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Generalised Density Forecast Combinations*

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Abstract

Density forecast combinations are becoming increasingly popular as a means of improving forecast ‘accuracy’, as measured by a scoring rule. In this paper we generalise this literature by letting the combination weights follow more general schemes. Sieve estimation is used to optimise the score of the generalised density combination where the combination weights depend on the variable one is trying to forecast. Specific attention is paid to the use of piecewise linear weight functions that let the weights vary by region of the density. We analyse these schemes theoretically, in Monte Carlo experiments and in an empirical study. Our results show that the generalised combinations outperform their linear counterparts.

JEL Codes: C53

Keywords: Density Forecasting; Model Combination; Scoring Rules

1 Introduction

Density forecast combinations or weighted linear combinations, or pools, of prediction models are becoming increasingly popular in econometric applications as a means of improving forecast ‘accuracy’, as measured by a scoring rule (see Gneiting & Raftery (2007)), especially in the face of uncertain instabilities and uncertainty about the preferred model; e.g., see Jore et al. (2010), Geweke & Amisano (2012) and Rossi (2013). Geweke & Amisano (2011) contrast Bayesian model

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