Discussion of “Trade Costs and Inflation Dynamics”

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This paper

1. How and how much do trade costs affect inflation?
2. Why is this paper important?
   - Monetary policy trade-offs: trade costs as cost-push shocks?
3. What do they do?
   - Measure trade costs.
   - Show empirically that trade costs change affect inflation:
     - if on final goods: one-time change in price level.
     - if on intermediate goods: persistent inflation.
   - Build a multi-country NK model to rationalize the findings.
   - Revisit 2018/19 US-China trade war and COVID-19 pandemic.

Thoughts and roadmap

- Great paper! been around for some time:

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  + Dmitry Muhkin at NBER SI. What more can I say!!!???

- Let me try to do the following:
  1. Understanding mechanisms/related literature.
  2. Real GDP in open economies.
  3. Trade costs: iceberg costs or tariffs (time permitting).

Main result and link to production network literature

- Main result: higher trade costs
  - on intermediate goods $\longrightarrow$ small but persistent inflation
  - on final goods $\longrightarrow$ larger but less persistent.
- Paper provides IRFs to show this and discusses the intuition.
- What does the production network literature predict?
  - Precisely this! but (mostly) closed economy.
  - Intuition: Upstream shocks take more time to materialize to CPI.

  Basu, 1995; La'o and Tahbaz-Salehi, 2022; Rubbo, 2023; Minton and Wheaton, 2024; Ho et. al, 2025.
- One sector seems enough for quantitative purposes.

  (see also Ho, Sarte, and Schwartzman, 2025)
- I like analytical results.
- Let me try to show your result in a stylized model.

“Simplified” model

- 2 countries. 2 goods.
- Country 1 produces good 1, country 2 produces good 2.
- Goal: what are the effects of trade costs on inflation in country 1?
- Inflation in country 1:

$$\pi_{1,1,t} = \omega^{C}_{11}\pi_{11,1,t} + \omega^{C}_{12}\pi_{12,1,t}$$

  with $\pi_{ij,s,t}$ inflation in country i of good j in currency s.
- If deviations from law of one price $\pi_{12,1,t} = \pi_{22,1,t} + \Delta\tau^{C}_{12,t}$.

$$\pi_{1,1,t} = \omega^{C}_{11}\pi_{11,1,t} + \omega^{C}_{12}\pi_{22,1,t} + \omega^{C}_{12}\Delta\tau^{C}_{12,t}$$

“Simplified” model ct’ed

- Inflation in country 1 under fully sticky wages is

$$\pi_{1,1,t} = (\omega_1^C)' \boldsymbol{\pi}_t + \omega_{12}^C \Delta \tau_{12,t}^C$$

$$\pi_{1,1,t} = \underbrace{\omega_{12}^C \Delta \tau_{12,t}^C}_{\text{Trade Costs on Final Goods}} + \underbrace{(\omega_1^C)' \boldsymbol{\Psi}^{\text{Sticky}} diag(\tilde{\Omega}^M \boldsymbol{T}_t')}_{\text{Trade costs on Intermediate Goods}}$$

$$- \underbrace{(\omega_1^C)' \boldsymbol{\Psi}^{\text{Sticky}} (\boldsymbol{I} - \tilde{\Omega}^M) \boldsymbol{P}_{t-1}}_{\text{Persistence}}$$

$$\underbrace{+(\omega_1^C)' \boldsymbol{\Psi}^{\text{Sticky}} (\hat{\chi}^{-1} - \boldsymbol{I}) \left[\beta E_t \boldsymbol{\pi}_{t+1} + \beta E_t \boldsymbol{\pi}_{t+1}^{\mathcal{E}} - \boldsymbol{\pi}_t^{\mathcal{E}}\right]}_{\text{Expectations + Exchange rate channels}}$$

- $\boldsymbol{\Psi}^{\text{Sticky}} = (\boldsymbol{I} - \hat{\chi}\tilde{\Omega}^{\boldsymbol{M}})^{-1}\hat{\chi}$: Sticky Leontief inverse
  - function of price stickiness and trade linkages across countries.
- Multi-country version of multi-sector NK models with IO linkages.

Real GDP data vs. model

- Footnote 33 in the paper define real GDP as

$$GDP_{i,t} = \frac{P_{i,t}Y_{i,t} - P^{M}_{i,t}M_{i,t}}{P^{C}_{i,t}}$$

- but this is GDP in units of consumption.
- Real GDP in the data uses double-deflation.
- Important when studying open economies.

CPI versus GDP deflator: Does it matter?

- Extreme case:
  - Domestically produced good fully exported X
  - Consumption fully imported. M
  - Trade balance. $P_X X = P_M M$.
- If divide nominal exports by import price (CPI) then $P_X X / P_M = M$.
  - Measure is not real GDP but imported quantity (consumption)!

CPI versus GDP deflator: Implications for Taylor Rule

- Taylor Rule in the paper

$$R_{i,t} = R_{i,t-1}^{\phi_r} \left((\pi_{i,t})^{\phi_\pi} \left(\frac{GDP_{i,t}}{GDP_{i,t}^{\text{flex}}} \right)^{\phi_y} \varepsilon_{i,t}^{r} \right)^{1-\phi_r}$$

- If measured as in data

$$R_{i,t} = R_{i,t-1}^{\phi_r} \left(\pi_{i,t}^{\phi_\pi} \underbrace{\left(\frac{rGDP_{i,t}}{rGDP_{i,t}^{\text{flex}}} \right)^{\phi_y}}_{\text{Real GDP Gap}} \underbrace{\left(\frac{P_{i,t}^{C,\text{flex}}}{P_{i,t}^{C}} \frac{P_{i,t}^{Y}}{P_{i,t}^{Y,\text{flex}}} \right)^{\phi_y}}_{\text{CPI and GDP deflator}} \varepsilon_{i,t}^{r} \right)^{1-\phi_r}$$

- Consumption or output gap?
- Perhaps behind your almost identical results in Figure 8 2nd row?

Iceberg costs versus tariffs

- Iceberg costs are not rebated, tariffs are.
- Is this important? Yes! It affects the optimal monetary policy response
  - Optimal monetary policy response to tariffs is “expansionary”.
    (e.g. Bianchi and Coulibaly, 2025; Werning, Guerrieri and Lorenzoni, 2025).
  - Why?
    - With distortions, optimal monetary policy want to get closer to first-best.
    - If permanent tariffs, new steady-state is distorted even if initial one is not.
    - Descentralized equilibrium is constrained inefficient with tariffs.
  - but I understand this is a positive paper!
  - My suggestion: no need to talk about tariffs when discussing the results.

Final thoughts

- Great paper. Important question. Well-written and executed.
- Pushed me to think even more seriously about these issues.

Thank you!

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