

An aerial, high-angle photograph of a port yard. The yard is densely packed with numerous shipping containers of various colors, including red, blue, yellow, green, and white. Some containers have logos like 'CK LINE' and 'PAN CON' visible. A blue forklift is positioned in the lower right quadrant, near a stack of containers. The background shows more stacks of containers and some industrial structures, all under a bright, slightly hazy sky.

Trade Diversion From Tariffs: A Case of the Port of Seattle

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Motivation

- NYT report on Port of Seattle published January 19th, 2026, claims that “Dock workers are used to uncertainty, but nothing since the Great Recession of 2008 compares to what they have experienced this year.” (NYT, 2026)
- Workers at the Port of Seattle have reported reduced work hours associated with declining shipping traffic following recent trade policy changes, a pattern also observed at other West Coast ports.
- Under a port development authority, the Northwest Seaport Alliance (NWSA), a vital hub for Pacific trade, manages the container, breakbulk, auto, and some bulk terminals in Seattle and Tacoma.
 - According to the 2024 NWSA Annual Trade Report, 92.4% of the vessel cargo value (container and non-container waterborne imports and exports combined) was tied to Asia & Pacific regions, making China, Japan, and South Korea as the Pacific Northwest’s leading trading partners.

Research Question and Contributions

Research Question:

- To what extent do macro-level tariff shocks land unevenly on a sub-national gateway?
- Today's presentation isolates the localized trade effects of the NWSA following the 2018–2019 trade actions.

Contributions:

- Bridges international trade theory (Structural Gravity) with sub-national regional economic impacts.

Empirical Estimation: DiD

My empirical strategy is a gravity model difference-in-differences (DiD).

- I estimate the effect of active tariff status on bilateral log trade flows, controlling for pair fixed effects, year fixed effects, and clustering standard errors at the pair or origin level, depending on the specification.

$$\log(\text{Trade}_{ijt}) = \beta_1(\text{Treat_Active}_{it}) + \eta_{ij} + \eta_{jt} + \varepsilon_{ijt}$$

- The treatment variable — `treat_active` — is a dummy equal to one for country-pairs where the origin country faced active 2018 tariffs.

Empirical Estimation: PPML

In addition to the DiD, I also estimate PPML — Poisson Pseudo-Maximum Likelihood — to address the well-known bias from zeroes and heteroskedasticity in trade data.

$$Trade_{ijt} = \beta_1(Treat_Active_{it}) + \eta_{ij} + \eta_{jt} + \varepsilon_{ijt}$$

Data

- To assess the trade impact of the 2018 tariffs, I estimate bilateral trade flows for treated exporters — China, Japan, South Korea, Taiwan, Vietnam, Germany, Canada, Mexico, Brazil, Italy, France, the United Kingdom, Belgium, Sweden, Thailand, and India — against untreated exporters before and after the tariff implementation.
- Untreated countries: Indonesia, Malaysia, Australia, Philippines, New Zealand, Russia, Chile, Cambodia, Singapore, Netherlands, Bangladesh, Ukraine, Saudi Arabia, United Arab Emirates, Spain, Peru, Colombia
- Years: 2017-2025
- Data from NWSA *Cargo statistics*.

Treated Country Imports Fell and Never Fully Recovered



Dashed line = 2018 tariff introduction.

2018
Tariffs begin

2019
Escalation

2020
COVID shock

2025
New tariff round

Total US Imports (USD millions), Source: NWSA, 2026

Tariff Actions

U.S. Trade Laws Authorizing the President's Tariff Actions

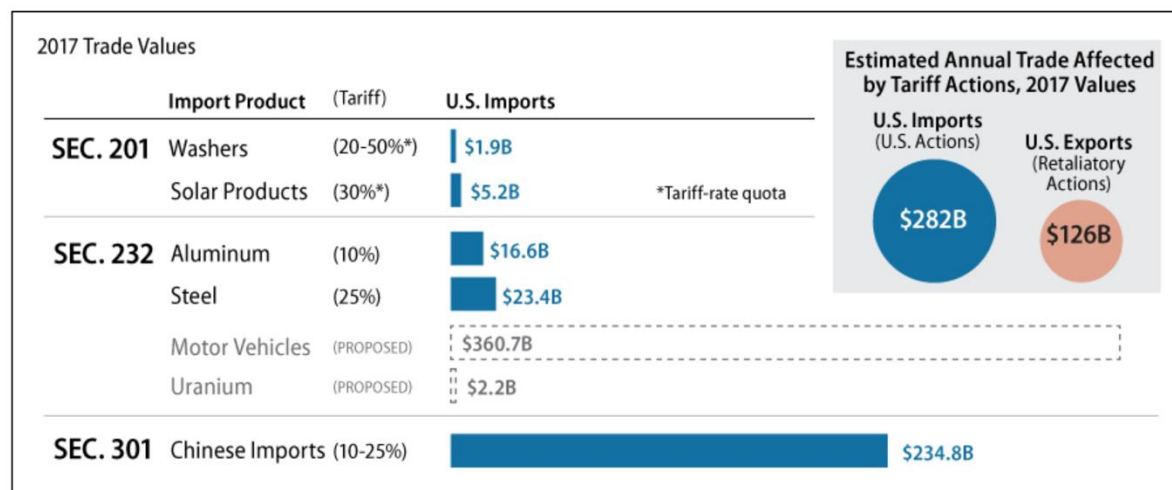
Section 201 of the Trade Act of 1974—Allows the President to impose temporary duties and other trade measures if the U.S. International Trade Commission (ITC) determines a surge in imports is a *substantial cause or threat of serious injury* to a U.S. industry.

Section 232 of the Trade Expansion Act of 1962—Allows the President to adjust imports if the Department of Commerce finds certain products are imported in such quantities or under such circumstances as to *threaten to impair U.S. national security*.

Section 301 of the Trade Act of 1974—Allows the United States Trade Representative (USTR) to suspend trade agreement concessions or impose import restrictions if it determines a U.S. trading partner is *violating trade agreement commitments or engaging in discriminatory or unreasonable practices that burden or restrict U.S. commerce*.

Source: Congressional Research Service (CRS). (2019). *Trump Administration Tariff Actions (Sections 301, 232, and 201): Frequent Questions* (CRS Report No. R45529). Washington, D.C.: Library of Congress. Retrieved from https://www.congress.gov/crs_external_products/R/PDF/R45529/R45529.5.pdf

U.S. Imports and Exports Affected by the Recent Tariff Actions



Sources: CRS analysis of U.S. import data from the U.S. Census Bureau and trade partner data from Global Trade Atlas IHS Markit.

Tariff Actions

U.S. Trade Laws Authorizing the President's Tariff Actions

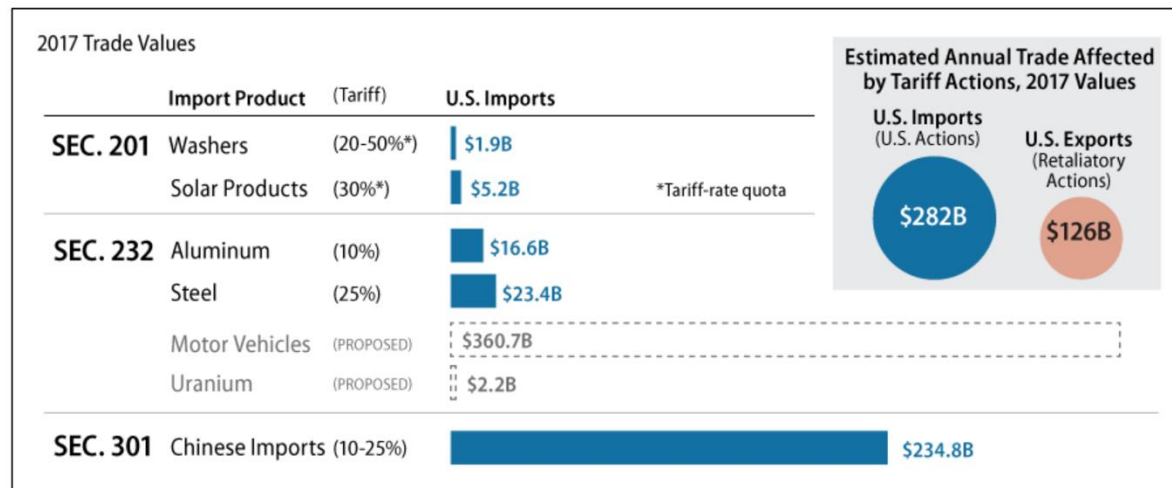
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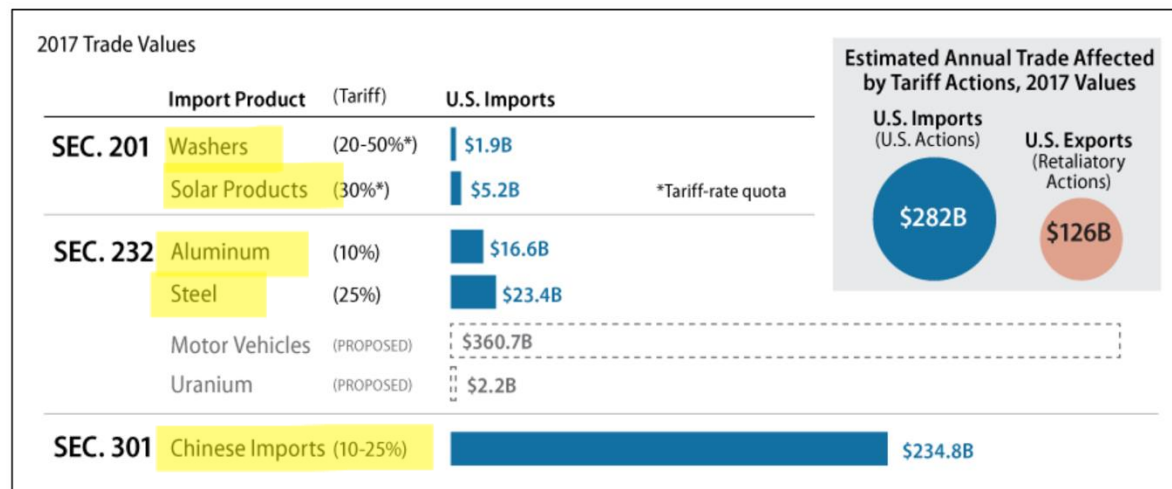
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Results: Sections 301, 232, and 201

Estimator	DiD				PPML	
	(1)	(2)	(3)	(4)	(5)	(6) ★
treat_active	0.166	1.506***	0.149	0.010	-0.028	-0.139***
	(0.049)	(0.356)	(0.062)	(0.068)	(0.150)	(0.180)
Origin FE	Yes	No	No	No	Yes	No
Year FE	Yes	Yes	Yes	No	Yes	No
Pair FE	No	No	Yes	Yes	No	Yes
Importer-Time FE	No	No	No	Yes	No	Yes
N	356	360	352	176	356	176

* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

Col. (2) inflated

No pair FE → selection bias.
Treats China & Germany as if comparable to Cambodia.

Cols. (1)(3)(4) null

Log-linear DiD finds no significant effect once pair heterogeneity is controlled.

Col. (6) preferred ★

PPML + pair & importer-time FE:
-13% trade reduction. Credible within-pair estimate.

What Does -13% Mean for the Port of Seattle?



~\$6-7B

Estimated annual trade
diverted or destroyed



-14.2%

Grand Total TEU decline
at NWSA ports, 2026 YTD



↓ Hours

Reduced longshoreman
shifts at ILWU Local 19

Seattle is a China-facing port. Its trans-Pacific trade lanes — China, Japan, South Korea, Taiwan — are exactly the corridors most exposed to the 2018 tariffs. A 13% bilateral trade reduction does not fall evenly across all U.S. ports. It concentrates where the exposure is highest. The coefficient in column (6) is not just a number — it is the longshoreman's missing paycheck.

Results: Section 301 (Only China)

Estimator	DiD						PPML
	(1)	(2)	(3)	(4)	(5)	(6)	(7) ★
True China Post 2018	-0.113 (0.105)	-0.135*** (0.037)	-0.113 (0.106)	-0.135*** (0.037)	-0.113 (0.105)	-0.135*** (0.037)	-0.079* (0.043)
Origin FE	Yes	No	Yes	No	Yes	No	No
Year FE	Yes	No	Yes	No	Yes	No	No
Importer FE	No	Yes	No	Yes	No	Yes	Yes
Pair FE	No	Yes	No	Yes	No	Yes	Yes
Clustered by	Exporter	Pair	Exporter	Pair	Exporter	Pair	Pair
Sample	Full	Full	Drop 2020	Drop 2020	Drop 20 25	Drop 20 25	Full
Observations	355	175	315	155	355	175	175

★ Preferred: cols (2)(4)(6)

Consistent -13.5%

Pair + Importer FE specs all yield -0.135^{***} , implying China's bilateral trade fell ~12.6% post-tariff.

Insignificant without pair FE

Origin + Year FE specs (1)(3)(5) are -0.113 but not significant. Pair FE is the key identification lever.

PPML confirms direction

Col. (7): -0.079^* , significant at 10%. Poisson estimate smaller but consistent sign.

Sample robust

Dropping 2020 (COVID) and 2025 barely moves the estimate — tariff effect is not pandemic-driven.

CONTROL GROUP AND LIMITATIONS

- These are not natural comparators for China, Japan, or Germany.
 - They export different goods, have different relationships with the United States, and faced different macroeconomic conditions over this period.
 - Russia drops out of the sample after 2022 due to sanctions.
 - Hong Kong appears only as a destination, not an origin, and functions partly as a Chinese re-export hub — which potentially confounds the China treatment effect.
- The parallel trends assumption is harder to defend with this control group than it would be with, say, a matched sample of similar exporters.
- That is something I am actively working to address, and I welcome suggestions from this audience on a better dataset.

Future Work

- Expanding the research on other West Coast ports
- Incorporate port and commodity-specific data (this has to be hand-collected)
- Incorporate staggered DiD by Nagengast and Yotov (2025).

References

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Thank you!

Any questions?

