Economic Brief

December 2012, EB12-12

A Citizen's Guide to Unconventional Monetary Policy

By Renee Haltom and Alexander L. Wolman

Historically, the Federal Reserve's primary monetary policy tool has been the federal funds rate. Since pushing that rate as low as it can effectively go in December 2008, the Fed has turned to alternative policy tools to stimulate economic growth and keep inflation near 2 percent. This *Economic Brief* provides a non-technical guide to how these unconventional policy tools are intended to work and discusses some of their risks.

Prior to 2008, the gist of the Federal Reserve's monetary policy could be conveyed with one sentence: Lower short-term interest rates to stimulate growth when the economy is weak, and raise them to prevent inflation when the economy is strong. Monetary policy became much more complicated in December 2008, when the Fed pushed its main policy rate, the target federal funds rate, as low as it can effectively go.[1] This unusual situation is called the "zero lower bound" (ZLB) on nominal interest rates.[2] Once the Fed confronted the ZLB, it turned to alternative tools to ease monetary policy further. These unconventional monetary policy tools fall into three general areas: increasing the size of the Fed's balance sheet; altering the composition of its balance sheet; and providing increasingly detailed guidance about the likely future path of policy.[3]

Before discussing the new tools further, it is important to note that the Fed's objectives have not changed. The Fed is bound by the congressionally established mandate to promote both maximum sustainable employment and price stability, together referred to as the "dual mandate."

Expanding the Balance Sheet

In normal times—that is, when the Fed is not facing the ZLB on nominal interest rates—the Fed loosens monetary policy by reducing the federal funds target rate and the primary credit rate (better known as the discount rate). These actions tend to translate into lower interest rates elsewhere in the economy. The announcement of a lower target rate is accompanied by a commitment to perform whatever open market asset purchases might be necessary to ensure that the actual federal funds rate falls along with the target rate. Asset purchases expand the Fed's balance sheet and inject funds into the banking system. Though today the ZLB means the central bank cannot push its policy interest rate lower, the Fed still can purchase assets in an attempt to influence broader market interest rates. Accordingly, the first unconventional monetary policy move of the past several years has been to make large-scale asset purchases (LSAPs), often called "quantitative easing" (QE).[4] This has occurred in three rounds:

- From November 2008 through March 2010, the Fed purchased $1.75 trillion in long-term Treasuries as well as debt issued by Fannie

Mae and Freddie Mac and fixed-rate mortgage-backed securities (MBS) guaranteed by those agencies. (This first round has been called QE1.)

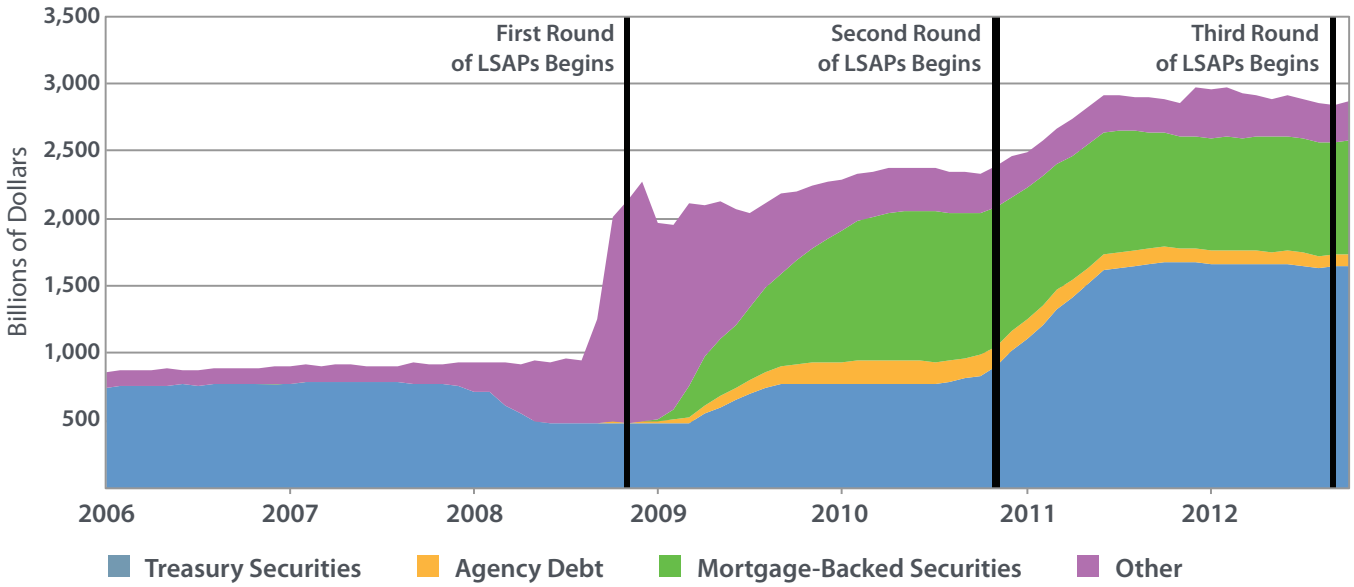
- From November 2010 through June 2011, the Fed purchased $600 billion in long-term Treasuries (QE2).

- And in September 2012, the Fed announced that it would purchase $40 billion in agency-backed MBS per month until economic conditions improved substantially (QE3).

These LSAPs have expanded the Fed's balance sheet significantly. (See Figure 1.) As noted, the purpose of LSAPs is to put downward pressure on overall market interest rates. LSAPs can lower market interest rates through two channels.[5] The first is the portfolio rebalance channel. Many investors are not indifferent between holding different types of long-term assets. For example, they may be restricted by regulations from holding certain assets, or they may have preferences for assets with certain risk characteristics. Because assets are not perfectly substitutable, and LSAPs change the relative supply of assets available to investors to purchase, LSAPs have the potential to change asset prices and interest rates. The second way LSAPs could lower market interest rates is by signaling that the Fed is likely to keep its policy rate low for a longer period than previously believed. The Fed's willingness to engage in LSAPs could have this signaling effect if they provide new information about the economic forecast or about how stimulative the Fed is willing to be. Additionally, exiting from the LSAP policy quickly would require significant asset sales that could disrupt markets. In contrast, a slow exit would be accomplished by simply waiting for the assets to mature and roll off the Fed's balance sheet. Therefore, if market participants expect the Fed to begin reducing the size of its balance sheet before raising rates, then larger LSAPs could signal that rates are likely to stay low for a longer time.

In fact, one danger posed by LSAPs is that they may exacerbate the risk associated with the Fed "getting behind the curve" in raising interest rates as the economy strengthens. LSAPs have significantly increased the amount of excess reserves in the banking system. In the five years prior to late 2008, excess reserves ranged between 1 percent and 20 percent of total reserves; today, 94 percent of reserves are excess reserves. Large excess reserves can lead to inflation if banks use those reserves to fund lending, thereby increasing the money supply. This has not occurred thus far, and the Fed has tools to prevent it. In particular, the Fed could raise the

Figure 1: Federal Reserve Assets



Note: Rapid growth of the "other" category prior to the first round of LSAPs was due to Fed actions to provide liquidity during the financial crisis, such as liquidity swaps with other central banks and loans to certain institutions and markets.

Source: Federal Reserve Board of Governors H.4.1 Release

interest rate it pays banks to hold reserves, which would discourage lending by reducing the opportunity cost of holding reserves. While the Fed always can raise interest rates, there is no guarantee that it will know when the appropriate time has come to do so. The presence of a large quantity of excess reserves may heighten the economy's sensitivity to policy mistakes because the reserves represent a ready source of funding for banks to expand their activities.[6]

Altering the Composition of the Balance Sheet

When the Fed purchases assets, whether through traditional monetary policy or through LSAPs, it must choose which assets to buy. Traditionally, the Fed has purchased primarily short-term Treasuries because they are highly liquid and safe.[7] In addition, purchasing Treasuries is a relatively neutral way to affect the financial system because Treasury purchases affect a broad array of other market interest rates, and therefore do not favor certain sectors over others. In the past several years, the Fed has deviated from this behavior in two key ways:

- The Fed purchased large quantities of agency-backed MBS in the amounts described above.

- The Fed replaced $667 billion in short-term Treasuries on its balance sheet with an equivalent amount in longer-term Treasures between September 2011 and the end of 2012. This action is the "maturity extension program" (MEP), but is often called "operation twist" for its intent to "twist" the yield curve.[8]

The direct result of these actions has been to alter the composition of the Fed's balance sheet.[9] Today less than 60 percent of the Fed's assets are Treasuries, compared to more than 90 percent prior to the financial crisis. In addition, the Fed has altered the average maturity of the Treasuries it holds. The Fed's purchases of MBS are intended to provide support to mortgage markets by lowering related interest rates. Through the MEP, the Fed intends to put downward pressure on interest rates on assets that are close substitutes for longer-term Treasuries in order to ease broader lending conditions and support the economic recovery.

One risk concerning these targeted balance sheet policies is that they may disrupt the efficient allocation of credit. If the Fed's acquisition of MBS is successful in raising their prices, then purchasing MBS would reduce interest rates on mortgage loans. This directs credit to borrowers in mortgage markets. Directing credit to mortgage markets may increase lending costs in other markets, favoring some borrowers over others. Some FOMC members, including Richmond Fed President Jeffrey Lacker and Philadelphia Fed President Charles Plosser, have argued that this would be a more appropriate role for fiscal policy, which is subject to political checks and balances.[10] Furthermore, after proving its willingness to conduct credit allocation, a central bank could experience political pressures to allocate credit in a specific way.

There are additional political risks associated with the Fed holding a large balance sheet composed of more risky assets. Reversing the monetary easing provided by LSAPs will involve some combination of selling those assets and raising the interest rate on excess reserves. Both of these actions will reduce the amount of money the Fed turns over to the Treasury at the end of each fiscal year.[11] An extreme but still possible outcome would involve the Fed's income falling so much that it would need to seek appropriations from Congress to cover its operating expenses. Such a scenario could jeopardize the Fed's operational independence from Congress.

Increasing Forward Guidance

Compared to its unprecedented balance sheet policies, the Fed's new practice of providing more information about future monetary policy might sound much less consequential, but greater "forward guidance" (FG) could have a significant effect on the economy. Forward guidance refers to statements the FOMC includes in its post-meeting press releases about what the committee is likely to do or not do in the future. FOMC statements have included FG since 1999, but the statements became much more detailed during the recent financial crisis:

- From March 2009 through June 2011, the statements indicated that economic conditions "are likely to warrant exceptionally low levels of the federal funds rate for an extended period."

- From August 2011 through December 2011, the statements provided an anticipated calendar date of future policy changes by stating that conditions "are likely to warrant exceptionally low levels for the federal funds rate at least through mid-2013." The calendar date was extended to late 2014, starting in 2012, and extended to mid-2015 in September 2012.

- In its September 2012 and October 2012 statements, the FOMC stated that rates are likely to stay low "for a considerable time after the economic recovery strengthens."

FG is intended to help markets form accurate expectations about the likely course of monetary policy. In fact, because markets are good at anticipating the Fed's policy changes, FG often moves markets more than actual changes in the federal funds rate.[12]

FG might be an especially useful monetary policy tool at the ZLB precisely because it does not rely on the ability to change current policy rates. Federal Reserve Chairman Ben Bernanke has explained that the Fed's use of FG since March 2009—four months after hitting the ZLB—has been intended to lower expected short-term rates, therefore lowering long-term rates, which are a function of expected short-term rates. That would stimulate economic activity by lowering interest rates on a variety of loan types.[13]

The most obvious risk associated with FG, as with any form of communication, is that the Fed's statements could be misunderstood. Many observers (including several FOMC members) have argued that this risk exists when the FOMC communicates about future policy in terms of a calendar date. The calendar date could refer to the date when the FOMC thinks its policy rule will warrant a policy change given the economic forecast. Alternatively, the date could refer to a point after which its policy rule and the forecast suggest policy should change, such that the Fed is conveying that it will keep policy easier than future conditions warrant.[14] The latter is a strategy that theoretical studies have shown might be useful for economies that have stagnated at the ZLB. For example, Gauti Eggertsson and Michael Woodford, at the New York Fed and Columbia University, respectively, show in a 2003 paper that at the ZLB, it is optimal for the central bank to raise inflation expectations, which it can accomplish by credibly committing to making monetary policy "too easy" in the future.[15] This commitment lowers real interest rates (nominal rates adjusted for inflation), which makes spending today more attractive relative to spending tomorrow.[16]

While the calendar date might give markets a concrete forecast for short-term interest rates given current economic data, it leaves room for interpretation over what policy rule the central bank is following in choosing that date. Therefore, it does not help financial market participants understand how policy might change if economic conditions change, nor how policy is likely to behave *after* the calendar date.

In the Eggertsson and Woodford model, the commitment to making monetary policy "too easy" would only stimulate economic activity if the commitment is viewed by the public as highly credible. That is, markets must believe that the central bank will, in fact, hold rates "too low" in the future simply because it promised to in the past, despite the fact that at that point, it would wish to raise rates to avoid inflation. Using a calendar date in FG rather than directly stating that it is following the "too easy" strategy could signal that there is internal disagreement at the central bank over whether the "too easy" strategy is desirable. If policymakers agree on the policy, it would leave less room for interpretation to state the policy rule directly and allow private agents to form expectations about calendar dates based on incoming data. If, instead, there is no internal agreement about the strategy of committing to "too easy" policy, the calendar date may be the only thing on which it is possible for policymakers to agree, based on their respective policy rules.[17]

In September and October of 2012, the FOMC statement said that rates are not likely to rise until "a considerable time *after* the economic recovery strengthens" (italics added). This language looks more like the type of overt commitment to "too easy" policy suggested by Eggertsson and Woodford, and thus might imply to markets that the Fed is willing to tolerate

above-target inflation. Raising inflation expectations is, in their model, the point of the policy, but in reality there is a risk that longer-term inflation expectations might become unanchored. Mitigating that risk requires convincing the public that any deviation of inflation from its target will be strictly temporary—a one-time byproduct of the Fed's efforts to jolt the economy out of economic weakness at the ZLB. Conveying this credibly and without misinterpretation could be difficult.

A final and quite different risk is that FG could contribute to a steady state in which inflation is too low. In the long run, nominal interest rates and inflation move together. This is the "Fisher effect," named after the late American economist Irving Fisher. If a central bank commits to low interest rates for a very long period of time, it is possible that expectations would settle on a long-run deflationary equilibrium. This possibility was raised in a 2010 speech by Minneapolis Fed President Narayana Kocherlakota, although he emphasized that he thought it highly unlikely to unfold in practice.[18] We do not have experience with long periods of forward guidance. However, Japan's experience of essentially zero nominal rates and intermittent deflation—a situation that has persisted for more than a decade—provides good reason to consider all the possible implications of extended forward guidance.

FG is likely to be a permanent addition to central bankers' toolkits because of the value of accurate private sector forecasts. The way FG has been used in the past five years—tying future policy to the severity of present conditions with an uncertain degree of commitment to following through—is inherently tricky. It poses both upside and downside risks to inflation, revealing how little certainty there is about the use of FG at the ZLB, and thus why it should be approached carefully.

Similar cautions could be extended to the other unconventional monetary policy tools employed by the Fed and other central banks in the past several years. Historically, facing the ZLB has been an extremely rare event, and as a result, many of these policies have been tested only in theory. It is too soon for textbooks to be rewritten with the full scope of the effectiveness and risks of unconventional monetary policy at the ZLB, but the recent experience will undoubtedly provide useful insight. ■

Renee Haltom is a writer and Alexander L. Wolman is an economist and vice president in the Research Department of the Federal Reserve Bank of Richmond.

Endnotes

1 In December 2008, a range was established for the target federal funds rate of 0 to 0.25 percent.

2 For an overview of why zero might be the lower bound on interest rates, see Todd Keister, "Why Is There a Zero Lower Bound on Interest Rates?" Federal Reserve Bank of New York Liberty Street Blog, November 16, 2011.

3 The unconventional monetary policy tools described in this *Economic Brief* are not the Fed's only new policy tools. The Fed also has engaged in lending to a variety of markets and institutions during the worst days of the financial crisis. These moves were done primarily to provide liquidity to those markets, rather than to provide monetary easing, and so are not discussed here. Additionally, in October 2008, the Fed started paying banks interest on their excess reserves. Because interest on reserves was not adopted to provide monetary easing, it also is not discussed here.

4 Referring to LSAPs as "quantitative easing" is a bit of a misnomer because the word "quantitative" focuses undue attention on increasing reserve balances in the banking system. LSAPs, in contrast, are intended to lower market interest rates.

5 The two channels are discussed in detail in a previous *Economic Brief*. See Renee Haltom and Juan Carlos Hatchondo, "How Might the Fed's Large-Scale Asset Purchases Lower Long-Term Interest Rates?" Federal Reserve Bank of Richmond *Economic Brief*, no. 11-01, January 2011.

6 For an extended discussion of this risk, see Huberto M. Ennis and Alexander L. Wolman, "Excess Reserves and the New Challenges for Monetary Policy," Federal Reserve Bank of Richmond *Economic Brief*, no. 10-03, March 2010; and, by the same authors, "Large Excess Reserves in the U.S.: A View from the Cross-Section of Banks," Federal Reserve Bank of Richmond Working Paper No. 12-05, August 2012.

7 The Federal Reserve Act prevents the Fed from purchasing many types of private assets.

8 Operation twist was the name of a 1961 program with a similar objective.

9 Due to the liquidity policy described in footnote three, the composition of the Fed's balance sheet first began to change in the second half of 2007, which was prior to the LSAPs and MEP.

10 See Jeffrey Lacker, "Perspectives on Monetary and Credit Policy," Speech to the Shadow Open Market Committee

Symposium, New York, N.Y., November 20, 2012; and Charles I. Plosser, "Fiscal Policy and Monetary Policy: Restoring the Boundaries," Speech to the U.S. Monetary Policy Forum at the University of Chicago Booth School of Business, New York, N.Y., February 24, 2012.

[11] The discussion here primarily concerns the Fed's balance sheet, as opposed to the consolidated U.S. government balance sheet. The implications of selling assets in a falling market for the consolidated balance sheet differ somewhat depending on whether the assets are government liabilities (i.e. Treasuries) or government-guaranteed MBS.

[12] See, for example, the evidence presented by Refet Gurkaynak, Brian Sack, and Eric Swanson in "Do Actions Speak Louder than Words? The Response of Asset Prices to Monetary Policy Actions and Statements," *International Journal of Central Banking*, vol. 1, no. 1, 2005, pp. 55–93.

[13] Ben S. Bernanke, "Monetary Policy since the Onset of the Crisis," Speech at the Federal Reserve Bank of Kansas City Economic Symposium, Jackson Hole, Wyo., August 31, 2012.

[14] The question of which message markets have received is investigated by Charles L. Evans, Jeffrey R. Campbell, Jonas D.M. Fisher, and Alejandro Justiniano in "Macroeconomic Effects of FOMC Forward Guidance," Brookings Institution, Spring Panel on Economic Activity, paper, March 22, 2012.

[15] See Gauti Eggertsson and Michael Woodford, "The Zero Bound on Interest Rates and Optimal Monetary Policy," *Brookings Papers on Economic Activity*, Spring 2003, pp. 139–211.

[16] For related work, see Iván Werning, "Managing a Liquidity Trap: Monetary and Fiscal Policy," National Bureau of Economic Research Working Paper No. 17344, August 2011.

[17] In the past year, lack of unanimity has been more than perception. Richmond Fed President Jeffrey Lacker has dissented over the use of calendar dates each time they have been used in 2012, in addition to dissenting on other aspects of policy.

[18] See Narayana Kocherlakota, "Inside the FOMC," Speech in Marquette, Mich., August 17, 2010.