What Determines State Heterogeneity in Response to US Tariff Changes?

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[Visiting NY Fed on Thursdays, Room 118]

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Very timely paper!

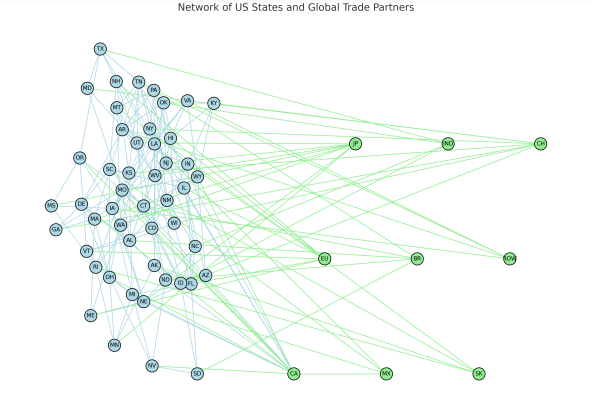
- In the midst of Trade War 2.0, orders of magnitude larger than 2018-19. 2025 Tariffs
- Liberation Day $\simeq$ 25 pp $\uparrow$ in tariffs
  - Shock to the cost of inputs of production (goods).
  - Since import-dependent sectors are concentrated in certain regions, effects not uniform

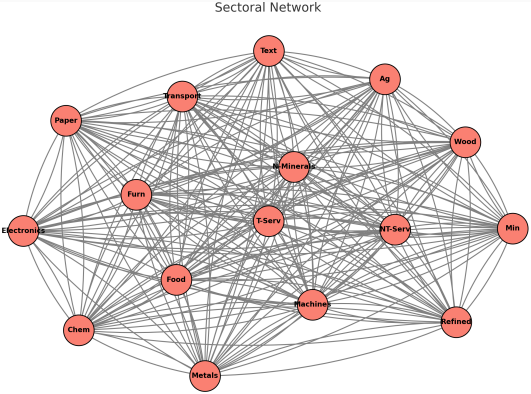
  => winners and losers. News
  - Sectoral $\cap$ Geographical dimensions => spillovers.

Very ambitious paper!

- Objective: Estimate the heterogeneous effect of an aggregate tariff shock on US States.
- Setup
  - Multi-sector, multi-region Eaton-Kortum model with *interstate* and *international* trade.
  - Calibrate the model to 50 U.S. states and major trade partners.
  - Simulate a uniform 25% tariff increase and analyze variation in state-level consumption.
- Key driver: interaction between a state's internal comparative advantage (CAd) and the U.S.'s external CAd.

Trade Network: Cross-State and Cross-Country





- States (blue) are a trade union (no tariffs) and a fiscal union (transfers). International trade subject to tariffs.

Main Findings

- A 25 pp unilateral increase in U.S. import tariffs ↑ aggregate U.S. consumption by 0.54 %. Heterogeneity: state-level changes [–0.8 % , +2.1 %].
- States whose internal CAd (sectoral productivity) is *negatively* correlated with U.S. external CAd (e.g., mining vs. high-tech) gain most.
- Foreign retaliation (tit-for-tat 25 pp) reverses national gains (–0.94 %), deepens state disparities, and hits export-intensive states harder.
- Labor mobility across sectors and states: moderates but does not eliminate cross-state dispersion.
- Pareto efficiency can be attained with per-capita redistributive transfer scheme.

Connections to Existing Literature

- **Ricardian and H–O frameworks:** Builds on Eaton–Kortum (2002) and Caliendo–Parro (2015), embedding both productivity and skill-abundance differences.
- **Intranational trade:** Extends Caliendo et al. (2018) and Rodríguez-Clare et al. (2021) by jointly modeling interstate and international trade with endogenous trade costs.
- **Regional impacts of trade shocks:** Complements Autor–Dorn–Hanson (2013), Kovak (2013), Waugh (2019), and Auer et al. (2020) on spatial heterogeneity under limited labor mobility.
- **Optimal policy in customs unions:** Provides quantitative groundwork for optimal tariff and transfer design in multi-member unions (cf. Ossa 2011; Bagwell–Staiger–Yurukoglu 2021).

COMMENTS

Comment 1: The 'Policymaker hat'

- Understanding how a tariff hikes affect regions/sectors heterogeneously is extremely important for policymakers.
- What the paper does right: decomposing the 'tariff effect' from the 'general equilibrium effect'

$$\frac{\widetilde{C}_n}{C_n} - 1 = \overbrace{\underbrace{\left(\frac{F_n}{P_n^c C_n}\right)}_{\substack{\text{Initial factor}\\ \text{income share}}} \underbrace{\left(\frac{\widetilde{F}_n/\widetilde{P}_n^c}{F_n/P_n^c} - 1\right)}_{\substack{\%\Delta \text{ in real}\\ \text{factor income}}}}^{\text{Factor income contribution}} + \overbrace{\underbrace{\left(\frac{T_n}{P_n^c C_n}\right)}_{\substack{\text{Initial tariff}\\ \text{revenue share}}} \underbrace{\left(\frac{\widetilde{T}_n/\widetilde{P}_n^c}{T_n/P_n^c} - 1\right)}_{\substack{\%\Delta \text{ in real}\\ \text{tariff revenue}}}}^{\text{Tariff revenue contribution}},$$

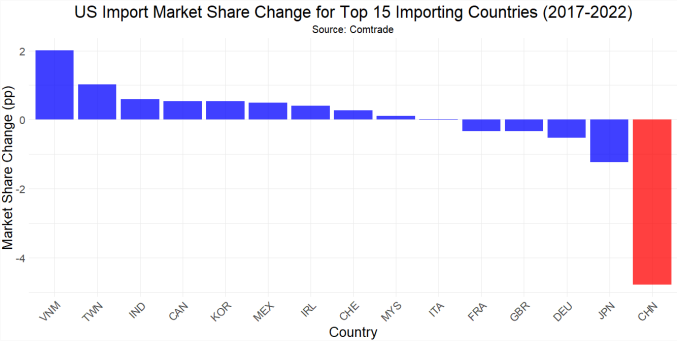
- Most estimates out there (think tanks, media) only consider the tariff effect.
- They also decompose 'sectoral effect' vs 'geographical effect' w/ immobile labor.
- Suggestion: Compute impact effects on 'inflation' (PCI) and GDP.

Comment 2: Why 2012?

- This whole paper is calibrated to before the 2018-19 tariffs.
  - 'We choose year 2012, because it is the most recent available year for bilateral trade between US states provided by the Census Bureau's Commodity Flow Survey.'
  - What about 2017 update?
- Standard in trade literature, but not so useful for policymakers today.
- Suggestion: Use the most recent data for trade flows and tariffs. Compute effects of 2025 Tariffs ($\simeq$25 pp!).
- Why is this important?

The supply chain changed

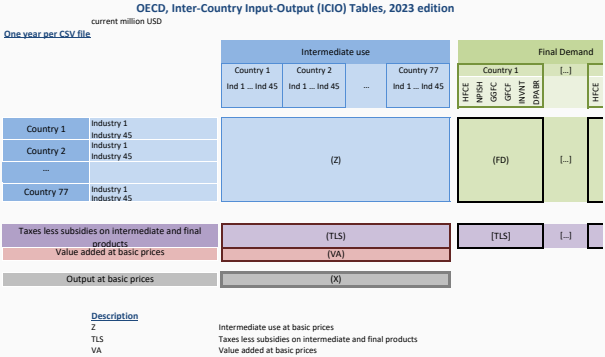
- Trade tensions between the U.S.- China since 2018 triggered reallocation of supply chains, [Gopinath, et al (2024), Fernandez-Villaverde, Mineyama and Song, 2024].
- "Nearshoring"/"friend-shoring" [Alfaro et al]: Vietnam key player now.



Source: Kalemi-Ozcan, Di Giovanni, Silva, Soylu and Yildirim (2024)

What to use instead?

- Suggestion: Use OECD Inter-Country Input–Output (ICIO), 2023 release.

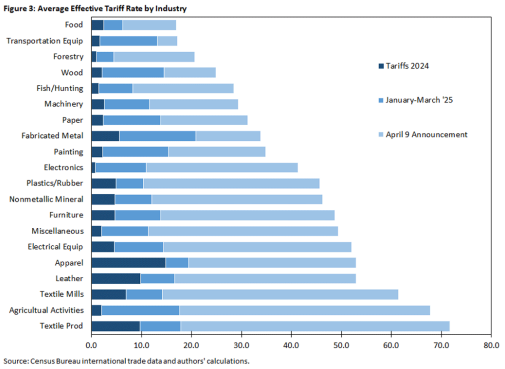


Source: https://www.oecd.org/en/data/datasets/inter-country-input-output-tables.html

- Suggestion: use WITC tariff, 2022 release.

Sectoral impact?

- I computed AETR by sector using Census data, keeping import shares constant (crappy job!).



Source: Azzimonti et al, *Economic Brief,April 2025, No. 25-15*

- Suggestion: Display the AETR by sector using model estimates.

Comment 3: What about unemployment?

- In this model, wages are perfectly flexible and adjust fully to the shock.

=> effects on *reallocation* rather than *unemployment* which is what Fed officials fear the most!

- Suggestion: why not have downward rigidity to wages or a (random) time lag to move between geographical locations and/or sectors?
  - It takes time to learn a new trade or move to new location.
- Rodríguez-Clare, Ulate, Vazquez (2025): dynamic trade and reallocation model with downward nominal wage rigidities.

  > *our analysis disaggregates the U.S. into its 50 states, while incorporating cross-state redistribution of the tariff-generated fiscal revenue, allowing us to analyze which states gain or lose more from the shock.*

- Suggestion: cite their paper!

Comment 4: Lump-sum transfers or “tax cuts”?

Thomson Reuters | TAX & ACCOUNTING | Our solutions

FEDERAL TAX

Treasury Hopes to Offset Tax Cut Costs With Tariff Revenue

Tim Shaw

April 30, 2025 · 5 minute read

Treasury Secretary Scott Bessent expressed optimism on President Trump’s 100th day in office about the progress of negotiations with congressional taxwriters on extending Tax Cuts and Jobs Act (TCJA) provisions as the administration expects tariffs to help pay for tax provisions.

- In the paper tariff revenue is rebated back as a lump-sum transfer => unrealistic.
- Suggestion (sequel?): distortionary corporate/sectoral taxes in US, additional tariff revenue used for tax cuts => efficiency gains [Alessandria, Ding, Khan and Mix, 2025.]

Comment 5: Political-economy hat

- Authors consider tariff-revenue rules that would generate Pareto efficiency.
- What would be politically feasible?

Political-economy hat: thoughts

1. Current focus on Wyoming and Oregon. Why?
   Suggestion: focus on 'big' or politically powerful States.

2. Heterogeneous preferences over tariff levels open the door for state-level bargaining.
   Suggestion: sequel paper?

3. Mode has implications for income inequality.

   - How do these tariffs affect Gini coefficient? What about the distribution of income inequality across states?
   - How do redistributive rules of tariff revenue affect these inequality measures?

Conclusion

- Fantastic paper.
- Extremely useful for policymakers in the current environment.
- I can think of SEVERAL sequels to it, this is a gold mine for research!!!

Winners and Losers according to the Media

Back

Trump tariffs to hit small farms in Maga heartlands hardest, analysis predicts

Major corporations are best placed to benefit from Trump polices at the expense of independent farmers

Heterogeneous geographical impact

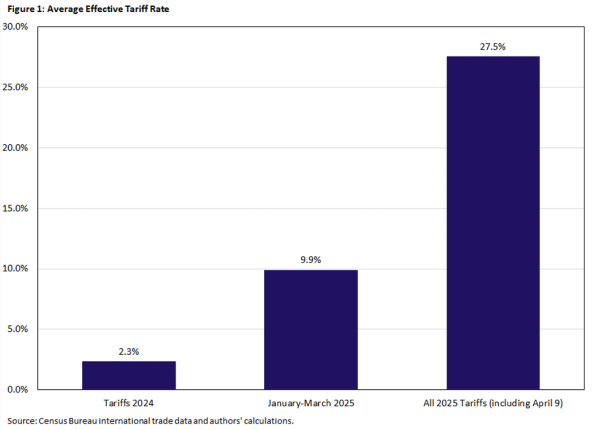
The early winners and losers of Trump's tariff battle with Canada, Mexico, China and Europe

Among the projected early winners are domestic US steel and aluminum manufacturers, like US Steel and Cleveland-Cliffs, which are expected to benefit after Trump slapped a blanket 25% levy on the key materials.

Century Aluminum, the US's largest primary aluminum producer, said Trump's tariffs would "help drive the resurgence of domestic aluminum production."

Heterogeneous sectoral impact

Average Effective Tariff Rate Back



Source: Azzimonti et al, *Economic Brief,April 2025, No. 25-15*