Modelling Sectoral Output Growth in the EC Economies

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Abstract

The remit for Workpackage 4.1 is to consider the supply side of the E3ME model. To this end, we have focused attention on the time series analysis of the sectoral outputs, with a view to investigating the role played by the normal output variables in the model. In this report, we comment on the use of normal output in E3ME and provide an overview of the statistical properties of annual output data, disaggregated into thirty-one industrial sectors, during 1970-1993, in the EU economies. We then undertake a statistical analysis of the output data, estimating a cointegrating Vector Autoregressive (VAR) model of the sectoral output data. We use this to characterise the dynamic properties of the output data through the estimation of persistence profiles, which show the time profile of the effects of shocks to the output series at different horizons.

The work illustrates the importance of accommodating in the analysis the presence of unit roots and cointegrating relationships in and among the output series. In particular, evidence of cross-country interdependencies in output series is found in specific industrial sectors (suggesting the importance of technology transfer for example), and the inclusion of these effects is shown to have a substantial influence on the dynamic properties of the model.

The importance of the use of sectoral disaggregation in the analysis of the output series, and of accommodating the cross-country interaction, is investigated through two empirical exercises. In the ..rst,
prediction criteria are calculated for models obtained using different degrees of disaggregation to compare their performance in terms of their ability to forecast economy-wide output movements. In the second, tests for aggregation bias are applied to measures of the persistence of shocks to total, economy-wide output for each of the EU economies, again obtained from models using different degrees of aggregation. In these exercises, no statistical evidence is obtained to doubt the validity of the disaggregate model or to support the use of a more aggregated model.
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