



Extended Factor-Augmented Vector Autoregression: macroeconomic forecasting with the Lasso

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Abstract

This paper considers macroeconomic forecasting with a large number of predictor variables. We propose an extended factor-augmented vector autoregressive model (EFAVAR), that describes the joint dynamics of macro variables, latent factors and high-dimensional predictors. Furthermore, We employ a factor model to obtain a small number of principal-component-based factor estimates which can represent common movement of informational data. Meanwhile, we utilize the least absolute shrinkage and selection operator (Lasso) to select a few of the most relevant observed predictors, which can capture idiosyncratic fluctuation of data. Then, the multi-step-ahead forecasts can be constructed using a handful of estimated factors and selected predictors. In addition, we investigate the consistency of Lasso estimate and forecasting accuracy in the theoretical perspective. Also, we examine the predictive performance by a small Monte Carlo study and an empirical analysis, and conclude that EFAVAR shows some improvements in comparison to other model candidates.

Keywords: Macroeconomic Time Series, Factor-augmented Forecasting, Principal Component, Large Vector Autoregression, Lasso, Predictive Performance