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SOMA Portfolio Composition[1]

The Federal Reserve's securities holdings are expected to decline significantly over the next couple of years, to the point at which they are judged to be no larger than necessary to implement monetary policy efficiently and effectively. As directed by the FOMC, during this time the Desk will only reinvest principal payments from Treasury and agency securities that are received in excess of the monthly redemption caps.[2] At the time of normalization of the portfolio size, the composition will likely differ substantially from that prevailing before the financial crisis. In particular, the Treasury portfolio will be composed of a large share of longer-term securities remaining from the large-scale asset purchase programs and the maturity extension program (MEP). Moreover, the SOMA portfolio will continue to include a substantial share of agency mortgage-backed securities (MBS).

Policymakers may wish to consider options for the long-run composition of the SOMA portfolio and the manner in which this long-run composition will be reached. In this memo, we first review the objectives guiding pre-crisis management of the SOMA portfolio and their applicability in the post-crisis period, and then draw attention to portfolio considerations for providing monetary accommodation at the effective lower bound for short-term interest rates. Next, considering the preferred SOMA configuration of "primarily Treasury securities" described in the Policy Normalization Principles and Plans ("Principles"), we discuss options related to potential sales of agency MBS. We then assess implications of Treasury portfolio structure under two illustrative scenarios that emphasize different portfolio objectives. Finally, we present options for transitioning to the long-run Treasury portfolio design.

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[2] In line with the maximum caps, staff projections suggest that Treasury rollovers will generally occur only once a quarter and that reinvestment of MBS paydowns is unlikely to occur in the coming years. More information is available in the December 2018 memo from Simon Potter to Research Directors, "SOMA Portfolio Developments in 2018."

Portfolio Objectives

In the years before the financial crisis, the primary objectives that guided the management of the SOMA portfolio were balance sheet flexibility, safety, and market neutrality. While these objectives continue to be relevant in the post-crisis period, the availability of policy space to provide accommodation at the effective lower bound has also become an important consideration.

Balance Sheet Flexibility: Pre-crisis, balance sheet flexibility reflected policymakers' preference for a portfolio that could allow the Federal Reserve to contract its holdings relatively quickly to offset a large discount window loan or other changes in the balance sheet without selling securities. To that end, the SOMA portfolio was structured with excess "maturity liquidity," achieved via sizable holdings of Treasury bills and short-term Treasury coupon securities.[3] This objective may be less relevant in an operating framework with abundant excess reserves, as there is less need to sterilize liquidity provision.

Safety: The objective of safety is largely defined by the limitations the Federal Reserve Act imposes on the securities that are eligible for purchase.[4] Other measures of safety, such as market risk and interest rate risk, were not important because SOMA holdings were typically held until maturity.

Market Neutrality: The objective of market neutrality reflected the desire to minimize the effect of SOMA holdings on interest rates and credit allocation by holding only Treasury securities and structuring the portfolio in a manner that would mirror the maturity distribution and types of Treasury debt held by the private sector. Before the crisis, adherence to the flexibility objective meant that the portfolio was composed of a larger share of bills and shorter-term coupon securities than in the Treasury universe. However, in consideration of the market-neutrality objective, the remainder of the portfolio had a maturity distribution that was broadly consistent with that of Treasury securities held by the public (Figure 1).

Policy Space: In the post-crisis environment, an additional portfolio consideration is the implied policy space for providing monetary accommodation during an economic downturn when short-term interest rates are at the effective lower bound. A portfolio with a larger share of shorter-term securities allows for a larger maturity extension program, which would permit the Federal Reserve to provide accommodation through its asset holdings without having to expand the size of its balance sheet.

[3] In addition to the securities held on an outright basis, the pre-crisis portfolio was comprised of repurchase agreements (repos) that allowed the Federal Reserve to expand or contract its portfolio without sales.
[4] Other measures that supported the safety objective included limits on counterparty credit risk for repos and reverse repos.

Options to Manage the MBS Portfolio

Since the beginning of the balance sheet normalization program in October 2017, MBS holdings have declined about $120 billion and currently stand at around $1.7 trillion. Staff estimates that the size of the MBS portfolio will gradually decrease by roughly $150 billion a year, on average, over the next several years. To continue reducing MBS holdings after the size of the portfolio is normalized, policymakers may choose to let the portfolio decline through principal paydowns or may prefer to actively sell MBS securities.

Passive Runoff versus Sales: Assuming a passive runoff, MBS holdings are projected to remain on the balance sheet beyond 2040. If policymakers wish to reach the preferred configuration of "primarily Treasury securities" described in the Principles more quickly, they may consider gradual MBS sales.[5] The Principles stated that the Committee does not anticipate selling MBS as part of the normalization process, but did not preclude MBS sales in transitioning to the target portfolio composition once the size of the balance sheet is normalized. Specifically, the Committee stated that "sales might be warranted in the longer run to reduce or eliminate residual holdings" and that the "timing and pace of any sales would be communicated well in advance."[6] Sales of MBS could result in realized losses and could lower interest income if the Treasury securities purchased as replacements carried lower coupons.

Operational Readiness Considerations: A related decision is whether to maintain a small amount of agency MBS in the portfolio for purposes of maintaining operational readiness.[7] On the one hand, a small MBS portfolio could be considered consistent with the decision to hold "primarily Treasury securities" noted in the Principles and would allow the Desk to retain operational readiness to conduct future asset purchase programs that may include MBS.[8] On the other hand, retaining even a small MBS portfolio may present political risks. The public could interpret a decision to maintain a small MBS portfolio as indicating policymakers' willingness to engage in future MBS market interventions in certain circumstances.

[5] For example, following normalization of the size of the balance sheet, an all-Treasury SOMA portfolio would be reached in about 6 years if the MBS portfolio was reduced by $20 billion per month through gradual sales and paydowns.
[6] In 2020, staff estimates suggest MBS would represent about 40 percent of the domestic SOMA portfolio.
[7] Preliminary study suggests that a MBS portfolio of less than $50 billion would support staff operational readiness.
[8] The Desk's MBS operations depend on a large number of processes, systems, and tools that are highly specialized and predominantly manual. Without periodic use, the expertise required to conduct MBS operations in an accurate and well-controlled manner could deteriorate.

Illustrative Scenarios for the Treasury Portfolio

We now turn to the composition of the SOMA Treasury portfolio, and highlight key results under two illustrative scenarios that place different degrees of emphasis on the balance sheet flexibility and market-neutrality objectives described above.[9] For both of these scenarios, we assume a passive unwind of the MBS portfolio. Consistent with recent baseline projections, the size of the balance sheet is expected to normalize in the second quarter of 2020, at which point purchases of Treasury securities are assumed to resume in order to keep pace with growth in non-reserve liability items and principal paydowns on agency securities.[10]

Flexibility Scenario: Under the scenario that emphasizes the balance sheet flexibility objective ("flexibility scenario"), we assume that, once the size of the balance sheet is normalized, the Federal Reserve initially purchases only Treasury bills until they represent 40 percent of the Treasury portfolio.[11] Thereafter, purchases would be conducted to maintain the bill share at 40 percent, with the remainder of purchases targeting the underrepresented maturity sectors of the non-bill Treasury portfolio relative to the Treasury universe.

Market-Neutral Scenario: Under the second scenario, which emphasizes market neutrality ("market-neutral scenario"), the Federal Reserve targets a substantially smaller share of bills in its Treasury portfolio. Specifically, we assume that, once the size of the balance sheet is normalized, the Federal Reserve initially purchases only Treasury bills until the bill share in the SOMA Treasury portfolio reaches the projected bill share of the Treasury universe of about 10 percent.[12] Thereafter, purchases would be conducted to maintain the target bill share, with the remainder of purchases conducted on a pro-rata basis in the underrepresented maturity sectors of the non-bill SOMA Treasury portfolio relative to the Treasury universe. This approach, over time, should result in a maturity

[9] For the purpose of these scenarios, we do not distinguish between Treasury purchases in the secondary market and rollovers at auction. Importantly, this approach abstracts from operational constraints related to the timing of SOMA maturities and the maturity date matching required for rollovers at auction. The next section of the memo will provide more information on operational approaches and timeline implications.
[10] Projections rely upon staff models underlying the balance sheet and income projections in Tealbook B and the FRB/US model. We use the economic outlook and balance sheet assumptions in the November Tealbook, but change the assumption for the longer-run level of reserves from $500 billion to $1 trillion, consistent with the December Tealbook baseline.
[11] The modeling approach assumes that, once the size of the portfolio is normalized, proceeds from all maturing securities holdings are allocated to outright bill purchases and no securities are rolled over at auction until the target amount of bills is reached. This implies that during that period no Treasury coupon securities are added to the SOMA portfolio.
[12] Under Tealbook assumptions for Treasury issuance, the long-run Treasury universe is comprised of about 10 percent Treasury bills. For reference, the supply of bills outstanding as a percentage of the total Treasury universe in previous decades was as low as about 10 percent, and currently, bills comprise about 15 percent of Treasury debt outstanding. Moreover, the bill share has increased in the last few years, and the future bill share could be higher than in our projection.

composition of the portfolio that is expected to be similar to that of outstanding Treasury debt.

Effects on Duration and Remittances: As shown in Figure 2, the paths for the duration of the Treasury portfolio differ notably across the two scenarios.[13] Under the flexibility scenario, the weighted-average duration is projected to decline after normalization of the size of the balance sheet as the Desk begins adding to the SOMA portfolio to keep pace with MBS paydowns and growth in non-reserve liabilities. The initial steep decline in duration results from the assumption that only bills are purchased until the target bill share of 40 percent is reached. Under the market-neutral scenario, the duration of the Treasury portfolio declines more gradually after normalization due to the substantially lower proportion of the portfolio allocated to bills, ultimately converging to that of the outstanding Treasury universe. Cumulative remittances through 2030 are projected to be about $60 billion higher under the market-neutral scenario than under the flexibility scenario, reflecting larger portfolio weights on higher yielding, longer-term securities.

Effects on Term Premiums: The larger share of longer-term securities held in the SOMA portfolio under the market-neutral scenario removes duration risk faced by private investors relative to the flexibility scenario, which could affect longer-term interest rates. However, these differences are small; staff estimates suggest that, over the projection horizon, the term premium effects on 10-year Treasury yields in the market-neutral scenario are only about 20 basis points more negative, on average, than those in the flexibility scenario. These estimates are subject to uncertainty, and the difference could be even smaller if the Treasury were to change its debt management practices in response to the Federal Reserve's decisions regarding the SOMA portfolio composition.

Effects on Policy Space: Considering that the largest feasible size of an MEP depends on the amount of the Federal Reserve's holdings of shorter-term Treasury securities, the flexibility scenario allows for a larger-sized program compared to the market-neutral scenario. When the bill share target is reached under the flexibility scenario, the Federal Reserve is projected to hold about $1.4 trillion in Treasury securities with remaining maturities of less than three years. If the Federal Reserve were to sell or redeem Treasury securities with remaining maturities between zero and three years, as it did during the 2011-2012 MEP, the flexibility scenario allows for a program size of about 6 percent of GDP. Under the market-neutral scenario, the holdings of Treasury securities with remaining maturities between zero and three years are projected

[13] For reference, we include the path for duration as implied by the economic outlook and the balance sheet assumptions in the November Tealbook baseline projection along with the updated assumption for the $1 trillion longer-run level of reserve balances.

to reach about $950 billion at the same point in time, which would allow for an MEP amounting to about 4 percent of GDP.[14]

Operational Considerations and Transition Timing

Certain operational considerations have implications for the length of time needed to transition to the desired Treasury portfolio composition. Although we discuss two divergent approaches below, a variety of intermediate options may also be considered.

Active Approach: In the illustrative scenarios presented above, once the size of the balance sheet is normalized in the second quarter of 2020, it is assumed that all subsequent purchases would be conducted in the secondary market. With this approach, the Desk is able to target specific sectors to reach the desired composition relatively quickly.[15] Therefore, under both considered scenarios, the desired long-run composition of the SOMA portfolio can be reached in a few years following the normalization of the size of the balance sheet.[16]

Passive Approach: In contrast, the Desk could continue to employ its long-standing approach of reinvesting maturing Treasury securities at auction and using secondary market purchases to keep pace with growth in balance sheet liabilities and offset principal payments on MBS. However, the ability to adjust the composition of securities acquired through rollovers would be limited as reinvestments at auction are constrained by the distribution of maturing SOMA securities across issuance dates.[17] Under the market-neutral scenario, staff estimates suggest that the portfolio will reach the desired composition more than ten years after the size of the portfolio normalizes with a passive approach. Under the flexibility scenario, it takes more than five years to reach the desired bill share and another ten years to reach the target shares of coupon securities.[18]

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[14] The size of the Federal Reserve's 2011-2012 MEP was $667 billion, or about 4 percent as a share of GDP.

[15] We consider the composition of the portfolio to be normalized when the underrepresented maturity sectors lie within 5 percentage points of the targeted allocation. Note that, as a legacy of the asset purchase programs, the SOMA portfolio is currently composed of a large share of Treasury securities with remaining maturities of 20-25 years that in the coming years could be considered overrepresented relative to the Treasury universe.

[16] Based on results from staff models, the targeted bill share could be reached in less than two years under the flexibility scenario. However, large outright bill purchases would be required to reach the 40 percent bill target, which may be constrained by total Treasury bill supply. Such operations may also be undesirable given the potential effects on market functioning.

[17] In a rollover, the Desk matches the maturity dates of its holdings to the issuance dates for newly-auctioned securities. Therefore, the profile of securities that can be acquired at auction is determined by the distribution of maturing funds across issuance dates as well as the Treasury's issuance calendar.

[18] As there are currently no bills held in the SOMA portfolio, reaching a targeted bill share with a passive approach is delayed relative to an active approach because bills can only be purchased in amounts to keep pace with balance sheet trend growth and MBS paydowns.

Although the same amount of Treasury debt would be acquired under either operational approach, if the SOMA portfolio roll-offs were reinvested only via secondary market purchases, the Treasury would need to increase issuance to the public to offset the amount that the SOMA previously acquired via auction add-ons. The Treasury's decisions about the segment in which to issue debt along the curve could have implications for interest rates.

The approaches discussed above are not the only available options to affect the composition of the Treasury portfolio. If policymakers wish to shorten the time required to normalize the composition of the portfolio, they may consider additional options, including adjusting the portfolio composition before the size of the balance sheet normalizes. For example, the Desk could adjust the current reinvestment approach to overweight short-dated issuance or apply some or all of the amount above the Treasury redemption cap toward purchases of Treasury bills in the secondary market rather than rolling over securities at auction. However, such changes to the operational approach could require modifying Desk communications on implementing the FOMC's reinvestment policy. Other approaches could be adopted after the size of the portfolio is normalized. Should policymakers choose to conduct gradual MBS sales, directing resulting funds to outright Treasury purchases would also modestly shorten the time to normalize the composition of the portfolio. Finally, options that combine aspects of the active and passive approaches described earlier are also possible.

Figure 1: Maturity Distribution of the SOMA Treasury Portfolio and the Treasury Universe Pre- and Post-Crisis

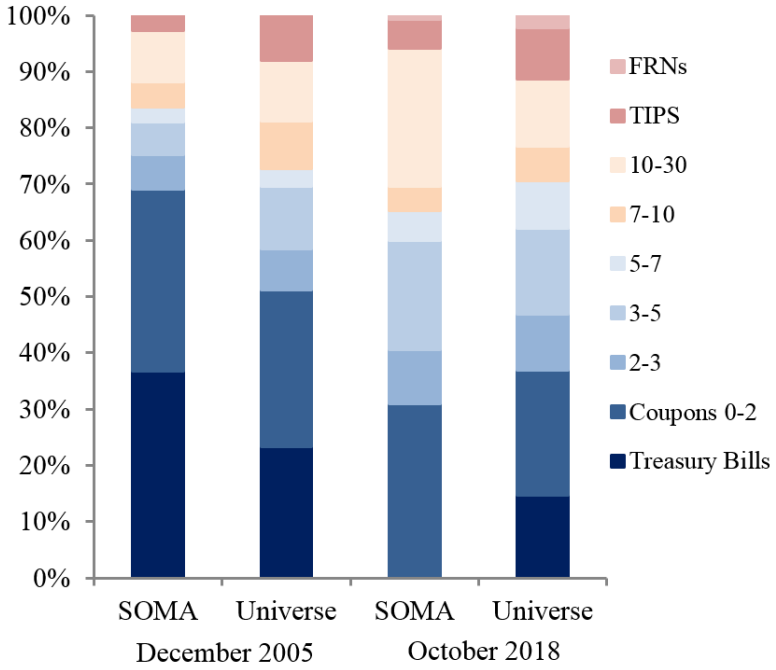

Figure 2: Duration of the Treasury Universe and the SOMA Treasury Portfolio under Alternative Scenarios