Exchange Rate Forecasts and Stochastic Trend Breaks

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Declaration of Originality

I certify that the work in this thesis has not previously been submitted for another degree nor has it been submitted as part of the requirements for another degree.

I also certify that the thesis has been written by me. Any help that I have received in my research work and the preparation of the thesis itself has been acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.
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Abstract

This thesis examines the forecastability of exchange rates in the presence of trend breaks. In particular, its focus is the predictive power of the interest rate differential for the exchange rate.

Chapter 1 is the Introduction to the thesis. In this Chapter, I briefly review the relevant literature on exchange rate predictability, forecasting in the presence of structural breaks and modelling trends in exchange rate time series.

Models are often evaluated via their out-of-sample forecasts over a single out-of-sample period. However, not all out-of-sample (OOS) periods are of equal difficulty - poor forecast performance of a model over a certain OOS period might actually be evidence in favour of the model if the OOS period was particularly difficult. In Chapter 2, I develop a way to quantify the difficulty of an OOS period affected by trend breaks. This method uses the deficit between the mean square forecast error of the optimal univariate forecast of the trend breaking process and the random walk forecast. This MSFE deficit is what needs to be made up by any extra information in a model in order to beat the random walk. In Chapter 2, I use the degree of difficulty measure in an ex-post analysis of the forecasts of a VEqCM over two separate periods.

Chapter 3 shows that when an out-of-sample period has trend breaks, the forecast error densities generated from a recursive forecasting procedure can have a spurious multimodality at various horizons. This is clearly problematic for any statistics calculated from these densities - in particular, any forecast evaluation statistics or tests. It would also produce misleading value-at-risk calculations. I develop a limit theory explaining why this occurs. In the second half of the Chapter I show how the forecast error density can be disentangled from the trend breaks. This allows an estimate of the extent to which breaks have affected a particular forecast statistic.
Abstract

In Chapter 4 I use a general trend representation (from the work of P.C.B.Phillips) to model inter-break exchange rate behaviour. I show how this broken trend representation can be used to estimate the trend breaks in an exchange rate series. I show that with the general trend representation, only ‘large’ breaks are identified - i.e., small (potentially spurious) breaks can be modelled with an unbroken trend. In an empirical application to the AUD-GBP exchange rate, I find that the estimated breaks can be rationalized using some recent theory on the effect of monetary policy shocks on exchange rate trends.

Chapter 5 concludes the thesis.