What Determines State Heterogeneity in Response to US Tariff Changes?

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Outlook for North American Trade & Immigration
Dallas Fed | PIIE
April 10, 2025

Disclaimer: The following views are those of the authors and do not necessarily reflect the views of the Federal Reserve Banks of Chicago, St. Louis, or the Federal Reserve System.

Roadmap

- Aggregate trade-offs for trade policy
  - Prices
  - Income
  - Government revenue
- Winners and losers
  - Sector-level implications
  - State-level implications

Reminder
What is a Tariff?

- A tariff is a sales tax applied to foreign-produced goods
- The duty is levied on the importer by the domestic government

- It is **not** directly paid by the exporter
- After the dust settles, incidence may be shared between the importer and the exporter

Aggregate Trade-offs

Some Friendly National Accounting

$$P \times C = W \times L + T$$

- P – Price level
- C – Aggregate consumption
- W – Aggregate factor return (average wage)
- L – Employment
- T – Tariff revenue

Aggregate Trade-offs
Some Friendly National Accounting

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- P – Price level
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Since we ultimately care about quantities, let's use this:

$$C = \frac{W \times L}{P} + \frac{T}{P}$$

Aggregate Trade-offs
General Mechanics

What happens as U.S. unilaterally ↑ tariffs?

- P ↑
  - Magnitude depends on *pass-through*...
  - How *elastic* is import demand?
  - How *elastic* is export supply?
- US *terms of trade* improve
  - Each unit produced/exported results in more units imported/consumed

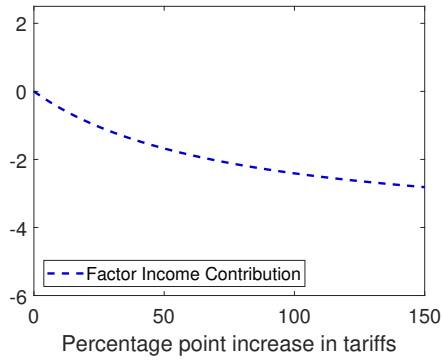
$$C = \frac{W \times L}{P} + \frac{T}{P}$$

Aggregate Trade-offs
General Mechanics

What happens as U.S. unilaterally ↑ tariffs?

- $\frac{W \times L}{P} \downarrow$
  - Generally depends on specific policy

$$C = \frac{W \times L}{P} + \frac{T}{P}$$

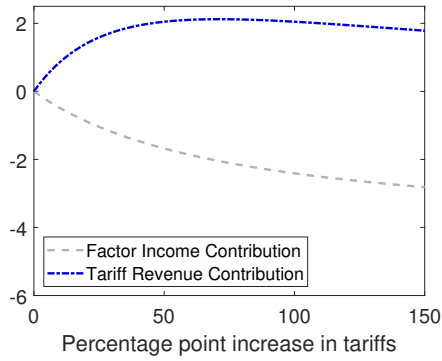


Aggregate Trade-offs
General Mechanics

What happens as U.S. unilaterally ↑ tariffs?

- $\frac{T}{P}$ hump shaped
  - ↑ when tariffs are low
  - ↓ when tariffs are high
- 70% tariff increase maximizes revenue
  - revenue increases by 2% of GDP

$$C = \frac{W \times L}{P} + \frac{T}{P}$$

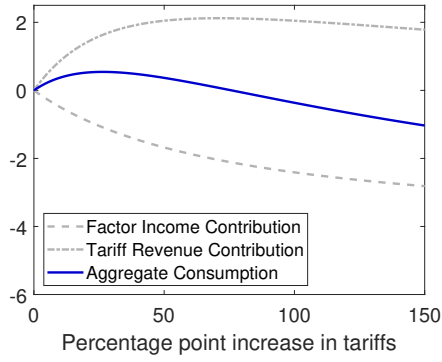


Aggregate Trade-offs
General Mechanics

What happens as U.S. unilaterally ↑ tariffs?

- Effect on C is hump shaped
  - Balance between income and revenue
- 25% tariff increase maximizes C

$$C = \frac{W \times L}{P} + \frac{T}{P}$$

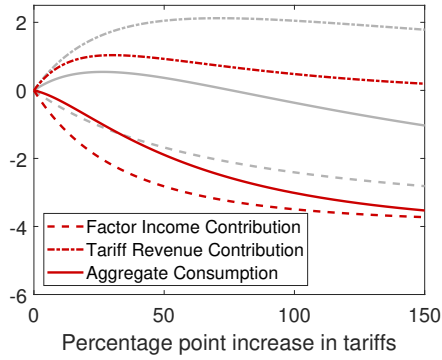


Aggregate Trade-offs
General Mechanics

What happens under tit-for-tat retaliation?

- $C \downarrow$
  - Deterioration in U.S. terms of trade
- $\frac{W \times L}{P} \downarrow$
  - Exports, production $\downarrow$
- $\frac{T}{P}$ still hump shaped, but lower
  - Max revenue $\downarrow$ to 1.2% of GDP

$$C = \frac{W \times L}{P} + \frac{T}{P}$$



Heterogeneity

Sector-Level Winners and Losers

- Tariffs offer **protection** for the **least** internationally competitive sectors
- Tariffs **raise input costs** for the **most** internationally competitive sectors

Top 3 Winning Sectors

1. Textiles and apparel
2. Mining
3. Wood

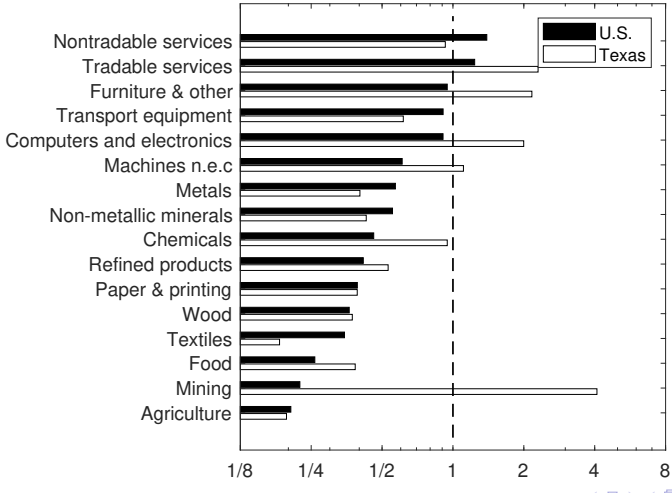
Top 3 Losing Sectors

1. Transportation equipment
2. Chemicals and pharmaceuticals
3. Computers, electronics and electrical equipment

Heterogeneity

International Competitiveness Index

Regions differ in productivity, worker skills, natural resources, geography

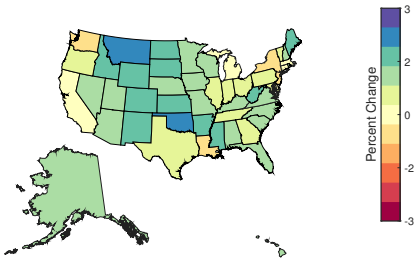


Heterogeneity

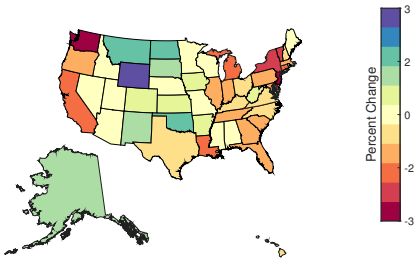
State-Level Winners and Losers

Percent Change in Consumption Following 25% increase in Tariffs

Without retaliation



With tit-for-tat retaliation

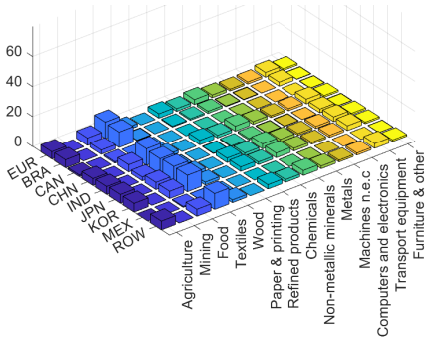


	Texas	U.S.	Canada	Mexico	Rest of World
Without retaliation	0.54	0.51	−1.75	−1.81	−0.20
With retaliation	−0.57	−0.94	−1.08	−1.61	−0.08

Ongoing Trade War

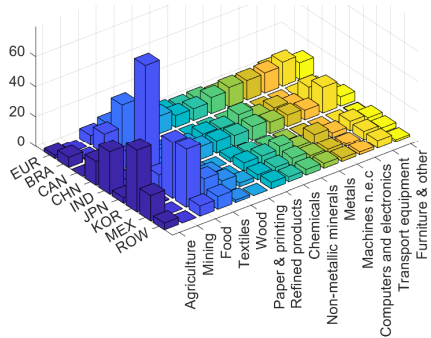
As of 2017

U.S.-Imposed Tariffs



Average, 1.6%

Foreign-Imposed Tariffs on U.S.

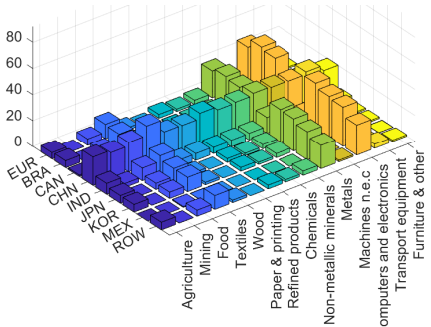


Average, 2.3%

Ongoing Trade War

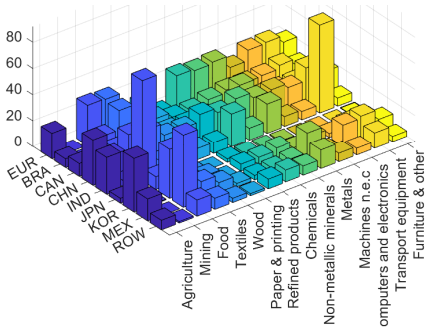
As of 2024

U.S.-Imposed Tariffs



Average, 1.6% $\rightarrow$ 8.0%

Foreign-Imposed Tariffs on U.S.

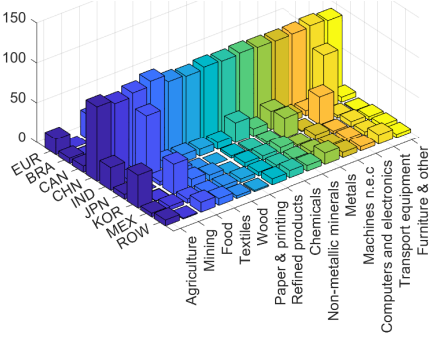


Average, 2.3% $\rightarrow$ 7.6%

Ongoing Trade War

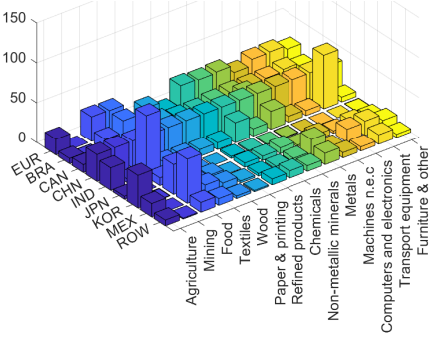
As of April 8, 2025

U.S.-Imposed Tariffs



Average, 1.6% $\rightarrow$ 8.0% $\rightarrow$ 18.8%

Foreign-Imposed Tariffs on U.S.



Average, 2.3% $\rightarrow$ 7.6% $\rightarrow$ 8.0%

Thank You

Coming Soon: "History of U.S. Tariffs" In-Depth Dallas Fed Blog Post

Non-technical summary of the evolution of U.S. trade policy with timely analysis

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