

Discussion of

Trade Costs and Inflation Dynamics

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Globalization at Crossroads: Trade Costs & Macroeconomic Challenges

- Global integration of value chains
- Recent disruptions
 - ▶ Disruptions
 - ▶ Pandemic
 - ▶ Geopolitical conflicts
- Existing literature focuses on
 - ▶ Firm-to-firm linkages
 - ▶ Output & investment

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Middle East

Suez Canal revenues hit \$6.3 bln in 2021 vs \$5.6 bln in 2020

Reuters

January 2, 2022 4:09 AM CST · Updated 2 years ago



Suez Canal Authority investments in FY 2020/2021 estimated at LE 16.9 Billion

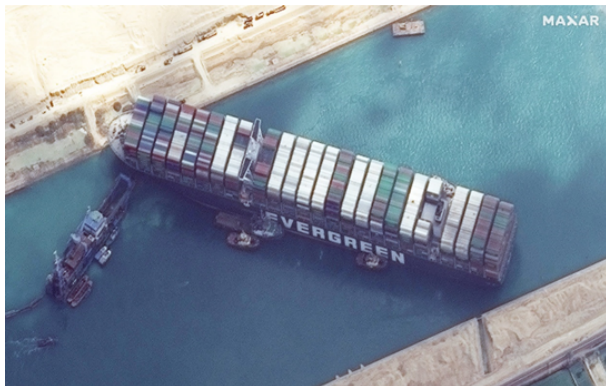
BY Egypt Today staff

Mon, 28 Sep 2020 - 08:54 GMT



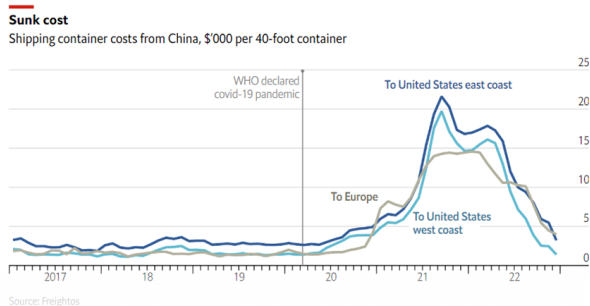
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Summary of the Paper: Three *Internally* Consistent Analyses

1. Measurement

- Use global input–output data & gravity regressions → trade cost residuals
- Construct country-level import-cost indices → correlate observed tariffs

2. Causal impact of Trade Costs: Panel Local Projections

- Final goods shocks: +10pp leads to 0.7pp CPI spike that fades within 2–3 years
- Intermediate shocks: 0.6pp CPI impact that persists over 5+ years.

3. Model & Policy: Multi-country NK-DSGE with final and intermediate goods

- Trade war: tariffs raised U.S. CPI by 0.3pp; GDP fell by 0.4%
- Pandemic & war: trade cost shocks added 1pp to U.S. inflation in 2022–23.

Armington Assumption: Backbone of Residuals, Regressions & Model

$$Q_{i,t} = \left(\sum_h Q_{ih,t}^{\frac{\eta-1}{\eta}} \right)^{\frac{\eta}{\eta-1}} \rightarrow Q_{ih,t} = \left(\frac{\tau_{ih,t} P_{h,t}}{P_{i,t}} \right)^{-\eta} Q_{i,t} \rightarrow \textcolor{red}{T}_{ih,t} = (\tau_{ih,t} \tau_{hi,t})^{1/2} = \left(\frac{\omega_{ih,t}}{\omega_{hh,t}} \cdot \frac{\omega_{hi,t}}{\omega_{ii,t}} \right)^{-\frac{1}{2(\eta-1)}}$$

Import-cost index (shock):

$$\textcolor{red}{\tau}_{i,t} = \sum_{h \neq i}^N \left(\frac{X_{ih,t}}{\sum_{k \neq i} X_{ik,t}} \right) \textcolor{red}{T}_{ih,t}$$

Local projections:

$$y_{i,t+h} = \delta_{i,h}^Q + \delta_{t,h}^Q + \beta_h^Q \Delta \textcolor{red}{\tau}_{i,t}^Q + \gamma_h^Q \Delta \tau_{i,t}^{\neq Q} + \Gamma_h^{Q'} Z_{i,t-1} + \varepsilon_{i,t+h}^Q, \quad h \geq 1$$

Structural Model:

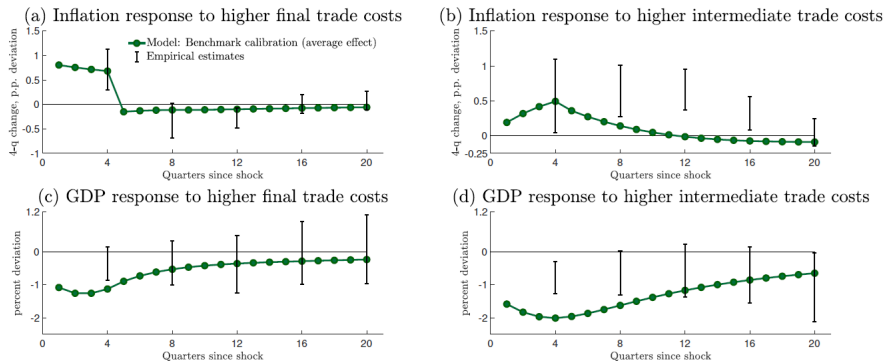
- Armington block (CES, iceberg costs) inside multi-country NK.
- Maps $\textcolor{red}{\tau}_{i,t}$ shocks into marginal costs & inflation.

Armington Assumption

Strengths & Limitations

Armington Assumption: Strengths & Limitations

Figure 6: Model vs Data

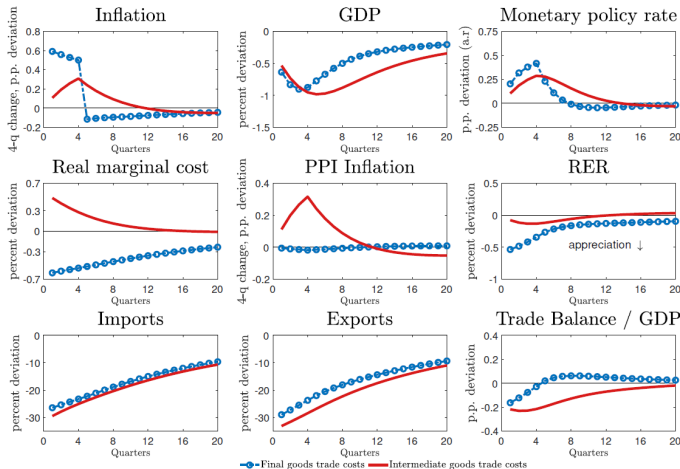


Note: Empirical and model-based estimates of the effects of a 10 percentage point increase in bilateral trade costs of the average country with all its trading partners. Trade shares in the simulation capture the average country openness to trade in final goods and intermediate inputs. Vertical whiskers correspond to empirical estimates reported in Section 3.

Good fit of local projection evidence on CPI inflation and GDP dynamics

Armington Assumption: Strengths & Limitations

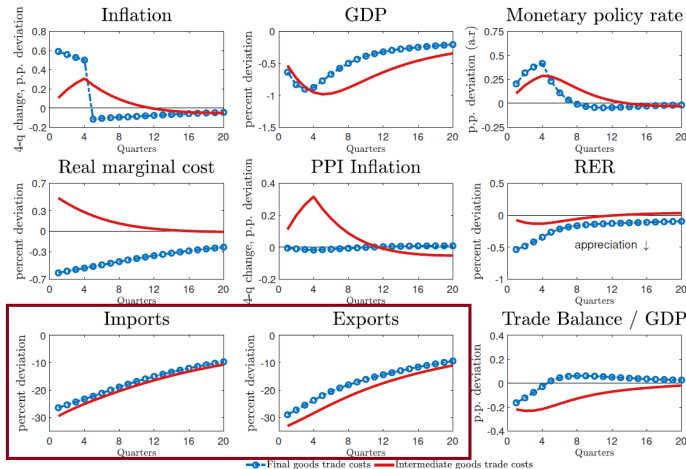
Figure 7: Effects on the U.S. of a 10 p.p. increase in trade costs



Note: Effects of a 10 percentage point increase in the U.S.'s trade costs from all trading partners on final consumption goods (blue circled line) and intermediate inputs (red solid line).

Armington Assumption: Strengths & Limitations

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Armington Assumption: Strengths & Limitations

Figure A.6: Response to Final Trade Costs

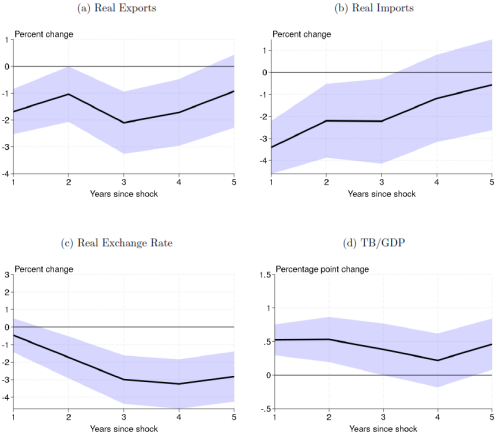
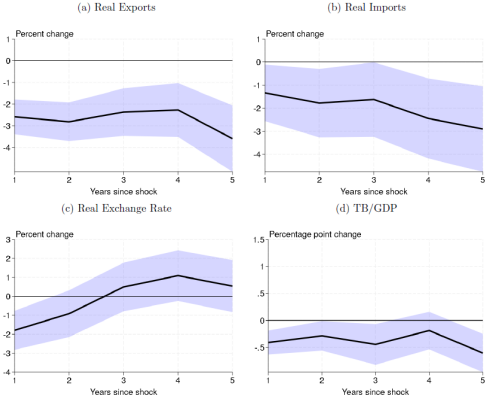


Figure A.7: Response to Intermediate Trade Costs



Model vs Local Projections: Trade Discrepancies

1. Magnitude of Trade Volume Responses

- **LP:** Exports and imports fall only modestly ($\approx 1-3\%$) and estimates are noisy
- **Model:** Predicts massive declines ($\approx 25-30\%$) in both exports and imports
 $\Rightarrow$ Trade-flow adjustments overstated by at least an **order of magnitude**

2. Trade Balance Dynamics

- **LP:** Final-goods trade-cost shock $\rightarrow$ TB/GDP **improves**
- **Model:** Predicts a **deterioration** or muted response in TB/GDP
 $\Rightarrow$ **Sign mismatch** $\rightarrow$ mis-specified substitution & reallocation

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3. Implication: rest of the exercises hinge on identification & model

- Inference, dynamic decomposition, policy analysis

Model vs Local Projections: Potential Causes & *Solutions*

1. Elasticity of substitution too high

- Cause: Armington CES with $\eta = 5$ forces very strong volume responses
- Solution: Consider Kimball aggregators or variable elasticity forms so that markups adjust

2. Pricing assumptions (currency denomination)

- Cause: Exchange rate changes translate one-for-one into import prices
- Solution: Introduce dominant currency pricing (DCP) or Calvo pricing in USD
- Solution: Model a distribution sector that buffers shocks before they hit final consumers

3. Absence of adjustment costs in trade

- Cause: No frictions in switching suppliers or restructuring supply chains.
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4. Calibration

- Trade cost shock autocorrelation ρ_τ 0.95 (quarterly) $\rightarrow$ LP predict ≈ 0 (fades away after $t = 1$)
- Estimate the model using Bayesian IRF - matching

Other Comments: Extensions & Robustness

Extensions

- Explore heterogeneity across advanced vs. emerging economies and by sectoral import intensity
- Use high-frequency proxies (freight rates, port congestion, shipping times) to refine timing
- Incorporate sector-level analysis and imported-energy shocks to dissect mechanisms
- Allow for asymmetric trade costs and varying weights in constructing import-cost indices

Robustness Checks

- Control for global commodity prices, exchange rates (NEER), and terms of trade to isolate shocks
- Test sensitivity to domestic trade flow measurements and alternative IO-weighting schemes
- Compare results using core CPI and excluding energy/food components

Thank you!