

July 21, 2015

### **Reinvestments Considerations<sup>1</sup>**

The Policy Normalization Principles and Plans state that the Committee expects to cease, or commence phasing out, reinvestments of repayments of principal on securities held in the System Open Market Account (SOMA) after it begins increasing the target range for the federal funds rate, and that the timing will depend on how economic and financial conditions and the economic outlook evolve. To aid the Committee in its discussions of the timing and manner of a change in reinvestments, this memo describes a number of possible strategies and discusses a range of policy issues associated with each strategy.

In this memo, we outline two basic strategies for communicating and executing a stop to reinvestment. The first is a strict calendar-dependent strategy, under which reinvestments would cease at a set date or after a specified interval following the initial firming of the federal funds rate. The second is a quantitative state-dependent strategy, under which redemptions would commence based on a particular macroeconomic threshold; potential thresholds include the level of the target federal funds rate, unemployment rate, or inflation. We then discuss a number of variations on these basic strategies.

The choice between using a calendar date or a description of economic conditions is important from a communications perspective. Policymakers may want to use a date for communicating the anticipated end of reinvestments because they are reasonably confident in their expectation that a reversal of their reinvestment strategy will not be needed to provide the appropriate degree of accommodation, or because they view this strategy as a parsimonious and comprehensible approach to implicitly communicate economic conditionality (as was arguably the case with calendar-based forward guidance for the federal funds rate). Alternatively, they may want to directly describe economic conditions, in qualitative or quantitative terms, under which they expect to cease reinvestments, because they believe that doing so provides clear communications or enhances the “automatic stabilizer function” of monetary policy: If the economy improves more rapidly than expected, increases in the federal funds target range and the cessation of reinvestments would both occur sooner, and vice versa.

The choice between a calendar-dependent and a state-dependent strategy can be separated from preferences about how quickly to normalize the size of the balance sheet.

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Policymakers who wish to reduce the balance sheet soon—both to start unwinding elevated securities holdings as well as to return to communicating the stance of policy solely by the target range of the federal funds rate—could choose calibrations of either a calendar- or state-dependent strategy consistent with ceasing reinvestment in the relatively near future. Others may be comfortable maintaining a larger balance sheet for a lengthy period of time because they judge that doing so will allow the FOMC to raise the target range for the federal funds rate sooner and faster, which could provide insurance against possible zero lower bound scenarios. Policymakers with this view might choose parameterizations of either strategy that would allow reinvestments to continue for a long period.

State-dependent strategies based on the level of the federal funds rate help to illustrate some of these points. Under the staff's baseline outlook, the economy continues to gain strength steadily, which is evident not only in the return to maximum employment and 2 percent inflation but also in the increasing level of the federal funds rate that supports these outcomes. Given this outlook, a preference for ending reinvestments sooner is consistent with a view that it is appropriate to begin withdrawing accommodation currently provided through the balance sheet at an earlier stage of the normalization process, and in particular, at a time when the federal funds target range is still relatively low. Because the federal funds rate is projected to be no longer constrained by the lower bound, any decrease in the amount of accommodation provided through the balance sheet can be offset by raising the federal funds rate target range at a slower pace. However, the flatter trajectory for the federal funds rate associated with an earlier end to reinvestments increases the probability that the federal funds rate could be pushed back to the zero lower bound in response to an adverse shock. In a state-dependent strategy formulated in terms of a threshold level for the federal funds rate, this sort of risk management consideration might suggest establishing a relatively high threshold.

In addition to contemplating these issues, the Committee may also wish to consider whether reinvestments should be ceased all at once or whether they should be phased out over time. There are several factors influencing this choice, including potential concerns related to the impact that redemptions may have on the Treasury and agency MBS markets. These concerns are likely more pronounced for the MBS market, than for the Treasury market. That said, past experience with halting purchases all at once did not appear to create significant market functioning problems.

The remainder of the memo reviews possible strategies for ceasing reinvestments, offers some examples of different timing of ceasing reinvestments, and explores some considerations related to phasing out redemptions. Based on feedback from the Committee, the staff will undertake additional work to develop a more detailed proposal.

## Possible strategies for ceasing reinvestments

In what follows, we discuss calendar-dependent and state-dependent strategies for ceasing reinvestments, along with some variations. We then discuss a number of considerations associated with these strategies, including communications issues and macroeconomic outcomes.

### *Defining the basic strategies*

- (i) **Strict calendar-dependent strategy:** Under a strict calendar-dependent strategy, the Committee would set a specific date or timeframe for ceasing reinvestments after the initial policy firming. While the Committee could further note that it might adjust this policy in light of evolving economic conditions, the idea would be to communicate that barring a significant change in the outlook—perhaps one that warrants a pause or reversal in the tightening cycle—the plan to cease reinvestments will proceed on the announced schedule.
- (ii) **Quantitative state-dependent strategy:** Under a quantitative state-dependent strategy, the Committee would choose a macroeconomic threshold for ceasing reinvestments, and communicate that threshold to the public.<sup>2</sup> The threshold could depend upon a single variable or a combination of variables, including the unemployment rate, inflation, and the federal funds target range (as a summary statistic of macroeconomic conditions); the Committee could indicate that reinvestments will continue as long as the threshold is not met.
- (iii) **Variations:** Between these two polar cases, a variety of strategies are available that use elements of each of these approaches.
  - a. For example, under a “flexible” calendar-based strategy, the Committee could opt to set a calendar date or timeframe for when reinvestments would cease, but at the same time, be clear that this timing could be adjusted depending on evolving economic developments. Of note, this approach is consistent with how calendar-based forward guidance was used in the Committee’s discussion of the federal funds rate path from August 2011 to October 2012.
  - b. Policymakers may prefer a “qualitative” state-dependent approach that would provide information regarding the factors that would guide the Committee’s reinvestment decisions, but that would not designate a particular quantitative threshold on which the decision would depend. This approach is along the lines of the Committee’s current forward guidance regarding the path of the federal funds rate, emphasizing the data-dependent nature of its policy decisions. Specifically, the Committee could communicate that it expects to begin the process of normalizing the size of the balance sheet when it is

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<sup>2</sup> The quantitative strategies defined in this memo are defined using thresholds. Alternatively they could be described using triggers.

reasonably confident that the initial stages of policy firming have proceeded as expected and that ceasing reinvestments will foster progress toward the Committee's objectives. Under such a qualitative approach, policymakers may rely to a greater extent on the Summary of Economic Projections as a communications device, which could provide quantitative guidance representing the Committee's range of views regarding the ceasing of reinvestments to frame the qualitative state-dependent guidance.

#### *Calendar-dependent strategy considerations*

Under a strict calendar-dependent strategy for ending reinvestment, the Committee could indicate that based on its current economic outlook, it expects to cease reinvestments by a certain date or a certain number of months following the initial increase in the federal funds target range. Using a date or fixed timeframe to convey the expected timing is straightforward; the Committee would state its intended timing to stop reinvestment, and this statement would characterize the path of redemptions. Unless the economy evolved significantly differently than anticipated (for example, if the economy fell into recession and the stance of policy was reversed), the Committee would not need to communicate much else about redemptions.

By construction, a strict calendar-based approach would be relatively inflexible. A strict calendar-based strategy could be appealing to policymakers who are concerned about the size and composition of Federal Reserve assets and would like to ensure that the normalization process is not delayed unless absolutely necessary. Even if the Committee allowed for some conditionality in adjusting the date for the ceasing of reinvestments based on significant economic developments, the Committee may find it difficult to take advantage of this conditionality, as policymakers may worry that a change to this reinvestment strategy could send unintended negative signals about the Committee's assessment of the outlook. If the economic outlook weakened, for example, or inflation failed to move up toward 2 percent, the Committee could nonetheless feel "locked in" to phasing out reinvestments according to a preset schedule. In principle, the macroeconomic effects of this could be offset by slowing the pace of increases in the target range for the federal funds rate. However, in practice, investors and the public might be puzzled and concerned about the fact that the Federal Reserve appeared to be tightening the stance of policy by allowing the runoff of its portfolio at a time that might call for additional accommodation.

Some of the concerns associated with a strict calendar-based strategy might be mitigated by employing a flexible calendar-based strategy. Under this type of strategy, the Committee could be very clear in its statements and other communications that its expectations for the timing of the ceasing of reinvestments are fundamentally data-dependent but that, based on its current outlook, ceasing reinvestments would begin at a

certain date or within a certain timeframe. Still, under this approach with a specified date or timeframe, the Committee may find itself facing some of the same issues that would arise for the strict calendar-based strategy. It may be difficult, in practice, for the Committee to change the date for commencing redemptions. Moreover, the strategy would leave open many questions about what factors the Committee would be reviewing in reaching a judgment about changing the date or timeframe.

#### *State-dependent strategy considerations*

A quantitative state-dependent approach would clearly link the Committee's reinvestment decision to economic conditions. Similar to the economic thresholds that the Committee employed for the target range for the federal funds rate, quantitative economic thresholds for the reinvestment decision would advance or postpone the beginning of the ceasing of reinvestment based on changes in the economic outlook. If the economy grew more quickly than anticipated or inflation picked up, reinvestments would cease earlier; conversely, if the economy grew more slowly or inflation did not rise toward 2 percent, reinvestments would continue for longer. The key is that reinvestments would not end until the thresholds are met.

Relative to calendar-dependent strategies, a quantitative state-dependent approach would ensure that the balance sheet is maintained for a time that is no longer or shorter than policymakers view as beneficial to support the normalization in the stance of policy. Moreover, such an approach would provide clarity to the public about the nature of the Committee's "reaction function" in adjusting the timing for the ceasing of reinvestments. A quantitative state-dependent approach might be particularly attractive to policymakers who wish to minimize the possibility of returning to the zero lower bound and are not particularly concerned about a potential extension in the period of time for normalizing the size and composition of the Federal Reserve's balance sheet.

A challenge associated with a quantitative state-dependent strategy would be determining exactly how to specify the thresholds. As with the thresholds for the target range for the federal funds rate, those for the reinvestment decision could be based on the level of the unemployment rate and the projected rate of inflation. Alternatively, the reinvestment decision could be conditional on the level of the target range for the federal funds rate. That approach might be especially desirable, for example, if policymakers wished to be in a position to respond to potential adverse shocks with a cut in the target rate for the federal funds rate. That view could be reinforced if there is a strong aversion to reintroducing asset purchases to provide accommodation; in that case, the Committee

might wish to be well away from the zero lower bound before beginning the process of normalizing the size of the balance sheet.<sup>3</sup>

The Committee might be uncomfortable with a quantitative state-dependent strategy if it were concerned that economic thresholds would be difficult to structure appropriately or if such a strategy could lead to outcomes that might be undesirable in some scenarios. Of note, the Committee moved away from quantitative thresholds for the federal funds rate once the time for liftoff appeared to be relatively near. In addition, some policymakers may be uncomfortable linking the reinvestment decision to the level of the target range for the federal funds rate, in part because that linkage might make it more difficult for the Committee to reach agreement on changes in the target range.

Finally, in some scenarios, quantitative thresholds could result in the Committee maintaining a very large balance sheet for a very lengthy period. While this is true to some extent for all the strategies if the economic recovery is not as strong as expected, in the case of quantitative thresholds, the Committee would have more limited flexibility to incorporate other factors in its decision about the timing of ceasing reinvestments.

Some of these considerations might suggest adopting a qualitative state-dependent strategy not unlike the current guidance for the federal funds rate. The Committee could note that it will likely cease reinvestments when it is reasonably confident that the initial stages of policy tightening have proceeded as expected and when it judges that ceasing reinvestments will foster further progress toward its objectives. By focusing on the “initial stages” of policy firming, such guidance might suggest that reinvestments could cease fairly soon if everything proceeds as anticipated. However, the Committee would retain the option of delaying the reinvestment decision if it judged a delay appropriate to foster progress toward its longer run objectives.

Relative to the quantitative state-dependent strategy, this type of qualitative approach would be less clear about the nature of the Committee’s reaction function. However, coupled with other forms of communication, the Committee might find this a reasonable approach to preserve optionality regarding the reinvestment decision while also providing the public with some useful information about the likely path of the Federal Reserve’s portfolio.

#### *Asset class considerations*

The discussion above focused on a general decision to cease reinvestment for all of the Federal Reserve’s holdings based on a calendar-dependent or state-dependent

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<sup>3</sup> Members of the Monetary Policy Committee of the Bank of England have laid out similar arguments in speeches and testimony. See the Bank of England Inflation Report from May 2014.

strategy. Another layer of complexity could involve adopting different approaches for the Federal Reserve's Treasury securities holdings versus agency MBS holdings. For example, some policymakers may be reasonably comfortable following a calendar-based strategy for the runoff of Treasury securities because the Treasury market is relatively deep and liquid. Assuming there was a high degree of clarity around the timing and subsequent path for the portfolio, it may be reasonable to expect that the Treasury market could absorb the additional supply without significant disruption.<sup>4</sup> In contrast, some policymakers may be concerned that allowing the runoff of our agency MBS holdings could have an outsized effect on mortgage rates and the still sluggish recovery in the housing sector.<sup>5</sup> Policymakers that held this view might wish to adopt a state-dependent strategy for ceasing reinvestments for agency MBS, conceivably involving criteria linked to the strength of the housing market.

Conversely, some policymakers may be wary about the possible market and economic effects of the very large redemptions of Treasury securities by the Federal Reserve, particularly at a time that the Federal Reserve is also raising the target range for the federal funds rate. At the same time, they may be concerned about the appearance of "credit allocation" associated with the Federal Reserve's holding of agency MBS securities. In this case, policymakers might be comfortable allowing the runoff of agency MBS holdings to commence very soon in order to begin the process of shedding such securities. Policymakers may believe that upward pressure on market rates associated with this step could be offset by delaying the ceasing of reinvestments of Treasury securities, perhaps by adopting a state-dependent strategy tied to the level of the federal funds rate.

### *Timing considerations*

Importantly, there is no general conclusion whether redemptions would start sooner or later under either a calendar-based or state-dependent strategy. This would depend entirely on the choice of date or conditions. However, there may be some correlation between the choice of strategies just described and preferences for how quickly to normalize the portfolio. Specifically, if policymakers prefer to begin redemptions relatively soon, they may wish to take the straightforward approach of

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<sup>4</sup> Whether the Committee employs a calendar- or a state-dependent strategy, staff projections suggest that unwinding the portfolio over time will lead to a smooth reversal of the term premium effects as the portfolio returns to its neutral long-run composition. These models implicitly assume that market expectations align perfectly with the modeled path of the portfolio. In reality, if the consensus market expectation is very different from what is announced, or if market expectations are diffuse, an announcement about redemptions could result in a notable market response, even if the overall path of the reduction is close to expectations. The experience with the taper tantrum reinforces this point and underscores the importance of clear communications. Current expectations suggest that there is a range of views around the expectations of lift-off.

<sup>5</sup> This effect is different than the market consideration discussion which follows below.

simply stating a date at which they will start, naming a timeframe that is in the fairly near future. These policymakers might be focused on the relatively large volume of Treasury securities in the SOMA portfolio that mature in 2016 and 2017. Given the proximity of the expected start date, policymakers may judge that it is unlikely that macroeconomic conditions will evolve appreciably differently than expected and call for an adjustment to the start date. They may also judge that formal economic thresholds are unlikely to be useful in describing the timing of that decision.

On the other hand, if policymakers are relatively less concerned with beginning the process of normalization soon, they might prefer to use a state-dependent approach since this will allow the market to anticipate changes in the timing of redemptions in a more flexible way as more information about the economy is accumulated over time. These policymakers might note that even with reinvestment of a substantial portion of the volume of maturing Treasury securities in the SOMA over the near term, the time to normalize the size of the balance sheet would not be greatly delayed.<sup>6</sup> Choosing a calendar date relatively far off in the future may make it difficult for the Committee to reach decisions about when to change the date and to describe the factors it is considering in adjusting the date. As noted above, complications such as these eventually led the Committee to shift away from calendar-based guidance for the target range for the federal funds rate.

## **Balance sheet scenarios**

In this section, we review two balance sheet scenarios that begin redemptions sooner or later to give a perspective on the size of the balance sheet, as well as the resulting trajectory of the economy. These scenarios can be helpful for understanding the impact of different parameter choices within each of the strategies discussed above.

### *Scenarios*

The first scenario is the staff baseline presented in the June Tealbook, Book B, under which reinvestments are halted six months after policy firming commences; it is roughly in line with the median response in the June Survey of Primary Dealers, as

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<sup>6</sup> Continuing reinvestments for a period of time causes the date at which the size of the portfolio is normalized to be pushed off some, but to a lesser extent than the delay in redemptions. This happens both because of continued growth in autonomous factors and because some of the securities acquired through reinvestments mature before the original normalization date in any case. If the timing at which the portfolio is normalized in sign is of particular concern, it could be addressed even more directly by adjusting the reinvestment allocation algorithm to towards shorter-dated tenors rather than in proportion to issuance. Of note, the current reinvestment policy used by the Open Market Trading Desk allocates maturing proceeds from Treasury coupon holdings in amounts proportional to the issuance amounts of the newly auctioned securities.



depicted in the top left panel of exhibit 1.<sup>7</sup> The SOMA portfolio evolves as depicted in the top right panel of exhibit 1. The balance sheet continues to put downward pressure on longer-term rates, as indicated in the bottom panel; this downward pressure gradually decreases as the size of the portfolio normalizes.<sup>8</sup> The federal funds rate path, as shown by the solid black line in the top left panel of exhibit 2, rises until it reaches its long-run level. Under this strategy, and assuming the baseline outlook, the target range for the federal funds rate is roughly 50 to 75 basis points and inflation is about 1.25 percent when reinvestments are ceased.

In the second scenario, shown as the dashed blue lines in exhibit 1 and 2, full reinvestments continue for almost two years after the commencement of policy firming, when the federal funds target range is 2 percent.<sup>9</sup> In this example, allowing full reinvestments to continue until the target range for the federal funds rate rises to 2 percent might be seen as providing flexibility to lower the target rate appreciably if necessary, without being constrained by the zero lower bound. Given that this particular threshold is met considerably later than six months after liftoff, the size of the balance sheet remains elevated for a longer period than under the Tealbook baseline, resulting in slightly more downward pressure on longer-term interest rates, as shown in the top left and bottom panels of exhibit 1.<sup>10</sup> In particular, the balance sheet normalizes in size about nine months later than under the baseline. Moreover, because modestly greater policy accommodation is provided through the balance sheet, the federal funds path rises a bit faster than under the baseline.<sup>11</sup> However, the differences between the two paths are small, with a maximum of roughly 10 basis points. In addition, the unemployment rate falls a bit more quickly and reaches a marginally lower trough, and the output gap shrinks

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<sup>7</sup> Results of the June Primary Dealer Survey suggest that the median participant expects reinvestments to cease, on average, 6 months after lift-off, and places approximately 30 percent probability of halting reinvestments all at once and 55 percent probability of a phase-out strategy. The June Survey of Market Participants also suggests that the median participant expects reinvestments to cease roughly 6 months after lift-off, but places approximately 20 percent probability of halting reinvestments all at once and 75 percent probability of a phase-out strategy. However, there is a wide range of expectations reported in those surveys.

<sup>8</sup> In particular, there is still downward pressure on longer-term interest rates after the balance sheet has normalized in size because the trajectory of the 10-year equivalent measure of the portfolio is still above where it would have been without the asset purchases; the 10-year equivalent measure of the portfolio exhibits a steady decline as the size of the portfolio declines throughout this period.

<sup>9</sup> Any macroeconomic variable could be chosen as the threshold. In the implementation of the second scenario, the federal funds rate is the threshold variable. The choice of a 2 percent federal funds rate is illustrative; policymakers would need to determine the variable and the level of that variable or variables at which reinvestments would cease.

<sup>10</sup> Because the interest income from higher securities holdings is essentially offset by the interest expense from greater reserve balances, remittances to the Treasury are similar in both scenarios.

<sup>11</sup> In the third quarter of 2015, the federal funds rate is assumed to remain at its baseline value, but thereafter, policymakers are assumed to respond to the marginally stronger conditions as prescribed by the inertial Taylor (1999) rule. In principle, policymakers could adjust the path of the federal funds rate so as to completely offset the additional accommodation provided by the higher balance sheet path, thereby insulating the goal variables of monetary policy from the effects of the later end to reinvestments.

slightly faster and becomes positive approximately one quarter earlier than in the first scenario. Inflation is essentially the same under both scenarios.

#### *Interactions between strategies and scenarios*

Although these scenarios are helpful in illustrating how these two distinct reinvestment strategies work in the modal outlook, they cannot demonstrate differences in how monetary policy would react with these strategies to shocks.

In particular, we focus on the relative flexibility of the state-dependent strategies and the calendar-based strategies. Under the strict calendar-based strategy, if the economy improved more slowly than assumed in the baseline case, redemptions, by construction, would not adjust in any way. That is, they would proceed as announced. As a result, the federal funds rate path consistent with this alternative path of the economy would likely be lower than that under the state-dependent strategy in order to provide more policy accommodation to offset the economic effects of the runoff of the Federal Reserve's securities holdings. On the other hand, under a strategy with at least some state dependence, including a flexible calendar-based approach, a reduction in redemptions would be delayed until some economic conditions are met and the federal funds rate path could possibly be higher than in the strict calendar-based strategy.

#### **Phasing out reinvestments and market-specific considerations**

Once a decision has been made about which strategy to employ for communicating its plan to cease reinvestments, the Committee may also wish to consider whether reinvestments should be ceased all at once or whether they should be phased out over some time. While full redemptions would be the simplest to implement and would result in the fastest reduction in the level of the balance sheet and the associated level of reserve balances, tapering of some sort has been used in most prior asset purchase programs. There are a few reasons to consider phasing redemptions out over time; below we discuss some issues specific to the Treasury and MBS markets and the path of the portfolio and also provide some assessment of the impact of a decision to phase out reinvestments.

#### *Treasury and MBS market considerations*

As with the end of the asset purchase programs, there may be some concern that abruptly ending reinvestment purchases could have some adverse effects on the Treasury and MBS markets. In particular, since the securities that would have otherwise been purchased by the Fed would now be absorbed by the public, there is a possibility that risk premiums in these assets could respond more than would otherwise be the case as the

market adjusts to the new environment without the Federal Reserve as a buyer.<sup>12</sup> These effects might arise even if a decision about ending reinvestments is well anticipated, and would likely be mitigated by phasing reinvestments out over time.

These concerns may be particularly pronounced in the MBS market. A principal consideration here is the large size of SOMA MBS paydowns relative to expected agency MBS market issuance. Specifically, SOMA MBS prepayments are expected to remain around 30 percent of TBA gross issuance in 2016, near recent levels. Moreover, the uncertainty inherent in the path of MBS paydowns results in some unknowns around the actual pattern of new supply the market will need to absorb.<sup>13</sup> Still, markets have been able to withstand the cessation of Federal Reserve purchases before. In particular, at the conclusion of the first large scale asset purchase program, net SOMA purchases of agency MBS fell by \$40 billion after March 2010 (shown in the top panel of exhibit 3), following a period of more gradual tapering. Agency MBS spreads widened 10 to 15 basis points and the volatility of spreads increased over that same period, but it is important to note that this was against the backdrop of a significant decline in rates and therefore an increase in prepayment risk associated with these securities. However, while this prior LSAP program ended without significant disruption, the underlying structure of the MBS market is noticeably different today, with greater concentration among dealers and more constrained dealer balance sheets due to the changing regulatory environment, complicating historical comparisons. Moreover, Fannie Mae and Freddie Mac no longer hold agency MBS in any significant quantity, so that ceasing reinvestments would leave the agency MBS market without a large government buyer for the first time in many years.

In the Treasury market, maturing securities will make up approximately 10 percent of projected issuance. These redemptions will need to be absorbed by the public, and the additional supply will arrive through increases in Treasury auction sizes in the primary market.<sup>14</sup> That said, the total size of maturities is large relative to the projected financing need for the Treasury in coming years, though the total projected issuance need is within historical ranges. For example, over the next several years, a large volume of the SOMA's Treasury securities mature; in order to offset such maturities and fund the deficit, Treasury would need to issue over \$1 trillion in additional securities to the public in some years. As shown in the bottom panel of exhibit 3, the expected annual increase

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<sup>12</sup> These market responses are distinct from the projected normalization of term premium arising from reductions in the Federal Reserve's portfolio. These could be characterized as "flow" effects and would be expected to be temporary.

<sup>13</sup> MBS paydowns are expected to total approximately \$600 billion from 2016 to 2018. If rates rise faster than projected, these paydowns would likely decrease.

<sup>14</sup> When SOMA does not reinvest its maturing holdings, Treasury must increase the offering size of its auctions to make up the shortfall in cash. However, it need not do so in the securities that SOMA would have otherwise purchased.

in privately held Treasury securities is similar to that experienced during the crisis. Importantly, however, the demand for Treasury securities was very intense during the crisis, and it remains to be seen how the market will adjust to a rapid pace of Treasury issuance during periods without this boost to demand.

Another consideration is that the maturity distribution of the additional supply will be determined by Treasury, which typically aims to manage its auction calendar in a predictable fashion. This is in contrast to MBS where the new securities will be market determined. With sufficient time to plan, Treasury would likely adjust its financing strategies to avoid unwanted volatility in auction sizes.<sup>15</sup> For example, it might initially issue additional bills to the public, consistent with its recently announced statement indicating plans to increase the level of Treasury bills outstanding. It might also increase sizes of coupon auctions in advance of the expected maturities in order to avoid unwanted volatility in issue sizes once redemptions commence (shown in exhibit 4).

*Pattern of redemptions and SOMA holdings*

A second reason to consider phasing out reinvestments over time is that the pattern of SOMA redemptions is uneven and, arguably, arbitrary. This unevenness is to be expected since no special consideration was given to the pattern of maturities when the assets were purchased. A choice to phase redemptions out gradually could help to smooth the pattern of reductions at least to some extent. While these patterns of redemptions do not have any noticeable effect on the reversal of the term premium effect in the staff projection models, it may be easier for the market to absorb the new supply if it arrives in a more gradual and smooth manner.

In addition to considerations about the pattern of redemptions, it may also be worth noting that when the Committee instructs the Desk to discontinue Treasury reinvestments, the SOMA will no longer own benchmark securities in the portfolio. While the portfolio has never been structured to maintain some specific level of benchmark securities, and in fact has held almost none in recent years because of limited maturities following the maturity extension program, SOMA holdings of these securities can provide some support to Treasury market functioning. Specifically, SOMA holdings can alleviate supply shortages that can result in repo market squeezes and settlement fails through securities lending. Choosing to phase out reinvestments would provide some

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<sup>15</sup> Treasury officials have publicly acknowledged the potential impact of SOMA maturities on public funding needs. Refer to the Minutes of the Meeting of the Treasury Borrowing Advisory Committee of the Securities Industry and Financial Markets Association on May 5, 2015 (<http://www.treasury.gov/press-center/press-releases/Pages/j110043.aspx>). In addition, the Federal Reserve would likely provide advance notice to the Treasury about plans to redeem securities.

modest benefits for the Treasury market as it would result in SOMA again being able to lend benchmark securities for some period.<sup>16</sup>

*Phase-out considerations*

If one assumes that the phase-out is executed over a period of a few quarters and that reinvestments are gradually reduced during that period with little market impact, staff estimates that the macro effects of a phase-out approach, relative to those of ending redemptions all at once, would be relatively small and would have no effect on the timing of any federal funds target range increases in the forecast. The timing of normalization would be affected only by a small margin. For example, implementing a nine-month phase-out of reinvestments leads to an extension of the normalization date of approximately one quarter. If such an approach provided benefits along the lines noted above, it could be seen as inexpensive insurance against potential market disruptions. On the other hand, for those policymakers who remain concerned about the size and composition of the balance sheet and who wish to cease reinvestments as soon as possible, the costs of phasing out reinvestments gradually might outweigh the potential benefits from a market functioning perspective.

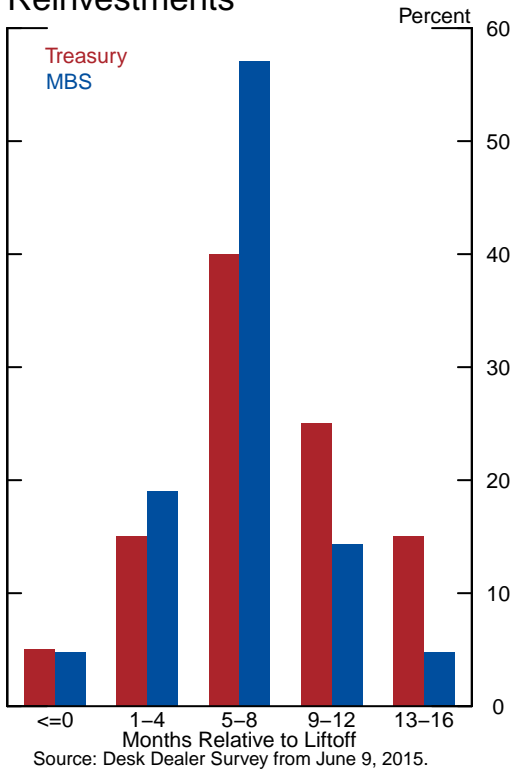
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<sup>16</sup> Other approaches such as pursuing some ongoing minimal level of reinvestments would be needed to address this concern on an ongoing basis.

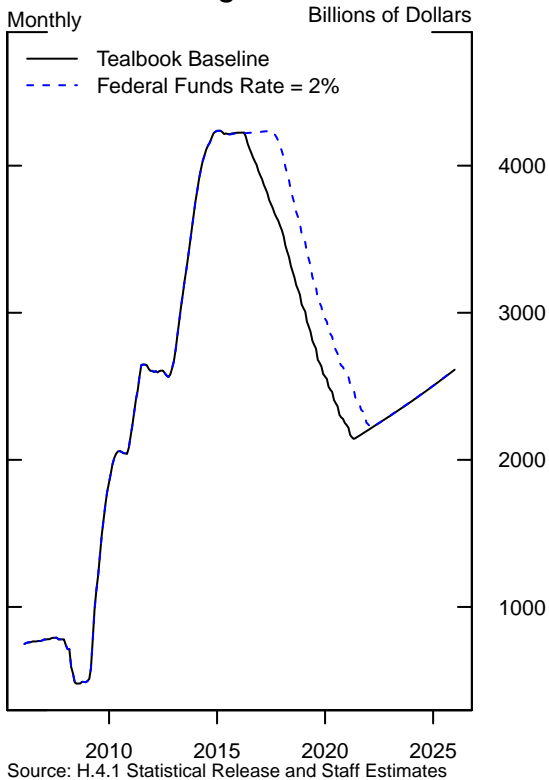
**Exhibit 1**

Class I FOMC – Restricted Controlled (FR)

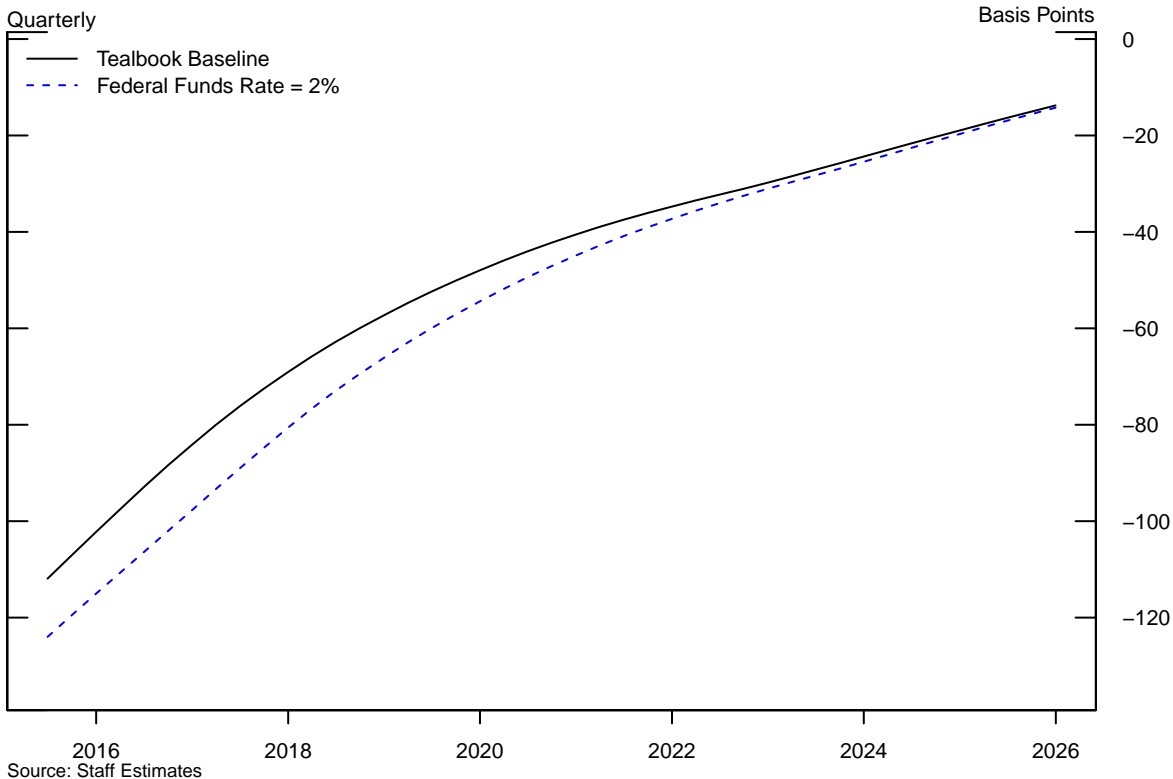
**PD Survey: Timing to End Reinvestments**



**SOMA Holdings**

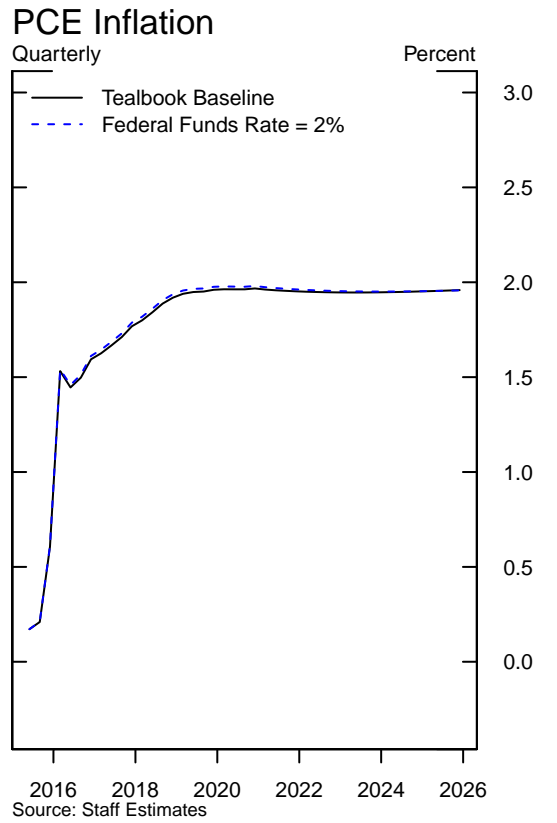
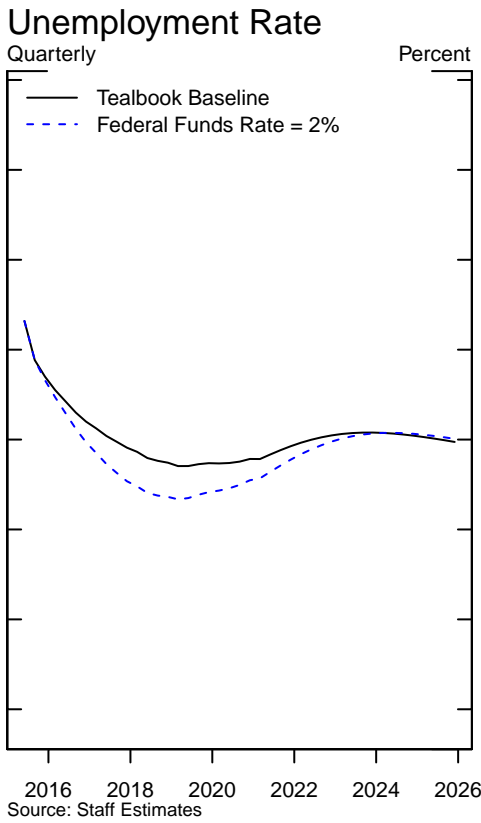
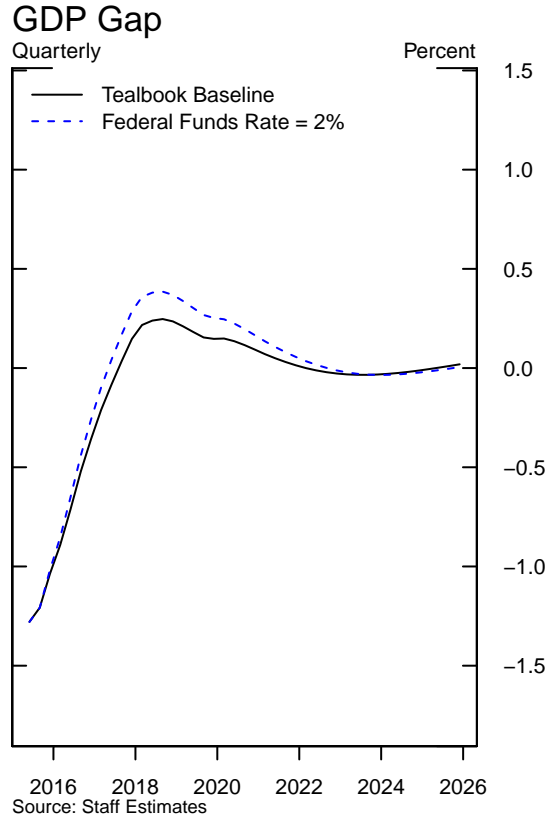
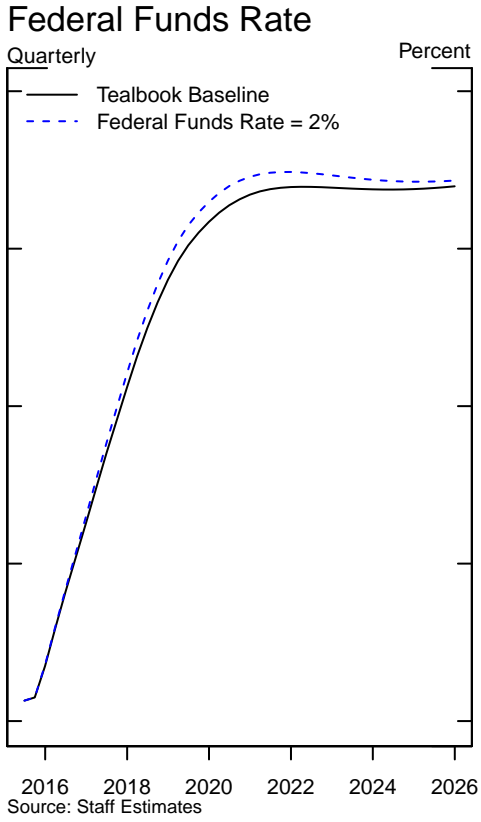


**Term Premium Effect**



**Exhibit 2**

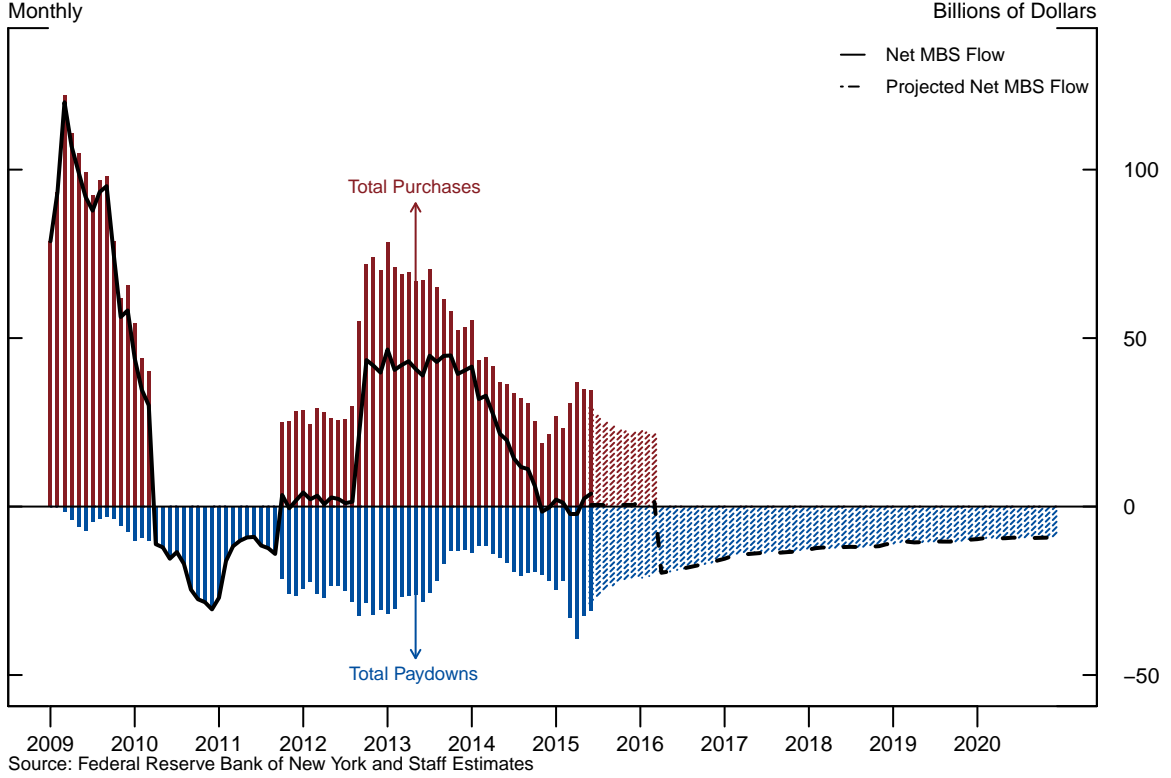
Class I FOMC – Restricted Controlled (FR)



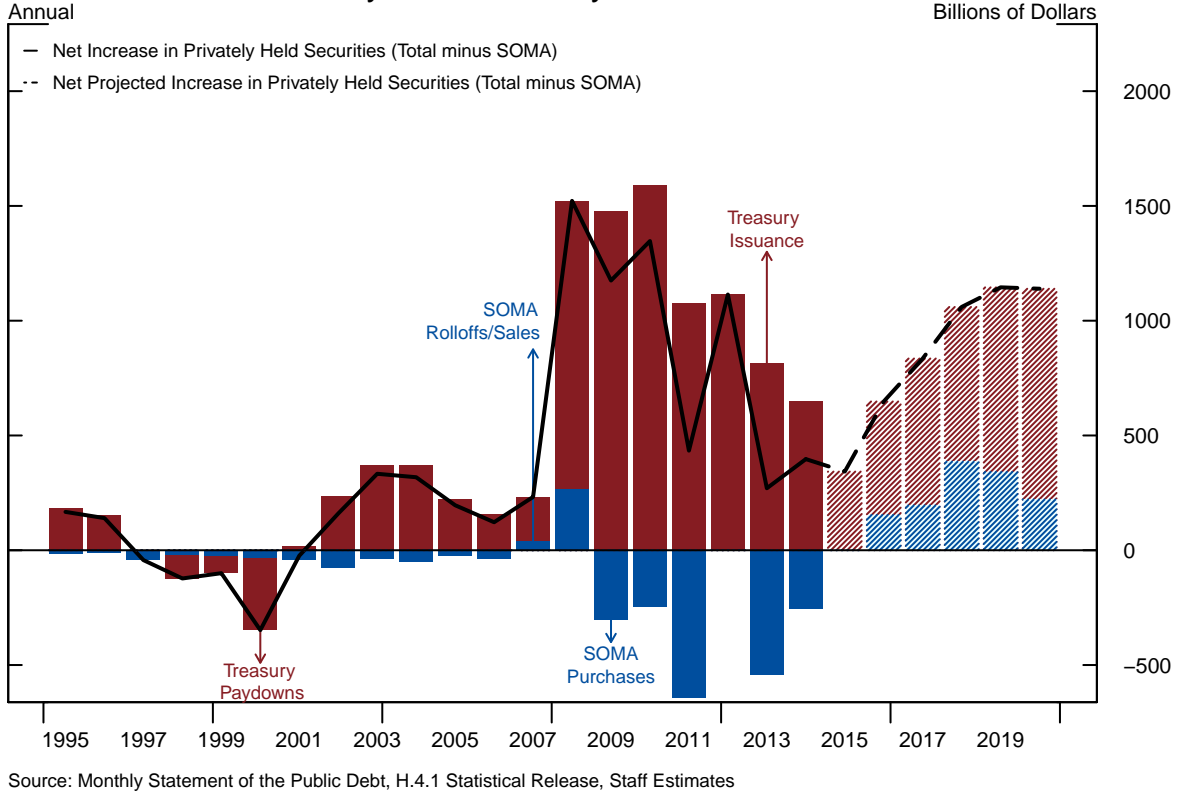
**Exhibit 3**

Class I FOMC – Restricted Controlled (FR)

**Agency MBS Purchases and Paydowns**



**Net Increase in Privately Held Treasury Securities**





**Exhibit 4**

Class I FOMC – Restricted Controlled (FR)

**Projected Receipts of Principal on SOMA Securities**

