The Evolving Role of the United States in Global Value Chains

Pol Antràs (Harvard)

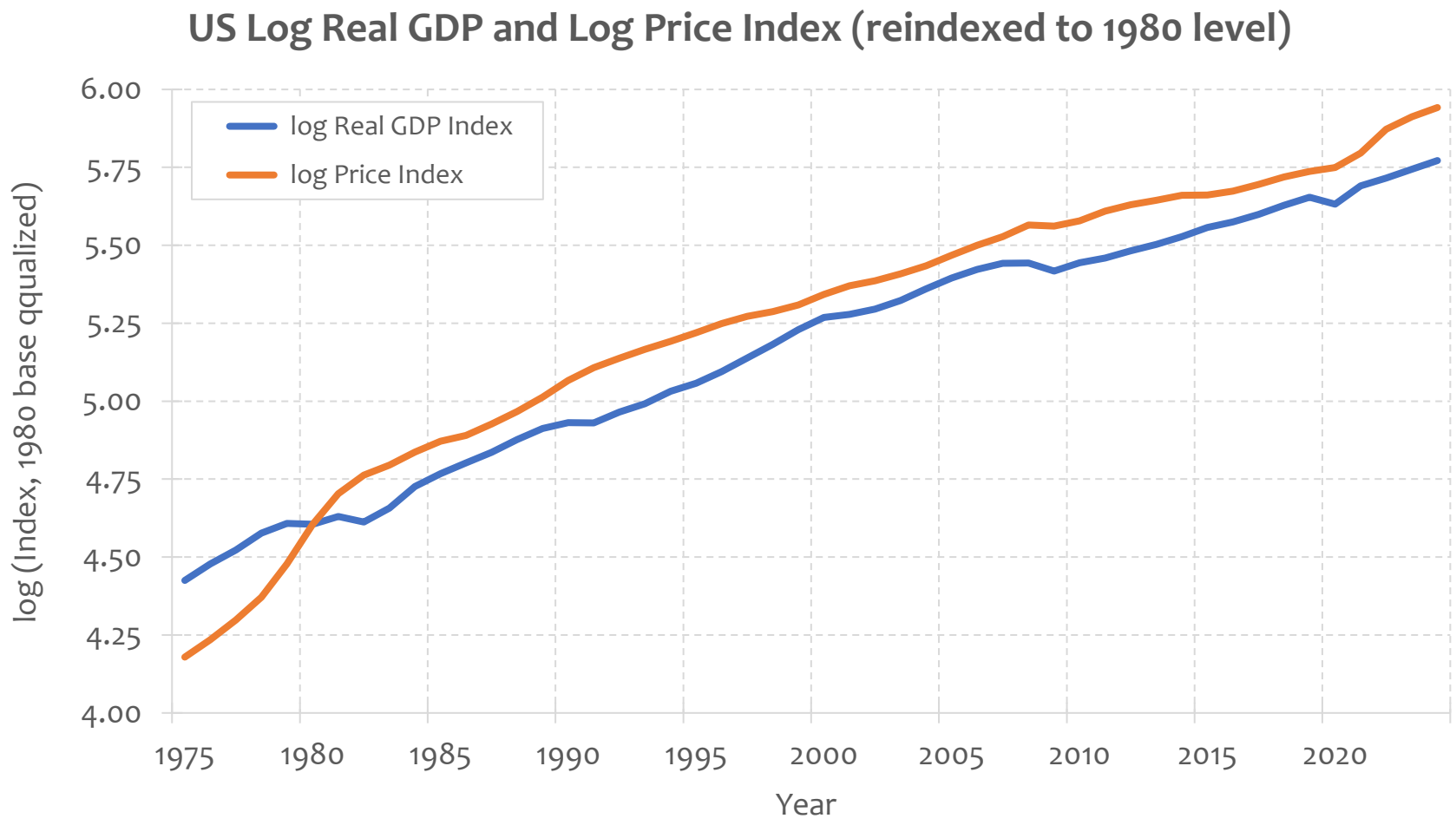
The U.S. Economy in a Changing Global Landscape
Federal Reserve Bank of Boston's 69th Economic Conference

Road Map

- The US in World Trade and GVCs: A Long-Run Perspective
- The Economics of Global Value Chains
- The Current Policy Environment
- Some Speculative Observations

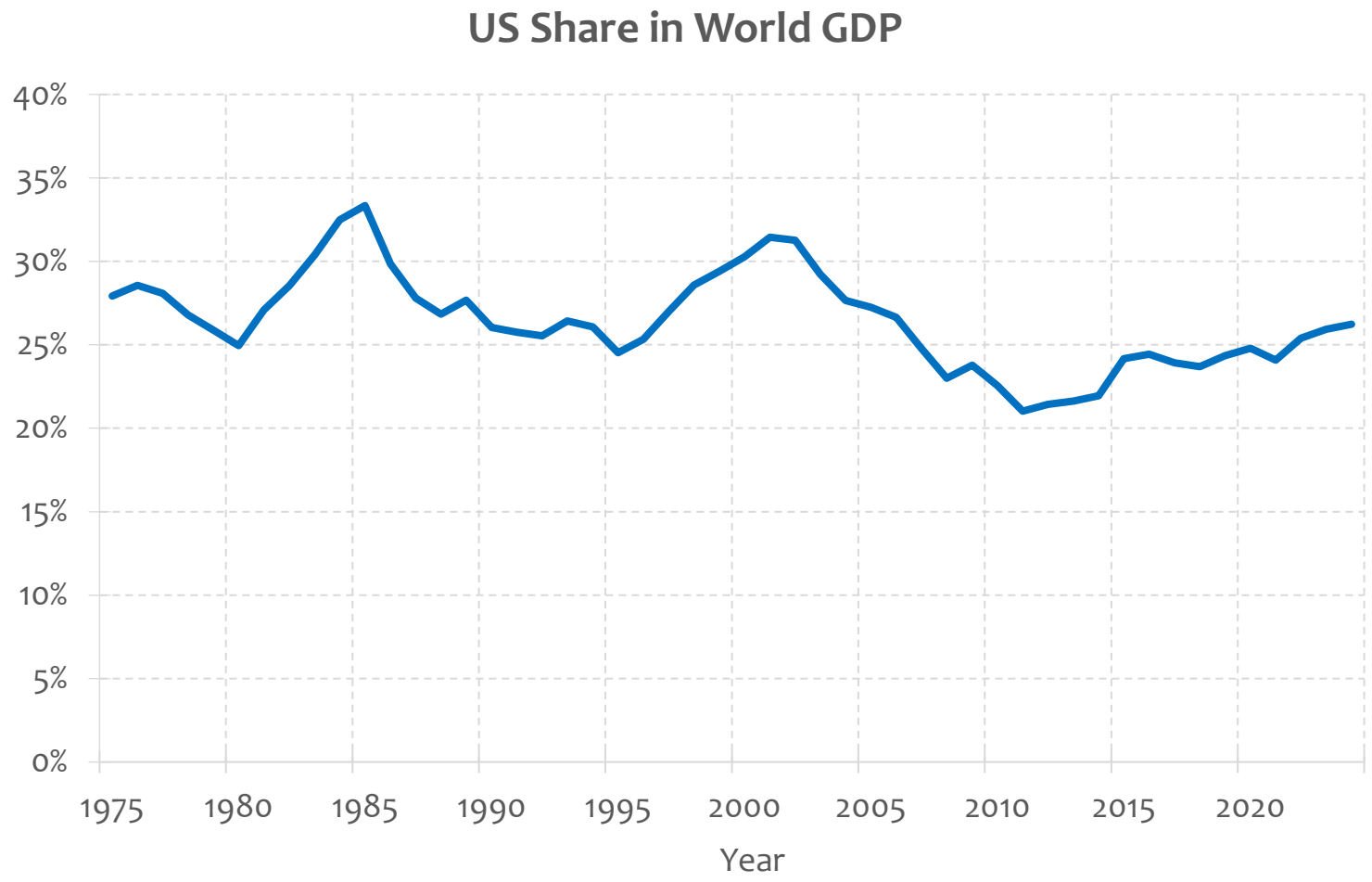
A Long-Run View:
Trends in the Last 50 Years

US Has Been a Remarkably Stable Economy



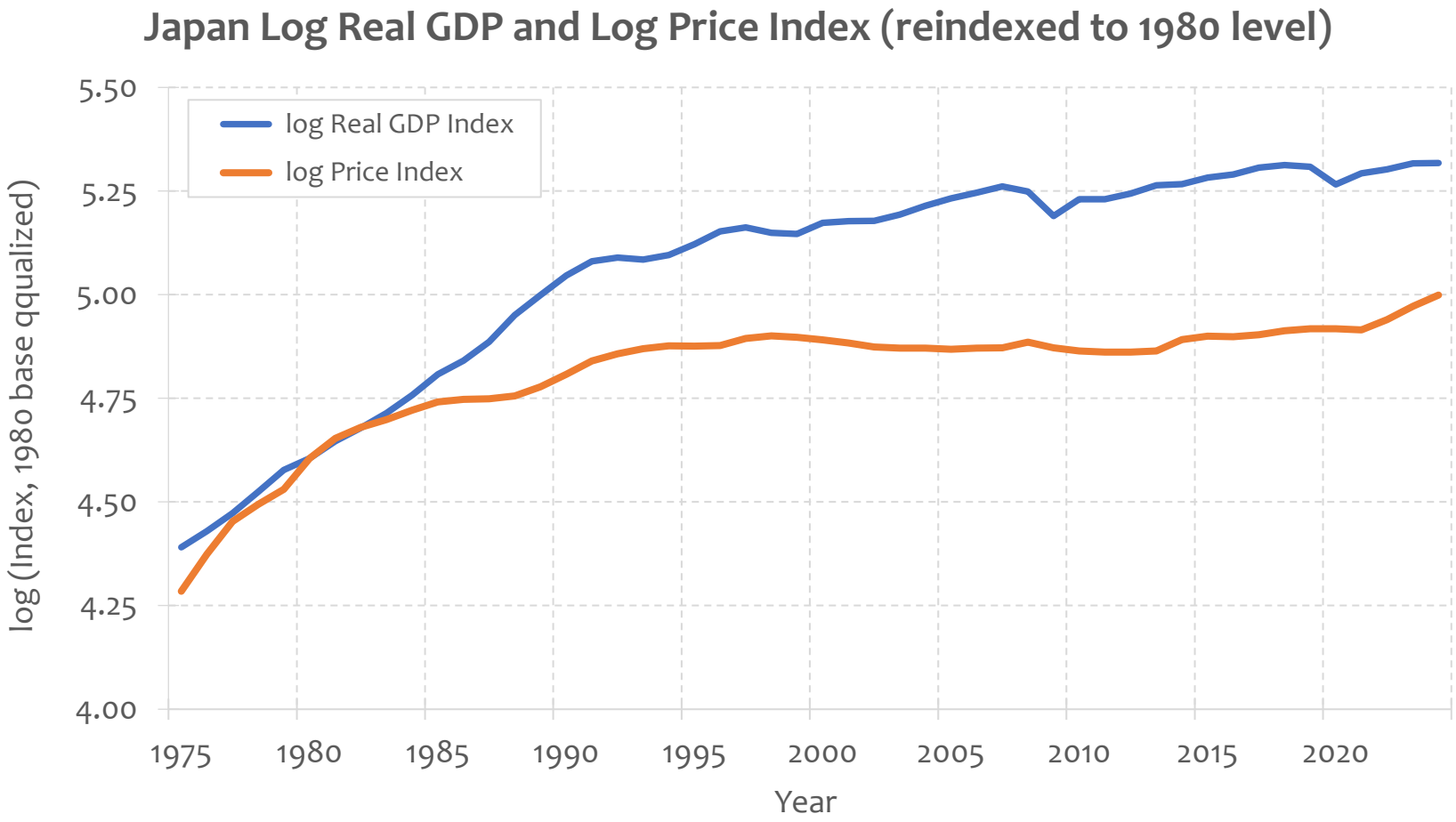
Source: World Development Indicators

US Remains About 25% of the World Economy



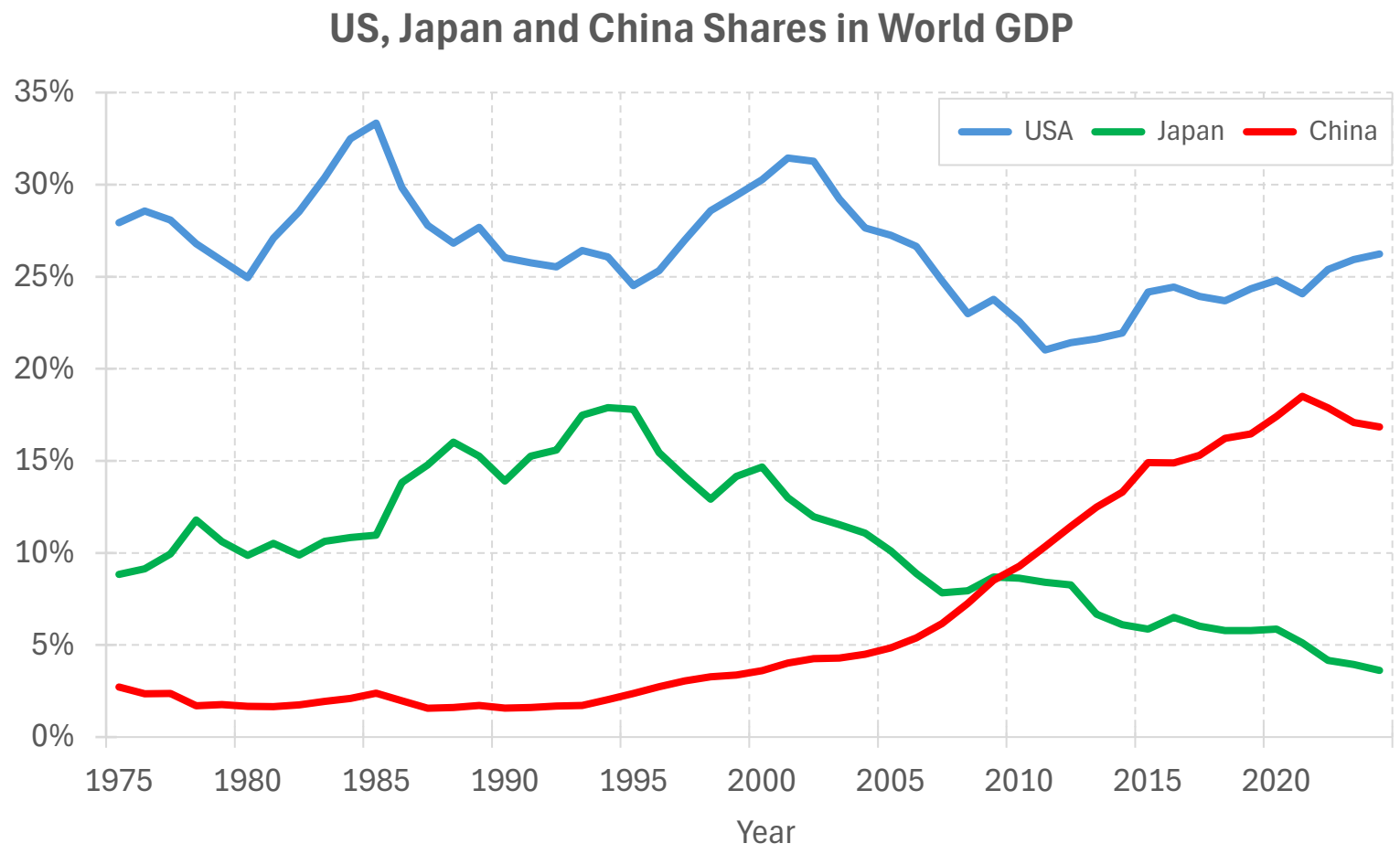
Source: World Development Indicators

It Need Not Have Played Out This Way



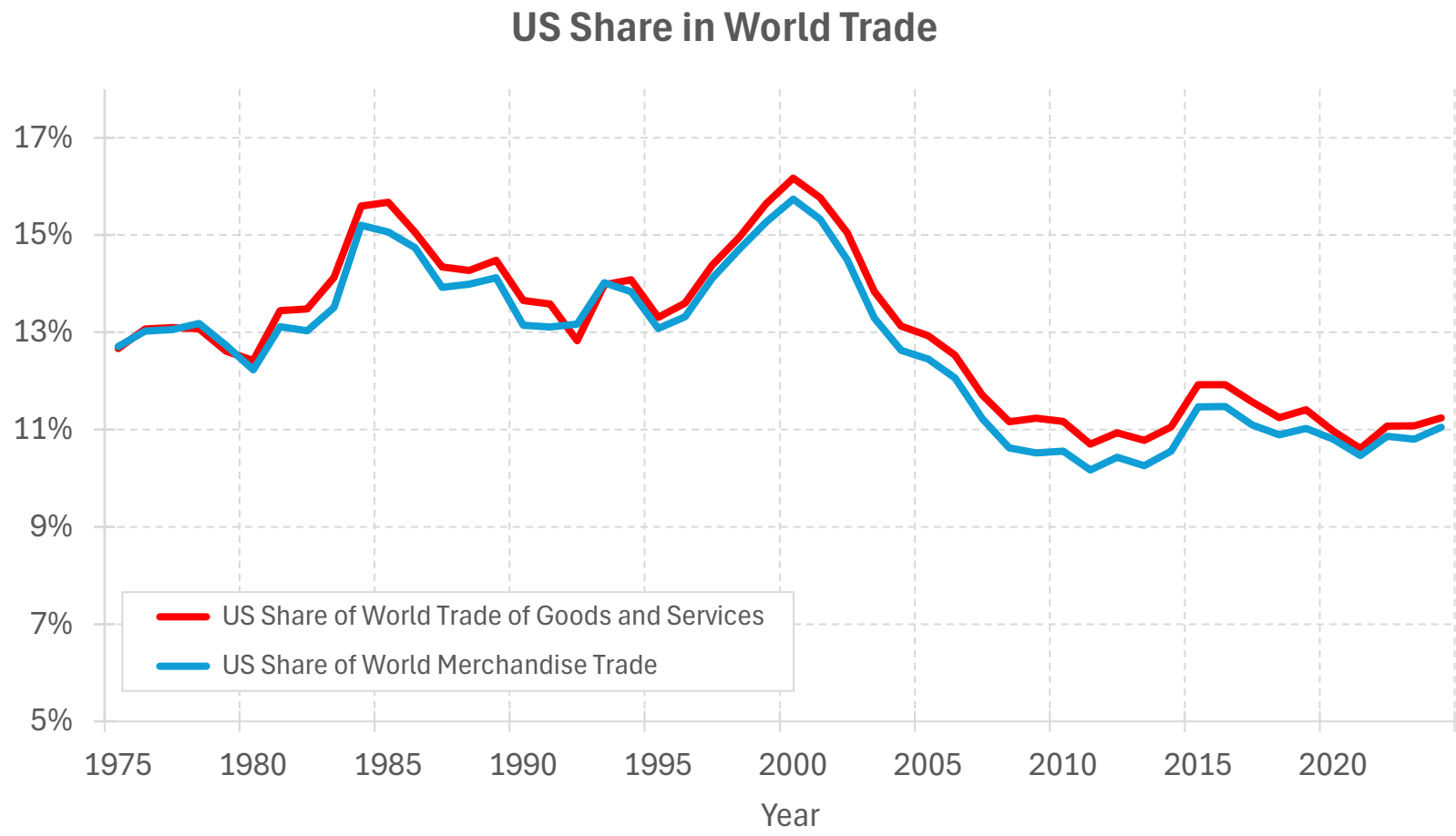
Source: World Development Indicators

A Japanese Decline and a Chinese Ascent



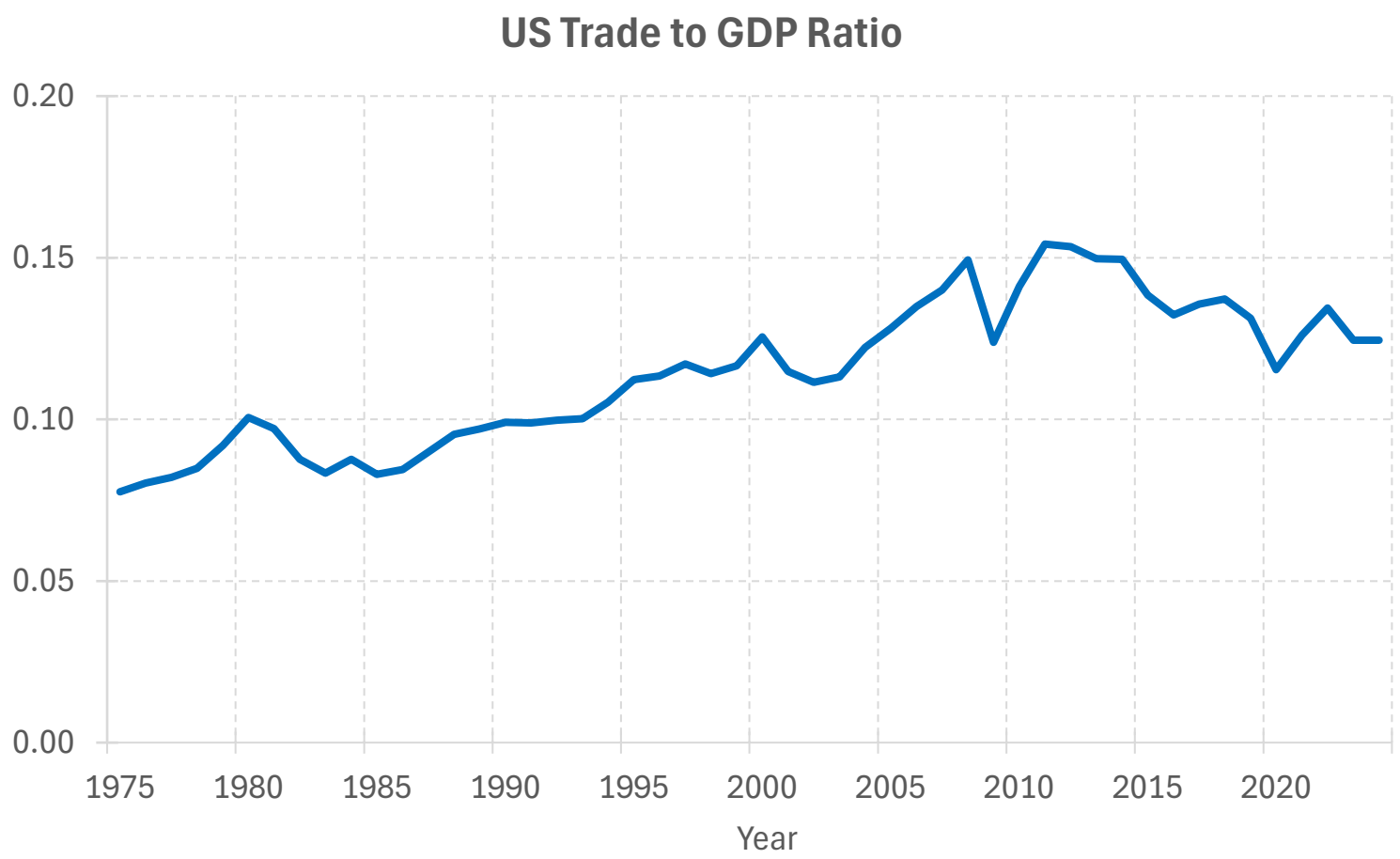
Source: World Development Indicators

US Accounts for Declining Share of World Trade



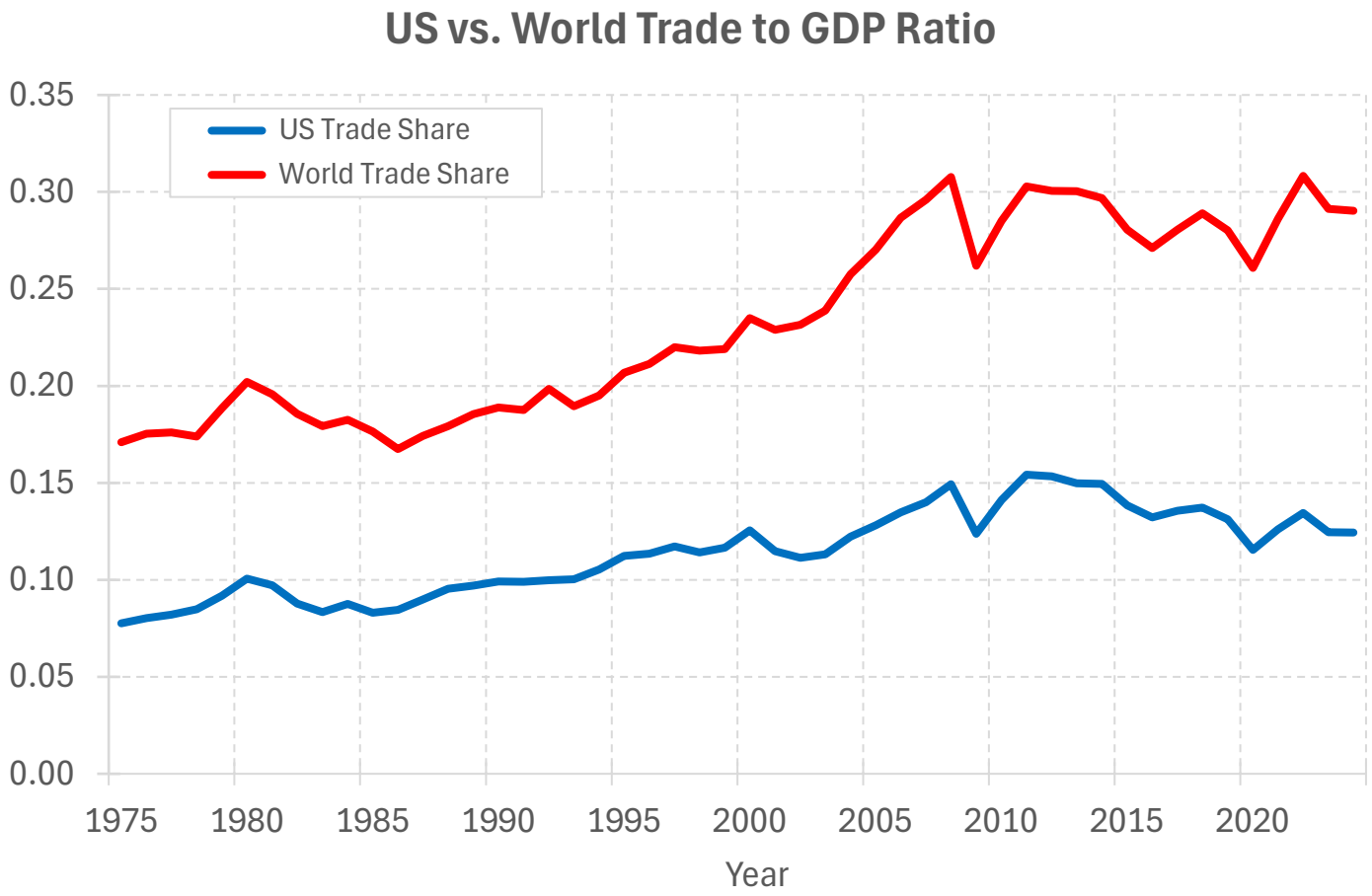
Source: World Development Indicators

Yet the US Trade to GDP Ratio Increased



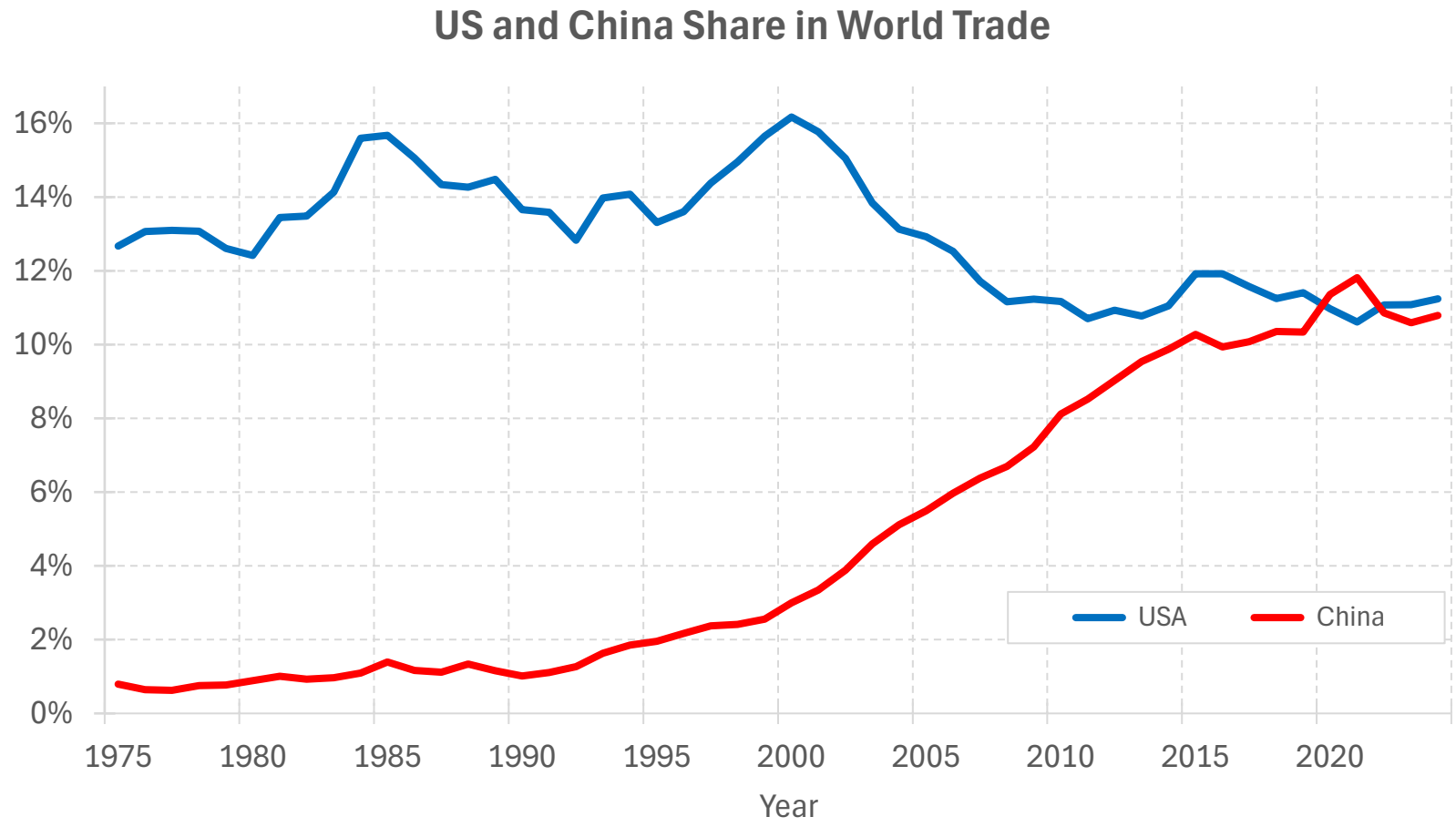
Source: World Development Indicators

Key: Rest of the World Became Even *More* Open



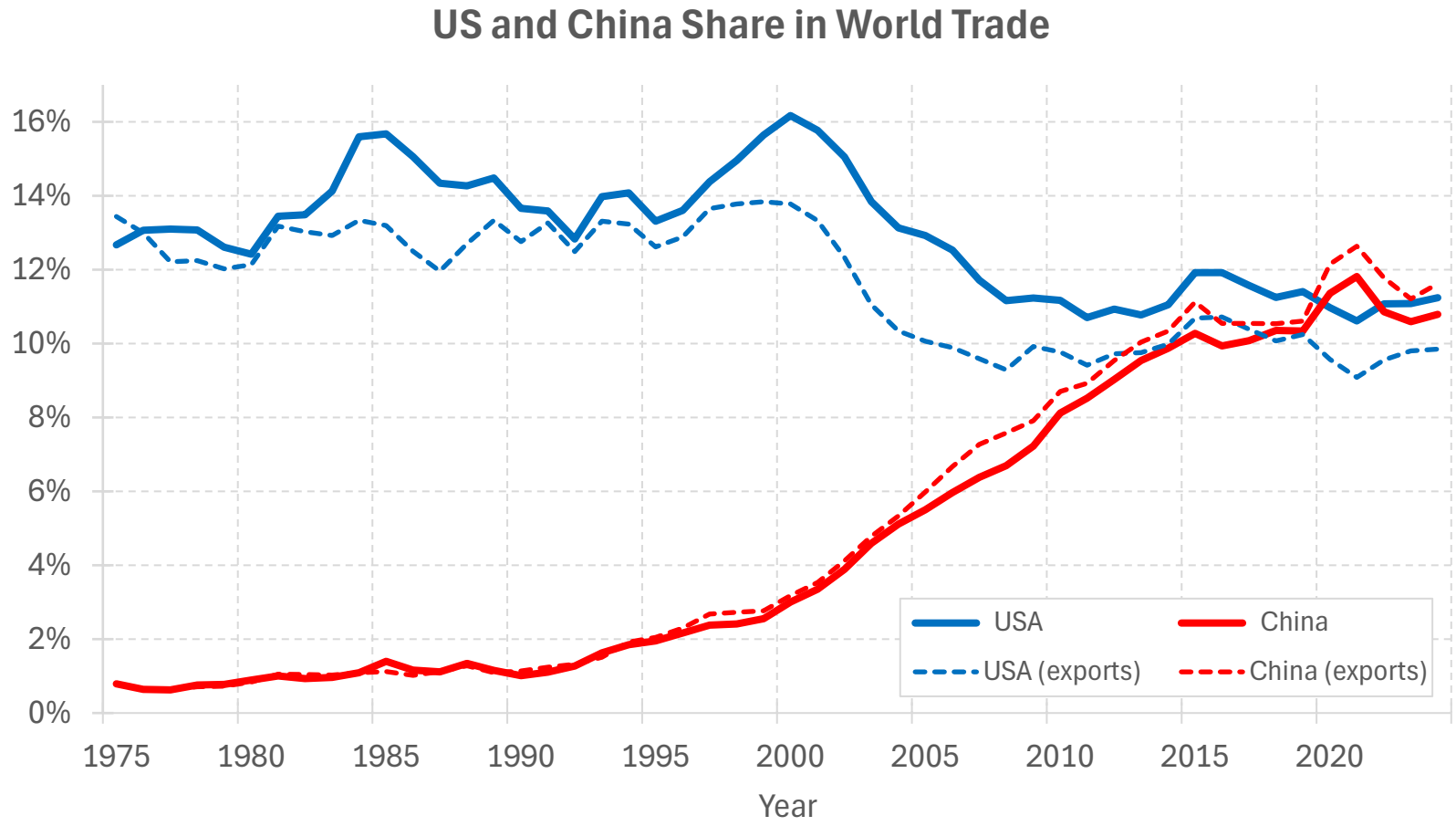
Source: World Development Indicators

China Caught Up with US



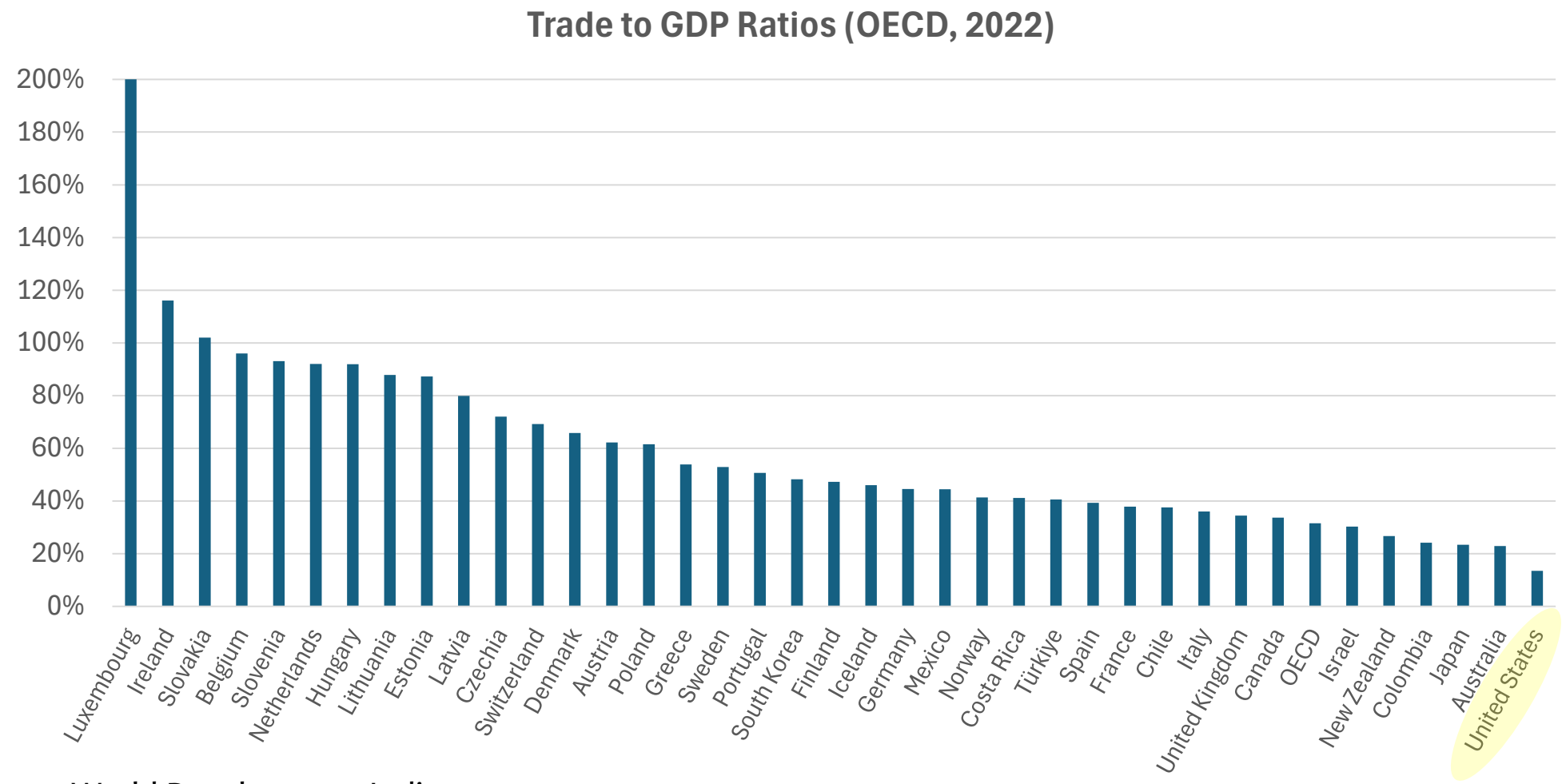
Source: World Development Indicators

China Overtook US in Exports



Source: World Development Indicators

US Features a Relatively Low Trade to GDP Ratio



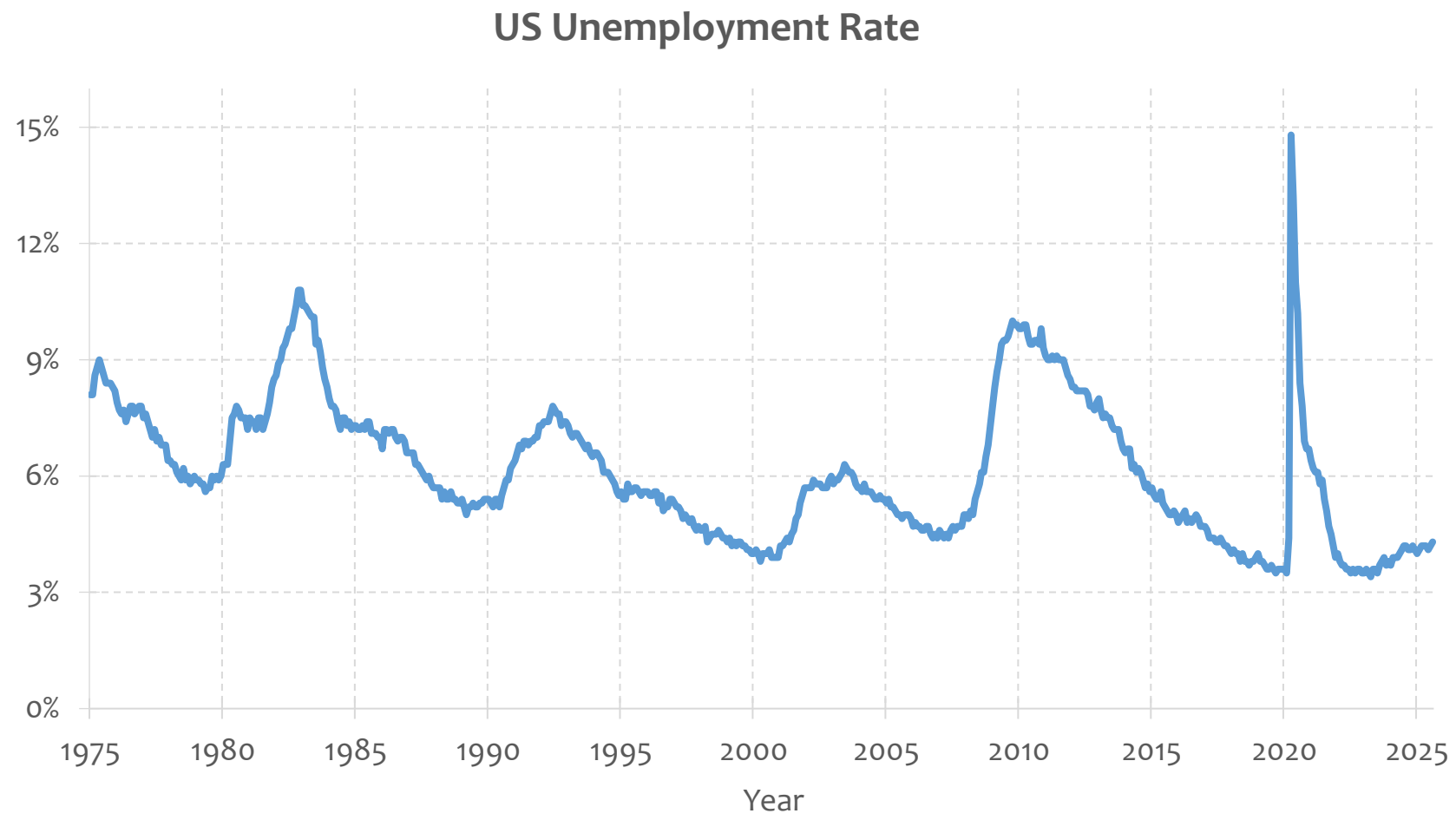
Source: World Development Indicators

Taking Stock

- US remains the largest economy in the world
- US has become more open to trade, but less so than other countries
- US appears more insulated from trade than other OECD economies
- Little evidence that US economy is decoupling from the rest of the world economy

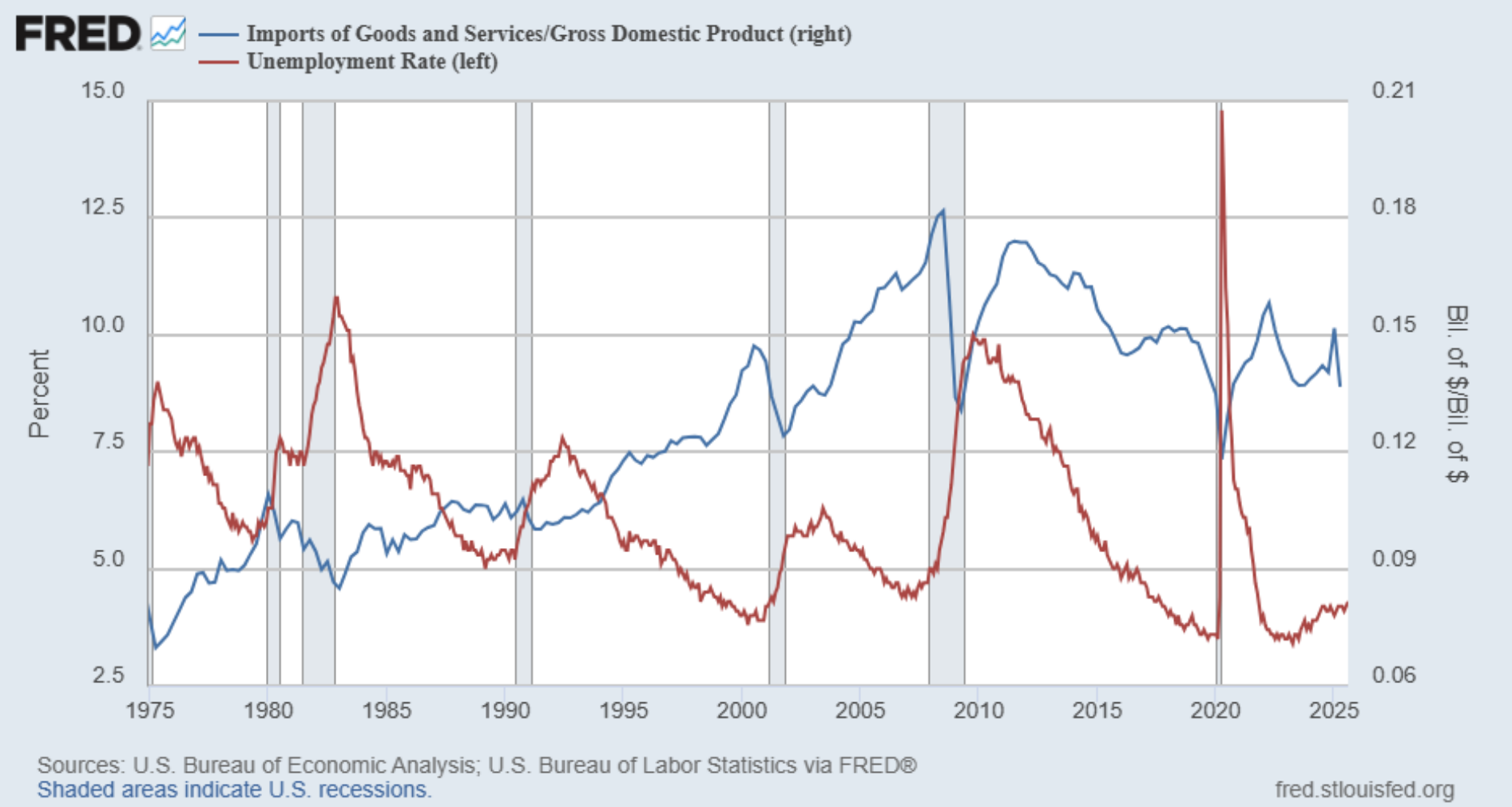
Globalization and the US Labor Market

US Unemployment Rate Largely Stable

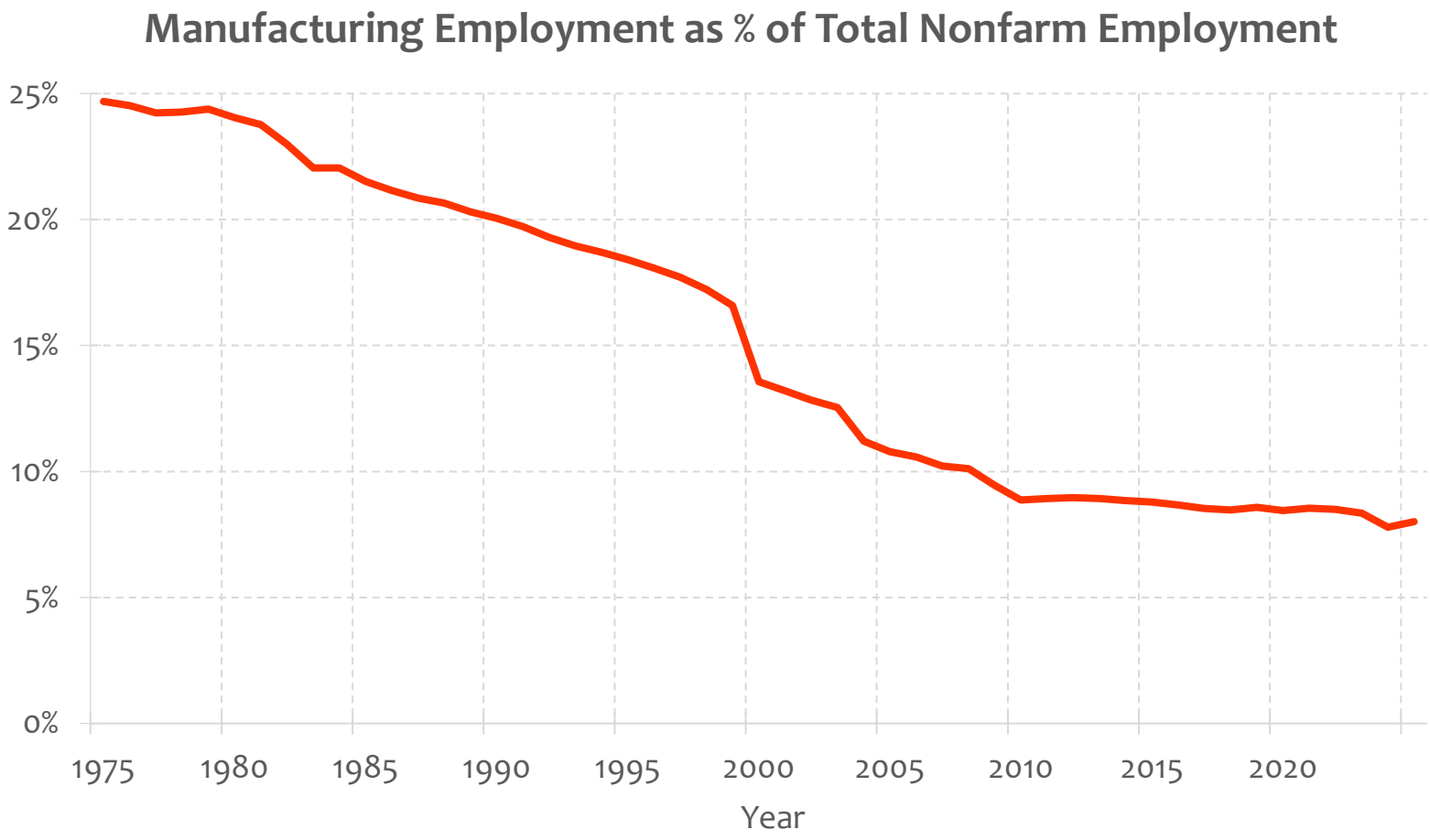


Source: Bureau of Labor Statistics

US Unemployment Seems Unrelated to Trade

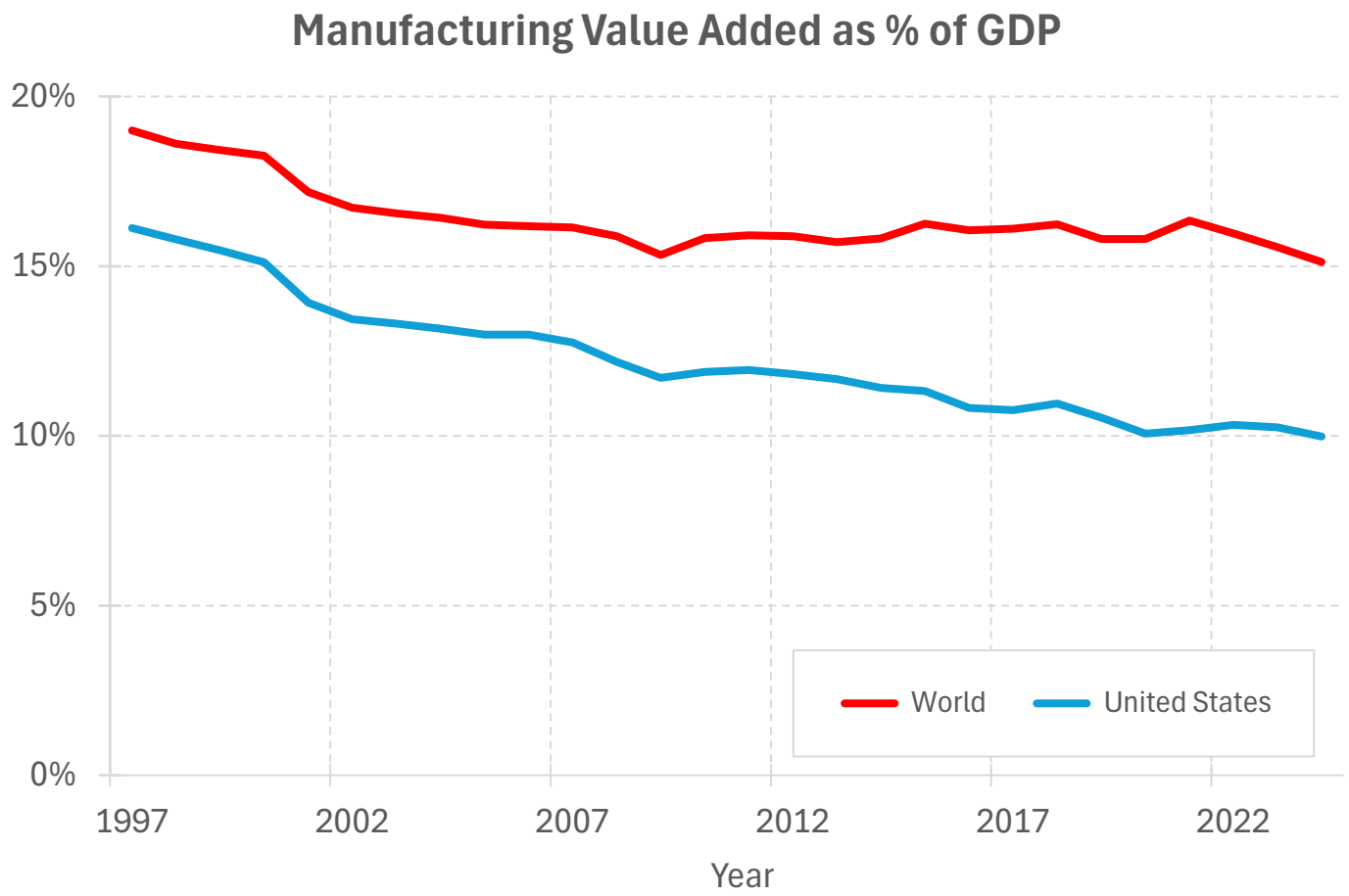


Steady Decline in Manufacturing Employment



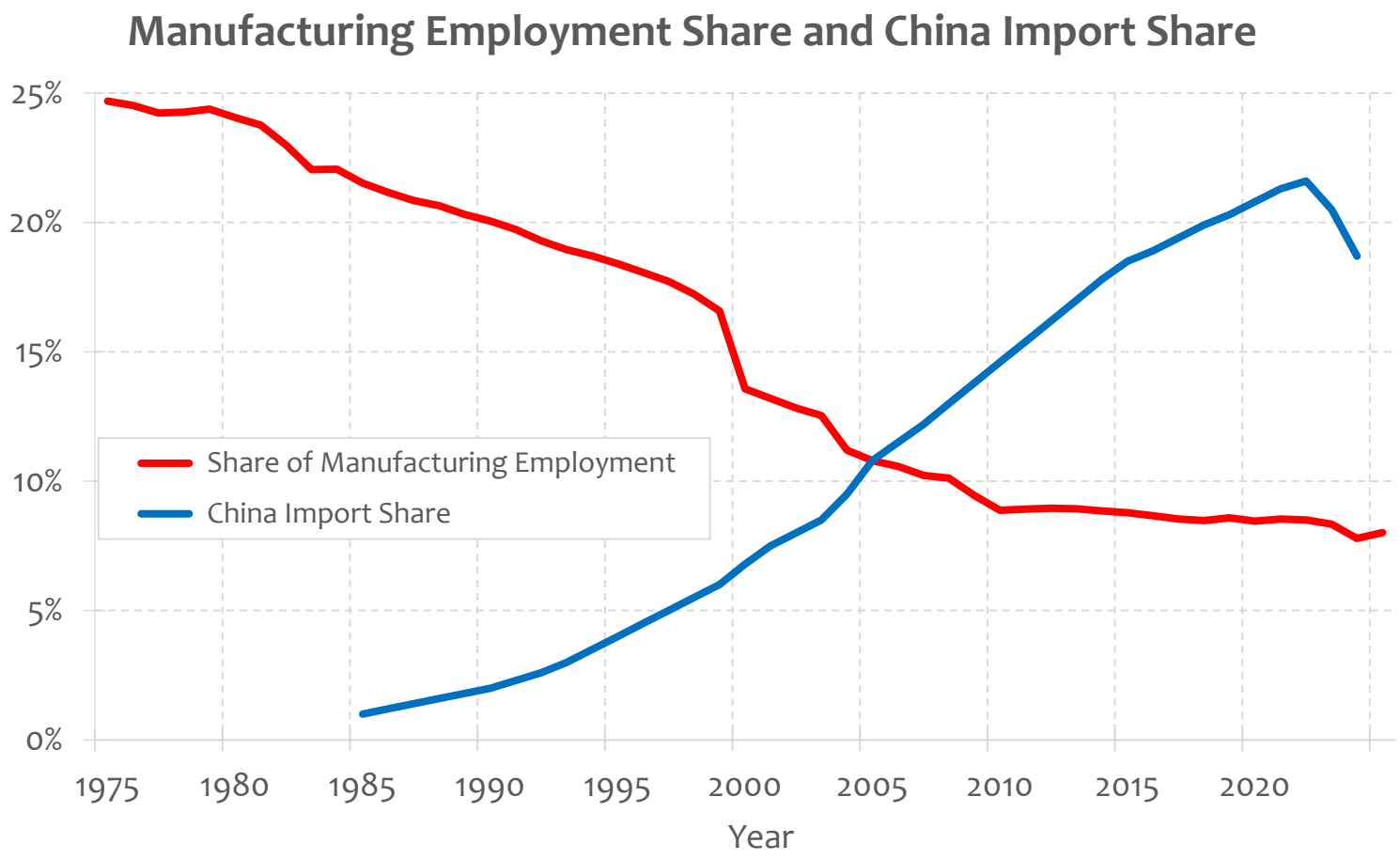
Source: Bureau of Labor Statistics

Steady Decline in Manufacturing Share of GDP



Source: World Development Indicators

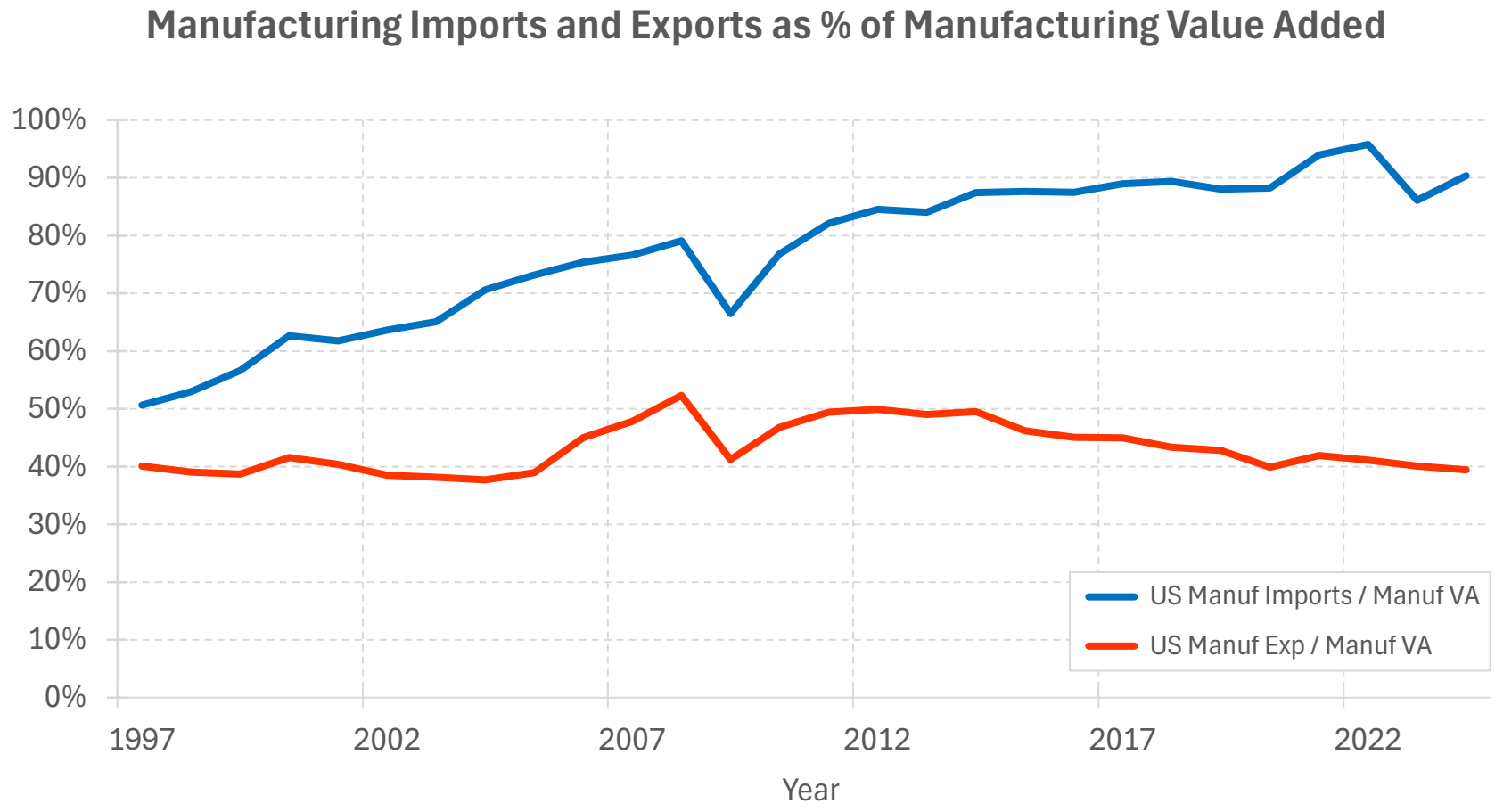
The China Shock: A Causal Link?



- Autor, Dorn and Hanson (2013)
- Pierce and Schott (2016)

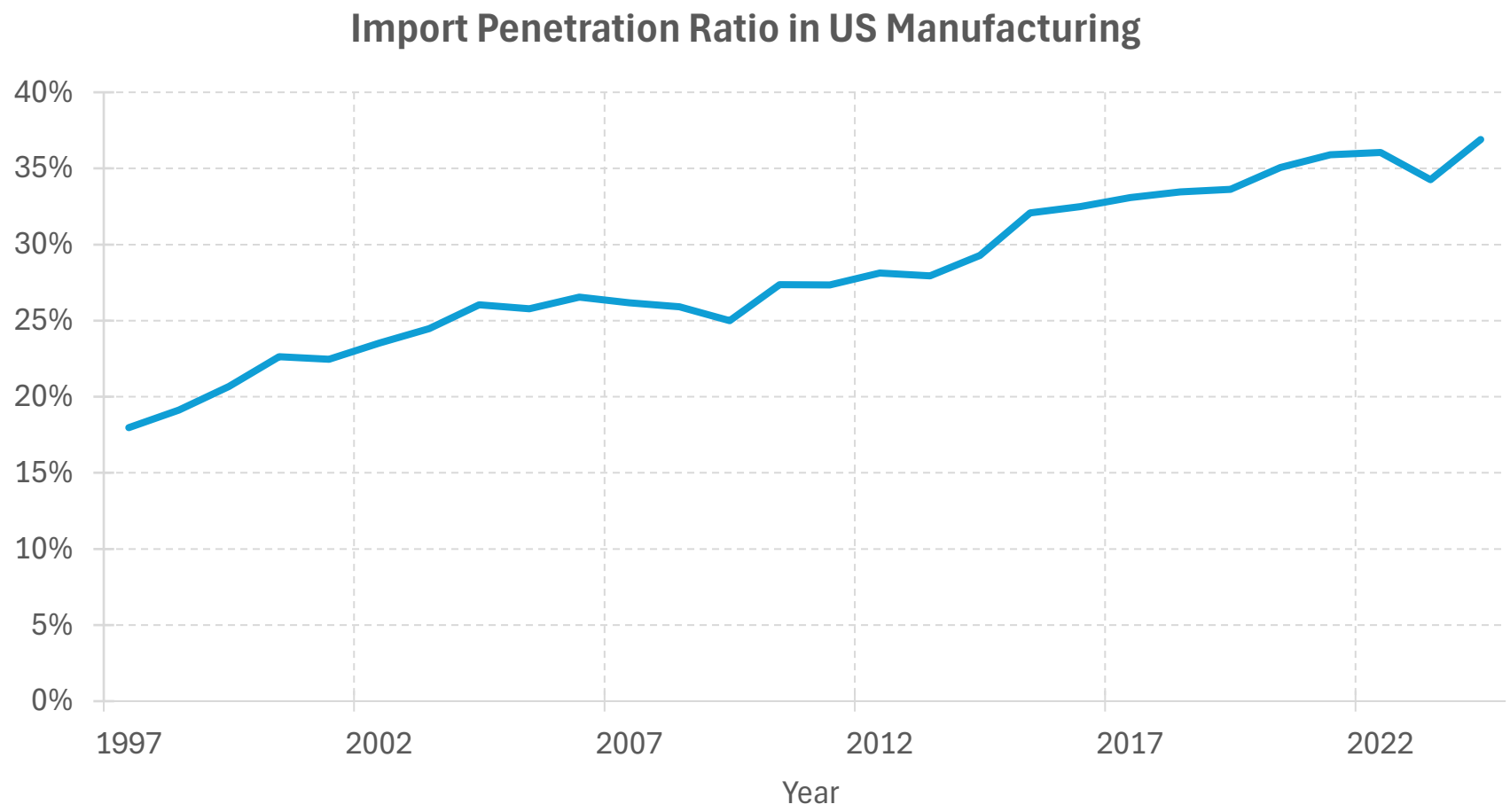
Source: Bureau of Labor Statistics and US Census

US Manufacturing Quite Exposed to Trade



Source: BEA and World Development Indicators

Particularly Exposed to ‘Import Competition’



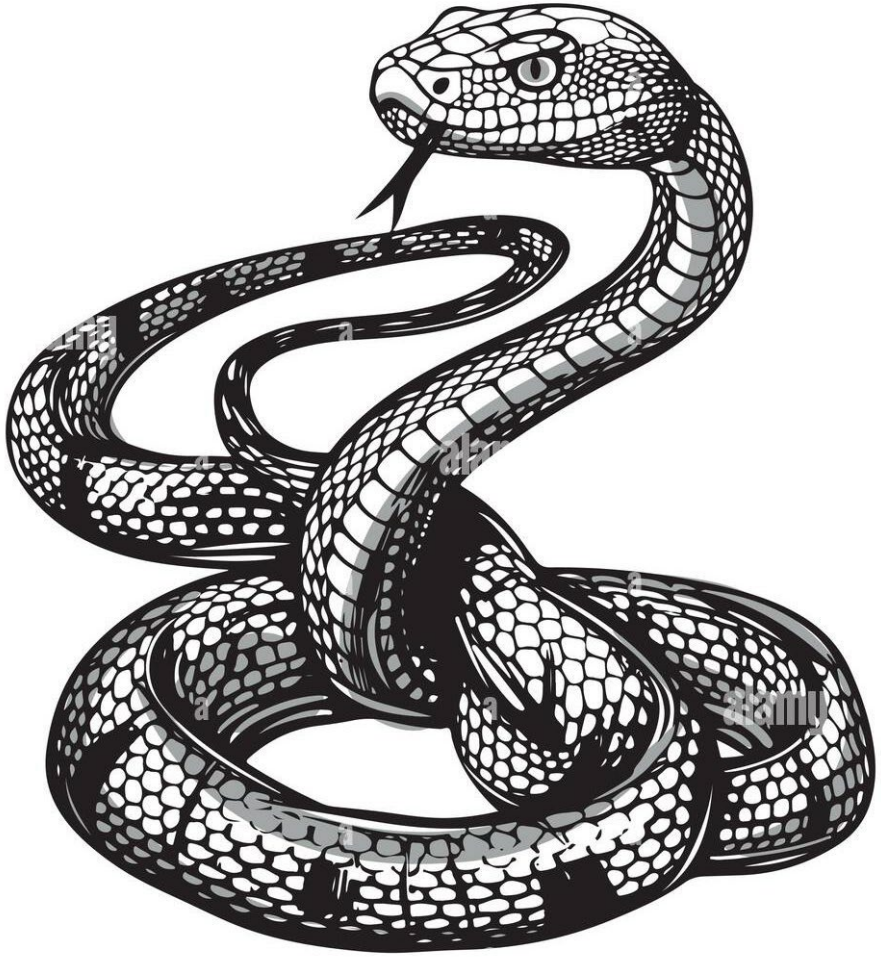
Source: BEA and World Development Indicators

Global Value Chains

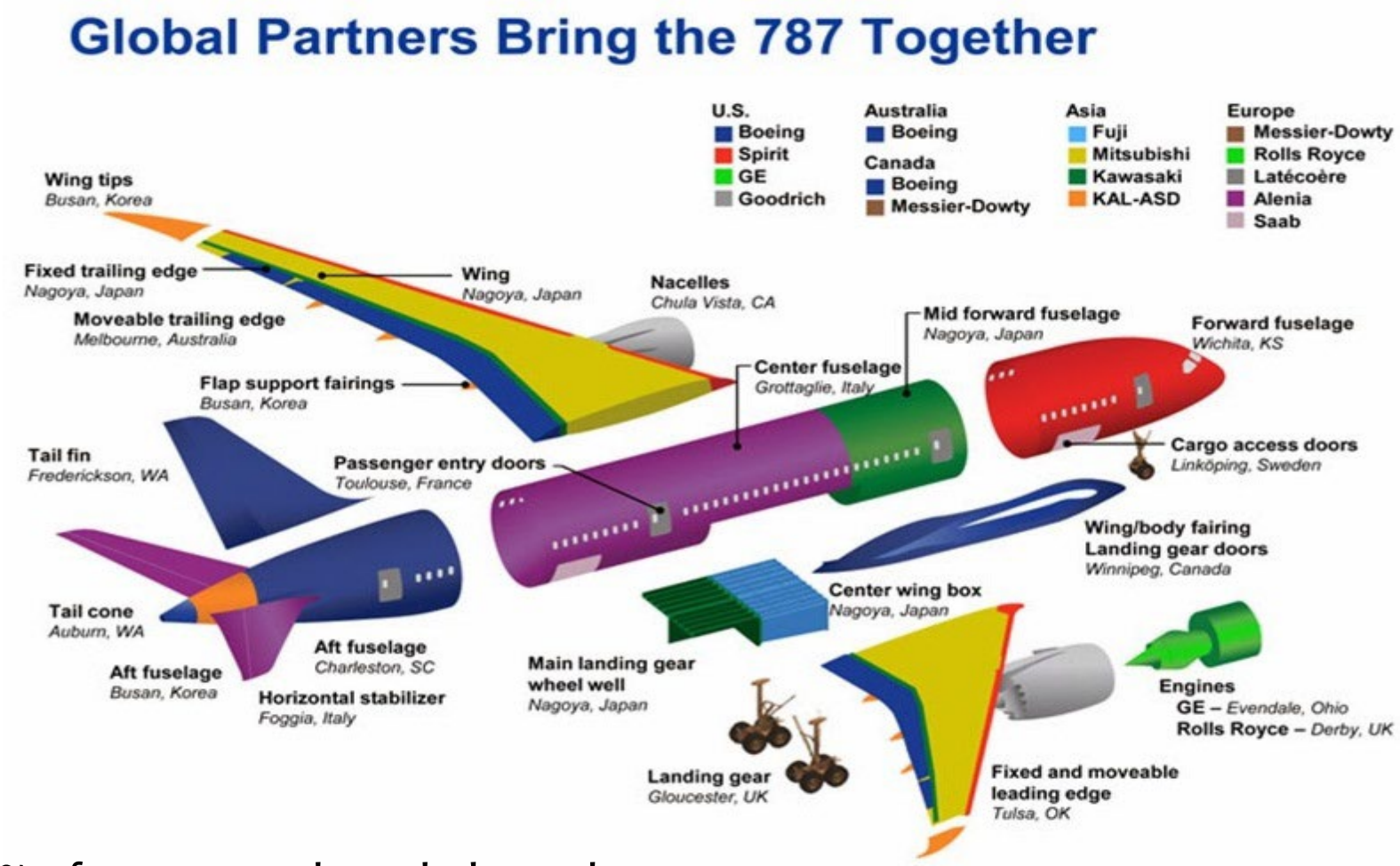
Background

- Much current thinking on the impact of trade (and tariffs) appears based on an outdated view of the world economy
- Countries are no longer exchanging "wine for cloth" (Ricardo, 1817)
- Since (roughly) the early 1980s, a combination of forces led to a fast **fragmentation of production** processes across borders
  - What we observe in Customs forms is (largely) slices of global value chains
- Large firms play a key role in laying out and governing these GVCs

Spiders and Snakes: Baldwin and Venables (2013)



An Example of a Spider

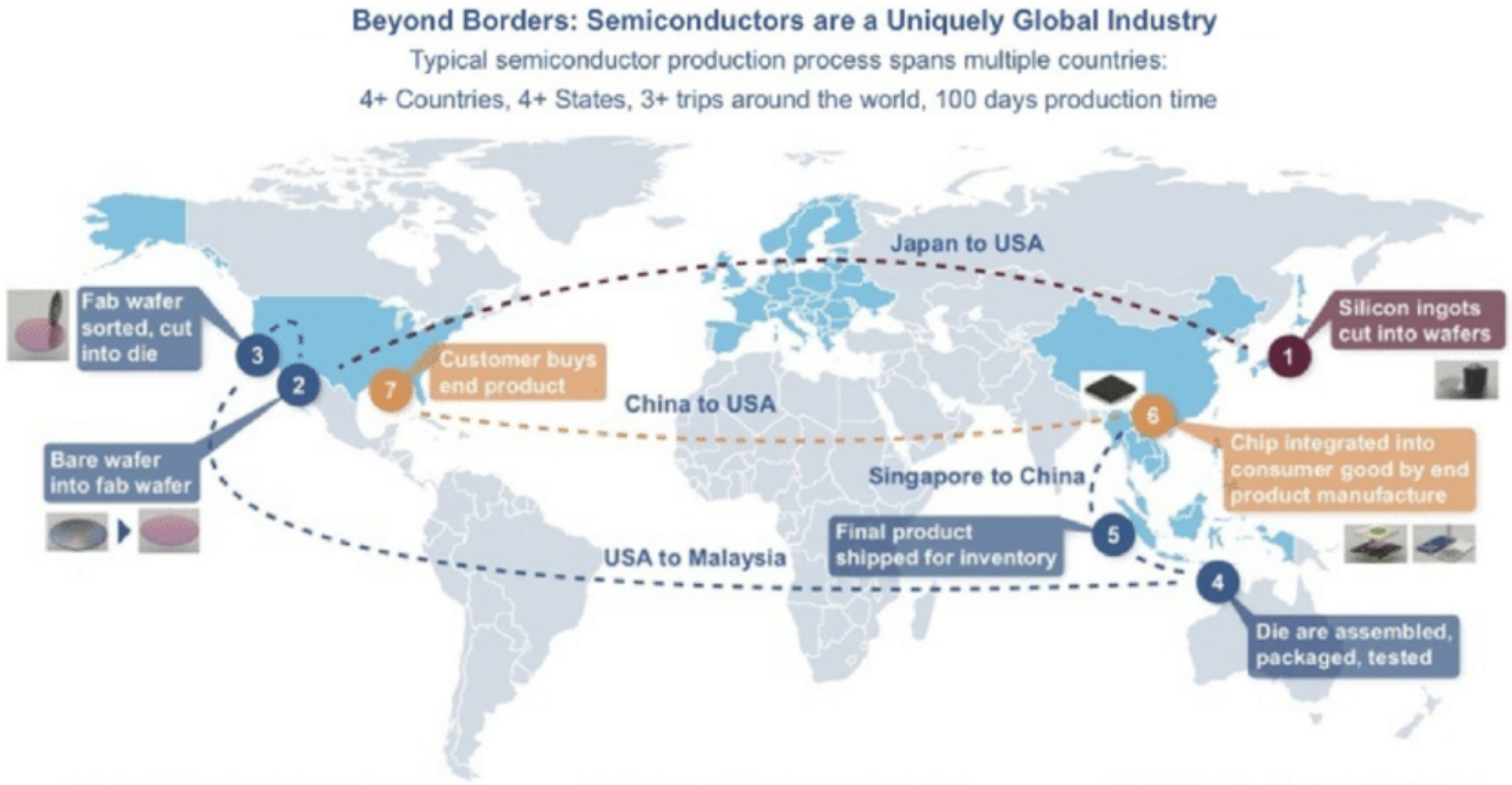


- 70% of parts produced abroad

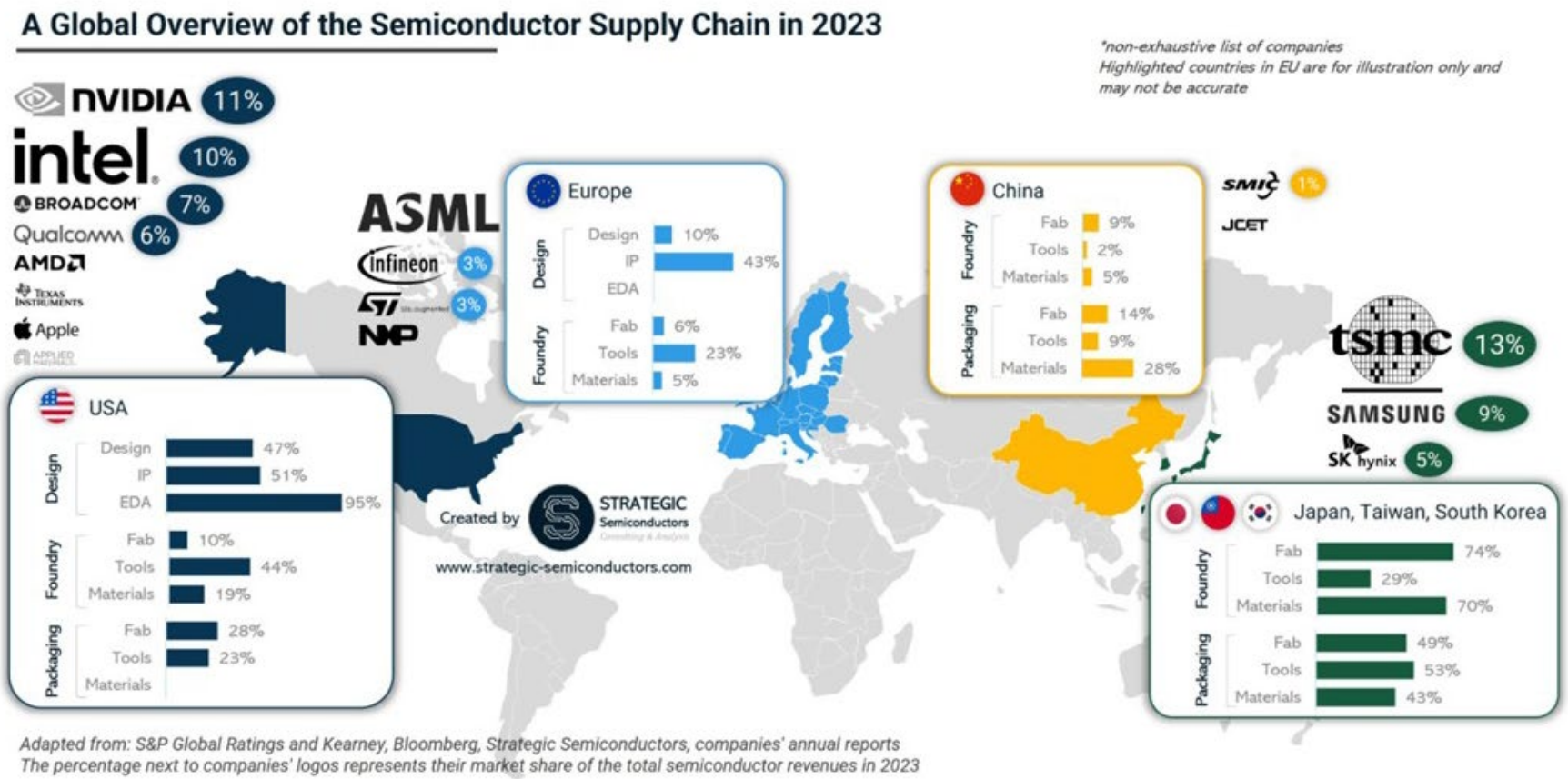
A *Web* of Spiders

- Only about 55% of the value of F-150s is US value added
- Only about 40% of Ford vehicles are assembled in the US

An Example of a Snake



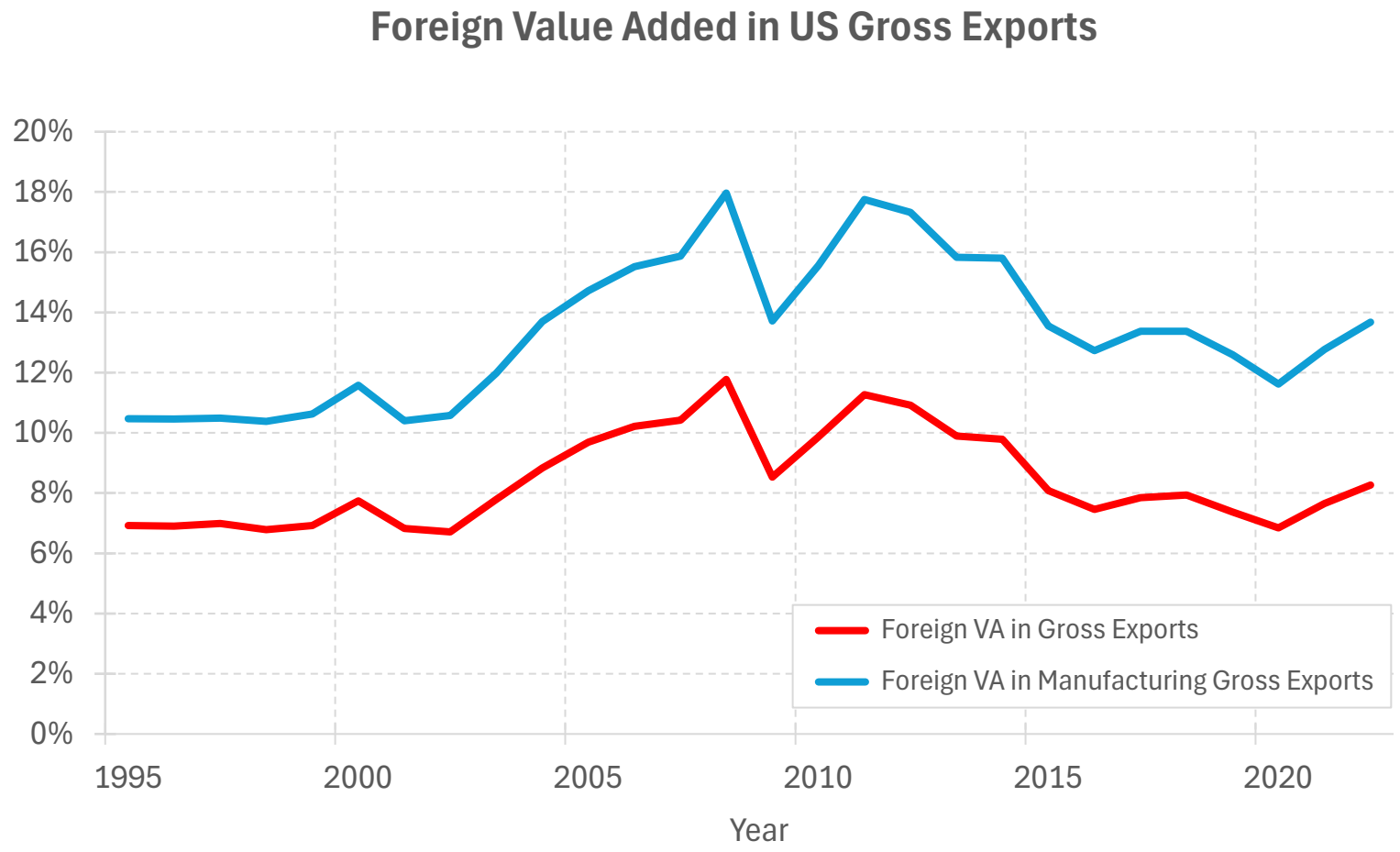
Semiconductors: A Firm-Level Perspective



(Source: Strategic Semiconductors)

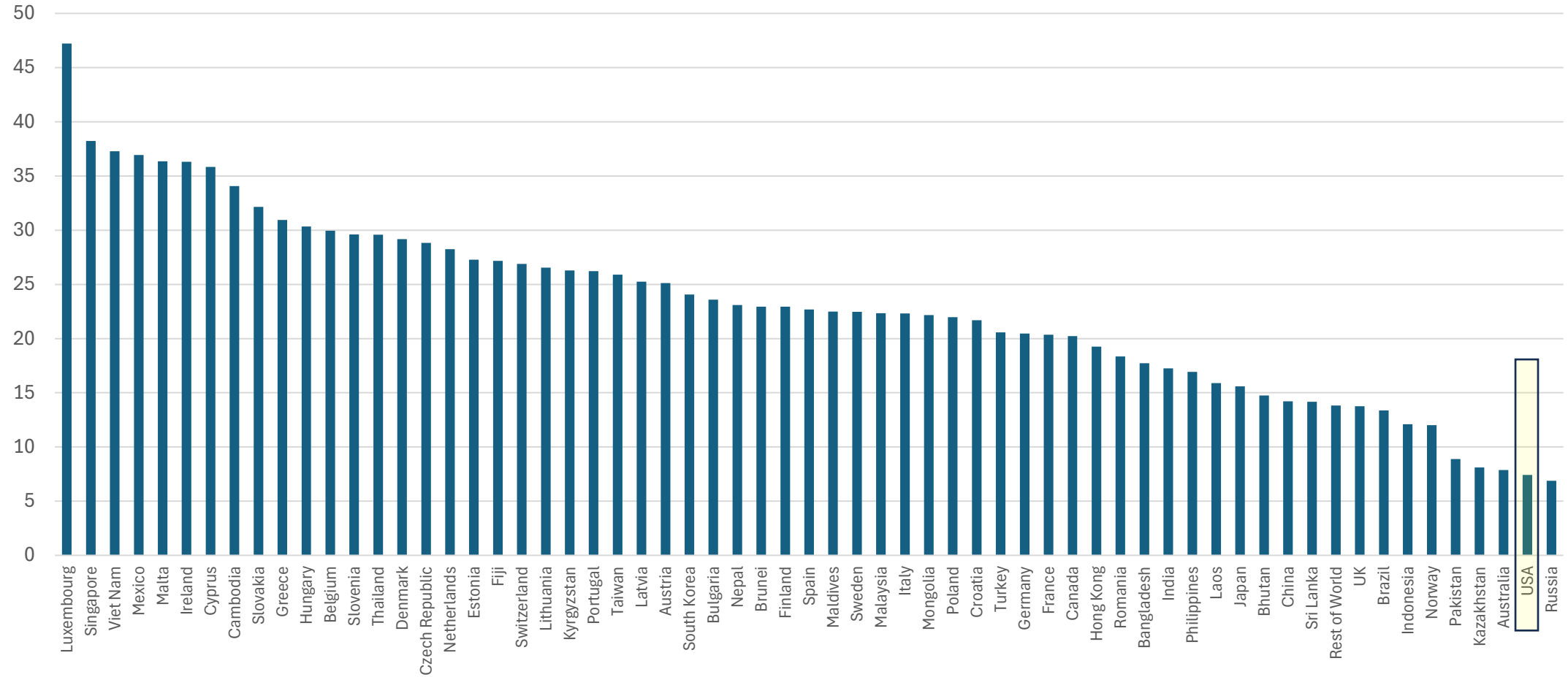
The US in Global Value Chains

US (Backward) GVC Participation



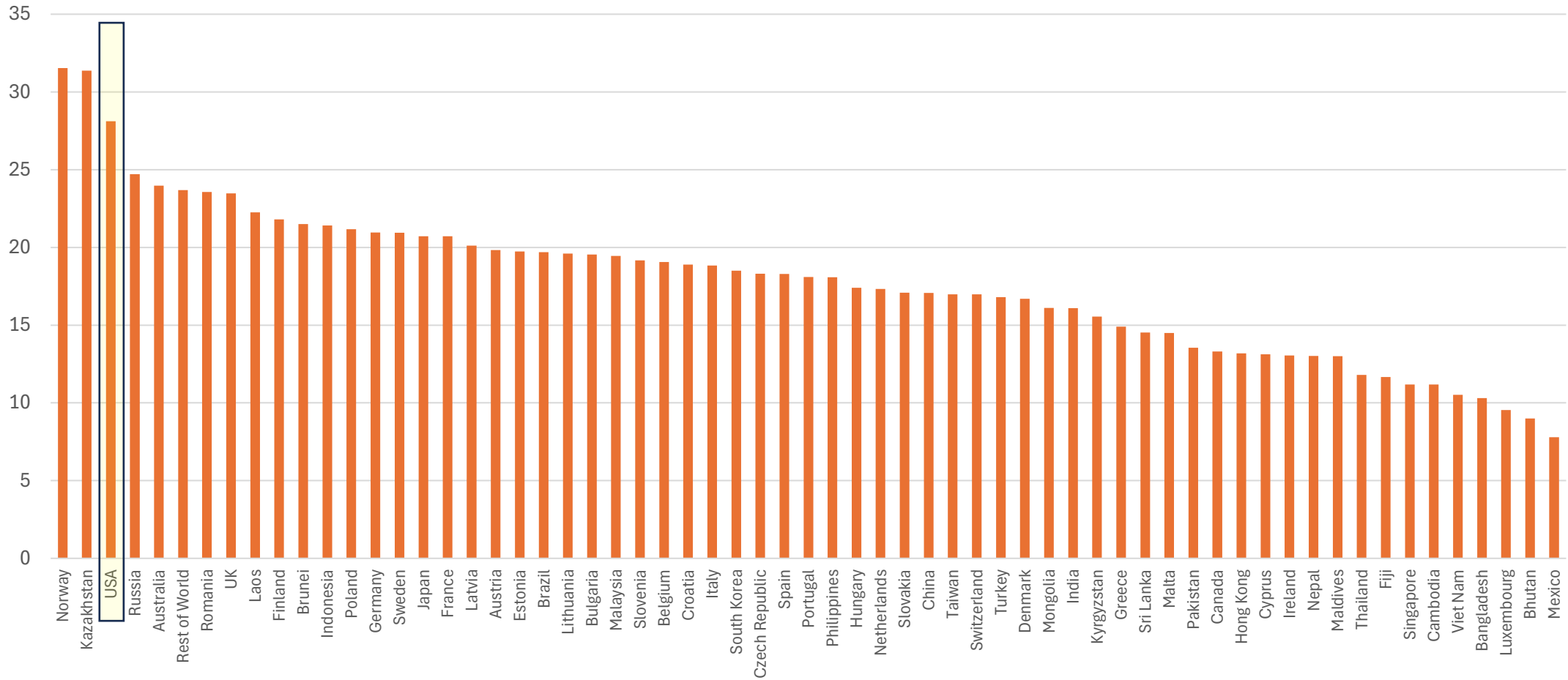
Source: OECD TiVA database

US Features Low Backward GVC Integration



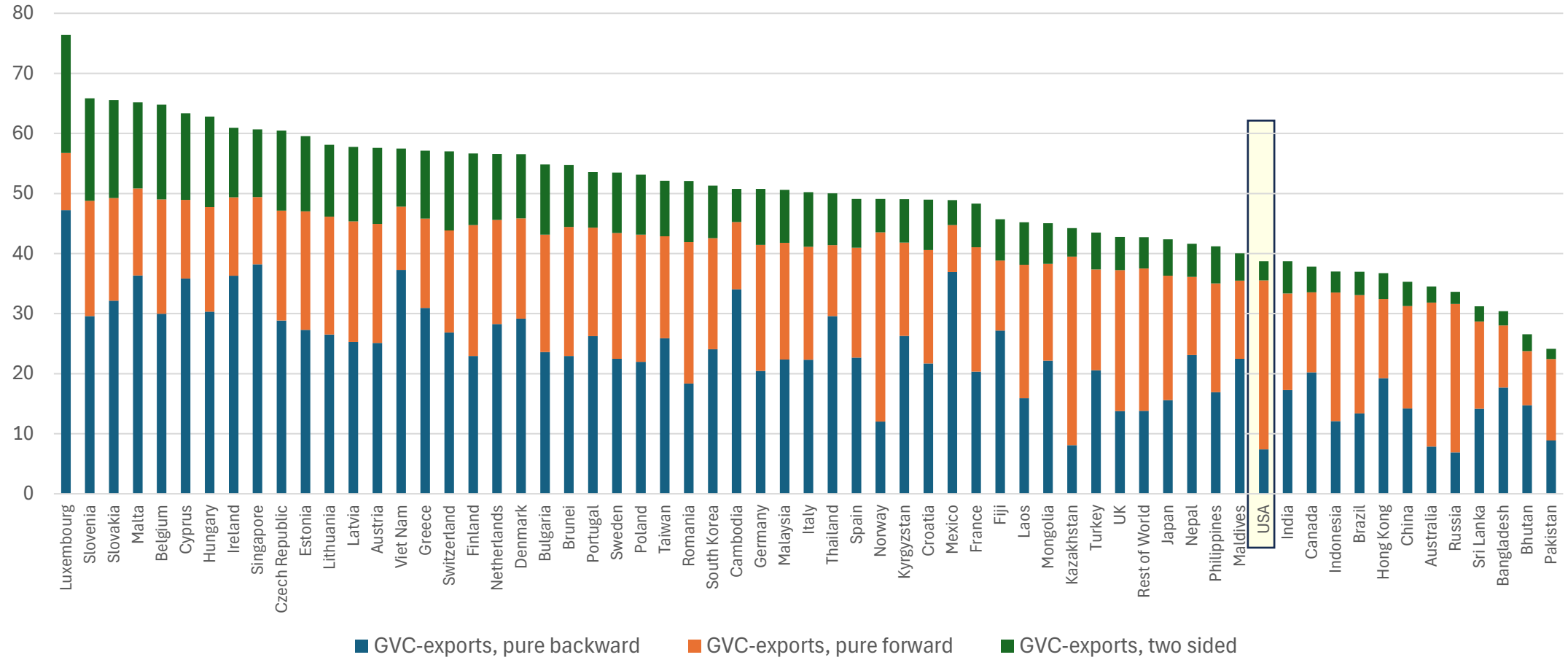
Source: Borin, Mancini and Taglioni (2025)

US Features High Forward GVC Integration



Source: Borin, Mancini and Taglioni (2025)

Overall GVC Participation



Source: Borin, Mancini and Taglioni (2025)

Calculations Based on World I-O Tables

			Use by country-industries							Final use by countries			Total use
			Country 1			…	Country M			Country 1	…	Country M	
			Industry 1	…	Industry N	…	Industry 1	…	Industry N		…		
Supply from country-industries	Country 1	Industry 1											
		…											
		Industry N											
	……												
	Country M	Industry 1											
		…											
		Industry N											
Value added by labour and capital													
Gross output													

Figure 1. Schematic Outline of a World Input–Output Table (WIOT)

Figure: Timmer et al. (2015)

The Perils of World I-O Tables

Figure 1. : GVC in Manufacturing: Establishment-based vs. Industry-based

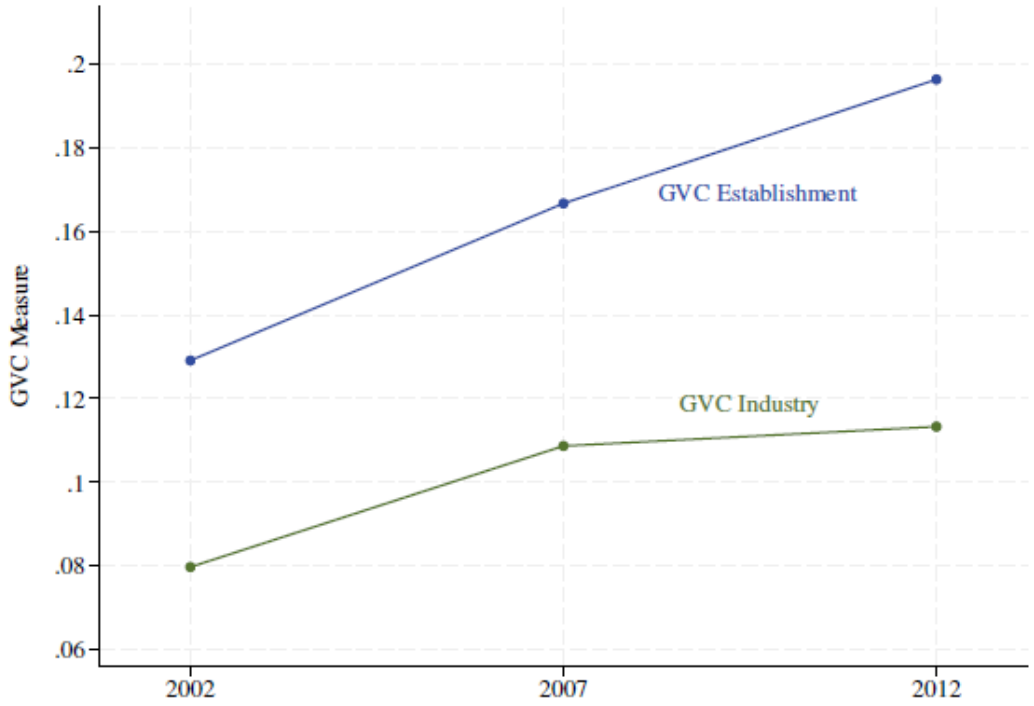
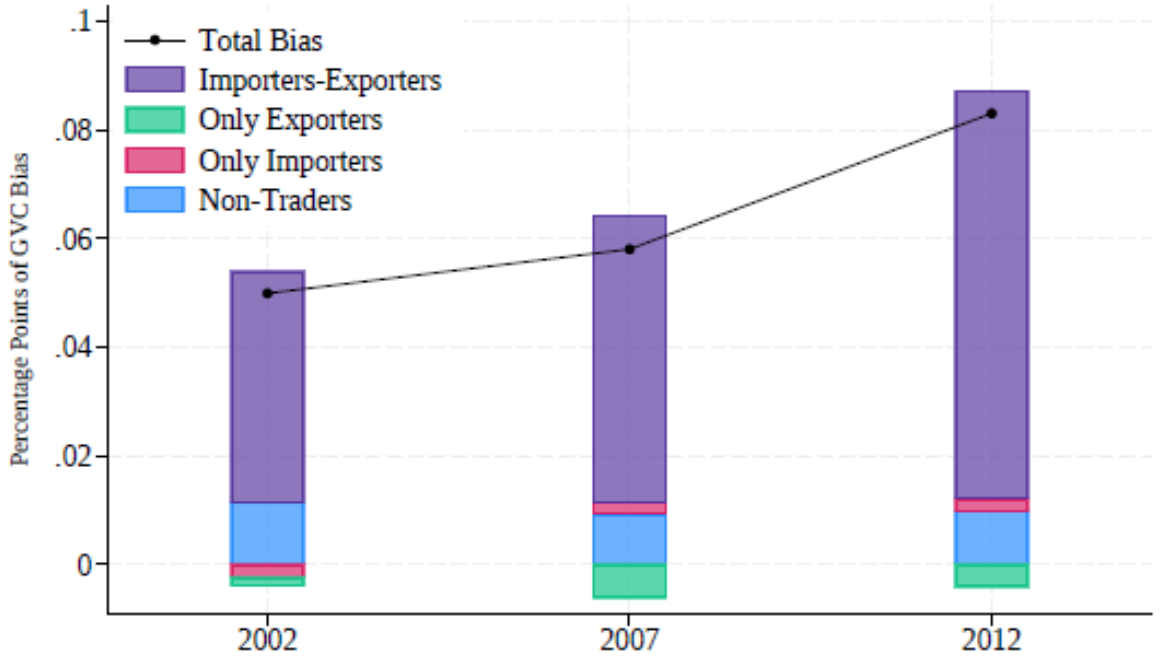


Figure 2. : GVC Bias by Establishment Type in U.S. Manufacturing



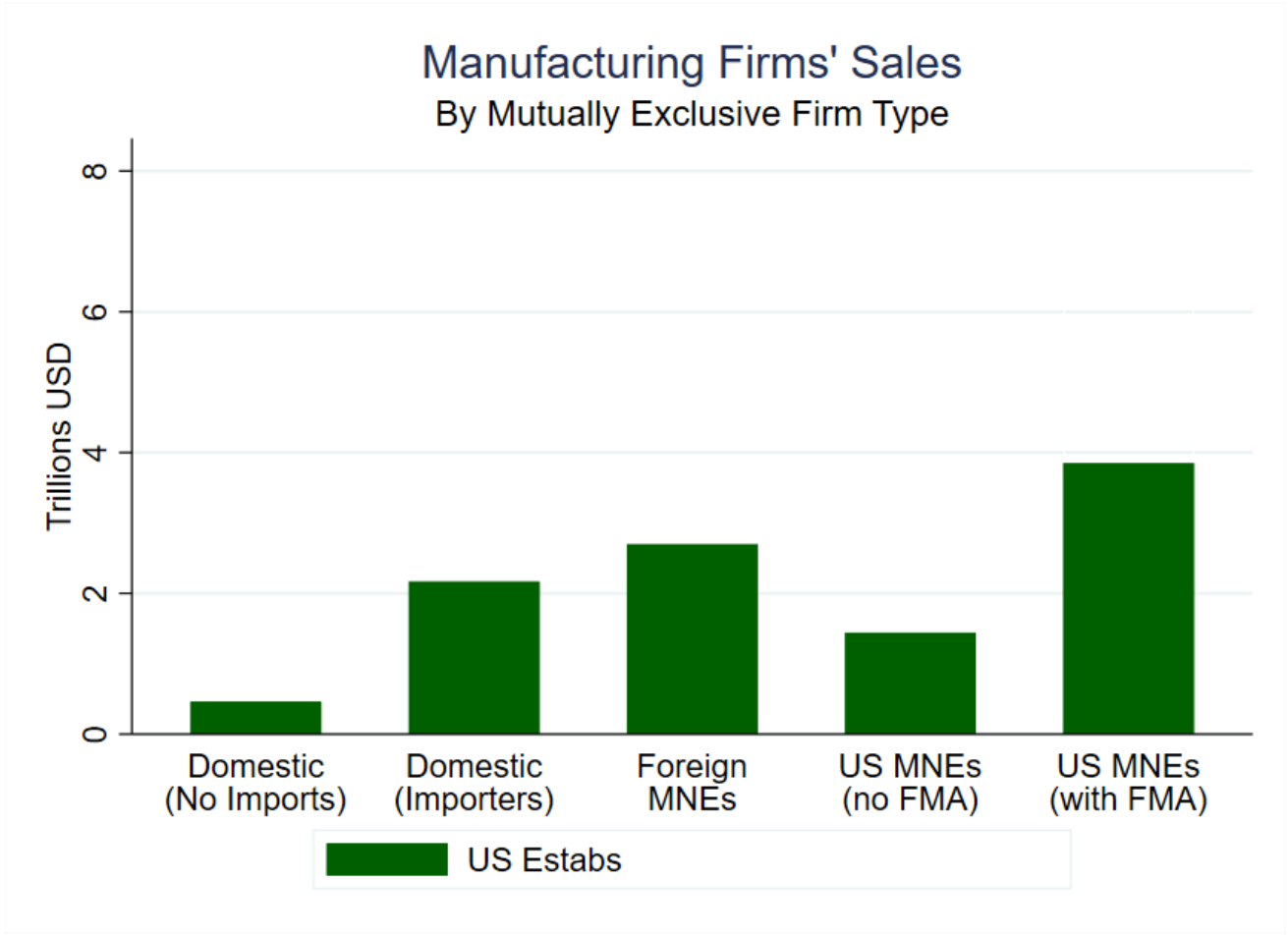
Source: Flaaen, Kamal, Lee and Yi (AER, P&P, 2024)

Multinationals Dominate US Manufacturing

Firm Type	Number of Firms	Employment (% Total)	Sales (% Total)	US Imports (% Total)	US Exports (% Total)
Non-MNE Manufacturing	242,000	10%	9%	9%	12%
US Affiliates of Foreign-based Manuf. MNEs	2,200	3%	10%	26%	21%
US-based Manuf. MNEs	1,550	10%	19%	32%	46%
MNEs / Total Manufacturing (%)	**1.5%**	**57%**	**76%**	**87%**	**85%**

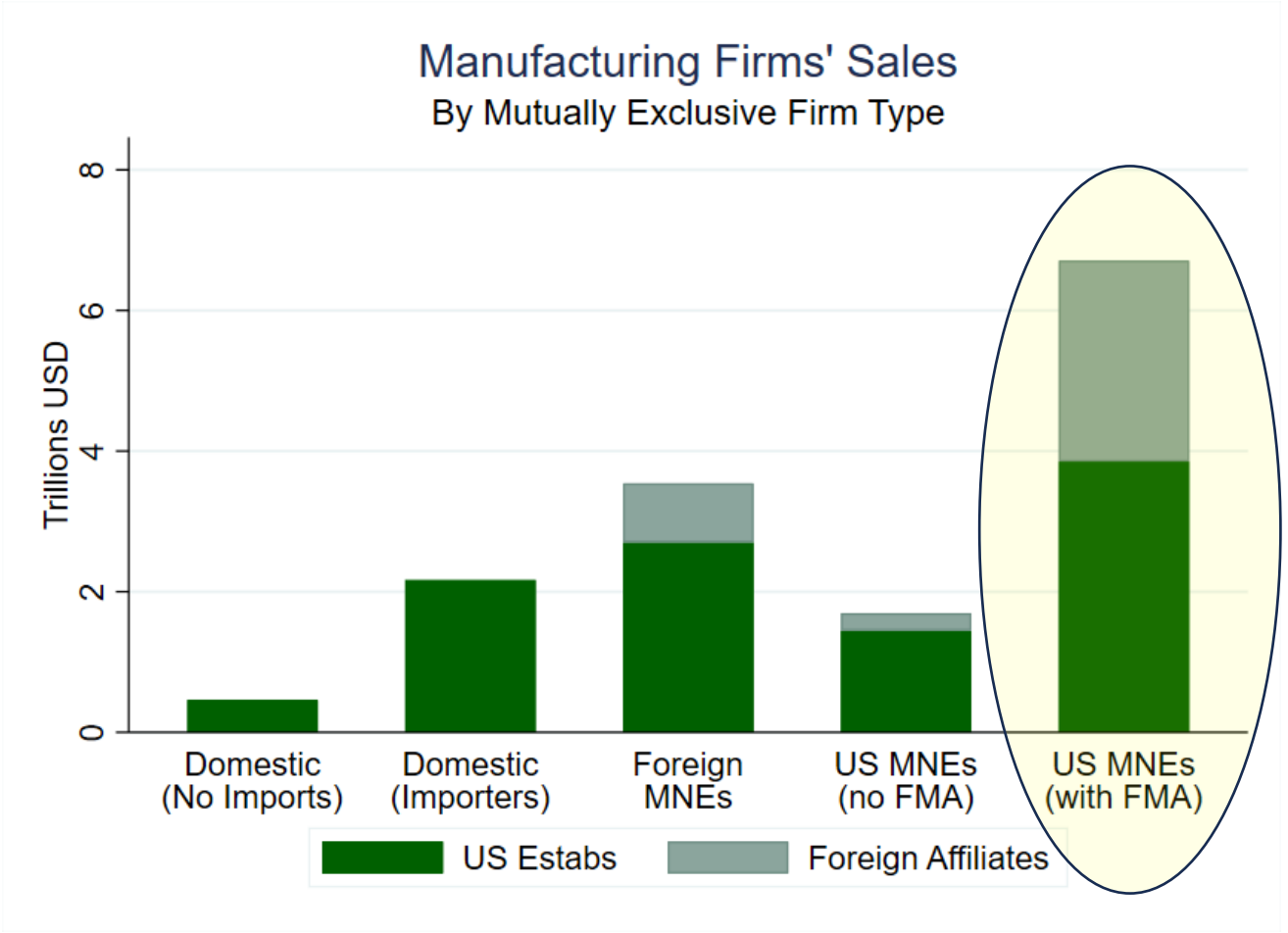
Source: Antràs, Fadeev, Fort and Tintelnot (forthcoming), for the year 2007

US Multinationals Are Also Huge Abroad



Source: Antràs, Fadeev, Fort and Tintelnot (forthcoming)

US Multinationals Are Also Huge Abroad



- US manufacturing MNEs' foreign affiliate sales are 74% of their US establishments' sales

Diversification in US Global Sourcing

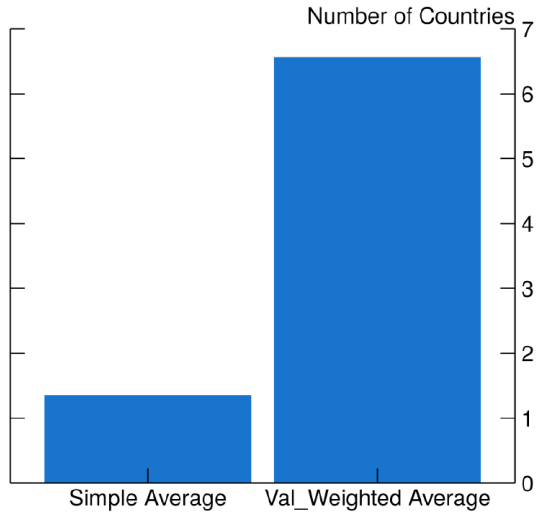
- Very little diversification for median US importer in 2007 (Antràs, Fort, Tintelnot, 2017)
- Same in 2017, but the average dollar of trade was part of a firm sourcing a given product from over six countries! (Javorcik, Pierce and Wisniewski, 2025)

TABLE 2—FIRM-LEVEL STATISTICS ON THE NUMBER OF SOURCE COUNTRIES PER IMPORTED PRODUCT

	Firm level		
	Mean	Median	Max
Mean	1.11	1.03	1.78
Median	1.00	1.00	1.00
95th percentile	1.61	1.00	4.00

Note: Table reports statistics on the number of countries from which a firm imports the same HS10 product.

Average Number of Source Countries for Firm-Product Pairs



Taking Stock

- US has become more open and more integrated in GVCs, but less so than other countries
- US forward GVC participation dominates its backward GVC participation
- For manufacturing, GVCs are of first-order importance in shaping US output and employment
- A small number of large multinational firms accounts for the vast majority of US manufacturing trade

The Economics of Global Value Chains

Key Questions

- Can we treat the various slices of GVCs as independently determined from other related slices?
  - Ratio of Dreamliner wings (Japan) to wing tips (Korea) must be one!
  - Distinct from general equilibrium or industry eq. interdependencies!
- Can we ignore the key role of large firms in laying out GVCs?
  - Can we ignore the large upfront investments associated with these GVCs?
- What are the implications of these special features of GVCs for shaping the response to current trade policy shocks?

Technical Hurdles for Economic Theorists

- Modeling GVCs is **not** easy
- Firms face complicated **combinatorial optimization problems** (due to trade costs + scale economies)
- Complex **market structures** (due to market power)
- Internalization decision requires incorporating **contract-theoretical** considerations
- We have made progress, but have no definitive answers

Some Insights

- Matching the data requires large fixed/sunk costs of laying out GVCs
- Empirically, **complementarities** are a dominant feature of global sourcing and global assembly decisions
- Complementarities can explain the rise of **superstar MNEs**
- Response to import competition shocks (China Shock) quite distinct from traditional models
- Import tariffs can operate in pretty subtle ways (especially when applied to inputs)

A China Shock with Global Sourcing

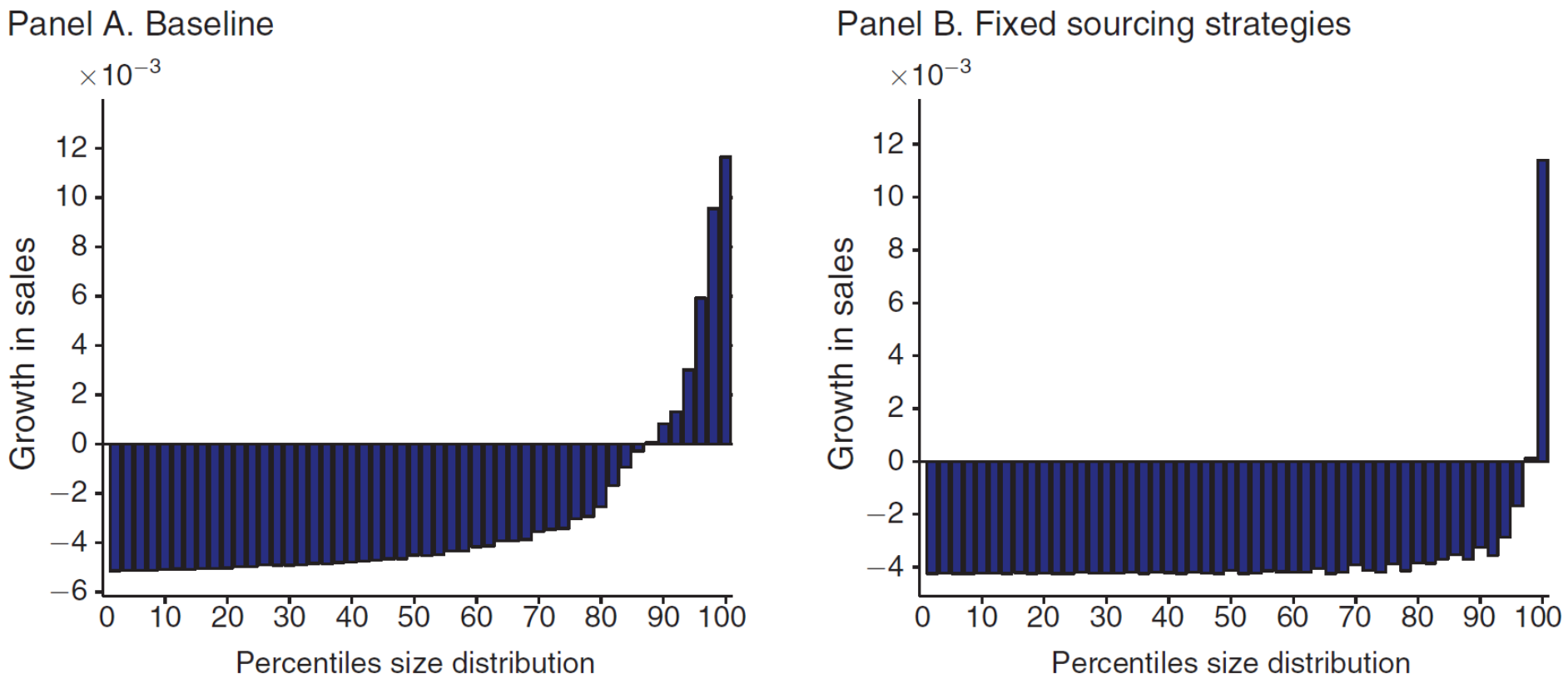


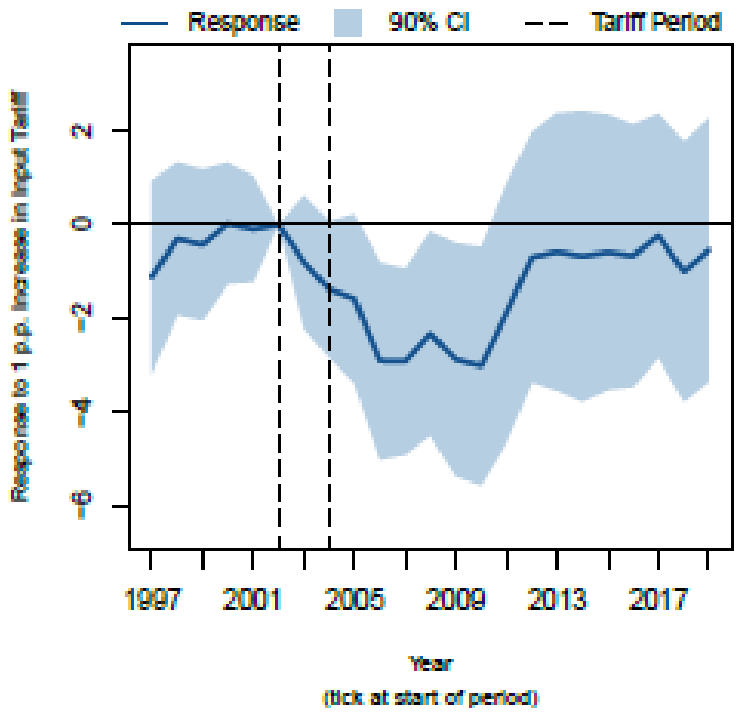
FIGURE 5. CHANGES IN THE SIZE OF FIRMS

Source: Antràs, Fort and Tintelnot (2017)

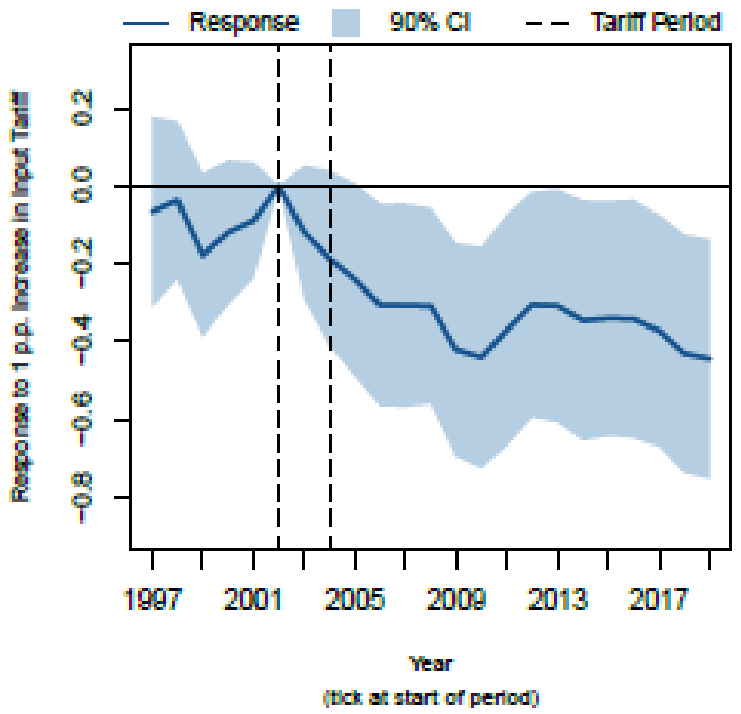
Downstream Effects of Upstream Tariffs

Figure 7: U.S. Share of World Exports in Downstream Industries

(a) Export Values



(b) Export Shares



Source: Cox (2025)

Taking Stock

- Tariffs, especially when applied to inputs, distort GVCs
- Resulting higher marginal costs reduce investments in complementarity activities (sourcing of other inputs or from other countries, foreign assembly, innovation, etc)
- This further reduces the profitability of these firms
- Not obvious that the end-result is ***more*** activity being redirected to one's economy
- Evidence in recent work by Head, Mayer, Melitz, and Yang (2025)

The Current Environment

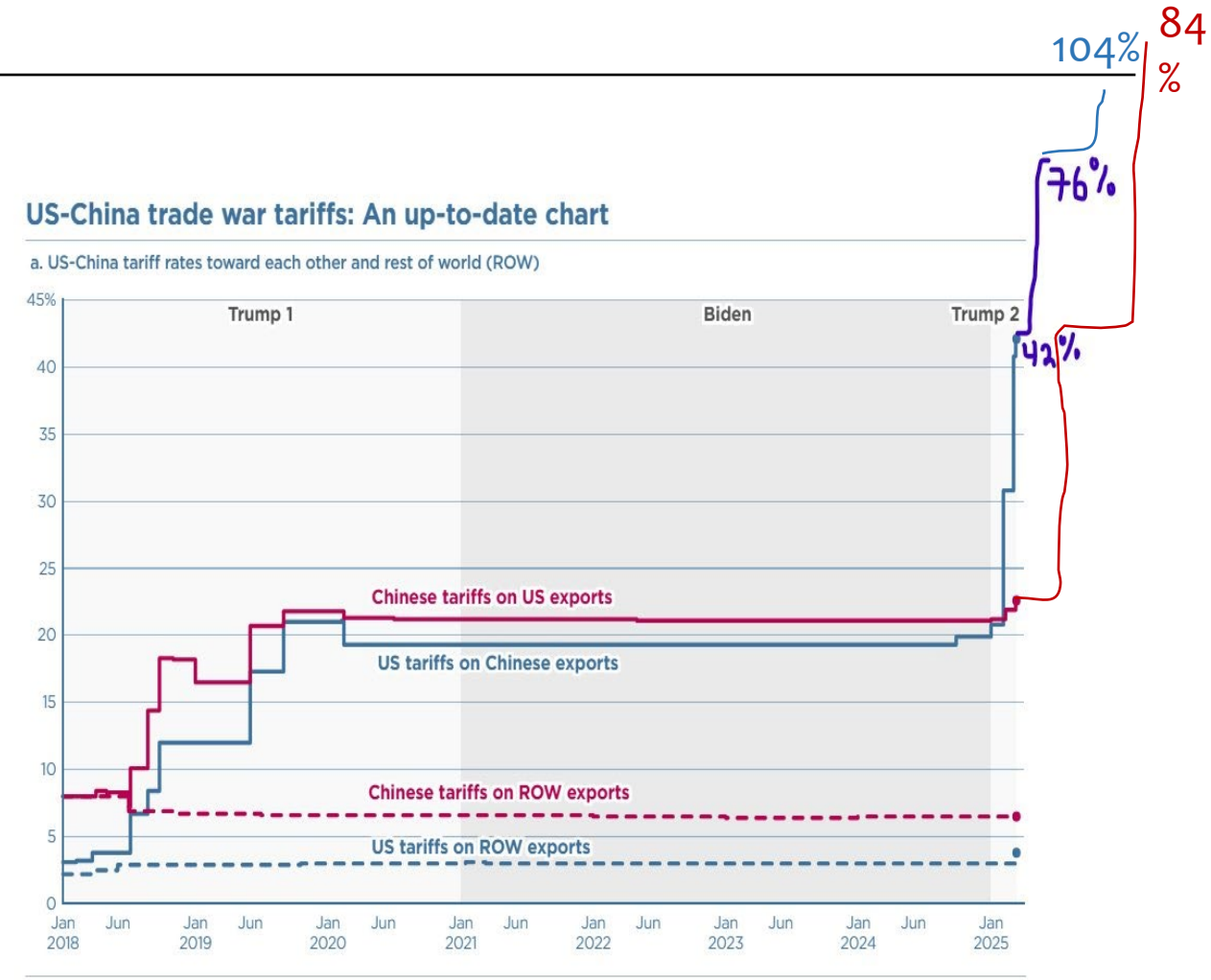
The Age of Trade Wars

Reciprocal Tariffs

Country	Tariffs Charged to the U.S.A. Including Currency Manipulation and Trade Barriers	U.S.A. Discounted Reciprocal Tariffs
China	67%	34%
European Union	39%	20%
Vietnam	90%	46%
Taiwan	64%	32%
Japan	46%	24%
India	52%	26%
South Korea	50%	25%
Thailand	72%	36%
Switzerland	61%	31%
Indonesia	64%	32%
Malaysia	47%	24%
Cambodia	97%	49%
United Kingdom	10%	10%
South Africa	60%	30%
Brazil	10%	10%
Bangladesh	74%	37%
Singapore	10%	10%
Israel	33%	17%
Philippines	34%	17%
Chile	10%	10%
Australia	10%	10%
Pakistan	58%	29%
Turkey	10%	10%
Sri Lanka	88%	44%
Colombia	10%	10%

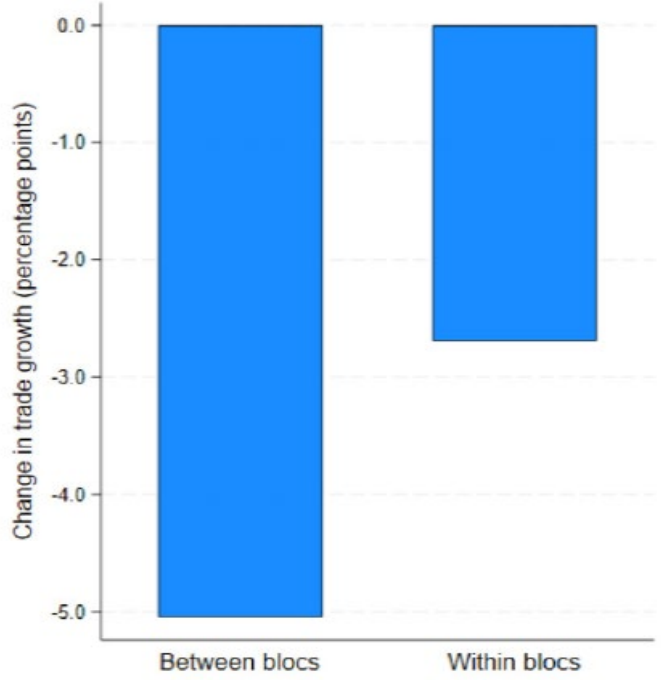
Reciprocal Tariffs

Country	Tariffs Charged to the U.S.A. Including Currency Manipulation and Trade Barriers	U.S.A. Discounted Reciprocal Tariffs
Peru	10%	10%
Nicaragua	36%	18%
Norway	30%	15%
Costa Rica	17%	10%
Jordan	40%	20%
Dominican Republic	10%	10%
United Arab Emirates	10%	10%
New Zealand	20%	10%
Argentina	10%	10%
Ecuador	12%	10%
Guatemala	10%	10%
Honduras	10%	10%
Madagascar	93%	47%
Myanmar (Burma)	88%	44%
Tunisia	55%	28%
Kazakhstan	54%	27%
Serbia	74%	37%
Egypt	10%	10%
Saudi Arabia	10%	10%
El Salvador	10%	10%
Côte d`Ivoire	41%	21%
Laos	95%	48%
Botswana	74%	37%
Trinidad and Tobago	12%	10%
Morocco	10%	10%



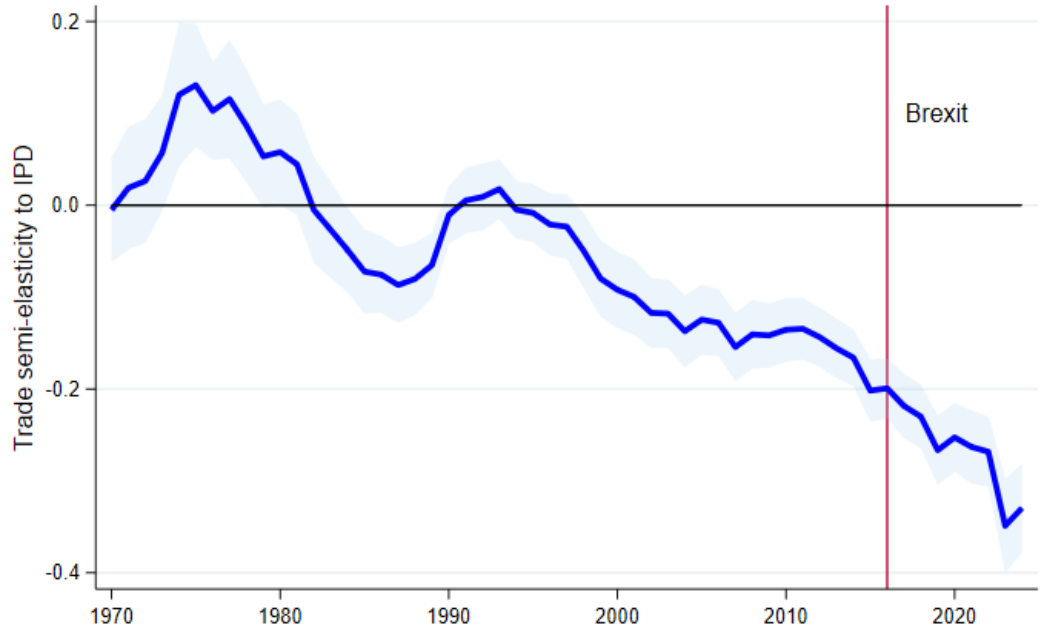
Source: Chad Bown

Geopolitics and Trade Flows



Source: Gopinath et al. (2025)

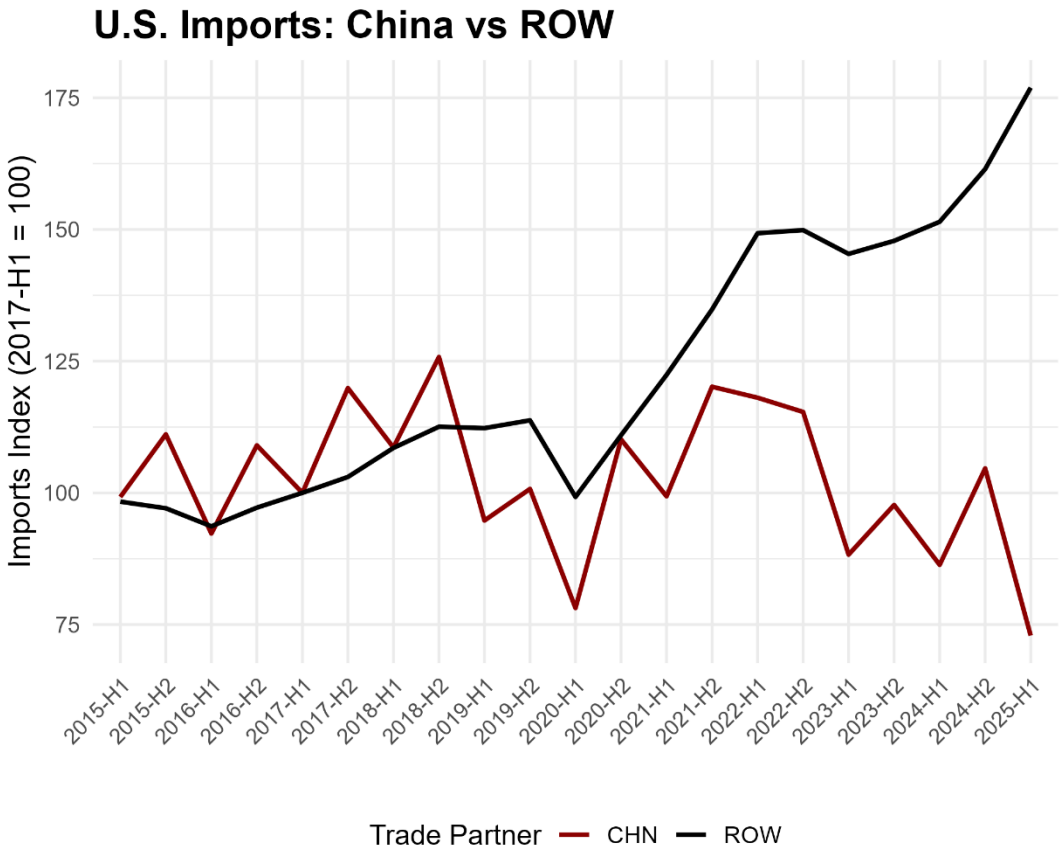
Notes: Chart plots the average trade growth during 2022Q2–2024Q1 minus the average trade growth during 2017Q1–2022Q1 within and between blocs. Bloc definition is based on a hypothetical Western bloc centered around the U.S. and Europe and a hypothetical Eastern bloc centered around China and Russia.

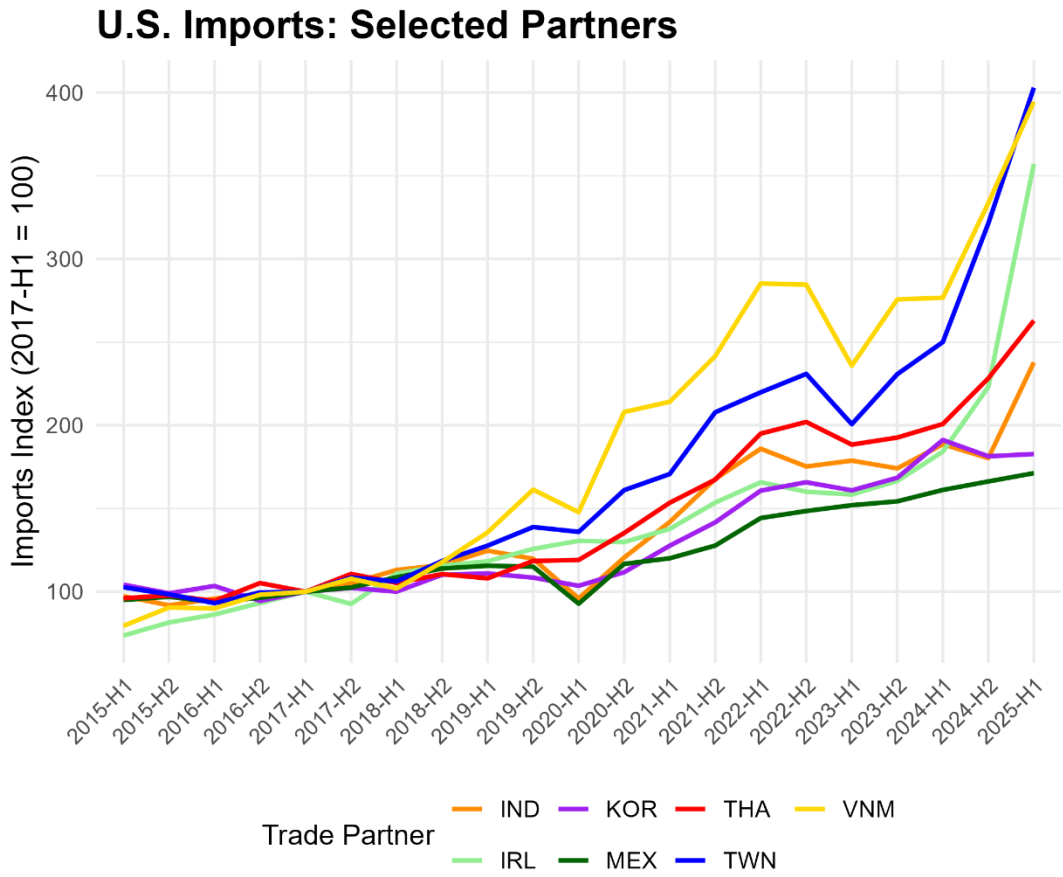


Source: Antràs and Presbitero (work in progress)

Notes: Chart plots the coefficient on the ideal point distance estimate from a gravity model of goods trade, which includes country-pair, source country x year, and destination country x year fixed effects. The ideal point distance is a time-varying measure of geopolitical disagreement between country pairs, based on voting pattern in the UNGA. Source: Bailey et al. (2017); IMF; CEPII Gravity dataset (Conte et al. 2022).

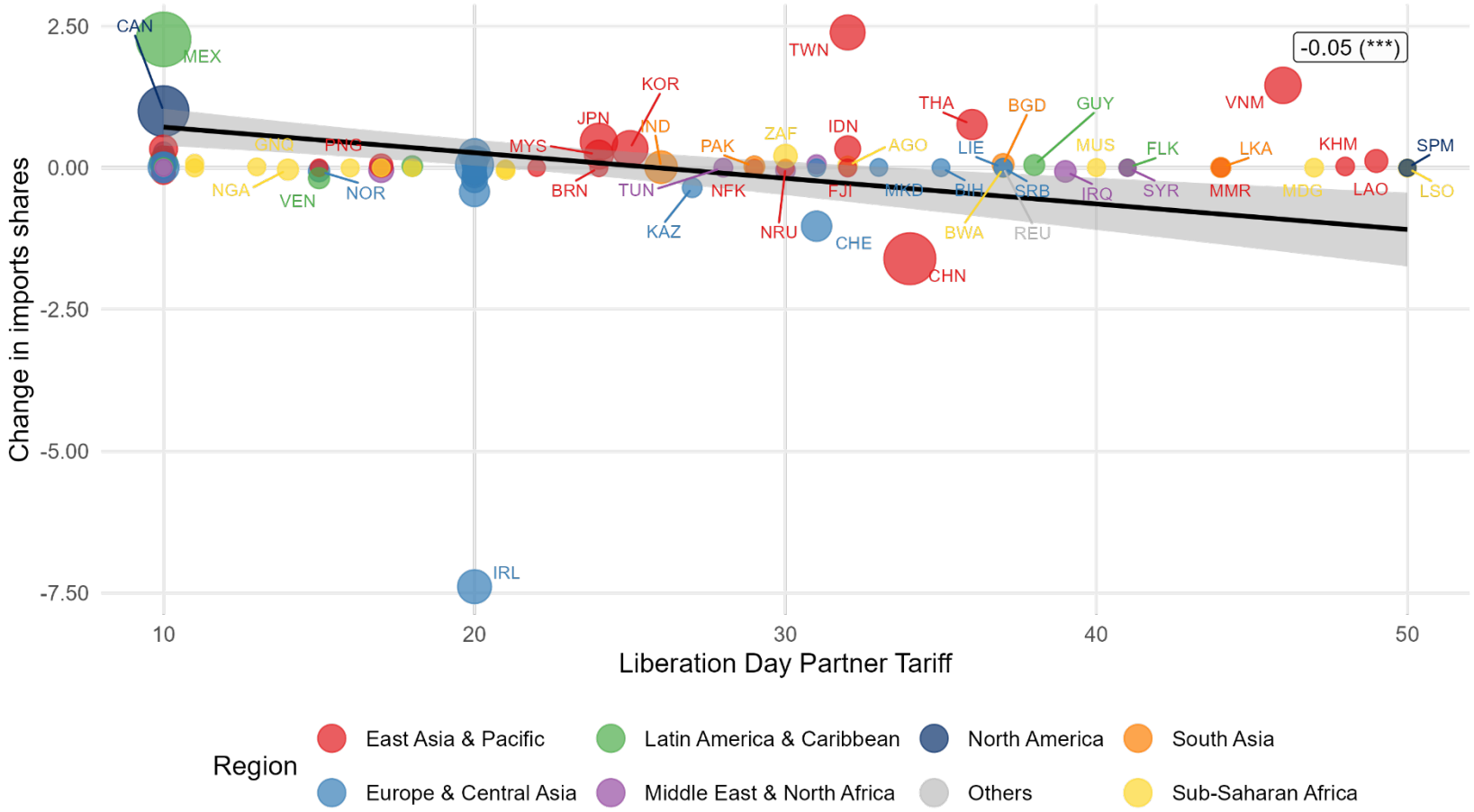
The Great Reallocation





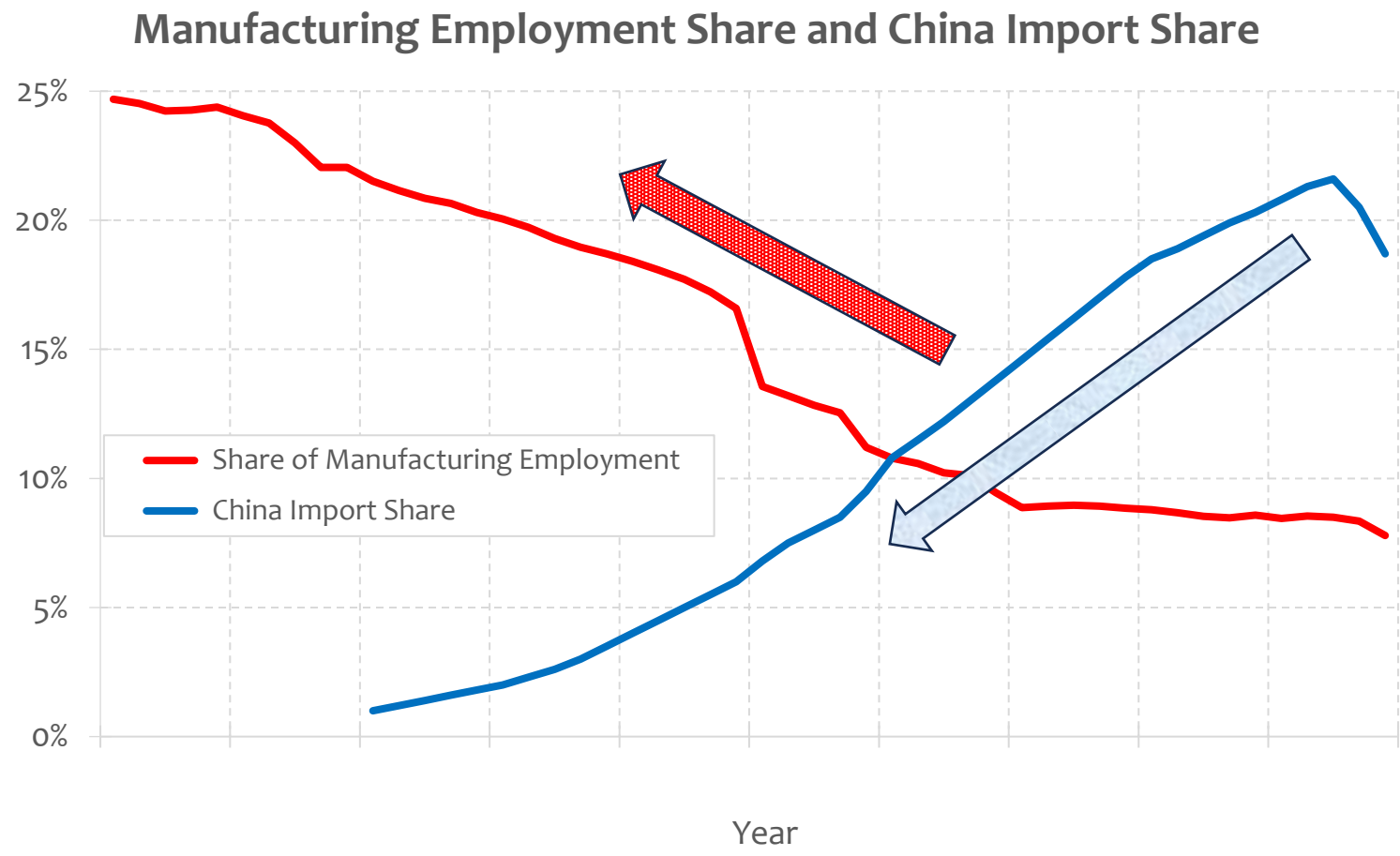
Source: Alfaro and Chor (2025)

Effect of Liberation Day Tariffs



Source: Alfaro and Chor (2025)

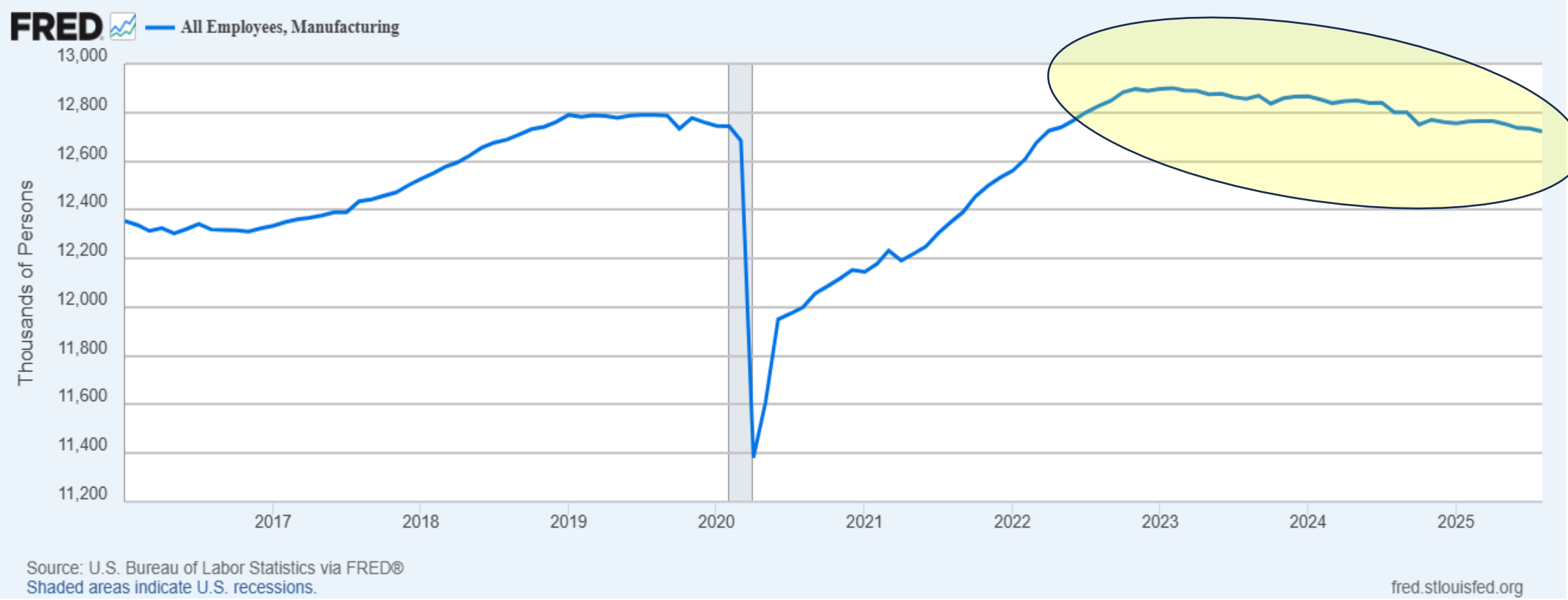
Will President Trump Undo the China Shock?



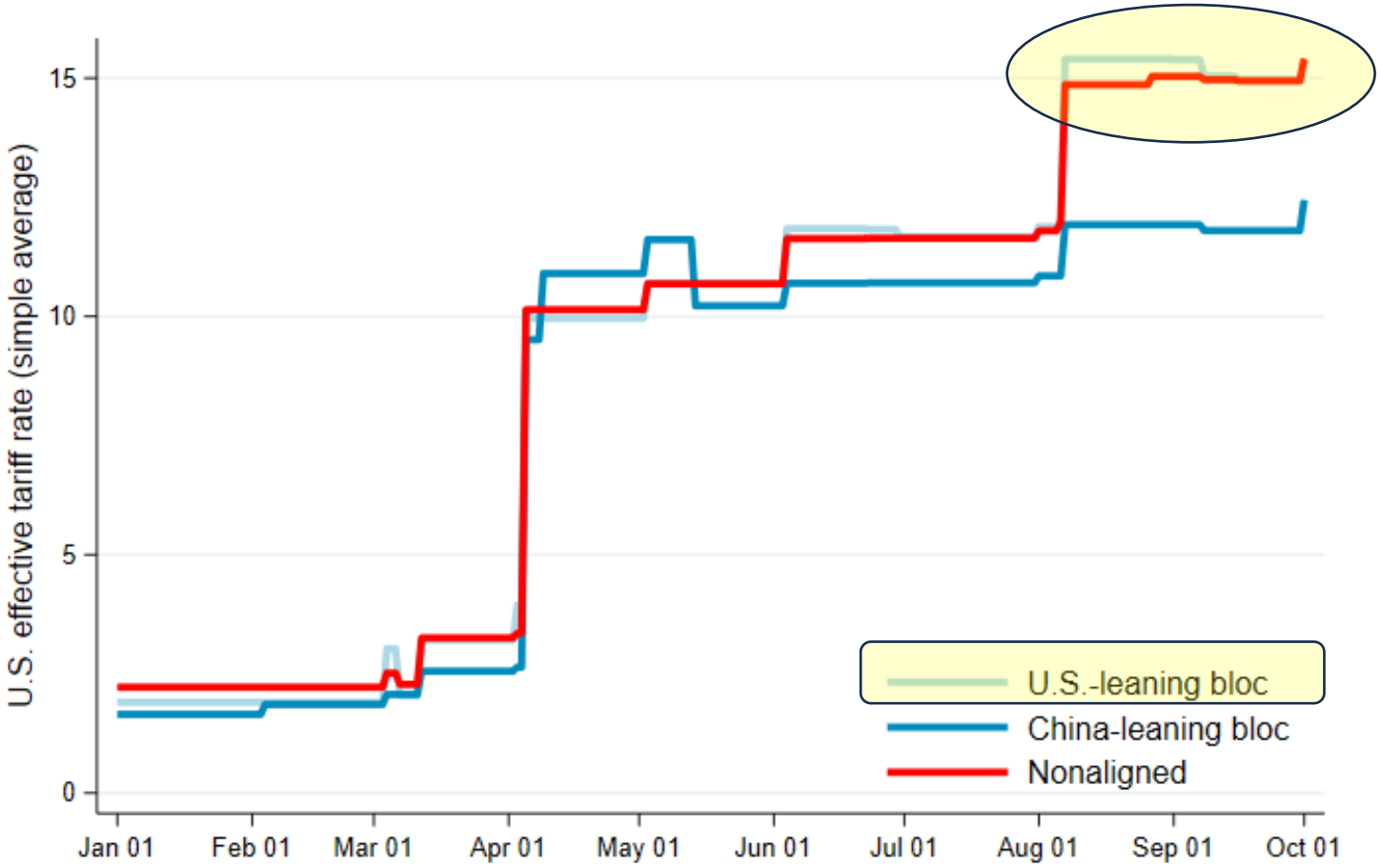
Source: Bureau of Labor Statistics and US Census

Manufacturing Employment

- For now, manufacturing employment is not coming back



Some Unpleasant Arithmetic of Trump's Tariffs



Source: Antràs and Presbitero (work in progress)

Taking Stock

- Standard models predict that if tariffs persist, economic activity (esp. manufacturing) will be redirected to the US
  - Perhaps, it is too early to tell
- Standard models also predict that optimal uniform unilateral tariff for the US is in the 20-40% range
  - Current environment is close to this optimum, except for Chinese retaliation
- How accurately do standard models capture how tariffs distort GVCs?

A Final Word of Warning

- Implications of a trade war in standard quantitative models with I-O links appear problematic
- Is Taiwan's optimal tariff really 88%?
- Would that tariff war raise Taiwanese welfare by 1.5%?
- But it takes a model to beat a model!

Table 2: The welfare cost of a tariff war (year 2014)

	Baseline Model		Baseline + distortions		Baseline + distortions + IO	
Country	Nash Tariff	%Δ Real GDP	Nash Tariff	%Δ Real GDP	Nash Tariff	%Δ Real GDP
AUS	14.1%	-1.38%	34.3%	-1.15%	41.9%	-0.68%
AUT	45.7%	-2.82%	45.3%	-3.61%	45.1%	-2.41%
BEL	55.9%	-3.27%	40.6%	-4.23%	51.6%	-3.58%
BGR	37.1%	-3.24%	31.3%	-3.46%	32.1%	-5.73%
BRA	98.2%	-0.50%	41.4%	-0.85%	46.4%	-0.57%
CAN	21.0%	-2.37%	29.8%	-2.03%	26.4%	-2.76%
CHE	51.9%	-1.97%	29.8%	-2.35%	41.5%	-0.74%
CHN	40.7%	-0.35%	39.3%	-0.59%	78.5%	-0.43%
CYP	12.5%	-3.48%	18.5%	-2.39%	19.4%	-5.79%
CZE	49.3%	-2.85%	49.4%	-4.09%	59.2%	-3.36%
DEU	59.1%	-0.96%	63.0%	-1.94%	67.0%	0.16%
DNK	59.3%	-2.31%	30.8%	-3.11%	44.4%	-3.07%
ESP	59.9%	-1.45%	48.7%	-1.71%	58.0%	-1.27%
EST	28.4%	-4.18%	26.0%	-4.85%	50.6%	-5.15%
FIN	31.4%	-1.75%	65.8%	-2.54%	57.5%	-1.23%
FRA	51.8%	-1.73%	37.7%	-1.89%	54.0%	-1.61%
GBR	27.9%	-2.03%	31.1%	-1.34%	28.0%	-2.77%
SVK	41.5%	-4.48%	41.6%	-4.36%	66.3%	-4.06%
SVN	46.3%	-3.26%	40.1%	-3.79%	46.3%	-3.31%
SWE	38.5%	-1.95%	49.1%	-2.37%	57.1%	0.10%
TUR	45.6%	-1.28%	48.9%	-1.91%	46.3%	-1.50%
TWN	35.4%	-2.35%	29.7%	-3.05%	87.8%	1.52%
USA	43.6%	-0.76%	39.7%	-0.56%	38.3%	-1.10%
Average	40.5%	-2.42%	37.5%	-2.63%	48.9%	-2.81%

Source: Lashkaripour (JIE, 2021)

Thank You!