SPARSE STRUCTURE ANALYSIS WITH APPLICATIONS TO SHORT-TERM FORECASTING OF THE US GDP

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The aim is to estimate short-term forecasts of the US GDP and its components by expenditure approach sooner than they are officially released by the national institutions of statistics. For this reason, nowcasts along with 1- and 2-quarter forecasts are estimated by using all available monthly information, officially released with a considerably smaller delay. The high-dimensionality problem of the monthly dataset used is solved by assuming sparse structures for the choice of leading indicators, capable of adequately explaining the dynamics of the GDP components. Variable selection and the estimation of the forecasts is performed by employing the LASSO method [1], together with some of its popular modifications. Additionally, a modification of the LASSO is proposed, which combines the ideas of LASSO and principal components, in order to further improve the forecasting performance. Forecast accuracy of the models is evaluated by conducting pseudo-real-time forecasting exercises for the main four components of the GDP over the sample of 2005–2015, and compared with the benchmark ARMA models. The main results suggest that LASSO is able to outperform ARMA models when forecasting the GDP components and to identify leading explanatory variables. Furthermore, popular modifications of the LASSO show promising accuracy gains. Our proposed modification of the LASSO in some cases show further improvement in forecast accuracy.

References