



Transmission mechanism of monetary policy in India

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ABSTRACT

This paper examines the transmission mechanism of monetary policy in India. Considering the external constraints on monetary policy, it estimates a series of vector autoregression models to examine the effects of an unanticipated monetary policy tightening on the real sector. The empirical results suggest that the lending rate initially increases in response to a monetary tightening. Banks play an important role in the transmission of monetary policy shocks to the real sector.

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1. Introduction

Monetary policy affects the real sector at least in the short run, and monetary policy decisions are transmitted to the real sector through different mechanisms. These mechanisms differ from one country to another depending upon their legal and financial structures. Since the beginning of the 1990s, analysis of monetary transmission mechanisms in emerging economies has gained substantial importance due to structural and economic reforms and subsequent transitions to new policy regimes. However, these economies have specific characteristics that differ from those of industrialized countries.

Monetary policies in emerging economies are constrained by the world's major central banks, i.e., the Federal Reserve Bank, the European Central Bank and the Bank of Japan. Hence, the analysis of monetary transmission mechanisms in emerging economies requires a model specification different from that of developed countries. A model misspecification may bias the results. The so-called price-puzzle is one of the consequences of model misspecification (Sims, 1992).

Previous empirical studies concerning monetary transmission mechanisms in emerging countries have established the importance of the bank lending channel. However, it is possible that the entire change in aggregate demand after a monetary policy shock occurs via the traditional money channel. Whether the effects of monetary tightening pass through the bank lending channel and not through the traditional money channel remains to be shown.

Central banks in emerging economies stabilize exchange rates.¹ A flexible exchange rate regime in these economies resembles a de facto peg. Since these economies are characterized by underdeveloped financial markets, their central banks intervene in foreign exchange markets to stabilize exchange rates. This phenomenon is often explained by the hypothesis of “fear of floating” (Calvo & Reinhart, 2000). Given this specific behavior of central banks in emerging economies, a better

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¹ For more details, see Calvo and Reinhart (2000), Reinhart and Rogoff (2002), Levy-Yeyati and Sturzenegger (2005).

understanding of monetary transmission mechanisms requires an analysis of not only the response of aggregate demand, but also the response of the exchange rate to a monetary policy shock.

In the post-reform period, the Reserve Bank of India has adopted market-oriented monetary policy instruments and operating procedures. In the new monetary policy framework, issues related to monetary transmission mechanisms have gained much importance. Some studies have examined specific transmission channels of monetary policy in India.² Since these studies suffer from the above-mentioned flaws, by taking into account these observations and providing a comprehensive empirical analysis of monetary transmission mechanisms in India, we hope that our work will have important implications for an emerging economy. In this paper, we examine three channels of monetary transmission in India: the bank lending channel, the asset price channel and the exchange rate channel.

The paper proceeds as follows. In Section 2, we review the previous work on monetary transmission mechanisms. In Section 3, we propose a benchmark vector autoregression (VAR) model in order to estimate the dynamic responses of GDP, prices and interest rates to an unanticipated monetary policy tightening. In Section 4, we augment the benchmark VAR model to examine the transmission channels of monetary policy and examine the robustness of our results. We conclude in Section 5.

2. Literature review

In order to examine the bank lending channel in the United States, [Bernanke and Blinder \(1988\)](#) expanded the standard IS-LM framework by including the bank loans market. Since the beginning of the 1990s, Vector Autoregression (VAR) models have become a widely used tool for analyzing monetary transmission mechanisms. [Bernanke and Blinder \(1992\)](#) examined monetary transmission mechanisms in the United States. They found that monetary policy works partly by affecting the composition of bank assets. [Christiano, Eichenbaum, and Evans \(1998\)](#) showed that the effects of an unanticipated monetary policy shock in the United States are completely transmitted to output, consumption and investment in eighteen months. [Peersman and Smets \(2001\)](#) demonstrated that an unanticipated monetary tightening tends to be followed by a real appreciation of the exchange rate and a temporary fall in output in the euro area. They showed that prices are more sluggish and fall significantly below zero several quarters after the decline in GDP. [Morsink and Bayoumi \(2001\)](#) found that banks play an important role in transmitting monetary shocks to real activity in Japan. [Suzuki \(2004\)](#) discussed the supply versus demand puzzle to examine the credit channel in Japan. He found evidence of the credit channel and showed that an unanticipated monetary policy shock is followed by a permanent increase in land prices.

A limited number of empirical studies have examined the monetary transmission mechanisms in emerging economies. [Disyatat and Vongsinsirikul \(2003\)](#) examined the monetary transmission mechanism in Thailand and demonstrated the importance of the bank lending channel. [Pandit, Mittal, Roy, and Ghosh \(2006\)](#) estimated a structural VAR model to examine the bank lending channel in the post-reform period in India. They showed that small banks are more severely affected by monetary tightening than large banks. However, [Al-Mashat \(2003\)](#) found that banks play little role in transmitting monetary policy shocks to the real sector in India. He concluded that the impact of a monetary policy shock on macroeconomic variables is larger after including the exchange rate in the model. An empirical study on monetary transmission in India showed that a positive shock to broad money leads to higher output, while a positive shock to the overnight call money rate produces the opposite effect ([Reserve Bank of India, 2003](#)), demonstrating the existence of a narrow credit channel in India. [Prasad and Ghosh \(2005\)](#) examined the relationship between monetary policy and corporate behavior in India. They observed a strengthening of the interest rate channel after 1998. [Singh and Kalirajan \(2007\)](#) concluded that interest rates play an important role in the monetary transmission mechanism in the post-reform period in India. [Ahmed, Hastam, Asif, and Yasir \(2005\)](#) examined different monetary policy channels in Pakistan and demonstrated the importance of the bank lending and interest rate channels.

3. Benchmark model

3.1. Benchmark identification scheme

We employ the VAR approach to examine the effects of an unanticipated monetary policy tightening on GDP, prices and overnight call money rate. The VAR approach takes into account the simultaneity between monetary policy variables and the real sector. We identify the benchmark VAR(p) representation as follows:

$$\sum_{i=0}^p \Phi_i Y_{t-i} = \Theta X_t + \varepsilon_t \quad (1)$$

where Y_t is the vector of endogenous domestic variables and X_t is the vector of exogenous foreign variables. Φ and Θ are polynomials. ε_t is the vector of structural innovations. The rationale for including the vector of exogenous foreign variables is to take into account external constraints and to control for international economic events. We assume that the exogenous

² [Al-Mashat \(2003\)](#), [Pandit et al. \(2006\)](#), [Reserve Bank of India \(2004\)](#), [Prasad and Ghosh \(2005\)](#).

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