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Alternative Measures of Forecasting Accuracy

Abstract: Alternative measures of forecasting accuracy include direction accuracy, the adjusted root mean square error, profitability and proximity to a perfect forecast. The results demonstrate that the random walk can be outperformed in exchange rate forecasting when forecasting accuracy is assessed in terms of measures that take into account more than just the magnitude of the forecasting error. Evaluating forecasting accuracy by using alternative measures leads to vastly different conclusions from those reached by using conventional measures such as the root mean square error. The three models produce better forecasts than the random walk when evaluated in terms of alternative criteria. This is a potential explanation for the Meese–Rogoff puzzle.

4.1 Introduction

By using measures of forecasting accuracy that depend entirely on the magnitude of the forecasting error, Meese and Rogoff (1983a) reached the conclusion that the random walk cannot be outperformed by exchange rate models in out-of-sample forecasting. The objective of this chapter is to find out whether using alternative measures of forecasting accuracy leads to different conclusions about the forecasting performance of exchange rate models relative to the random walk. This is actually the only explanation for the puzzle, as we are going to find out in due course, when we realise that other potential explanations are not valid. Although several economists have suggested the use of alternative measures of forecasting accuracy and managed to outperform the random walk, no one has presented their findings as an explanation for the puzzle, thus perpetuating the controversy. Relying on the magnitude-only measures of forecasting accuracy is not always appropriate, and a consensus is emerging that criteria other than just magnitude should be used (Engel and Hamilton, 1990; Cheung et al., 2005; Moosa and Burns, 2012, 2013a, 2013b, 2014a).

The use of alternative criteria draws attention to other characteristics of a good forecast that are not reflected by the conventional magnitude-only measures of forecasting accuracy. In this study, several alternative measures of forecasting accuracy are used. These include direction accuracy (Engel and Hamilton, 1990; Cheung et al., 2005; Moosa and Burns, 2012), profitability (Leitch and Tanner, 1991; Li, 2011; Moosa and Burns, 2012, 2013a, 2014a), proximity to a perfect forecast (Moosa and Burns, 2013b), and the adjusted root mean square error (ARMSE) (Moosa and Burns, 2012). We address the proposition that the main reason for the failure of exchange rate models to outperform the random walk is the use of forecasting accuracy measures that rely exclusively on the magnitude of the error by introducing and applying several alternative criteria to evaluate the forecasts presented in Chapter 3. It is argued that using measures of forecasting accuracy that rely only on the magnitude of the forecasting error (such as the RMSE) is inappropriate and that when alternative criteria are employed, the Meese and Rogoff results can be overturned.

4.2 Literature review

The use of criteria other than the magnitude of the forecasting error to evaluate forecasting accuracy is not novel or controversial. Cheung et al.