

FIDELIO: A fully interregional dynamic econometric long-term input-output model for the EU

Topic: FIDELIO: a New Econometric Input-Output Model for the European Union

Author: Kurt Kratena

Co-Authors: Gerhard Streicher

Policy simulations during the last decades have been heavily relying on standard static CGE models with a small number of industries. Recently DSGE models (usually termed as New Keynesian) have been developed that incorporate dynamic behavior and institutional constraints at the aggregate macroeconomic level. Only few examples of CGE models with high industry detail and dynamic behavioral rules can be found in the literature, for example the IGEM model by Jorgenson and his collaborators, (Goettle, Ho, Jorgenson, Slesnick and Wilcoxon, 2007). We present FIDELIO as a model, oriented along the lines of IGEM, and also heavily relying on the 'Jorgenson philosophy' of calibrating the model with parameters taken from recent and relevant econometric work. The framework of FIDELIO is the set of supply-use tables at the level of 59 industries/commodities for the EU 27. These tables are made consistent with international trade flows, relying on the WIOD (www.wiod.org) database and thereby generating an inter-regional model set-up. The input-output structures are partly flexible (not Leontief type functions) by modeling factor demand and trade using flexible functional forms (Translog and AIDS).

FIDELIO describes private consumption as a dynamic optimization process with durables, non-durables ('buffer stock' model) and special emphasis on energy and the energy efficiency of the stock of durables. The behavior of firms is described by a Translog model, where dynamics is introduced by adjustment of the ex post return on capital to the forward looking user cost relationship. This model differentiates K,L,E,Mm,Md inputs, therefore dealing explicitly in a flexible form with substitution between imported intermediates (Mm) and all other factors. That yields a different model of international trade compared to the standard CGE model, where imported commodities are only substituted against domestic commodities at all levels of demand.

Environmental satellite accounts for energy and environment from the WIOD (www.wiod.org) database are consistently linked to the input-output structures. Factor supply is modeled by a segmented labor market (skills) with wage bargaining based on the wage curve model.