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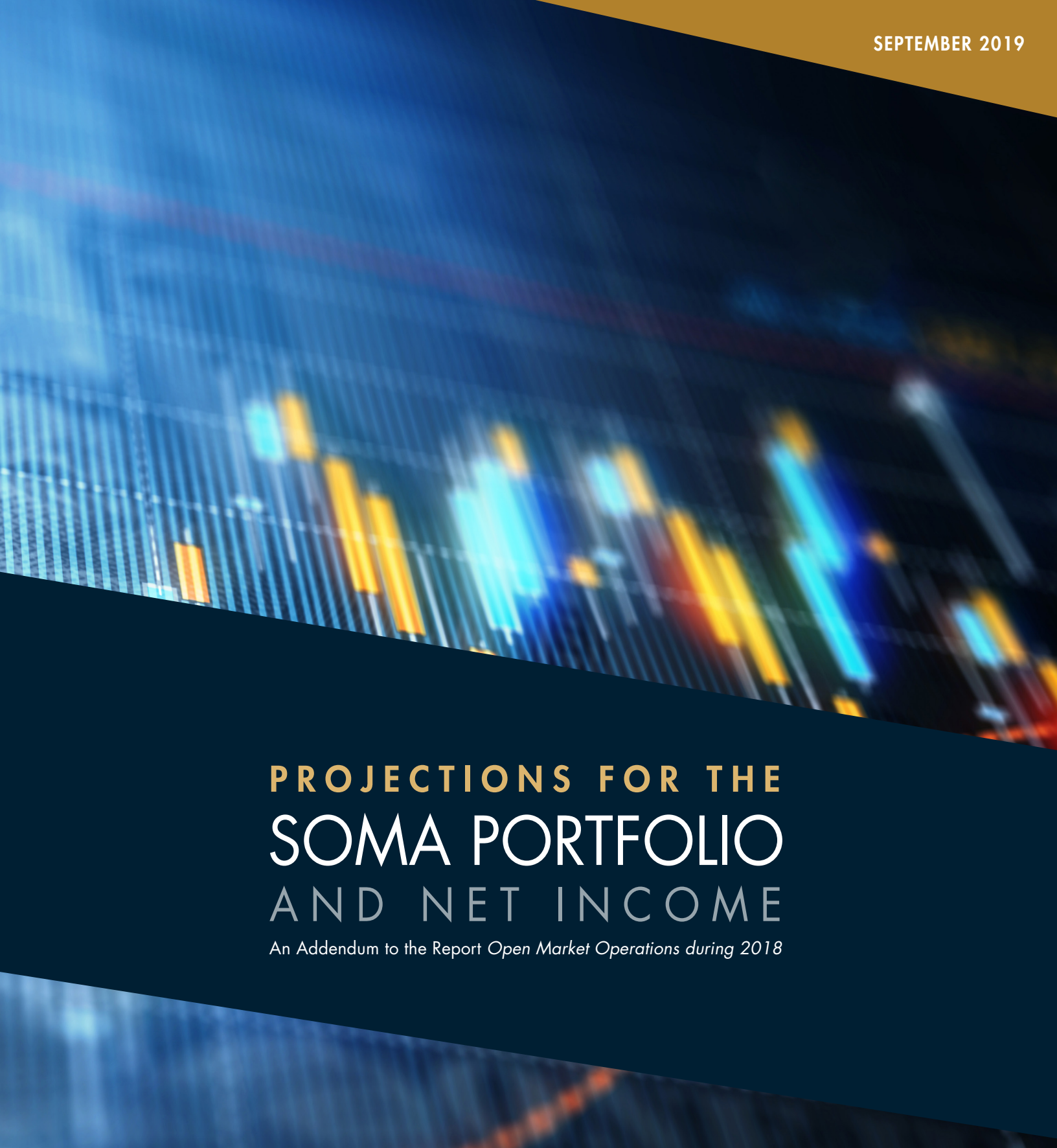


# PROJECTIONS FOR THE SOMA PORTFOLIO AND NET INCOME

An Addendum to the Report *Open Market Operations during 2018*

A REPORT PREPARED FOR THE FEDERAL OPEN MARKET COMMITTEE BY THE MARKETS GROUP OF THE FEDERAL RESERVE BANK OF NEW YORK

# Contents

*This addendum to* **Open Market Operations during 2018** *describes projections for securities held in the System Open Market Account. Lauren Fiesthumel, Lisa Stowe, and Kathryn Chen were primarily responsible for preparation of the addendum.*

# Introduction

In early 2019, the Federal Open Market Committee (FOMC) provided additional information on its plans for the longer-run implementation framework for monetary policy and announced its intention to cease its program to reduce the size of the Federal Reserve's balance sheet. In January 2019, the FOMC announced that it intends to operate in an ample reserves regime, in which the control of short-term interest rates is exercised primarily through administered rates and the active management of the supply of reserve balances is not required.[1] Next, in March 2019, the FOMC released its Balance Sheet Normalization Principles and Plans, in which it affirmed its intent to hold primarily Treasury securities in the long run and announced its plans to slow the reduction of the System Open Market Account (SOMA) securities holdings beginning in May and to conclude the reduction of aggregate securities holdings at the end of September.[2] This guidance was adjusted in July 2019 with the announcement that the reduction of securities holdings would cease as of August 1, 2019.[3]

Under this guidance, beginning in August, the total size of the securities portfolio will be held roughly constant and further declines in the level of reserves will be driven by increases in non-reserve liabilities of the Federal Reserve rather than by runoff in the portfolio.[4] This process will continue until reserve balances reach a level that policymakers deem consistent with efficient and effective monetary policy implementation. At that point, purchases of Treasury securities will be needed to supply a level of reserves consistent with interest rate control in an ample reserves regime. These reserve management purchases will have the same purpose as pre-financial-crisis purchases of Treasury securities—expanding the size of the SOMA portfolio to accommodate growth in demand for currency, reserves, and other liabilities.[5] In this way, the overall size of the Federal Reserve's balance sheet will be driven by the evolution of liabilities.

Given the uncertainty about the pace at which reserves will decline and the longer-run trajectory of reserves, the portfolio projections presented in this addendum consider several scenarios that vary in these factors. Assumptions underlying the projections are based on publicly available, market- and survey-based interest rate forecasts and expectations for the level and composition of Federal Reserve liabilities, as well as on the FOMC's communications about monetary policy normalization. The assumptions underlying the portfolio projections are presented in the first section of this addendum. The remainder of the addendum presents a range of outcomes for portfolio balances, income, and reserves.

Results of this exercise illustrate the possible future contours of the portfolio as well as the possible timing for when reserve management purchases will begin. The precise timing of the onset of these reserve management purchases will depend not only on the longer-run level of reserves but also on the evolution of Federal Reserve liabilities, whose size and variability generally are not closely related to Federal Reserve monetary policy decisions.

Given the range of assumptions for the lowest level of reserves—between $1.1 trillion and $1.25 trillion—and a range of assumptions about Federal Reserve liabilities, the projections suggest that reserve management purchases could begin as soon as late 2019 or as late as 2025. The uncertain timing illustrates the range of expectations for how the Federal Reserve's balance sheet will evolve as well as the sensitivity of the exercise to these assumptions.

It is important to note that this exercise does not involve analysis of the underlying drivers of the day-to-day evolution of non-reserve liabilities, which in practice are highly variable and often influenced by seasonal factors and calendar-related effects. For example, Federal Reserve notes tend to grow at a faster rate during the fourth quarter than in other quarters, possibly owing to holiday-related demand for cash. If included, this type of variability would likely affect the timing of the resumption of reserve management purchases.

In terms of income, the projections indicate that the portfolio's net income will remain firmly positive across a range of scenarios, and that the portfolio will remain in an unrealized gain position, assuming interest rates evolve as implied by current market rates.

# Assumptions

The future path of the SOMA portfolio and its associated net income will be influenced by a range of factors, including the longer-run level of reserve balances and the composition of Federal Reserve liabilities. The evolution of the portfolio is also influenced by interest rate, economic, and exogenous balance sheet developments. This section of the addendum reviews the assumptions about these factors that are used to develop the projections; a complete list of key assumptions can be found in the Appendix.

## BALANCE SHEET

### LIABILITIES AND CAPITAL

Assumptions about liabilities are drawn from the June 2019 Survey of Primary Dealers and the June 2019 Survey of Market Participants (the Surveys).[6] The Surveys asked respondents for their expectations regarding the size and composition of the Federal Reserve's balance sheet, on average, in 2025. The Surveys also asked respondents for their expectations for the lowest average weekly level of reserve balances between now and 2025. Both questions were conditional on the federal funds rate not moving to the zero lower bound at any point between now and the end of 2025. The distributions of responses to both the balance sheet question and the reserves-trough question were used to construct three illustrative scenarios. A median liabilities scenario was created based on the 50th percentile of survey responses for each liability and capital line item in the balance sheet question and for the reserves trough. A smaller liabilities scenario and a larger liabilities scenario were created in a similar fashion using the 25th percentile responses and the 75th percentile responses to the two questions, respectively.

In effect, for the purpose of these projections, the expected reserve balance trough is assumed to be the level that the FOMC views as consistent with efficient and effective monetary policy implementation. Reserve balances are therefore assumed to decline through the projection horizon until reaching the reserves trough corresponding with each scenario. After that point, reserve balances are assumed to grow at a constant rate to the longer-run level implied by the distribution of responses to the Surveys' balance sheet question. Federal Reserve notes, commonly known as currency in circulation (currency), and capital are assumed to grow from their levels at the end of July 2019 to the longer-run survey-implied level at a constant rate of growth. All other liabilities are assumed to remain constant at the survey-implied 2025 levels throughout the horizon.

Table 1

**Assumed Levels of Federal Reserve Balance Sheet in 2025 and Current Levels**

Billions of U.S. Dollars

| | Smaller Liabilities Scenario | Median Liabilities Scenario | Larger Liabilities Scenario | July 31, 2019 |
|---|---|---|---|---|
| Federal Reserve notes | 2,000 | 2,250 | 2,395 | 1,700 |
| Reserve balances | 1,200 | 1,300 | 1,500 | 1,491 |
| *Lowest Reserve Balance* | *1,100* | *1,200* | *1,250* | |
| Deposits in Treasury General Account (TGA) | 300 | 350 | 400 | 177 |
| Reverse repos with private counterparties | 1 | 10 | 20 | 7 |
| Reverse repos with foreign official accounts | 220 | 250 | 262 | 301 |
| Other deposits | 60 | 70 | 81 | 58 |
| All other liabilities and capital | 45 | 50 | 59 | 45 |
| Total | 3,826 | 4,280 | 4,717 | 3,779 |

Sources: Board of Governors of the Federal Reserve System; Federal Reserve Bank of New York.

Notes: The table is based on the Survey of Primary Dealers and the Survey of Market Participants conducted by the New York Fed in June 2019. The surveys asked respondents to provide expectations for the size and composition of the Federal Reserve's balance sheet, on average, in 2025. Respondents were also asked to provide expectations for the lowest average weekly reserve balances between now and 2025. Both questions are conditioned on not moving to the zero lower bound.

**Table 1** summarizes the expected average levels for Federal Reserve liabilities and capital corresponding to the median, 25th, and 75th percentile responses used to construct the three scenarios; values as of July 31, 2019, are shown for reference.

In the longer run, respondents expect currency to be the largest liability on the Federal Reserve's balance sheet, at levels ranging from $2.0 trillion to $2.4 trillion. From current levels, the rate of currency growth implied by the survey median is 4.9 percent, lower than the 6.3 percent observed last year but somewhat higher than the growth rate observed so far this year; growth rates for the other scenarios range from 3 percent to 6 percent.

Across the three scenarios, survey respondents expect reserves to bottom out at a level between $1.1 trillion and $1.25 trillion, before growing to between $1.2 trillion and $1.5 trillion in 2025. Since reaching a peak of $2.8 trillion in late 2014, reserve balances have gradually declined to $1.5 trillion as of July 31. Taking into account survey-implied levels of non-reserve liabilities and the FOMC's guidance on the evolution of the SOMA portfolio, projections imply that reserve balances will decline by an additional $150 billion to $400 billion before reaching their lowest point.

Survey responses for the 2025 average level of the Treasury General Account (TGA)—the account in which the U.S. Treasury holds cash balances at the Federal Reserve—range from $300 billion to $400 billion, notably higher than the July level, which was temporarily reduced to a level below the Treasury's stated cash balance policy as a result of the debt limit impasse.[7] According to recent public releases by the Treasury, the TGA is expected to rebound over the remainder of 2019, reaching roughly $400 billion by year-end.[8] Survey-implied levels for reverse repurchases (reverse repos) with foreign official accounts, a service known as the foreign repo pool, range from $220 billion to $262 billion, notably below the July level of roughly $300 billion. Taken together, longer-run levels of liabilities imply a longer-run balance sheet size between $3.8 trillion and $4.7 trillion.

These assumptions involve smooth growth rates for currency and capital, and flat trajectories for other non-reserve liabilities. In practice, these liabilities may exhibit day-to-day variability as well as varying growth rates. For example, the TGA displays substantial variation owing to the timing of fiscal flows and security settlements. Furthermore, although reserve balances trended downward in 2018 as a result of ongoing reductions in securities holdings, reserves fluctuated within a wide $280 billion range.[9]

### ASSETS

Assumptions about Federal Reserve assets are drawn from the FOMC's communications regarding the domestic securities portfolio and balance sheet normalization. Consistent with this communication, the level of domestic securities holdings in these scenarios is assumed to remain roughly constant for a time, while reserve balances decline gradually owing to persistent gradual increases in currency and other non-reserve liabilities and growth in Federal Reserve capital. In the meantime, principal payments on agency debt and agency mortgage-backed securities (MBS) will be reinvested into Treasury securities up to a maximum amount of $20 billion per month. Above $20 billion, principal payments on agency securities will be reinvested into agency MBS. After reserves reach the trough levels previously discussed, the portfolio is assumed to begin growing in size through reserve management purchases of Treasury securities. All other assets, including foreign currency reserves, are assumed to remain at current levels throughout the projection horizon.[10]

## INTEREST RATES

The paths for the federal funds rate and longer-term interest rates are drawn from market-based indicators.[11] The projections assume that the Federal Reserve uses interest on excess reserves (IOER) as its primary tool for controlling the level of the federal funds rate, with supplementary support from the rate it sets on overnight reverse repos (ON RRPs). This assumption is consistent with the FOMC's January statement regarding monetary policy implementation and balance sheet normalization. The target range for the federal funds rate is assumed to be 25 basis points wide, with the IOER rate assumed to be set 15 basis points below the top of the target range and the ON RRP offering rate assumed to be set at the bottom of the target range. The effective federal funds rate is assumed to be 15 basis points below the top of the target range, in line with the level of the IOER rate.

Under these assumptions, the effective federal funds rate gradually declines from its current level to a low of 1.2 percent in the second quarter of 2021. Thereafter, it gradually rises to a longer-run level of 1.5 percent. The ten-year Treasury yield and thirty-year fixed primary mortgage rate are assumed to rise to 2.5 percent and 4.2 percent, respectively, in the longer run.

# Projection Results

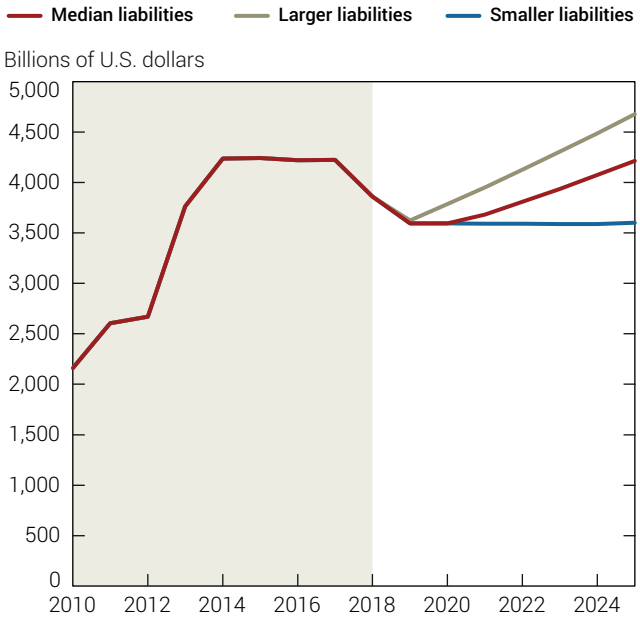
## PATH OF PORTFOLIO HOLDINGS AND RESERVE BALANCES

The analysis of changes in the Federal Reserve's securities holdings and SOMA net income starts with the SOMA domestic securities portfolio as of July 31, 2019, and then incorporates the previously described assumptions. As noted earlier, Federal Reserve liabilities are assumed to evolve smoothly over the forecast horizon, with growth in non-reserve liabilities driven solely by currency and capital. Upon reaching their trough levels, reserve balances grow gradually to their 2025 averages. This assumption leads to a smooth path of reserve balances over the forecast horizon; in practice, these factors exhibit considerable daily volatility. As a result, these projections are merely illustrative.

**Charts 1 and 2** illustrate the projected path of total SOMA portfolio balances under the three scenarios, along with the corresponding path of reserve balances. In all scenarios, reserve balances decline until reaching their assumed trough. In the median scenario, that point occurs in the second quarter of 2021, when reserve balances have declined to $1.2 trillion. The portfolio grows to $4.2 trillion by the end of the projection period. In the smaller liabilities scenario, that point occurs more than four years later, when reserve balances have reached $1.1 trillion; the portfolio remains smaller than in the median scenario throughout the projection horizon, reaching a level of $3.6 trillion at the end of the projection period. In the larger liabilities scenario, reserves reach their low point at $1.25 trillion in the fourth quarter of 2019, more than one year earlier than in the median projection; the portfolio grows from there to $4.7 trillion by the end of the projection horizon.

Chart 1

**Projected SOMA Domestic Securities Holdings: Alternative Liabilities Scenarios**

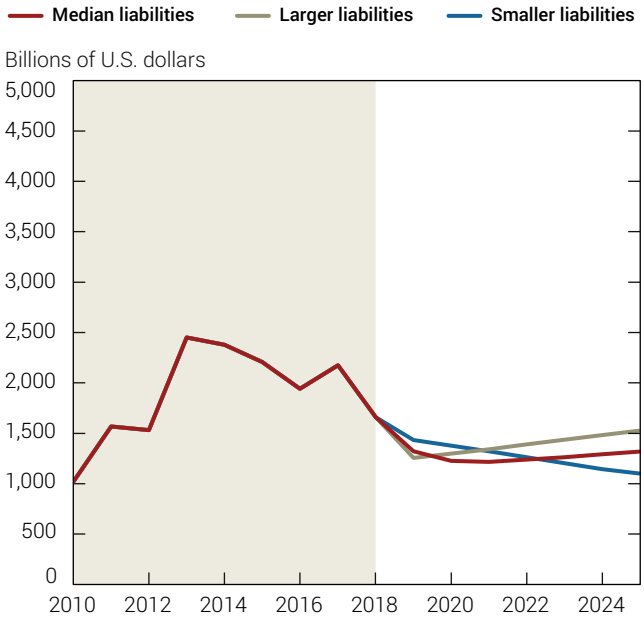



Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end. Figures for 2010-18 (shaded area) are historical settled holdings. Smaller and larger liabilities are based, respectively, on the 25th percentile and 75th percentile responses to a question about the size and composition of the Federal Reserve's long-run balance sheet in the Survey of Primary Dealers and the Survey of Market Participants conducted by the New York Fed in June 2019. Projected figures are rounded.

Chart 2

**Projected Reserve Balances: Alternative Liabilities Scenarios**




Sources: Board of Governors of the Federal Reserve System; Federal Reserve Bank of New York.

Notes: Projected figures are as of year-end. Historical figures are as of the last Wednesday in December. Figures for 2010-18 (shaded area) are historical reserve balances. Smaller and larger liabilities are based, respectively, on the 25th percentile and 75th percentile responses to a question about the size and composition of the Federal Reserve's long-run balance sheet in the Survey of Primary Dealers and the Survey of Market Participants conducted by the New York Fed in June 2019. Projected figures are rounded.

Although each scenario assumes a different level for the reserves trough, the time it takes to reach that level is predominantly affected by the pace of currency and capital growth and the total size of the remaining liabilities in that scenario. **Chart 2** shows the different paces of decline in reserve balances that result from the range of assumptions in the three scenarios. Although the assumed reserves trough is only $50 billion higher in the larger liabilities scenario than in the median scenario, the faster growth in non-reserve liabilities also assumed in this scenario leads to a faster pace of reserve decline throughout the projection horizon; as a result, the reserves trough in the larger liabilities scenario is reached more than one year sooner than the trough in the median scenario. Additionally, although these scenarios assume smooth paths for Federal Reserve liabilities, small variations could have significant effects on when the reserves trough is reached. For example, a $100 billion decline (increase) in reserves from the median path would result in the trough being reached five quarters sooner (five quarters later), in the first quarter of 2020 (third quarter of 2023).

## PORTFOLIO COMPOSITION

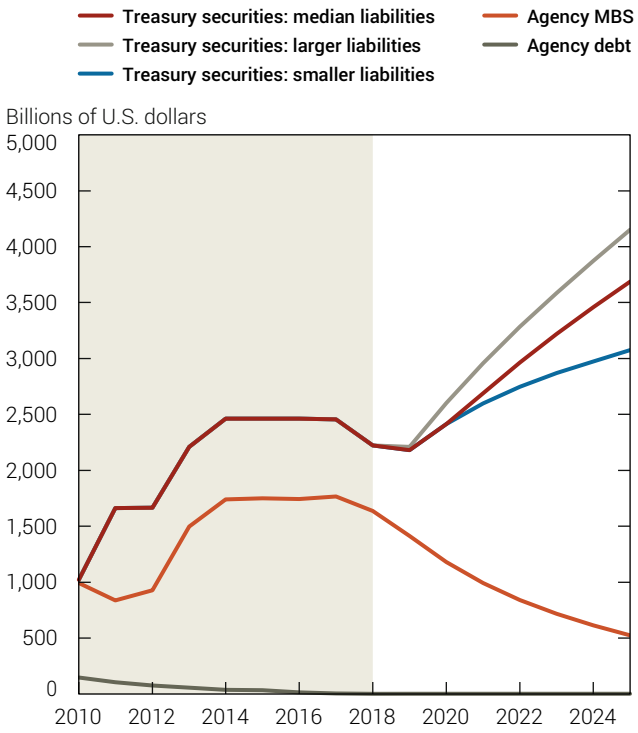
While the aggregate size of the portfolio will remain constant for a time, its composition will slowly evolve to be more heavily weighted in holdings of Treasury securities, consistent with the Balance Sheet Normalization Principles and Plans. This compositional shift will be achieved through both the reinvestment of principal payments on securities holdings as well as reserve management purchases of Treasury securities. As previously discussed, until the reserves trough is reached, principal payments on agency debt and MBS below the $20 billion monthly cap are reinvested into Treasury securities through secondary market purchases. Upon reaching the reserves trough, all portfolio operations—the reinvestment of principal payments received from securities holdings as well as reserve management purchases—are assumed to occur in the Treasury market. All else equal, a portfolio experiencing a larger amount of reserve management purchases will exhibit a higher share of Treasury securities over time.

**Chart 3** shows projections of portfolio holdings of Treasury, agency MBS, and agency debt across the three scenarios given the timing of Treasury and agency debt maturities and model-based estimates for MBS principal pay-downs.[12] Because interest rates are unchanged across the three scenarios, the evolution of the agency MBS portfolio is identical in all three. In contrast, the evolution of the Treasury portfolio is driven by the pace of reserve management purchases, which differ across the three scenarios owing to the different assumptions about growth in Federal Reserve liabilities. As a result, differences across the scenarios stem solely from differences in the evolution of the Treasury portfolio.

In the median scenario, roughly $30 billion in agency security principal payments will be reinvested into agency MBS until reserves reach their trough, while maturing Treasury securities will be fully reinvested into newly issued Treasury securities at auction. Over the entire forecast horizon, roughly $1.6 trillion of Treasury securities

Chart 3

**Projected SOMA Domestic Securities Holdings: Alternative Liabilities Scenarios by Asset Class**




Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end. Figures for 2010-18 (shaded area) are historical settled holdings. Smaller and larger liabilities are based, respectively, on the 25th percentile and 75th percentile responses to a question about the size and composition of the Federal Reserve's long-run balance sheet in the Survey of Primary Dealers and the Survey of Market Participants conducted by the New York Fed in June 2019. Projected figures are rounded.

are projected to be purchased in the secondary market. Of this total, roughly $1 trillion will be purchased to offset the decline in agency MBS holdings through the end of the projection horizon. An additional $600 billion of reserve management purchases are projected to be conducted to accommodate growth in liabilities. This combination of reinvestments and secondary-market Treasury purchases will bring the Treasury securities share of the SOMA portfolio from 58 percent at the end of 2018 to 87 percent at the end of 2025. In the larger liabilities scenario, additional reserve management purchases are necessary to accommodate a higher growth rate for the size of Federal Reserve liabilities, leading to a portfolio with a greater share of Treasury securities holdings than in the median. The opposite is true for the smaller liabilities scenario. All in all, by 2025 the share of Treasury securities holdings in the SOMA portfolio is 89 percent in the larger liabilities scenario and 85 percent in the smaller liabilities scenario.

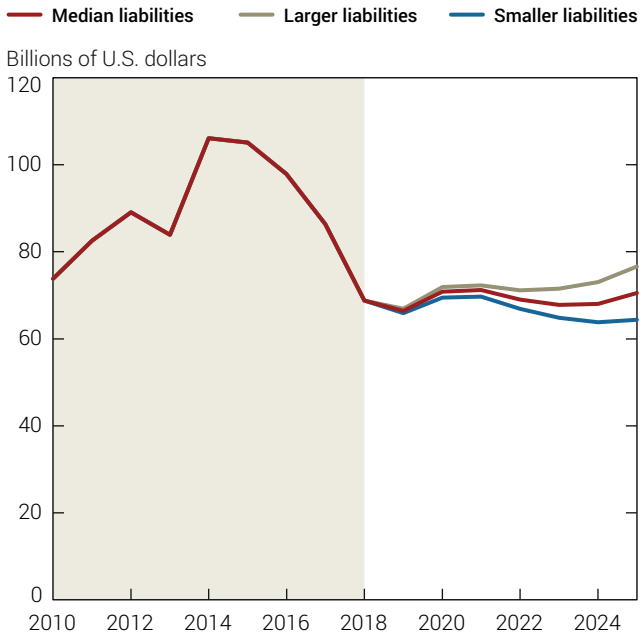
## SOMA NET INCOME AND REMITTANCES

SOMA net income—a measure that reflects income and expenses associated with the SOMA portfolio, including its assumed funding costs—is projected to remain roughly unchanged relative to 2018 until reserve management purchases resume in each scenario (**Chart 4**). Net income is projected to increase after the portfolio begins to expand as purchases of Treasury securities resume at yields in excess of IOER. In comparison to the median liabilities scenario, net income grows at a slower (faster) pace in the smaller (larger) scenario given the slower (faster) pace of income-generating Treasury securities purchases. The lowest projected value for net income over the projection horizon ranges from $64 billion (in 2024) in the smaller liabilities scenario to $67 billion (in 2019) in the larger liabilities scenario.

A set of interest rate shocks illustrates the sensitivity of SOMA net income to alternative interest rate paths in **Chart 5.**[13]

Chart 4

**Projected SOMA Net Income: Alternative Liabilities Scenarios**

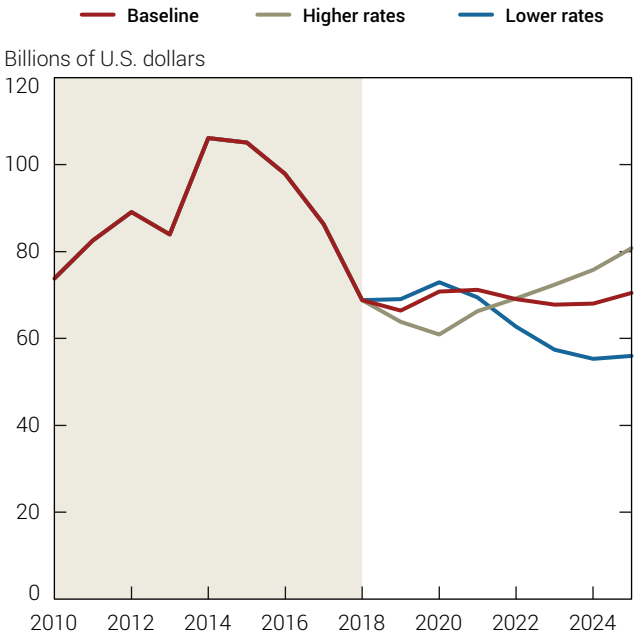



Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end. Figures for 2010-18 (shaded area) are historical net income amounts. Smaller and larger liabilities are based, respectively, on the 25th percentile and 75th percentile responses to a question about the size and composition of the Federal Reserve's long-run balance sheet in the Survey of Primary Dealers and the Survey of Market Participants conducted by the New York Fed in June 2019. Projected figures are rounded.

Chart 5

**Projected SOMA Net Income: Alternative Interest Rate Paths**




Sources: Federal Reserve Bank of New York.

Notes: Figures are as of year-end. Figures for 2010-18 (shaded area) are historical net income amounts.The higher and lower interest rate scenarios assume that all interest rates are 1 percentage point higher or lower, respectively, than the rates used in the baseline scenario. All rate scenarios assume the median path for liabilties. Projected figures are rounded.

Net income stays roughly constant in the baseline interest rate path scenario, assuming a median level of liabilities. In the lower interest rate shock scenario, net income increases relative to the median before the reserves trough is reached, as funding costs decrease more than in the other two scenarios. The opposite is true of the higher interest rate shock scenario: After the reserves trough is reached, net income grows sharply because coupon income generated from Treasury purchases at relatively higher yields more than offsets the additional funding cost resulting from higher interest rates. In the lower interest rate scenario, net income declines after purchases of Treasury securities resume, as coupon income is decreased.

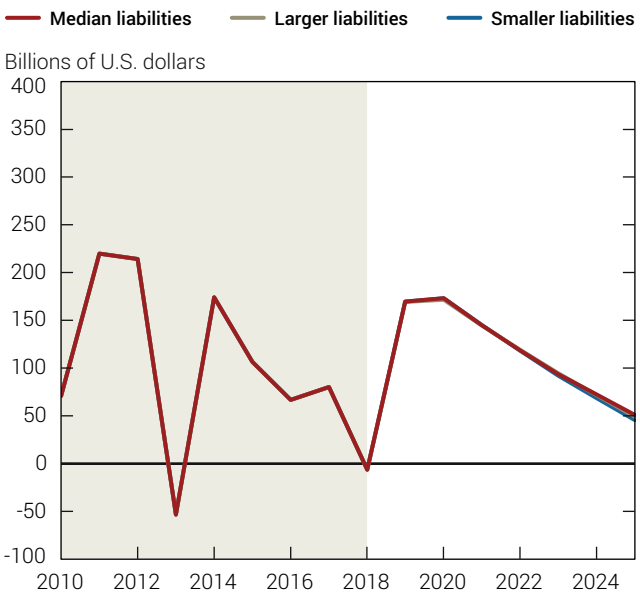
The Federal Reserve remits excess earnings to the U.S. Treasury after providing for the cost of operations, the payment of dividends, and any amount necessary to maintain aggregate Reserve Bank capital surplus up to a specified limit. Remittances associated with the projections shown in this addendum remain positive, and net income generated by the SOMA portfolio is likely to remain roughly steady over the projection period. It is important to bear in mind that the Federal Reserve's policy decisions are intended to advance its dual mandate of maximum employment and price stability, and that the implications of such decisions for government finances extend well beyond their direct influence on the Federal Reserve's earnings.

## SOMA UNREALIZED GAINS AND LOSSES

The market value of securities holdings fluctuates with changes in the prevailing level of interest rates. The unrealized gain on the portfolio, shown in **Chart 6**, calculated as the difference between the market value of the portfolio and its book value (which reflects amortized cost), varies over the projection period

Chart 6

**Projected SOMA Unrealized Gains and Losses: Alternative Liabilities Scenarios**




Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end. Figures for 2010-18 (shaded area) are historical unrealized gains and losses. Smaller and larger liabilities are based, respectively, on the 25th percentile and 75th percentile responses to a question about the size and composition of the Federal Reserve's long-run balance sheet in the Survey of Primary Dealers and the Survey of Market Participants conducted by the New York Fed in June 2019. Projected figures are rounded.

Chart 7

**Projected SOMA Unrealized Gains and Losses: Alternative Interest Rate Paths**


Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end. Figures for 2010-18 (shaded area) are historical unrealized gains and losses. The higher and lower interest rate scenarios assume that all interest rates are 1 percentage point higher or lower, respectively, than the rates used in the baseline scenario. All rate scenarios assume the median path for liabilties. Projected figures are rounded.

but is positive throughout, reaching $51 billion at the end of the projection horizon. These projections are similar across all three liabilities scenarios considered. To measure the sensitivity of this outcome to interest rate assumptions, **Chart 7** compares unrealized gains and losses assuming the median liabilities sizes under the baseline path of interest rates to those implied by the higher and lower interest rate shock scenarios considered earlier; at the end of the projection horizon, under the higher interest rate shock, the portfolio is projected to be held at an unrealized loss of $64 billion, whereas it is projected to be held at an unrealized gain of $161 billion in the lower interest rate shock scenario. The portfolio's unrealized gain or loss position has no effect on net income or Federal Reserve remittances to the Treasury, unless assets are actually sold and those gains or losses are realized and therefore reported in the non-interest income portion of the Federal Reserve's income statement. Similarly, it has no effect on the conduct of monetary policy.[14]

## Conclusion

As with prior exercises, the projections in this addendum are merely illustrative. The actual paths of the SOMA portfolio, Federal Reserve liabilities, and future income will be influenced by a range of factors, including interest rate, economic, and balance sheet developments.

Over the course of 2019, the FOMC announced its decisions to operate in a framework of ample reserves and to stop the decline in the size of the SOMA portfolio. Accordingly, the portfolio size will remain roughly constant for a period of time until reserves have declined to a level that the FOMC views as consistent with an ample reserves regime. Thereafter, the portfolio will resume growth to maintain an appropriate supply of reserves consistent with interest rate control in an ample reserves regime. The timing of the resumption of reserve management purchases to increase the size of the balance sheet will depend on several factors, including the effective and efficient level of reserve balances and the evolution of Federal Reserve liabilities. As a result of ongoing reinvestments and reserve management purchases, the composition of the portfolio will shift more toward holdings of Treasury securities over the forecast horizon, consistent with the FOMC's decision to hold a portfolio composed primarily of Treasury securities in the long run.

# Appendix

The assumptions underlying the scenarios for the portfolio and the SOMA net income projection exercise are presented below. Sources for these assumptions include the June 2019 Survey of Primary Dealers and the June 2019 Survey of Market Participants as well as market-based indicators. The scenarios are also guided by the FOMC's January 2019 Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization, March 2019 Balance Sheet Normalization Principles and Plans, and July 2019 implementation note.

## INTEREST RATE ASSUMPTIONS:

- Market-implied rates as of July 31, 2019, for
  - the effective federal funds rate,
  - the ten-year Treasury yield, and
  - the thirty-year fixed primary mortgage rate.
- The MBS current coupon rate is assumed to be a constant 100 basis points over the primary mortgage rate.
- Money market rates are guided by FOMC communications on policy normalization:
  - The target range for the federal funds rate is 25 basis points wide.
  - The IOER rate is 15 basis points below the top of the target range.
  - The ON RRP offering rate is set at the bottom of the target range.
  - The effective federal funds rate is assumed to be 15 basis points below the top of the target range.

## BALANCE SHEET ASSUMPTIONS:

- Projections start with the Federal Reserve balance sheet as of July 31, 2019.
- Asset-related assumptions
  - Agency MBS prepayments are derived from a staff model.
  - Communications from the FOMC guide the evolution of the SOMA portfolio.
- Liability-related assumptions
  - Longer-run levels of liabilities and capital are based on responses to the survey question on the composition of the balance sheet, on average, in 2025.
  - The reserves trough is based on responses to the survey question on the lowest expected level of reserves between now and 2025.
  - Median liabilities scenario: Reflects the median responses
    - Currency and capital projections assume the constant annual growth rates implied by the 2025 averages (approximately 5 percent and 2 percent, respectively).
    - Reserve balances decline until they reach $1.2 trillion.
    - Reserve balances grow to $1.3 trillion in 2025.
    - All other liability line items are held constant at expected 2025 levels:
      - Deposits in the TGA: $350 billion
      - Foreign repo pool: $250 billion
      - ON RRP: $10 billion
      - Other deposits: $70 billion
  - Larger liabilities scenario: Reflects the 75th percentile responses
    - Currency and capital projections assume the constant annual growth rates implied by the 2025 averages (approximately 6 percent and 5 percent, respectively).
    - Reserve balances decline until they reach $1.25 trillion.
    - Reserves balances grow to $1.5 trillion in 2025.
    - All other liability line items are held constant at expected 2025 levels:
      - Deposits in the TGA: $400 billion
      - Foreign repo pool: $262 billion
      - ON RRP: $20 billion
      - Other deposits: $81 billion
  - Smaller liabilities scenario: Reflects the 25th percentile responses
    - Currency and capital projections assume the constant annual growth rates implied by the 2025 averages (approximately 3 percent and less than 1 percent, respectively).
    - Reserve balances decline until they reach $1.1 trillion.
    - Reserves balances reach $1.1 trillion at the end of 2025.
    - All other liability line items are held constant at expected 2025 levels:
      - Deposits in the TGA: $300 billion
      - Foreign repo pool: $220 billion
      - ON RRP: $1 billion
      - Other deposits: $60 billion

# Endnotes

[1] See the FOMC communication, Statement Regarding Monetary Policy Implementation and Balance Sheet Normalization (January 2019).

[2] Together, the January, March, and July announcements revise and replace the FOMC's earlier communication regarding policy normalization, Policy Normalization Principles and Plans (2014, updated 2015 and 2017).

[3] See the FOMC communication, Decisions Regarding Monetary Policy Implementation (July 2019).

[4] For further discussion on the mechanics of the Federal Reserve's balance sheet, see Box 3, "Explaining Changes in the Federal Reserve's Balance Sheet," in *Open Market Operations during 2018*.

[5] However, the size of these purchases will likely be larger in nominal terms, reflecting faster growth in non-reserve liabilities than before the crisis.

[6] The Survey of Primary Dealers is available at **https://www.newyorkfed.org/markets/primarydealer_survey_questions** and the Survey of Market Participants is available at **https://www.newyorkfed.org/medialibrary/media/markets/survey/2019/jun-2019-smp-results.pdf**.

[7] In May 2015, the Treasury announced its intention to hold in the TGA a level of cash generally sufficient to cover one week of outflow, subject to a minimum balance objective of roughly $150 billion. Since then, the TGA has generally been well above this level. For details, see **https://www.treasury.gov/press-center/press-releases/Pages/jl10045.aspx**.

[8] For more detail, see the quarterly refunding statement released by the U.S. Treasury on July 29, 2019, **https://home.treasury.gov/news/press-releases/sm743**.

[9] The average of the distribution of weekly figures for reserve balances was $1.98 trillion, and the corresponding interquartile range was between $2.12 trillion and $1.84 trillion. For a more detailed discussion of these factors, see the "Selected Liabilities" section of *Open Market Operations during 2018*.

[10] In reality, changes in both assets and liabilities on the Federal Reserve's balance sheet impact the level of reserves. However, given the larger size and variability of certain liabilities and secular growth in these factors, we focus primarily on the impact of non-reserve liabilities to simplify this discussion. In particular, we focus on Federal Reserve notes, the Treasury General Account, and other deposit accounts.

[11] Implied paths for the federal funds rate, ten-year Treasury yield, and thirty-year primary mortgage rate are derived using staff calculations that rely upon Bloomberg quotes as of July 31, 2019. For more detail, please see the Appendix.

[12] The timing of principal payments from maturing Treasury securities and agency debt securities is known with certainty since maturity dates are fixed. In contrast, projected principal pay-downs associated with agency MBS are subject to considerable uncertainty owing to the embedded prepayment option in the underlying mortgages. This uncertainty necessitates the use of model-based estimates for MBS principal pay-downs that are sensitive to changes in interest rates, home prices, and other factors. For a more detailed description, see Box 3, "Agency MBS Prepayment Uncertainty," in *Open Market Operations during 2017*.

[13] The higher and lower interest rate scenarios examined in Chart 5 assume that all interest rates are 1 percentage point (100 basis points) higher or lower, respectively, than the rates used in the baseline scenario. In each case, the shocks are phased in over two quarters. This analysis is done using the median liabilities scenario as the baseline case. All other assumptions are held constant.

[14] For securities that are held to maturity, at which point the Federal Reserve will receive the par values, the market valuation of the securities and their amortized cost converge to the par value so that the unrealized position gradually reduces to zero as the securities approach maturity. For an explanation of the accounting principles regarding unrealized and realized positions, as well as the potential implications for the Federal Reserve's ability to meet its obligations, see Brian Bonis, Lauren Fiesthumel, and Jamie Noonan, "SOMA's Unrealized Loss: What Does It Mean?," Federal Reserve Board of Governors *FEDS Notes*, August 13, 2018, **https://www.federalreserve.gov/econres/notes/feds-notes/somas-unrealized-loss-what-does-it-mean-20180813.htm**.