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The Indian exchange rate and Central Bank action: An EGARCH analysis ☆

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ABSTRACT

We analyze the impact of conventional monetary policy measures such as interest rates, intervention, and other quantitative measures, on exchange rate level and volatility, and compare these to the impact of Central Bank communication using dummy variables in the best of a family of GARCH models estimated with daily and monthly Indian data. Since India has a managed float, we also test if the measures affect the level of the exchange rate. We find variations in the Euro/Dollar rate strongly affect the Rupee/Dollar level and volatility. The interest rate differential has strong perverse effects, tending to increase variance and depreciate the Indian currency. News decreases volatility as it adds to scarce information. Domestic policy variables affect both level and volatility, and persist at the monthly frequency, but sometimes work at cross-purposes. Communication channels have potential but were not used effectively.

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1. Introduction

Exponential growth has occurred in research on monetary policy, but the rich and challenging experiences in emerging markets are still under-explored. In this paper we estimate the best model in the family of autoregressive conditional heterosckedasticity (ARCH) and generalized ARCH (GARCH) models of exchange rate volatility, for the period following maturing of Indian money and foreign exchange (FX) markets. We insert policy dummies together with controls to study the impact on exchange rate volatility of conventional monetary policy measures such as interest rates, intervention and other quantitative measures, and of Central Bank (Reserve Bank of India, RBI) communication.[1] Since India has a managed float, it is worthwhile to test if the measures also affect the level of the exchange rate, and if their effect persists beyond the very short-run.

Since a range of policy instruments continue to be used on the path towards freer markets it is a good period to analyze the effectiveness of various instruments. An assessment of their relative impact contributes to understanding transition and the way forward.

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[1] Fišer and Horváth (2010) use policy dummies in an equation for exchange rate volatility, and Ghosh and Bhattacharya (2009) do so in a GARCH model of the money market.

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1.1. Indian scenario

In the past decade, there was rapid development in markets, in institutions and in instruments of monetary policy. A liquidity adjustment facility (LAF) was introduced. Injections and absorptions of liquidity largely kept the overnight inter-bank loan rate (the call money rate) in a band between two policy rates (Ghosh & Bhattacharya, 2009).

The stated aim of Indian exchange rate policy is to reduce volatility, while the level is said to be market determined around fundamentals.[2] In the period under analysis there was a movement away from a fixed exchange rate. Partial capital account convertibility followed full current account convertibility of the balance of payments. Equity flows were liberalized before debt flows.[3] Surges in inflows have created problems for monetary management. Despite a current account deficit, reserves crossed the $300 billion mark in 2008.[4] Development of foreign exchange markets has been rapid. The average daily turnover in Indian FX markets, which was about US $3.0 billion in 2001, grew to US $34 billion in 2007, the fastest rate of growth among world markets, BIS (2007). Growth in derivatives especially was strong, increasing to more than double the spot transactions (Goyal, 2011).

Monetary policy follows a multiple indicator approach, giving weight to both inflation and growth. Though the RBI is not formally independent, a series of measures granted greater independence after the liberalizing reforms of the early nineties.[5] A populous low per capita income democracy, where inflation is a politically sensitive issue, requires rapid monetary response to contain inflationary expectations. But at the same time developmental issues cannot be ignored.

The RBI is not at the point of the impossible trinity, where monetary policy becomes ineffective, since the exchange rate is not fixed, and the capital account is not fully open. But it is a challenge to address the needs of the domestic cycle while managing external shocks. An important question is the impact of policy rates on the exchange rates. If this impact is low then rate change can be targeted to the domestic cycle. Alternative policy instruments are useful since segmented domestic financial markets make it difficult to close interest differentials. Moreover, differences in domestic and international policy cycles require positive differentials, as in the exit from the global financial crisis when emerging markets faced inflation while mature markets still battled deflation. As larger FX market turnover and rapid market deepening makes standard intervention less effective, communication could offer an additional instrument to policy.

1.2. Literature survey

There is evidence of the effect of Central Bank (CB) communication, largely for developed countries. Blinder, Ehrmann, Fratzscher, Haan, and Jansen (2008) offer a survey. They argue that communication makes monetary policy more effective either by creating news, or reducing noise when markets are not perfect or there is learning.[6] The literature suggests CB transparency can work in a number of ways depending upon how effectively the CB is able to maintain credibility and how public expectations are formed. It is not only CB communication that matters, but also its timing. Communication becomes intense before any monetary policy meeting to prepare the market for the forthcoming decisions. Fratzscher (2005) finds oral interventions to be more successful in moving exchange rates in the desired direction as compared to actual interventions.

Literature on the effect of CB communication on exchange rates, to which our paper contributes, is still in a nascent stage for emerging markets. Since uncertainties are pervasive in such markets, communication should have a larger impact there. Goyal, Ayyappan Nair, and Samantaraya (2009) demonstrate this theoretically, and present some evidence for India, in a study of strategic interaction between monetary policy and FX markets. Fišer and Horváth (2010) show Czech National Bank communication tends to decrease exchange rate volatility using a GARCH framework. Égert (2007) finds appropriate CB communication enhances the effect of actual intervention and of interest rate news in the emerging markets of the European Union. Égert (2009) finds short-lived effects of CB communication and news on the South African Rand.

There is relatively more work on the effect of intervention. Faced with large inflows a number of emerging market CBs intervene and believe it works to damp appreciation and volatility although in deep mature markets it is thought to be ineffective. Galati and Disyatat (2005) find Czech authorities intervene mainly in response to koruna appreciation, but could not find evidence of influence on short-term exchange rate volatility. In the Guimarães and Karacadag (2005) study of foreign

[2] Dr. Bimal Jalan, then RBI Governor, described India's exchange rate policy as: "focusing on managing volatility with no fixed rate target while allowing the underlying demand and supply conditions to determine the exchange rate movements over a period in an orderly way (RBI, 2001 pp. 6–7)". Mohan (2006), then Deputy Governor, RBI wrote: "The exchange rate policy in recent years has been guided by the broad principles of careful monitoring and management of exchange rates with flexibility, without a fixed target or a pre-announced target or a band, while allowing the underlying demand and supply conditions to determine the exchange rate movements over a period in an orderly way. Subject to this predominant objective, the exchange rate policy is guided by the need to reduce excess volatility, prevent the emergence of destabilising speculative activities, help maintain adequate level of reserves, and develop an orderly foreign exchange market."

[3] Capital flows can come in through foreign institution investors (FIIs) or their sub-accounts registered with the regulator. Even in 2011 restrictions on debt were much tighter than on equity flows. While an FII could invest upto 10 percent of the total issued capital of an Indian company, the cap on aggregate debt flows from all FIIs together was 1.55 billion USD. Source:

[4] Reserve Bank of India(RBI)-http://www.rbi.org.in/scripts/PublicationsView.aspx?id=12847

[5] For example, there is no longer automatic financing of the fiscal deficit.

[6] Empirical literature studying CB communication has grown rapidly in the last decade, as conventional wisdom in CB circles changed from saying as little as possible to the importance and the art of managing market expectations. Communication has become an important part of monetary policy.

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