



THE THIRTIETH DUBROVNIK ECONOMIC CONFERENCE

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Laura Alfaro and Davin Chor

Global Supply Chains: The Great Reallocation

Hotel " Sun Gardens Dubrovnik "

Dubrovnik

June 13 – 15, 2024

Draft version

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CROATIAN NATIONAL BANK

EUROSYSTEM

Global Supply Chains: The Great Reallocation

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NBER & CEPR

Global Supply Chains (GVCs)

In the Spotlight

- **Optimism of 1990s-2000s:** Falling transportation costs & policy barriers + technological change
 - **Supply chains...** improve **efficiency**, by allowing firms to perform stages/procure inputs in different locations
 - Opportunities for growth and development (WB, 2020)
- **Concerns of 2010s-20s:** Natural disasters, climate change, pandemic, war (Invasion Ukraine, terrorist attack against Israel), national security
 - **Supply chains...** expose firms and countries to **disruption risks**
 - Backlash in developed nations; Colantone et al., 2022 (Europe); Alfaro, Chen and Chor, 2023 (US) → rise in trade barriers
 - “Favoring the friendshoring of supply chains ... will lower the risks to our economy” (Yellen, 2022)
- **Alfaro and Chor (2023):** Broad-ranging look at the **evolution of US supply chains** from 1990s to 2022 (focus on post-2017; available data)
 - Partners, products, modes, value chain position, economic activity; for signs of friend/near/reshoring

Global Supply Chains (GVCs)

Preview

- ✓ **Not Deglobalization (yet):** Trade flows have rebounded, US imports at all-time high in 2022 (Antràs, 2020; Baldwin, 2021)
- ✓ **A “Great Reallocation”:** GVC reconfiguration (2017-2022).
 - Decrease in China’s product-level import shares → Increase in import shares from “friends.” including: Vietnam (low cost), Mexico (nearshoring / regional GVCs)
 - **Alfaro, Brussevich, Minoiu, Presbitero (2024):** How did firms deal with fixed reallocating costs so quickly? Role of financing constraints + Specialized lending.
- ✓ **Caution:**
 - i. Rising costs: Evidence of **rising unit values** from Vietnam and Mexico → Diversification is Costly
 - Banks and Financing can help
 - ii. **May not** ultimately **reduce dependence** on China

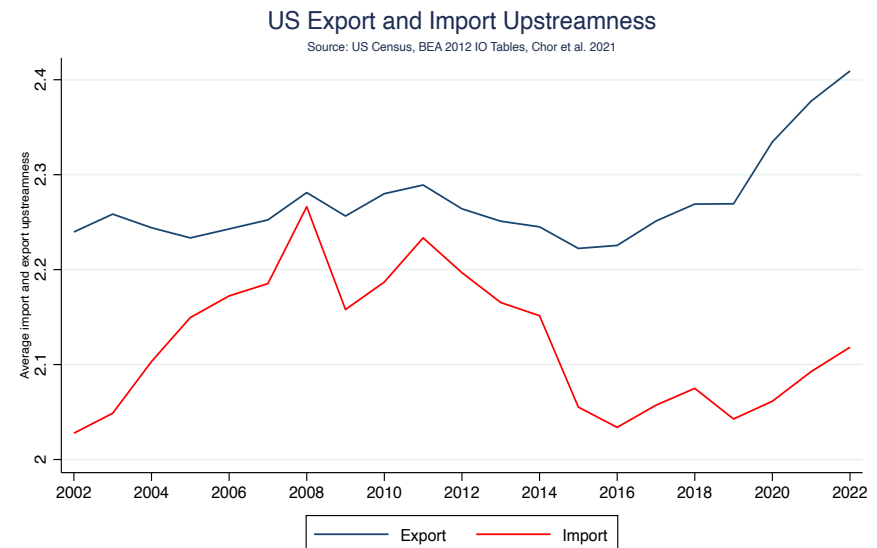
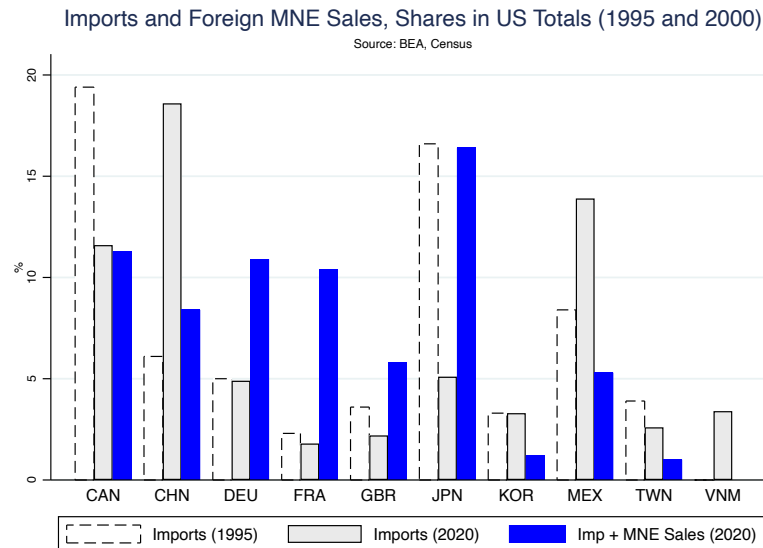
US Supply Chain Patterns

A Longer-Run Perspective (1990s-2017)

=

- **Partners:** Shift in import sourcing from High-Income (Japan & Canada) → Low-Wage (China & Mexico)
 - Though regional patterns persist: NAFTA, EU, Asia Pacific
- **Mode:** High-Income countries remained engaged via FDI (to circumvent policy barriers, rising costs at home)

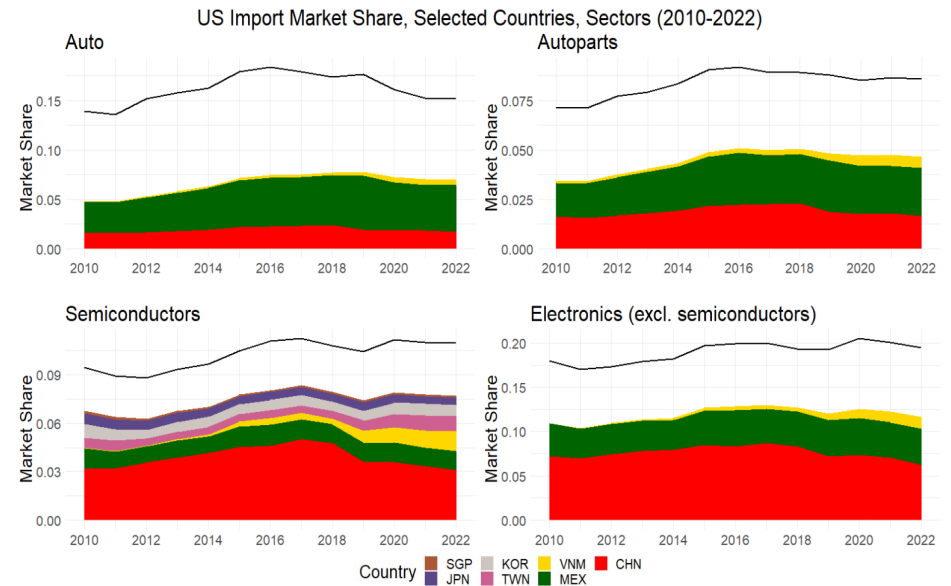
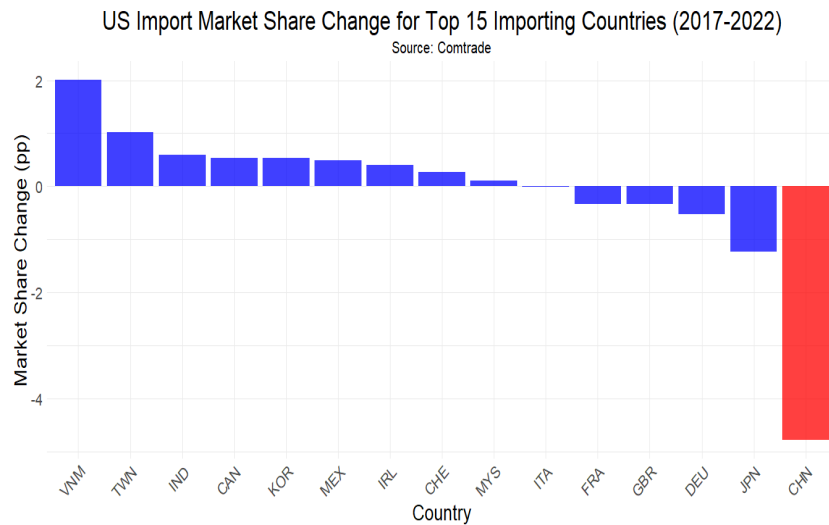
- **Products:** Measure of value chain positioning to final goods (c.f., Chor et al. 2021)
 - Exporter of upstream products; importer of final goods
 - Role energy independence
 - Also: **Recent ↑ in US import upstreamness**



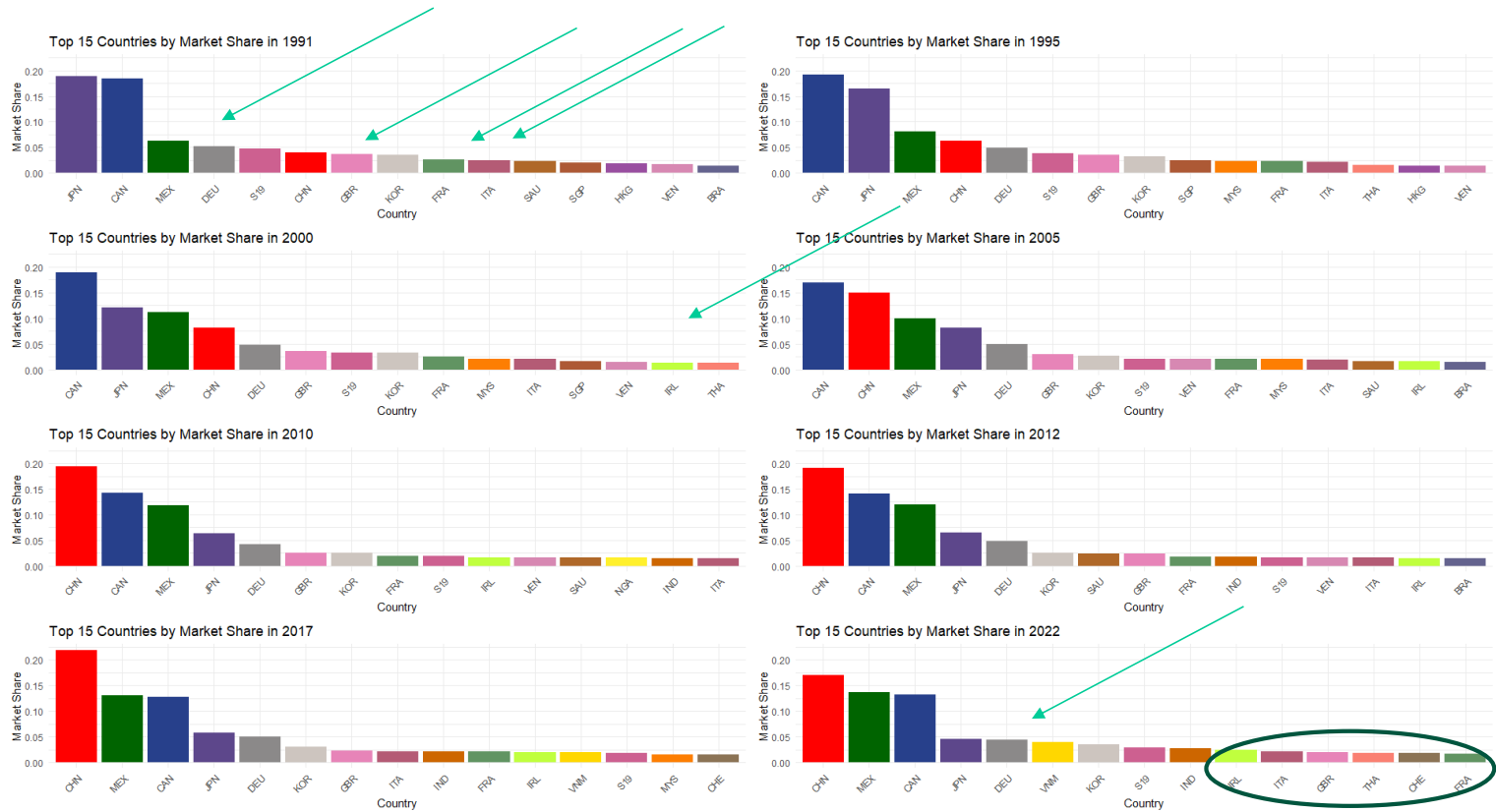
The Great Reallocation: 2017-2022

- US imports grew 6.7% (non-petroleum real imports: 4.2%)
- Imports from China grew 1.2%
- **BUT... lost 5pp market share** to among other “friends”: Vietnam, Mexico (Freund et al., 2023)

- In sectors central to policy debate: autos, auto parts, semiconductors, electronics



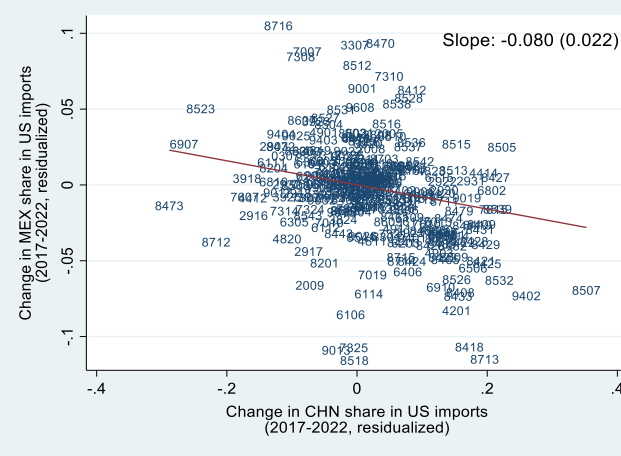
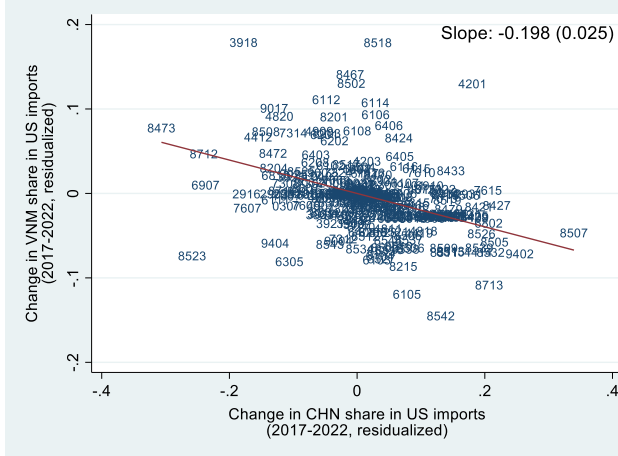
Role of Europe



Import Market Share from “Friends”

Product-level Regressions (HS4): $\Delta y_{p,22-17} = \beta_1 \Delta CHNsh_{p,22-17} + \beta_2 \Delta y_{p,17-12} + D_{p0} + \varepsilon_p$

Dependent variable: Import sources, c:	Δ US product-level import share from c (2017-2022)						
	VNM	MEX	CAN	IND, THA, MYS. IDN	KOR, TWN, SGP	IRL, CHE	ROW
ΔCHN import share (2017-2022)	<u>-0.198***</u> [0.025]	<u>-0.079***</u> [0.020]	<u>-0.012**</u> [0.005]	<u>-0.136***</u> [0.044]	<u>-0.440***</u> [0.134]	<u>-0.011*</u> [0.006]	-0.101 [0.062]
Lag Δ in c's import share (2012-2017)	0.768 [0.529]	-0.118 [0.220]	0.001 [0.069]	0.106 [0.161]	0.188 [0.126]	0.073 [0.053]	-0.453*** [0.087]
Observations	1,149	1,149	1,149	1,149	1,149	1,149	1,149
R-squared	0.529	0.296	0.220	0.301	0.561	0.136	0.458
HS2 fixed effects?	Y	Y	Y	Y	Y	Y	Y



Product-level decreases in China’s import share:

- **Increase in import market share from “friends”**

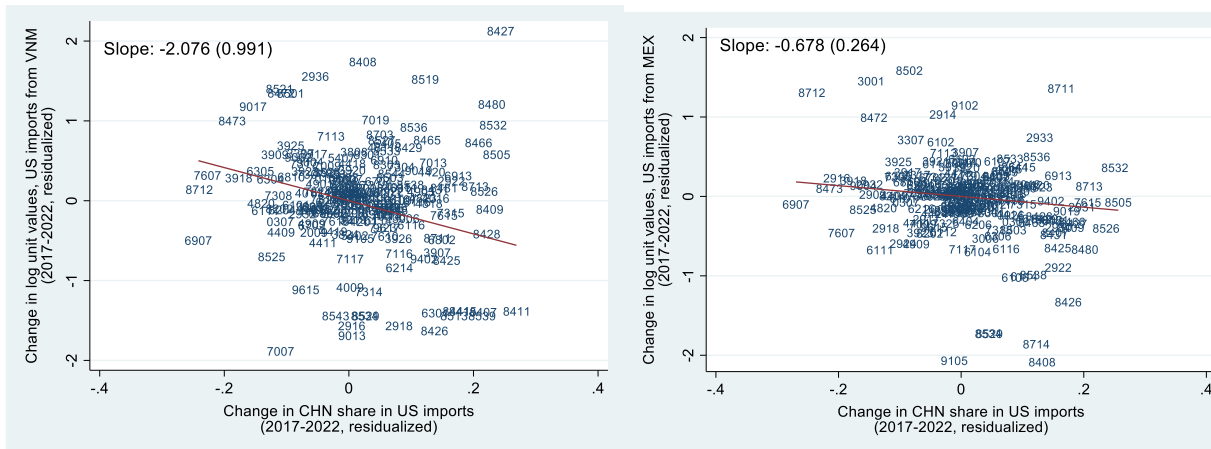
Source: Alfaro and Chor (2023)

Import Market Share from “Friends”: Heterogeneous Responses

- Vietnam: Gains particularly in electrical and electronic equipment (e.g., microphones, electric generating sets, telephone sets). Also: plastic floor coverings and apparel.
 - Broadly speaking: In more upstream, or lower labor share products.
 - Mexico: Also gained import share in electrical and electronic equipment (e.g., discs, tapes and storage devices, calculating machines). Also: autos and auto parts, glass iron and steel products.
 - Broadly speaking: Less upstream (proximity to the US), or higher labor share products.
- ✓ **Policy Driven Reallocation.** Both Vietnam and Mexico: Greater response for products with higher US tariffs on China.

Caution I: Higher Unit Values from “Friends”

Dependent variable: Import sources, c:	Δ Log US product-level import unit value from c (2017-2022)						
	VNM	MEX	CAN	IND, THA, MYS. IDN	KOR, TWN, SGP	IRL, CHE	ROW
ΔCHN import share (2017-2022)	-1.960* [1.001]	-0.630** [0.282]	0.062 [0.367]	-0.905 [0.905]	-0.460* [0.245]	-0.331 [0.622]	-0.700 [1.110]
Lag Δ log import unit value from c (2012-2017)	-0.334*** [0.086]	-0.198*** [0.027]	0.045 [0.086]	-0.416*** [0.090]	-0.234*** [0.056]	-0.297*** [0.077]	-0.788*** [0.151]
Observations	634	926	982	1,025	954	847	286
R-squared	0.342	0.355	0.424	0.350	0.404	0.325	0.306
HS2 fixed effects?	Y	Y	Y	Y	Y	Y	Y



Product-level decreases in China’s import share:

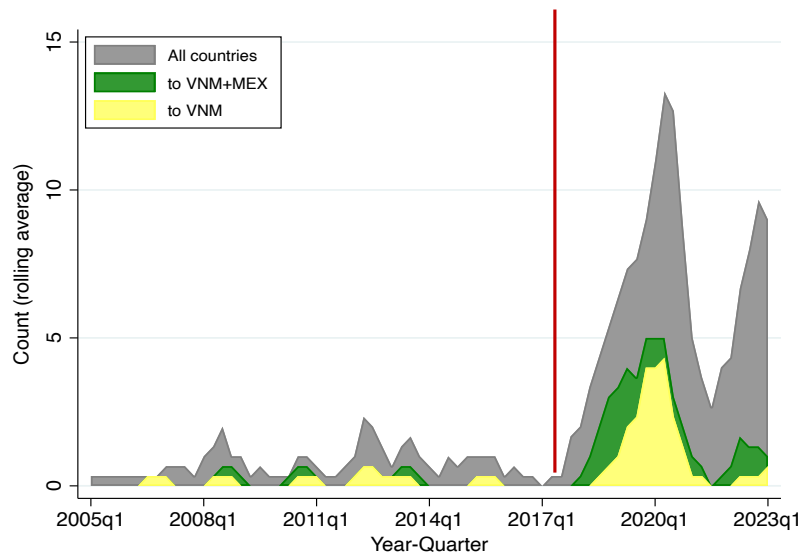
➤ **Increases in the unit values** of goods purchased by the US from **Vietnam (10%), Mexico (3%)**

• A combination of cost-push or demand-pull forces

The Great Reallocation: Firms' Strategies

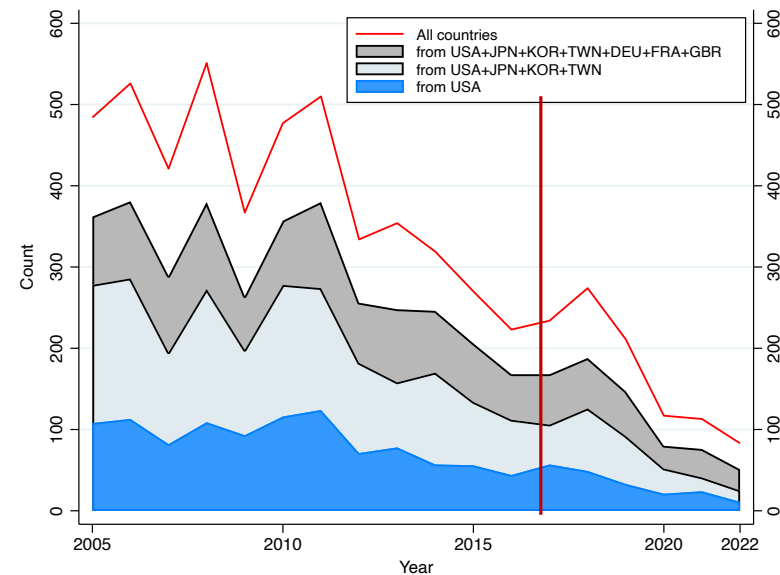
Offshoring and Greenfield FDI

- Intent/Attention:** In companies' earnings call transcripts, increased mentions of "friend/near/reshoring" + potential moves away from China, toward Vietnam or Mexico



Friend/Near/Reshoring in Earnings Calls
(2005-2023Q3) Refinitiv & NL Analytic

- Modes:** China dropped off as a preferred destination for greenfield FDI originating from the US + other source countries



China's Inward Greenfield FDI (2005-2022)
FT fDi Markets

Caution I: Diversification and Reallocation are Costly Sticky Supply Chains Relationships

- Supply chains impose nontrivial search costs on participants and are often governed by incomplete contracts
⇒ sunk costs generate **durable and sticky relationships** (U.S. suppliers are not diversified)
- The tariff hikes were a—large shock to U.S. importers from China and induced reallocation
 - How did firms deal with costs so fast? Role of **financing constraints?**

Table 1. Number of Source Countries Per Imported Product by US Firms

	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

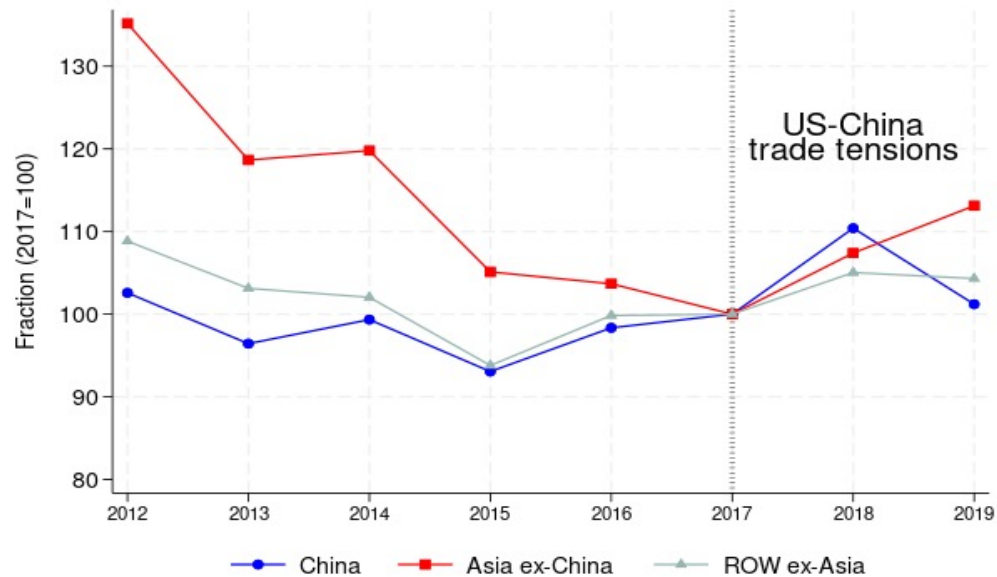
Source: Antràs, Fort and Tintelnot (2017). Table reports statistics on the number of countries from which a firm imports the same HS10 product for the year 2007.

Source: Antràs, Fort, Tintelton (2017)

The Great Reallocation: Firm-Supplier Evidence

Importing Firms Suppliers (Alfaro, Brussevich, Minoiu, Presbitero, 2024)

Reallocation Post Tariffs: **U.S. Firms that were importing at least one product from a Chinese Supplier reduced their relationship** (# of suppliers' entries)

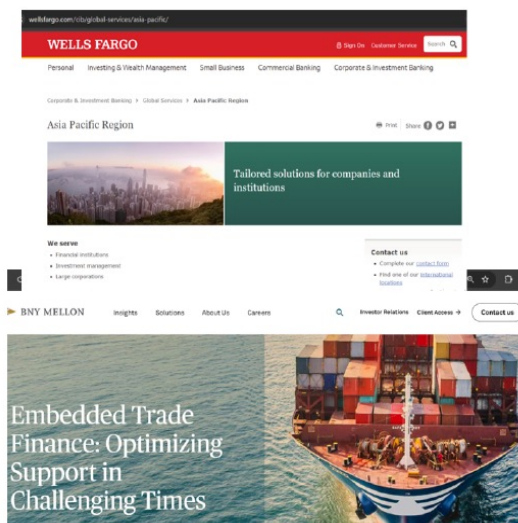


Source: S&P Panjiva Supply Chain Intelligence. Share of Imports by U.S. importers by region (2012:Q1-2019:Q4; 2017:Q4=100)

Specialized Banks, Information Frictions, Reallocation Costs

(Alfaro, Brussevich, Minoiu, Presbitero, 2024)

- Relationship banks: Specialized Information can help during distress times
- Specialized banks have informational advantages in working with borrowers
 - **Credit demand**: Do tariff-hit importers increase their demand for bank credit?
 - **Bank financing channel**: Did Tariff-hit firms borrowing from specialized banks obtain more credit and at better terms?



Our services

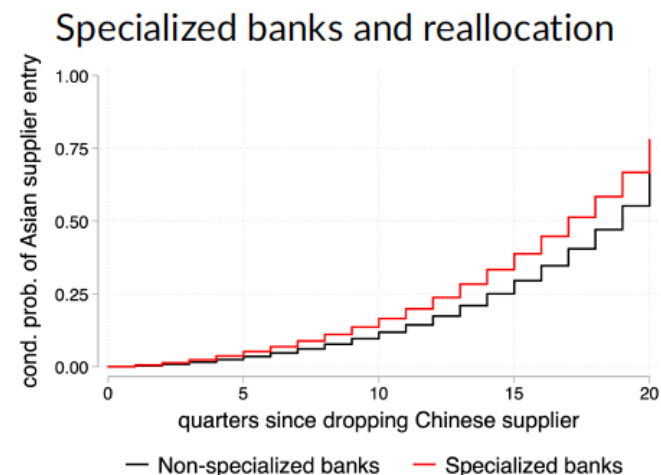
With offices in major cities across the region, Wells Fargo p manage risk and take advantage of Asia Pacific and Global

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Import Tariffs and Banking Relationships

Specialized Banks in Trade-Oriented Firms: Better Terms

(Alfaro, Brussevich, Minoiu, Presbitero, 2024)

Dependent variable:	(1) Loan Amount (log)	(2) Interest Rate	(3) Import Share from Asia	(4) Entry to Asia
Tariffs-hit x Post x Specialized bank [1]	0.0136*** (0.0047)	-0.0224*** (0.0087)	0.4089*** (0.0248)	0.5295*** (0.0358)
Tariffs-hit x Post x Other bank [2]	0.0036 (0.0036)	0.0287*** (0.0075)	0.3625*** (0.0166)	0.5229*** (0.0265)
pvalue ttest Ha: 1 > 2	-	-	0.000	0.424
Observations	1,257,187	870,348	130,923	130,923
R-squared	0.7961	0.8026	-	-
Firm FE, Firm controls x Post	Y	Y	Y	Y
Industry x State x Quarter FE	Y	Y	-	-
Bank x Quarter FE, Bank x Firm FE	Y	Y	-	-
State x Year FE, Industry x Year FE	-	-	Y	Y
Product x Year FE, Product x Firm FE	-	-	Y	Y

Banking relationships:

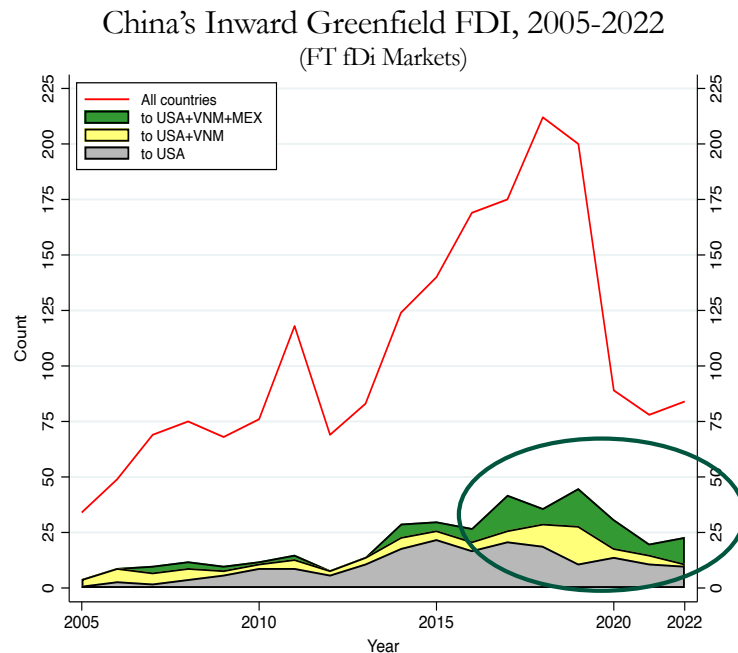
L_{ib} is debt of firm i with bank b ; X^m_i are exports of firm i to market (country/region) m , Average pre-tariffs (2012-2013); Multi-bank vs single-bank firms (pre-tariffs)

Banking relationships matter for quantity and price of credit

Caution II

The Back Door: Does Friendshoring Reduce Dependence?

- **Rising greenfield FDI** by China in Vietnam and Mexico (in line with FDI trends reported by VNM/MEX statistical agencies)



- **Rising share of imports** from China in third-countries, including US “friends”

China's Market Share- Top US Trading Partners
(Comtrade, Eurostat)

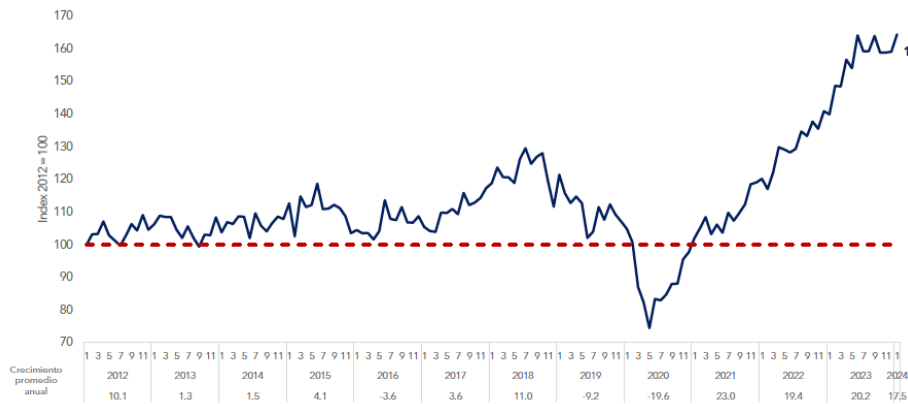
	2017		2022	
MEX				
#				
1	USA	46.4%	USA	43.9%
2	CHN	17.6%	CHN	19.6%
CAN				
1	USA	51.4%	USA	48.6%
2	CHN	12.6%	CHN	14.0%
JPN				
1	CHN	24.5%	CHN	21.0%
2	USA	11.0%	USA	10.1%
DEU				
1	CHN	10.2%	CHN	12.0%
3	USA	6.3%	USA	6.1%
VNM				
1	CHN	27.5%	CHN	33.2%
6	USA	4.4%	THA	3.8%
EU				
1	CHN	18.2	CHN	20.9
2	USA	11.5	USA	11.9

Mexico:

Bienes de Capital e Inversión

Importaciones de bienes de capital

Índice 2012=100

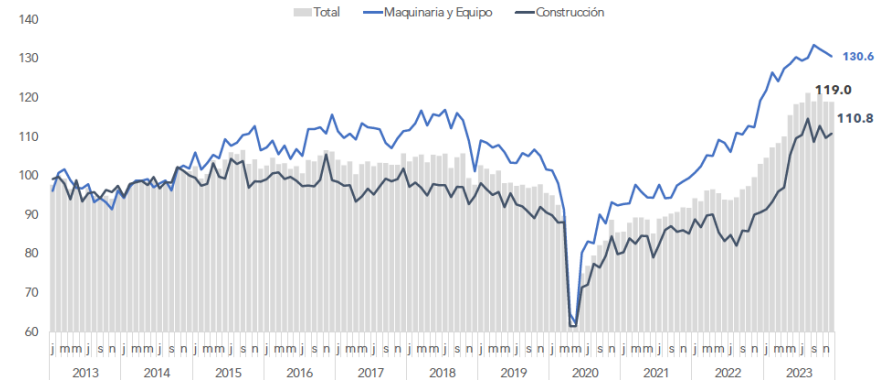


Fuente: Banco de México

Enero 2024

Inversión Fija Bruta

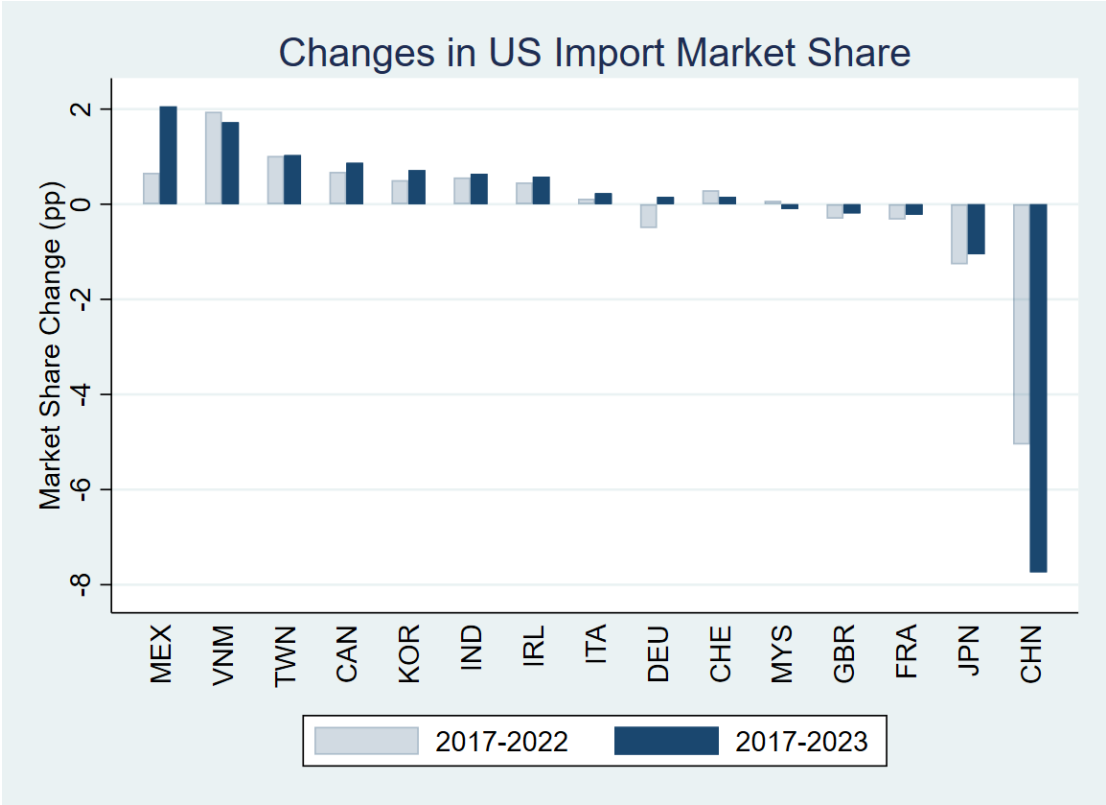
Serie indexada, 100=promedio 2012



Fuente: INEGI

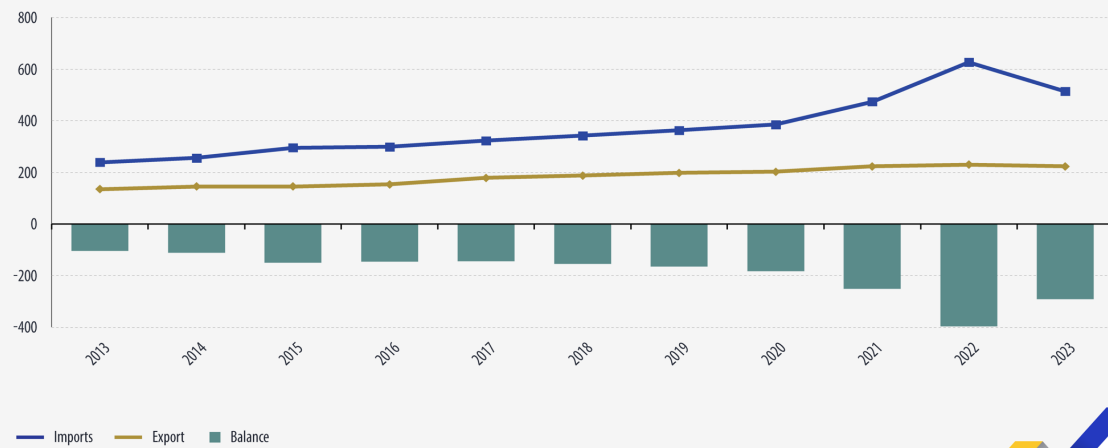
Source: Bank of Mexico (Luis de la Calle)

US Import Market Share, 2017-2023



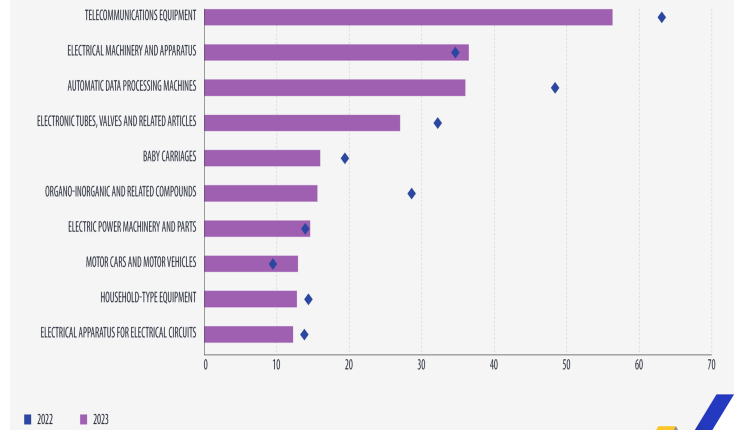
What About Europe?

EU trade in goods with China, 2013-2023
(€ billion)



eurostat

EU most imported goods from China, 2022 and 2023
(€ billion)



eurostat

What About the Region?

EU exports of goods to China, 2023

	€ million	% of China in extra EU exports
Germany	97 303	13.6
France	25 017	9.3
Netherlands	22 299	8.5
Italy	19 172	6.3
Ireland	8 875	7.9
Belgium	8 259	4.8
Spain	7 579	5.3
Sweden	6 897	8.1
Denmark	5 337	10.0
Austria	5 060	8.0
Finland	3 554	10.8
Poland	3 078	3.4
Slovakia	2 874	11.7
Czechia	2 438	5.6
Hungary	1 543	4.9
Bulgaria	1 017	6.3
Romania	856	3.4
Portugal	769	3.3
Slovenia	394	1.4
Greece	385	1.8
Estonia	253	5.3
Luxembourg	228	7.0
Latvia	185	2.5
Lithuania	146	0.9
Croatia	79	1.0
Malta	37	2.5
Cyprus	26	0.8

Source: Eurostat (online data code: DS-018995)

EU imports of goods from China, 2023

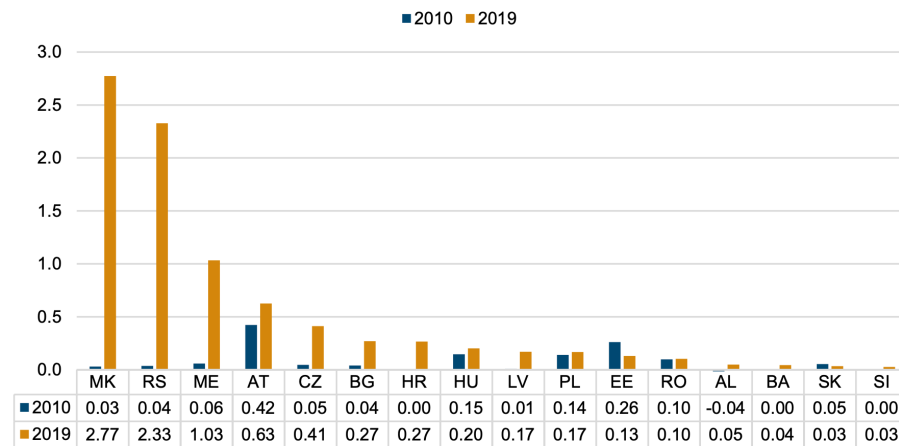
	€ million	% of China in extra EU imports
Netherlands	116 942	25.7
Germany	94 525	20.0
Italy	47 589	18.7
France	42 023	16.3
Spain	36 677	18.9
Poland	31 684	28.5
Belgium	30 826	16.1
Czechia	25 401	43.7
Hungary	11 043	25.0
Slovenia	9 867	29.1
Sweden	9 580	16.5
Ireland	8 591	10.4
Denmark	7 413	17.6
Austria	7 107	13.9
Greece	6 901	17.0
Romania	6 754	20.8
Portugal	5 221	19.5
Slovakia	4 311	20.0
Finland	3 140	14.0
Bulgaria	2 663	13.4
Lithuania	1 710	12.8
Croatia	1 298	13.4
Estonia	948	30.2
Latvia	869	18.1
Cyprus	758	13.2
Malta	356	12.4
Luxembourg	213	9.1

Source: Eurostat (online data code: DS-018995)

Eastern Europe

	2017	2022
Albania	7.90%	4.15%
Austria	5.72%	8.11%
Bosnia Herzegovina	6.52%	8.12%
Bulgaria	3.67%	5.78%
Croatia	3.16%	3.28%
Czechia	12.58%	18.77%
Estonia	8.50%	8.73%
Germany	10.24%	13.01%
Hungary	5.07%	6.74%
Latvia	3.10%	3.75%
Montenegro	9.61%	9.34%
North Macedonia	5.77%	7.80%
Poland	12.15%	13.14%
Romania	4.98%	5.14%
Serbia	8.22%	12.11%
Slovakia	7.45%	7.53%
Slovenia	6.31%	11.93%
European Union	20.22%	20.83%

Figure 3 / Chinese FDI inward stocks in Austria and the 17+1 economies, 2010 and 2019 (% of total FDI stocks in the host economy)

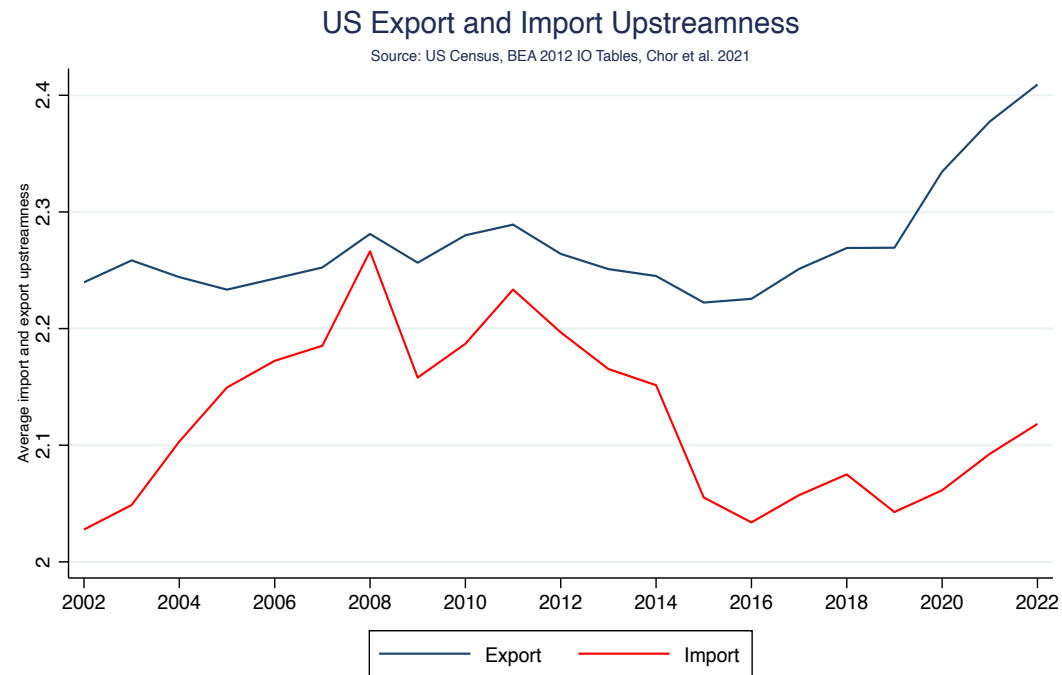


Note: Negative partner country shares arise if total stocks are positive but there is repatriation of capital by the selected partner country – see wiiw FDI database.

Source: wiiw FDI database, calculations based on OeNB data.

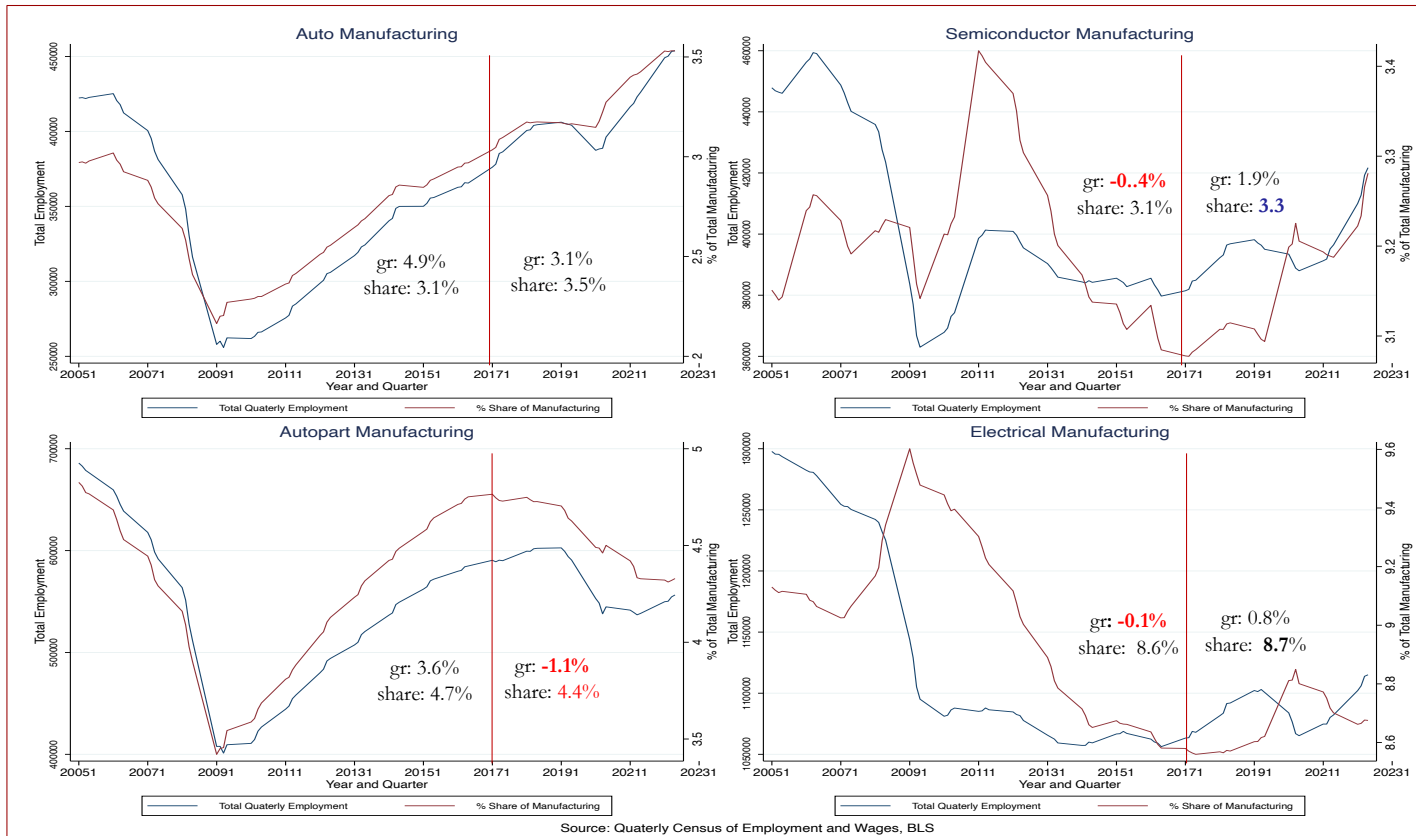
Evidencia Preliminar: Relocalización y Posición en la Cadena de Valor

- Aumento en la intermediación de importaciones de EE. UU.
- Sugiere que se están realizando más etapas finales dentro de EE. UU.



Preliminary Evidence: Reshoring, Cont.

US Employment in Key Manufacturing Sectors (Levels and Shares), 2005-2022



- **Rise in US import upstreamness** suggests more finishing stages being performed within the US (Slide 2, right figure).

- Data up to 2022 (BLS): In some manufacturing subsectors, **long-run decline in employment (and establishments) bottomed out**.

BUT... not a uniform story: in some (e.g., autos), prior to 2017; in others (e.g., semiconductors), post-2017.

Global Supply Chains

Implications and Conclusions

- ✓ **Reallocation:** Direct US sourcing from China has decreased; “Friends” have gained
 - Gaining market share: low-wage locations in Asia (e.g., Vietnam) + nearshoring (e.g., Mexico)
 - US imports have become more upstream (reshoring of production stages)
- But ... **caution** (beyond preliminary data):
 - a. True **extent** of decoupling **remains to be seen**: different modes of globalization
 - Trade: China gaining market share with “friends” (Mexico, Vietnam, EU...) + FDI: China increasing presence in “friends” → Not total independence from China
 - b. Reallocation is **costly**: tariffs on China have been passed on to consumers (Amiti et al., 2019; Cavallo et al., 2021)
 - + **Rising unit import prices from alternative source countries**, including Vietnam and Mexico (Alfaro and Chor, 2023)
 - + Bank financing is critical for mitigating large search costs related to trade disruptions and for supply chain resilience (Alfaro, Brussevich, Minoiu, Presbitero, 2024)
- **Crucial debate:** weigh static losses against dynamic gains (Mill-Bastable test)
 - Policies eliminated “exhibitions of indecision” (Kennan, 47): political backing + sentiment (Alfaro, Chen, Chor, 2023)
 - Important to develop frameworks to subject policies to evaluation