

SAM-Based Structuralist Modeling: Multipliers, Stability, and Closures in a Generalized Framework

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This study develops a unified analytical framework for multisector structuralist computable general equilibrium (CGE) models with explicit treatment of functional and institutional income distribution. The central research question is: under what conditions do alternative macroeconomic closures—unconstrained output adjustment versus capacity-constrained demand adjustment—yield stable equilibria, and how do inter-industry linkages and distributional structures interact to determine these conditions?

The method builds on social accounting matrix (SAM) algebra, employing block matrix decomposition and spectral analysis to derive closed-form stability conditions. We introduce the income-consumption feedback matrix $\hat{Z} = P \hat{I}^{-1} \hat{I}^C P \hat{I}$, which captures the full transmission from output to consumption demand via functional distribution ($\hat{I}^C$) and consumption propensities ($\hat{I}$). Stability of the quantity subsystem requires $\hat{I} \cdot (L \hat{Z}) < 1$, a Keynesian condition ensuring that induced demand increases are smaller than output increases. This complements the Hawkins-Simon conditions governing the price-distribution subsystem.

Using a two-sector, two-institution illustrative framework, we show how the model nests classical input-output and Miyazawa-Pyatt multiplier analyses while extending them to accommodate price-quantity interactions and mixed closures where some sectors are demand-constrained and others capacity-constrained. The analysis reveals that inter-industry linkages impose structural constraints on income distribution that cannot be resolved by price adjustments alone, and that the sign structure of distributional determinants—particularly $\det \hat{I} \cdot \det \hat{I}^C$ —governs whether adjustment paths are monotonic or oscillatory.

The principal novelty lies in the provision of a common analytical scaffold linking structuralist CGE modeling to multiplier analysis, facilitating the analysis of mixed-constrained and unconstrained closures in economies where sectors operate under different adjustment regimes.