Monetary Policy and Production Networks: An Empirical Investigation
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- **Contribution.** First econometric study on the contribution of production networks to the effect of monetary policy shocks on economic activity.
- **Main result.** Production networks substantially contribute to monetary non-neutrality in the short run and their presence accounts for 20%-45% of the effect of monetary policy shocks on US consumption.

**Model: roundabout production and sector-specific price rigidity**

- Production: \( Y_{kt} = L_{kt}^{1-\delta} (\prod_r Z_{kr}^{\omega_{kr}} (r))^{\delta}, \{\omega_{kr}\} \) entries of input-output table
- Flexible prices: \( P_{kt} = \frac{\theta}{\theta-1} MC_{kt} \sim W_t^{1-\delta} (\prod_r P_{rt}^{\omega_{kr}})^{\delta} \), suppliers’ prices in MC
- Rigid prices: sector-specific probability \( \alpha_k \) of prices remaining fixed
- Monetary policy: \( M_t = NGDP_t = P_t^e C_t \), \( \ln M_t = \ln M_{t-1} + r_t \), \( r_t \) is MP shock
- Effect of MP shock \( r_t \) on final consumption in sector \( k \) (log-linearised):
  \[ c_{kt} = \alpha_k c_{k,t-1} + \alpha_k r_t + (1 - \alpha_k) \delta \sum_{r=1}^{K} \omega_{kr} c_{rt} \]
  (\( \uparrow \) in own rigidity) **Direct effect** + **Downstream effect** (\( \downarrow \) in own rigidity)

**Surprise monetary policy tightening (25bp)**

**Econometric strategy**

- Run the following regression for every sector:
  \[ \Delta c_{kt} = \eta_{k0} + \sum_{j=1}^{12} \eta_{kj} \Delta c_{kt-j} + \sum_{j=1}^{24} \phi_{kj} r_{t-j} + \sum_{j=1}^{12} \psi_{kj} \sum_{r=1}^{K} \omega_{kr} \Delta c_{r,t-j} + \epsilon_{kt} \]
- Estimate the **downstream effect** for every sector as the difference between full and restricted (\( \tilde{\psi}_{kj} = 0, \forall j \)) IRFs to a surprise 25bp MP shock
- Aggregate IRFs using consumption shares as weights (\( c_t = \sum_{k=1}^{K} \omega_{ck} c_{kt} \))

**Data (monthly)**

- IO table: combine 2007 BEA “MAKE” and “USE” tables
- Consumption weights: 2007 BEA “USE” table