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# COMMENTARY

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## I. INTRODUCTION

The past ten years have witnessed a remarkable resurgence of interest in the relationship between monetary policy, economic fluctuations, and inflation. Important research by Bernanke and Blinder (1992), Sims (1992), and Taylor (1993) refocused considerable attention on the way in which the Federal Open Market Committee (FOMC) sets the federal funds rate relative to the state of the economy and how these monetary policy rules affect the evolution of the economy. Virtually all of this literature assumes that the Federal Reserve can instantly and continuously set the federal funds rate equal to its target funds rate. In fact, a large quantity of resources at the Federal Reserve Bank of New York is directed at keeping the effective federal funds rate close to the target rate. On any given day, large quantities of funds may be injected or withdrawn from financial markets in order to reach this target. In practice, it could be that only small injections are necessary to hit a target rate that is well-known and announced to all participants.

How does the Federal Reserve Bank of New York's Trading Desk actually implement the instructions from the FOMC, and what can macroeconomists learn from this action? The paper by Selva Demiralp and Oscar Jordá is a carefully executed analysis of the announcement effect using high-frequency Trading Desk data.

There are three broad questions addressed by their paper. First, what is the behavior of  $f_t - f_t^*$ , the deviation of the funds rate from its target? Macroeconomic models that use Taylor rules or other interest rate feedback rules assume that the monetary authority can reach its target with precision and at zero cost. Deviations from these rules are often ignored or assumed to be exogenous. If these deviations were large and persistent, they would require more attention in economic models. If the Trading Desk cannot hit the target rate within acceptable bounds, economists would have to investigate the consequences. Second, how do open market operations respond to different aspects of the  $f_t - f_t^*$  deviation? Historically, this has been an important issue for signaling monetary policy intentions (Feinman 1993), but it seems less important now that the FOMC announces the target federal funds rate after each meeting. Third, how do financial markets respond to changes in the target rate? By looking at the response of term rates around the days of target changes, implications for term-structure theory can be assessed. There is a good deal of research on surprise changes in monetary policy, and the empirical analysis here falls into this category. Less work has focused on anticipated policy moves. In the context of systematic monetary policymaking, understanding these latter implications seems to be a high priority.

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## II. ANNOUNCEMENT EFFECTS

Macroeconomic models of the U.S. economy assume that the FOMC sets its target rate  $f_t^*$  and maintains short-term interest rates at this target rate over the relevant time period. For example, the models in the recent *Monetary Policy Rules* volume (Taylor 1999) generally ignore any specific role for money or liquidity. These simplifications can be justified when the demand for money is stable and the FOMC injects a “sufficient” amount of liquidity to hit its target rate. As Demiralp and Jordá discuss, the required injection of liquidity depends on expected policy actions. They provide an example of how this can work behind the scenes in a larger model. The following setup uses their notation for the demand and supply of reserves:

$$(1) \quad R_t^d = -\alpha(f_t - \gamma E_t f_{t+1}) + \varepsilon_t$$

$$(2) \quad R_t^s = R_{t-1} + \beta(f_{t-1} - f_{t-1}^*).$$

Within this framework, what happens when the funds target  $f_t^*$  falls? If the target change is unanticipated ( $E_t f_{t+1} = f_t$ ), then reserve demand is unchanged and a large open market purchase is required to inject the additional liquidity. If the target change is anticipated several days in advance, two possibilities arise. First, because current reserve demand falls in this instance, the Trading Desk must contract reserves ahead of the target easing in order to keep the target funds rate at its higher current value. Alternatively, the Desk could accept an early decline in the funds rate by not contracting reserves. In this situation, on the day the target change is announced, the reduction in the effective funds rate will be smaller and the size of the liquidity injection will be smaller (since no earlier contraction in liquidity was required in this case). These smaller effects are referred to as “announcement effects.”

Although these theoretical effects are plausible, there is currently an institutional constraint inhibiting this type of behavior by the Trading Desk. At the end of each FOMC meeting, the Committee votes on the authorization language for the Trading Desk over the intermeeting period. Essentially, the Committee authorizes the Desk to carry out its current policy intentions, whether an explicit interest rate target or a borrowing target. Of critical importance, the Desk is not authorized to anticipate changes in the instrument target that may or may not be adopted at subsequent FOMC meetings. Although this is unlikely to be an issue, the Committee has adopted a daily review procedure that can be interpreted as a monitoring role. On the morning of each business day, a conference call is made to discuss the Trading Desk’s daily plan. The call includes staff members from the Board of Governors

and the New York Fed as well as one of the rotating Reserve Bank presidents who is a voting member.

One interpretation of this procedure is that the Reserve Bank presidents are performing a monitoring role, just as outside accounting firms provide objective auditing services for corporations. By including a voting member of the Committee, there is every reason to expect that any deviations from the Committee’s directive to the Desk would be discovered immediately. Of course, just as the use of external auditors does not presume any wrongdoing on the part of corporate officers, the participation of a non–New York Reserve Bank president does not presume any ill intentions on the part of supporting staff. Nevertheless, a prudent safeguard is in place.

How does this procedure square with a bit of casual empiricism? Following this conference in April 2001, the FOMC met on Tuesday, May 15. It was widely assumed in the financial markets that the FOMC would cut the target funds rate again at this meeting. Prior to the meeting, the target funds rate was 4.5 percent, and the futures market had built in the near-certain expectation of a target change to 4 percent. On Monday, May 14, federal funds opened at 4.43 percent and the effective rate for Monday was 4.43 percent. On the day of the meeting, the opening rate was 4.25 percent. As expected, the target change to 4 percent was announced at 2:15 p.m. and the effective rate for the day was 4.22 percent. Although the funds market traded below target ahead of the change, it is difficult to say whether this was due to market expectations or other institutional issues related to middle-of-the-quarter financing needs or settlement issues. In any event, the softer funds rate ahead of the target change seems to be consistent with a modest announcement effect in this case.

## III. RESPONDING TO FUNDS RATE DEVIATIONS

The heart of Demiralp and Jordá’s empirical analysis is in Section IV. The funds rate deviations from target are divided into three components: NEED, EXPECTED, and SURPRISE. A Tobit analysis is used to characterize the movements of overnight, temporary, and permanent operations relative to these three elements. The empirical results find evidence of a liquidity effect from 1984 to 1994 based upon the injection of reserves in response to NEED. Demiralp and Jordá also indicate that there is evidence of an announcement effect in the latter two samples after the FOMC began to indicate its target funds rate. Much of the evidence of accommodation

seems to be based on the lack of responses to expected moves. As the authors point out, the smaller samples during these periods suggest that the lack of significant responses must be interpreted cautiously.

#### IV. TERM RATES

An important issue here is, how do term rates respond to changes in the target rate? In one sense, the answer should naturally depend on whether the target changes were expected or surprises. In the context of futures market data, once the market has formed the expectation of a change in target, this information should be reflected throughout the term structure of interest rates. Consequently, on the day of an FOMC meeting in which the Committee changes the target in an expected way, there should be no change in term rates. And if the Committee surprises the markets at the meeting, term rates should respond. These issues can be addressed with fed funds futures market data, and Demiralp and Jordá's Table 7 reports mixed results for the expectations hypothesis.

A different approach to this question would focus attention on the economy's driving forces, or shocks. Different economic shocks will likely hit the yield curve in different ways. For example, all else equal, expansionary aggregate demand and aggregate supply shocks have different implications for future inflation. If we take the view that monetary policy surprises are relatively small and not a major determinant of economic fluctuations, then most policy moves are expected responses to incoming economic shocks.

Consequently, most of the actions arising from target changes to term rates will occur on the date that the futures market determines that a new economic shock has arrived, which the FOMC normally responds to later at its meeting. Furthermore, the path of expected target changes will be necessary for deducing the implications for longer term rates. An initial 25-basis-point increase in the target rate could arise from an expansionary aggregate demand shock or expansionary aggregate supply shock. However, the expected paths over the next twelve months would likely diverge due to different inflationary implications. Therefore, it would be useful to find a way to employ futures market data to shed light on the way in which the economy responds to different shocks.

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