



## The Effect of the Fed's Purchase of Long-Term Treasuries on the Yield Curve

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After its March 18 meeting, the Federal Open Market Committee (FOMC) stated that it had decided to purchase “up to \$300 billion of longer-term Treasury securities over the next six months.” This decision follows a speech by Chairman Bernanke on December 1, 2008, indicating that “the Fed could purchase longer-term Treasury or agency securities on the open market in substantial quantities. This approach might influence the yields on these securities, thus helping to spur aggregate demand.”<sup>1</sup>

It is commonly believed that the FOMC affects longer-term rates by setting a target for the overnight federal funds rate. It is also commonly believed that longer-term rates are determined by the market's expectation for short-term rates, in accordance with the expectations hypothesis of the term structure of interest rates. Under the expectations hypothesis, long-term rates are equal to the market's expectation of the short-term rate over the term of the long-term asset plus a risk premium. Hence, if the FOMC reduces its target for the funds rate and the market expects the FOMC to keep the target low, long-term rates should decline accordingly. With the funds rate target near zero, it is essentially impossible for the FOMC to reduce long-term rates by reducing its funds rate target further.

Chairman Bernanke seems to suggest that the purchase of a large quantity of longer-term government securities might reduce longer-term rates. With short-term rates already near zero, this would cause the yield curve to flatten, as long-term rates decline relative to short-term rates. However, the idea that the Fed can influence long-term interest rates by intervening directly in the longer end of the market is inconsistent with the commonly held view—that is, the expectations hypothesis. This hypothesis assumes that there is a very high degree of substitutability (essentially perfect) among Treasuries of various maturities. Under perfect substitutability, the reduction in long-term rates (with unchanged risk premiums) would cause investors to purchase the lower-yielding short-term assets and sell the now higher-yielding long-term assets. This arbitrage activity

could cause longer-term rates to rise and short-term rates to fall. This process would continue until the yield curve returned to its previous structure. The only possible effect of the increased purchase of long-term securities would be on the position of the yield curve: It could shift down if the purchase of long-term Treasuries sufficiently increased the supply of credit relative to demand. Under the expectations hypothesis, the slope of the yield curve is determined by risk premiums that should not be affected by simply purchasing assets at one end of the term structure relative to the other.

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Either the Fed affects long-term rates because of the expectations hypothesis, which means that it cannot permanently affect the shape of the yield curve by purchasing securities in one end of the market, or the short and long ends of the market are sufficiently segmented so that the Fed can permanently affect the slope of the yield curve by intervening in one end of the term structure relative to the other. However, in the latter case, the Fed's ability to influence long-term rates by controlling the short-term rate is attenuated by the zero lower bound.

The observed effect of the FOMC's decision to purchase longer-term government securities on the term structure is consistent with the belief that there is a high degree of substitutability of assets across the term structure. An announcement effect occurred when the FOMC made known its intention to purchase up to \$300 billion in longer-term government securities: Longer-term Treasury yields immediately declined by about 50 basis points. In contrast, shorter-term rates were unaffected by the announcement. The announcement effect resulted in a significant flattening

of the yield curve. Figure 1 shows the coupon yield curve the day before and the day of the announcement: There was very little effect on rates for Treasuries with maturities of less than a year, but the announcement effect gets progressively larger as the term to maturity lengthens—until about 5 years. (For maturities of 5 years or longer the effect is about 50 basis points.) A similar announcement effect is reflected in the wide range of longer-term corporate bond yields.

The FOMC made good on its announcement and the Fed increased its holdings of longer-term Treasury securities by about \$59 billion between March 19 and April 29, 2009. During this period Treasury yields responded to Fed actions as well as other changes in the economic and financial environment. Figure 2 compares the yield curves on March 17 and April 29. The marked flattening of the yield curve associated with the FOMC’s announcement has vanished. Instead, the yield curve has become more steeply sloped, as longer-term Treasury yields have risen while short-term rates have declined.

There have been many events that markets have responded to since March 18. Hence, it is difficult if not impossible to attribute the steepening of the yield curve to a particular factor. The Fed has increased its purchases of longer-term Treasuries and expanded its balance sheet by about \$150 billion since March 18. Whatever their immediate effect, these actions appear to have had no permanent effect on the yield curve. ■

Figure 1

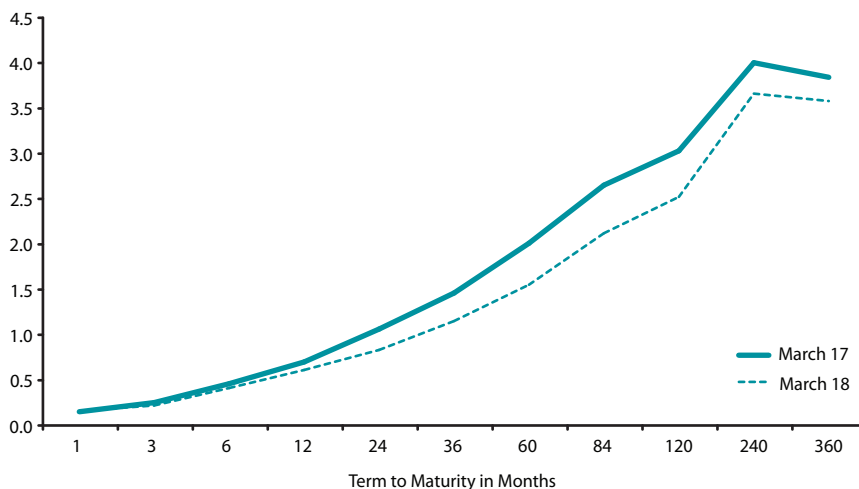
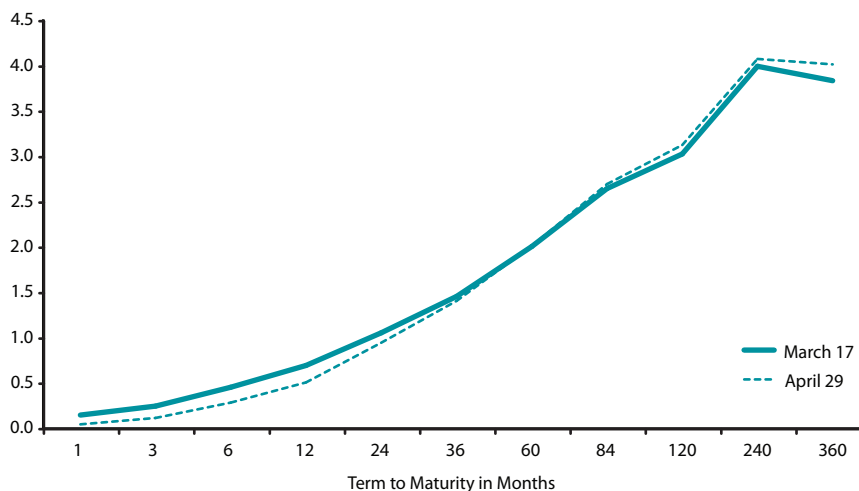


Figure 2



<sup>1</sup> Bernanke, Ben S. “Federal Reserve Policies in the Financial Crisis.” Speech at the Greater Austin Chamber of Commerce, Austin, Texas, December 1, 2008.