Abstract

"Forecasting with Model Uncertainty: Representations and Risk Reduction" (joint with Jonathan Wright)

We consider estimation and forecasting in regression models when there is uncertainty about the choice of predictor variables. The researcher wants to select a model, estimate the parameters, and use the parameter estimates for forecasting. We investigate the distributional properties of a number of different schemes for model choice and parameter estimation: in-sample model selection using the Akaike information criterion, out-of- sample model selection, and splitting the data into subsamples for model selection and parameter estimation. A weak-predictor asymptotic scheme, combined with a representation result that simplifies the analysis of these procedures, allows us to develop approximations to their distributions and to associated forecast risks. We show that some methods can be improved by a simulation procedure that is similar to bagging (bootstrap aggregation). We also extend the results to forecast combination methods and to analyzing models with parameter instability.