporating the downgrade to the outlook following the close of Tealbook A, the risks to its outlook for U.S. and foreign real GDP growth and inflation over the next year are skewed to the downside. These risks have increased significantly with the spread of the coronavirus outbreak.

THE CASE FOR ALTERNATIVE B

As the coronavirus outbreak continues, its effects will weigh on U.S. economic activity, at least in the near term, and pose downside risks to the economic outlook. Under these circumstances, policymakers may see a compelling rationale for additional accommodation to support the economic expansion and to further insure against less favorable scenarios. They may judge that further monetary policy easing will buffer the effects of the shock, even if it is only partially able to offset the physical disruptions to economic activity from the coronavirus outbreak. In addition, with inflation pressures muted, and in light of declines in some indicators of longer-term inflation expectations, policymakers may see policy easing as needed to stave off an erosion of inflation expectations that would further delay a sustained return of inflation to the Committee's symmetric 2 percent objective. For all of these reasons, policymakers might prefer Alternative B, which lowers the target range for the federal funds rate 50 basis points and indicates that the current accommodative stance of policy "will help" support the expansion, strong labor market conditions, and a return of inflation to the Committee's symmetric 2 percent objective.

With regard to the modal outlook, policymakers may view recent developments surrounding the coronavirus outbreak—disruptions to supply chains, social distancing affecting domestic demand, and weak global growth weighing on exports—as foreshadowing a significant stepdown in U.S. economic growth in the near term. Private-sector reactions to recent developments are likely to lead to slower consumer purchases, dampened business sentiment, and weaker business fixed investment. Although policymakers may see generally favorable economic conditions over the medium term and a gradual rise of inflation to 2 percent as the most likely outcomes, they may judge that these outcomes can be achieved only with a substantially more accommodative path for the policy rate than they had previously envisaged.

With regard to risks to the outlook, policymakers may view these as weighted to the downside, both for economic activity and inflation. They may be concerned that the coronavirus outbreak and the responses of consumers and businesses could have significant negative effects on U.S. economic activity. In that case, policymakers may judge that the risks to the outlook warrant the provision of additional accommodation in the near term on risk-management grounds. They may also judge that, should economic activity and inflation turn out to be less adversely affected than expected, the Committee would be able to remove accommodation as warranted. If the Committee were not to act

now, and headwinds and risks were to intensify, then it may prove more challenging for the Committee to provide the appropriate degree of accommodation to achieve over time its dual-mandate objectives in light of the proximity of the policy rate to its effective lower bound.

Policymakers may judge that after two years with the unemployment rate at or below 4 percent, along with inflation continuing to run below the Committee's objective, it is even less likely that inflationary pressures would materialize in the current environment. In particular, the sharp decrease in energy prices and a stronger dollar will weigh on inflation, at least in the near term. Policymakers may also judge that the downward revision in aggregate demand from the coronavirus outbreak is likely to create disinflationary pressures that more than offset the upward pressure on inflation stemming from the negative supply effects of this shock. Furthermore, in light of the recent decline in market-based measures of inflation compensation, a more accommodative monetary policy stance, along the lines of Alternative B, would support keeping inflation expectations anchored near 2 percent.

In light of recent market volatility, it is hard to anticipate how market participants would react to a statement along the lines of Alternative B. Market prices, along with responses to the Desk's latest surveys of primary dealers and market participants, currently indicate the most likely outcome to be a reduction in the target range of at least 50 basis points at the March meeting and a reduction of about 100 basis points by the April meeting, relative to the current target range. Hence, a 50 basis point reduction, as in Alternative B, may fall short of current market expectations. However, market participants would likely see the inclusion of the "act as appropriate" language as in line with their expectations, and a sign of a higher likelihood of further monetary policy easing at a later time. Consequently, the effect of an announcement like Alternative B on the expected path of interest rates and on the prices of financial assets could be rather limited. As noted above, however, market reactions are particularly difficult to gauge in the current environment.

THE CASE FOR ALTERNATIVE A

Policymakers may judge that the coronavirus outbreak will weigh heavily on economic activity “for some time”. Taking into account the evolving risks posed by the outbreak as well as the recent weakness in inflation and concerns about low inflation expectations, policymakers may wish to provide a substantial increase in monetary policy accommodation to support economic activity and the return of inflation and inflation expectations to levels consistent with the Committee’s symmetric 2 percent objective. In light of these developments, under Alternative A the Committee would decide to lower the target range for the federal funds rate to its effective lower bound of 0 to $\frac{1}{4}$ percent. Alternative A would also signal the Committee’s preparedness to undertake further monetary accommodation as implied by the “use its tools” and “act as appropriate” language.

Policymakers may regard the global spread of the coronavirus as likely to widen and to have consequences for the U.S. economy close to those described in the “Severe Global Pandemic” scenario in the Risks and Uncertainty section of Tealbook A, which features a moderate recession and an unemployment rate rising to 6 percent. They may therefore size the policy response to what is likely needed to aid the recovery from a recession. They may further judge that, in view of the proximity of the policy rate to the effective lower bound, it is of great importance for monetary policy to act forcefully when confronted with greater risks to the outlook.

With inflation continuing to run below the Committee’s symmetric 2 percent objective and a significant decline in readings of longer-term inflation expectations from market-based measures, policymakers may be concerned that a substantial slowdown in economic activity could lead to an unwelcome deterioration in expected inflation. They may judge that substantial accommodation is needed to ensure that inflation expectations remain well anchored at the Committee’s 2 percent symmetric inflation objective.

The expected distribution of the level of the federal funds rate implied by market quotes imply a roughly 50 percent chance that the funds rate target will be reduced by 75 basis points at this meeting, and by about 100 basis points by the April meeting. Consequently, this policy action could be interpreted as moderate easing surprise. If so, equity prices and inflation compensation may increase, but in the current high volatility environment, assessing the market reaction is especially difficult.

THE CASE FOR ALTERNATIVE C

Policymakers may judge that the reduction in the target range for the federal funds rate earlier this month has resulted in an accommodative stance of monetary policy that is for the most part appropriate in light of the risks posed by the coronavirus outbreak. Taking into account the lags in the effects of the accommodation provided over the past 12 months, policymakers may consider that reducing the target range for the federal funds rate by 25 basis points at this meeting is appropriate to support the Committee's goals of maximum employment and a return of inflation to 2 percent.

With the policy action in Alternative C, policymakers may judge that the negative effects of the coronavirus outbreak will be temporary, unwinding in the second half of this year, as supply chains are restored and production and exports recover. In addition, they may note that monetary policy may not be the appropriate tool to address the disruptions to economic activity and therefore might see little benefit in providing more accommodation at this time.

When considering the risks to the outlook, policymakers may judge that the downside risks posed by the coronavirus are reasonably well contained over the medium term, and if they materialized, would be better addressed by actions other than monetary policy. This judgment, together with the easing of monetary policy earlier this month and an expectation of the approval of additional fiscal measures to address the economic consequences of the coronavirus, may reinforce policymakers' views that reducing the target for the federal funds range by 25 basis points is appropriate at this time. Nevertheless, a significant amount of uncertainty remains. Hence, the Committee may wish to indicate that it will continue to monitor the implications of incoming information for the economic outlook, by explicitly acknowledging that "the economic effects of the coronavirus remain uncertain."

The policy action in Alternative C would be less forceful than the widely-held expectation of a reduction of at least 50 basis points in the target range for the federal funds rate at the upcoming meeting. Equity prices and inflation compensation would likely fall in response to adverse reactions to the policy surprise.

IMPLEMENTATION NOTE

Draft implementation notes corresponding to each of the Alternatives appear on the following pages. Struck-out text indicates language deleted from the previous implementation note, issued March 3, 2020. Bold red underlined text indicates additions to language relative to that in the previous note, and blue underlined text indicates text that links to websites.

Implementation Note for March 2020 Alternative A

Release Date: March 18, 2020

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 3, 2020~~ March 18, 2020:

- The Board of Governors of the Federal Reserve System voted [unanimously] to set the interest rate paid on required and excess reserve balances at ~~1.10~~ 0.10 percent, effective ~~March 4, 2020~~ March 19, 2020.
- 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 4, 2020~~ March 19, 2020, 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 to 1-1/4~~ 0 to 1/4 percent. In light of recent and expected increases in the Federal Reserve’s non-reserve liabilities, the Committee directs the Desk to continue purchasing Treasury bills at least into the second quarter of 2020 to maintain over time ample reserve balances at or above the level that prevailed in early September 2019. The Committee also directs the Desk to continue conducting term and overnight repurchase agreement operations at least through ~~April~~ June 2020 to ensure that the supply of reserves remains ample even during periods of sharp increases in non-reserve liabilities, and to mitigate the risk of money market pressures that could adversely affect policy implementation. In addition, the Committee directs the Desk to conduct 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 ~~1.00~~ 0.00 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 at auction all principal payments from the Federal Reserve’s holdings of Treasury securities and to continue reinvesting all principal payments from the Federal Reserve’s holdings of agency debt and agency mortgage-backed securities received during each calendar month. Principal payments from agency debt and agency mortgage-backed securities up to \$20 billion per month will continue to be reinvested in Treasury securities to roughly match the maturity composition of Treasury securities outstanding; principal payments in excess of \$20 billion per month will continue to be reinvested in agency mortgage-backed securities. 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 $\frac{1}{2}$ 1 percentage point decrease in the primary credit rate to 1.75 0.75 percent, effective March 4, 2020 March 19, 2020. 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 March 2020 Alternative B

Release Date: March 18, 2020

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 3, 2020~~ March 18, 2020:

- The Board of Governors of the Federal Reserve System voted [unanimously] to set the interest rate paid on required and excess reserve balances at ~~1.10~~ 0.60 percent, effective ~~March 4, 2020~~ March 19, 2020.
- 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 4, 2020~~ March 19, 2020, 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 to 1-1/4~~ 1/2 to 3/4 percent. In light of recent and expected increases in the Federal Reserve’s non-reserve liabilities, the Committee directs the Desk to continue purchasing Treasury bills at least into the second quarter of 2020 to maintain over time ample reserve balances at or above the level that prevailed in early September 2019. The Committee also directs the Desk to continue conducting term and overnight repurchase agreement operations at least through ~~April~~ June 2020 to ensure that the supply of reserves remains ample even during periods of sharp increases in non-reserve liabilities, and to mitigate the risk of money market pressures that could adversely affect policy implementation. In addition, the Committee directs the Desk to conduct 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 ~~1.00~~ 0.50 percent, in amounts limited only by the value of Treasury securities held outright in the System Open Market Account that are available for such operations and by a per-counterparty limit of \$30 billion per day.

The Committee directs the Desk to continue rolling over at auction all principal payments from the Federal Reserve’s holdings of Treasury securities and to continue reinvesting all principal payments from the Federal Reserve’s holdings of agency debt and agency mortgage-backed securities received during each calendar month. Principal payments from agency debt and agency mortgage-backed securities up to \$20 billion per month will continue to be reinvested in Treasury securities to roughly match the maturity composition of Treasury securities outstanding; principal payments in excess of \$20 billion per month will continue to be reinvested in agency mortgage-backed securities. 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 1/2 percentage point decrease in the primary credit rate to 1.75 1.25 percent, effective March 4, 2020 March 19, 2020. 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 March 2020 Alternative C

Release Date: March 18, 2020

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 3, 2020~~ March 18, 2020:

- The Board of Governors of the Federal Reserve System voted [unanimously] to set the interest rate paid on required and excess reserve balances at ~~1.10~~ 0.85 percent, effective ~~March 4, 2020~~ March 19, 2020.
- 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 4, 2020~~ March 19, 2020, 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 to 1-1/4~~ 3/4 to 1 percent. In light of recent and expected increases in the Federal Reserve’s non-reserve liabilities, the Committee directs the Desk to continue purchasing Treasury bills at least into the second quarter of 2020 to maintain over time ample reserve balances at or above the level that prevailed in early September 2019. The Committee also directs the Desk to continue conducting term and overnight repurchase agreement operations at least through ~~April~~ June 2020 to ensure that the supply of reserves remains ample even during periods of sharp increases in non-reserve liabilities, and to mitigate the risk of money market pressures that could adversely affect policy implementation. In addition, the Committee directs the Desk to conduct 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 ~~1.00~~ 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 at auction all principal payments from the Federal Reserve’s holdings of Treasury securities and to continue reinvesting all principal payments from the Federal Reserve’s holdings of agency debt and agency mortgage-backed securities received during each calendar month. Principal payments from agency debt and agency mortgage-backed securities up to \$20 billion per month will continue to be reinvested in Treasury securities to roughly match the maturity composition of Treasury securities outstanding; principal payments in excess of \$20 billion per month will

continue to be reinvested in agency mortgage-backed securities. 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 $1/2$ **1/4** percentage point decrease in the primary credit rate to **1.75** **1.50** percent, effective ~~March 4, 2020~~ **March 19, 2020**. 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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Balance Sheet and Income Projections

The staff has prepared projections of the Federal Reserve's balance sheet and the associated income statement that are consistent with the projections in Tealbook A. Compared with the previous Tealbook, projections for both the federal funds rate and longer-term interest rates are significantly lower.

Reserve balances. As of February 2020, the level of reserve balances stood at \$1.69 trillion. Reserves are assumed to remain at or above \$1.5 trillion, the average level that prevailed in early September (see the upper panel in the exhibit titled "SOMA Open Market Operations and Their Near-Term Effect on Reserve Balances").¹ This outlook reflects assumed paths of reserve management purchases of Treasury bills and repo operations through July 2020; thereafter, reserves are projected to grow roughly in line with nominal GDP.² The projected path for reserves is about \$100 billion higher on average over the next 3 years than the previous Tealbook (see the upper-right chart in the exhibit titled "Total Assets and Selected Balance Sheet Items"). This change reflects the net effects of downward revisions to other liabilities, and a small increase in Treasury securities held in the SOMA portfolio.³

Evolution of the SOMA portfolio. At the end of February 2020, about \$3.9 trillion of securities were held outright in the SOMA portfolio, consisting of about \$2.5 trillion of Treasury securities and \$1.4 trillion of agency securities (see the exhibit titled "Federal Reserve Balance Sheet Month-end Projections—March Tealbook").⁴

¹ Although a minimum level of \$1.5 trillion of reserve balances is likely to ensure that they remain ample through the near term, the minimum level of reserves consistent with remaining in an ample-reserves regime is uncertain and will be reassessed as information accrues about banks' demand for reserve balances.

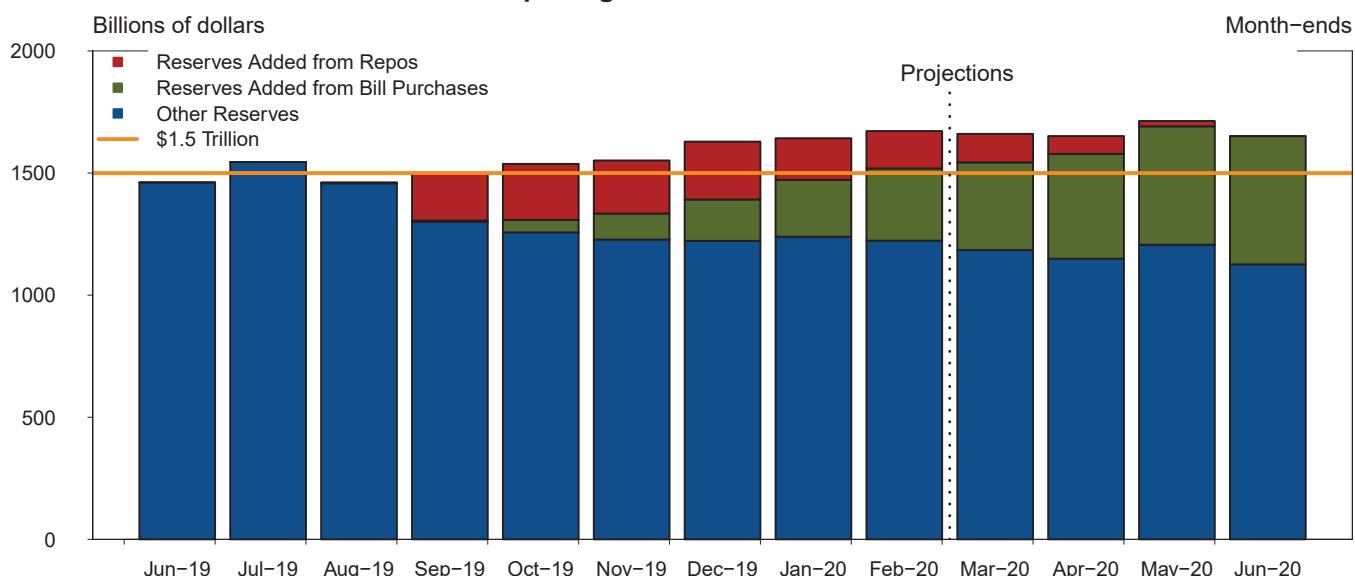
² The staff assumes that reserve management purchases of Treasury bills continue through July 2020, compared to June 2020 in the previous Tealbook. Additionally, the staff assumes that take-up in repo operations will decline to zero sometime during the summer. The projection incorporates the staff's near-term forecasts for TGA balances, foreign repo pool, and overnight reverse repo operations through July 2020 and currency through December 2021. Thereafter, these liability items are assumed to grow in line with nominal GDP. The staff assumes that liability items other than reserves, currency, and the TGA, such as DFMU balances, grow in line with nominal GDP from the start of the projection period.

³ Specifically, the foreign repo pool was revised down by \$45 billion and assets increased by about \$35 billion. The staff has also made small revisions to some technical assumptions.

⁴ SOMA securities held outright include bills purchased for reserve management, but do not include securities held temporarily through the Desk's overnight and term repo operations.

SOMA Open Market Operations and Their Near-Term Effect on Reserve Balances

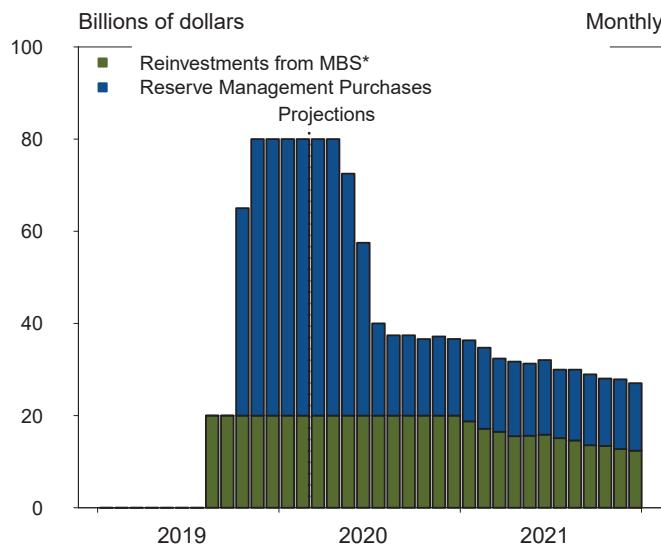
Decomposing the Path of Reserve Balances



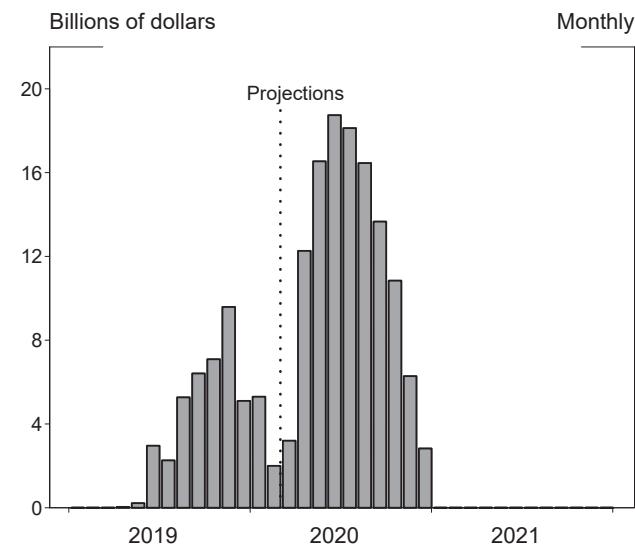
Balance Sheet & Income

Date	Reserve Management Purchases of Treasury Securities		Reinvestments from Agency Securities*		to Agency MBS	
	Period	Since Oct 2019	Period	Since Aug 2019	Period	Since Aug 2019
2020: January	60.0	225.0	20.0	120.0	5.3	38.8
2020: February	60.0	285.0	20.0	140.0	2.0	40.8
2020: March	60.0	345.0	20.0	160.0	3.2	44.0
2020:Q2	150.0	495.0	60.0	220.0	47.5	91.5
2019	165.0	165.0	100.0	100.0	38.9	33.5
2020	435.2	600.2	240.0	340.0	126.2	159.7
2021	189.0	789.3	181.2	521.2	0.0	159.7
2022	171.7	961.0	136.8	658.0	0.0	159.7

Purchases of Treasury Securities



MBS Reinvestments*

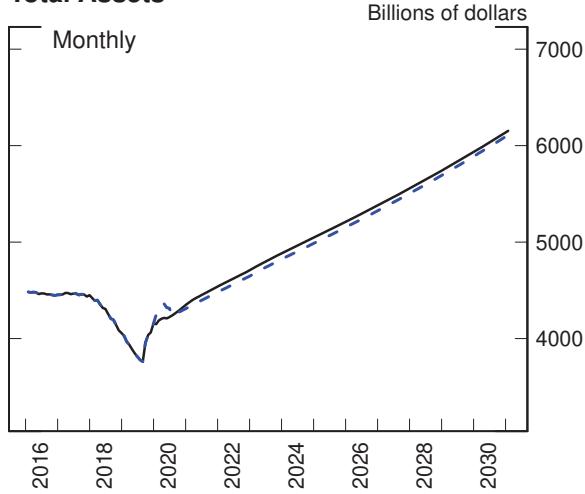


* Principal payments from holdings of agency securities below \$20 billion per month are reinvested into Treasury securities, while those above are reinvested into agency MBS.

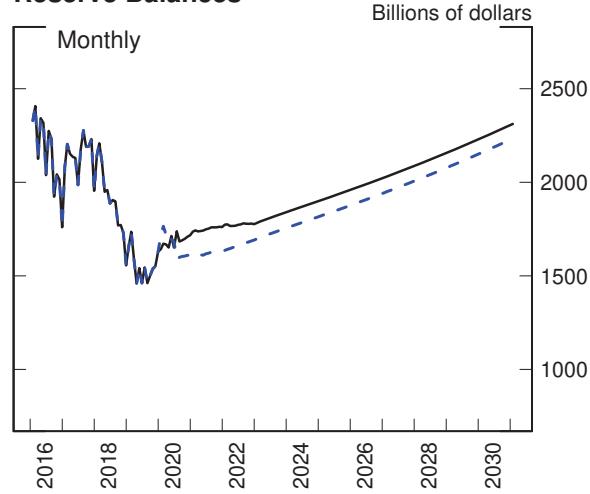
Total Assets and Selected Balance Sheet Items

— March Tealbook baseline
- - - January Tealbook baseline

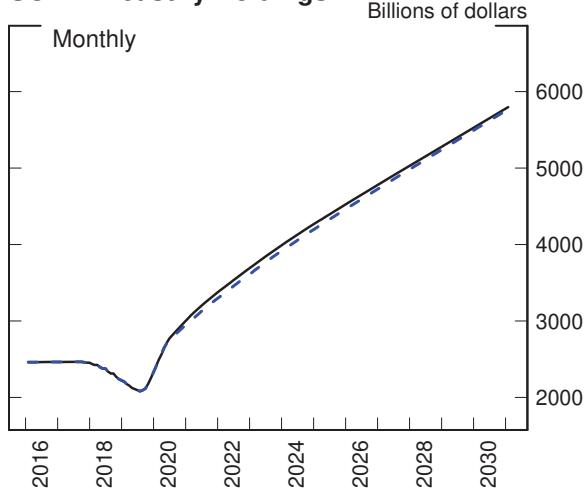
Total Assets



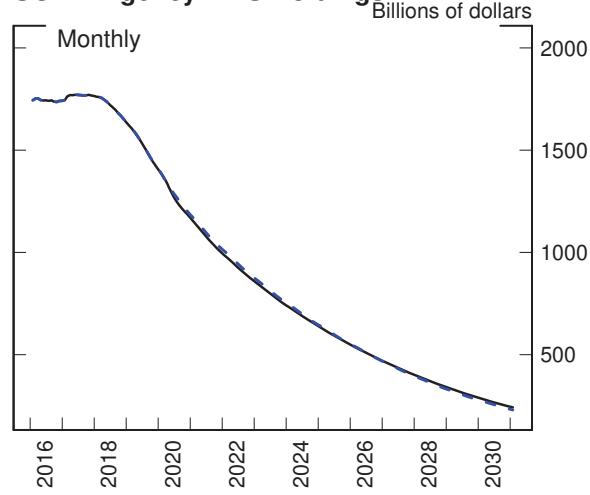
Reserve Balances



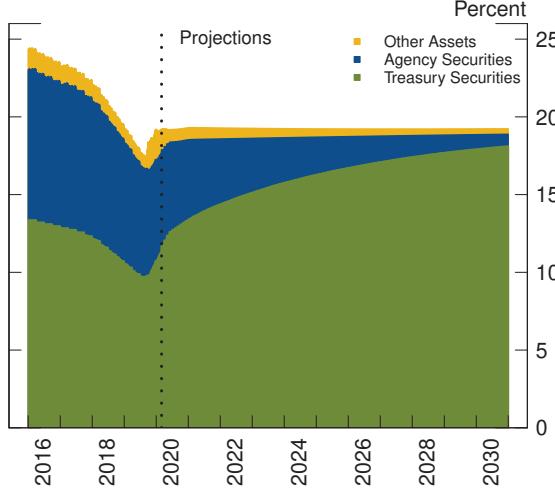
SOMA Treasury Holdings



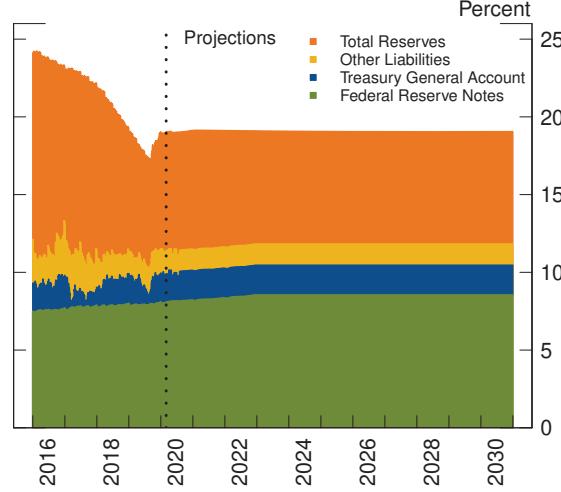
SOMA Agency MBS Holdings



Assets as a Percent of GDP



Liabilities as a Percent of GDP



Balance Sheet & Income

Federal Reserve Balance Sheet
Month-end Projections – March Tealbook
(Billions of dollars)

	Historical*			Projections				
	Aug 2014	Sep 2017	Feb 2020	Dec 2020	Dec 2021	Dec 2023	Dec 2025	Dec 2030
	4,416	4,460	4,158	4,347	4,538	4,882	5,210	6,136
Total assets								
Selected assets								
Loans and other credit extensions**	0	0	0	0	0	0	0	0
Securities held outright	4,157	4,240	3,863	4,172	4,371	4,734	5,076	6,024
U.S. Treasury securities	2,437	2,465	2,489	2,999	3,373	3,990	4,524	5,776
Agency debt securities	42	7	2	2	2	2	2	2
Agency mortgage-backed securities	1,678	1,768	1,372	1,170	996	741	549	245
Unamortized premiums	209	162	123	118	109	91	78	56
Unamortized discounts	-19	-14	-13	-10	-10	-10	-11	-11
Total other assets	69	72	185	67	67	67	67	67
Total liabilities	4,360	4,419	4,119	4,308	4,499	4,840	5,164	6,077
Selected liabilities								
Federal Reserve notes in circulation	1,249	1,532	1,753	1,850	1,964	2,166	2,313	2,723
Reverse repurchase agreements	277	557	229	236	246	266	284	334
Deposits with Federal Reserve Banks	2,825	2,323	2,131	2,218	2,284	2,404	2,562	3,015
Reserve balances held by depository institutions	2,762	2,073	1,691	1,717	1,761	1,840	1,959	2,305
U.S. Treasury, General Account	49	159	357	434	453	488	521	614
Other deposits	15	91	83	68	71	76	81	96
Earnings remittances due to the U.S. Treasury	3	2	2	0	0	0	0	0
Total Federal Reserve Bank capital***	56	41	39	38	39	42	46	58

Source: Federal Reserve H.4.1 daily data and staff calculations.

Note: Components may not sum to totals due to rounding.

*August 2014 corresponds to the peak month-end value of reserve balances; September 2017 corresponds to the last month-end before the initiation of the normalization program.

**Loans and other credit extensions includes discount window credit; central bank liquidity swaps; and net portfolio holdings of Maiden Lane LLC.

***Total capital includes capital paid-in and capital surplus accounts.

Consistent with the Committee's October 2019 Statement Regarding Monetary Policy Implementation, we assume that the Desk will continue to purchase Treasury bills at a pace of \$60 billion per month through April.⁵ Subsequently, we assume that the pace of Treasury bill purchases will slow to \$45 billion in May, \$30 billion in June, and \$10 billion in July. Thereafter, in order to expand SOMA in line with trend increases in reserves and in other Federal Reserve liabilities, we assume reserve management purchases of Treasury securities, initially of about \$15 billion per month (see the exhibit titled "Total Assets and Selected Balance Sheet Items").⁶ With these liabilities assumed to grow roughly at the pace of nominal GDP, the size of the balance sheet as a share of nominal GDP remains near its current level of about 19 percent throughout the projection horizon, just as in the previous Tealbook.

The weighted-average duration of the SOMA Treasury portfolio is currently about 6 years, about the same as in the January Tealbook. As shown in the exhibit titled "Projections for the Characteristics of SOMA Treasury Securities Holdings," the path for duration is about the same as the previous projection. Duration is projected to decline to about 5.4 years by the end of 2021, as the share of bills increases to 26 percent of the SOMA Treasury portfolio. The decline in duration then slows, reflecting the slower pace of bill purchases.⁷ All told, the SOMA Treasury portfolio attains its assumed longer-run composition, consisting of one-third Treasury bills, in 2024:Q3, two quarters earlier than in the previous Tealbook.

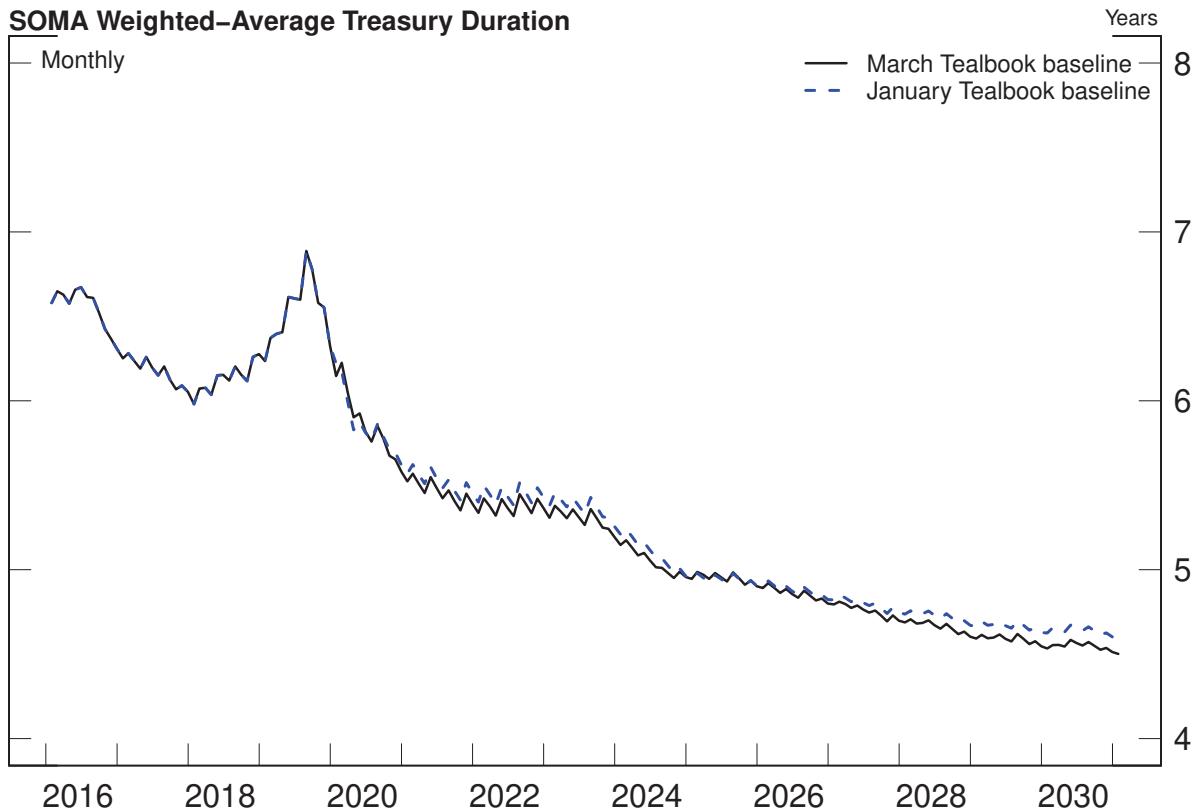
The level of reinvestments in agency MBS is projected to be significantly higher than in the previous Tealbook. This reflects the decrease in longer-term interest rates, which is expected to lead to increased prepayments. Specifically, projections for reinvestments have increased by about \$10 billion on average per month throughout the rest of the year. As a result, principal payments are also now projected to exceed the \$20 billion cap on reinvestment into Treasury securities through the fourth quarter of 2020,

⁵ Median expectations from the Desk's March surveys were for bill purchases to continue at a pace of \$60 billion per month through June.

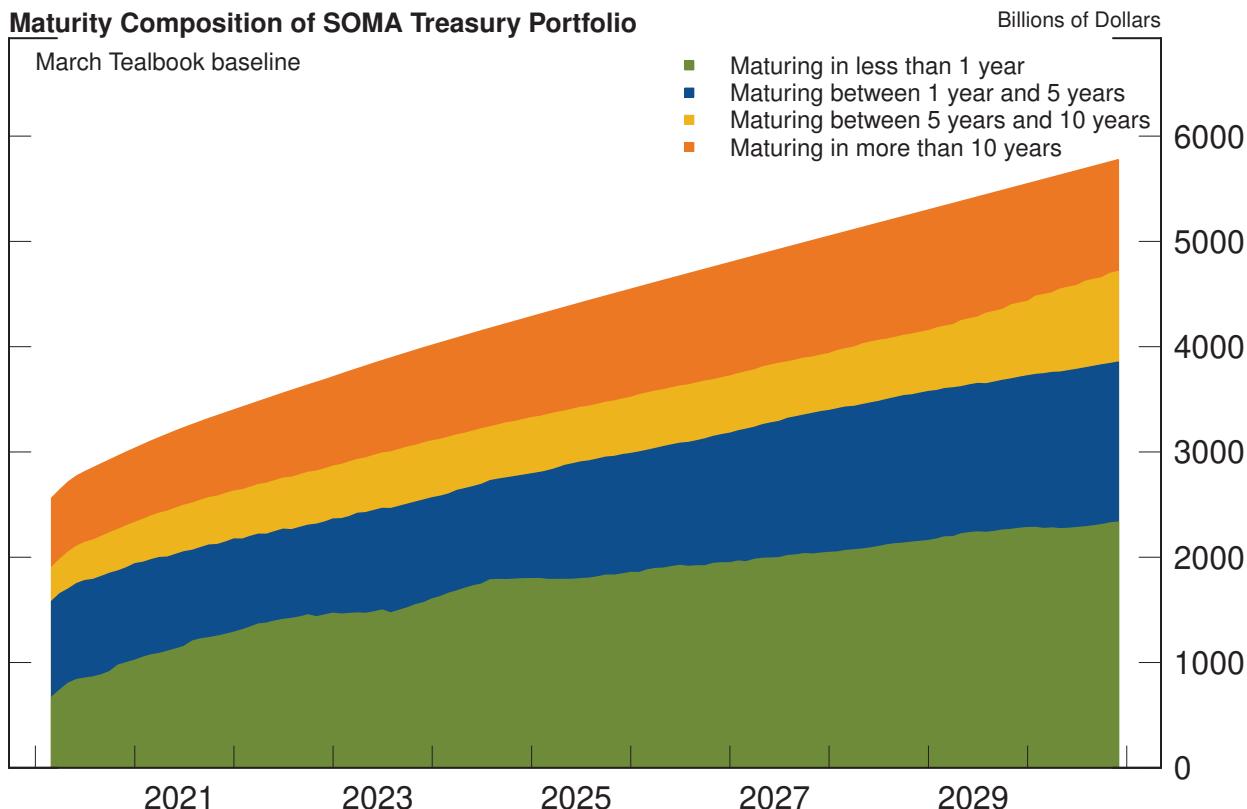
⁶ We assume that rollovers of maturing Treasury securities will continue to be directed toward newly issued securities at Treasury auctions in proportion to the maturity distribution of Treasury debt issued at the time of rollover.

⁷ We continue to assume that purchases aimed at accommodating trend growth in Federal Reserve liabilities will be directed entirely toward Treasury bills until bills constitute approximately one-third of the Federal Reserve's portfolio of Treasury securities, close to the pre-crisis composition. Once that composition is reached, further purchases aimed at accommodating growth in Federal Reserve liabilities are assumed to reflect the projected maturity distribution of Treasury securities outstanding at that time.

Projections for the Characteristics of SOMA Treasury Securities Holdings



Balance Sheet & Income



one quarter later than in the previous Tealbook (see the table and lower charts in the exhibit titled “SOMA Open Market Operations and Their Near-Term Effect on Reserve Balances”). The share of agency MBS in the SOMA portfolio, which currently stands at 34 percent, is expected to decline to about 4 percent by the end of 2030 (see the lower-left panel in the exhibit titled “Total Assets and Selected Balance Sheet Items”).⁸

Unrealized gains or losses. The path for the unrealized gain position of the SOMA portfolio has stepped up significantly through the medium term, reflecting the lower projected path of interest rates (see the two bottom charts in the exhibit titled “Income Projections”). The SOMA portfolio was in a net unrealized gain position of about \$314 billion at the end of February. With longer-term interest rates projected to rise, the unrealized gain position is expected to decline over the next few years and turn into an unrealized loss position around 2023:Q4. The unrealized loss position of the SOMA portfolio bottoms out at around \$43 billion in 2026:Q3.⁹

Total Term Premium Effect. As shown in the table “Projections for the 10-Year Treasury Total Term Premium Effect (TTPE),” the securities held in the SOMA portfolio are estimated to be reducing the term premium embedded in the 10-year Treasury yield by 135 basis points in the current quarter, the same as in the previous Tealbook.¹⁰ Over the projection horizon, the magnitude of the downward pressure exerted on the term premium in longer-term Treasury yields is estimated to diminish gradually, at an average pace of about 2 basis points per year. The gradual decline reflects the decrease in the duration of the Federal Reserve’s securities holdings over the projection horizon. At the end of the projection horizon in 2030, the total term premium effect of the SOMA portfolio on the 10-year Treasury yield is estimated to be about 110 basis points.

Remittances. Remittances are projected to be about \$10 billion lower per year versus the previous Tealbook (see the middle-left chart in the exhibit titled “Income Projections”). This downward adjustment is a result of interest income falling more than interest expense. Both interest income and expense fall as a result of the downward

⁸ We assume that reinvestments of principal payments from agency securities holdings into Treasury securities continue to be spread across the maturity spectrum of outstanding Treasury securities for the entire projection period.

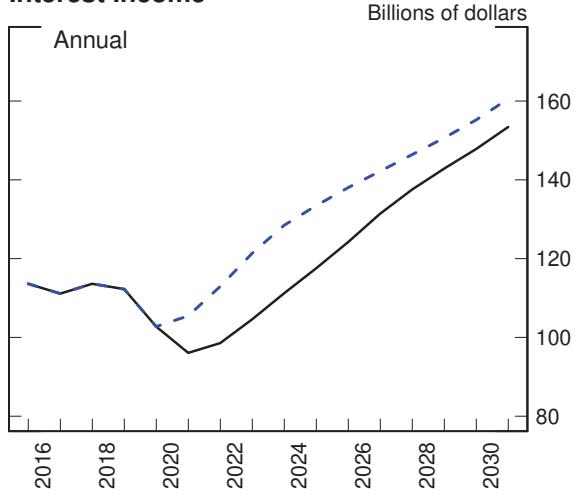
⁹ See the Tealbook B box titled “What Does It Mean for the SOMA Portfolio to be in an ‘Unrealized Loss’ Position?” (June 2018) for an explanation of the accounting concepts underlying unrealized and realized gain and loss positions, as well as their implications for the Federal Reserve’s ability to meet its obligations.

¹⁰ The overall 10-year Treasury term premium is assumed to gradually approach its long-run value of 50 basis points.

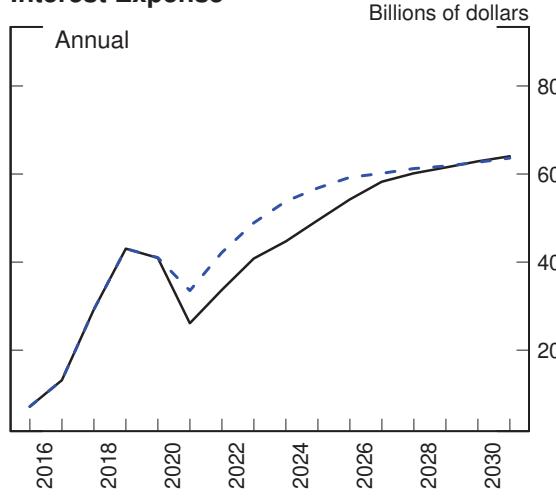
Income Projections

— March Tealbook baseline - - - January Tealbook baseline

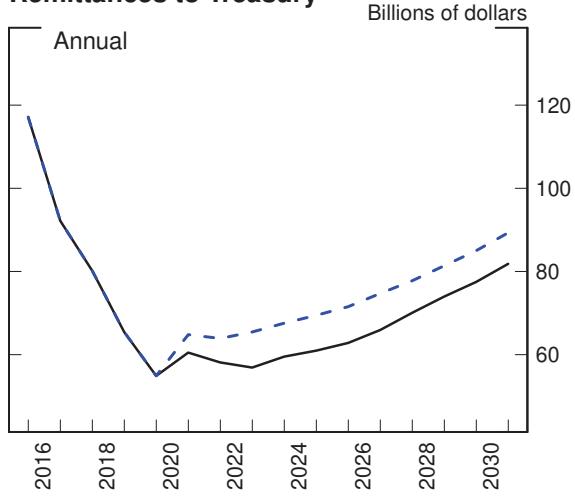
Interest Income



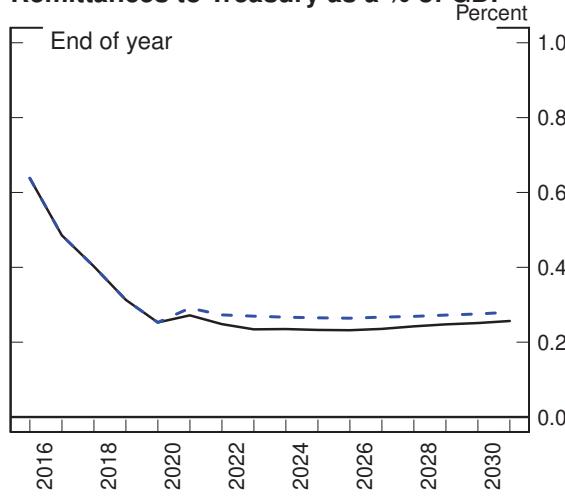
Interest Expense



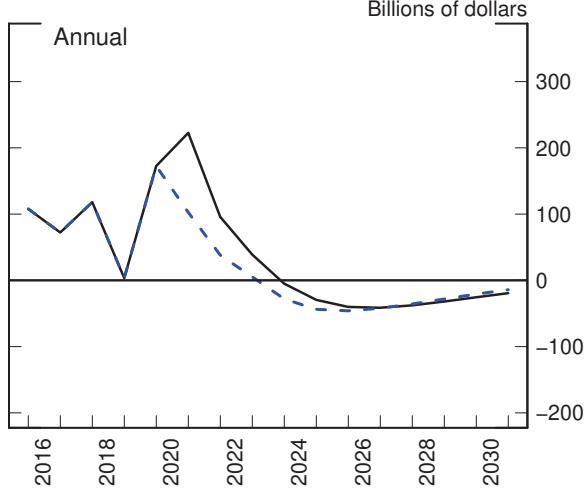
Remittances to Treasury



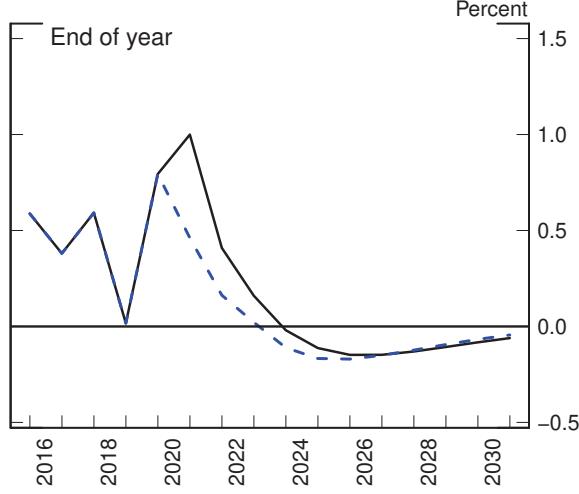
Remittances to Treasury as a % of GDP



Unrealized Gains/Losses



Unrealized Gains/Losses as a % of GDP



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

Date	March Tealbook	January Tealbook
Quarterly Averages		
2020:Q1	-135	-135
Q2	-134	-135
Q3	-133	-134
Q4	-133	-133
2021:Q4	-130	-130
2022:Q4	-127	-127
2023:Q4	-124	-124
2024:Q4	-121	-121
2025:Q4	-119	-119
2026:Q4	-117	-117
2027:Q4	-115	-116
2028:Q4	-113	-114
2029:Q4	-111	-113
2030:Q4	-110	-111

revisions to interest rate projections (see the top charts in the exhibit). The smaller decline in expense reflects the effect of a simultaneous upward revision to reserve balances.

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
EFFR	effective federal funds rate
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
MEP	Maturity Extension Program
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
TTPE	Total Term Premium Effect
WAM	Weighted Average Maturity
ZLB	zero lower bound