Factor Models and Dynamic Stochastic General Equilibrium models: a forecasting evaluation

GABRIELE PALMEGIANI [*]

LUISS University of Rome

Abstract

This dissertation aims to put dynamic stochastic general equilibrium (DSGE) forecasts in competition with factor models (FM) forecasts considering both static and dynamic factor models as well as regular and hybrid DSGE models. The empirical study shows three main conclusions. First, DSGE models are significantly outperformed by the generalized dynamic factor model (GDFM) in forecasting output growth in both short and long run, while the diffusion index (DI) model outperforms significantly DSGE models only in the short run. Second, the most surprising result of the dissertation, we discovered that only the hybrid DSGE model outperforms significantly all other competitive models in forecasting inflation in the long run. This evidence falls out with recent papers that found just regular DSGE models able to generate significant better forecasts for inflation in the long run as well as papers where hybrid DSGE models are found to forecast poorly. Third, in most cases, the unrestricted vector autoregressive (VAR) model represents the worse forecasting model. Although our results are consistent with the prevalent literature who gives to factor models the role to forecast output variables and to DSGE models the role to forecast monetary and financial variables, this research documents that exploiting more information on many macroeconomic time series, through hybrid DSGE models, is important not only to obtain more accurate estimates, but also to get significantly better forecasts.

Keywords: Diffusion Index (DI) model, Generalized Dynamic Factor Model (GDFM), Dynamic General Equilibrium (DSGE) model, Data-Rich DSGE (drDSGE) model, Equal Predictive Ability Tests.

---
[*]*Corresponding author address:* Gabriele Palmegiani, LUISS University, Viale Romania 32, Rome. E-mail: gpalmegiani@luiss.it or gabriele.palmegiani@gmail.com, Office: (+39) 0650543030.