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# Monetary policy and U.S. long-term interest rates: How close are the linkages?

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**Abstract**

The effect of monetary policy on long-term interest rates has been a question of interest in recent years. A number of papers, relying on single-equation estimation techniques, have presented evidence that long-term interest rates exhibit sizable and significant responses to unanticipated changes in the Federal Reserve's target federal funds rate. This paper examines these findings in light of conflicting findings from VAR studies, which indicate negligible effects of innovations in the federal funds rate on long-term rates. To address the issue we use a single-equation approach where unanticipated changes in the federal funds rate are measured as residuals from policy reaction functions. We also estimate VAR specifications, which incorporate information about the timing of changes in the Federal Reserve's target federal funds rate. Our single-equation estimates provide evidence of strong responses of long rates to unanticipated changes in the federal funds rate both for the Greenspan period and for a longer period back to the mid-1960s. It seems likely that estimated VARs for the post-1987 years are less successful in isolating monetary policy surprises than was the case for earlier years.


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## 1. Introduction

In 2006 the *Financial Times* called the question of why long-term interest rates were so low "the central economic problem of our time." Referring to the question of why long-rates failed to rise in the wake of a sustained increase in U.S. short-term rates, the *Times* declared that "The fortunes of millions rest in no small measure on the answer to this question." Journalistic exaggeration aside, the effect of monetary policy on long-term interest rates is a subject of considerable interest. Given current U.S. monetary policy procedures, this question reduces to that of how a change in the federal funds rate affects the yields on longer-term securities. A decade ago a reading of the literature would have indicated considerable doubt about even the direction of this effect.[1] There was also a view that the size and persistence of the effect of the federal funds rate on longer-term yields would vary with economic conditions.[2] The prevailing theory of the term-structure of interest rates, the expectations hypothesis, by itself provides little guidance about the effect monetary policy actions will have on longer-term interest rates: the nature of the effect depends on the way in which the policy action affects expected future short-term interest rates and risk premiums imbedded in long rates.

Research since 2000 has changed the situation. Studies by Kuttner (2001), Cochrane and Piazzesi (2002), Gurkaynak, Sack, and Swanson (2005a), Ellingsen and Söderström (2003), Ellingsen, Söderström, and Masseng (2004) and Beechey (2007) provide evidence that unanticipated changes in the federal funds rate have significant effects on U.S. interest rates at maturities as long as 10 or 30 years. Kuttner's estimates, for example, indicate that an unanticipated rise of one-percentage point in the federal funds target rate will increase the interest rate on a 10-year government security by 32 basis points and the rate on a 30-year security by almost 20 basis points. If one accepts the expectations hypothesis concerning the term-structure of interest rates, it is unclear why current monetary policy actions should be affecting expectations of short-term rates so far in the future. These empirical results have led to theoretical explanations, the most common of these centering on the effect monetary actions have on market participants' perceptions of the Federal Reserve's information set and policy preferences, including their long-run target inflation rate.

But how strong is this evidence of sizable significant responses of longer-term interest rates to unanticipated changes in the federal funds rate? Two characteristics of the above cited empirical studies are: they deal with the post-1987 period and use single-equation econometric methodologies. A number of other studies of the relationship between the federal funds rate and long-term interest rates use a VAR methodology and look at a longer time period: Evans and Marshall (1998), Edelberg and Marshall (1996), and Berument and Froyen (2006). These studies do not find significant sustained effects of monetary policy on long-term interest rates. Evans and Marshall, for example, find that "a contractionary policy shock induces a pronounced positive but short-lived response of short-term interest rates. The response declines monotonically with maturity; long-term rates are virtually unaffected."

This paper addresses the discrepancy between results from the two types of studies. We pursue two lines of inquiry. First, there are questions about the ability of the VAR methodology to capture policy actions and particularly policy surprises. Market forecasters may adapt to changing

[1] See Akhtar (1995) as well as the discussion and references in Berument and Froyen (2006).

[2] Roley and Sellon (1995, p. 73), for example, state that "the relationship between policy actions and long-term rates is likely to vary over the business cycle as financial market participants alter their views on the persistence of policy actions."