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## DRG Study on “Exchange Rate Policy and Modelling in India”

The Reserve Bank of India released a DRG Study entitled, “[Exchange Rate Policy and Modelling in India](#)”. The Study is co-authored by Prof. Pami Dua, Professor in the Department of Economics of Delhi School of Economics along with Dr. Rajiv Ranjan, Director in the Department of Economic Analysis and Policy of the Reserve Bank of India. The study covers two main topics: first, various aspects of economic policy with respect to the exchange rate and second, modelling and forecasting the exchange rate.

The study analyses India’s exchange rate policy and discusses the structure of the foreign exchange market in India in terms of participants, instruments and trading platform, as also, turnover in the Indian foreign exchange market and forward premia. The study then attempts to develop a model for the rupee-dollar exchange rate taking into account variables from monetary and micro structure models as well as other variables including intervention by the central bank. The focus is on the exchange rate of the Indian rupee vis-à-vis the US dollar, i.e., the Re/\$ rate.

The study also covers the exchange rate policy of India in the background of large capital flows. The movement of the Indian rupee is largely influenced by the capital flow movements rather than traditional determinants like trade flows. Though capital flows are generally seen to be beneficial to an economy, a large surge in flows over a short span of time in excess of the domestic absorptive capacity can be a source of stress to the economy giving rise to upward pressures on the exchange rate, overheating of the economy, and possible asset price bubbles.

The study notes that an important aspect of the policy response in India to the various episodes of volatility has been market intervention combined with monetary and administrative measures to meet the threats to financial stability while complementary or parallel recourse has been taken to communication through speeches and press releases. In line with the exchange rate policy, it has also been observed that the Indian rupee is moving along with the economic fundamentals in the post-reform period. Moving forward, as India progresses towards full capital account convertibility and gets more and more integrated with the rest of the world, managing periods of volatility is bound to pose greater challenges in view of the impossible trinity of independent monetary policy, open capital account and exchange rate management. Preserving stability in the market would require more flexibility, adaptability and innovations with regard to the strategy for liquidity management as well as exchange rate management. With the likely turnover in the foreign exchange market rising in future, further development of the foreign exchange market will be crucial to manage the associated risks.

After studying various aspects of economic policy with respect to the exchange rate, the study attempts to gauge the forecasting ability of economic models with respect to exchange rates with the difference that this is done in the context of a developing country that follows a managed floating (as opposed to flexible) exchange rate regime. Starting from the naïve model, the study examines the forecasting performance of the monetary model and various extensions of it in the vector autoregressive (VAR) and Bayesian vector autoregressive (BVAR) framework. The study examines, first, whether the monetary model can beat a random walk. Second, it investigates if the forecasting performance of the monetary model can be improved by extending it. Third, the study evaluates the forecasting performance of a VAR model vs a BVAR model. Lastly, it considers if information on intervention by the central bank can improve forecast accuracy. The main findings are :

- (i) The monetary model generally outperforms the naïve model. This negates the findings of the seminal study by Meese and Rogoff (1983) that finds that models which are based on economic fundamentals cannot outperform a naive random walk model.
- (ii) The result that it is possible to beat the naïve model may be due to the fact that the intervention by the central bank may help to curb volatility arising due to demand-supply mismatch and stabilise the exchange rate. The exchange rate policy of the Reserve Bank is guided by the need to reduce excess volatility.
- (iii) Forecast accuracy can be improved by extending the monetary model to include forward premium, volatility of capital inflows and order flow.
- (iv) Information on intervention by the central bank helps to improve forecasts at the longer end.
- (v) Bayesian vector autoregressive models generally outperform their corresponding VAR variants.

Thus, the availability of information on certain key variables at regular intervals that affect the exchange rate can lead to a more informed view about the behavior of the future exchange rates which may allow the market participants to plan their foreign exchange exposure better by hedging them appropriately. Such key variables could include past data on exchange rates, forward premia, capital flows, turnover and intervention by central banks. As regards availability of data on key variables relating to the Indian foreign exchange market, most of the data are available in public domain and can easily be accessed by market participants, academicians and professional researchers. Skilful use of these variables will help them gain sound insight into future exchange rate movements.

*[Note: Development Research Group (DRG) is constituted in the Reserve Bank's Department of Economic Analysis and Policy for undertaking effective policy-oriented research backed by strong analytical and empirical basis on subjects of current interests. The views expressed in these studies are those of the authors and do not reflect the views of the Reserve Bank.]*