Dynamic Bayesian Predictive Synthesis
in Time Series Forecasting

Kenichiro McAlinn[*] & Mike West

Department of Statistical Science, Duke University, Durham, NC 27708-0251

January 29, 2016

Abstract

We discuss model and forecast comparison, calibration, and combination from a foundational perspective. Bayesian predictive synthesis (BPS) defines a coherent theoretical basis for combining multiple forecast densities, whether from models, individuals, or other sources, and extends existing forecast pooling and Bayesian model mixing methods. Time series extensions are implicit dynamic latent factor models, allowing adaptation to time-varying biases, mis-calibration, and dependencies among models or forecasters. Bayesian simulation-based computation enables implementation. A macroeconomic time series study highlights insights into dynamic relationships among synthesized forecast densities, as well as the potential for improved forecast accuracy at multiple horizons.

[*]Corresponding author. Tel: +1 919 684 4210. Fax: +1 919 684 8594
E-mail: kenichiro.mcalinn@duke.edu (Ken McAlinn), mw@stat.duke.edu (Mike West)