Time-varying uncertainty and exchange rate predictability

Authors:

Knut Are Aastveit (Norges Bank and BI Norwegian Business School)
Francesco Ravazzolo (University of Bozen/Bolzano)
Herman van Dijk (Econometric Institute, Erasmus University Rotterdam and Norges Bank)

Abstract:

We study the predictive ability of macroeconomic fundamentals for monthly exchange rates using a Bayesian predictive combination approach. Our combination approach accounts for time-varying uncertainty of several model and data features in order to provide more accurate and complete density forecasts. The combination weights are latent random variables that depend on past history. The combined density scheme is incorporated in a Bayesian Sequential Monte Carlo method which re-balances the set of forecasted densities in each period using updated information on the time-varying weights. In this way, we are able to weight data uncertainty, parameter uncertainty, model uncertainty, including model incompleteness, and uncertainty in the combination of weights in a coherent way. In an empirical exercise, we study the forecasting performance of our combination approach relative to other combination approaches and common benchmarks for seven major exchange rates vis-à-vis the US dollar over the period 2000-2014. We find that our combination approach improves point and density forecasts, relative to various benchmark approaches, by magnitudes of 10-20 percent and 30-40 percent, respectively. While accounting for weight uncertainty plays a role in improving the density forecasting performance, the main bulk of the gains, both in terms of point and density forecasting performance, stems from allowing for model incompleteness in the combination scheme.