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Cross-country differences in monetary policy execution and money market rates' volatility

Leonardo Bartolini[a], Alessandro Prati[b,*]

[a]*Research Department, Federal Reserve Bank of New York, 33 Liberty Street, New York, NY 10045-0001, USA*
[b]*Research Department, International Monetary Fund, 700 19th Street NW, Washington, DC 20431, USA*

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Abstract

Volatility patterns in overnight interest rates display differences across industrial countries that existing models—designed to replicate the features of individual countries' markets—cannot account for. This paper presents an equilibrium model of the overnight interbank market that matches cross-country differences in patterns in interest volatility by incorporating differences in how central banks manage liquidity in response to shocks. Our model is consistent with central banks' practice of rationing access to marginal facilities when the objective of stabilizing short-term interest rates conflicts with another high-frequency objective, such as an exchange rate target.

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1. Introduction

The overnight market for unsecured interbank loans plays a key role in the financial structure of most industrial countries. It anchors the term structure of

*Corresponding author. Tel.: +1 202 623 6275; fax: +1 202 589 6275.
E-mail addresses: leo.bartolini@ny.frb.org (L. Bartolini), APRATI@imf.org (A. Prati).

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interest rates and serves as the channel through which monetary policy is executed and liquid funds are funneled into the non-bank sector. To make models tractable for term-structure analysis and asset-pricing, most studies of this market have sidestepped the role of monetary policy in determining interest rates. The few studies that have taken the role of policy into explicit account have attempted to replicate features of individual markets—typically, the U.S. federal funds market. However, cross-country evidence (for instance, BIS, 1997; Ball and Torous, 1999; Prati et al., 2003) points to patterns in interest rates that call for a more integrated framework than available from models tailored to fit individual markets.

In this paper, after building on previous empirical studies to present more comprehensive evidence on the historical behavior of short-term interest rates in the main industrial countries, we present a theoretical model of the overnight interbank market that replicates the main patterns in interest volatility highlighted in our empirical work. Specifically, our agenda is to explain theoretically the following stylized facts: (i) In countries relying on periodic reserve requirements, short-term interest rates display sharp cyclical volatility behavior; (ii) In the United States and in other countries whose central banks are committed to stabilizing interest rates at high frequency, interest rate volatility *falls* as market rates depart from their target level and/or approach rates on official marginal facilities; by contrast, interest rate volatility *rises* as market rates approach rates on marginal facilities, in countries where access to such facilities is rationed, for instance, because interest rate targeting is subordinated to exchange rate targeting; and (iii) Interest rate volatility rises during periods in which a central bank may be reluctant to supply or drain funds to and from the market, for instance, because the country's exchange rate is veering away from its target level.

In our effort to explain these patterns theoretically, our goal is to present a unified framework that captures the main cross-country differences along a key dimension of policy execution: A central bank's willingness to offset high-frequency liquidity shocks by injecting or draining liquidity into and from the market, at both intra-marginal and marginal liquidity-management facilities. This willingness plays a central role in our analysis as it does in actual policy execution in the industrial world. For instance, many central banks routinely ration access to official lending and borrowing when the goal of stabilizing interest rates conflicts with another high-frequency objective, such as an exchange rate target. Conversely, other central banks react forcefully to deviations of interest rates from target. Our model captures this difference by parameterizing the amount of funds banks can trade with the central bank in response to shocks, and shows this degree of freedom to help replicate the main features of short-term interest rate volatility in the main industrial countries.

To place our effort into context, we should note the extent to which this study adds to previous research on interbank markets, including our own previous work.

Empirically, we are not the first ones to investigate fact (i)—which, for U.S. data, has been in the public domain at least since Spindt and Hoffmeister (1988)—and fact (iii)—which empirical research has tried to document (generally without success; see, for instance, Artis and Taylor, 1994) at least since Svensson (1991). Fact (ii) was first investigated in Prati et al. (2003), though that analysis should be viewed as