

Households in FIDELIO: Dynamic optimization with durables and energy

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

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Households in FIDELIO are described by a variant of the 'buffer stock' model with durables and non-durables at the aggregate level of consumption. The demand for three durable categories (vehicles, appliances, video/audio goods & computers, owner occupied houses) and total non-durables is directly derived from the dynamic optimality conditions of the 'buffer stock' model and estimated econometrically in an ECM with GMM system estimation for a panel of 21 EU countries. Total non-durables without housing expenditure (which is linked to the housing stock) is then further split up into nine categories by applying a Quadratic AIDS (QUAIDS) model in order to account for non-linear Engel curves of different consumption categories. This model has been estimated applying system estimation techniques to a panel of the EU 27 countries. Final energy consumption of households takes place in private transportation, heating and electricity consumption. The demand for these consumption categories depends on their 'service' price, thereby considering the energy efficiency of the corresponding stock of durables (vehicles, appliances and video/audio goods & computers), as well as the 'rebound effect' of efficiency improvements. The energy demand of households in monetary units is fully consistent linked to the energy flows in physical units in the environmental satellite accounts. The link from this consumption model block to the input-output structures works through bridge matrices between the COICOP categories of consumption and the CPA commodities of the input-output model.