



Declining required reserves, funds rate volatility, and open market operations [☆]

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Abstract

The standard view of the monetary transmission mechanism rests on the central bank's ability to manipulate the overnight interest rate by controlling reserve supply. In the 1990s, there was a significant decline in the level of reserve balances in the US accompanied at first by an increase in federal funds rate volatility. However, following this initial rise, volatility declined. In this paper, we find evidence of structural breaks in volatility. We estimate a Tobit model of temporary open market operations and conclude that there have been changes in the Desk's reaction function that played a major role in controlling volatility.

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1. Introduction

Monetary policy is implemented on a daily basis mainly through open market operations (OMOs) carried out by the Domestic Trading Desk (the Desk) at the

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Federal Reserve Bank of New York. These operations are used to bring the supply of balances at the Federal Reserve in line with the demand for them at an interest rate (the federal funds rate) near the level specified by the Federal Open Market Committee (FOMC). Movements in the funds rate then affect the real economy through the monetary or credit channels of the monetary transmission mechanism.

Over time, the Desk has had to adapt to structural changes in the supply of, or demand for, reserve balances. The change addressed in this paper is the decline in reserve requirements since the early 1990s that led to lower demands for Fed balances. We find that low required balances brought about a changed daily pattern of demand for balances and caused an adjustment in Desk behavior to limit the size of deviations of the funds rate from the FOMC target.

The decline in required balances in the 1990s triggered a debate over the role of reserve requirements. Critics of reserve requirements argued that lower requirements would remove a distortionary tax on depository institutions and improve the worldwide competitive position of US banks. Advocates argued that low required balances might complicate monetary policy and increase short-term interest rate volatility. If higher volatility were transmitted to long-term rates, there could be negative effects on the real economy. Proponents further argued that the role of the US dollar as the primary world currency should also be considered, in that higher volatility in US money markets could deter foreign investors from holding dollar-denominated assets. In the event, volatility of the federal funds rate did increase at first but fell back, remained stable for a while, and then declined further.

In this paper, we investigate the Desk's reaction function to test the hypothesis that changes in the pattern of Desk operations for supplying liquidity are one reason why funds rate volatility has remained low even as required balances have declined. Our analysis confirms that interest rate volatility depends essentially on institutional arrangements for providing and absorbing liquidity, rather than the level of reserve requirements, consistent with the conclusions of Sellon and Weiner (1996, 1997).

The remainder of the paper is organized as follows. Section 2 discusses the implications of lower reserve requirements for volatility in the federal funds rate and the implementation of open market operations. Section 3 examines the decline in funds rate volatility despite lower reserve requirements and looks for structural breaks in volatility. Section 4 describes the types of OMOs we are considering and explains the methodology used to measure the Desk's reaction function. Section 5 provides empirical evidence of changes in the Desk's reaction function. Section 6 concludes.

2. Lower reserve requirements, volatility, and open market operations

A bank¹ satisfies its reserve requirement with vault cash and the balance maintained in its account at a Federal Reserve Bank. As shown in Fig. 1, total required balances (the solid line) trended down in the 1990s because of a decline in required

¹ For brevity, we use the term "bank" to refer to all depository institutions.

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