Econ Focus

Third Quarter 2022

FEDERAL RESERVE

The Fed Is Shrinking Its Balance Sheet. What Does That Mean?

While the Fed has experience buying assets to respond to crises, questions remain around unwinding those actions

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When the COVID-19 pandemic hit the United States in early March 2020, the Fed quickly stepped in to limit the economic fallout. It reduced its interest rate target to near zero and purchased large quantities of U.S. Treasury bonds and mortgage-backed securities (MBS) by injecting reserves into the banking system. As a result of these purchases, the size of the Fed's balance sheet more than doubled from about $4 trillion prior to the pandemic to nearly $9 trillion at the start of 2022.

The Fed first engaged in this type of balance sheet expansion, popularly known as quantitative easing (QE), more than a decade ago. It was one of the then-unconventional monetary policy tools the Fed employed in reaction to the Great Recession. With its return during the pandemic, QE seems to have become a more routine part of the Fed's crisis toolkit. But there is still debate among economists over how and how well it works. And when it comes to the reverse process of shrinking the Fed's balance sheet, typically referred to as quantitative tightening (QT), economists know even less.

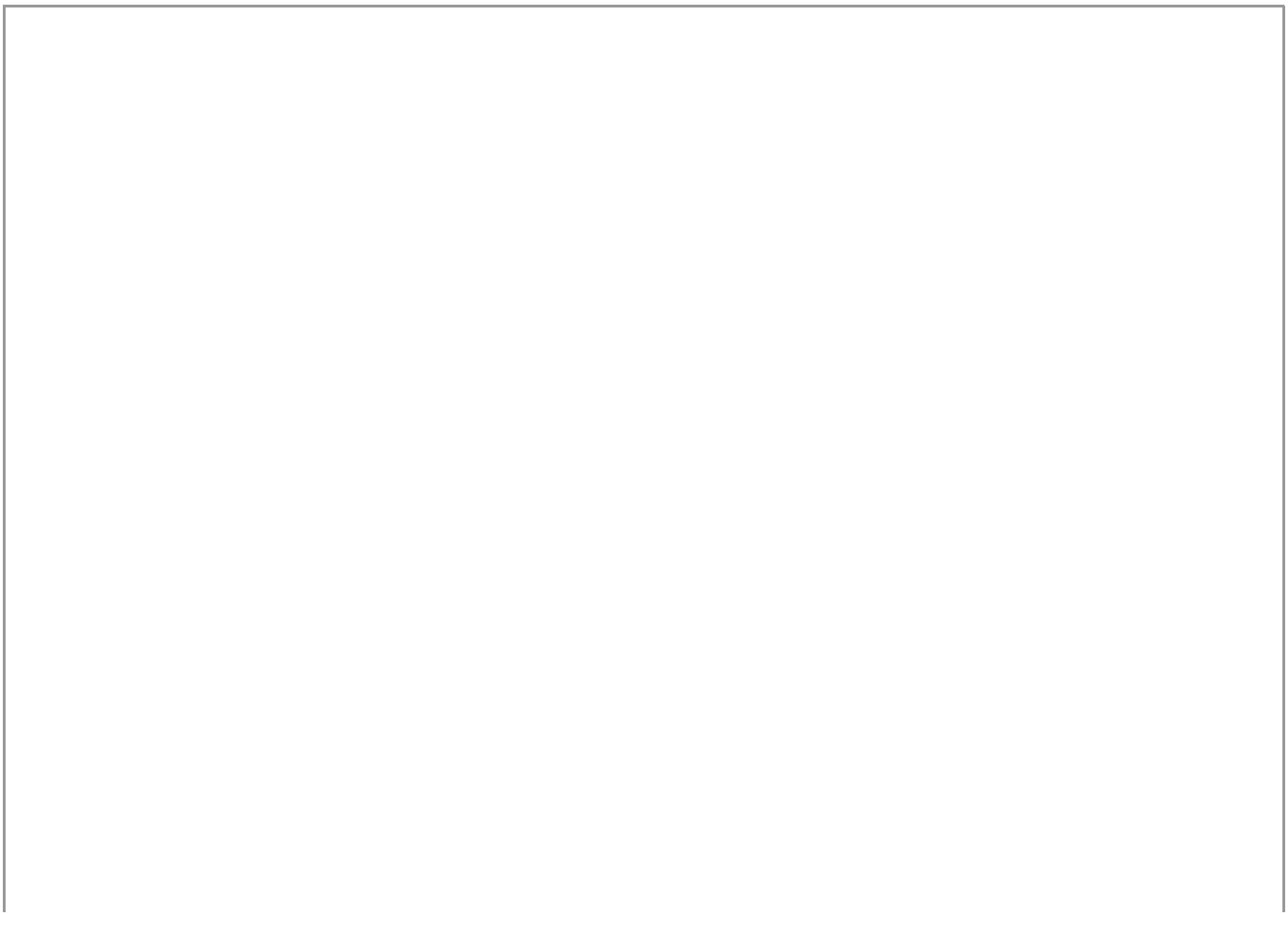
In response to inflation running well above its long-run target, the Fed began unwinding its accommodative monetary policy this year. This entailed ending QE in March and then beginning QT in June. When QE ended, the Fed reinvested any maturing securities to maintain the size of its balance sheet. With QT, the Fed stopped reinvesting up to $30 billion in maturing Treasuries and $17.5 billion in maturing MBS every month, passively shrinking its assets as those securities "roll off" without being replaced. Those caps are scheduled to rise to $60 billion and $35 billion, respectively, in September.

This process is similar to the one the Fed used when it last engaged in QT from 2017 to 2019, albeit at a faster pace. That brief prior period is the only other experience the central bank has had with shrinking its balance sheet, leaving little empirical evidence to draw on when it comes to calculating its effects. At a press conference on May 4 following the Fed's announcement that it would begin QT in June, Fed Chair Jerome Powell offered, "I would just stress how uncertain the effect is of shrinking the balance sheet."

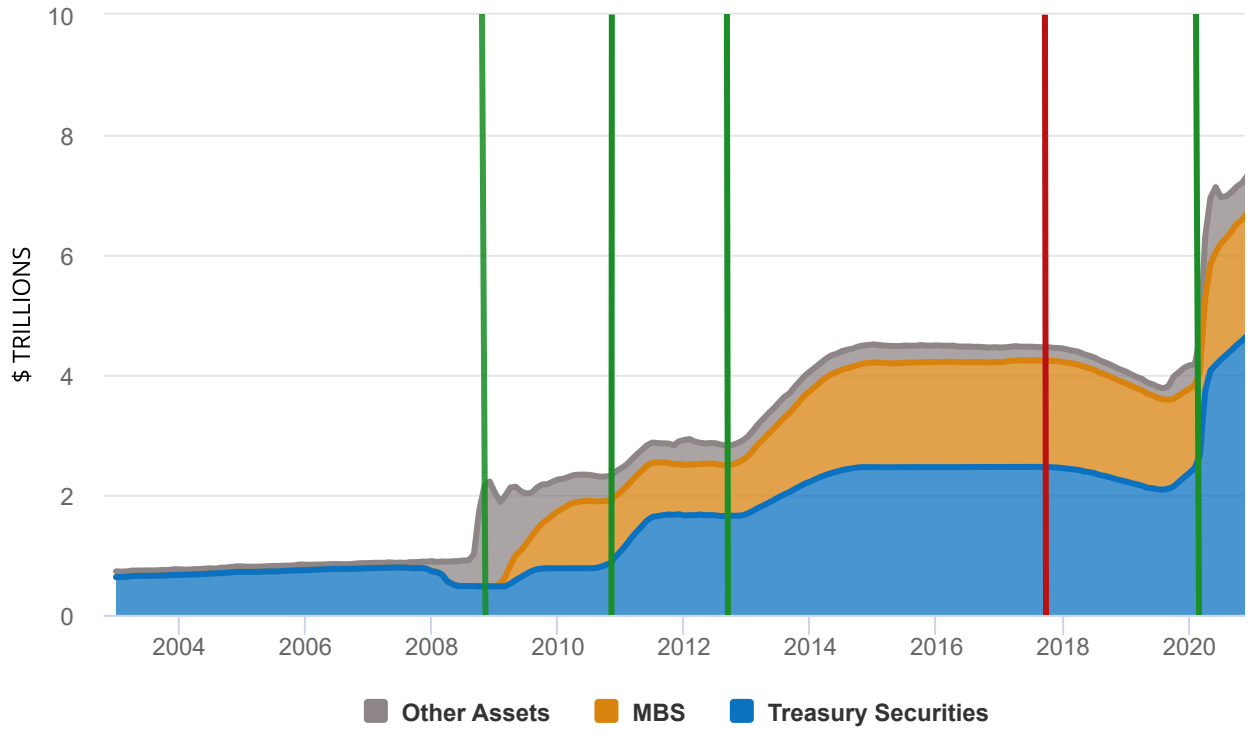
Given this uncertainty, what does the Fed hope to accomplish with QT, what does it want to avoid, and what do economists really know about using the central bank's balance sheet as a policy tool?

How Does QE Work?

As with any balance sheet, the Fed's consists of assets on one side and equal liabilities on the other. Before the Great Recession, the Fed's assets were mostly Treasuries, and its liabilities consisted largely of currency in circulation. The size of its balance sheet was also much smaller than it is today, hovering around $800 billion. Through a series of QE operations from 2008 to 2014, the Fed expanded its balance sheet by purchasing primarily long-term Treasuries and MBS issued by government-sponsored enterprises. (See chart below.) On the liabilities side, the Fed paid for these purchases mostly through the creation of reserves, which are cash balances that banks hold at the Fed and on which the Fed pays interest.



Evolution of the Fed's Assets



NOTE: Green lines denote the start of asset purchases through quantitative easing (QE), red lines denote the start of sheet reduction through quantitative tightening (QT).
SOURCE: Board of Governors of the Federal Reserve System

The Fed's decision to engage in QE during the Great Recession and the COVID-19 crisis stemmed from a desire to provide additional stimulus to the economy after its traditional tool reached its limit. Normally, the Fed provides accommodation by reducing short-term interest rates, which lowers the cost of borrowing and spurs economic activity. But when short-term rates fall near zero, the Fed can't drive them any lower. While some other central banks did experiment with slightly negative rates during the global financial crisis, there is still a limit to how low policymakers can push rates before firms and consumers would choose to switch to cash, which pays an interest rate of zero. (See "Subzero Interest," *Econ Focus*, First Quarter 2016.)

With short-term interest rates as low as they could go, the Fed turned its sights to long-term rates. By buying up long-term assets, the Fed could reduce their supply, increasing their price and lowering their yield (the price and interest rate of bonds are inversely related).

How would this help stimulate the economy? According to some economic models, it shouldn't. Through QE, the Fed primarily swaps one type of government liability (Treasuries) for another (reserves). If financial firms are indifferent about which type of security they

hold, then the swap shouldn't matter. This led former Fed Chair Ben Bernanke, who oversaw the Fed's initial adoption of QE, to quip, "The problem with QE is it works in practice, but it doesn't work in theory."

Bernanke was being a bit facetious. There are in fact multiple theories of how QE stimulates the economy, although economists disagree about their relative importance. One theory acknowledges that Treasuries and reserves may be imperfect substitutes, both because they have different maturities and because only banks that have accounts with the Fed can hold reserves. Certain financial firms may also strongly prefer to hold long-dated securities. Given the existence of these and other financial frictions, reducing long-term interest rates through QE should stimulate economic activity just as lowering short-term rates does.

QE also provides a signal about future Fed policy. This comes in two flavors, which Williams College professor Kenneth Kuttner described in a 2018 article in the *Journal of Economic Perspectives* as "Delphic" and "Odyssean." According to the Delphic story, QE signals the Fed's forecast that future economic conditions will be weak, which leads firms and individuals to expect the Fed to keep short-term rates lower for longer. Under the Odyssean version, QE reinforces the Fed's verbal commitment to keep short-term rates lower for longer by tying monetary policymakers to the mast, so to speak. Because the interest the Fed earns on the long-term securities it acquires through QE is largely fixed while the interest it pays on reserves changes with monetary policy, the Fed opens itself up to losses if it were to start raising interest on reserves before reducing the size of its balance sheet. To the extent that Fed policymakers are concerned about such losses, they would seek to unwind QE before raising short-term rates, making the Fed's commitment to keep rates lower for longer more credible.

Lastly, QE can have a positive effect by improving liquidity conditions in financial markets. If the assets the Fed purchases are less liquid than the reserves it exchanges for them, it can help restore healthy market functions and encourage greater bank lending. This effect is likely to be greatest at the height of a crisis, such as in September 2008 following the collapse of Lehman Brothers or in March 2020 at the onset of the pandemic, when financial markets are under the greatest stress.

What About QT?

As the comment from Bernanke suggests, the conventional wisdom among economists is that regardless of how it works, QE does have a positive effect on the economy. But just as in the debates over how QE operates, there are a range of estimates of how much difference it makes. Researchers have used economic models to estimate the effects of Fed asset purchases as well as event studies looking at the actual market reaction to each episode of QE. Each approach has pros and cons, and depending on the study, QE was either highly effective or it wasn't.

Still, there are at least multiple episodes of QE available for economists to study to try to tease out its effects. In contrast, the Fed has only attempted QT once before — from October 2017 to September 2019. This makes estimates even more uncertain, as Powell alluded to in his May press conference. A recent study by economists at the Fed Board of Governors estimated that reducing the balance sheet by around $2.5 trillion over several years would be roughly equivalent to raising the Fed's policy rate by half a percentage point, but the authors stressed that their estimate was "associated with considerable uncertainty."

It might be tempting to assume that the effects of QT would simply mirror those of QE, but there are some key differences. In the case of QE, the signaling channel likely plays an important role because the start of QE is usually somewhat of a surprise, albeit a welcome one. Financial crises happen suddenly, so when the Fed has stepped in with QE, it did so swiftly to reassure markets. When it comes to QT, the Fed has instead taken great pains to avoid surprises. It announced its plans for shrinking the balance sheet well in advance, and the QT process is happening passively following a fixed schedule. In 2017, Philadelphia Fed President Patrick Harker assured markets that QT would be like "watching paint dry." This cautious approach likely stems, at least in part, from the Fed's experience during the 2013 "taper tantrum," when markets reacted strongly to unanticipated comments by then-Chair Bernanke suggesting that the Fed might end QE soon.

Andrew Lee Smith of the Kansas City Fed and Victor Valcarcel of the University of Texas at Dallas compared the effects of QE and QT in a recent working paper. In support of the paint drying metaphor, they found that shrinking the balance sheet did not produce the same "large announcement effects" that accompanied QE. While the Fed is moving more quickly with QT this time, it still took steps to ensure there were no surprises. It presented its initial plans for shrinking its balance sheet in January, added full details of the roll-off schedule in May, and began implementing that plan in June.

"They want to set QT on a fixed course and not have it be the focus of people's attention, because they want people paying attention to the federal funds rate as the instrument of monetary policy," says William Nelson, executive vice president and chief economist of the Bank Policy Institute and former deputy director of the Division of Monetary Affairs at the Fed Board. "Of course, even though it's drying paint, that doesn't mean it's not imparting some restraint on the economy."

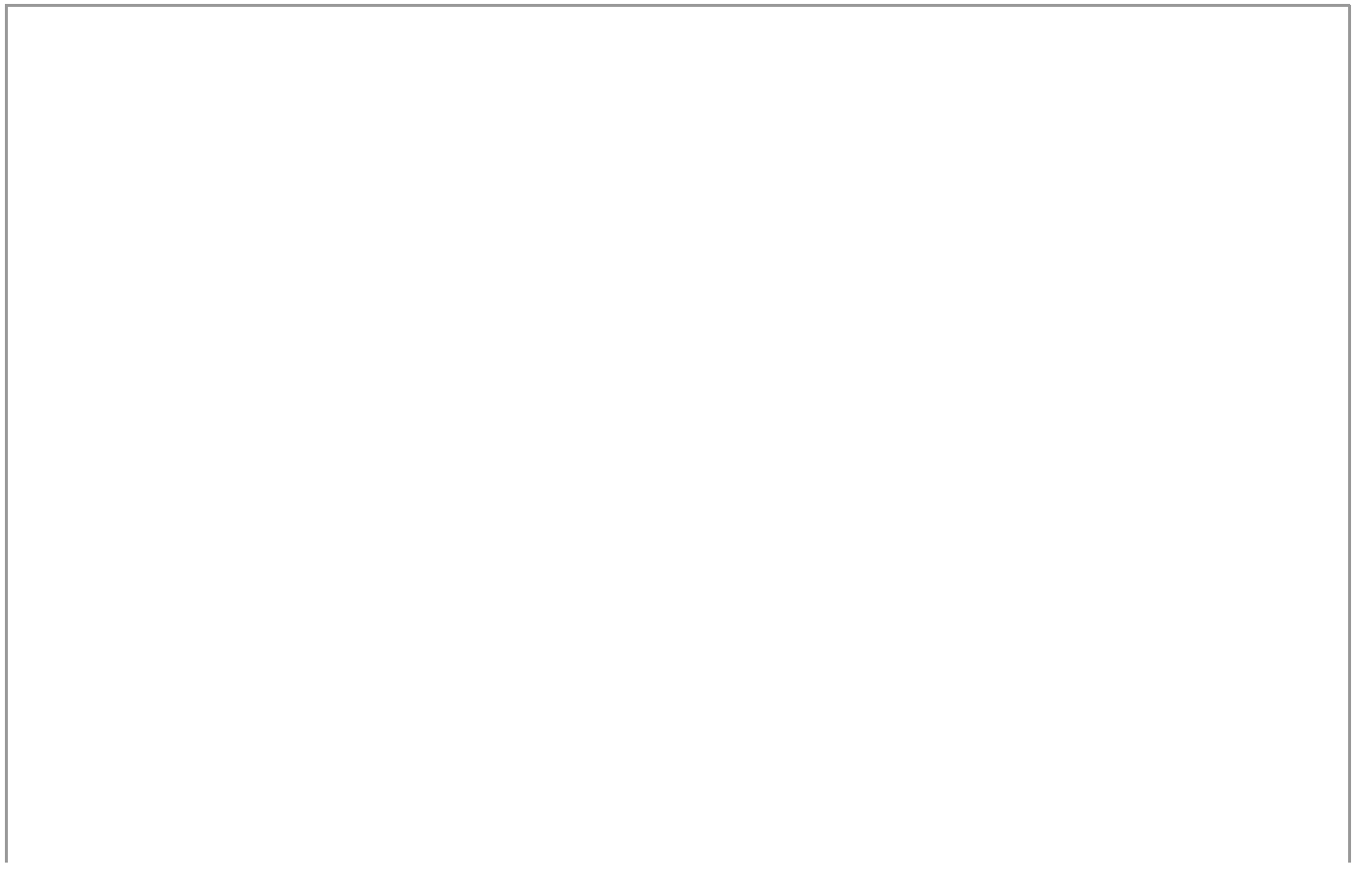
While the signaling effects of QT may be weaker, Smith and Valcarcel found that the liquidity effects were roughly double those experienced under QE. As the Fed allows maturing securities to fall off the asset side of its balance sheet, it shrinks reserves on the liability side by an equivalent amount. At the same time, because the Fed is no longer purchasing Treasuries and agency MBS, private markets need to absorb more of those assets. This can result in some volatility as investors adjust.

This tightening through the liquidity channel may not show up immediately. In a 2017 policy paper, Falk Bräuning of the Boston Fed estimated that the magnitude of the liquidity effect from QT depends on the total quantity of reserves in circulation. When the Fed first begins to shrink its balance sheet, reserves will still be well above what banks require. But as the total supply of reserves shrinks, each additional dollar of reserves drained will have a greater effect on interest rates.

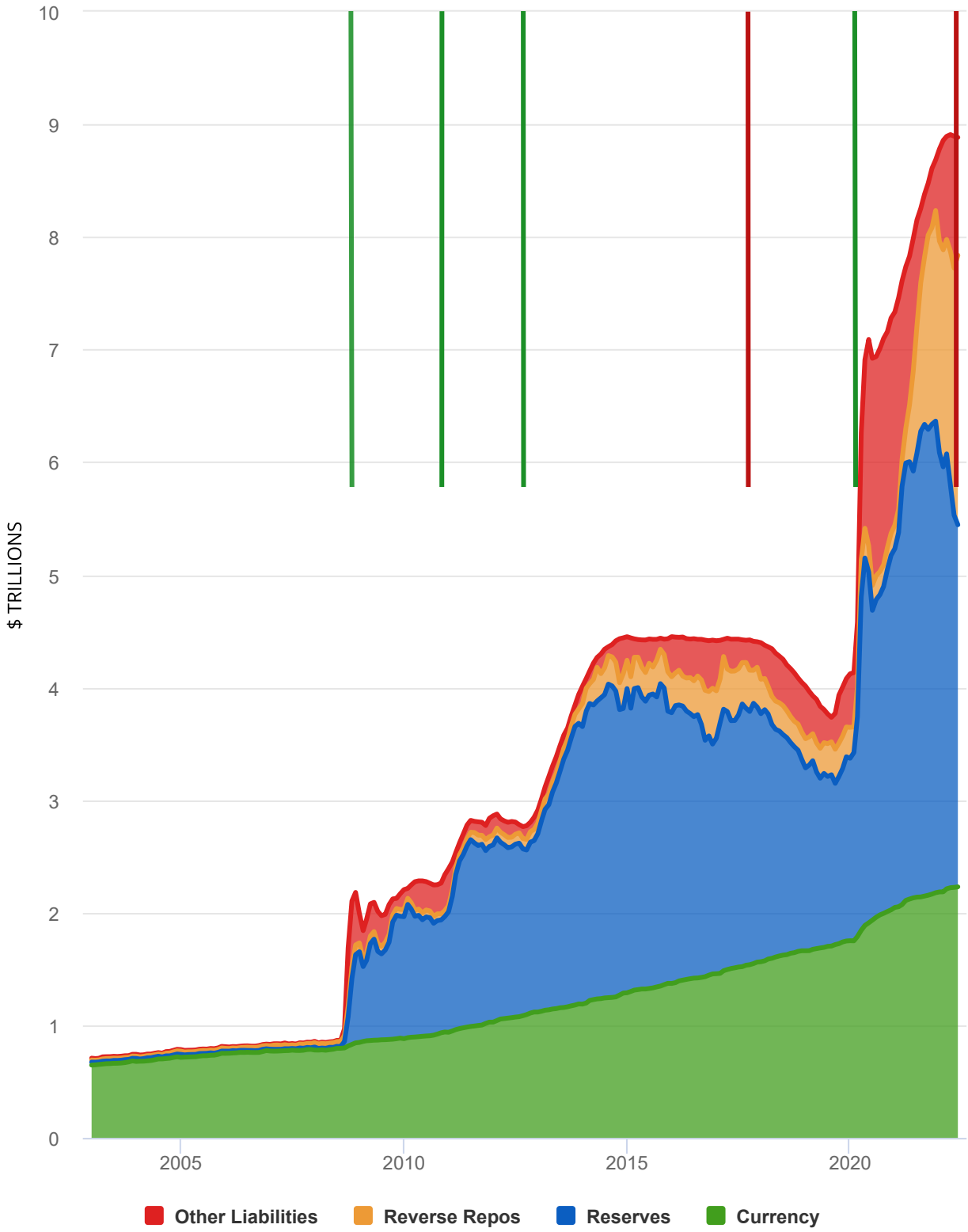
Why Shrink the Balance Sheet?

Given the uncertainties surrounding the effects of QT and the potential for market disruptions as the Fed tries to zero in on the right level of reserves, why shrink the balance sheet at all? Most policymakers and economists expect that QT will provide some additional monetary tightening, which should help the Fed achieve its goal of getting inflation back down to its 2 percent target. But in principle, the Fed could achieve such tightening through interest rate policy alone. Unlike in the case of lowering rates during a downturn, the Fed faces no limit on how high it can raise rates. At first glance, then, using balance sheet policy to tighten seems unnecessary.

But there are other rationales for engaging in QT besides monetary tightening. One motivation relates to the "Odyssean" signaling theory of how QE works. By purchasing longer-term assets, the Fed opens itself up to interest rate risk. When it raises the interest it pays on reserves as part of tightening monetary policy, the Fed risks having to pay out more on its liabilities than it earns on its assets because rates on its liabilities will be rising while rates on its assets remain largely fixed. (See chart below.)



Evolution of the Fed's Liabilities



NOTE: Green lines denote the start of asset purchases through quantitative easing (QE), red lines denote the start of balance sheet reduction through quantitative tightening (QT).

SOURCE: Board of Governors of the Federal Reserve System

"In the old days, the Fed operated with a balance sheet that was pretty small and its main liability was currency, which it pays no interest on at all," says William English, a professor of finance at Yale University and former director of the Division of Monetary Affairs and secretary to the Federal Open Market Committee at the Fed Board. "So, the Fed made money no matter what. Now there is more of a risk that if the Fed has to raise rates fast during a tightening cycle, it will end up having a loss."

As English and Donald Kohn of the Brookings Institution noted in a recent Brookings blog post, balance sheet losses don't affect the Fed in the same way they would a commercial bank. The Fed cannot default or go bankrupt because it can always create reserves to cover its losses. Most of the time, the Fed's earnings on its balance sheet are positive, and it remits any profits above its operating costs back to the Treasury. In the case of a loss, the Fed would halt its remittances to the Treasury until it had offset its losses with subsequent profits. As long as the Fed's future earnings remain positive, temporary losses pose no issue for its operations, though if the Fed were to suffer protracted and large enough losses, it could require fiscal support from the Treasury to continue implementing monetary policy. Even short of that worst-case scenario, English and Kohn note that temporary losses could still raise political scrutiny from Congress that the Fed might prefer to avoid.

Shrinking the balance sheet reduces the Fed's exposure to those kinds of losses. A 2019 *International Journal of Central Banking* article by economists from across the Federal Reserve System and Barclays estimated that reducing the amount of reserves on the Fed's balance sheet from $2.3 trillion (roughly the amount it held at the start of the first QT in 2017) to $1 trillion would reduce the chances of recording a quarterly loss from 30 percent to less than 5 percent.

Our Related Research

"Projecting the Evolution of the Fed's Balance Sheet," *Economic Brief* No. 22-15, April 2022

"Relative Price Changes Are Unlikely to Account for Recent High Inflation," *Economic Brief* No. 22-10, March 2022.

"The Fed's Evolving Involvement in the Repo Markets," *Economic Brief* No. 21-31, September 2021.

Another reason for shrinking the balance sheet has to do with the composition of the Fed's assets. The Fed has $2.7 trillion in MBS, but in its plan for reducing the balance sheet, released in January, it expressed a desire to hold primarily Treasuries in the long run. Buying non-Treasuries affects the allocation of credit to different sectors of the economy, and several policymakers and economists have argued such policy decisions should be made by Congress or the Treasury Department, not the Fed. Getting to a Treasuries-only

balance sheet on the Fed's current plan could be a long road, however. As mortgage rates rise, fewer homeowners will refinance their loans, slowing the rate at which MBS held by the Fed mature and roll off its balance sheet. In a May speech, Cleveland Fed President Loretta Mester noted that the Fed could speed up this process by actively selling some of its MBS, but that might also open the central bank up to greater losses.

Reloading for the Next Crisis

A final reason for engaging in QT is to free up capacity for a future QE. If the Fed's balance sheet were to continue to grow, it could, in theory, run out of Treasuries or other acceptable assets to purchase to conduct QE in the future.

Former Richmond Fed President J. Alfred Broaddus Jr. and policy advisor Marvin Goodfriend confronted this issue under very different circumstances in a 2001 Richmond Fed *Economic Quarterly* article. At that time, the federal government was enjoying a budget surplus, and Broaddus and Goodfriend were concerned that the Treasuries market could dry up if the United States were to pay down its debt. While that didn't come to pass (and indeed seems difficult to imagine today), the Fed could still face the same problem if its asset purchases were to outpace the supply of Treasuries. Additionally, an ever-increasing balance sheet would expose the Fed to even larger losses in a tightening cycle.

"The Fed would rather not have this ratchet effect where the balance sheet just keeps getting bigger, because at some point, you have a problem," says English. "I think they want to be clear that this is a counter-cyclical policy that they'll engage in to provide support when it's necessary, and they'll unwind when it's appropriate to do so."

READINGS

Cavallo, Michele, Marco Del Negro, W. Scott Frame, Jamie Grasing, Benjamin A. Malin, and Carlo Rosa. "Fiscal Implications of the Federal Reserve's Balance Sheet Normalization." *International Journal of Central Banking*, December 2019, vol. 15, no. 5, pp. 255-306.

English, William B., and Donald Kohn. "What if the Federal Reserve Books Losses Because of Its Quantitative Easing?" Brookings Institution "Up Front" blog, June 1, 2022.

Kuttner, Kenneth N. "Outside the Box: Unconventional Monetary Policy in the Great Recession and Beyond." *Journal of Economic Perspectives*, Fall 2018, vol. 32, no. 4, pp. 121-146.

Smith, A. Lee, and Victor J. Valcarcel. "The Financial Market Effects of Unwinding the Federal Reserve's Balance Sheet." Federal Reserve Bank of Kansas City Research Working Paper No. 20-23, revised January 2022.

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