

Fed Asset Buying and Private Borrowing Rates

BY MICHAEL D. BAUER

Past rounds of large-scale asset purchases by the Federal Reserve have lowered yields not only on the targeted securities, but also on various private borrowing rates. In particular, yields on corporate bonds and primary mortgage rates decreased in response to Fed asset purchase announcements. Notably, however, the link between rates on mortgage-backed securities and actual mortgage rates has weakened in the wake of the financial crisis.

With the federal funds rate, the traditional policy tool of the Federal Reserve, effectively reaching zero in late 2008, policymakers have turned to unconventional policy tools to further ease the stance of monetary policy (Williams 2011). These tools are aimed at lowering longer-term interest rates to stimulate economic activity and reduce unemployment. They can be grouped into two categories: communication and balance sheet policies. The Federal Open Market Committee (FOMC) has taken new communication initiatives by providing forward guidance about future policy. In August 2011, it started to explicitly lay out its expectations for the future path of the federal funds rate. The Fed's unconventional balance sheet policies began in 2009 with a program of large-scale asset purchases (LSAPs) of Treasury and mortgage-backed securities, followed by further purchase programs. These purchases have been designed to put downward pressure on longer-term interest rates.

Unconventional monetary policy actions can only be successful in stimulating the economy if they lower the interest rates that matter most for businesses and households, that is, the private borrowing rates that determine the cost of funds for the private sector. This *Economic Letter* reviews the Fed's balance sheet programs, providing evidence about their impact on private borrowing rates, such as corporate bond yields and mortgage rates. To help understand the financial-market effects of these programs, the *Letter* examines the channels through which they likely have affected longer-term interest rates. It also looks at mortgage spreads, which capture the difference between the return to investors on mortgage bonds and mortgage costs to homeowners, focusing on factors that may limit pass-through to primary mortgage rates.

Three rounds of asset purchases

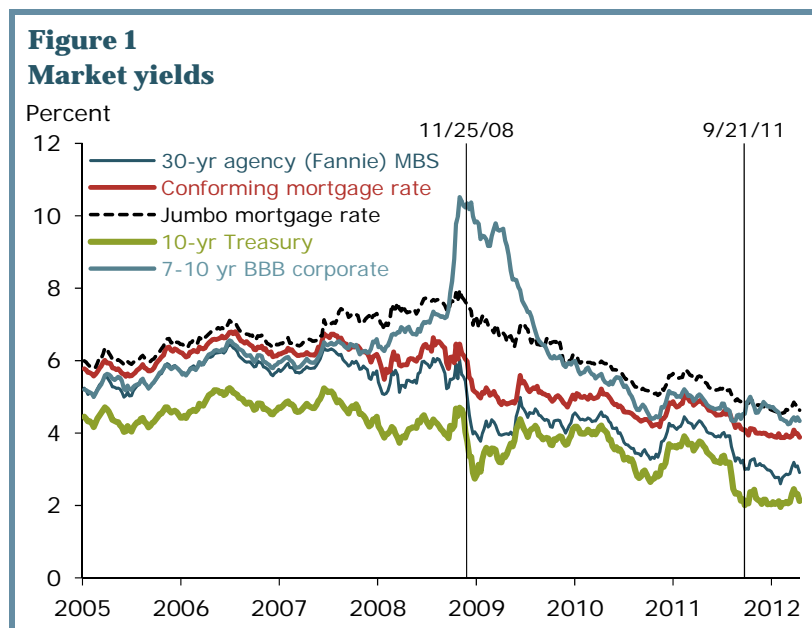
The first round of LSAPs, often referred to as QE1 for quantitative easing, involved total purchases of \$1.75 trillion in Treasury securities, mortgage-backed securities (MBS), and federal agency debt. The program was first announced on November 25, 2008. It represented a milestone in U.S. monetary policy, since it was the first time the Fed expanded its balance sheet to stimulate the economy. In that initial announcement, the Fed indicated it would purchase up to \$600 billion in agency MBS and agency debt. Subsequent announcements occurred in Chairman Bernanke's speech on December 1 and in FOMC statements on December 16 and January 28, 2009. On March 18, the Fed announced plans to purchase substantially more agency MBS and agency debt, plus \$300 billion of longer-term Treasury securities.

The Fed signaled a second purchase program, QE2, involving \$600 billion of Treasury securities, mainly in announcements between August and November 2010. Krishnamurthy and Vissing-Jorgensen (2011) identify the key QE2 announcement dates, excluding Chairman Bernanke's speech on August 27 because interest rates increased strongly that day due to other news. The same dates are used here. Importantly, only Treasury securities were included in this program.

On September 21, 2011, the FOMC communicated its intent to purchase an additional \$400 billion in longer-term Treasury securities financed by the sale of short-term debt. The Committee also announced that the Fed would use proceeds from principal repayment of agency MBS and agency debt to purchase new agency MBS. These activities are known as the Maturity Extension Program (MEP), or "Operation Twist."

Since the start of the LSAP programs, longer-term interest rates have fallen substantially. Figure 1 displays several long-term interest rates from 2005 to 2012: the ten-year Treasury yield; the 30-year

Fannie Mae MBS yield; the primary conforming mortgage rate; the nonconforming, or jumbo, mortgage rate; and a corporate bond yield index compiled by Merrill Lynch that captures the average yield on investment-grade securities with seven-to-ten years maturity remaining. Since the first LSAP announcement in November 2008, not only Treasury yields, but also MBS yields and private borrowing rates decreased substantially. Corporate bond yields fell by more than the ten-year Treasury yield. Primary mortgage rates fell significantly, though by much less than MBS yields.



Effects on market interest rates

Of course, other factors besides monetary policy actions affected interest rates over the period studied here. To quantify the effects of LSAPs on interest rates, one possible approach is to focus on rate changes on days when the Fed made key announcements about these programs, since markets usually react immediately when the Fed signals future purchases (see Bauer and Rudebusch 2011 and Gagnon et al. 2011).

This event study approach is not perfect. One shortcoming is that it misses effects that occur on days other than those when key announcements are made. Also, other events may occur on announcement days that affect longer-term interest rates. Nevertheless, the event study provides a reasonable first approximation and is widely used in the economic literature. Cumulative interest rate changes on key announcement days are taken as estimates of the financial market effects of a specific purchase program. Table 1 shows these estimates for three key interest rates: the ten-year Treasury yield; the 30-year

Fannie Mae MBS yield; and an investment-grade corporate bond yield index. Primary mortgage rates are excluded here because they are survey-based and respond more slowly to news.

QE1 had very pronounced effects on interest rates. The key announcements led to decreases of close to one percentage point. The announcements not only lowered yields on targeted Treasury securities and MBS, but also on corporate bonds. Gagnon et al. (2011) and Krishnamurthy and Vissing-Jorgensen (2011) documented similar effects on other MBS and

corporate bond yields, confirming that the QE1 effects were large and widespread. Why then was the impact of QE1 so large and why did it extend to securities beyond those purchased by the Fed?

Central bank LSAPs potentially may affect interest rates through at least three channels. Notably, all three channels can broadly affect longer-term interest rates, extending beyond those securities that the central bank announces it will purchase:

- A *portfolio balance channel*, because the supply of long-maturity bonds available to private investors is reduced. The reduced supply of longer-term securities targeted by the Fed lowers the amount of interest rate risk in investor portfolios. That in turn decreases the risk premium that they require to hold both the targeted securities and other assets of similar duration. Longer-term interest rates are lowered across the board as a result. Gagnon et al (2011) emphasize this channel for QE1.
- A *signaling channel*, which arises when the Fed's announcements are interpreted as signals of its intent to hold down short-term interest rates further into the future. Bauer and Rudebusch (2011) argue that this channel played an important role for QE1.
- A *market functioning channel*, because QE1 provided relief when conditions in financial markets were dire, liquidity very low, and panic widespread. The Fed's intervention calmed investor fears. Thus, the intervention substantially supported a range of asset prices, including MBS and corporate bonds, lowering their yields.

The two other programs, QE2 and MEP, also affected yields of securities that were not targeted for Fed purchases. QE2 had particularly wide effects, although it only targeted Treasuries. The program lowered yields on Treasury securities, MBS, and corporate bonds by similar magnitudes. Generally though, QE2 and MEP affected interest rates much less than QE1 did. One reason is that bond market functioning had largely returned to normal. In addition, expectations of future short-term interest rates were already very low when these programs were announced, leaving little room for further signaling effects. Finally, QE2 and MEP were smaller than QE1.

As noted, the LSAP programs generally have had broad effects on market interest rates, spilling over from the markets in which the Fed intervened to other fixed-income markets, such as corporate bonds.

Table 1

Effects of past LSAPs on interest rates

	10-yr Treasury yield	BBB corp. yield	30-yr MBS yield
QE1	-1.00	-0.89	-0.93
QE2	-0.14	-0.13	-0.14
MEP	-0.08	-0.03	-0.25

Notes: Cumulative change of key interest rates in percentage points over the announcement days of the three past LSAP programs.

QE1: 11/25/08, 12/01/08, 12/16/08, 01/28/09, 03/18/09.

QE2: 08/10/10, 09/21/10, 11/03/10.

MEP: 09/21/11.

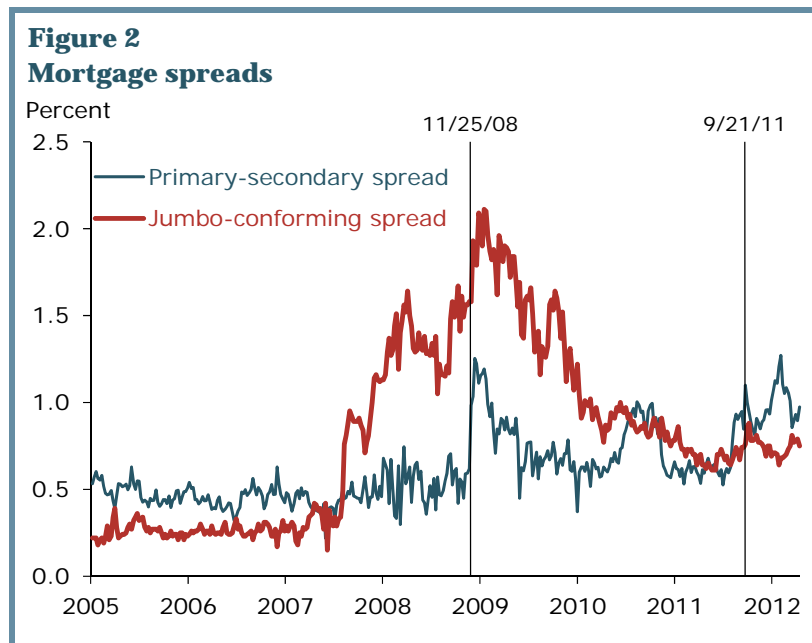
In this regard, the programs have worked similarly to conventional monetary policy, which also uses interest rate changes to stimulate or slow the economy.

Primary mortgage rates

One important way LSAPS may stimulate the economy is by pushing down residential mortgage interest rates. Lower mortgage rates encourage home purchases and mortgage refinancing (see Tarullo 2011). When mortgage rates are lower, payments are lower and house prices tend to rise. Homeowners are better off and may spend more. As we have seen, LSAPs have lowered MBS yields, which are secondary mortgage rates that reflect the returns to investors who hold these securities. But to gauge effects on homeowners, we need to look at primary mortgage rates.

The conforming mortgage rate is the average rate on mortgages that meet Fannie Mae and Freddie Mac requirements for securitization. The difference between the conforming mortgage rate and the yield on agency MBS is called the primary-secondary spread. Figure 2 shows that this spread has been more volatile since the onset of the financial crisis. Moreover, the spread has increased substantially since LSAPs were initiated and remains elevated. Primary conforming rates have not decreased as much as MBS over this period. In particular, conforming rates did not respond as strongly to LSAP announcements in November 2008 and September 2011.

The jumbo mortgage rate is the average rate on nonconforming mortgages, that is, those that are too large to qualify for purchase by Fannie Mae and Freddie Mac. The jumbo-conforming spread is the average premium that homeowners pay for a jumbo mortgage over a conforming mortgage. It has increased dramatically starting in 2007 and still is about three times larger than normal. This indicates that LSAP effects on jumbo mortgage rates are even more muted than those on primary mortgage rates.



Higher spreads now than before the crisis indicate more limited pass-through from secondary to primary mortgage rates. This limited pass-through probably reflects structural changes in the mortgage origination business. Importantly, mortgage origination capacity has contracted in the wake of the financial crisis because of failures, reallocation of resources to other activities such as loss mitigation and foreclosures, and longer origination timelines. Thus, industry consolidation may have reduced competitive pressures among mortgage originators. As a result, margins and pricing power have increased. Originators are not under as great pressure to pass on decreases in secondary rates to homeowners. This suggests that the weaker link between MBS yields and primary mortgages may persist for some time.

Conclusion

The Fed's recent balance sheet programs, known as large-scale asset purchases, have had widespread effects on private borrowing rates. These effects have come through at least three channels: portfolio balance, signaling, and market functioning. Reductions in private borrowing rates may have been larger for the first round of LSAPs because the signaling and market functioning channels played a very important role. In subsequent LSAP rounds, potential signaling and market functioning effects have been more limited. In addition, more limited pass-through of lower rates from secondary to primary mortgages appears to reflect changes in the characteristics of today's mortgage origination business.

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References

- Bauer, Michael, and Glenn Rudebusch. 2011. "The Signaling Channel for Federal Reserve Bond Purchases." FRBSF Working Paper 2011-21. <http://www.frbsf.org/publications/economics/papers/2011/wp11-21bk.pdf>
- Gagnon, Joseph, Matthew Raskin, Julie Remache, and Brian Sack. 2011. "The Financial Market Effects of the Federal Reserve's Large-Scale Asset Purchases." *International Journal of Central Banking* 7(1, March), pp. 3–43. <http://www.ijcb.org/journal/ijcb11q1a1.htm>
- Krishnamurthy, Arvind, and Annette Vissing-Jorgensen. 2011. "The Effects of Quantitative Easing on Interest Rates: Channels and Implications for Policy." *Brookings Papers on Economic Activity*, Fall.
- Tarullo, Daniel K. 2011. "Unemployment, the Labor Market, and the Economy." Speech at the World Leaders Forum, Columbia University, New York, October 20. <http://www.federalreserve.gov/newsevents/speech/tarullo2011020a.htm>
- Williams, John C. 2011. "Unconventional Monetary Policy: Lessons from the Past Three Years." *FRBSF Economic Letter* 2011-31 (October 3). <http://www.frbsf.org/publications/economics/letter/2011/el2011-31.html>

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