DRG Study on "Interest Rate Modelling and Forecasting in India"
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The Development Research Group (DRG) of the Reserve Bank of India has published a Study entitled "Interest Rate Modelling and Forecasting in India", the twenty-fourth in the DRG Study Series. The Study is authored by Dr. Pami Dua of the Delhi School of Economics and Smt. Nishita Raje and Dr. Satyananda Sahoo of the Department of Economic Analysis and Policy of the Reserve Bank. DRG Study Series have an accent on policy-oriented research. The studies are released for wider circulation with a view to generating constructive discussion among professional economists and policy makers on subjects of current interest. The views expressed in these studies are those of the authors and do not reflect the views of the Reserve Bank.

In the wake of the progressive deregulation of financial markets in the post-reform period particularly in the context of ensuring efficient transmission of monetary policy, the interest rate has been considered as a key financial variable that affects decisions of consumers, businesses, financial institutions, professional investors and policymakers. Movements in interest rates have important implications for the economy's business cycle and are crucial to understanding financial developments and changes in economic policy. Timely forecasts of interest rates can, therefore, provide valuable information to financial market participants and policymakers.

Against this backdrop, the Study endeavours to develop models to forecast short-term and long-term rates: call money rate, 15-91 days Treasury Bill rates and interest rates on Government securities with (residual) maturities of one year, five years and ten years. Univariate as well as multivariate models were evaluated for each interest rate. In the multivariate models, factors, such as, liquidity, Bank Rate, repo rate, yield spread, inflation, credit, foreign interest rates and forward premium are considered. The random walk (or naïve) model was used as the benchmark for evaluating the forecast performance of each model.

The Study compares the forecasting performance of alternative models using weekly (secondary market) data for the period April 1997 to December 2001.The models are tested for out-of-sample accuracy from January 2002 to September 2002. A special feature of the Study is the empirical exercise on Bayesian Vector Autoregressive (BVAR) models. It may be noted that BVAR models impose prior beliefs (restrictions) on the relationships between different variables as well as between own lags of a particular variable. As they are unaffected by overparametrisation or the degree of freedom constraints, these models are generally considered superior to the usual VAR models for forecasting.

The Study finds that multivariate models generally perform better than naïve and univariate models over longer horizons since interactions and dependencies between variables become stronger over such periods. In the class of multivariate models, BVAR models work well for forecasting the call money rate (for longer-term forecasting) and the one-year Government security rate (for the short and longer term). The VAR (in levels) works best at the short and longer end for the Treasury Bill rate as well as the 10-year Government security rate, although in both cases the performance of the BVAR models is also satisfactory. In this context, it is important to note that by loosening the prior, the Bayesian model approaches the VAR model with limited restrictions on the coefficients. On the other hand, the Vector Error Correction Model performs best for short-term and long-term forecast horizons for the 5-year Government security rate. The ARMA-GARCH model produces best results for short-term forecasts of the call money rate.

Overall, the study concludes that the forecasting performance of BVAR models is satisfactory for most interest rates. The framework for forecasting alternative interest rates provided by the Study could be used as an input for policy deliberations. The study is also available on RBI website www.rbi.org.in

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