Robustness in Foreign Exchange Rate Forecasting Models: Economics-based Modelling after the Financial Crisis

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Modern macroeconomics relies hugely on foreign exchange rate (FX) dynamics. Several economic trade theory foundations give a key role for FX in terms of the informational content that it provides. FX typically measures structural misalignments, anticipating future short-run dynamics of key macroeconomic variables aiming to correct those misalignments with or without external intervention. Some common models are the (un-)covered interest rate parity and the purchasing power parity, or the law of one price. These kind of models, the former developed primarily for interest rate dynamics have a long tradition as common wisdom in macroeconomics for both their tractability and modelling convenience. It is noteworthy that it is possible to analyse misalignments since it is intuitive to assume a long-run relationship between prices of relative goods across different economies.

In this article, the out-of-sample behaviour is analysed, i.e. the predictive power of a bunch of statistical and economics-based models when forecasting exchange rates (FX) for the UK, Japan, and the Euro Zone in relation to the US. Economic models are all those which are supported by a generally accepted economic theory behind, justifying its foundations. On the other hand, statistical models are those in which the predictive power comes exclusively from the informational content of the series itself, neglecting any economic argument.

A special focus is given to the observed commodity prices boom of 2007-8 and the financial crisis of 2008-9. We analyse the forecasting behaviour of six economic plus three statistical models when forecasting from one up to 60-steps-ahead, i.e. through the next five years, using a monthly dataset comprising from 1981.1 to 2014.6. We first analyse forecasting errors until mid-2006 and then compare to those obtained

until mid-2014; hence, comparing before and after the two mentioned global prices phenomena. Our six economics-based models can be classified in three groups: interest rate spreads, monetary fundamentals, and the purchasing power parity model with global measures.

Our results indicate that there are indeed changes of the first best models when considering the different spans. Interest rate models tend to be better predicting using the short sample; also showing better tracking when crisis hit. With the longer sample, the models based on price differentials are more promising however, with heterogeneous results across countries. These results are important since they shed evidence on what model specification one must use when facing different FX volatility.