Evaluating inflation targeting as a monetary policy objective for India

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ABSTRACT

This study formulates a small open economy model for India with exchange rate as a prominent channel of monetary policy. The model is estimated using the Instrumental Variable-Generalized Methods of Moments (IV-GMM) estimator and evaluated through simulations. This study compares different cases of domestic and CPI inflation targeting, strict and flexible inflation targeting, and simple Taylor type rules. The analysis highlights the unsuitability of simple Taylor-type monetary rules in stabilizing the Indian economy and suggests that discretionary optimization works better in stabilizing this economy. There seems to be a trade-off between output gap stabilization and exchange rate stabilization in flexible domestic inflation targeting and CPI inflation targeting respectively. However, flexible domestic inflation targeting seems a better alternative from an overall macro stabilization perspective in India where financial markets are still not sufficiently integrated to ensure quick transmission of interest rate impulses and existence of rigidities in the economy.

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1. Introduction

Inflation targeting has emerged as a powerful and effective monetary policy regime since the early 1990s. It has been adopted by a number of industrial countries starting with New Zealand in 1990, Canada in February 1991, Israel in December 1991, the United Kingdom in 1992, Sweden and Finland in 1993 and Australia and Spain in 1994. Many of the empirical studies show that an inflation targeting regime has been successful in significantly reducing inflation in these countries. Bernanke et al. (1999), for example, found that inflation remained lower after inflation targeting than would have been the case if forecasted by using Vector Auto-Regressions (VARs) estimated with the data from the period before inflation targeting started. Inflation targeting also helped to maintain price stability once it was achieved. Inspired by the success of inflation targeting in industrialized economies, many Emerging Market Economies (EMEs) also adopted an inflation-targeting approach to monetary policy, including Chile in 1991, Brazil in 1999, Czech Republic in 1997, Poland in 1998 and Hungary in 2001.

Inflation targeting is currently practiced by a group of advanced economies and several medium to small sized EMEs. The applicability of this regime to a large, growing, developing economy like India is still a researchable area. There has been growing interest in analyzing the applicability and suitability of inflation targeting as a monetary policy regime for India, primarily because the current multiple indicator monetary policy approach[2] of the Reserve Bank of India (RBI) seems to have lost its relevance and does not appear to work effectively.[3] Many studies in the literature have attempted to analyze India's preparedness for inflation targeting. Indeed. several studies have examined financial sector reforms as the essential pre-condition for adoption of inflation targeting, and analyzed the preparedness of India for inflation targeting from that perspective (see, Jha, 2008; Kannan, 1999). Following Kannan's (1999) suggestion that implementation of inflation targeting in India should wait until financial sector reforms have been completed, Singh (2006) argued that the first phase of financial sector reforms is complete and macroeconomic performance in terms of level of inflation and interest rates is satisfactory and stable suggesting that conditions are favorable in India for the adoption of inflation targeting. Singh advocated addressing a few issues, namely, use of both fiscal and monetary instruments to control inflation, publication of full-fledged inflation reports, and establishing an inflation committee to bring transparency in its operation before an actual inflation targeting framework could be adopted in India. Khatkhate (2006) asserted that inflation targeting might be a good policy framework for India as the RBI always has to be on alert to maintain its credibility and authority

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[2] Post global financial crisis, financial stability has become one of the major concerns of central banks across the world. However, if implemented in a flexible manner, inflation targeting is perfectly compatible with a financial stability objective (Walsh, 2009).
[3] Refer to D'souza (2003), Shah (2007), Mishra and Mishra (2009), Mishra and Mishra (2010).

in controlling inflation, even though the sources of inflation in India are often non-monetary.[4] She suggested that in operational terms India ought to target headline inflation. Mishra and Mishra (2009) analyzed the preconditions for inflation targeting in India, namely, the independence of monetary policy from fiscal, external, structural and financial concerns, and assessing its suitability as a monetary policy framework for India. They found that the Indian economy satisfies the preconditions for inflation targeting.

Extending the analysis of Mishra and Mishra (2009), this study attempts to answer the question of the probable consequences of shifting to an inflation targeting framework of monetary policy, and how different shocks will affect the economy under this framework by using a general linear model of the economy with quadratic loss function to be minimized by the central bank for India.

Inflation targeting is conducted in conjunction with a Monetary Policy Rule (MPR). MPR is part of the overall monetary policy of the central bank or monetary authority, and specifies how the instrument of monetary policy is to be changed given the characteristics of the macro economy and the policy objective of the central bank. This study compares different cases of strict and flexible domestic and CPI (Consumer Price Index) inflation targeting (Optimal MPR) with simple Taylor type rules (simple MPR) to examine the most suitable[5] inflation targeting framework for India. Modeling inflation targeting as the announcement and assignment of a relatively specific loss function to be minimized by the central bank, this study suggests that simple Taylor type rules are inadequate in stabilizing the economy, and that optimal rules work better. Further, though there seems to be a trade-off between output gap stabilization and exchange rate stabilization in flexible domestic inflation targeting and CPI inflation targeting respectively, flexible domestic inflation targeting appears to be a better policy option for India from an overall macro stabilization aspect.

The organization of the rest of this paper is as follows: Section 2 presents a brief review of the models used in literature to examine the monetary policy rules; Section 3 outlines the structure of the theoretical model and the description of its main equations; Sections 4 and 5 present empirical and simulation results respectively; and the final section presents the conclusions and policy implications of this study.

2. Literature review

There are a wide variety of models developed in the literature to investigate monetary policy rules. These models differ in size, degree of openness and degree of 'forward lookingness' assumed. Some of these models are developed in closed economy settings to examine the performance of policy rules that are consistent with a monetary policy regime of inflation targeting, for example, Rudebusch and Svensson (1999), and Clarida et al. (1999) among others. Many of the studies extended the analysis of monetary policy from closed economy settings to open economy settings. These open economy models differ from their closed counterparts as the real exchange rate affects both aggregate demand and inflation. This complicates monetary management as the impact of exchange rate on real activity and inflation must be accounted for while formulating monetary policy. Some of the notable studies are Ball (2000)[6], Walsh (1999), Svensson (2000), and Clarida et al. (2001).

The above models study inflation-targeting regimes for developed countries; however, for the purpose of the current study, more relevant are those studies that look at inflation targeting as a monetary policy regime for EMEs. Many of the studies modify the models

developed in the literature to include characteristics mainly present in EMEs, for example, Moron and Winkelried (2003) modified the model of Svensson (2000) to incorporate financial vulnerability characteristics (which are commonly present in EMEs) to examine inflation targeting monetary policy rules. Fraga et al. (2003) analyzed the case for inflation targeting in EMEs and asserted that the problems faced by EMEs with respect to their fiscal, financial and external sectors are more acute when compared to developed economies. They use a small open economy model where imports enter as intermediate goods rather than as consumption goods. This assumption seems more plausible for the developing economy as capital and intermediate goods form a larger proportion of total imports in developing countries than do consumption goods. Goyal (2008a) adapted a standard IS-LM-UIP framework to build in the dualistic labor market and wage price rigidities present in the Indian economy. She found that in a simple open EME model calibrated to typical institutions and shocks of a densely populated EME like India, a monetary stimulus preceding a temporary supply shock can help stabilize inflation at minimum output cost, because of the exchange rate appreciation that accompanies a fall in interest rates and rise in output. In another study, Goyal (2008b) adapted the dynamic, stochastic, general equilibrium models[7] to analyze optimal monetary policy rules to the labor market structure of the small open emerging economy of India. By examining the welfare effects of different types of inflation targeting regimes for India, she concluded that flexible CPI inflation targeting without lags[8] works best and even more so when the degree of openness increases. However, due to welfare loss from the lags of CPI, domestic inflation targeting continues to be more robust and effective.

3. A macro structural model of a small open economy

The formulation of the model of monetary policy used to analyze different inflation targeting monetary policy rules is based on the literature (in particular the models by Batini and Haldane, 1999, Svensson, 2000 and Goyal, 2008a) and broad conclusions derived by Mishra and Mishra (2010). Their model suggests that the monetary policy has real effects. It suggested that a 'New Keynesian' framework incorporating some form of stickiness in the prices which gives rise to non-neutral effects of monetary policy is needed to prepare the framework suitable for the evolution of monetary policy. Second, since the mid 1990s rate variables have been better at signaling the stance of monetary policy for India than quantity variables, and this implies the use of nominal interest rate (rather than money supply) as an instrument of monetary policy. Third, there is a growing importance of the exchange rate channel in the transmission of monetary policy in India, with exchange rate shocks playing a central role in explaining the volatility of inflation, interest rate, growth of credit and money supply in that country. Thus, exchange rate shocks as well as shocks originating from the rest of the world (transmitted through exchange rate) are important in conducting monetary policy, and the model for evaluation of monetary policy should incorporate this. Against this background we set up a model of monetary policy

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[4] Such as changes in food output, marketed surplus, lax fiscal policy etc.
[5] The 'most suitable' implies the framework which is capable of bringing in overall macro stabilization and not just inflation stabilization.
[6] For a closed economy version of the model, refer to Ball (1997).

[7] Notable models of the type include models by Clarida et al. (1999, 2001), Svensson (2000), Woodford (2003) and Gali and Monacelli (2005).
[8] CPI is available only at a monthly frequency in India, with a two month lag. Further, four distinct CPI measures are compiled for different reference populations. These are Consumer Price Index for Industrial Workers (CPI-IW), Consumer Price Index for Urban Non-Manual Employees (CPI-UNME), Consumer Price Index for Agricultural Labourers (CPI-AL) and Consumer Price Index for Rural Labourers (CPI-RL). These indices differ from each other in reference population, basket of goods and services and their weights, geographical areas and base-periods etc. None of these measures presents all the spectrum of the population of the country. There is a need to develop a harmonized measure of consumer price index which is computed on an all India basis and reflects the purchasing power of domestic currency in domestic market and thus facilitates international comparisons. Therefore, there are both information and price adjustment lags in the CPI.