Economics 35310: Empirical Assignment (Q3)

Levi Crews

March 1, 2019

Were I able to fully simulate the endogenous network in Question 2, here's what I would do. I would consider two types of shocks:

1. **productivity shocks**: take a new draw of ϕ_j for all j;
2. **foreign demand shocks**: take a new draw of β_{jF} for all j.

Note that, in response to a shock, the network may evolve.

Consider the productivity shock. After taking the new draw of ϕ, I would re-solve for equilibrium. As a result, I would have two model economies (one for the original and one for the new draw of ϕ). Then I would run the following adaptation of regression (12) from Acemoglu, Akcigit, & Kerr (2016):

$$\Delta \ln Y_{j,\text{new}} = \gamma^{\text{own}} \Delta\phi_j + \gamma^{\text{upstream}} Upstream_{j,\text{old}} + \gamma^{\text{downstream}} Downstream_{j,\text{old}} + \epsilon_j \tag{1}$$

where

- $Y_{j,\text{new}}$ = real value added
- $\Delta\phi_j$ = the change in productivity from old to new draw for firm j
- $Upstream_{j,\text{old}} = \sum_i (Input\%^{\text{old}}_{i\to j} - \mathbf{1}_{i=j})\Delta\phi_j$
- $Downstream_{j,\text{old}} = \sum_i (Output\%^{\text{old}}_{j\to i} - \mathbf{1}_{i=j})\Delta\phi_j$
- ϵ_j = an error term,

and where $Input\%^{\text{old}}_{i\to j}$ and $Output\%^{\text{old}}_{j\to i}$ are elements of the Leontief inverse. Note that I do not use time fixed-effects or control with lags because this is a static model.

I would use an analogous specification for the foreign demand shock: just replace $\Delta\phi_j$ with $\Delta\beta_{jF}$ and modify the up- and downstream terms.

With these regressions, I would hope to show that

- supply-side (productivity) shocks propagate downstream much more powerfully than upstream
- demand-side (e.g., import penetration) shocks predominately propagate upstream.