SFC-IO and CGE models: a comparison

Topic: Recent Developments in Stock-Flow Consistent Input-Output Modelling - I
Author: Gennaro Zezza
Co-Authors: Roberto ROSON

SFC-IO and CGE models: a comparison

Abstract

Stock-flow Consistent (SFC) macroeconomic models are gaining ground for their consistent joint treatment of real and financial markets. The vast majority of such models has been developed in the Post-Keynesian tradition, where the output level is determined by aggregate demand both in the short and the long run, which is usually treated as the point of convergence of stock-flow ratios after a sequence of out-of-equilibrium adjustments.

SFC models have recently been expanded to incorporate a more detailed treatment of the supply side, introducing an input-output structure (thereby being called SFC-IO), to better consider the systemic interdependencies among economic sectors, which is crucial in many applications (e.g., economic impacts of climate change). This new line of research is still in its infancy, with no attempt so far to build a full empirical model for a country. The seminal paper by Berg et al. (2015) is theoretical; the Eurogreen model discussed in D'Alessandro et al. (2020) is not fully SFC; Di Domenico (2021) presents a theoretical SFC model with an IO structure of only three industries. However, the robustness of the SFC approach is attracting interest from academics and practitioners: the latest example is the SFC model developed for the Italian Treasury (Barbieri Hermitte et al., 2023).

The input-output extension of SFC models makes them closer to another popular class of models, the one of Computable General Equilibrium (CGE)., Indeed, CGE models share with the SFC ones the method of parameters' calibration based on a detailed Social Accounting Matrix (SAM). However, CGE models lack a thorough treatment of financial markets, whereas they may be better suited to capture some substitution processes driven by variations in relative prices.

Our paper contrasts the two methodologies, focusing on their application to empirical modeling for a whole country using available IO tables. Which are the comparative advantages of employing one approach, over the other, in specific assessment exercises? Could we devise a convergence of the two methods into an integrated model? We illustrate the key points through a comparative numerical simulation example using data from the Italian economy.

References

Barbieri Hermitte, R., Cagnazzo, A., Favero, C. A., Felici, F., Macauda, V., Nucci, F., and Tegami, C. 2023. ITFIN: A stock-flow consistent model for the Italian economy, Economic Modelling, vol. 119, 106113
Berg, M., Hartley, B., and Richters, O. 2015. A stock-flow consistent input-output model with applications to energy price shocks, interest rates, and heat emissions, New Journal of Physics, vol. 17, no. 1, 015011

D'Alessandro, S., Cieplinski, A., Distefano, T., and Dittmer, K. 2020. Feasible alternatives to green growth, Nature Sustainability, vol. 3, no. 4, 329–35

Di Domenico, L. 2021. Stability and determinants of the public debt-to-GDP ratio: an Input-Output – Stock Flow Consistent approach, MPRA Working papers, no. 110463, 1–53