

Macroeconomic Forecasting in India: Does Machine Learning Hold the Key to Better Forecasts?

The Reserve Bank of India today placed on its website a Working Paper titled "Macroeconomic Forecasting in India: Does Machine Learning Hold the Key to Better Forecasts?" under the Reserve Bank of India Working Paper Series¹. The Paper is authored by Bhanu Pratap and Shovon Sengupta.

The paper reviews the paradigm of machine learning (ML) and applies it to forecast Consumer Price Index (CPI) based inflation for India. The study trains various machine learning algorithms and tests them against standard statistical models in forecasting headline, food, fuel and core measures of inflation. Main findings of the paper suggest

that ML methods are generally able to outperform standard statistical models. Further, it finds that simple average-based forecast combinations generally outperform all individual models. Simple weight scheme also outperforms the complex weight method. Notwithstanding the debate on optimum combination method, these results suggest that forecast combination is a good practice to achieve better forecasts. The paper also compares the approaches of directly forecasting headline inflation versus separately forecasting its components and combining them to generate a forecast for headline inflation. It finds no meaningful gains in forecasting accuracy using the latter approach. The study concludes by noting that the field of machine learning offers a new paradigm with tools and methods to incorporate new data as well as more complex methods in a policymaker's forecasting toolkit.

¹The Reserve Bank of India introduced the RBI Working Papers series in March 2011. These papers present research in progress of the staff members of the Reserve Bank and are disseminated to elicit comments and further debate. The views expressed in these papers are those of authors and not of the Reserve Bank of India. Comments and observations may kindly be forwarded to authors. Citation and use of such papers should take into account its provisional character.