Understanding Interstate Trade Patterns

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Highlights

- Interstate trade patterns are investigated within the U.S.

- The following elasticities are all identified:
  - Elasticity of substitution across goods
  - Elasticity of substitution across varieties of each good
  - Elasticity of distance for each good.

- Elasticity of substitution estimates are lower.

- Elasticity of distance estimates are higher.

- Home-bias effects are decreasing over time.

Bilateral Interstate Trade at the Good Level

- Under CES, the bilateral trade value from state i to state r for good j is obtained as:

$$\underbrace{\log\left(X_{r,i}^j\right)}_{\text{Bilateral Trade of Good } j} = \left(\underbrace{\log\left(\left(P_{i,i}^j\right)^{1-\eta^j}\right)}_{\text{Source Effects}} + \underbrace{\log\left(\left(P_r^j\right)^{\eta^j} C_r^j\right)}_{\text{Destination Effects}} \underbrace{-\delta^j \eta^j \log\left(D_{r,i}^j\right)}_{\text{Trade Costs}} + \underbrace{\log\left(\theta_{r,i}^j\right)}_{\text{Residuals}} \right)$$

  - η^j is the elasticity of substitution across varieties of good j
  - δ^j is the elasticity of distance
- η^j versus δ^j are identified using both trade and production-side data.
- Commodity Flow Survey data (2007; 2-digit) are used for trade.
- Gross markup data (from Census Bureau) are used for estimating η^j's.
- The average η^j (across industries) is estimated as 3.01.
- The average δ^j (across industries) is estimated as 0.45.

Aggregate Interstate Trade at the Good Level

- Under CES, the good-level import value of state r for good j is obtained as:

$$\underbrace{\log\left(M_r^j\right)}_{\text{Total Imports of Good } j} = \left(\begin{array}{c} (1-\varepsilon) \quad \times \underbrace{\log\left(P_r^j\right)}_{\text{Constructed Price Index}} \\ + \underbrace{\log\left((P_r)^\varepsilon C_r\right)}_{\text{State-Fixed Effects}} + \underbrace{\log \gamma_r^j}_{\text{Residuals}} \end{array} \right)$$

- ε is the elasticity of substitution across goods
- P_r^j is constructed using estimated variables/parameters according to:

$$P_r^j \equiv \left(\sum_i \theta_{r,i}^j \left(P_{i,i}^j \left(D_{r,i}^j \right)^{\delta^j} \right)^{1-\eta^j} \right)^{\frac{1}{1-\eta^j}}$$

- ε is estimated as 1.09.