Exports in Disguise?
Trade Re-Routing during the US-China Trade War

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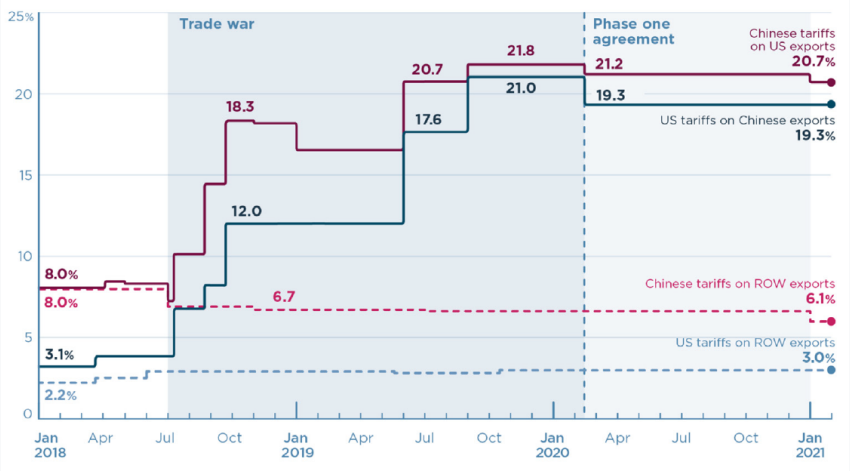
The US–China Trade War



Bown (2021)

Concerns about widespread rerouting via third countries

Bloomberg

Business | Economics

Chinese Exporters Dodge Tariffs With Fake Made-in-Vietnam Labels

- Some avoid
- Vietna trade

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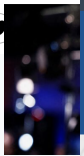
US Senator proposes barring Chinese firms using third countries to evade tariffs

By David Shepardson

September 19, 2024



U.S.-CHINA ECONOMIC AND SECURITY REVIEW COMMISSION

Consumer Products from China: Safety, Regulations, and Supply Chains

Robin Brooks ✓
@robin_j_brooks

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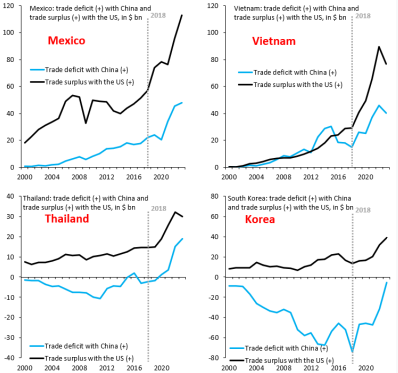
We've documented wide-spread & ongoing export diversion of western goods to Russia via Central Asia. So it's no surprise that China circumvents US tariffs by sending stuff on more circuitious routes, primarily via Mexico, Vietnam, Thailand and South Korea. There is no decoupling.

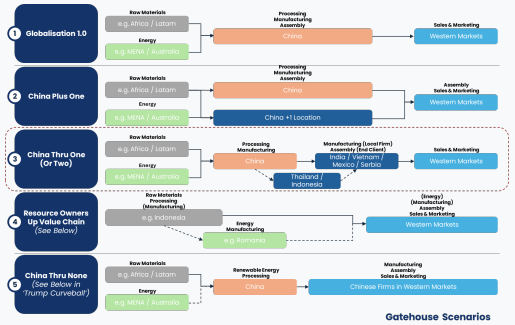


Our objectives

To what extent were Chinese products rerouted to the US through Vietnam as a result of the US-China trade war?

- Define rerouting: **same HS 8-digit product** imported from China and exported to the US by **the same firm** in the same quarter
- Study how rerouting responds to the US-China trade war
- Extend the analysis to all third countries
- Distinguish between rerouting and value-add activities using firm production (forthcoming)

Taxonomy



Gatehouse (2024)

(a) Types of Supply Chain Strategies

Exports to the U.S.		
A		Tariff Evasion: Re-Routing
	A1	Incumbent Domestically-owned
	A2	Incumbent Foreign-owned
	A3	New Domestically-owned
	A4	New Foreign-owned
B		Not Tariff Evasion: Value-Added
	B1	Incumbent Domestically-owned
	B2	Incumbent Foreign-owned
	B3	New Domestically-owned
	B4	New Foreign-owned

(b) Types of Vietnamese Exports to the US

Three Sources of Data

Combine transaction-level customs data with trade war tariffs and firm-level financials.

Shipment Profile for Bill of Lading

Arrival Date: Dec. 14, 2021 | Data Source: Vietnam Exports

Shipment Details

HS Code: 8414.90.32
Transport Method: Maritime
Dollar Value: $67,597
Item Quantity: 4200 pieces

Shipment Description

Bộ phận của Turbo tăng áp: vỏ bên ngoài bằng thép-Panther Turbine Housing12 (839192-0012), Hàng mới 100%

Three main data sources:

1. Vietnam's import and export transactions from Panjiva
   - Jan 2018 - Dec 2022
2. Trade war tariffs from Bown (2021)
   - Tariffs at 6-digit product level
   - Excluding tariffs that also affected Vietnam
3. Firm production from Vietnam Enterprise Survey (VES)
   - Annual from 2000-2021, almost all registered businesses
   - Firm tax ID, ownership, employment, revenue

Definition and measurement of rerouting

Definition: Importing and exporting same 8-digit product to the US within the same quarter

Product-level rerouting share:

$$L_{pt} = \frac{\min\{x_{pt}^{US}, m_{pt}^{CN}\}}{x_{pt}^{US}} \tag{1}$$

Province-level rerouting share:

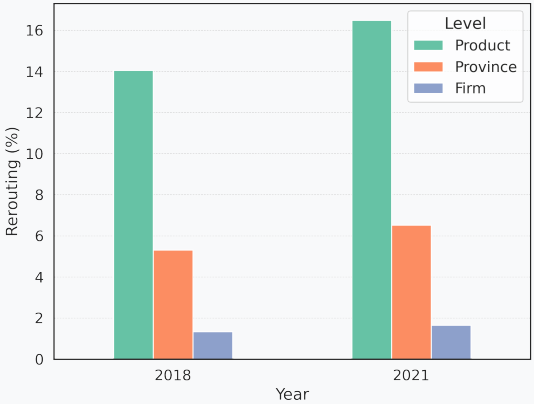
$$L_{kpt} = \frac{\min\{x_{kpt}^{US}, m_{kpt}^{CN}\}}{x_{kpt}^{US}} \tag{2}$$

Firm-level rerouting share:

$$L_{ipt} = \frac{\min\{x_{ipt}^{US}, m_{ipt}^{CN}\}}{x_{ipt}^{US}} \tag{3}$$

i: firms, p: 8-digit products, t: quarters, x^{US}: exports to the US, m^{CN}: imports from China

Level of Aggregation Matters

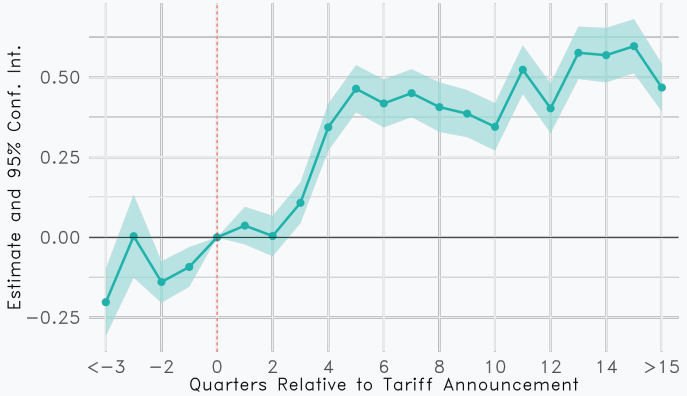


Annual Rerouting Shares Measured at the 8-digit-Quarter

Implied increase in rerouting

- Product-level: 2.45 pp or $10.6 billion
- Province-level: 1.22 pp or $4.3 billion
- Firm-level: 0.31 pp or $1.1 billion

Product-level rerouting response to trade war tariffs



$$L_{pct} = \sum_{j=-4}^{16} \beta_j \Delta\tau_{pc} \times I\{t - s_{pc} = j\} + \alpha_{pt} + \alpha_{pc} + \varepsilon_{pct} \quad (4)$$

$\Delta\tau_{pc}$: Initial trade-war tariff increase, s_p: Quarter of initial tariff implementation

Chinese subsidiaries increase re-routing after 2018

	2018	2019	2020	2021
All US Exporters (Total)				
Domestic	3,503	4,255	5,304	5,086
Chinese	186	342	491	507
Other Foreign	1,652	1,967	2,074	2,097
Total	5,341	6,564	7,869	7,690
Number of Rerouters				
Domestic	333	433	533	533
Chinese	57	144	216	236
Other Foreign	478	671	757	792
Total	868	1,248	1,506	1,561
Rerouting Share of US Exporters (%)				
Domestic	9.51	10.18	10.05	10.48
Chinese	30.65	42.11	43.99	46.55
Other Foreign	28.93	34.11	36.50	37.77
Total	16.25	19.01	19.14	20.30

Table: Rerouting by ownership and year

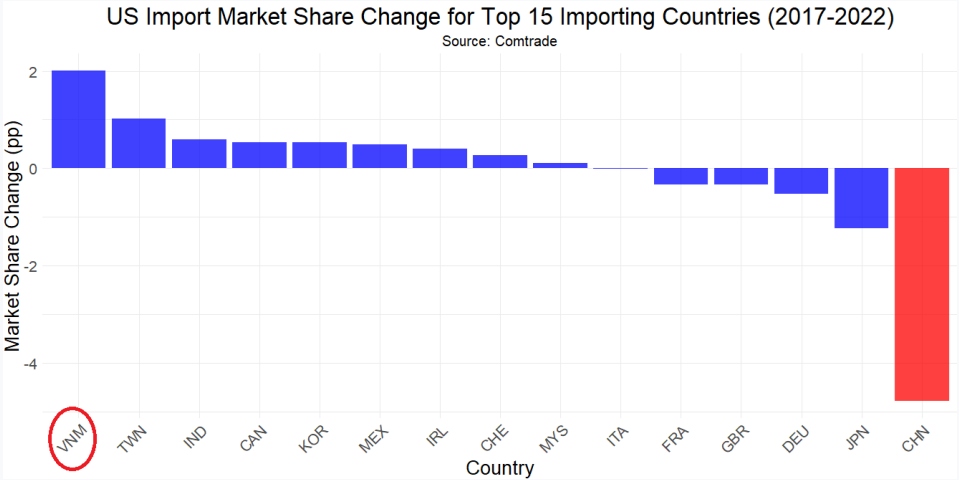
Conclusion

- Trump tariffs have diverted economic activity from China to third countries.
- Need clear definition to pin down precisely what rerouting is and how much is taking place to determine what the appropriate policy response should be.
- We define and measure rerouting. We show that it has increased since the onset of the trade war but it is not as widespread as commonly perceived.
- Punitive measures against third countries based on aggregate data would be unwise.

Appendix

- US import market share change for top importing countries (2017-2022) Link
- Vietnam manufacturing employment by top foreign direct investment (FDI) sources (2000-2021) Link
- Examples of rerouting misclassification Link
- Rerouting at Alternative Levels of Aggregation Link
- Rerouting by Vietnam Provinces Link
- Relationship between Rerouting and Trade War Tariff Changes Link
- Top 10 Rerouted Products Link
- Event study: Firm-level rerouting share Link
- Co-movement of imports from China with exports to top destinations Link
- Product-level rerouting from China for all US trading partners Link

Vietnam gained the most US market share during trade war



Alfaro and Chor (2023)

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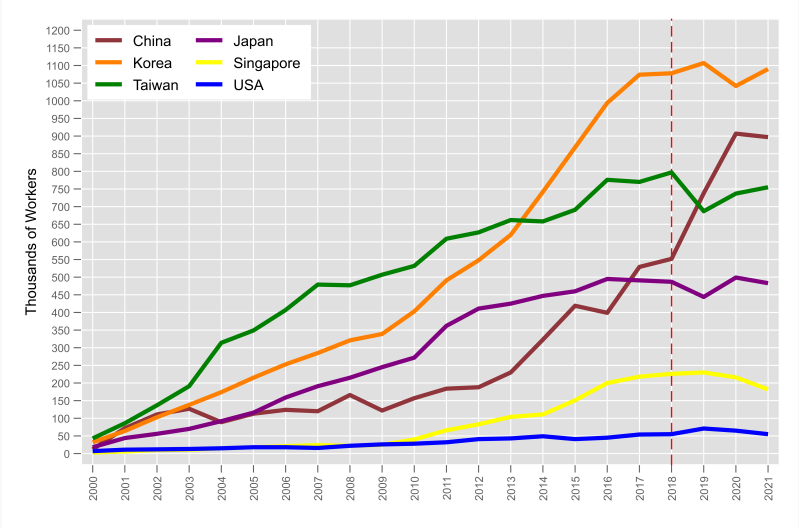
Vietnam manufacturing employment by top FDI sources

- FDI into Vietnam ↑→ Input demand ↑→ Imports from China ↑ (Wu, 2023)



Examples of Aggregation Bias in Rerouting Measurement

Aggregate trade flows misidentify the following two activities as rerouting:

1. Firm A importing condensers and evaporators (8418.99.10) and exporting refrigerated display cases (8418.50.99)
2. Firm B in HCM City importing bicycle tires (4011.50.00) and firm C in Dong Nai exporting bicycle tires (4011.50.00)

Product granularity and **firm identity** matter for better measurement.

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Rerouting at Alternative Levels of Aggregation

	2018			2021		
	Year	Quarter	Month	Year	Quarter	Month
	Panel A: Product-Level Rerouting (%)					
HS 4-digit	21.87	21.52	20.99	41.96	37.75	36.85
HS 6-digit	16.52	16.18	15.4	20.74	19.85	19.1
HS 8-digit	14.59	14.05	13.19	17.49	16.49	15.72
	Panel B: Province-Level Rerouting (%)					
HS 4-digit	12.17	11.25	10.14	23.01	21.5	20.52
HS 6-digit	6.96	6.45	5.9	8.76	8.4	7.87
HS 8-digit	5.98	5.3	4.78	6.84	6.52	6.07
	Panel C: Firm-Level Rerouting (%)					
HS 4-digit	3.61	2.97	2.46	6.02	5.75	5.42
HS 6-digit	1.94	1.65	1.54	2.21	2.06	1.91
HS 8-digit	1.66	1.34	1.19	1.77	1.65	1.55

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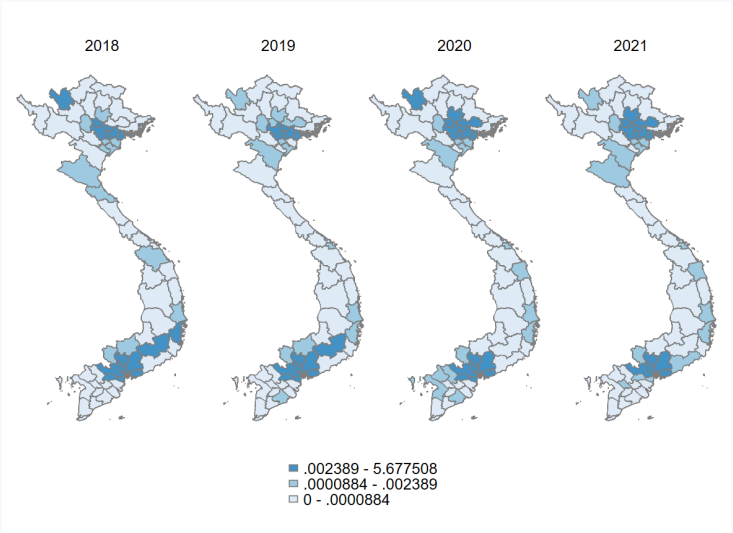
Changes in Province-Level Rerouting Over Time (HS8, 2018-2021



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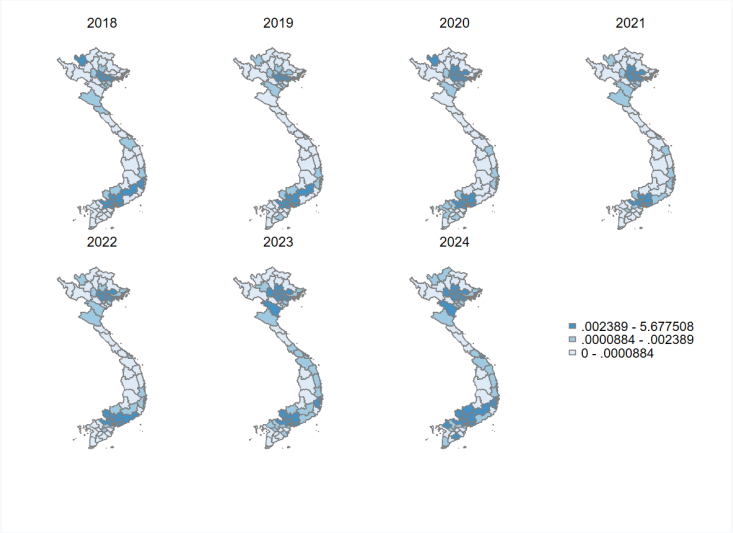
Changes in Province-Level Rerouting Over Time (HS8, 2018-2024



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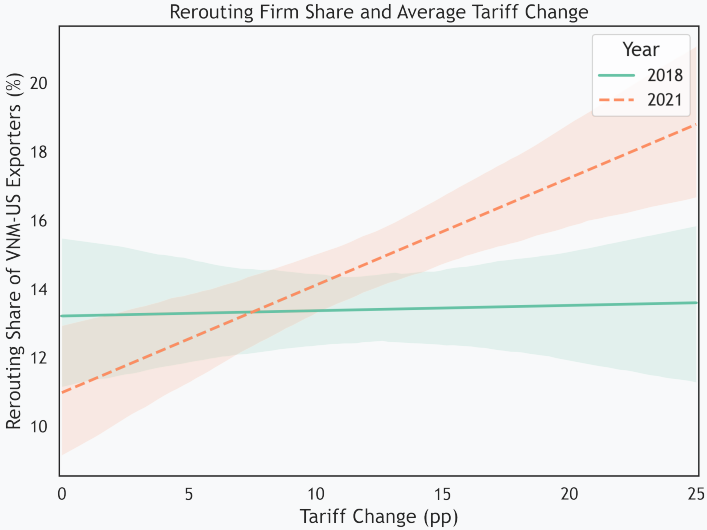
Rerouting is increasing in tariff changes



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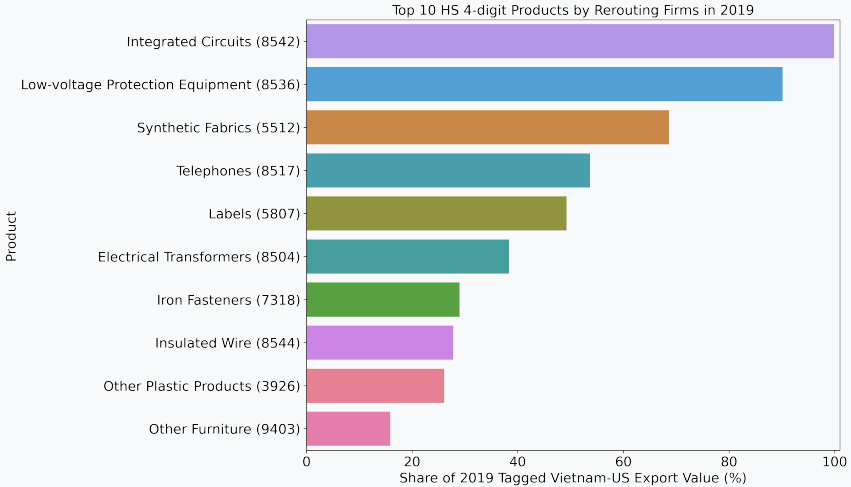
Rerouting varies significantly by product

We compute the share value exported to the US by firms tagged as rerouters



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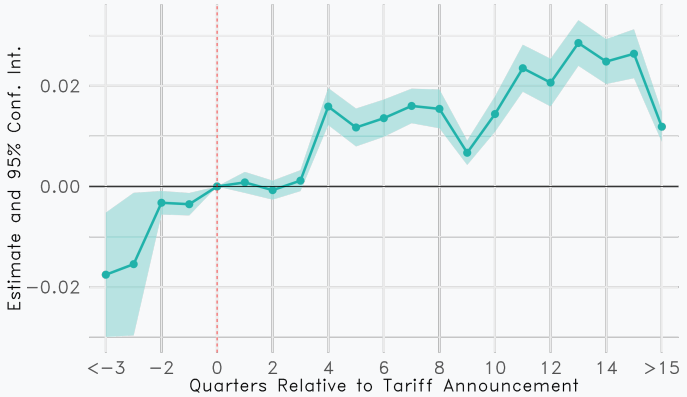
Firm-level rerouting response to trade war tariffs



$$L_{ipct} = \sum_{j=-4}^{16} \beta_j \Delta\tau_{pc} \times I\{t - s_p = j\} + \alpha_{ipt} + \alpha_{ipc} + \varepsilon_{ipct} \quad (5)$$

$\Delta\tau_{pc}$: Initial trade-war tariff increase, s_p: Quarter of initial tariff implementation

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Co-movement of Chinese imports and exports to top destinations

$$
\begin{aligned}
\ln x_{ipct} = \alpha_{ipc} + \alpha_{ipt} + \alpha_{pct} + \varepsilon_{ipct} \\
&+ \sum_{k \in C} \beta_k I\{c = k\} \times \Delta\tau_{pc} \times D_{pt} \times \ln m_{ipt}^{CN} \\
&+ \sum_{k \in C} \gamma_k I\{c = k\} \times \Delta\tau_{pc} \times \ln m_{ipt}^{CN} \\
&+ \sum_{k \in C} \delta_k I\{c = k\} \times D_{pt} \times \ln m_{ipt}^{CN} \\
&+ \sum_{k \in C} \theta_k I\{c = k\} \times \ln m_{ipt}^{CN}
\end{aligned}
\tag{6}
$$

- $C = \{EU, HKG, JPN, KOR, TWN, USA\}$ - top export destinations for Vietnam
- $\Delta\tau_{pc}$ - trade-war tariff increase
- $D_{pt} = 1$ if post-tariff announcement, 0 otherwise

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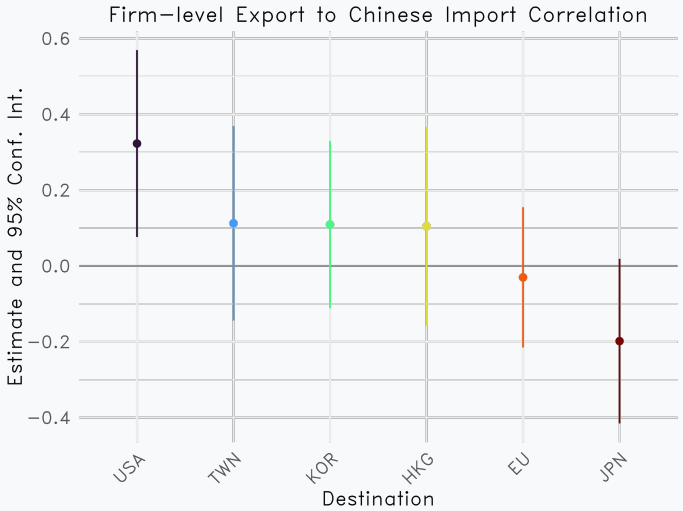
Co-movement of Chinese imports and exports to top destinations



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Extend our analysis to all third countries using UN Comtrade

How much rerouting did other third countries conduct? What would be the implied "net" export to the US?

For every country k, calculate its rerouting share in terms of US total import:

$$L_{pt}^{k} = \frac{\min\{x_{pt}^{k,US}, m_{pt}^{k,CN}\}}{x_{pt}^{k,US}}$$

$$L^{k} = \frac{\sum_t \sum_p L_{pt}^{k} x_{pt}^{k,US}}{m^{US}} \tag{7}$$

- $x_{pt}^{k,US}$: country k export to US
- $m_{pt}^{k,CN}$: country k import from China

Caveat: This is most likely an **upper bound** of rerouting

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Total rerouting share by third countries

	2018			2021		
	Year	Quarter	Month	Year	Quarter	Month
	Product-Level Rerouting (%)					
HS 4-digit	18.6	18.4	18.1	20.6	20.3	20.0
HS 6-digit	14.6	14.2	13.8	15.8	15.4	15.0

- Use HS6-quarter as a benchmark: $\Delta L = 1.2$ pp
- China's US import market share change in 2018-2021 is —3.1 pp
- China's US "net" import market share change in 2018-2021 is —1.9 pp

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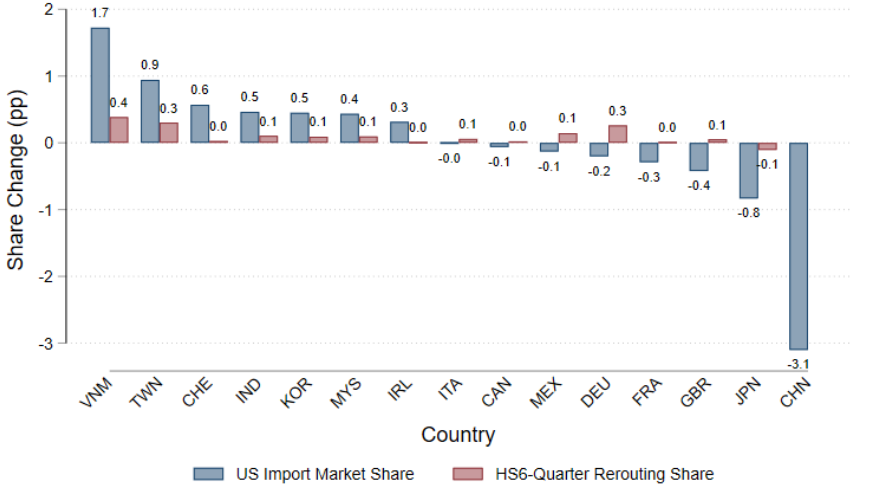
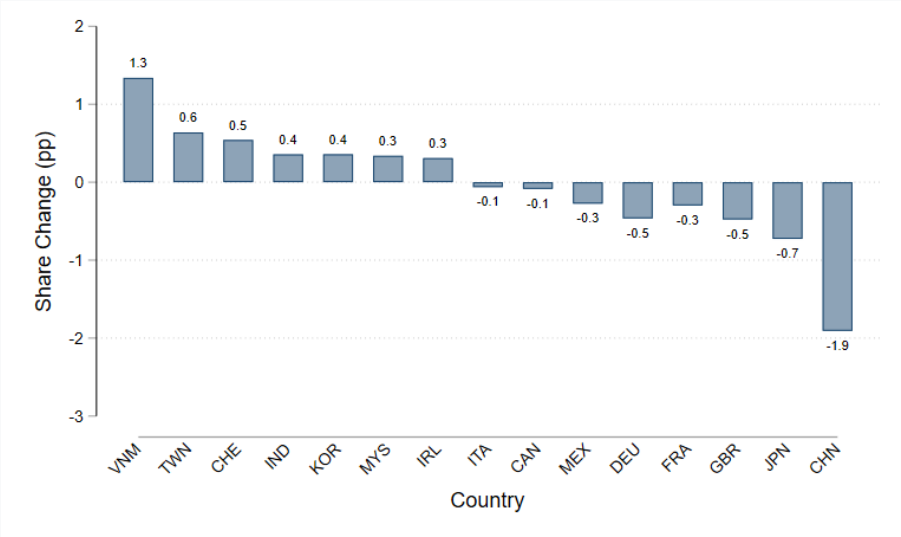
US import and rerouting share change for top importing countries, 2018-2021



US import market share change net of rerouting, 2018-2021



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