OPEN MARKET OPERATIONS

DURING 2022

A Report Prepared for the
Federal Open Market Committee
by the Markets Group of the
Federal Reserve Bank of New York

APRIL
2023

CONTENTS

This report, presented to the Federal Open Market Committee by Roberto Perli, Manager of the System Open Market Account, describes open market operations of the Federal Reserve System for the calendar year 2022. Christian Cabanilla, Shafat Alam, Aidan Brown, Kathryn Chen, Dayna Goodwin, Radhika Mithal, Linsey Molloy, and Julie Remache were primarily responsible for preparation of the report.

OVERVIEW

KEY DEVELOPMENTS IN 2022

During 2022, inflation remained above the Federal Open Market Committee's longer-run target and the labor market remained strong. In response, the Federal Open Market Committee (FOMC or Committee) increased the target range for the federal funds rate from zero to ¼ percent to 4 ¼ to 4 ½ percent by year-end. The Federal Reserve's monetary policy implementation framework continued to be effective, with the effective federal funds rate (EFFR) remaining within its target range during the year.

The Committee also began the process of reducing the size of the Federal Reserve's balance sheet during 2022. In January, the Committee released its Principles for Reducing the Size of the Federal Reserve's Balance Sheet.[1] The release communicated the high-level principles regarding the Committee's intended approach, including information on sequencing for removing policy accommodation. The Committee subsequently issued its Plans for Reducing the Size of the Federal Reserve's Balance Sheet in May.[2] The Committee stated that it intended to reduce the Federal Reserve's securities holdings in a predictable manner, primarily by adjusting the reinvested amounts of principal payments on System Open Market Account (SOMA) securities holdings. Beginning on June 1, principal payments from Treasury and agency securities held in the SOMA were reinvested to the extent that they exceeded monthly caps. The redemption caps were subsequently raised to their current level starting in September. After reaching a high of $8.97 trillion following the final net asset purchases in the first quarter, the Federal Reserve's balance sheet decreased to $8.55 trillion at year-end 2022. Total assets as a share of nominal GDP (NGDP) also declined, falling from 36 percent in 2021 to 33 percent by the end of 2022.

The composition of Federal Reserve liabilities also shifted during 2022. The size of the overnight reverse repurchase (ON RRP) facility saw material growth during the first half of the year, before ending the year at an average level of $2.18 trillion in December. In contrast, reserve balances decreased by $1.08 trillion to an average level of $3.09 trillion in December 2022. The Treasury General Account (TGA) saw significant variation during the year, peaking in the second quarter at $964.4 billion before declining to $446.7 billion at year-end 2022. (See **Box 2** on page 28 for additional details on changes in the composition of Federal Reserve liabilities.)

The ON RRP facility continued to serve its intended purpose of supporting effective policy implementation by providing an investment option for a broad base of money market investors. The significant growth in usage of the ON RRP facility in 2022 was driven by the attractiveness of the ON RRP rate compared to other short-term money market rates, as well as a broader preference for shorter-duration investments, mainly from money market funds (MMFs).

As overnight interest rates traded well below the top of the federal funds target range, the standing repurchase agreement facility (SRF) was not actively used. The SRF is intended to act as a backstop to address temporary pressures in overnight funding markets that could spill over to the federal funds market and potentially impair the implementation of monetary policy. The criteria for SRF counterparty eligibility were expanded during 2022 and fourteen depository institutions were added to the facility over the year, bringing the total number of SRF counterparties to seventeen, in addition to primary dealer counterparties.

Global U.S. dollar funding markets remained stable throughout the year amid broad increases in policy rates across several jurisdictions and abundant dollar liquidity across the financial system, as reflected in broadly lower average usage of U.S. dollar central bank swap lines during 2022 compared to 2021. Usage of the standing overnight repurchase agreement facility for foreign and international monetary authorities (commonly referred to as the FIMA repo facility) was limited to transactions undertaken by FIMA account holders for operational readiness purposes.

The cumulative effect of increases in administered rates into 2022 resulted in sharply higher interest expense, and SOMA net income declined to $65.7 billion in 2022 from $114.8 billion in 2021. The Federal Reserve remitted a total of $76.0 billion to the U.S. Treasury in 2022. By September 2022, most Reserve Banks had suspended weekly remittances to the Treasury, and the Federal Reserve System started accumulating a deferred asset, which totaled $16.6 billion at year-end.[3] (See **Box 3**, "Understanding Net Income and Deferred Assets at the Federal Reserve during 2022," on page 34.) The deferred asset, which reflects the cumulative negative net income of the Federal Reserve, has no implications for how the Federal Reserve conducts monetary policy and does not constrain its ability to meet its financial obligations. The SOMA portfolio ended the year with a significant unrealized loss position, reflecting broader increases in market yields during the year; this unrealized position has no effect on net income or remittances to the Treasury.

The Open Market Trading Desk at the Federal Reserve Bank of New York (the Desk) did not conduct any foreign exchange intervention activity during 2022, and the SOMA foreign currency reserve portfolio totaled $18.6 billion at the end of the year. The Desk continued to manage the SOMA foreign currency reserve holdings in line with the portfolio's investment objectives of liquidity, safety, and return.

In coming years, the size and composition of the Federal Reserve's balance sheet will continue to evolve. Staff projections, which reflect the FOMC's plans for balance sheet reduction, show the portfolio declining in size for several years, then remaining generally steady through reinvestments, before finally expanding to match the growth in Federal Reserve liabilities. Over time, portfolio holdings shift toward Treasury securities, consistent with the FOMC's intention to return to a portfolio composed primarily of Treasury securities. Using survey-based assumptions about the path of interest rates, the projections indicate that SOMA net income could remain negative for several years, driven by the increased cost of interest-bearing Federal Reserve liabilities, before returning to positive levels in subsequent years.

Operational resilience is an important priority, and the New York Fed continued to enhance its operational flexiblity as well as its cyber and geographic resilience. The Desk continued its practice of undertaking small-value excercises with counterparties in order to maintain its readiness to implement a range of potiential FOMC directives.

The Federal Reserve continued to engage with other authorities and private-sector parties on efforts that support structural improvements to market functioning. A number of initiatives related to enhancing Treasury market functioning continued to make substantive progress during the year. The Desk continues to monitor Treasury market functioning through a suite of metrics and qualitative outreach to market participants. (See **Box 1**, "Treasury Market Resiliency and Monitoring Market Functioning," on page 13.)

A GUIDE TO THIS REPORT

This report is divided into five main sections:

1. **The Federal Reserve's Framework for Monetary Policy Implementation**: This section provides an overview of the Federal Reserve's framework for monetary policy implementation, including the purpose and usage of the various tools employed by the Desk. (**pp. 5-6**)

2. **Open Market Operations**: This section describes the steps taken by the Desk within the framework to implement the FOMC's operating directives in money markets and securities markets during 2022. The Desk's operations to manage the Federal Reserve's portfolio of foreign currency–denominated assets are also included in this section. (**pp. 7-18**)

3. **Selected Balance Sheet Developments**: This section examines the composition of the Federal Reserve's balance sheet, reviews developments related to the SOMA portfolio, and discusses the purposes of and recent trends in the Federal Reserve's liabilities. It also presents an illustrative projection of the balance sheet and SOMA net income under a set of simplifying assumptions. (**pp. 19-40**)

4. **Counterparties**: This section reviews the trading counterparties to the Desk's domestic and foreign open market operations. (**pp. 41-42**)

5. **Operational Flexibility and Resiliency**: This final section highlights actions implemented to enhance cyber resilience and details operational readiness exercises undertaken during the year. (**pp. 43-44**)

Appendix 1 provides summaries of the key terms for each of the Desk's operations. Appendix 2 highlights links to the FOMC documents governing Desk operations. Appendix 3 summarizes the Desk's public disclosures about its operations. Appendix 4 presents assumptions underlying the scenarios for the SOMA portfolio and the SOMA net income projections. Appendix 5 provides links to web pages where source material for Federal Reserve–related content can be found.

Underlying data for the charts shown in this report is provided on the New York Fed's website to the extent that its release is permitted by data suppliers. Additional questions regarding this report and the underlying data can be addressed to **ny.mkt.soma.annualreport@ny.frb.org**.

THE FEDERAL RESERVE'S FRAMEWORK FOR MONETARY POLICY IMPLEMENTATION

The Federal Reserve implements monetary policy in a framework that includes a target range for the federal funds rate to communicate the FOMC's policy stance, a set of administered rates set by the Federal Reserve, and market operations directed by the FOMC and conducted by the Desk to promote money market conditions consistent with the FOMC's target range for the policy rate. The FOMC can also employ forward guidance for the target range for the policy rate and alter the size and composition of the Federal Reserve balance sheet as a mechanism for achieving its objectives. The framework supports the FOMC's pursuit of its maximum employment and price stability objectives, mandated by Congress and articulated in the Committee's Statement on Longer-Run Goals and Monetary Policy Strategy, which it reaffirmed in January 2022.[4]

The money market tools used by the Federal Reserve for policy implementation are designed to maintain short-term interest rate control in an environment of ample reserves in the banking system. The FOMC's policy rate is the federal funds rate, which is maintained within a target range set by the Committee. The federal funds rate is the rate at which depository institutions and other eligible entities conduct overnight unsecured transactions in central bank balances. The Federal Reserve sets two main administered rates: The rate of interest on reserve balances (IORB) is paid to depository institutions with accounts at the Federal Reserve, while the ON RRP rate is offered to a wide range of money market lenders. These administered rates are set at levels that support the federal funds rate trading within the target range.

Given the safety and convenience of maintaining reserves in Federal Reserve accounts, little incentive exists for banks to lend to private-sector counterparties at rates lower than the IORB rate. However, since not all money market participants are eligible to hold Federal Reserve accounts or to earn the IORB rate, the EFFR can trade below the IORB rate. As such, the ON RRP facility supports control over the federal funds rate by offering a broader range of money market participants an overnight investment, which enhances their bargaining power in negotiating similar private-sector transactions. Amid significant shifts in reserve levels in recent years, the Federal Reserve has been able to maintain control of the EFFR through use of its administered rates.

In 2021, the Committee established two standing repurchase agreement (repo) facilities, the SRF and the FIMA repo facility, to serve as backstops in money markets to support the effective implementation of monetary policy and smooth market functioning. The Federal Reserve offers daily SRF operations on a standing basis against Treasury, agency debt, and agency mortgage-backed securities (MBS), with pricing set above the general level of overnight interest rates. These features of the SRF allow the facility to limit any potential upward pressure in repo rates that could contribute to the federal funds rate moving above its target range. The SRF is open to primary dealers and eligible depository institutions. The FIMA repo facility provides account holders, which consist of central banks and other foreign monetary authorities, an alternative means to access temporary U.S. dollar liquidity against their holdings of Treasury securities other than through sales of Treasury securities. As a result, the FIMA repo facility can help address pressures in dollar funding markets that could otherwise affect U.S. financial conditions. In this respect, the FIMA repo facility complements the U.S. dollar liquidity swap lines as a backstop for dollar funding.

Changes in the size or composition of the balance sheet are an important part of the monetary policy implementation framework, although the purpose of these changes can vary depending on the circumstances. Asset purchases can be used to maintain ample levels of reserves in the banking system and support interest rate control. Such reserve management purchases were a regular feature of monetary policy prior to the global financial crisis and were also conducted in 2019 and 2020 to lift the level of reserves in the banking system.

Asset purchases can also be used to directly influence financial conditions. In circumstances where the federal funds rate is constrained by the effective lower bound, the FOMC may direct the Desk to conduct asset purchases to further ease financial conditions. In such cases, asset purchases put downward pressure on longer-term interest rates by reducing the stock of longer-term debt held by the public. Such purchases were employed in the wake of the global financial crisis to put downward pressure on yields and to promote a stronger economic recovery, and more recently to foster accommodative financial conditions in response to the COVID-19 pandemic.

Lastly, on occasion, asset purchases can be used to address severe disruptions to market functioning that could impede the transmission of monetary policy and affect broader financial stability. Purchases can alleviate frictions in dealer intermediation, establish clearing prices for the assets purchased, and ease balance sheet constraints of private market participants. As such, these factors can help restore the functioning of private markets and support the flow of credit to the U.S. economy. For example, in March 2020 asset purchases were conducted to address severe disruptions in U.S. Treasury, agency MBS, and agency commercial mortgage-backed securities (CMBS) markets and support market functioning.

OPEN MARKET OPERATIONS

To implement monetary policy, the Desk conducts open market operations as directed by the FOMC. Domestic open market operations in 2022 included outright purchases of Treasury securities and agency MBS, as well as repurchase agreements and reverse repurchase agreements. These operations also included the securities lending program to support smooth functioning of Treasury markets. The Desk also manages the SOMA foreign reserves portfolio and maintains swap arrangements with certain foreign central banks to provide dollar liquidity to global funding markets.

MONEY MARKET DEVELOPMENTS AND RELATED POLICY MEASURES

During 2022, the FOMC increased the target range for the federal funds rate from 0 to ¼ percent to 4 ¼ to 4 ½ percent by year-end, with four increases of 75 basis points each occurring between June and November (**Table 1 and Chart 1**). Throughout the year the effective federal funds rate remained consistently within the target range, generally at a spread of 8 basis points below the IORB rate (**Chart 2**).

Uncertainty about the path of the economy and monetary policy in 2022 led to greater investor preference for shorter-duration investments, mainly from MMFs. Along with a declining supply of Treasury bills, these factors put downward pressure on yields in money markets. Private overnight repo rates often traded below the ON RRP rate and Treasury bill rates frequently traded below comparable maturity money market rates during the year, which increased the attractiveness of the rate offered at the ON RRP facility and contributed to its growth, especially during the first half of 2022.[5] In addition, deposit rates across the banking system increased more slowly than the federal funds target range, which further supported the amount of assets under management at MMFs and, by extension, demand at the ON RRP facility.

As balance sheet runoff proceeded into late 2022, a range of money markets began to see some shifts. There were emerging signs of greater competition for deposits and increases in demand for wholesale borrowing by some banks. For example, advances from Federal Home Loan Banks (FHLBs) and borrowing by domestic banks in the federal funds market both saw increases into the end of the year. In addition, Treasury bill yields and private repo rates began to increase relative to the ON RRP rate during the second half of 2022, in part due to higher levels of net Treasury bill issuance. ON RRP take-up was lower on certain days, such as Treasury settlement days, and there was a modest increase in private repo borrowing activity toward the end of 2022.

REVERSE REPURCHASE AGREEMENTS

During 2022, the FOMC continued to direct the Desk to conduct ON RRP operations at an offering rate 5 basis points above the bottom of the target range for the federal funds rate. During 2022, there were no changes to counterparty limits, overall limits on the size of the facility, or eligibility requirements.

Operational Results

Usage of the ON RRP facility increased primarily during the first half of 2022 and remained more stable in the second half of the year, outside of temporary increases near quarter- and year-end periods. Daily take-up at the ON RRP averaged $2.18 trillion during December, reaching a high of $2.55 trillion at year-end. Over the year, MMFs, government-sponsored enterprises (GSEs),

Table 1

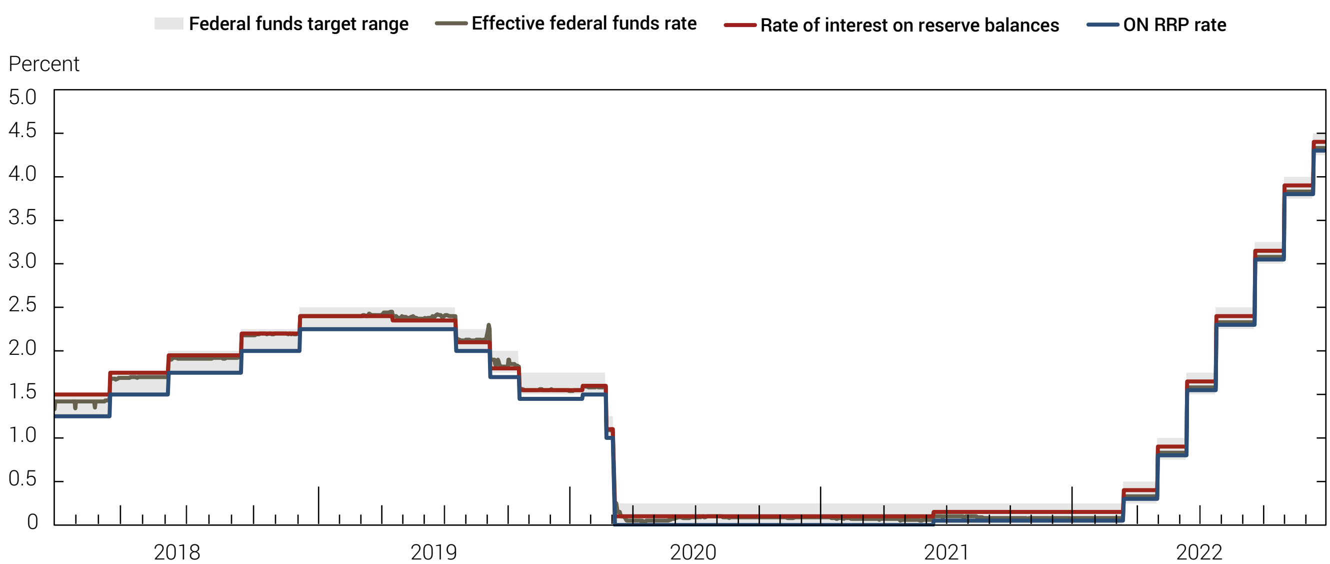
Key Policy Rates Effective in 2022

FOMC Meeting Announcing Policy Rate Changes	Effective Date Range for Policy Rates during 2022	Federal Funds Target Range		IORB Rate		ON RRP Rate		Spread between IORB and ON RRP Rates	SRF Rate	
		Rate (Percent)	Change (Basis Points)	Rate (Percent)	Change (Basis Points)	Rate (Percent)	Change (Basis Points)	Level (Basis Points)	Rate (Percent)	Change (Basis Points)
March 2022	March 17 to May 4	¼ to ½	25	0.40	25	0.30	25	10	0.50	25
May 2022	May 5 to June 15	¾ to 1	50	0.90	50	0.80	50	10	1.00	50
June 2022	June 16 to July 27	1½ to 1¾	75	1.65	75	1.55	75	10	1.75	75
July 2022	July 28 to September 21	2¼ to 2½	75	2.40	75	2.30	75	10	2.50	75
September 2022	September 22 to November 2	3 to 3¼	75	3.15	75	3.05	75	10	3.25	75
November 2022	November 3 to December 14	3¾ to 4	75	3.90	75	3.80	75	10	4.00	75
December 2022	December 15 to December 31	4¼ to 4½	50	4.40	50	4.30	50	10	4.50	50

Sources: Federal Open Market Committee; Board of Governors of the Federal Reserve System.

Chart 1

Federal Funds Target Range, Effective Federal Funds Rate, Rate of Interest on Reserve Balances, and ON RRP Rate

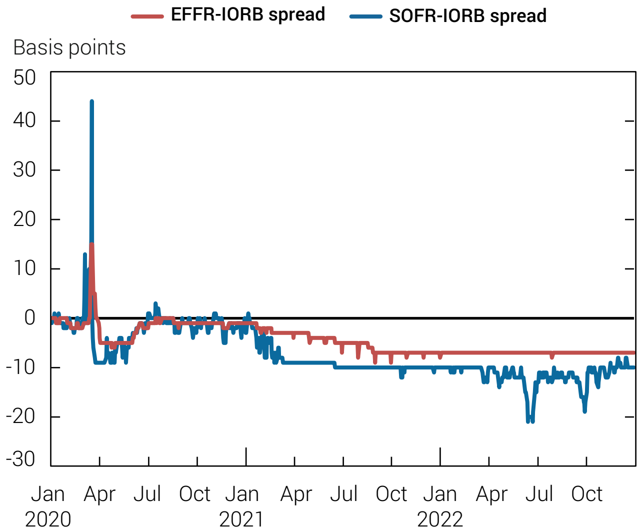


Source: Federal Reserve Bank of New York.

Notes: Figures are daily. For data prior to July 29, 2021, rate of interest on reserve balances refers to the rate of interest on excess reserves.

Chart 2

Effective Federal Funds Rate and Secured Overnight Financing Rate Spreads to IORB



Source: Federal Reserve Bank of New York.

Note: Prior to July 29, 2021, interest on reserve balances (IORB) was referred to as interest on excess reserves (IOER).

and primary dealers accounted for an average of 91 percent, 7 percent, and 3 percent of the participation in the ON RRP facility, respectively (**Chart 3**).[6] (See the "Money Market Developments and Related Policy Measures" section of this report for additional detail on the increase in ON RRP usage.)

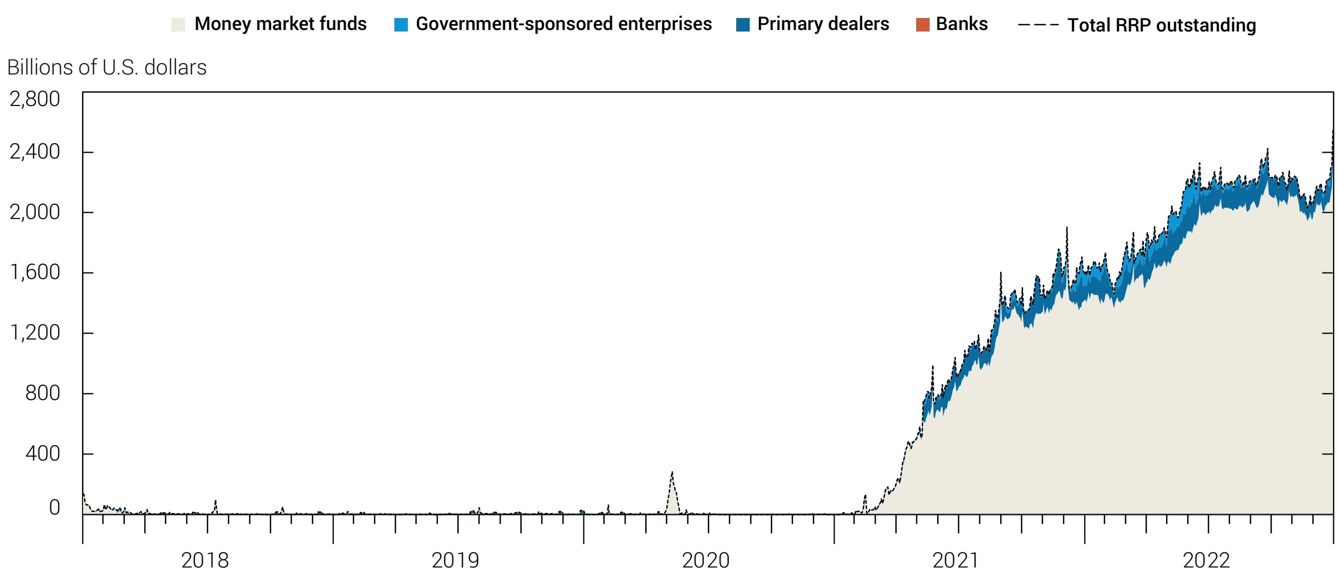
REPURCHASE AGREEMENTS

STANDING REPURCHASE AGREEMENT FACILITY

Under the SRF, the Desk offers daily overnight repo operations against Treasury securities, agency debt securities, and agency MBS at a backstop rate intended to limit upward pressure on overnight interest rates. As directed by the FOMC, the Desk offered daily overnight repo operations with a minimum bid rate in line with the top of the federal funds target range and an aggregate limit of $500 billion. The eligibility requirements for SRF counterparties were adjusted in April 2022 to allow a broader set of depository institutions to access the facility. (See the "Counterparties" section of this report for additional detail.)

Chart 3

SOMA Reverse Repo Amounts Outstanding by Counterparty Type



Source: Federal Reserve Bank of New York.

Note: Figures are daily and include overnight and term operations.

Operational Results

Given continued stable funding market conditions and repo market rates trading well below the SRF's minimum bid rate, the facility had little usage in 2022. SRF counterparties participated in periodic small-value transactions during 2022 that were conducted for operational readiness purposes.

FOREIGN AND INTERNATIONAL MONETARY AUTHORITY (FIMA) REPO FACILITY

As directed by the FOMC, the FIMA repo facility enables approved account holders to enter overnight repo transactions with the Federal Reserve against Treasury securities that are held in custody at the New York Fed. FIMA repo transactions are conducted at an offering rate equal to the minimum bid rate for the standing repurchase agreement facility.

Operational Results

Usage of the FIMA repo facility was limited given stable U.S. dollar funding market conditions, ample U.S. dollar liquidity, and the backstop nature of the facility's pricing. During 2022, there was modest usage of the facility by FIMA account holders for operational readiness purposes.

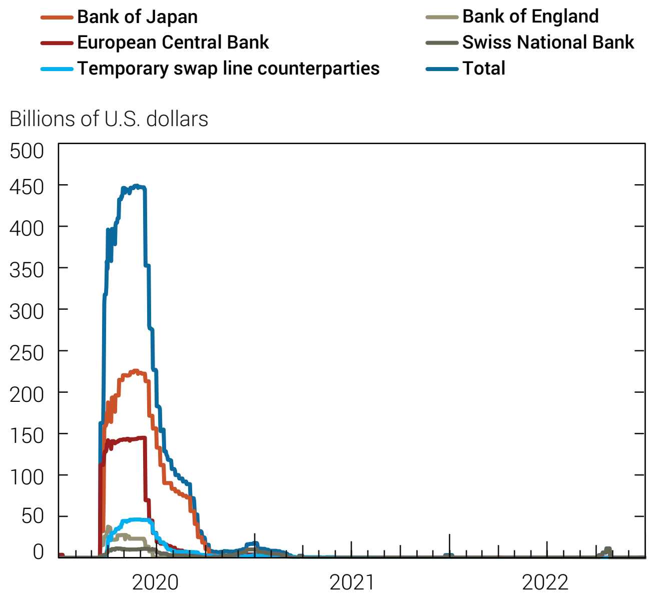
CENTRAL BANK LIQUIDITY SWAPS

In 2022, the FOMC continued to direct the Desk to maintain standing U.S. dollar and foreign currency liquidity swap lines with a network of five other major central banks—the Bank of Canada (BoC), Bank of England (BoE), Bank of Japan (BoJ), European Central Bank (ECB), and Swiss National Bank (SNB). During 2022, U.S. dollar swap operations were offered weekly at a one-week tenor, which is the typical operating practice in stable global dollar funding conditions.

The U.S. dollar liquidity swap lines, which involve a temporary exchange of currencies between two central banks, provide a liquidity backstop to ease strains in global funding markets or reduce the risk that they could emerge, thereby helping to mitigate the effects of such strains on the supply of credit to households and businesses, both domestically and abroad. The foreign central bank receiving dollars lends the dollars in secured transactions with local banks.

Chart 4

U.S. Dollar Liquidity Swaps Outstanding by Central Bank



Source: Federal Reserve Bank of New York.

Notes: Figures are daily. Temporary swap line counterparties include Bank of Korea, Monetary Authority of Singapore, Banco de México, Reserve Bank of Australia, Danmarks Nationalbank, and Norges Bank.

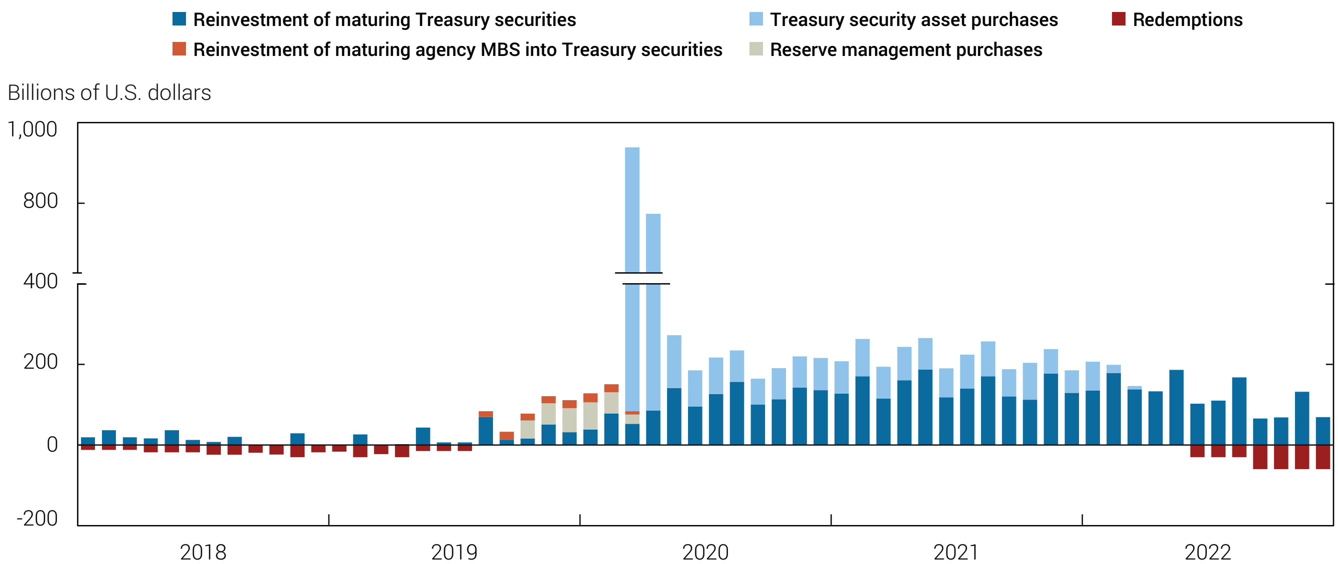
Operational Results

Overall, usage of U.S. dollar liquidity swap lines was modest in 2022, remaining well under $1 billion for most of the year, as global dollar funding markets largely functioned smoothly against a backdrop of elevated levels of bank reserves and abundant dollar liquidity (**Chart 4**). Four of the five central banks with standing swap line arrangements drew on their lines in 2022, namely the BoE, BoJ, ECB, and SNB. Usage reached a high of $11.3 billion in mid-October, driven primarily by draws from the SNB, which peaked at $11.1 billion. These draws were associated with local money market dynamics and were not reflective of broader offshore dollar funding strains.[7] Usage of the swap lines reverted to low levels by late October.

TREASURY SECURITIES OPERATIONS

In early 2022, the FOMC directed the Desk to continue slowing the pace of net purchases of Treasury securities,

Chart 5
SOMA Treasury Transactions



Source: Federal Reserve Bank of New York.

continuing the process that began in late 2021. In line with these directives, the Desk increased Treasury securities holdings in the January and February monthly purchase periods by smaller amounts than it had in previous months. At its March meeting, the FOMC directed the Desk to reinvest all maturing Treasury securities into newly issued Treasury securities to maintain the size of the SOMA. Apart from small-value exercises, the Desk did not conduct additional operations to purchase Treasury securities after March.

Consistent with the FOMC's Plans for Reducing the Size of the Federal Reserve's Balance Sheet, beginning in June SOMA Treasury holdings were redeemed up to a monthly cap. In months in which coupon maturities were less than the monthly cap, Treasury bills were also redeemed in amounts needed to meet the monthly cap. In the first phase of runoff from June to August, the cap on redemption of Treasury securities was $30 billion per month. Beginning in September, the cap increased to $60 billion per month. The FOMC continued to direct the Desk to reinvest at auction all principal payments above the monthly redemption cap from SOMA holdings of Treasury securities.

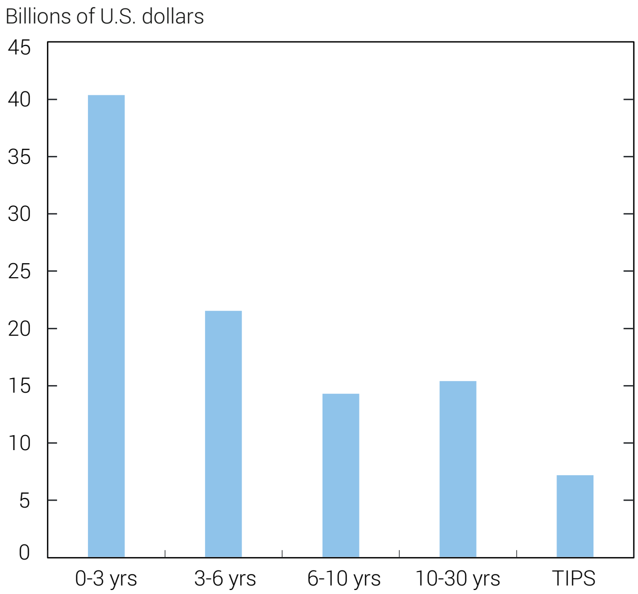
TREASURY SECURITY ASSET PURCHASES

Operational Results

Treasury security asset purchases during 2022 totaled $60 billion and were conducted during the January and February monthly purchase periods (**Chart 5**). The Desk's purchases of Treasury securities continued to be conducted across a range of maturities roughly in proportion to the outstanding issuance of Treasury securities (**Chart 6**). The Desk refrained from purchasing Treasury bills given high investor demand and the marginal impact of bill purchases on broader financial conditions.[8] Offers were generally attractive relative to indicative and theoretical prices for these securities. Offered amounts in Treasury security purchase operations were, on average, three times those of securities purchased, reflecting a slight increase compared to levels from 2021.

Treasury asset purchases ended in early March 2022, concluding the Federal Reserve's purchases of Treasury securities that began in March 2020. The Desk continued to conduct small-value purchase and sales operations for operational readiness purposes. (See the "Operational Readiness" section of this report for a summary of small-value exercises.)

Chart 6
Distribution of SOMA Treasury Purchases across Sectors in 2022



Source: Federal Reserve Bank of New York.

Note: Excludes purchases conducted for the purpose of testing operational readiness.

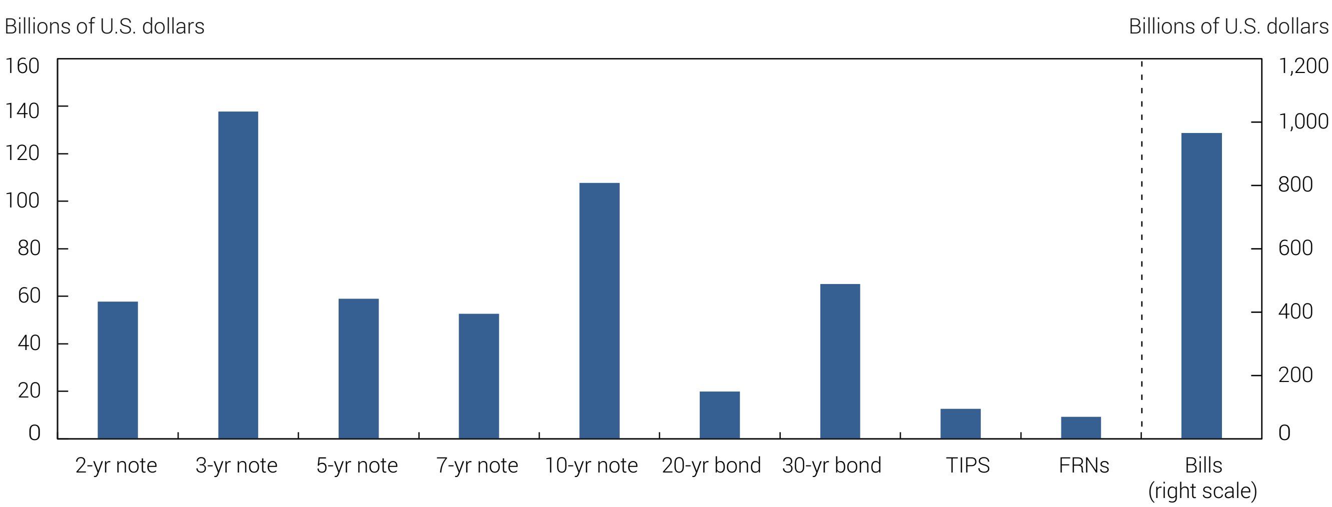
REINVESTMENTS OF TREASURY SECURITY PRINCIPAL PAYMENTS

Operational Results

From January to May, the Desk reinvested a total of $772.1 billion of maturing Treasury securities at auction, composed of $426.5 billion in Treasury bill reinvestments and $345.6 billion in Treasury coupon reinvestments. Consistent with the FOMC's directives, in June the Desk began to reinvest maturing Treasury securities only to the extent they exceeded the monthly cap. From June through December, the Desk reinvested $715.7 billion of maturing Treasury securities, comprising $539.5 billion in Treasury bill reinvestments and $176.2 billion in Treasury coupon reinvestments.

Maturing Treasury coupons were reinvested into coupon securities and maturing Treasury bills were reinvested into bills at auctions of newly issued Treasury securities. Bids by the SOMA at auctions of Treasury securities are placed as noncompetitive tenders and are treated as add-ons to announced auctions sizes. Maturing amounts were apportioned pro rata based on the issuance amounts of securities that settled on the matching maturity date. Specifically, on mid-month maturity dates the Desk reinvested maturing Treasury coupon

Chart 7
Distribution of SOMA Reinvestments at Treasury Auctions in 2022



Source: Federal Reserve Bank of New York.

Note: Bars show the cumulative amount of Treasury securities acquired through reinvestments in 2022.

Box 1

TREASURY MARKET RESILIENCY AND MONITORING MARKET FUNCTIONING

The U.S. Treasury market remains the deepest and most liquid securities market in the world and is fundamental for the transmission of monetary policy. Maintaining these characteristics of the U.S. Treasury market is a goal of the Federal Reserve and other U.S. government agencies. The Desk actively monitors U.S. Treasury market functioning in support of these goals. This box details how the Federal Reserve monitored U.S. Treasury market functioning as liquidity worsened during 2022 and provides an update on the progress of the Inter-Agency Working Group for Treasury Market Surveillance (IAWG) on improving the longer-term resiliency of the U.S. Treasury market.[a]

Monitoring Treasury Market Functioning

Extensive monitoring of the U.S. Treasury market is conducted by the Desk through market outreach, monitoring of market data, and analysis of internal operations data. The Desk conducts daily outreach across a broad range of market participants to gather views on the functioning of the Treasury markets. This outreach complements a range of financial market indicators that the Desk monitors to assess trends in the liquidity and functioning of Treasury markets, which include more common measures of liquidity used across financial markets, such as relative value across Treasury securities and the ease with which U.S. Treasury securities can be bought and sold.[b] The Desk also utilizes internal data across the range of open market operations it conducts to analyze counterparty- and aggregate-level metrics.

During 2022, an increase in broader interest rate volatility contributed to deterioration in a range of Treasury market liquidity and functioning metrics tracked by the Desk. Market outreach conducted by the Desk suggested Treasury markets continued to function effectively, but with lower levels of liquidity. For example, bid-ask spreads widened modestly in 2022 but remained below the levels observed during the onset of the pandemic-related market disruptions (**Chart 8**).

Although a range of metrics suggested challenging liquidity conditions, outreach by the Desk indicated that market participants continued to be able to conduct trades, albeit at higher transaction costs and in smaller sizes. Treasury market liquidity tends to be reduced during periods of heightened volatility, and the lower levels of liquidity during 2022 were broadly in line with the increases in volatility during the year.

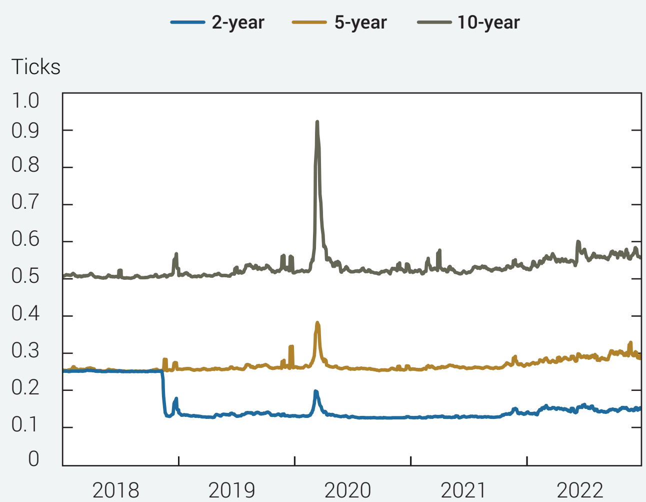
IAWG Progress in Improving Treasury Resiliency

Market-monitoring efforts by the Desk run parallel to the work of the IAWG, which is focused on improving the broader resilience of the U.S. Treasury market. The IAWG's work has focused on five main areas—expanded central clearing, the resilience of market intermediation, data quality and availability, trading venue transparency and oversight, and the effects of leverage and fund liquidity risk management. The IAWG made significant progress on these goals during 2022, as detailed in an IAWG-published Staff Progress Report and discussed at the 2022 U.S. Treasury Market Conference.[c]

continued on page 14

Chart 8

Daily Bid-Ask Spreads for On-the-Run Treasury Securities (Five-Day Rolling Average)



Source: BrokerTec.

Note: Effective November 19, 2018, BrokerTec halved the tick size in the two-year note from ¼ to 1/8 of a 32nd.

This progress includes:

Evaluating expanded central clearing. The Securities and Exchange Commission (SEC) proposed a rule in September 2022 that would enhance risk management practices for central counterparties in the Treasury market and result in additional clearing of secondary market transactions in Treasury securities.[d]

Bilateral repo data. The Treasury Department's Office of Financial Research (OFR) in February 2022 announced a pilot program to collect transaction-level data on the historically opaque non-centrally cleared bilateral repo markets.[e]

SEC dealer registration. The SEC proposed new rules in March 2022 that would require market participants acting in dealer-like roles and/or engaging in material buying and selling of government securities to register with the SEC, among other requirements.[f]

Enhancements to public data. The SEC approved a proposal to increase the frequency of aggregate U.S. Treasury Trade Reporting and Compliance Engine, or TRACE, transaction data releases and include additional metrics. The SEC also proposed an amendment to require additional data reporting in Form PF for certain investment advisors.

[a] The IAWG was formed by the Treasury Department, Securities and Exchange Commission (SEC), and Federal Reserve Board in 1992 to improve monitoring and surveillance and strengthen interagency coordination with respect to the Treasury markets.

[b] For example, see Michael Fleming and Claire Nelson, "How Liquid Has the Treasury Market Been in 2022?," Federal Reserve Bank of New York *Liberty Street Economics*, November 15, 2022, at https://libertystreeteconomics.newyorkfed.org/2022/11/how-liquid-has-the-treasury-market-been-in-2022; and Lorie K. Logan, "The Federal Reserve's Market Functioning Purchases: From Supporting to Sustaining," remarks at SIFMA webinar, July 15, 2020, at https://www.newyorkfed.org/newsevents/speeches/2020/log200715.

[c] U.S. Treasury Department, Federal Reserve Board, Federal Reserve Bank of New York, Securities and Exchange Commission, and Commodity Futures Trading Commission, 2021, "Recent Disruptions and Potential Reforms in the U.S. Treasury Market: A Staff Progress Report," November 8, available at https://home.treasury.gov/system/files/136/IAWG-Treasury-Report.pdf; and the 2022 U.S. Treasury Market Conference replay, available at https://www.newyorkfed.org/newsevents/events/markets/2022/1116-2022.

[d] See Securities and Exchange Commission, 2022, "Standards for Covered Clearing Agencies for U.S. Treasury Securities and Application of the Broker-Dealer Customer Protection Rule with Respect to U.S. Treasury Securities," at https://www.sec.gov/rules/proposed/2022/34-95763.pdf.

[e] Samuel J. Hempel, R. Jay Kahn, Vy Nguyen, and Sharon Y. Ross, "Non-centrally Cleared Bilateral Repo," *OFR Blog*, Office of Financial Research, August 24, 2022, available at https://www.financialresearch.gov/the-ofr-blog/2022/08/24/non-centrally-cleared-bilateral-repo/.

[f] See Securities and Exchange Commission, "Further Definition of 'As a Part of a Regular Business' in the Definition of Dealer and Government Securities Dealer," Federal Register 87, no. 74, April 18, 2022: 23054-23106, at https://www.federalregister.gov/documents/2022/04/18/2022-06960/further-definition-of-as-a-part-of-a-regular-business-in-the-definition-of-dealer-and-government.

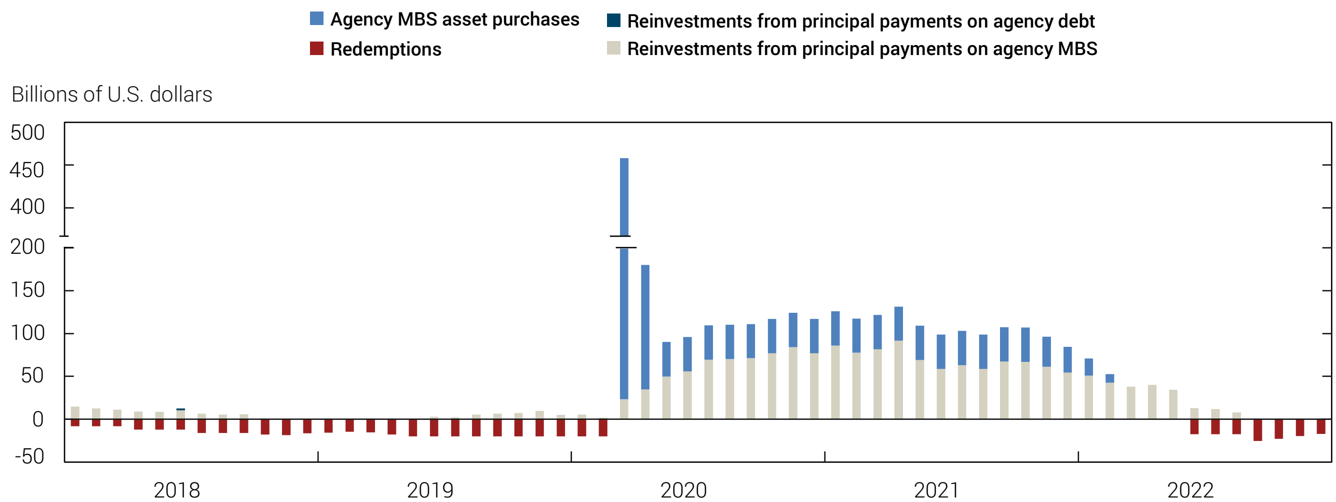
securities into newly issued three-, ten-, and thirty-year Treasury securities. End-of-month maturing Treasury securities were reinvested into newly issued two-, five-, seven-, and twenty-year, floating rate, and inflation-linked Treasury securities. Reinvestments of Treasury bills occurred based on their weekly maturities, in line with U.S. Treasury issuance cycles.

For the full year, a total of $330.0 billion in Treasury securities were redeemed and the Desk reinvested $1.49 trillion of maturing Treasury securities, down from $1.73 trillion in 2021 (**Chart 7,** page 12). Total bill reinvestments were $966.0 billion and total coupon reinvestments were $521.8 billion.[9]

AGENCY MBS OPERATIONS

As with Treasury securities, in early 2022, the FOMC directed the Desk to further slow the pace of net agency MBS purchases, continuing the process of reducing net purchases that began in late 2021 (**Chart 9**). During this period, the FOMC directed the Desk to increase agency MBS holdings by at least $20 billion during the January purchase period and by at least $10 billion during the final February purchase period, and continued to direct the Desk to reinvest principal payments of agency MBS into agency MBS. At its March meeting, the FOMC directed the Desk to reinvest principal payments of agency MBS to maintain the size of the SOMA.

Chart 9
SOMA Agency MBS Transactions



Source: Federal Reserve Bank of New York.
Notes: Reinvestment and agency MBS asset purchases occur from mid-month to the following mid-month. Figures may be rounded.

Beginning in June, the FOMC directed the Desk to reduce SOMA agency MBS holdings by reinvesting agency MBS principal payments into agency MBS only to the extent that they exceeded a monthly cap. The cap for agency MBS was initially set at $17.5 billion per month for the June to August purchase periods before increasing to $35 billion per month from the September monthly purchase period onward. The FOMC directed the Desk to continue to conduct dollar rolls and coupon swaps as necessary to facilitate settlement of the Federal Reserve's agency MBS transactions.

AGENCY MBS ASSET PURCHASES

Operational Results

The Desk purchased a total of $123.8 billion of agency MBS during the January and February mid-month purchase periods. These purchases were made up of $30.0 billion in net purchases and $93.7 billion in reinvestments of principal payments on existing agency MBS holdings. During the March to May 2022 mid-month purchase periods, the Desk maintained the size of agency MBS holdings by purchasing a total of $112.7 billion in agency MBS to reinvest principal payments on existing holdings. The Desk purchased a total of $32.8 billion in agency MBS during the purchase periods of June, July, and August. No purchases were executed from the September purchase period to the end of 2022 as principal payments on agency MBS holdings were under the monthly cap during that time.[10]

The Desk allocated its purchases in line with the agency MBS that were issued at the time. Prior to June 2022, most MBS purchases had coupons of 4.0 percent or lower, reflecting prevailing primary mortgage rates. However, as primary mortgage rates increased over the rest of the year, the Desk's purchases of production agency MBS also shifted toward higher coupons. By July 2022, more than half of monthly purchases were in 4.5 and 5.0 percent coupons.

Over the course of 2022, the Desk purchased a total of $306.3 billion of agency MBS in the secondary market (**Table 2**), including reinvestments of principal payments on existing MBS holdings.[11] The Desk's agency MBS purchases spanned fifteen- and thirty-year uniform agency MBS (UMBS) issued by Fannie Mae and Freddie Mac, as well as thirty-year Ginnie Mae securities (**Charts 10 and 11**). The Desk's purchases of thirty-year securities accounted for 90 percent of its agency MBS purchases. The Desk's fifteen-year UMBS purchases made up 10 percent of its total

Table 2

Distribution of SOMA Agency MBS Operations in 2022

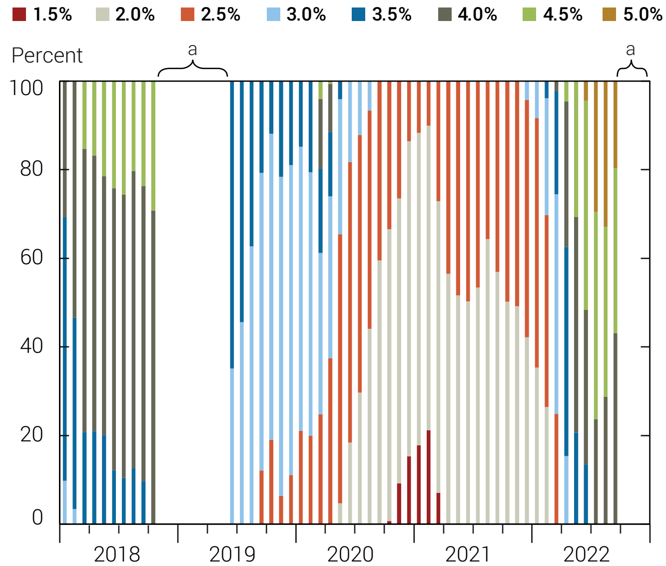
Agency	Coupon (Percent)	Purchases (Billions of U.S. Dollars)	Purchases as a Share of Gross Issuance (Percent)
		30-year	
Uniform MBS	2.0	32.1	30
	2.5	54.5	32
	3.0	32.1	22
	3.5	27.9	23
	4.0	30.4	22
	4.5	23.7	17
	5.0	6.2	6
Ginnie Mae	2.0	6.0	15
	2.5	17.8	23
	3.0	14.2	21
	3.5	9.3	17
	4.0	11.4	16
	4.5	7.7	10
	5.0	1.8	3
Subtotal		274.9	18
		15-year	
Uniform MBS	1.5	5.2	34
	2.0	11.2	36
	2.5	5.9	35
	3.0	3.9	35
	3.5	3.7	42
	4.0	1.4	21
	4.5	0.1	2
Subtotal		31.4	32
Total		306.3	19

Sources: Federal Reserve Bank of New York; Knowledge Decision Services, LLC.

Notes: Figures may be rounded. Gross issuance represents all fixed-rate agency MBS issued in 2022, including non-TBA-eligible securities. Subtotal issuance comprises all coupons, including those not purchased for the SOMA, with original terms to maturity of fifteen or thirty years. Total issuance comprises all coupons and all original terms to maturity. For TBA outright purchases conducted after May 1, 2019, both Fannie Mae and Freddie Mac securities are deliverable into Uniform MBS contracts.

Chart 10

SOMA Purchases of Thirty-Year Agency MBS by Coupon



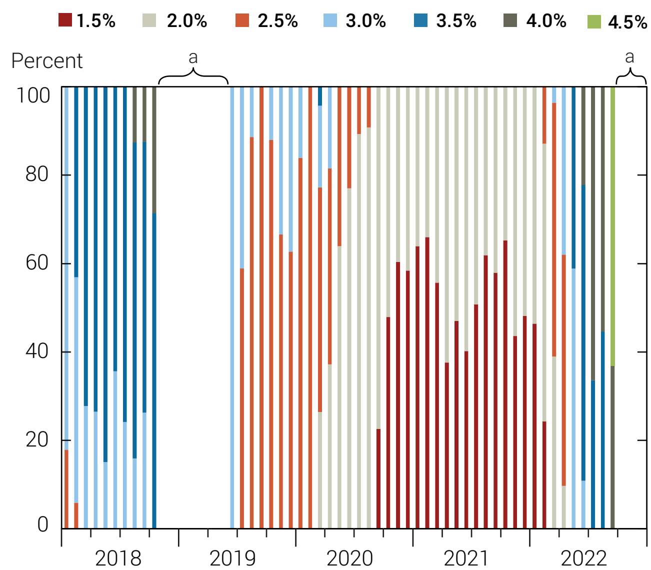
Source: Federal Reserve Bank of New York.

Note: Figures are monthly and exclude purchases conducted for the purpose of testing operational readiness.

[a] The Desk did not conduct reinvestment purchases of agency MBS from November 2018 to May 2019 and from October 2022 to December 2022, as monthly principal payments of agency MBS were below the prevailing reinvestment cap for each period.

Chart 11

SOMA Purchases of Fifteen-Year Agency MBS by Coupon



Source: Federal Reserve Bank of New York.

Note: Figures are monthly and exclude purchases conducted for the purpose of testing operational readiness.

[a] The Desk did not conduct reinvestment purchases of agency MBS from November 2018 to May 2019 and from October 2022 to December 2022, as monthly principal payments of agency MBS were below the prevailing reinvestment cap for each period.

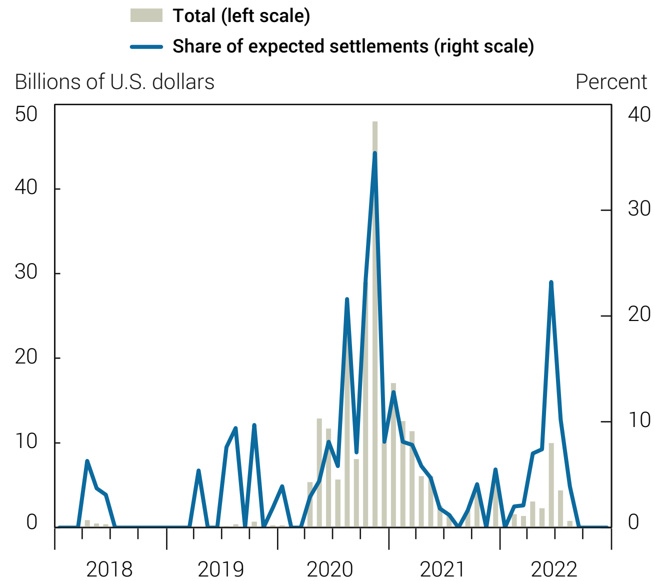
purchases of agency MBS during 2022 and were concentrated in 2.0 and 2.5 percent coupon securities.

CUSIP Aggregation

In October 2022, the Desk announced plans to consolidate many small, individual agency MBS into fewer and larger-value securities.[12] Through this process, known as CUSIP aggregation, several existing agency MBS with similar characteristics—including issuing agency, coupon, and original term to maturity—are consolidated into one larger security.

By reducing the number of individual securities held in the SOMA portfolio, CUSIP aggregation can lower operational risk, simplify back-office portfolio administration, and reduce custodial costs that are assessed on an individual CUSIP basis. During the fourth quarter of 2022, the Desk focused on aggregating Freddie Mac MBS held in the SOMA that were issued prior to June 2019 and had a forty-five-day payment delay. Over the course of approximately three months, the total number of agency MBS CUSIPs in the SOMA was reduced from 31,000 to fewer than 30,000.[13]

Chart 12
SOMA Dollar Roll Sales



Source: Federal Reserve Bank of New York.

Notes: Figures are monthly by settlement month. Share of expected settlements is calculated excluding purchases conducted for the purpose of testing operational readiness.

DOLLAR ROLLS

Operational Results

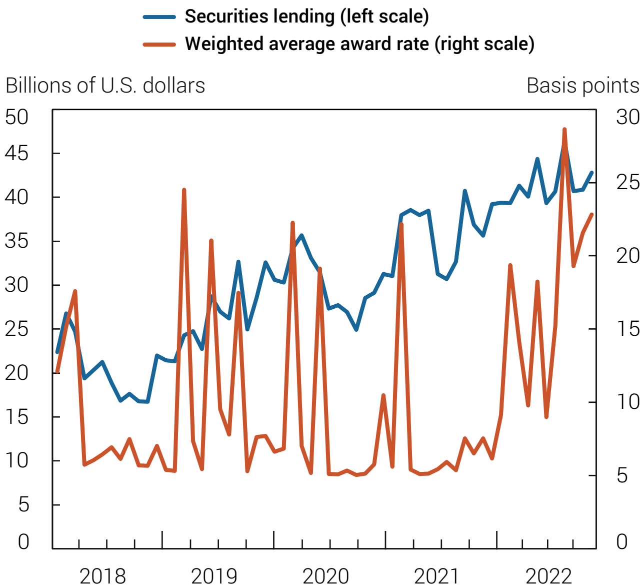
Given the forward-settling nature of the Desk's agency MBS transactions in the to-be-announced (TBA) market, agency MBS can become scarce in the market during the time between a transaction's trade date and its settlement date. Because these conditions could create settlement frictions, the Desk can conduct dollar roll sales, which delay settlement of agency MBS transactions to a future date to facilitate settlement. Dollar roll sales allow dealers additional time to obtain securities to settle transactions, in exchange for a market price that compensates the Federal Reserve for the delay in settlement.

Mirroring the broader rise in primary mortgage rates, origination of the underlying mortgages in agency MBS shifted to higher-coupon securities during 2022. However, as mortgage origination lags the moves in primary mortgage rates, there was less supply of higher-coupon MBS to deliver into TBAs for settlement, particularly in mid-2022. To facilitate settlement, the Desk rolled a total of approximately $23 billion of settlements during 2022, which represented approximately 5 percent of settlements, compared to 4 percent of settlements in 2021 (**Chart 12**). Dollar rolls were concentrated in Ginnie Mae securities and thirty-year UMBS.

SECURITIES LENDING

The FOMC has authorized the Desk to lend eligible Treasury and agency debt securities held in the SOMA to primary dealers on an overnight basis. These operations provide a secondary and temporary source of securities to the financing market to promote the smooth clearing of Treasury and agency debt securities. Lending Treasury securities, especially those in which the SOMA holds a significant market share, helps mitigate periods of scarcity in the market for these securities, such as when individual issues experience high levels of short positioning or elevated settlement fails.

Chart 13
SOMA Securities Lending in Treasuries



Source: Federal Reserve Bank of New York.
Note: Figures are monthly averages of daily lending results.

Operational Results

In 2022, the Desk continued to conduct daily operations to lend Treasury and agency debt securities from the SOMA portfolio to primary dealers. Securities lending volumes in Treasury securities averaged $41 billion per day in 2022, up from $35 billion per day in 2021, driven in part by higher demand for specific Treasury securities across repo markets during 2022 (**Chart 13**).

The slight increase in SOMA securities lending volumes during 2022 in part reflected the higher proportion of SOMA holdings of Treasury securities to outstanding amounts compared to previous years. Greater demand by investors across certain Treasury issues led the volume-weighted average bid fee on Treasury securities to rise to about 16 basis points in 2022, up from 8 basis points in 2021.

FOREIGN RESERVES MANAGEMENT

The Federal Reserve holds a portfolio of euro- and yen-denominated assets, which could be used to fund a potential foreign exchange intervention.[14] The size and currency composition of foreign reserve holdings are largely a result of past intervention activity in foreign exchange markets. In accordance with their statutory authorities, the FOMC and U.S. Treasury make decisions on foreign exchange intervention activity. In 2022, the Desk was not directed to undertake any such activity.

INVESTMENT APPROACH

The Desk is directed by the FOMC to manage the SOMA's foreign currency holdings in a manner that ensures sufficient liquidity, maintains a high degree of safety, and, once these objectives have been met, provides the highest rate of return possible in each currency. The Desk passively manages its foreign currency reserve holdings against an internal asset allocation target, which is based on the FOMC's stated objectives and updated on an annual basis. The SOMA's foreign currency reserves may be invested on an outright basis in Dutch, French, German, and Japanese government securities, as well as in deposits at the Bank for International Settlements and foreign central banks such as the Deutsche Bundesbank, Banque de France, De Nederlandsche Bank, and Bank of Japan.

INVESTMENT ACTIVITY

In 2022, the Desk purchased Japanese yen–denominated foreign sovereign debt securities in the secondary market consistent with the investment approach. Purchases of euro-denominated foreign sovereign debt securities were not required to meet the target allocation. The Desk also continued to hold foreign currency reserves in deposits at various official institutions. As of year-end 2022, the SOMA foreign currency portfolio totaled $18.6 billion, compared with $20.3 billion at the end of 2021.[15] Since no transactions associated with foreign exchange intervention were undertaken and the interest income received was minimal due to the low interest rate environment in the euro area and Japan, changes in the portfolio's reported U.S. dollar market value largely reflected changes in the foreign exchange value of the dollar against the euro and Japanese yen over the year.[16] (Foreign currency–denominated holdings are described further in the "Selected Balance Sheet Developments" section of this report.)

SELECTED BALANCE SHEET DEVELOPMENTS

The size of the Federal Reserve's balance sheet evolved in line with the FOMC's directives during the year, decreasing on net over the course of 2022 (**Table 3**). Specifically, the FOMC directed the Desk to continue reducing net purchases of Treasury securities and agency MBS through early March 2022, then maintain the size of SOMA holdings by reinvesting principal payments through May, before starting the process of balance sheet runoff in June. This resulted in total assets reaching a high of $8.97 trillion in the second quarter of 2022 and subsequently declining by $363.9 billion during the second half of the year. Total assets ended 2022 at $8.55 trillion, $205.1 billion lower than at year-end 2021. Total assets as a share of nominal GDP also declined, to 33 percent of GDP in 2022 from 36 percent in 2021.

Along with the decline in the size of the Federal Reserve's balance sheet, the composition of liabilities shifted over the course of the year. Reserve balances declined by $959.5 billion during 2022 and reached an average level during December of $3.09 trillion. This decline is partly attributable to a significant increase in the ON RRP facility during the first half of the year. The Treasury General Account increased on net over the year, peaking in the second quarter at $964.4 billion, before ending 2022 at $446.7 billion.

SOMA interest income reached historically high levels during 2022, driven by the large size of the SOMA portfolio. However, the cumulative effect of increases in administered rates in late 2022 resulted in sharply higher interest expenses, and SOMA net income declined to $65.7 billion in 2022 from $114.8 billion in 2021. By September 2022, most Reserve Banks had suspended weekly remittances to the Treasury and the Federal Reserve System started accumulating a deferred asset.[17]

SELECTED ASSETS

The Federal Reserve's assets can be divided into SOMA and non-SOMA assets. The SOMA assets make up 95.2 percent of the Federal Reserve's assets and are mainly composed of domestic securities holdings, along with smaller proportions of foreign reserve portfolios, repurchase agreements, and U.S. dollar liquidity swaps with foreign central banks. Non-SOMA assets include loans to depository institutions through the primary and secondary credit programs and asset holdings from the emergency credit and liquidity facilities. These assets are Federal Reserve assets but are not part of the SOMA. All else equal, an increase (decrease) in holdings of a particular asset leads to a corresponding increase (decrease) in reserve balances or other liabilities.

SOMA DOMESTIC SECURITIES HOLDINGS

PORTFOLIO SIZE AND COMPOSITION

Most of the SOMA is composed of domestic holdings of Treasury securities and agency MBS. The SOMA domestic securities portfolio decreased to $8.14 trillion at year-end 2022 from $8.27 trillion in 2021. The decline in the securities portfolio over the year was driven by a roughly $153 billion decrease in Treasury securities, while agency MBS holdings increased slightly on net by nearly $26 billion, reflecting the net effect of purchases in early 2022.[18] (See the "Agency MBS Holdings" section of this report for additional details on agency MBS runoff.) The domestic securities portfolio at year-end 2022 was composed of Treasury securities totaling $5.50 trillion (68 percent), agency MBS totaling $2.64 trillion (32 percent), agency CMBS totaling $8.5 billion (less than 1 percent), and agency debt totaling $2.3 billion (less than 1 percent) (**Chart 14**).[19]

Table 3

Changes in Selected Federal Reserve Assets and Liabilities

Billions of U.S. Dollars

	Assets							
	U.S. Treasury Securities	Agency MBS, Agency Debt, and Agency CMBS	Repo	Central Bank Liquidity Swaps	Primary Credit Program	Emergency Credit and Liquidity Facilities	Other Assets	Total Assets
Outstanding as of:								
December 31, 2021	5,652.5	2,617.9	0.0	3.3	0.6	52.8	429.3	8756.4
December 30, 2022	5,499.4	2,643.7	0.0	0.4	5.3	26.2	376.3	8,551.3
Changes in the period								
Dec 31, 2021 to Dec 30, 2022	(153.1)	25.8	0.0	(2.9)	4.7	(26.6)	(53.0)	(205.1)

	Liabilities and Capital							
	Reserves	Federal Reserve Notes	Treasury General Account	ON RRP	FIMA Reverse Repo Pool	Other Liabilities and Capital	Subtotal of Non-Reserve Liabilities	Total Liabilities and Capital
Outstanding as of:								
December 31, 2021	3,644.3	2,187.1	406.1	1,904.6	278.5	335.8	5,112.1	8,756.4
December 30, 2022	2,684.8	2,259.0	446.7	2,553.7	335.8	271.3	5,866.5	8,551.3
Changes in the period								
Dec 31, 2021 to Dec 30, 2022	(959.5)	71.8	40.6	649.1	57.4	(64.5)	754.4	(205.1)

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

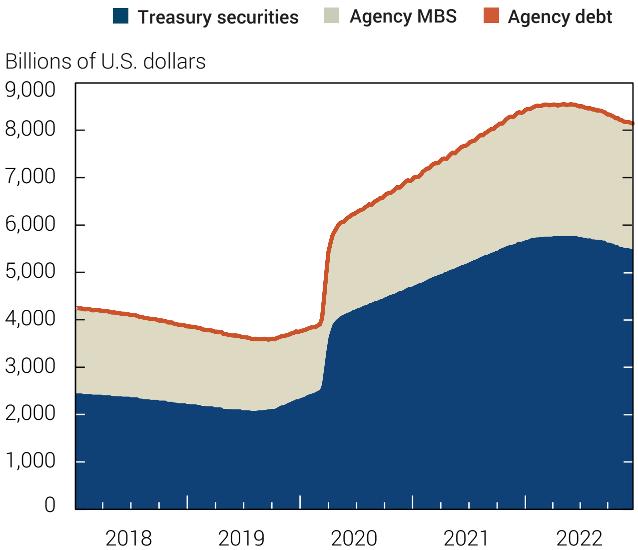
Notes: These figures may differ from Federal Reserve Banks Combined Financial Statements due to financial accounting adjustments for 2022 recorded after year-end. Securities balances are listed at par value and exclude unsettled MBS. Emergency credit and liquidity facility outstanding balances exclude nonmarketable portion of Treasury equity. Other assets include primarily unamortized net premium and accrued interest receivable on securities, foreign currency–denominated holdings, and the LLC's investments of U.S. Treasury equity in nonmarketable Treasury securities. Other Liabilities and Capital include primarily non-reserve deposits.

Treasury Holdings

During 2022, SOMA Treasury securities holdings decreased from $5.65 trillion to $5.50 trillion. This decline was mostly driven by a $116.7 billion decrease in Treasury coupon holdings, with the remaining decline coming from a $36.5 billion decrease in Treasury bill holdings. Although asset purchases of Treasury securities by the Desk ended in early March, total holdings peaked at $5.77 trillion in the second quarter because of increased inflation compensation on holdings of Treasury Inflation-Protected Securities (TIPS).[20] In line with the FOMC's Plans for Reducing the Size of the Federal Reserve's Balance Sheet,

Chart 14

Composition of SOMA Domestic Securities Holdings



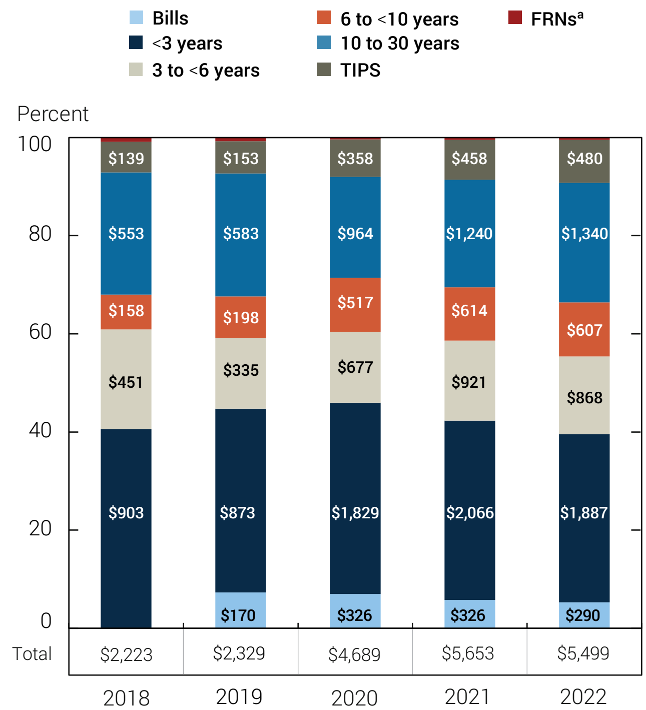
Source: Board of Governors of the Federal Reserve System.

Notes: Figures are weekly and include unsettled holdings. Agency CMBS are included in agency MBS amount.

Chart 15

Distribution of SOMA Treasury Holdings

Percentage Share and Billions of U.S. Dollars



Source: Federal Reserve Bank of New York.

Note: Figures are as of year-end and may be rounded.

[a]Less than 1 percent of holdings in 2018, 2019, 2020, 2021, and 2022 are Floating Rate Notes (FRNs).

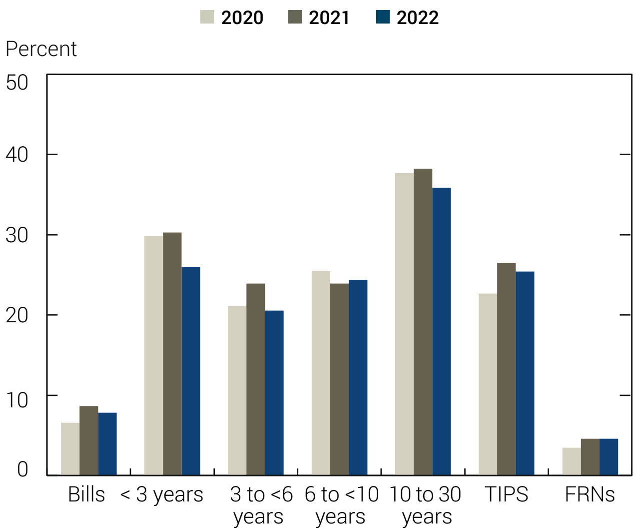
the start of balance sheet runoff resulted in the Treasury portfolio declining by roughly $270 billion during the second half of 2022.

The composition of the SOMA Treasury portfolio shifted modestly toward longer maturities by year-end. Nominal coupon securities with less than three years to maturity, which continue to make up the largest share of the SOMA Treasury securities portfolio, and those with three to six years to maturity together decreased by a total of $231.8 billion during 2022. Coupon securities with ten to thirty years to maturity increased by $100.5 billion over the same period (**Chart 15**).

The share of the outstanding Treasury universe held in the SOMA portfolio decreased across most sectors during 2022. The aggregate SOMA holdings of Treasury securities as a share of the $23.93 trillion in marketable Treasury debt outstanding (inclusive of SOMA holdings) decreased to 23 percent at the end of 2022 from 25 percent at year-end 2021. This decline was mainly driven by a $1.35 trillion increase in the overall Treasury debt outstanding during the year, along with the decrease of approximately $153 billion in SOMA Treasury holdings. The SOMA continued to hold the greatest proportion of outstanding Treasury securities within the ten- to thirty-year nominal coupon sector (36 percent) (**Chart 16**). Approximately 40 percent of the SOMA holdings in this sector were acquired by the Federal Reserve prior to 2020. The SOMA share of coupon securities with up to three years remaining to maturity declined from 30 percent to 26 percent, driven by larger Treasury issuance in this sector during the year. The share of SOMA bills holdings fell slightly, from 9 percent to 8 percent over the year.

The weighted average maturity of SOMA Treasury securities (7.9 years) remained significantly higher than that of the outstanding Treasury universe (6.2 years). The difference is reflective of the SOMA's larger holdings of longer-maturity nominal Treasury securities (ten to thirty years) relative to the

Chart 16
SOMA Treasury Holdings as a Share of Outstanding Treasury Supply



Sources: Federal Reserve Bank of New York; U.S. Treasury Department.
Note: Figures are as of year-end.

stock of outstanding securities. Compared to year-end 2021, the weighted average maturity of the SOMA Treasury portfolio increased by 0.3 years, reflecting the increase in Treasury holdings with ten to thirty years to maturity coupled with decreases in the share of Treasury securities with less than six years to maturity.

Agency MBS Holdings

On net, settled agency MBS holdings in the SOMA increased over the course of 2022 to a total of $2.64 trillion. The SOMA's settled holdings of agency MBS reached its highest level in April of $2.74 trillion and remained relatively flat until September, before decreasing through year-end. Purchases of agency MBS generally settle one to two months in the future and the Desk delayed some settlements during mid-2022 by conducting dollar roll transactions. Due to these factors, settled SOMA holdings of agency MBS started to decrease a few months after runoff began in June. (For more details on agency MBS operations, see the "Open Market Operations" section of this report.) The agency MBS portfolio decreased by $77.1 billion from mid-September through the end of the year.

The composition of the SOMA agency MBS portfolio was broadly similar to its composition at the end of 2021 (**Charts 17 and 18**). The weighted average coupon of the agency MBS held in the SOMA portfolio increased slightly to 2.6 percent at the end of 2022 from 2.5 percent at year-end 2021. Approximately 85 percent of agency MBS holdings were 3.0 percent coupons or lower at year-end 2022, with holdings of agency MBS coupons greater than or equal to 4.0 percent increasing slightly from 6.6 percent to 8.5 percent during the year (**Chart 19**). The sharp rise in primary mortgage rates during 2022 slowed prepayment rates materially, resulting in an increase in the weighted average life of the agency MBS portfolio from 5.7 years in 2021 to 8.9 years at the end of 2022.[21]

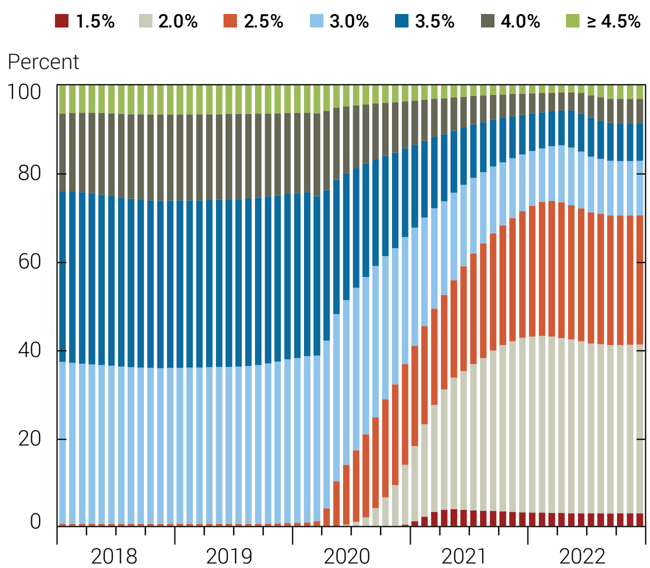
Holdings of agency MBS across issuers were broadly similar to 2021. Within the SOMA, 41 percent of agency MBS holdings are guaranteed by Fannie Mae, 38 percent are guaranteed by Freddie Mac, and 21 percent are guaranteed by Ginnie Mae.[22] SOMA portfolio holdings of thirty-year MBS increased slightly, to 88 percent of the portfolio from 87 percent, as broader refinancing activity slowed and resulted in decreased origination of fifteen-year agency MBS.

SOMA holdings of agency MBS as a share of the outstanding stock of fixed-rate agency MBS fell during 2022, from 35 percent to 33 percent. Agency MBS holdings in the SOMA were slightly more concentrated in lower-coupon securities than the overall agency MBS universe because of the substantial purchases from 2020 through 2022 at historically low mortgage rates. The weighted average coupon rate of SOMA holdings of agency MBS at year-end 2022 of 2.6 percent was slightly below the broader market's weighted average coupon rate of 2.8 percent.

Agency Debt Holdings

SOMA agency debt holdings were unchanged at $2.3 billion during 2022. These holdings were issued by Fannie Mae and Freddie Mac and consist of the remainder of the $172 billion of agency debt acquired by the Federal Reserve between 2008 and 2010 as part of its first large-scale asset purchase program. These holdings mature between 2029 and 2032.

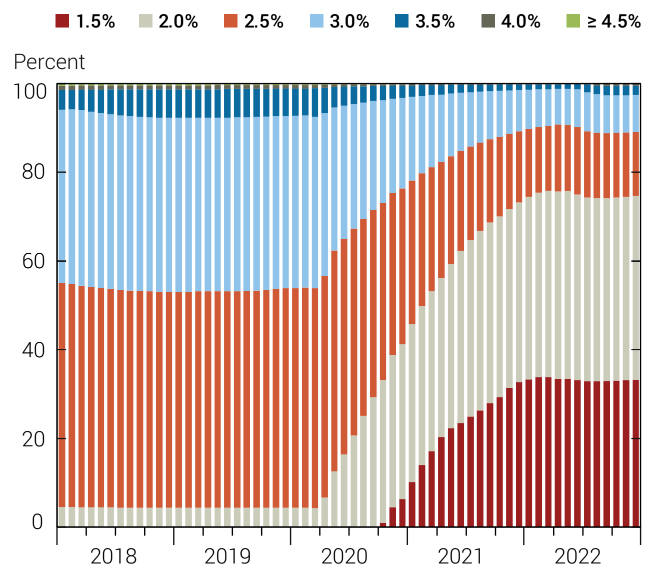
Chart 17
Distribution of SOMA Holdings of Thirty-Year Agency MBS by Coupon



Source: Federal Reserve Bank of New York.

Note: Figures may be rounded.

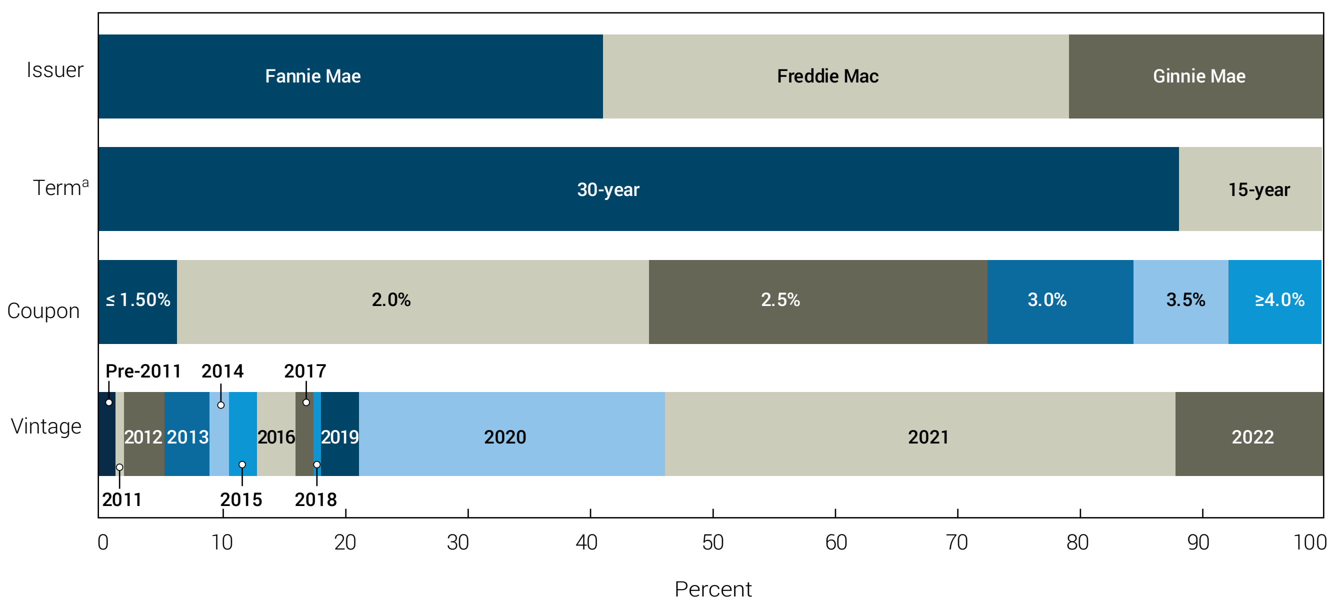
Chart 18
Distribution of SOMA Holdings of Fifteen-Year Agency MBS by Coupon



Source: Federal Reserve Bank of New York.

Note: Figures may be rounded.

Chart 19
Distribution of SOMA Agency MBS Holdings



Source: Federal Reserve Bank of New York.

Notes: Figures are as of December 30, 2022. Holdings total $2.63 trillion and consist of settled holdings only.

[a] Less than 1 percent of holdings are ten- and twenty-year agency MBS, which may be delivered into fifteen- and thirty-year TBA contracts, respectively.

Agency CMBS Holdings

SOMA agency CMBS holdings decreased by $744 million to $8.5 billion as a result of principal payments.[23] The Desk did not purchase any new agency CMBS during 2022 and agency CMBS portfolio principal payments are not reinvested. Agency CMBS holdings accounted for less than 1 percent of total SOMA agency MBS holdings and represented around 1 percent of outstanding agency CMBS at year-end. The composition of these holdings was approximately 79 percent Fannie Mae securities, 10 percent Ginnie Mae securities, and 12 percent Freddie Mac securities by the end of 2022.[24] As of year-end, the weighted average life of the SOMA CMBS portfolio was 7.4 years.

PORTFOLIO RISK METRICS

The duration of the SOMA portfolio increased, driven primarily by the agency MBS portfolio, as broader interest rates moved higher. Duration measures the sensitivity of a security's price to changes in interest rates and may be thought of as the present value–weighted average time to maturity of cash flows from the security. The longer the duration of a security, the more sensitive it is to changes in interest rates. Duration is generally greater for longer-maturity and lower-coupon securities. The par-weighted average duration of the SOMA domestic securities portfolio rose from 5.8 years to 6.3 years, driven by the increase in agency MBS portfolio duration from 4.9 to 6.6 years (**Chart 20**).[25] The duration of agency MBS is more sensitive to changes in interest rates than Treasury securities because of the embedded prepayment option in underlying mortgages.[26] The increase in the effective duration of the SOMA's holdings of agency MBS reflected the sharp increase in primary mortgage rates during 2022. The duration of the portfolio of Treasury securities held in the SOMA decreased modestly from 6.2 years to 6.1 years as reductions in duration from the aging of the existing portfolio were partially offset by increases in duration from new net purchases and reinvestments.

Measures of the dollar value of duration risk held in the SOMA portfolio increased during 2022. One method of measuring dollar duration is in terms of ten-year equivalents—that is, the amount of ten-year Treasury securities that would be needed to match the duration risk in the portfolio. The SOMA portfolio's ten-year equivalent measure increased from $5.29 trillion at the end of 2021 to $6.36 trillion at the end of 2022, driven largely by increases in market yields (**Chart 21**).[27]

SOMA REPURCHASE AGREEMENTS

There were no outstanding repurchase agreements under either the SRF or FIMA repo facility at year-end 2022. The lack of usage of these facilities throughout 2022 reflected generally stable funding conditions and ample dollar liquidity, as well as the backstop nature of the facilities' pricing. (For more information on repurchase agreements, see the "Open Market Operations" section of this report.)

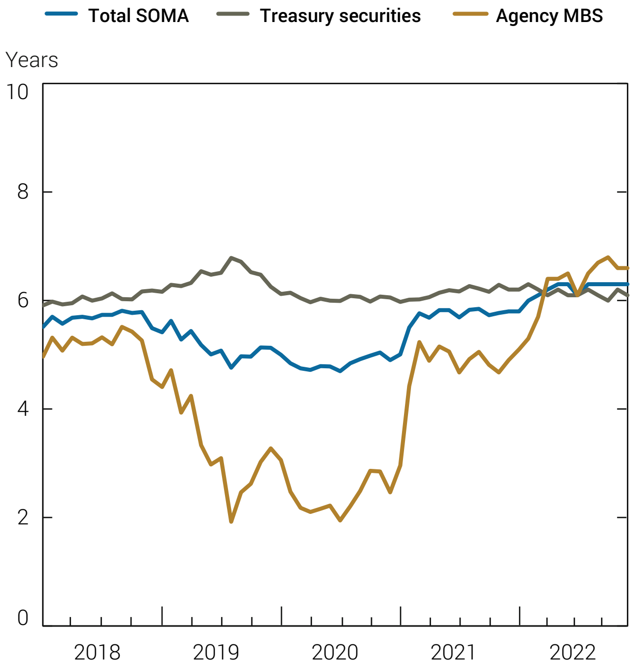
CENTRAL BANK LIQUIDITY SWAPS

The aggregate outstanding balance of U.S. dollar swap lines decreased by $2.9 billion in 2022 to reach $412 million at year-end. Smooth functioning and ample liquidity conditions in global dollar funding markets led to lower usage of the swap lines at 2022 year-end, resulting in the decline in aggregate outstanding swaps over the year. (For more information on central bank swaps, see the "Open Market Operations" section of this report.)

SOMA FOREIGN CURRENCY–DENOMINATED HOLDINGS

The Federal Reserve holds foreign currency–denominated assets, which are invested to ensure adequate liquidity to meet potential foreign exchange intervention needs. As of year-end 2022, the SOMA foreign currency portfolio totaled $18.6 billion, composed of $11.5 billion of euro-denominated assets and $7.1 billion of yen-denominated assets. The portfolio decreased by $1.8 billion in U.S. dollar terms over the year, primarily owing to a 6 percent depreciation of the euro against the dollar and a 13 percent depreciation of the yen against the dollar. Government debt obligations decreased as a percentage of both the euro-denominated and yen-denominated portfolios, while the percentage of cash held on deposit at official institutions increased (**Chart 22**). (For more information on the foreign

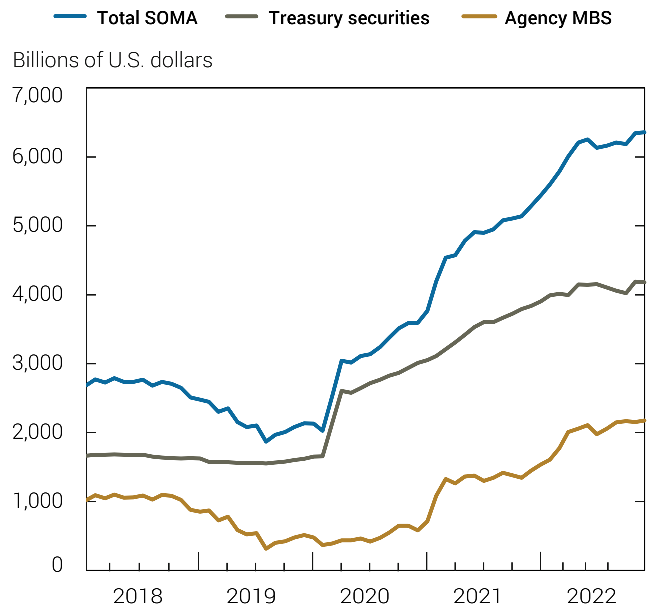
Chart 20
Average Duration of SOMA Domestic Securities Holdings



Source: Federal Reserve Bank of New York.

Notes: Figures are as of month-end. Calculations are par-weighted. Total SOMA and agency MBS do not include agency CMBS. Agency debt is not shown given the small balance of holdings.

Chart 21
SOMA Domestic Securities Holdings in Ten-Year Equivalents



Source: Federal Reserve Bank of New York.

Notes: Figures are as of month-end. Calculations are par-weighted. Total SOMA and agency MBS do not include agency CMBS. Agency debt is not shown given the small balance of holdings.

currency–denominated portfolio, see the “Open Market Operations” section of this report.)

For euro-denominated assets, the Macaulay duration of the portfolio fell from 25.0 months at year-end 2021 to 16.6 months at year-end 2022 as the share of deposits in the portfolio increased.[28] For yen-denominated assets, the Macaulay duration of the portfolio decreased from 0.4 months at year-end 2021 to less than one day at year-end 2022 following the maturity of government debt holdings.

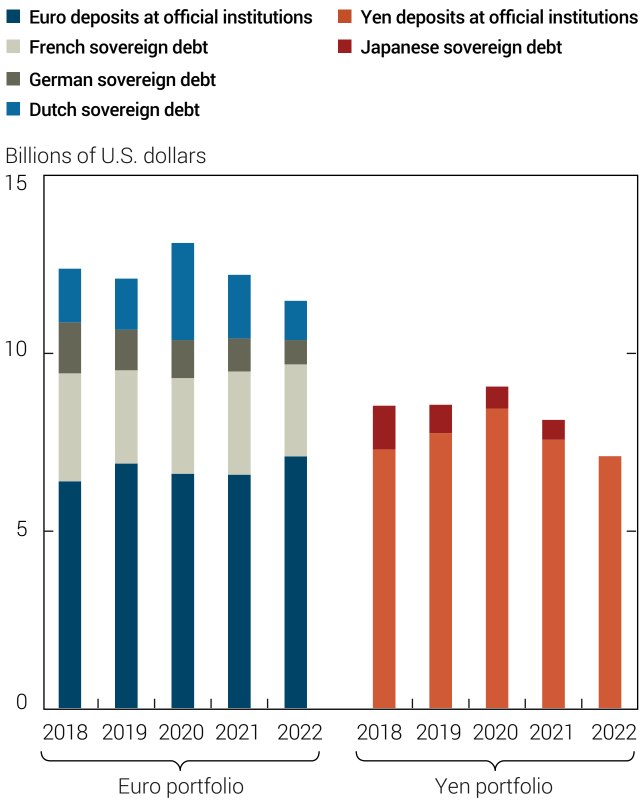
PRIMARY CREDIT PROGRAM

The Federal Reserve’s primary credit program serves as a backup source of liquidity for depository institutions in generally sound financial condition and with appropriate collateral pledged to a Reserve Bank. Loans are initiated by depository institutions and approved by Reserve Banks.

The use of primary credit increased during 2022, as some depository institutions’ borrowing needs rose. The primary credit rate was increasingly competitive to some other comparable rates, such as term FHLB advance rates, making it an attractive alternative source of liquidity for some institutions. The average daily outstanding loan balance under primary credit rose from $745 million in 2021 to $3.2 billion in 2022. Small domestic banks continued to make up most primary credit loan originations.

Over 2022, the primary credit rate for each Reserve Bank was raised from 0.25 percent to 4.50 percent, equal to the top of the federal funds target range and increasing in line with the range throughout the course of 2022. Primary credit loans continued to be granted for terms up to ninety days.[29]

Chart 22
Distribution of SOMA Foreign Currency Portfolio Holdings



Source: Federal Reserve Bank of New York.
Note: Figures reflect amortized cost.

EMERGENCY CREDIT AND LIQUIDITY FACILITIES

The total balances of the remaining emergency credit and liquidity facilities established in response to the financial disruptions associated with the COVID-19 pandemic declined to $26.2 billion in 2022, a decrease of $26.6 billion over the year.[30] The decreases in these facilities—the Term Asset-Backed Securities Loan Facility (TALF), Municipal Liquidity Facility (MLF), Main Street Lending Program (MSLP), and Paycheck Protection Program Liquidity Facility (PPPLF)—were the result of maturities and/or prepayments during 2022.[31] Assets originated by the TALF and MLF have final maturities in 2023, while the MSLP and PPPLF loans have final maturity dates in 2026.[32] The Federal Reserve published term sheets providing details of each program and the Board provides periodic reports to Congress on the facilities.

TERM ASSET-BACKED SECURITIES LOAN FACILITY

The TALF was announced on March 23, 2020, to support the flow of credit to consumers and businesses. Under the TALF, the New York Fed provided financing to a special purpose vehicle (SPV) to make three-year nonrecourse loans to holders of certain AAA-rated non-agency CMBS, collateralized loan obligations (CLOs), and asset-backed securities backed by student loans, auto loans, credit card loans, loans guaranteed by the Small Business Administration (SBA), and certain other consumer and commercial receivables.

The TALF ceased extending credit on December 31, 2020. Of loans originated by the TALF, $1.0 billion remained outstanding at year-end 2022, compared to $1.3 billion at year-end 2021. The decrease over the year was primarily because of routine principal amortization of securities pledged to secure the loans, following a series of voluntary prepayments from borrowers in 2021. The TALF has one remaining borrower, whose loans are scheduled to mature between July and December 2023. The U.S. Treasury provided a $10 billion equity investment to the TALF SPV, which returned a total of $340 million in equity in excess of the New York Fed's exposure to TALF loans to the U.S. Treasury in 2022, compared to $8.6 billion in 2021.

MUNICIPAL LIQUIDITY FACILITY

The MLF was announced on April 9, 2020, to help state and local governments manage cash flow stresses caused by the pandemic. The MLF purchased eligible short-term municipal securities directly from eligible issuers through an SPV using financing provided by the New York Fed. The MLF ceased purchasing notes as of December 31, 2020, and at year-end 2022 had a total remaining outstanding balance of $2.9 billion, held in one note due, compared to $4.1 billion at year-end 2021. The decrease during 2022 was driven by voluntary note prepayments by borrowers. The U.S. Treasury made an initial equity investment of $17.5 billion in the SPV, and the MLF returned a total of $1.3 billion in equity in excess of the New York Fed's exposure to MLF notes to the U.S. Treasury in 2022, compared to $13.3 billion in 2021.

PAYCHECK PROTECTION PROGRAM LIQUIDITY FACILITY

The PPPLF was authorized by the Federal Reserve Board on April 8, 2020, to provide a source of liquidity to financial institutions that lend to small businesses through the SBA's Paycheck Protection Program. The PPPLF ceased extending credit on July 30, 2021, and had $11.4 billion in outstanding advances as of year-end 2022, compared to $33.9 billion in 2021. The last maturing loan within the PPPLF will expire on July 31, 2026, although most, if not all, loans are expected to be prepaid due to PPP loan forgiveness.

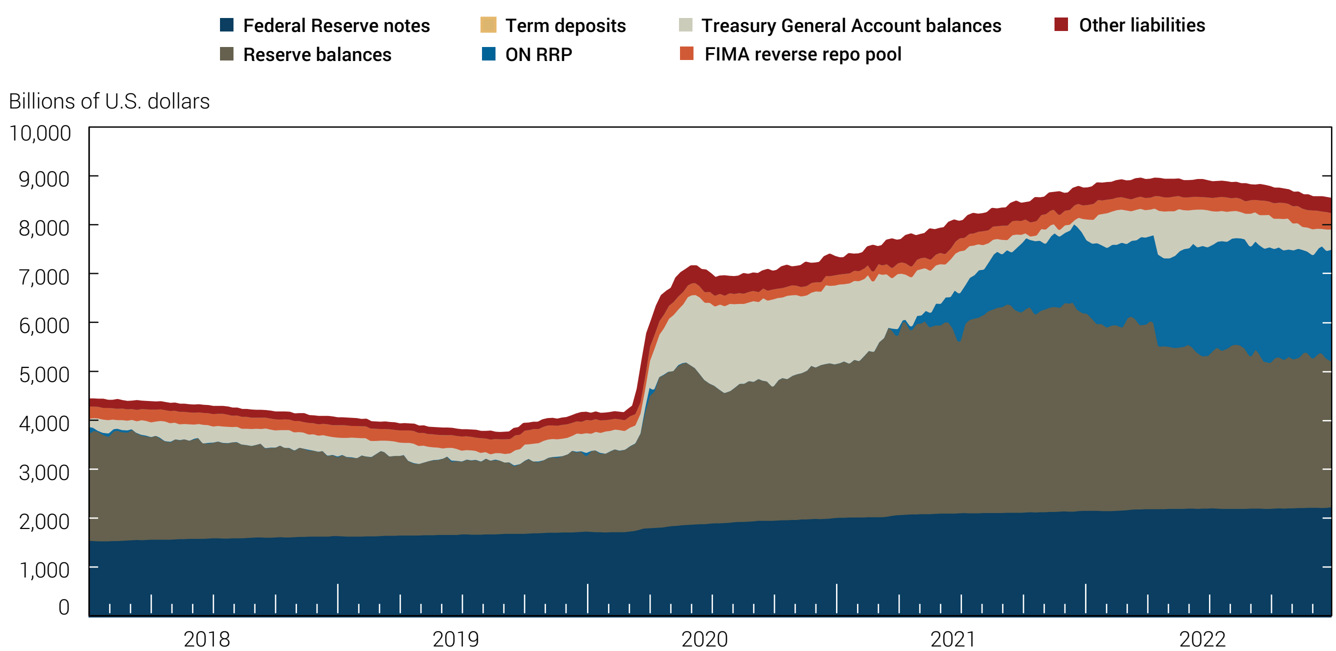
MAIN STREET LENDING PROGRAM

The MSLP was authorized by the Federal Reserve Board on April 9, 2020, to support lending to small and medium-sized businesses and nonprofit organizations that were in sound financial condition before the onset of the COVID-19 pandemic. The Federal Reserve Bank of Boston established one SPV to manage and operate all five facilities under the MSLP.[33] The MSLP ceased purchasing participations in eligible loans on January 8, 2021, and had an outstanding balance, net of loss allowance, of $10.8 billion at year-end 2022, compared to $13.4 billion as of year-end 2021. The SPV returned to the U.S. Treasury $1.8 billion of the equity investment on May 20, 2022, and $2.4 billion of the equity investment on November 18, 2022. This reduced the U.S. Treasury's remaining equity contribution to $11.5 billion, which fully protects the Boston Fed against losses from the MSLP loan portfolio.

SELECTED LIABILITIES

With the start of balance sheet reduction during 2022, total liabilities and capital of the Federal Reserve declined to $8.55 trillion at year-end, compared to $8.76 trillion at year-end 2021 (**Chart 23**). Although the overall decrease in liabilities over 2022 was driven by balance sheet reduction, the composition of Federal Reserve liabilities was influenced by the broader demand for these liabilities.[34] (For more

Chart 23
Federal Reserve Liabilities



Source: Board of Governors of the Federal Reserve System.
Note: Figures are weekly.

Box 2

SHIFTS IN THE COMPOSITION OF FEDERAL RESERVE LIABILITIES OVER 2022

As the size of the Federal Reserve's liabilities declined in 2022, the composition of liabilities also shifted. These changes occurred within the context of rapid increases in policy rates by the FOMC and the start of balance sheet runoff. The Committee intends to slow and then stop the decline in the size of the balance sheet when reserve balances are somewhat above the level it judges to be consistent with ample reserves. This path to the Committee's intended level of reserves will depend on shifts in broader money market conditions and the evolution of the Federal Reserve's liabilities.

As a key tool in the Federal Reserve's monetary policy implementation framework, the ON RRP facility provides an alternative investment to a broad range of money market participants, thereby supporting control of the federal funds rate. As designed, ON RRP take-up tends to increase when rates on alternative investments, such as private repo or Treasury bills, are near or below that offered at the facility. As the Federal Reserve began to raise its administered rates and net Treasury bill issuance reached its lowest levels of the year, ON RRP usage moved significantly higher. Over the second half of 2022, continued investor demand for risk-free, overnight investments resulted in continued high levels of take-up at the facility. The ON RRP continued to operate as expected amid these conditions, with usage increasing in 2022 by a cumulative $649.1 billion by year-end and representing 30 percent of the Federal Reserve's liabilities and capital compared to 22 percent in 2021. Other liabilities changed by smaller magnitudes, with Federal Reserve notes, the FIMA reverse repo pool, and TGA balances increasing by a total of $169.8 billion over the year.

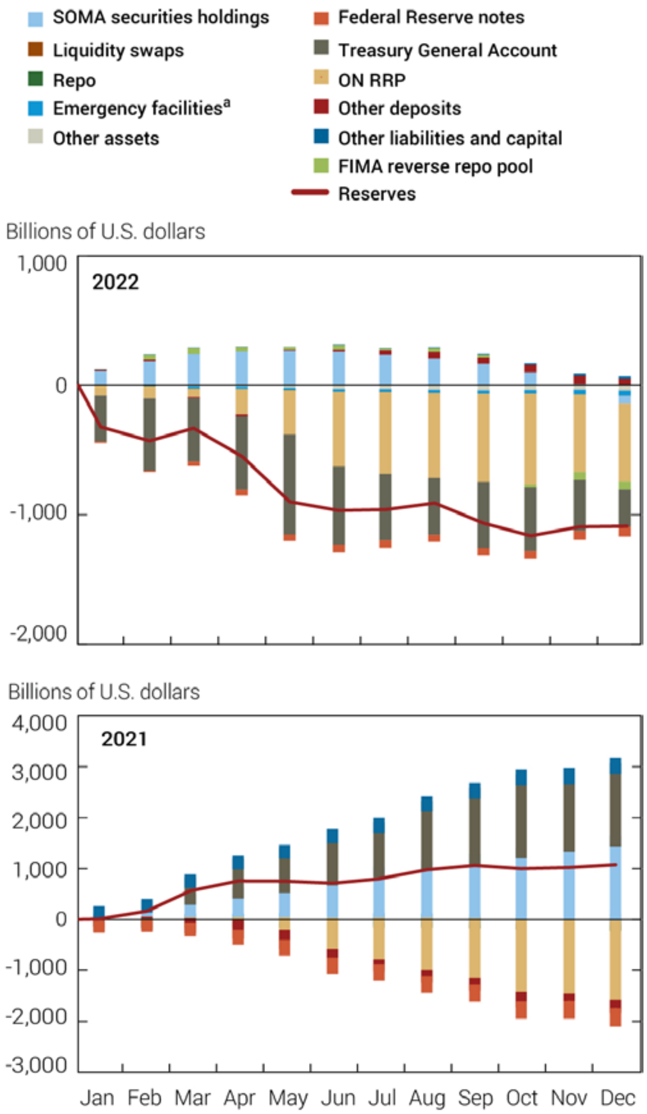
The significant variation in liabilities, particularly the growth in the ON RRP facility, had a greater impact on reserve levels during 2022 than asset runoff. Nonetheless, the start of asset runoff in June began a longer process of reducing reserves in the banking system. By year-end, reserves had decreased by $959.5 billion to their lowest levels since July 2020 and accounted for 31 percent of the Federal Reserve's liabilities, compared to 42 percent at year-end 2021. Deposit rates at banks generally lagged increases in the target range of the federal funds rate during 2022, resulting in an outflow of deposits and associated reserves over the year. Nonetheless, reserve balances remained abundant at year-end 2022.

Usage of the ON RRP facility is expected to decline over time, which should slow the decline in reserves as balance sheet runoff continues. This process would occur as declining reserve levels increase competition for private money market funding and draw funds out of the ON RRP. All else equal, this would shift funds back into the banking system. During periods in late 2022, these dynamics were evident as overnight repo rates increased to levels above the ON RRP rate and became more attractive than the facility rate, resulting in lower ON RRP usage. In addition, when MMF managers have more certainty about the path of the economy and the peak level of policy rates, they would likely begin to extend their weighted-average maturities by investing in longer-duration alternatives to the ON RRP facility, such as Treasury bills or other assets. These factors should lower ON RRP facility usage over time and result in continued shifts in the composition of the Federal Reserve's liabilities.

information on Federal Reserve liability composition, **see Box 2,** "Shifts in the Composition of Liabilities over 2022," above.) Federal Reserve liabilities provide safe and liquid assets to a range of parties including depository institutions, ON RRP counterparties, foreign official account holders, the U.S. Treasury, and holders of paper currency. Overall, the growth of the ON RRP facility and the contraction in reserves represented the most significant changes in Federal Reserve liabilities during 2022.

Chart 24

Sources of Cumulative Change in Reserve Balances



Source: Federal Reserve Bank of New York.

Notes: All else equal, increases in SOMA securities holdings, liquidity swaps, repo, emergency facilities, and other assets increase reserves, while increases in ON RRP, Federal Reserve notes, Treasury General Account, FIMA reverse repo pool, other deposits, and other liabilities and capital decrease reserves. Other assets include net premiums, net discounts, discount window loans, accrued interest, bank premises, and accounts receivable. Bars above the axis reflect changes supplying reserves, while bars below the axis represent changes reducing reserves.

[a]Emergency facilities reflects the monthly average of the sum of the weekly averages of the PPPLF, PDCF, and MMLF, and the Wednesday levels of the MLF, MSLP, TALF, SMCCF, and CPFF. All other figures are the monthly averages.

RESERVE BALANCES

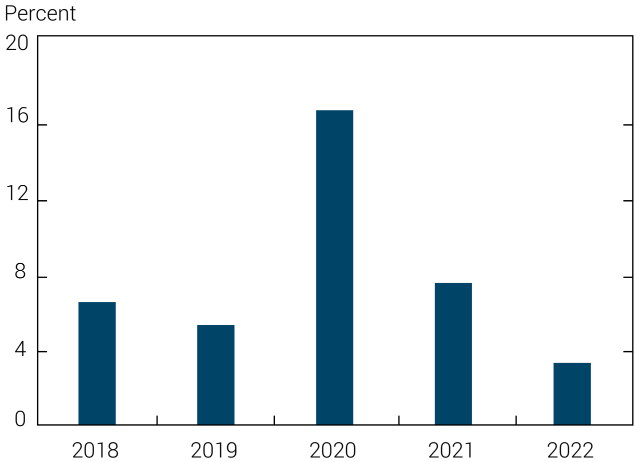
Reserves declined $959.5 billion during 2022 and reached an average in December of $3.09 trillion; the $2.68 trillion year-end reserve balance was the lowest level since July 2020 (**Chart 24**). Most of the decline in reserves resulted from increases in the ON RRP facility, mainly during the first half of the year when reserves fell by a total of $1.07 trillion. Increases in the TGA, Federal Reserve notes, and the FIMA reverse repo pool, as well as the balance sheet runoff in the second half of the year, also contributed to the decline in reserves. Smaller domestic depository institutions had a larger drop in reserves during 2022, while larger domestic banks had a more modest decrease. In contrast, reserves held by foreign banks increased modestly in 2022 and remained near historical highs. Reserves continued to be the largest liability of the Federal Reserve, though reserves as a share of total liabilities declined.

FEDERAL RESERVE NOTES

Federal Reserve notes, commonly known as currency in circulation (currency), increased by $71.8 billion during 2022 to $2.26 trillion at year-end. For U.S. households and firms, currency is an asset that can be readily exchanged for goods and services and serves as a store of value. In addition, demand for U.S. currency can also originate from abroad. The rate of growth of currency outstanding has generally reflected the pace of expansion of domestic economic activity in nominal terms. Heightened financial or political uncertainty can also drive growth in currency, as during 2020, when the adverse outlook for the economy and shutdowns associated with the pandemic prompted investors, businesses, and households to move rapidly toward cash and cash-like instruments.

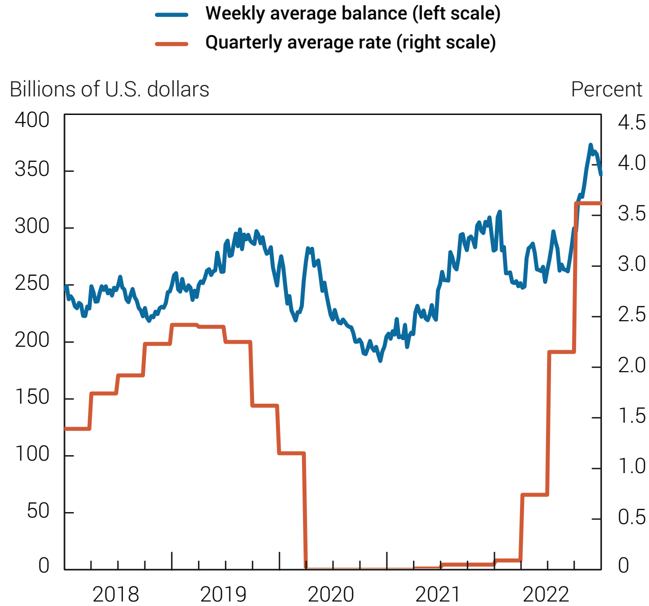
Federal Reserve notes outstanding increased by about 3 percent in 2022, continuing the slowdown in currency growth since 2020 to a level below that of the years prior to 2020 (**Chart 25**). Compared to 2021, the absence of economic impact payments and other stimulus-related outlays diminished domestic growth in currency in circulation. Foreign demand for U.S. currency related to tourism began to recover during 2022 but as of year-end was still below previous levels. In addition, increases in broader interest rates have generally resulted in lower incentives to hold currency, compared to interest-bearing investments.

Chart 25
Annual Changes in Federal Reserve Notes



Source: Board of Governors of the Federal Reserve System.
Note: Figures reflect annual growth rates based on year-end Wednesday levels.

Chart 26
FIMA Reverse Repo Pool



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

REVERSE REPURCHASE AGREEMENTS

OVERNIGHT REVERSE REPOS

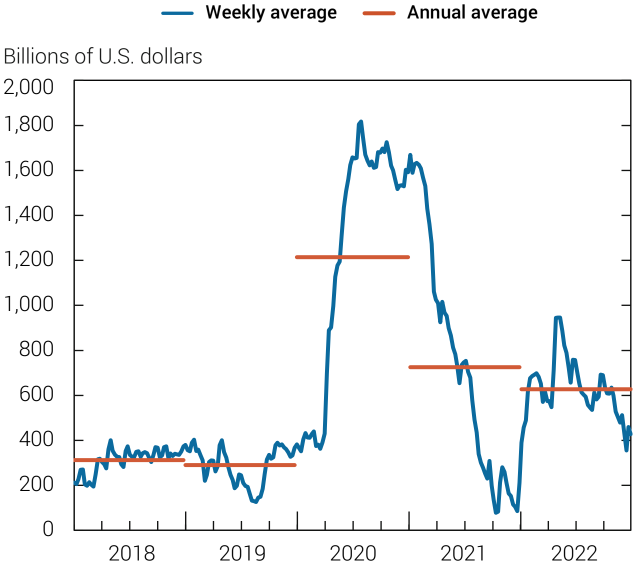
The ON RRP facility increased from an average level of $1.60 trillion in December 2021 to an average of $2.18 trillion in December 2022, temporarily reaching its highest daily level of $2.55 trillion at year-end 2022. The broader growth in the ON RRP facility over the year in part reflected increased uncertainty among investors about the near-term path of policy rates, which prompted a preference for shorter-duration assets. The ON RRP facility continued to operate as expected by providing an investment option for a broad base of money market investors, and its increased usage during 2022 reflected these ongoing dynamics across short-term money markets. (For more information about the ON RRP operations, see the “Open Market Operations” section of this report.)

FIMA REVERSE REPO POOL

The New York Fed has long offered its foreign official and international account holders an overnight reverse repo investment service, the FIMA reverse repo pool, also known as the foreign reverse repo pool. At the end of each business day, account holders’ cash balances are swept into an overnight reverse repo secured by the SOMA domestic securities holdings. Upon maturity on the following business day, the securities are repurchased by the SOMA at a price that includes a return calculated at a rate generally equal to the New York Fed’s ON RRP rate. This service enables central banks to hold dollar liquidity buffers at the Federal Reserve for cash management and clearing and settlement needs for securities in these accounts. The Federal Reserve offers this service as part of a suite of banking and custody services to central banks, governments, and international official institutions.

The FIMA reverse repo pool’s interest rate increased from 5 basis points to 4.30 percent during 2022, in line with increases in the federal funds rate throughout the year. Through the first half of 2022, aggregate FIMA reverse repo pool balances experienced significant swings, and in November reached a weekly average high of $373.4 billion, compared to the previous year’s weekly average high of $309.4 billion (**Chart 26**). Like trends in the ON RRP facility, the combination of higher interest rates paid on FIMA reverse repo pool balances and demand for shorter-duration investments contributed to inflows into the FIMA reverse repo pool.

Chart 27
Treasury General Account Balances



Source: Board of Governors of the Federal Reserve System.
Note: Weekly figures are the average of daily figures; annual figures are the average of the weekly figures for the year.

DEPOSITS

TREASURY GENERAL ACCOUNT

By statute, the Federal Reserve acts as the fiscal agent for the federal government, and the U.S. Treasury maintains a cash balance at the Federal Reserve known as the Treasury General Account. The U.S. Treasury uses the TGA to deposit individual and corporate taxes paid to the U.S. government, disburse payments, pay interest on federal debt, and settle Treasury security issuance, maturities, and buybacks. TGA balances typically exhibit significant variation around Treasury auction settlement dates, as well as when there are significant expenditures, such as those related to Social Security or military spending, and on dates when tax payments are due. To ensure it can meet its obligations even if the ability to borrow new funds is temporarily disrupted, the U.S. Treasury generally strives to maintain a TGA balance that is large enough to ensure that it can cover one week of net outgoing payments including the gross volume of maturing marketable debt, subject to a minimum of roughly $150 billion. The U.S. Treasury often holds a TGA balance above the level necessary to meet its projected cash needs to support its regular and predictable approach to issuing debt.[35]

Throughout the year, the TGA exhibited material fluctuations, driven by increases in the first half of the year and a reversion back to levels in line with pre-pandemic balances later in 2022 (**Chart 27**). During January and February, the TGA increased as the Treasury rebuilt its cash balances following the increase of the statutory debt limit in late 2021. This was followed by another sharp increase to an annual weekly average high of $945.7 billion in early May amid large tax receipts. Thereafter, the TGA declined by $499.0 billion over the remainder of the year. Compared to 2020 and 2021, TGA balances were much closer to historical ranges as the Treasury reduced its balances from the elevated COVID-era levels that were a result of significant borrowing to fund disbursements related to fiscal stimulus. The weekly average balance of the TGA over 2022 ended $98.7 billion lower than the average of $725.8 billion during 2021.

FOREIGN OFFICIAL AND OTHER DEPOSITS

The Federal Reserve has long offered deposit services to international and multilateral organizations, government-sponsored enterprises, and, more recently, to designated financial market utilities (DFMUs). GSEs are financial intermediaries chartered by the federal government that primarily facilitate the flow of credit to the housing and agriculture sectors. Title VIII of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 authorized the Board of Governors to authorize Federal Reserve Banks to establish and maintain accounts for designated financial market utilities. DFMUs provide the infrastructure for transferring, clearing, and settling payments, securities, and other financial transactions. Unlike deposits held by FIMA customers and GSEs at the New York Fed, deposits held by DFMUs may be remunerated at the rate paid on reserve balances maintained by depository institutions or another rate determined by the Board from time to time, not to exceed the general level of short-term interest rates. As of 2017, the Federal Reserve Banks had opened accounts for all eight DFMUs.

In 2022, average aggregate balances of foreign official and other deposits declined by about $55.9 billion to $242.7 billion but have remained at higher levels since 2020. The aggregate decline was driven in part by declines in DFMU balances, partially reflecting reduced proportions of cash received by DFMUs as collateral against open positions.

GSE account balances continued to vary through each month, with large increases in balances when GSEs positioned cash in their Federal Reserve accounts ahead of principal and interest payment dates. As rates rose during the year and agency MBS prepayments were lower, these peaks in GSE deposits also declined. Foreign official deposits were stable over the year at a level of between $5 and $10 billion.

FINANCIAL RESULTS

SOMA portfolio net income decreased in 2022, with weekly net income turning negative during the third quarter. The downward trend in net income during the year was driven mainly by higher interest expense from the sharp increases in the Federal Reserve's administered rates. The Federal Reserve remitted a total of $76.0 billion to the U.S. Treasury in 2022. Beginning in September 2022, most Federal Reserve Banks suspended weekly remittances to the U.S. Treasury and started accumulating a deferred asset. This deferred asset is expected to increase in size in the coming years but has no implications for the Federal Reserve's conduct of monetary policy or its ability to meet its financial obligations.

SOMA NET INCOME

In 2022, SOMA income increased modestly to $126.1 billion, driven by an increase in interest income from a larger domestic securities portfolio and higher income from holdings of TIPS in the SOMA, offset by higher interest expense on the ON RRP facility and the FIMA reverse repo pool (**Table 4**). SOMA net income, which considers the costs of funding the portfolio, decreased to $65.7 billion from $114.8 billion in 2021 as these costs increased significantly in line with administered rates. Though less pronounced, additional drivers of net income included losses on the revaluation of foreign currency–denominated asset holdings amid broader dollar strength.

Table 4

SOMA Net Income

Billions of U.S. Dollars

	2022	2021
Interest income		
Repurchase agreements	0.0	0.0
Treasury securities	115.9	92.6
Agency debt	0.1	0.1
Agency MBS	54.0	29.6
Other	0.0	0.0
	170.0	122.3
Interest expense		
Reverse repurchase agreements		
Overnight and term RRP	(36.7)	(0.3)
FIMA reverse repo pool	(5.3)	(0.1)
Other	0.0	0.0
	(42.0)	(0.4)
Non-interest income (loss)		
Foreign currency translation gains (losses)	(1.8)	(1.9)
Other	(0.1)	0.0
	(1.9)	(1.9)
SOMA income	126.1	120.1
Assumed funding cost	(60.4)	(5.3)
SOMA net income	65.7	114.8

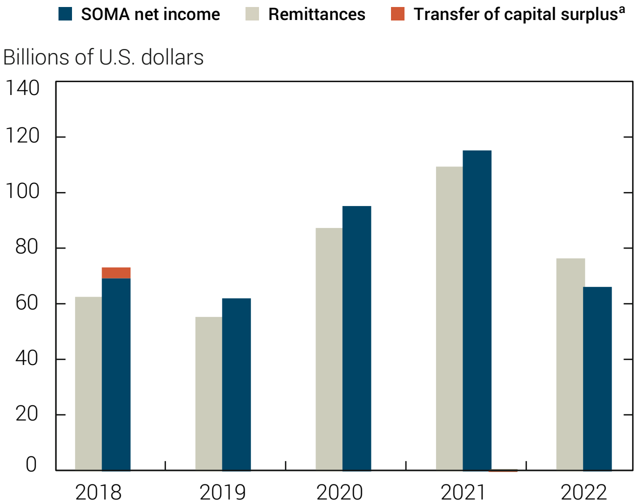
Sources: Federal Reserve Bank of New York; Board of Governors of the Federal Reserve System.

Notes: Assumed funding cost represents the interest expense on interest-bearing liabilities assumed to be associated with SOMA net assets in excess of Federal Reserve notes outstanding and the TGA balance held at the New York Fed. Actual interest expense on all non-SOMA interest-bearing liabilities of the Federal Reserve (including reserves and term deposits) totaled $60.4 billion for 2022 and $5.3 billion for 2021. These liabilities fund non-SOMA assets of the Federal Reserve in addition to SOMA net assets.

FEDERAL RESERVE REMITTANCES

The Federal Reserve remits its earnings to the U.S. Treasury Department on a weekly basis, after providing for the cost of operations, payment of dividends, and any amount necessary to maintain aggregate Reserve Bank capital surplus up to

Chart 28
SOMA Net Income and Federal Reserve Remittances to the U.S. Treasury



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

Note: Reflects the sum of all positive weekly remittances during 2022.

[a]Represents the transfer of capital from Federal Reserve Banks to comply with the statutory limit on the aggregate Federal Reserve surplus. The limit was reduced in 2018 from $10 billion to $7.5 billion and then to $6.825 billion. In 2021, the limit was reduced further to $6.785 billion by the National Defense Authorization Act for 2021, resulting in a $40 million transfer by Reserve Banks from their capital surplus. Given the scale of the chart, the 2021 transfer is not visible.

the specified limit of approximately $6.8 billion.[36] The Federal Reserve remitted a total of $76.0 billion to the U.S. Treasury in 2022, compared to $109.0 billion in 2021. Weekly remittances were higher during the first half of 2022, reflecting more earnings from the larger SOMA holdings and relatively low interest expenses. In the second half of 2022, weekly remittances decreased and eventually were suspended in September for most Reserve Banks as increases in interest expenses exceeded SOMA interest income (**Chart 28**).

The Federal Reserve recorded a deferred asset of $16.6 billion at the end of 2022, which represents the amount of future earnings that Reserve Banks will need to realize before remittances to the Treasury resume. Once Federal Reserve net income turns positive again, this deferred asset will be reduced and eventually extinguished. (See the "Projections" section of this report for further details.) The deferred asset does not impact the ability of the Federal Reserve to implement monetary policy or meet any of its financial obligations.

SOMA UNREALIZED GAINS AND LOSSES

The market value of the SOMA securities portfolio fluctuates with changes in the prevailing level of interest rates. Unrealized gains and losses are calculated as the difference between the market value of the portfolio and its book value, which reflects amortized cost. The SOMA's unrealized gain or loss position has no effect on net income or remittances to the Treasury under the accounting rules of the Federal Reserve unless assets are sold and those gains or losses are realized. For securities that are held to maturity, unrealized gains or losses fall to zero over time as their price reverts to par at maturity. Unrealized gains and losses have no effect on the conduct of monetary policy.

The increase in market interest rates across the yield curve during 2022 drove an unrealized loss position for the domestic portfolio of $1.08 trillion, compared to an unrealized gain position of $127.9 billion in 2021 (**Table 5**). The Treasury portfolio decreased from a $134.6 billion unrealized gain position at the end of 2021 to a $672.8 billion unrealized loss position at the end of 2022, and the agency MBS portfolio moved from an unrealized loss of $7.4 billion at the end of 2021 to an

Table 5
SOMA Domestic Portfolio Unrealized Gains and Losses
Billions of U.S. Dollars

Year	Treasury Securities	Agency MBS	Agency Debt	Total
2018	35.5	(42.2)	0.5	(6.2)
2019	139.1	20.8	0.7	160.6
2020	298.7	54.4	0.9	354.0
2021	134.6	(7.4)	0.7	127.9
2022	(672.8)	(407.7)	0.2	(1,080.4)

Source: Board of Governors of the Federal Reserve System.

Note: Figures are as of year-end.

Box 3

UNDERSTANDING NET INCOME AND DEFERRED ASSETS AT THE FEDERAL RESERVE DURING 2022

The Federal Reserve's consolidated net income turned negative in September 2022, resulting in a deferred asset being recorded in 2022.[a] This negative net income is a result of policy rate increases undertaken by the Federal Reserve in its pursuit of its congressional mandate of maximum employment and price stability. Indeed, income is not a policy objective for the FOMC, but rather an outcome of conducting policy to achieve its employment and price stability objectives, which benefit all Americans. Over time, net income would be expected to turn positive again.

The Federal Reserve's net income is mainly based on the difference between the interest income generated from its SOMA securities holdings and the interest expense associated with its liabilities. Most of the Federal Reserve's interest income is generated by its holdings of securities in the SOMA, with more negligible amounts from other assets such as discount window lending and other credit and liquidity facilities. Interest expense is driven by several remunerated liabilities, including reserve balances and the ON RRP facility, which are directly tied to administered rates set by the Federal Reserve. In addition, roughly one-third of the Federal Reserve's liabilities are unremunerated, including currency in circulation and the TGA. Apart from interest expenses, the Federal Reserve also incurs operational expenses, although these are smaller in comparison to interest expenses.[b]

Negative net income at the Federal Reserve is the result of past and current monetary policy decisions made by the FOMC in seeking to achieve its congressional mandate of maximum employment and price stability. Asset purchase programs directed by the FOMC to provide accommodative financial conditions and support market functioning during extraordinary circumstances, such as the COVID-19 pandemic, have resulted in a larger SOMA portfolio. The increase in the size of the SOMA portfolio has contributed to substantially higher net income and remittances to the U.S. Treasury, which have totaled more than $1 trillion since 2008. As the FOMC increased the federal funds target range in 2022 from near zero to 4 ¼ to 4 ½ percent, interest expenses eventually surpassed interest income, resulting in net income turning negative and remittances sharply dropping. In the longer run, projections suggest that net interest income will turn positive again as interest expense goes down as short-term interest rates move lower, coupled with increases in interest income owing to reinvestments and reserve management purchases into higher-yielding securities. (See the "Projections" section of this report for further details.) Although the policy measures taken by the FOMC in support of the overall economy affect the net income of the Federal Reserve, net income itself is not a policy consideration. Current trends in the Federal Reserve's net income are best viewed from a longer-term perspective and in the context of its actions in achieving its core policy mandates and objectives.

[a] For more discussion of the concepts related to the Federal Reserve's income and its evolution in recent years, see "An Analysis of the Interest Rate Risk of the Federal Reserve's Balance Sheet, Part 1: Background and Historical Perspective," Board of Governors of the Federal Reserve System *FEDS Notes*, July 15, 2022, available at https://www.federalreserve.gov/econres/notes/feds-notes/an-analysis-of-the-interest-rate-risk-of-the-federal-reserves-balance-sheet-part-1-20220715.html.

[b] Operational expenses include such things as salaries, pension benefits, occupancy, and equipment. In 2022, operational expenses totaled $5.6 billion compared to $102.4 billion in interest expenses.

unrealized loss of $407.7 billion. The foreign portfolio moved to an unrealized loss position of $452 million from an unrealized gain position of $68 million at the end of 2021.

PROJECTIONS

The projections presented here illustrate how the SOMA portfolio may evolve in coming years under the FOMC's Plans for Reducing the Size of the Federal Reserve's Balance Sheet (Plans), released at its May 2022 meeting. Reflecting the Plans, the projections shown here illustrate a possible path for the portfolio. However, the outlook for the balance sheet remains uncertain. The projections demonstrate possible paths of the portfolio and the balance sheet under one set of assumptions and are purely illustrative. The actual path of the portfolio will depend on the Committee's future decisions about the balance sheet as well as economic and market developments. In addition to Committee communications, the assumptions underlying the projections reflect market participant expectations drawn from results of the Desk's Surveys of Primary Dealers and Market Participants (Desk Surveys) and simple rules used to proxy for the evolution of Federal Reserve liabilities.[37]

The projections suggest that the size of the SOMA portfolio will continue to decline over coming years at a pace roughly twice that of the balance sheet runoff that occurred from 2017 through 2019. They also reflect the FOMC's intention to slow and then stop the decline in the size of the balance sheet when reserve balances are somewhat above the level the Committee judges to be consistent with ample reserves. Once reduction in the size of the balance sheet has ceased, reserve balances will continue to decline for a time until the Committee judges that reserve balances are at an ample level. When reserve balances reach an ample level, the portfolio resumes growth through reserve management purchases of Treasury securities. In the longer run, the portfolio is composed primarily of Treasury securities.

The projections also illustrate possible dynamics related to the composition of Federal Reserve liabilities during balance sheet reduction. However, these dynamics are highly uncertain. For example, a decline in ON RRP facility balances will depend on the attractiveness and appetite for alternative investments as well as bank behavior regarding deposit pricing. Reserve balances may absorb more or less of the balance sheet reduction as a result.[38]

In addition to providing illustrative paths for the SOMA portfolio and reserve balances, the projections also include illustrative paths for portfolio income and the market value of portfolio holdings. Under the baseline path, the portfolio's net income is projected to decline from recent levels before increasing in subsequent years. Additional scenarios that consider alternate interest rate paths show that in an environment of higher interest rates, net income could be lower than the projected path and remain negative for longer, whereas if interest rates were lower, net income could be higher than the baseline.

While the unrealized loss position of the SOMA portfolio grew throughout 2022, this trend is projected to reverse and the unrealized loss to decrease as market rates for Treasury securities and agency MBS are assumed to decline over time and as gains and losses on held-to-maturity securities converge to zero in the longer run. Alternate scenarios suggest that the unrealized gain or loss position of the portfolio could vary depending upon the path of market rates. Net income and unrealized gains or losses do not impact the Federal Reserve's ability to implement monetary policy.

ASSUMPTIONS

This section reviews the assumptions about SOMA portfolio runoff, Federal Reserve liabilities, and interest rates that are used for the projections; a complete list of key assumptions can be found in Appendix 4.

BALANCE SHEET

Assets

The projections assume that the size of the SOMA portfolio will evolve in three phases: portfolio reduction, portfolio maintenance, and portfolio growth. During portfolio reduction, monthly principal payments from Treasury coupon securities and agency securities are reinvested only to the extent that they exceed monthly redemption caps. The redemption caps are initially maintained at $60 billion and $35 billion for Treasury securities and agency securities, respectively. Treasury coupon principal payments are redeemed up to the monthly Treasury cap, and Treasury bills are redeemed when coupon principal payments are less than the monthly cap, with bill redemptions equal to the remainder under the cap. To slow balance sheet reduction, the redemption caps on Treasury and agency securities are assumed to be lowered by half.[39]

In discussion at the March 2022 FOMC meeting, Committee participants generally agreed that it would be appropriate to consider agency MBS sales after balance sheet runoff was well underway to enable suitable progress toward a longer-run portfolio composed primarily of Treasury securities. As in past *Open Market Operations* reports, because no plans have been established for such a program, these projections assume that reductions in the portfolio are achieved only through redemptions of maturing securities without asset sales; if the FOMC were to introduce sales of agency MBS, the path of the portfolio would diverge from what is presented here.

Consistent with the Plans, the decline in the portfolio stops and its size is maintained at a roughly constant level when reserves are somewhat above the level assumed to be consistent with an ample reserves regime. At this point, all principal payments—including those from agency security holdings—are reinvested into Treasury securities, in line with the FOMC's stated objective of holding a portfolio primarily composed of Treasury securities in the longer run. Reserves continue to decline during the portfolio maintenance phase due to growth in non-reserve liabilities. (See the "Liabilities and Capital" section below.) Once reserves reach an ample level, the portfolio enters the growth phase, at which point purchases of Treasury securities resume at a pace that maintains reserves at an ample level.

The timing of the transition between these three phases is determined by the level of reserves as a share of nominal GDP, where the assumed nominal rate of growth for GDP is based on median responses to the January/February 2023 Survey of Primary Dealers. The median expected longer-run growth rates of real GDP and headline personal consumption expenditures (PCE) price inflation were 1.8 percent and 2.0 percent, respectively, consistent with a long-run level of nominal GDP growth of 3.8 percent. To slow balance sheet reduction, redemption caps are lowered when reserves reach approximately 10 percent of NGDP. To stop balance sheet reduction and maintain a stable SOMA portfolio size, full reinvestments resume when reserves reach approximately 9 percent of NGDP.

The portfolio is assumed to enter the growth phase when reserve balances reach an ample level. The amount of reserves needed in an ample reserves regime is highly uncertain, and the projections reflect a simple assumption for the long-run level of reserves. In practice, the Committee will continue to monitor money market conditions and adjust its policy implementation tools accordingly. As an approximation, the projections assume that the level of reserves needed in an ample reserves regime is equivalent to the average level of reserves as a share of NGDP in December 2019, or approximately 8 percent, similar to the assumptions employed in recent *Open Market Operations* reports.

Liabilities and Capital

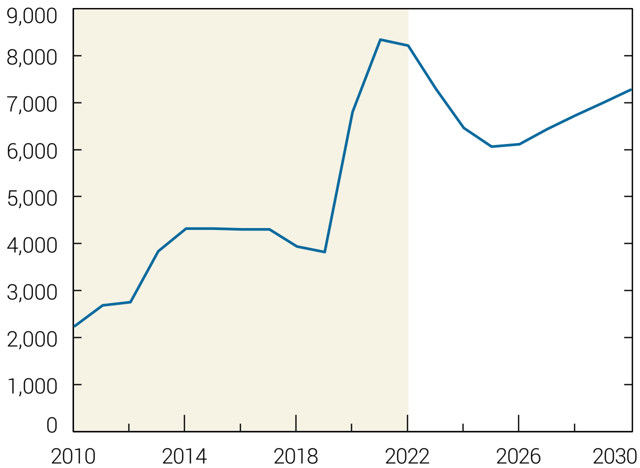
Demand for most Federal Reserve liabilities is anticipated to grow over time. Accordingly, most non-reserve liabilities and capital are assumed to begin at their average December 2022 levels and grow over the projection horizon in line with nominal GDP.

There are two exceptions to this approach. First, the TGA is assumed to rise to $550 billion by the second quarter of 2023, a level in line with the cash balance guidance provided in the Treasury's February 2023 Quarterly Refunding Statement. Thereafter, the TGA is assumed to grow with nominal GDP, like other non-reserve liabilities.[40] Second, ON RRP facility balances are assumed to decline to a minimal level by the time balance sheet reduction ends, at a pace roughly similar to the pace of portfolio reduction.

INTEREST RATES

The baseline paths for the federal funds rate and longer-term interest rates are drawn from responses to the January/February 2023 Desk Surveys. In the survey responses, the median expected midpoint of the federal funds target range rises from 4.375 percent at year-end 2022 to 4.875 percent by year-end 2023, before falling to 2.375 percent in the longer term. The ten-year Treasury yield and thirty-year fixed primary mortgage rate are expected to fall to 3 percent and 5.2 percent, respectively, in the longer run. The IORB rate is assumed to be set 10 basis points below the top of the target range and the ON RRP offering rate is assumed to be set 5 basis points above the bottom of the target range, in line with recent settings.

Chart 29
Projected SOMA Domestic Securities Holdings

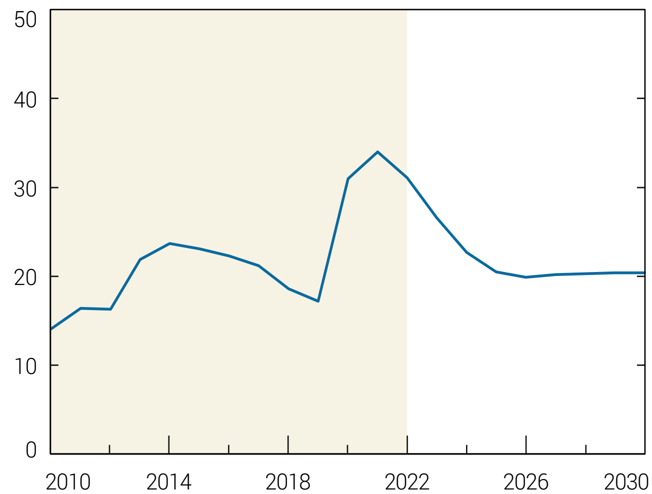


Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end and are rounded. Figures for 2010-22 are shaded and represent historical balances.

Projections assumptions are primarily based on publicly available information further detailed in Appendix 4 of this report.

Chart 30
Projected SOMA Domestic Securities Holdings as a Share of NGDP



Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end and are rounded. Figures for 2010-22 are shaded and represent historical balances.

Projections assumptions are primarily based on publicly available information further detailed in Appendix 4 of this report.

The projection exercise also considers a range of outcomes for net income and portfolio market values assuming lower and higher interest rates; these alternate scenarios assume interest rates are 100 basis points higher or lower than the values obtained from the January/February 2023 Desk Surveys. The data files for this report also include scenarios in which interest rates are 200 basis points higher or lower than the values obtained from the January/February 2023 Desk Surveys.

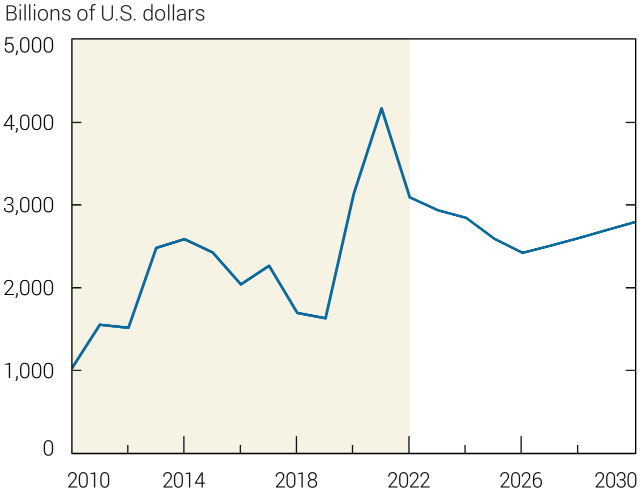
PROJECTION RESULTS

PATH OF PORTFOLIO HOLDINGS AND RESERVE BALANCES

Starting with the SOMA domestic securities portfolio as of December 2022 and incorporating the assumptions described above results in the path of the SOMA through 2030 shown in **Chart 29**. The portfolio declines through mid-2025 as maturing principal payments are allowed to run off, subject to caps. The pace of decline is more rapid early in the projection period, with monthly declines averaging close to $80 billion through mid-2024, after which the pace slows as the caps are reduced. The ON RRP facility is assumed to decline in line with the reduction in the portfolio, and reserves decline due to growth in other non-reserve liabilities. After falling by about $2.5 trillion from the peak size reached in the first half of 2022, the portfolio stops declining in mid-2025, at which point it is maintained at roughly $6.0 trillion—about 21 percent of NGDP—for a little over one year (**Chart 30**); meanwhile, the ON RRP facility reaches and remains at a minimal level and reserves continue to decline as most other liabilities continue to grow (**Charts 31 and 32**). The contours of the path of reserves also reflects the evolution of the deferred asset, although the effect is small. (See the "SOMA Net Income and Remittances" section below.)

Once reserves reach the assumed ample level, the portfolio resumes growth at the end of 2026 to match the assumed growth in demand for most Federal Reserve liabilities. By 2030, the SOMA totals $7.2 trillion—or 20 percent of NGDP.

Chart 31
Projected Reserve Balances

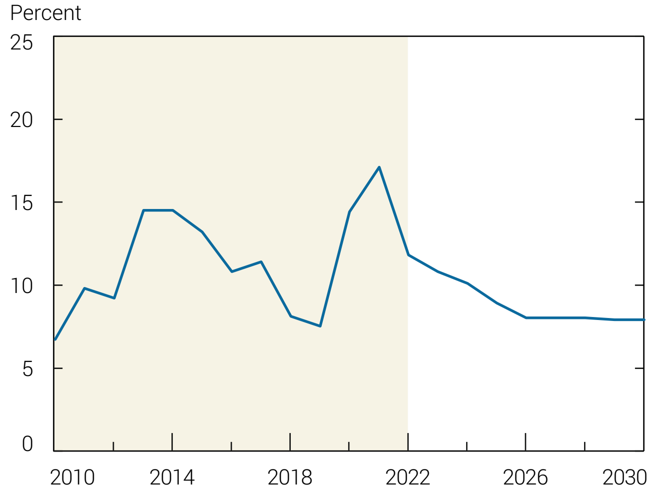


Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end and are rounded. Figures for 2010-22 are shaded and represent historical year-end balances calculated as averages of December daily reserve balances.

Projections assumptions are primarily based on publicly available information further detailed in Appendix 4 of this report.

Chart 32
Projected Reserve Balances as a Share of NGDP



Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end and are rounded. Figures for 2010-22 are shaded and represent historical year-end balances calculated as averages of December daily reserve balances as a share of year-end NGDP.

Projections assumptions are primarily based on publicly available information further detailed in Appendix 4 of this report.

While the precise level of the SOMA and reserves in the longer run is unknown due to uncertainty in demand for Federal Reserve liabilities, the projections shown here illustrate the dynamics that will prevail in the coming years. As discussed earlier, the pace of decline in the ON RRP balances is highly uncertain and will depend on several factors, including the behavior of banks and other money market investors and money market conditions. Accordingly, the path of reserves on the way to their longer-run level may not follow the linear decline shown in these projections.

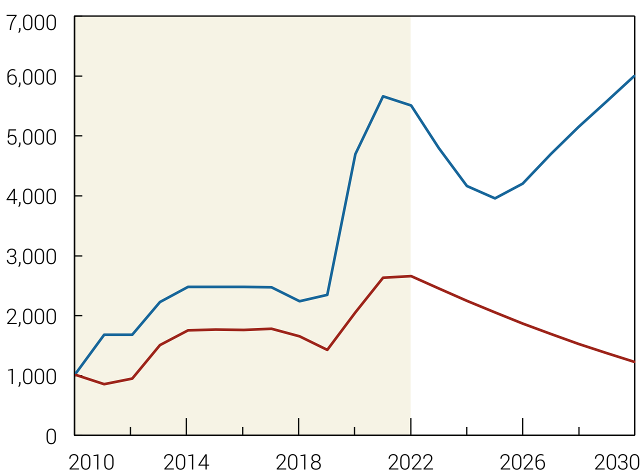
PORTFOLIO COMPOSITION

As the size of the SOMA portfolio declines in coming years through the redemption of maturing securities under the caps, the composition of the portfolio between Treasury securities and agency MBS is roughly unchanged. Through 2025, the portfolio is composed of roughly 66 percent Treasury securities and 34 percent agency securities. During the periods when the portfolio is held constant and resumes growth, all principal payments from agency securities are reinvested into Treasury securities—consistent with the Committee's intention to return to a portfolio composed primarily of Treasury securities—and principal payments from Treasury securities are reinvested into new Treasury securities at auction. When the portfolio resumes growth, reserve management purchases are conducted in Treasury securities. As a result, the proportion of the portfolio allocated to agency securities gradually declines starting in 2025. By 2030, the SOMA portfolio is composed of 83 percent Treasury securities and 17 percent agency securities (**Chart 33**).

SOMA NET INCOME AND REMITTANCES

As discussed earlier in this report, 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 an aggregate Reserve Bank capital surplus up to the statutory limit. SOMA net income—a measure that reflects interest income and interest expense associated with the SOMA portfolio,

Chart 33
Projected SOMA Domestic Securities Holdings by Asset Class

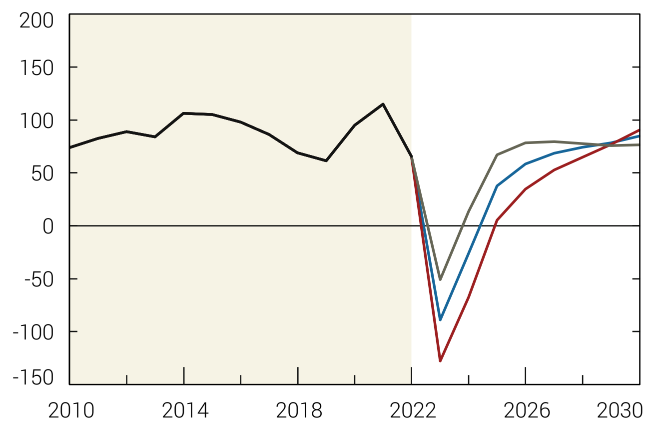


Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end and are rounded. Figures for 2010-22 are shaded and represent historical balances.

Projections assumptions are primarily based on publicly available information further detailed in Appendix 4 of this report.

Chart 34
Projected SOMA Net Income



Source: Federal Reserve Bank of New York.

Notes: Figures are annual totals and are rounded. Figures for 2010-22 are shaded and represent historical values.

Projections assumptions are primarily based on publicly available information further detailed in Appendix 4 of this report.

and the portfolio's assumed funding costs—is the primary driver of Federal Reserve remittances. A substantial portion of Federal Reserve liabilities are not remunerated, including Federal Reserve notes and the Treasury General Account.

In this exercise, SOMA net income is projected to decline notably during the portfolio reduction phase through 2024 (**Chart 34**).[41] It is projected to do so because costs associated with reserve balances and the ON RRP facility increase as a result of short-term interest rate increases, while interest income declines modestly as the size of the portfolio is reduced. However, the declining trend in net income then reverses as short-term interest rates decline in the longer run. To a lesser extent, the income from higher-yielding securities added to the portfolio through reinvestments and reserve management purchases also contributes to increases in net income. The projections for negative net income suggest that remittances to the U.S. Treasury will be suspended for some time, and that the deferred asset recorded on the Federal Reserve's balance sheet reflecting the accumulated net loss will continue to grow.[42] As net income gradually increases above zero, the deferred asset will be reduced, and remittances resume once the deferred asset is extinguished.

To illustrate the sensitivity of SOMA net income to alternative interest rate paths, **Chart 34** also shows the outcomes for net income assuming short- and long-term interest rates that are 100 basis points higher and lower than in the baseline scenario.[43] When interest rates are 100 basis points higher than indicated in the January/February 2023 Desk Surveys, net portfolio income is negative for roughly one quarter longer than in the baseline due to higher expenses from interest paid on reserves.[44] In the scenarios in which interest rates are lower, interest expenses are lower relative to the baseline, resulting in higher net income throughout most of the projection horizon.

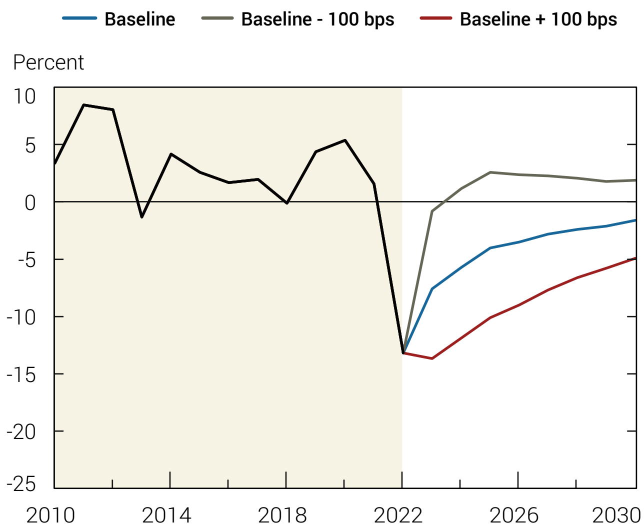
SOMA UNREALIZED GAINS AND LOSSES

The market value of securities holdings—and, accordingly, the portfolio's unrealized gains or losses—fluctuates with changes in the prevailing level of market rates for Treasury and agency securities. Importantly, the SOMA portfolio's unrealized gain or loss position does not affect the ability of the Federal Reserve to meet its financial obligations.[45] Assuming the baseline path of market rates, the current unrealized loss on the portfolio, calculated as the difference between the market value of the portfolio and its book value (which reflects amortized cost), is projected to have peaked at roughly $1.3 trillion during 2022, before ending the year at $1.2 trillion, or about 13 percent of the par value of the SOMA portfolio at year-end (**Chart 35**), primarily reflecting the decrease in longer-term rates on Treasury and agency securities. Later, as these rates decline and stabilize at their assumed long-run levels, the unrealized loss continues to decrease and the market value of securities converges to par value as the portfolio ages.

Similar to the sensitivity of net income, when interest rates are 100 basis points higher than indicated in the January/February 2023 Desk Surveys, the unrealized loss on the portfolio becomes more negative, reaching roughly 14 percent of the portfolio.[46] As noted earlier, the Federal Reserve's earnings, gains, or losses have no impact on its ability to fulfill its financial obligations or implement monetary policy in pursuit of its statutory goals.

Chart 35

Projected SOMA Unrealized Gains and Losses as a Share of the SOMA Portfolio



Source: Federal Reserve Bank of New York.

Notes: Figures are as of year-end and are rounded. Figures for 2010-22 are shaded and represent historical values.

Projections assumptions are primarily based on publicly available information further detailed in Appendix 4 of this report.

COUNTERPARTIES

The New York Fed relies on a robust network of trading counterparties to supply the necessary operational capacity to execute domestic and foreign open market operations. This network of counterparties is diverse and geographically dispersed to ensure that the New York Fed could continue to conduct open market operations in a range of scenarios. The New York Fed transacts primarily with regulated banks and broker-dealers, considering other types of counterparties only when appropriate to execute its responsibilities, and seeks to transact with counterparties that do not pose an undue level of credit risk exposure to the New York Fed or to the parties on whose behalf the New York Fed executes market operations.[47] Among other requirements, counterparties are expected to operate in accordance with the best practices for fixed income and foreign exchange markets published by New York Fed-sponsored and related groups.[48]

PRIMARY DEALERS

Primary dealers are trading counterparties of the New York Fed in its implementation of monetary policy and are expected to participate consistently and competitively in open market operations. They are also expected to make markets for the New York Fed on behalf of its official account holders as needed, and to bid on a pro rata basis in all Treasury auctions at reasonably competitive prices.[49] The New York Fed also expects primary dealers to provide ongoing insight into market developments in the daily market monitoring activities that the Desk conducts to support the formulation and implementation of monetary policy. The Desk announced one new primary dealer during the year, bringing the total to twenty-five primary dealers.

REVERSE REPURCHASE AGREEMENT COUNTERPARTIES

To enhance its ability to support the monetary policy objectives of the FOMC, the New York Fed has arrangements with an expanded set of counterparties with whom the Desk can conduct reverse repo transactions. These RRP counterparties—which include money market funds, government-sponsored enterprises, and banks—augment the existing set of primary dealer counterparties with which the New York Fed can conduct reverse repos. As of December 31, 2022, there were 136 expanded RRP counterparties, comprising 105 money market funds from thirty-one investment management firms, sixteen government-sponsored enterprises, and fifteen banks. During the year eight RRP counterparties were added and one was removed.

STANDING REPURCHASE AGREEMENT FACILITY COUNTERPARTIES

SRF counterparties, which include primary dealers and eligible depository institutions, may participate in SRF operations. The Desk announced fourteen new SRF counterparties during 2022, bringing the total to seventeen as of December 31. Consistent with the New York Fed's commitment to ensuring that its policies promote a fair and competitive marketplace, the eligibility requirements for SRF counterparties were adjusted in April 2022 to allow a broader set of depository institutions to access the facility.

FOREIGN EXCHANGE COUNTERPARTIES

Foreign exchange counterparties are trading counterparties of the New York Fed in its foreign exchange operations conducted on behalf of the Federal Reserve and the U.S. Treasury. These counterparties are also expected to make reasonable markets for Desk transactions that relate to the currency needs of the New York Fed's official account holders and agencies of the U.S. government. In addition, the New York Fed relies on its foreign exchange counterparties for ongoing insight into global financial market developments as it conducts daily market monitoring activities to support the formulation and implementation of policy by U.S. monetary authorities. As of December 31, 2022, there were twenty-one foreign exchange counterparties.

FOREIGN RESERVES MANAGEMENT COUNTERPARTIES

The New York Fed transacts with foreign reserves management counterparties to invest the foreign currency reserves of the Federal Reserve and the U.S. Treasury. These counterparties are expected to participate consistently and competitively in the Desk's periodic investment operations. The Desk also relies on its foreign reserves management counterparties for ongoing insight into global financial market developments in its daily market monitoring activities to support the formulation and implementation of policy by the U.S. monetary authorities. As of December 31, 2022, there were twenty-four foreign reserves management counterparties, representing sixteen parent financial firms.

OPERATIONAL FLEXIBILITY AND RESILIENCY

Over the course of 2022, the New York Fed continued efforts to enhance operational flexibility and resiliency by maintaining a robust and geographically dispersed network of counterparties (as described in the previous section) and operational capabilities. New York Fed staff operated in a hybrid posture for most of the year, which helped support readiness to conduct operations in a range of scenarios to implement monetary policy in accordance with FOMC directives. In addition, the Desk continued to undertake operational readiness exercises and initiatives to enhance cyber resiliency.

OPERATIONAL READINESS

The Desk continued its practice of conducting small-value transaction exercises for certain domestic and foreign SOMA operations to maintain operational readiness. During these exercises, transactions were conducted end-to-end, from trade execution through settlement, and were modest in size. These exercises test the operational capability to execute a range of operation types that may be required to effectively implement future policy directives. For example, the Desk developed plans to conduct monthly small-value purchases and sales of Treasury and agency securities to maintain operational readiness following the Committee's decision to conclude outright purchases of these securities in March 2022. However, conducting small-value exercises should not be interpreted as a signal about the possible future timing or direction of changes in policy.

The Desk also conducts small-value exercises leveraging back-up tools as part of its contingency preparedness efforts. These exercises test the Desk's ability to execute certain critical operations under a scenario in which primary tools such as the proprietary FedTrade electronic trading platform are unavailable. In 2022, tests using back-up tools encompassed overnight reverse repo, overnight repo, and securities lending operations.

Table 6
Small-Value Exercise Results in 2022: Domestic Operations

Operation Type	Operation Amount (Millions of U.S. Dollars)
Treasury outright purchases and sales	250
Agency MBS outright sales	285
Agency MBS coupon swaps	40
Overnight reverse repurchase agreement transactions with back-up tool	94
SRF transactions	61
SRF transactions with back-up tool	61
Securities lending with back-up tool	130

Source: Federal Reserve Bank of New York.

Notes: Figures may be rounded. Further details for each small-value exercise are available on the Federal Reserve Bank of New York's website.

The aggregate par value of all transactions conducted for the purpose of testing operational readiness did not exceed their authorized limits during 2022. These tests covered domestic and foreign outright operations, as well as repo and reverse repo transactions. Small-value exercises for domestic operations were announced in advance and the results were posted on the New York Fed's website (**Table 6**). Results of small-value

Table 7
Small-Value Exercise Results in 2022: Foreign Operations

Operation Type	Operation Amount
Foreign reserves management transactions	
Euro portfolio	€16,600,000
Yen portfolio	¥1,900,000,000
U.S. dollar liquidity swaps with standing swap line central banks	$220,000
Foreign currency liquidity swaps with standing swap line central banks	
Bank of England	£51,000
Bank of Japan	¥51,000

Source: Federal Reserve Bank of New York.
Note: Figures may be rounded.

central bank liquidity swap transactions were also posted on the New York Fed's website (**Table 7**).

OPERATIONAL AND CYBER RESILIENCY

The Federal Reserve operates in an increasingly complex environment in which trading and payment systems and information infrastructure are evolving and becoming more sophisticated. As part of a long-standing commitment to proactively manage security risks, the Federal Reserve continues to invest in initiatives to improve physical and information security while also enhancing operational resilience.

In recent years, the New York Fed has enhanced resiliency through initiatives focused on improving physical and information security, while proactively identifying and monitoring cyber threats. The Federal Reserve remains focused on tracking significant malicious actors and their methods of attack to better understand and prepare for the risks they pose. Relatedly, the Federal Reserve also tracks and monitors emerging technologies used by these actors that could be used in novel ways to threaten the cyber security or operations of the Federal Reserve in the future. The New York Fed regularly refreshes its cyber security strategy to adapt to the realities of a dynamic cyber threat environment. This includes focusing on cloud security to increase cyber resiliency, reducing exposures to potential cyberattacks, identifying emerging threats in near real time, and expanding information sharing and collaboration with other financial and central banking counterparts.[50]

During 2022, the Federal Reserve and most of its service providers, counterparties, and customers operated in a hybrid posture. This approach required additional technology and operational assurance since some portions of Desk operations were conducted from the office and some from home. The New York Fed plans to continue to operate in a hybrid model, with staff working remotely and at the office.

GEOGRAPHIC RESILIENCY

In the event of wide-scale disruptions in large metropolitan areas (in particular, the New York region, where many market participants are located), the Federal Reserve must continue to conduct open market operations and settlement activities. In 2022, the Desk continued to enhance its operational flexibility and resiliency by maintaining a robust, geographically dispersed network of counterparties and Desk operations.

To sustain the resiliency of the Desk's operations, the New York Fed continued to operate alternative sites for trading and settlement of open market operations in other Reserve Bank locations across the Federal Reserve System. These arrangements ensure that the Desk can carry out critical operational and analytical activities should a contingency scenario affect the greater New York area. Similarly, all primary dealers have established and regularly test geographically dispersed primary and secondary locations to ensure that robust end-to-end participation in open market operations could still be conducted amid any wide-scale disruption.

APPENDIX 1:

Terms for Desk Operations

The following tables summarize the key terms for Desk operations as they were implemented in 2022. For more information on each open market operation, including frequently asked questions (FAQs), visit the Markets & Policy Implementation page of the New York Fed's website, at **https://www.newyorkfed.org/markets**.

Overnight Reverse Repurchase Agreements

For more information, visit the FAQs at https://www.newyorkfed.org/markets/rrp_faq.

Term	Overnight
Eligible securities	U.S. Treasury securities
Counterparties	Primary dealers, eligible 2a-7 money market funds, government-sponsored enterprises, and banks
Aggregate operation limit	These operations were limited by the value of Treasury securities held outright in the SOMA that was available for such operations.
Frequency	Daily
Per counterparty limit	One proposition per counterparty in an amount not to exceed $160 billion
Maximum offer rate	January 1 to March 16: 0.05 percent March 17 to May 4: 0.30 percent May 5 to June 15: 0.80 percent June 16 to July 27: 1.55 percent July 28 to September 21: 2.30 percent September 22 to November 2: 3.05 percent November 3 to December 14: 3.80 percent December 15 to December 31: 4.30 percent
Awards	The ON RRP facility is conducted as a fixed-price, single-price auction. If the total amount of propositions received was less than or equal to the amount of available securities, all awards were made at the specified offer rate to all counterparties that submitted propositions. In the highly unlikely event that the value of propositions received exceeded the amount of available securities, awards would be made at the rate at which this size limit was achieved (the stop-out rate), with all propositions below this rate awarded in full and all propositions equal to this rate awarded on a pro rata basis.
Execution platform	FedTrade, the Desk's proprietary trading platform

Standing Repurchase Agreement Facility

For more information, visit the FAQs at https://www.newyorkfed.org/markets/repo-agreement-ops-faq.

Term	Overnight
Eligible securities	U.S. Treasury securities, agency debt securities, and agency MBS
Counterparties	Primary dealers and eligible depository institutions
Aggregate operation limit	$500 billion
Frequency	Daily
Per counterparty limit	Two propositions of up to $20 billion per eligible security type at rates no lower than the minimum bid rates
Minimum bid rate	January 1 to March 16: 0.25 percent March 17 to May 4: 0.50 percent May 5 to June 15: 1.00 percent June 16 to July 27: 1.75 percent July 28 to September 21: 2.50 percent September 22 to November 2: 3.25 percent November 3 to December 14: 4.00 percent December 15 to December 31: 4.50 percent
Awards	SRF operations are auctions conducted in a multiple-price format. If the total amount bid in an individual operation was less than or equal to the aggregate operation limit, all propositions were accepted at their submitted rates. If the aggregate amount bid exceeded the aggregate operation limit, propositions were accepted at their submitted rates, starting with the highest-rate bid relative to the benchmark rate set internally for each security type and working down until the aggregate operation limit was reached. After that, individual propositions were either partially awarded or not awarded based on their proximity to those benchmark rates for each security type.
Execution platform	FedTrade, the Desk's proprietary trading platform

Central Bank Liquidity Swaps

For more information, visit the FAQs at https://www.federalreserve.gov/newsevents/pressreleases/swap-lines-faqs.htm.

Maturity	Up to 88 days
Counterparties	Foreign central banks with standing swap line arrangements
Frequency	The central bank liquidity swap counterparties hold U.S. dollar liquidity-providing operations according to a schedule pre-approved by the Chair of the FOMC. One-week maturity operations were offered weekly throughout 2022 by four of the five standing swap line central banks.
Per counterparty limit	None specified
Price	For price details, see operation results at https://www.newyorkfed.org/markets/desk-operations/central-bank-liquidity-swap-operations.

Outright Treasury Purchases

Treasury Security Asset Purchases

For more information, visit the FAQs at https://www.newyorkfed.org/markets/treasury-reinvestments-purchases-faq.

Counterparties	Primary dealers
Eligible securities	All outstanding U.S. Treasury securities
Operation size and frequency	The Desk published a tentative schedule of operations for each applicable month, detailing operation dates and times, the security types and maturity range, and maximum purchase amount for each operation.
Holdings limits	SOMA holdings were limited to a maximum of 70 percent of the total outstanding amount of any individual Treasury security.
Excluded securities	Securities trading with heightened scarcity value in the repo market for specific collateral, newly issued nominal coupon securities, securities that were cheapest to deliver into active Treasury futures contracts, cash management bills, TIPS with one year or less to maturity, other securities with four weeks or less to maturity, STRIPS, and securities trading in the when-issued market. The specific issues excluded from consideration were announced at the start of each operation.
Offer submission	Counterparties were allowed to submit nine propositions per security across the range of eligible securities for an operation.
Awards	Offers were evaluated based on their proximity to prevailing market prices at the close of the multiple-price auction, as well as measures of relative value. Relative value measures were calculated using the New York Fed's proprietary model.
Execution platform	FedTrade, the Desk's proprietary trading platform

Reinvestments of Treasury Securities

For more information, visit the FAQs at https://www.newyorkfed.org/markets/treasury-rollover-faq.

Counterparties	U.S. Treasury
Eligible securities	All securities issued at auction by the U.S. Treasury
Operation size and frequency	The value of all maturing Treasury securities in excess of any applicable redemption cap amount as directed by the Committee was rolled over at each auction into newly issued securities. Reinvestments were allocated proportionally across new issues by the announced offering amounts.
Holding limits	SOMA holdings were limited to a maximum of 70 percent of the total outstanding amount of any individual Treasury security.
Bid submission	The Desk places noncompetitive bids for the SOMA portfolio at Treasury auctions. These bids were treated as add-ons to announced auction sizes.
Awards	Noncompetitive bidders receive the stop-out rate, yield, or discount margin determined by the competitive auction process.
Execution platform	TAAPs, the New York Fed's auction platform for issuance of Treasury securities

Securities Lending

For more information, visit the FAQs at https://www.newyorkfed.org/markets/sec_faq.

Term	Overnight
Eligible securities	U.S. Treasury and agency securities (for securities loaned and collateral received)
Counterparties	Primary dealers
Aggregate operation limit	The value of Treasury and agency debt securities held outright in the SOMA that was available for such operations
Frequency	Daily
Aggregate lending limit	Ninety percent of each Treasury and agency debt security owned by the SOMA with a maturity of fourteen or more days was available for lending each day (the "theoretical amount" available to borrow).
Per counterparty limit	Maximum of 25 percent of the theoretical amount available to borrow per issue and $5 billion total par in outstanding securities loans at any one time
Per issue bid limit	Up to two bids per issue

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Fee	Primary dealers bid a fee to borrow the security; the fee is economically equivalent to a spread between the overnight general collateral repo rate and the overnight specials rate for the borrowed security. The minimum fee is 5 basis points.
Awards	Held as competitive multiple-price auctions for each security at noon each business day
Execution platform	FedTrade, the Desk's proprietary trading platform

Agency MBS

Asset Purchases including Reinvestment Purchases

For more information, visit the FAQs at https://www.newyorkfed.org/markets/ambs-treasury-faq.

Counterparties	Primary dealers that transact in the agency MBS market
Eligible securities	MBS guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae
Operation size and frequency	The Desk published a tentative schedule of planned agency MBS operations approximately every two weeks, detailing operation dates and times, the type of securities to be purchased (including agency, term, and coupon), and the maximum purchase amounts.
Excluded securities	No specific exclusions
Offer submission	Counterparties were allowed to submit up to ten offers per TBA security across the range of eligible securities in a multiple-price auction, meaning that each offer at or below the stop-out rate was transacted at the offer rate.
Awards	Offers were evaluated based on their proximity to prevailing market prices at the auction close.
Execution platform	FedTrade, the Desk's proprietary trading platform

Dollar Rolls

Term	One month
Eligible securities	Agency MBS guaranteed by Fannie Mae, Freddie Mac, and Ginnie Mae
Counterparties	Primary dealers that transact in the agency MBS market
Operation size	As appropriate to facilitate settlement associated with the Federal Reserve's agency MBS transactions
Frequency	As appropriate to facilitate settlement associated with the Federal Reserve's agency MBS transactions

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Per counterparty limit	Not applicable
Bid submission	Request for quote from dealers for dollar amount financed
Awards	Best price
Execution platform	Tradeweb, a commercial trading platform

Foreign Reserves Management

For more information, see https://www.newyorkfed.org/markets/international-market-operations/foreign-reserves-management.

Counterparties	Foreign Reserves Management counterparties
Eligible assets	The SOMA's foreign currency reserves may be invested on an outright basis in German, French, Dutch, and Japanese government securities, as well as in deposits at the Bank for International Settlements and at foreign central banks such as the Deutsche Bundesbank, Banque de France, De Nederlandsche Bank, and Bank of Japan.
Execution platform	Tradeweb and Bloomberg, commercial trading platforms; and voice trading.

APPENDIX 2:

Governing Documents

On January 31, 2023, after the period covered by this report, a new governing document, the "FOMC Authorizations and Continuing Directives for Open Market Operations," became effective. This new governing document incorporates:

- authorizations previously within the Committee's Authorization for Domestic Open Market Operations and Authorization for Foreign Currency Operations,
- a new continuing directive that incorporates the SRF and FIMA repo resolutions as well as direction to the Desk to continue to conduct other ongoing operations,
- the foreign currency directive, and
- two other authorizations related to contingency situations.

The new, unified document improves clarity and transparency but does not make substantive changes to governance of Desk activities.
https://www.federalreserve.gov/monetarypolicy/files/FOMC_AuthorizationsContinuingDirectivesOMOs.pdf

AUTHORIZATIONS AND RESOLUTIONS FOR DOMESTIC AND FOREIGN OPERATIONS EFFECTIVE IN 2022

On January 25, 2022, the FOMC voted to reaffirm the following governing documents:

https://www.federalreserve.gov/monetarypolicy/files/FOMC_RulesAuthPamphlet_202202.pdf

GUIDELINES FOR THE CONDUCT OF SYSTEM OPEN MARKET OPERATIONS IN FEDERAL-AGENCY ISSUES

The Guidelines for the Conduct of System Open Market Operations in Federal-Agency Issues, which were temporarily suspended on January 27, 2009, remained suspended throughout 2022.

https://www.federalreserve.gov/monetarypolicy/files/FOMC_FederalAgencyIssues.pdf

DOMESTIC POLICY DIRECTIVES ISSUED TO THE FEDERAL RESERVE BANK OF NEW YORK

In 2022, the FOMC authorized and directed the Open Market Desk at the Federal Reserve Bank of New York to execute transactions in the SOMA in accordance with domestic policy directives. The domestic policy directives issued by the FOMC from January 1 to December 31 are available at the link below.

https://www.federalreserve.gov/monetarypolicy/fomccalendars.htm

APPENDIX 3:

Operations Disclosures

The following table summarizes the types of information disclosed by the Desk about various SOMA operations. To access the data listed in the table, visit the Markets Data Dashboard on the New York Fed's website, at https://www.newyorkfed.org/markets/data-hub. For Treasury data, see https://www.treasurydirect.gov/auctions/announcements-data-results/.

Operations Disclosures

Operation Type	Operation Schedule	Operation Results	Additional Operations Data[a]	Transaction Data[b]
Domestic open market operations				
Standing repurchase agreement transactions	c	✓	✓	✓
Overnight reverse repurchase agreement transactions	c	✓	✓	✓
Treasury outright purchases	✓	✓	✓	✓
Treasury rollovers		✓[d]		
Treasury securities lending	c	✓	✓	✓
Agency MBS outright purchases	✓	✓	✓	✓
Agency MBS dollar rolls		✓	✓	✓
Foreign currency operations				
Foreign reserves management transactions				✓
Central bank liquidity swaps			✓[e]	
Small-value exercises				
Repurchase agreement transactions	✓	✓	✓	✓
Reverse repurchase agreement transactions	✓	✓	✓	✓
Treasury outright sales	✓	✓	✓	✓
Treasury outright purchases	✓	✓		✓
Treasury securities lending	✓	✓	✓	✓
Agency MBS outright sales	✓	✓	✓	✓
Agency MBS coupon swaps	✓	✓	✓	✓
Foreign reserves management transactions				✓

Source: Federal Reserve Bank of New York.

[a] Additional data could include details about types of counterparties, pricing, and higher-frequency transaction data.

[b] The New York Fed discloses transaction data with market counterparties on a quarterly basis with a two-year lag, in accordance with the Dodd-Frank Act. Details include: the date and amount of the transaction; the counterparty to the transaction; the price, interest rate, or exchange rate at which the transaction was conducted; other relevant terms; and for certain types of transactions, information about the collateral.

[c] Since overnight reverse repurchase agreement transactions, standing repurchase agreement transactions, and Treasury securities lending are daily facilities, a regular calendar is not released; schedule changes are typically announced at least one business day prior to the operation.

[d] SOMA awards are released by the U.S. Treasury after each auction.

[e] Transactions between the New York Fed and foreign central bank counterparties are reported weekly by the New York Fed; foreign central banks' operation results are reported immediately after the completion of their respective auctions.

APPENDIX 4:

Summary of Projection Assumptions

The assumptions underlying the scenarios for the SOMA portfolio and the SOMA net income projection exercise are presented below. Sources for these assumptions include market expectations from the January/February 2023 Surveys of Primary Dealers and Market Participants, Plans for Reducing the Size of the Federal Reserve's Balance Sheet (Plans) released at the May 2022 FOMC meeting, and simple rules used to proxy for the evolution of Federal Reserve liabilities.

INTEREST RATE ASSUMPTIONS:

- The following interest rates are set based on combined responses to the January/February 2023 Surveys of Primary Dealers and Market Participants:
  - the effective federal funds rate,
  - the ten-year Treasury yield, and
  - the thirty-year fixed primary mortgage rate.
- The IORB rate is set 10 basis points below the top of the target range.
- The ON RRP offering rate is set 5 basis points above the bottom of the target range.

BALANCE SHEET ASSUMPTIONS:

- Projections start with the Federal Reserve balance sheet as of December 30, 2022.
- Asset-related assumptions:
  - The initial size of the redemption caps is drawn from the Plans released at the May 2022 FOMC meeting. The caps for Treasury and agency securities are set at $60 billion and $35 billion per month, respectively. Treasury bills are redeemed when Treasury coupon maturities fall below the monthly cap.
  - When the pace of portfolio decline slows, the monthly Treasury and agency security redemption caps are decreased to $30 billion and $17.5 billion, respectively. All reinvestments are allocated to Treasury securities.
  - Once reserve balances reach their assumed long-run level (see below), reserve management purchases are conducted in Treasury securities to keep pace with the growth in liabilities and capital, while principal payments on agency securities are reinvested into Treasury securities.
- Liability-related assumptions:
  - Longer-run levels of capital and non-reserve liabilities other than the TGA and ON RRP facility are assumed to grow from their average December 2022 levels over the projection horizon in line with nominal GDP. The nominal GDP growth rate is based on responses to the January/February 2023 Survey of Primary Dealers. The median projected longer-run growth rates of real GDP and headline personal consumption expenditures (PCE) price inflation are 1.8 percent and 2.0 percent, respectively, consistent with a long-run level of nominal GDP growth of 3.8 percent, assuming that GDP and PCE inflation evolve similarly and that both PCE inflation and the growth rate of the GDP deflator imply an equivalent rate of growth of nominal GDP.
  - The long-run level of reserves is set such that the ratio of reserves to nominal GDP equals 8 percent.
  - The TGA rises to $550 billion by end Q2 2023 and grows in line with nominal GDP starting in Q3 2023 to $728 billion by end-2030.
  - ON RRP facility balances are assumed to decline to a minimal level by the end of 2025 at a pace similar to that of balance sheet reduction.

APPENDIX 5:

Reference Web Pages

Policies, communications, and data discussed in this document can be found online at the websites for the Board of Governors of the Federal Reserve System and the Federal Reserve Bank of New York. Below, we provide the primary web pages where this source material can be found.

FEDERAL RESERVE BOARD

FOMC rules and authorizations

https://www.federalreserve.gov/monetarypolicy/rules_authorizations.htm

FOMC statements, implementation notes, minutes, and information about policy normalization

http://www.federalreserve.gov/monetarypolicy/fomccalendars.htm

https://www.federalreserve.gov/monetarypolicy/policy-normalization.htm

Background on reserve requirements and interest on reserve balances

https://www.federalreserve.gov/monetarypolicy/reservereq.htm

https://www.federalreserve.gov/monetarypolicy/reserve-balances.htm

Detailed transaction information about discount window lending to depository institutions

https://www.federalreserve.gov/regreform/discount-window.htm

Federal Reserve System financial reports

https://www.federalreserve.gov/monetarypolicy/bst_fedfinancials.htm

FEDERAL RESERVE BANK OF NEW YORK

Markets and Policy Implementation

https://www.newyorkfed.org/markets/index.html

Markets Data Dashboard and historical open market operations data

https://www.newyorkfed.org/markets/data-hub

https://www.newyorkfed.org/markets/omo_transaction_data

Electronic version of this report and the underlying data for the charts and tables

https://www.newyorkfed.org/markets/annual_reports

OPERATIONAL POLICIES AND OTHER DETAIL REGARDING:

Domestic market operations

https://www.newyorkfed.org/markets/domestic-market-operations

Repurchase and reverse repurchase agreements

https://www.newyorkfed.org/markets/domestic-market-operations/monetary-policy-implementation/repo-reverse-repo-agreements

Treasury open market and securities lending operations

https://www.newyorkfed.org/markets/domestic-market-operations/monetary-policy-implementation/treasury-securities

https://www.newyorkfed.org/markets/domestic-market-operations/monetary-policy-implementation/securities-lending

Agency MBS open market operations

https://www.newyorkfed.org/markets/domestic-market-operations/monetary-policy-implementation/agency-mortgage-backed-securities

International market operations

https://www.newyorkfed.org/markets/international-market-operations

Foreign currency operations, including foreign reserves management, central bank liquidity swaps, and foreign exchange quarterly reports

https://www.newyorkfed.org/markets/international-market-operations/foreign-reserves-management

https://www.newyorkfed.org/markets/international-market-operations/central-bank-swap-arrangements

https://www.newyorkfed.org/markets/quar_reports

New York Fed counterparties for market operations

https://www.newyorkfed.org/markets/counterparties

System Open Market Account holdings

https://www.newyorkfed.org/markets/soma-holdings

https://www.newyorkfed.org/data-and-statistics/data-visualization/system-open-market-account-portfolio

Consolidated list of statements and operating policies across all Desk open market operations

https://www.newyorkfed.org/markets/op_policies

Desk statement regarding small-value exercises

https://www.newyorkfed.org/markets/operational-readiness

Desk surveys of primary dealers and market participants

https://www.newyorkfed.org/markets/primarydealer_survey_questions

https://www.newyorkfed.org/markets/survey_market_participants

FR 2420 Report of Selected Money Rates

https://www.newyorkfed.org/markets/reference-rates

https://www.newyorkfed.org/medialibrary/media/markets/EFFR-technical-note-070815.pdf

Services for central banks and international institutions

https://www.newyorkfed.org/markets/central-bank-and-international-account-services

ENDNOTES

[1] See **https://www.federalreserve.gov/newsevents/pressreleases/monetary20220126c.htm.**

[2] See **https://www.federalreserve.gov/newsevents/pressreleases/monetary20220504b.htm.**

[3] Remittances to the U.S. Treasury are sent weekly, in arrears, by each of the twelve Federal Reserve Banks. See the 2022 Federal Reserve System Audited Financial Statements, available at **https://www.federalreserve.gov/aboutthefed/audited-annual-financial-statements.htm.**

[4] See **https://www.federalreserve.gov/newsevents/pressreleases/monetary20220126b.htm.**

[5] See also Gara Afonso, Marco Cipriani, and Gabriele La Spada, "Banks' Balance-Sheet Costs, Monetary Policy, and the ON RRP," Federal Reserve Bank of New York *Staff Reports*, no. 1041, December 2022, at **https://www.newyorkfed.org/research/staff_reports/sr1041.**

[6] Figures may not sum to 100 because of rounding.

[7] See Andréa M. Maechler and Thomas Moser, "Return to Positive Interest Rates: Why Reserve Tiering?," remarks at the Swiss National Bank Money Market Event, Geneva, Switzerland, November 17, 2022, **https://www.snb.ch/en/mmr/speeches/id/ref_20221117_amrtmo/source/ref_20221117_amrtmo.en.pdf**.

[8] The Desk also refrained from purchasing Treasury floating-rate notes (FRNs) given limited supply.

[9] Treasury bills that matured on Tuesdays were reinvested into newly issued four-, eight-, and seventeen-week Treasury bills, while Treasury bills that matured on Thursdays were reinvested into newly issued thirteen-, twenty-six-, and fifty-two-week Treasury bills.

[10] Principal payments on SOMA MBS holdings averaged more than $40 billion per month through April before slowing to an average of $27 billion per month for the rest of the year as the sharp rise in primary mortgage rates significantly reduced homeowners' incentive to refinance their mortgages.

[11] This includes purchases conducted in January from the December 2021 mid-month purchase period.

[12] See Federal Reserve Bank of New York, "Statement Regarding Aggregation of Agency Mortgage-Backed Securities Holdings," October 6, 2022, at **https://www.newyorkfed.org/markets/opolicy/operating_policy_221006.**

[13] The three prior rounds of CUSIP aggregation that began in 2011, 2015, and late 2019 focused only on Fannie Mae and Freddie Mac securities, while one round in early 2019 focused exclusively on Ginnie Mae holdings. These aggregations reduced the portfolio's individual CUSIP count by more than 125,000.

[14] The New York Fed is authorized by the FOMC to intervene in the foreign exchange market by executing foreign exchange transactions for the SOMA as directed by the FOMC and in its capacity as fiscal agent of the United States for the Treasury's Exchange Stabilization Fund.

[15] Reported on an amortized cost basis.

[16] Further details can be found in the New York Fed's *Treasury and Federal Reserve Foreign Exchange Operations* quarterly reports. See **https://www.newyorkfed.org/markets/quar_reports.html**.

[17] Remittances to the U.S. Treasury are sent weekly, in arrears, by each of the twelve Federal Reserve Banks. See the 2022 Federal Reserve System Audited Financial Statements, available at **https://www.federalreserve.gov/aboutthefed/audited-annual-financial-statements.htm.**

[18] Further information on balance sheet run-off dynamics can be found in "The 'How and When' of the Fed's Balance Sheet Runoff," available at **https://medium.com/new-york-fed/the-how-and-when-of-the-feds-balance-sheet-runoff-3c37787fa948**.

[19] Percentages may not sum to 100 because of rounding.

[20] Increases in the consumer price index result in an adjustment higher in the inflation compensation associated with SOMA TIPS holdings, which increases the par value of Treasury securities.

[21] For instance, over the course of 2022, thirty-year Fannie Mae and Freddie Mac conditional prepayment rates (CPRs) decreased from 14 percent to 4 percent, while Ginnie Mae CPRs decreased from roughly 23 percent to 6 percent. Estimates of the weighted average life of an MBS refers to the expected time outstanding until the underlying mortgage principal is repaid and is dependent on a model of future prepayments that is subject to uncertainty.

[22] As a result of the UMBS program, some securities held in the SOMA consisted of mortgages guaranteed by both Fannie Mae and Freddie Mac; however, for purposes here, such mortgages are counted as being guaranteed by their most recent guarantor.

[23] Purchases of agency CMBS concluded in November 2021.

[24] Percentages may not sum to 100 because of rounding.

[25] "Modified duration" is used to calculate the duration of Treasury securities, while "effective duration" is employed to measure the duration of MBS. Modified duration approximates the percentage change in the price of a fixed-income security given a 100 basis point parallel shift in the yield curve and is most applicable to securities with fixed cash flows, such as Treasury securities. Effective duration, which accounts for the potential alterations in cash flows as interest rates change, is suitable for capturing the duration of MBS because it is affected by mortgage borrowers' decisions to exercise or forgo their prepayment option. Duration measures of the portfolio throughout this report are calculated on a par-weighted average basis. Due to the relatively small size of agency debt and CMBS holdings, they are excluded from summary risk statistics.

[26] Homeowners' option to prepay their mortgage at any time without penalty adds uncertainty to the agency MBS holder's expected cash flows. In general, lower mortgage rates encourage homeowners to refinance their loans, thereby shortening the duration of the MBS securitizing these loans, while higher mortgage rates discourage homeowners from refinancing, thereby lengthening the duration of MBS.

[27] The ten-year equivalent is calculated using end-of-day prices for ten-year Treasury securities and current time to maturity.

[28] Macaulay duration is the weighted average time of future cash flows.

[29] The narrower spread and availability of term loans were changes to the program implemented in March 2020.

[30] The emergency credit and liquidity facilities were established under Section 13(3) of the Federal Reserve Act. In some cases, the U.S. Treasury provided the facilities with equity capital to protect the Federal Reserve against potential losses. Upon closure of the facilities housed in special purpose vehicles (SPVs), any remaining Treasury equity is fully redeemed, and residual earnings of facilities supported by Treasury equity are distributed in 90:10 shares to the U.S. Treasury and the facility's host Reserve Bank, respectively. The SPVs that remain open retain Treasury equity in amounts roughly equal to facility holdings to cover any potential losses to the host Reserve Bank.

[31] The Commercial Paper Funding Facility, Money Market Mutual Fund Liquidity Facility, Primary Dealer Credit Facility, and Secondary Market Corporate Credit Facility were all fully wound down during 2021. See "Board of Governors of the Federal Reserve System - Reports to Congress Pursuant to Section 13(3) of the Federal Reserve Act in Response to COVID-19," available at **https://www.federalreserve.gov/publications/reports-to-congress-in-response-to-covid-19.htm**.

[32] These assets originated or purchased by the facilities can also be prepaid at each obligor's discretion.

[33] These include the Main Street New Loan Facility (MSNLF), Main Street Expanded Loan Facility (MSELF), Main Street Priority Loan Facility (MSPLF), Nonprofit Organization New Loan Facility (NONLF), and Nonprofit Organization Expanded Loan Facility (NOELF).

[34] Total Federal Reserve liabilities and capital increase (decrease) when the balance sheet expands (contracts). The composition of liabilities and capital can also shift when there is no change in the total size of the balance sheet.

[35] For more information on Treasury cash balance policy, see "Quarterly Refunding Statement of Deputy Assistant Secretary for Federal Finance Brian Smith," February 2, 2022, at **https://home.treasury.gov/news/press-releases/jy0581**.

[36] The Federal Reserve is restricted by statute from building capital above a certain limit.

[37] The assumptions for this report are primarily drawn from results of the January/February 2023 Surveys of Primary Dealers and Market Participants.

[38] For a discussion of how ON RRP balances affect the mechanics of balance sheet runoff, see "The Fed's Balance Sheet Runoff and the ON RRP Facility," a *Liberty Street Economics* blog post by Marco Cipriani, James Clouse, Lorie Logan, Antoine Martin, and Will Riordan, at **https://libertystreeteconomics.newyorkfed.org/2022/04/the-feds-balance-sheet-runoff-and-the-on-rrp-facility**.

[39] The cap on agency MBS is assumed to decline to $17.5 billion; however, in the baseline scenario, monthly paydowns are projected to be below that level and there are no agency MBS reinvestments.

[40] The TGA declined from nearly $1 trillion in April 2022 to $447 billion at the end of 2022 ahead of the Debt Issuance Suspension Period announced in January 2023. For further information, see the press release from the U.S. Department of the Treasury at **https://home.treasury.gov/news/press-releases/jy1231**.

[41] All net income figures presented here assume that securities are held to maturity and that asset sales are not conducted. Any losses (gains) from sales would result in lower (higher) net income.

[42] For further information, see Sections 11.96 and 60.55 of the *Financial Accounting Manual for Federal Reserve Banks* at **https://www.federalreserve.gov/aboutthefed/files/bstfinaccountingmanual.pdf**.

[43] Interest rate increases and decreases are modeled as parallel shocks, with rates floored at zero for negative shocks. If upward rate shocks were instead modeled such that rates increased more at the short end, net income would decline further than shown here. This is because interest costs associated with IORB are one of the prominent drivers of net income over the redemption period.

[44] If interest rates were 200 basis points higher than indicated in the January/February 2023 Desk Survey, net portfolio income would be negative for roughly three years, about one year longer than in the baseline.

[45] For further discussion of the impact of unrealized losses, see "SOMA's Unrealized Loss: What Does It Mean," a *FEDS Note* by Brian Bonis, Lauren Fiesthumel, and Jamie Noonan, at **https://www.federalreserve.gov/econres/notes/feds-notes/somas-unrealized-loss-what-does-it-mean-20180813.html**; and "An Analysis of the Interest Rate Risk of the Federal Reserve's Balance Sheet, Part 1: Background and Historical Perspective," a *FEDS Note* by Alyssa Anderson, Dave Na, Bernd Schlusche, and Zeynep Senyuz, at **https://www.federalreserve.gov/econres/notes/feds-notes/an-analysis-of-the-interest-rate-risk-of-the-federal-reserves-balance-sheet-part-1-20220715.html**.

[46] Interest rate increases and decreases are modeled as parallel shocks, with rates floored at zero for negative shocks. As gains and losses on the portfolio are largely driven by gains and losses on longer-dated holdings whose market value is more sensitive to changes in interest rates, a scenario in which the curve steepens or flattens would only have a significant negative effect on unrealized gains and losses on the portfolio to the extent longer-term rates rise.

[47] For details about the New York Fed policy on counterparties for market operations, see **https://www.newyorkfed.org/markets/counterparties/policy-on-counterparties-for-market-operations**.

[48] These include the Treasury, agency debt, and agency MBS best practices published by the New York Fed–sponsored Treasury Market Practices Group as well as the FX Global Code promulgated by the Global Foreign Exchange Committee and the New York Fed–sponsored Foreign Exchange Committee.

[49] The U.S. Treasury promulgates rules and provides guidelines for Treasury auctions that are applicable to primary dealers and other bidders. Primary dealers are expected to bid their pro rata share of each auction, an amount that is determined as the total amount auctioned divided by the number of primary dealers at the time of the auction.

[50] The Federal Reserve adheres to the SWIFT Customer Security Program (CSP) and uses this program to help strengthen the cyber security and resiliency of the central banking community.

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