

Structural propagation in a production network with restoring substitution elasticities

Topic: Methodological aspects of input-output analysis

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We model an economy-wide production network by cascading binary compounding functions, based on the sequential processing nature of the production activities. As we observe a hierarchy among the intermediate processes spanning the empirical input–output transactions, we utilize a stylized sequence of processes for modeling the intra-sectoral production activities. Under the productivity growth that we measure jointly with the state-restoring elasticity parameters for each sectoral activity, the network of production completely replicates the records of multi-sectoral general equilibrium prices and shares for all factor inputs observed in two temporally distant states. Thereupon, we study propagation of a small exogenous productivity shock onto the structure of production networks by way of hierarchical clustering.