

The \$4 Trillion Conundrum

An Analysis of the Federal Reserve's Balance Sheet and Reduction Operations

The severity of the last Great Recession motivated monetary policy makers in the United States and abroad to dig deep into their toolbox to assist their economies in a time of great economic stress. Not only did the Federal Reserve (Fed) lower the fed funds rate to zero, and keep it there for many years, they also increased the size of their balance sheet from \$800 billion to \$4.5 trillion. By implementing large scale security purchase programs, the Fed anticipated their involvement in the market would lower longer tenor interest rates. The Fed hoped lower longer-term rates would motivate individuals and businesses to take on debt for projects or investments that would stimulate the economy. The Fed's balance sheet, formally known as Federal Reserve System Open Market Account (SOMA), traditionally held foreign currency reserves and Treasury securities, but as the Fed implemented their plans to help the economy, the balance sheet swelled with agency mortgage backed securities (MBS), agency debentures, and additional Treasury securities.

During the Great Recession and subsequent recovery, the Fed executed three distinct operations that increased the size of their balance sheet. Commonly known as *quantitative easing* (QE), the Fed made open market purchases of various securities at different tenors with the end goal of stimulating the economy.

QUANTITATIVE EASING TIMELINE

- **QE 1** - Beginning in November of 2008 and ending August of 2010. The Fed purchased a combined \$1.5 trillion in securities, heavily skewed towards agency MBS. Most of the purchases were Treasury and agency MBS, and to a lesser extent, agency debentures.
- **QE 2** - Beginning in November of 2010 and ending June of 2011. The Fed announced they intended to purchase an additional \$600 billion in long term Treasury securities, at the rate of \$75 billion per month.
- **QE 3** - Beginning in September of 2012 and ending October 2014. The Fed announced an open-ended purchasing operation of agency MBS at the rate of \$40 billion per month. QE 3 was subsequently expanded by an additional \$45 billion of monthly Treasury security purchases. This operation continued at the monthly rate of \$85 billion until December 2013 when the Fed started to reduce their monthly purchases.

Throughout and after the three quantitative easing processes, the Fed continually reinvested proceeds from maturities and mortgage paydowns, thus each purchasing operation increased its overall balance sheet.

The Fed has maintained a stance that they do not intend on keeping a \$4.5 trillion balance sheet. During the June 2017 Federal Open Market Committee (FOMC) meeting, the Fed prepared the market for the eventual normalization of the balance sheet. The Fed set out a very measured plan to reduce the balance sheet utilizing maturities and paydowns on MBS. They did not signal the intention to sell securities at any time during this process. Starting October 2017, the Fed allowed for a maximum of \$4 billion agency MBS paydowns and \$6 billion of non-MBS (mainly Treasury) securities to roll off without reinvestment. Every three months, the caps increase by \$4 and \$6 billion for agency MBS and non-MBS, respectively. The caps increase quarterly until they reached \$20 billion for agency MBS and \$30 billion for non-MBS for a total of \$50 billion per month. Monthly maturities and paydowns above the caps are to be reinvested into additional Treasury or agency MBS, if needed. If maturities or paydowns in a specific month do not reach the cap, the shortfall will not be made up by selling securities or carrying the shortfall balance forward. The gradual ramping process was intended to ease the market into a new form of tightening monetary policy without causing market disruptions.

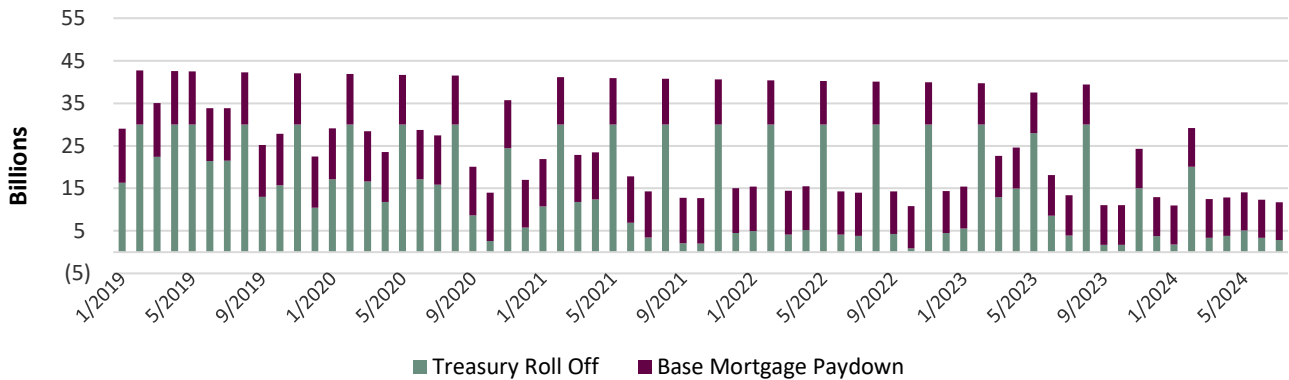
Since October of 2017, the Fed's balance sheet has been on autopilot, gradually ramping the caps up to the maximum levels and holding steady at a combined cap of \$50 billion per month. Given the absolute size of the balance sheet and the large amount of securities running off per month, the Fed has provided minimal guidance on final size of its balance sheet or other factors that may cause the Fed to rethink its strategy. As Fed Chairman Powell stated after the December 2018 FOMC meeting, "the balance sheet is on autopilot," implying there is little motivation to change course. The market consensus is the balance sheet will ultimately reach and be maintained around \$2.5-3 trillion. Recently, FOMC members have softened their tone around the

balance sheet, indicating they may be willing to reduce or halt the runoff if economic data warrants this action.

As the Fed continues to reduce its balance sheet, investors will need to absorb the bonds the Fed once held. While Treasury investors factor in a smaller Fed role in the market, they are faced with an additional headwind as net issuance from the US Treasury is set to continue to grow to fund the Federal Government's increasing budget deficit. As additional Treasury supply comes to the market, investors may demand higher yields to compensate for the increased debt issuance. If the Federal Government was running a budget surplus and issuing less Treasury securities than were maturing each period, the market would be better positioned to absorb the Fed's lesser role of a large participant in the Treasury market.

It is important to evaluate the structure and communication mechanisms of the Fed's balance sheet reduction plans, as less obvious details can only be determined with a complete analysis. Given the complexities of the runoff, it is important to evaluate what has occurred with the balance sheet and what could happen to it in the future. As of December 31, 2018, if all runoff caps were met, the balance sheet should be \$450 billion smaller, but the plan has missed the caps by over \$60 billion dollars. This means the balance sheet runoff has been slightly less burdensome to investors than forecasted. The forward projection of how the balance sheet might runoff is very important to the investment community as a slower rate of runoff would put less pressure on the market to absorb additional securities. The SOMA holdings are reported to the public by the Fed on a weekly basis, enabling investors to map out the future runoff schedule with a high degree of confidence. The graph on the following page shows the future projected balance sheet runoff amounts.

Projected Combined Monthly Balance Sheet Runoff

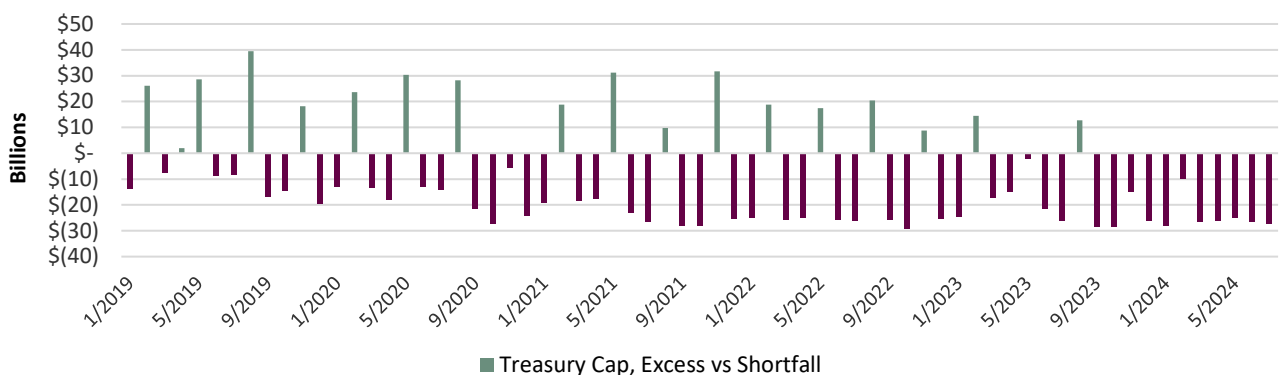


Source: Bloomberg; Federal Reserve

A key takeaway from the graph above is the combined \$50 billion cap is never breached. Modeling the runoff of non-mortgage securities is straight forward while mortgage securities add runoff variability due to prepayments. The future path of interest rates will play a significant role in the runoff of the mortgage portion of the balance sheet. If interest rates rise significantly the runoff of mortgages would naturally slow as homeowners are less incentivized to pay off or prepay their mortgages. The opposite is true if interest rates fall significantly.

Using the Fed’s balance sheet data, the non-mortgage runoff schedule can be analyzed to determine the severity of runoff each month. The graph below represents any additional maturities above the cap (\$30 billion) and any shortfall of maturing securities during any specific month.

Treasury Cap, Excess vs Shortfall



Source: Federal Reserve

When a shortfall in maturities exists versus the cap, the Fed does not carry that shortfall over to the next period or sell securities to reach the cap. Looking forward into 2019, half of the months will experience a shortfall. Beyond 2019, most months are likely to suffer a shortfall versus the maturity cap. This indicates the runoff is not nearly as severe as anticipated. During months of excess maturity amounts above the cap, the Fed will reinvest those funds back into the balance sheet by participating in Treasury auctions. The Fed will reinvest excess maturities on a pro-rata basis across the maturity tenor of Treasury auctions. The graph above does not consider the Fed’s reinvestment of excess maturing funds as we do not know the future funding strategy of the Treasury. In our view, the effect is minimal.

While the Fed communicates the balance sheet runoff is on “autopilot” at the current \$50 billion per month cap rate, the future runoff rate does not appear as daunting as some predicted.

Average Monthly Cap Surplus/Shortfall

Time Period	Monthly Surplus with Treasuries	Monthly Shortfall with Treasuries	Monthly Shortfall with Mortgages
1/2019-1/2021	7,852,084,876	10,338,158,790	18,385,221,449
1/2021-1/2023	6,272,433,112	16,742,783,801	26,268,302,852
1/2019-1/2023	7,206,386,729	13,423,507,445	22,209,157,927

Treasury Cap \$30 Billion

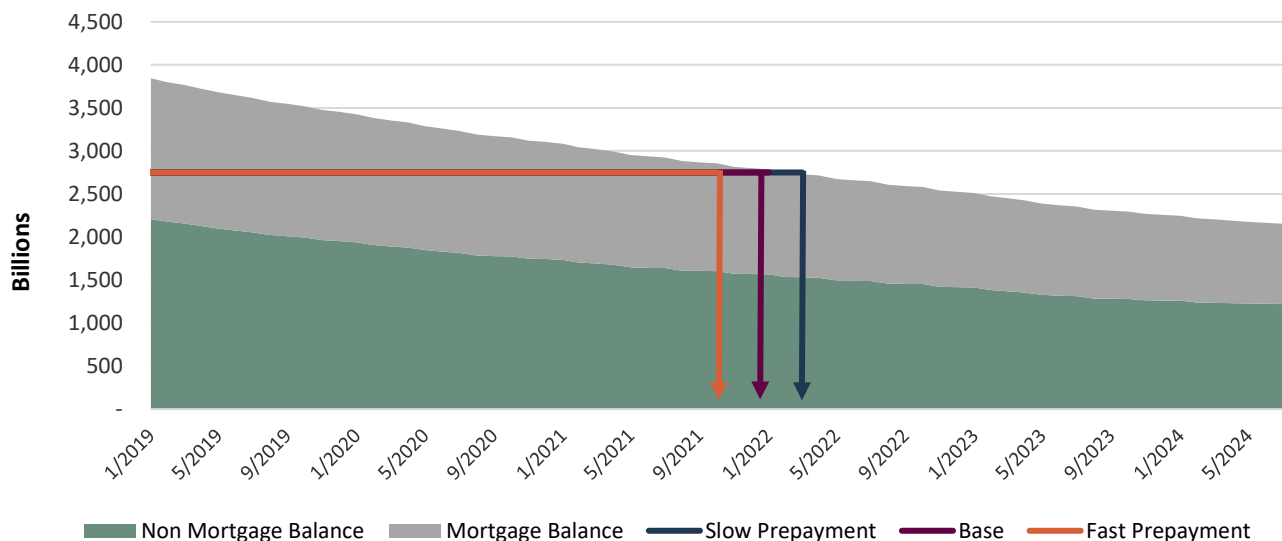
Source: Bloomberg; Federal Reserve

Mortgage Cap \$20 Billion

Over the next two years, we forecast the non-mortgage portion of the balance sheet will average a shortfall of over \$10 billion per month. Even though the non-mortgage portion of the balance sheet averages a near \$8 billion surplus during the next two years, the balance sheet runoff will not experience the effect of those reinvestments for at least two years. This is due to the Fed’s current policy of investing excess funds from maturities into Treasury securities with remaining maturities of at least two years. We project the mortgage portion of the balance sheet runoff will miss each monthly cap by \$5-9 billion per month over the next two years. In total, we project the Fed will miss their \$50 billion cap by over 30% in the next two years, increasing in subsequent years.

Predicting the runoff of the mortgage portion of the balance requires forecasting prepayment assumptions. The assumptions will vary the speed and effects of prepayments on the individual mortgage pools held by the Fed. We assumed a base case prepayment assumption for our analysis, but when stressed with fast and slow prepayment assumptions, overall runoff of the mortgage portfolio is only marginally affected.

Balance Sheet Run Off Under Different Scenarios



Source: Bloomberg; Federal Reserve

Market participants expect the Fed to terminate their balance sheet runoff operations once the balance sheet reaches \$2.5-3 trillion. We feel the terminal size is not nearly as important as the path to getting there, as the Fed may not reach a terminal size they are comfortable with before having to undertake future purchasing operations. Only five months separate our slow and fast runoff scenarios. We are not concerned about fluctuations in the mortgage runoff affecting the market or materially affecting the pace of runoff.

The Fed ultimately wants to shrink their balance sheet to be composed of mainly Treasury securities. We are looking to the Fed for signals regarding how they may modify the current balance sheet runoff path to achieve their goals. While the current goal of \$50 billion runoff per month is likely to fall short of the current program, we feel the Fed may use the balance sheet as an additional tool for communication and action. Changing the rate or composition of the balance sheet run off allows the Fed to create a more accommodating or restrictive monetary policy. We feel the Fed will alter the balance sheet runoff program earlier than most expected. Below are several ways the Fed may communicate changes:

1. **Outright reduction in current caps.** This would not materially alter the current runoff schedule since the caps are higher than the natural runoff rate for most months.
2. **Signal a significant reduction in the Treasury cap.** This would lower the overall cap and may materially alter the runoff path. We believe the level of Treasury holdings in the balance sheet is at a level the Fed is comfortable with over the long term. This action would reduce the runoff and allow mortgages to be a greater portion of the runoff.
3. **Instead of a cap on mortgage runoff, the Fed could communicate a monthly floor amount for mortgage runoff that will be reduced each month.** This process would combine the natural mortgage runoff process as well as outright security sales to reach the floor level. This option would help the Fed accomplish their goal of reducing the balance sheet as well as reducing the overall mortgage holdings of the balance sheet faster. We feel this would be combined with a reduction in Treasury runoffs. While this option makes logical sense, the Fed has preferred a passive approach to the balance sheet wind down process.
4. **Ceasing runoff completely.** We feel this approach will also include a tweak to their operations. Instead of reinvesting mortgage runoff amounts into mortgage securities, they will likely reinvest those funds into Treasury securities. This option would hold the balance sheet size constant, but the composition would slowly move to all Treasury holdings.

We feel if the Fed takes any additional action on the balance sheet, it will be to reduce or cease the absolute monthly runoff, but the Fed may also attempt to smooth the monthly amounts running off. Smoothing monthly runoff levels allows the balance sheet to be less of a factor in the market, as increased volatility in runoff amounts have the potential to distort technical factors such as supply and demand imbalances of specific Treasury securities.

While the Fed has adjusted the fed funds rate many times over the course of history, they have never used the balance sheet as a monetary policy tool to this extent. This unprecedented action twisted and shifted the yield curve in ways the Fed felt would stimulate the economy, but the future costs to the market and economy are mostly unknown. Many professionals focused on this topic admit there was some success as a result of the quantitative easing programs, but concede they are worried about the unintended consequences as a result of

normalizing the balance sheet. As the Fed moves to regain a few of their monetary policy tools for a future need, it is important to pay close attention to market dynamics and Fed commentary as the balance sheet is now in focus. If the Fed is unable to significantly shrink the balance sheet from the current level, that tool in their tool box might lose some of its effectiveness if it is needed in the future.



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Questions?

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