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Trade Diversion or Pre-existing Integration?

Mexico and Vietnam after the US–China Trade War

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Abstract

This paper aims to estimate the differential export reaction of Mexico and Vietnam to the US–China trade war using product-level BACI trade data covering 314,705 country-product observations. Exploiting cross-product variation in tariff exposure — defined here as the product of the Section 301 tariff shock and China's pre-war share of US imports — the analysis shows evidence that for Vietnam, exports grew approximately 20 percentage points faster in highly exposed sectors compared to the rest of the world. This pattern holds regardless of how the estimation window is defined or how fixed effects are structured, and is further validated by a China-side regression in which the same exposed sectors experienced measurable export contractions over the same period. Mexico's response, by contrast, is statistically indistinguishable from zero once the initial export level control is taken out of the specification. This finding reveals that Mexico's trade war gains were entirely induced by pre-existing productive capacity in exposed sectors — the product of three decades of NAFTA and USMCA integration — rather than by the tariff shock itself. The tariff opportunity resulting from the trade war just activated pre-existing global value chain relationships rather than generating new ones. The differentiation, veiled in aggregate-level analyses and, to our knowledge, unestablished in prior work, constitutes the essential contribution of the paper.

Keywords: US–China trade war, trade diversion, Mexico, Vietnam, tariff exposure, shift-share identification, global value chains, BACI

JEL Codes: F13, F14, F15, F60

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List of Abbreviations

BACI: Base pour l'Analyse du Commerce International — harmonised bilateral trade dataset produced by CEPII

CEPII: Centre d'Études Prospectives et d'Informations Internationales

DiD: Difference-in-Differences

FE: Fixed Effects

GVC: Global Value Chain — cross-border production network in which different stages of production occur in different countries

HS2 / HS4 / HS6: Harmonised System product classification at the 2-digit chapter / 4-digit heading / 6-digit subheading level

IMMEX: Industria Manufacturera, Maquiladora y de Servicios de Exportación — Mexico's programme granting tax exemptions to firms that import inputs for export processing

MFN: Most Favoured Nation — the baseline WTO tariff rate applied to all trading partners

NAFTA: North American Free Trade Agreement (1994–2020)

OLS: Ordinary Least Squares

SE: Standard Error

UNCTAD: United Nations Conference on Trade and Development

USMCA: United States–Mexico–Canada Agreement (successor to NAFTA, in force since 2020)

USTR: United States Trade Representative

1. Introduction

Initiated in early 2018 through a series of Section 301 tariff measures, the US–China trade strife represents one of the most far-reaching unilateral trade policy shocks since the Smoot–Hawley Act of 1930. Throughout 2018 and 2019, the United States Trade Representative (USTR) implemented duties encompassing over \$550 billion worth of Chinese imports, structured in four successive tranches at rates reaching 25 percent. These measures were not gradual adjustments at the margin; they were large, sudden, and targeted specific product categories — electrical machinery, computers, furniture, steel, and chemicals among the most affected. Evidence of the consequences is clearly documented in the economic literature: Fajgelbaum et al. (2020) show that tariffs were almost completely passed through to US import prices, generating losses to US consumers and importing firms of approximately \$51 billion. Amiti, Redding and Weinstein (2019) estimate that US households faced monthly income losses of \$1.4 billion by the end of 2018. It is therefore explicit, the burden fell not on Chinese exporters, but on American buyers.

In this context, the main question for international trade economics becomes: who filled the gap? When US tariffs made Chinese goods more expensive across hundreds of product categories simultaneously, which third countries were positioned to replace Chinese suppliers — and moreover, did they? The stakes extend beyond the trade war itself — to the broader literature on trade diversion, supply chain adjustment, and the determinants of export competitiveness. The standard theory of trade diversion, originating with Viner (1950), suggests that the main effect of these duties was to reroute trade, not eliminate it: imports from the targeted country decline, but third-country suppliers, who do not face the tariff, gain a relative price advantage. Whether this mechanism operated after 2018, and for whom, is an empiric question that the emerging literature has only partially answered.

Mexico and Vietnam have been frequently referred to in policy commentary and aggregate data as the primary beneficiaries of the US–China trade war. Both recorded strong export growth to the United States in the years following the shock and have been cited as examples of successful supply chain reorientation. However, a careful scrutiny of the existing literature reveals a gap: no study has examined their respective export responses within a single joint empirical framework, and the mechanisms explaining their gains — which may differ substantially — have not been systematically compared. This paper ultimately aims to fill that gap.

Turning to the empirical strategy: it exploits cross-product variation in tariff exposure, following the shift-share identification approach pioneered by Autor, Dorn and Hanson (2013). For each HS6 product, an exposure variable is constructed as the product of the Section 301 tariff increase and China's pre-war share of US imports in that product — highest where US reliance on China was greatest and tariffs hit hardest. The estimating equation relates the log change in exports to the United States between the pre-war (2015–

2017) and post-war (2019–2021) periods to this exposure measure, interacted with country indicators for Mexico and Vietnam, on BACI trade data covering 314,705 country-product observations across 96 HS2 sectors.

The results draw a sharp line between the two countries. Vietnam's exports grew approximately 20 percentage points faster in highly exposed sectors — a pattern robust to alternative specifications and confirmed by a China-side validation regression where the same sectors contracted. Mexico's response, by contrast, is statistically indistinguishable from zero in the preferred specification. Mexico did benefit in aggregate, but that growth traces back entirely to pre-existing productive capacity built over thirty years of NAFTA and USMCA integration — not to the tariff shock itself. When the initial export level is removed as a control, Mexico's coefficient collapses to zero. Firm-level evidence from Utar et al. (2025) and structural evidence from Arora et al. (2025) corroborate this reading from below: gains were confined to already-integrated GVC firms, and logistics bottlenecks at the US–Mexico border prevented new flows from materialising within our estimation window.

Three contributions follow. The first is empirical: estimating Mexico's and Vietnam's responses within a single framework allows a direct, controlled comparison that prior work has not attempted. The second is interpretive: the two beneficiaries operated through fundamentally different channels — Vietnam through genuine tariff-driven diversion, Mexico through the activation of pre-existing GVC capacity — a distinction aggregate data cannot expose. The third is methodological: the three-specification comparison developed here offers a replicable diagnostic for separating policy shock effects from pre-existing structural relationships. Section 2 reviews the relevant literature. Section 3 describes the data. Section 4 presents the empirical strategy. Section 5 reports the results. Section 6 discusses the findings. Section 7 concludes.

2. Related Literature

2.1 The US–China Trade War: Scale and Aggregate Consequences

The economics of the US–China trade strife has produced a consequent and rapidly growing empirical literature. The natural starting point is the measurement of the tariff shock and its aggregate repercussions. Fajgelbaum et al. (2020) offer the most comprehensive analysis of the short-run impact on the American economy, matching Section 301 tariff changes to publicly available import and export data at the HS10 level. Their key finding is that US tariffs were almost entirely passed through to duty-inclusive import prices — which means that Chinese exporters did not lower their prices to absorb the tariff, and the cost fell almost fully on the final US consumers and importing firms. The aggregate loss to US consumers and firms buying imports reached \$51 billion, or 0.27 percent of GDP. After accounting for tariff revenue and profits to domestic producers, the net aggregate real income loss was \$7.2

billion, or 0.04 percent of GDP. These numbers are relatively small at the macro level but shadow large redistributive effects across sectors and regions.

Amiti, Redding and Weinstein (2019) reach similar conclusions on pass-through, estimating that the US tariffs generated a monthly income loss to US households of \$1.4 billion by the end of 2018 — suggesting an annualised burden of approximately \$17 billion, substantially larger than the Fajgelbaum et al. (2020) estimate due to different methodological choices. Cavallo et al. (2021) confirm complete tariff pass-through at the border and find partial but significant pass-through at the retail level, implying that intermediaries might have absorbed some of the shock rather than passing it fully to final consumers.

On the Chinese side, the tariff shock led to a significant shrinkage of Chinese exports to the United States in the targeted product categories. The literature consistently documents that Chinese export prices to the US did not drop, implying that Chinese exporters ended up losing market share rather than adjusting prices. Had Chinese exporters lowered prices to maintain competitiveness, the relative price advantage for third-country suppliers would have been attenuated or eliminated — complete pass-through is therefore what makes trade diversion possible in the first place. Fajgelbaum and Khandelwal (2022) take stock of these findings and extend the picture to US investment, employment, and the retaliation channel through Chinese tariffs on US agricultural and manufacturing exports.

2.2 Trade Diversion: Theory and Evidence

The concept of trade diversion was introduced by Viner (1950) in the context of customs unions: when two countries eliminate tariffs between themselves while maintaining external tariffs, trade may shift away from lower-cost external suppliers toward higher-cost member suppliers. In the present context, the mechanism is analogous but operates in reverse: a unilateral tariff increase by the United States on Chinese imports creates a relative price disadvantage for Chinese goods, handing third-country exporters who face the pre-existing MFN tariff rate a relative price edge over Chinese suppliers.

Fajgelbaum et al. (2021), in a paper specifically focused on global reallocations, document that many third-country exporters did increase their sales of tariff-exposed products to the United States following the 2018 shock — though the response was far from uniform. Some countries gained substantially; others showed nothing. The differences trace back to productive capacity, existing trade relationships, and the structure of comparative advantage. Countries whose exports were substitutes for Chinese goods in US demand gained the most, consistent with the trade diversion mechanism — those offering complements did not. Cigna et al. (2022), published in *Economic Inquiry*, find trade diversion in US import data but note that its magnitude shifts considerably across product categories, pointing to sector-specific constraints — production technology, supplier availability — as the binding factors.

Nicita (2019), in an early UNCTAD analysis, uses bilateral trade data to track shifts in US import sourcing across origin countries following the shock. Vietnam and Mexico emerge as the two largest gainers — capturing an estimated \$7.9 billion and \$4.2 billion respectively

in redirected exports to the US, against an approximate \$25 billion decline in Chinese exports across the same product categories. The numbers are descriptive rather than causal, but they set the stage for the econometric work that follows.

2.3 Vietnam as a Beneficiary

Vietnam figures prominently in the trade war literature as a beneficiary, and the data bear this out. Choi and Nguyen (2023), published in *Pacific Economic Review*, apply a difference-in-differences framework to successive tariff tranches and their effect on Vietnamese exports to the US. The gains are real but uneven — concentrated in the third round of increases (September 2018, targeting \$200 billion of Chinese imports) and skewed toward medium-technology products: machinery, electronics assembly, textiles. High-technology categories showed more muted gains, running up against the ceiling of Vietnam's existing industrial base.

Dang, Yawei and Abdullah (2024), in the *Journal of Trade Science*, estimate a DiD model using HS6-level bilateral trade data from UN Comtrade, focused specifically on Vietnamese exports to the United States. Three sectors account for most of the gains: plastics and plastic articles, machinery and mechanical appliances, and textiles and garments — all areas where China held a dominant pre-war position and faced large tariff increases. Outside these categories, the effects are largely absent. Vietnam gained where it could, not everywhere it was exposed.

Mayr-Dorn et al. (2023) shift the focus from aggregate export flows to labour market outcomes within Vietnam. Using district-level data on employment and wages, they show that districts more exposed to the tariff shock — defined by their industrial mix relative to US-targeted Chinese export categories — saw stronger employment and wage growth in the post-war period. This matters: it establishes that Vietnam's export gains translated into real productive activity on the ground, not just a reallocation of existing capacity.

A recurring concern in the Vietnam literature is trade rerouting — Chinese goods re-exported through Vietnam with minimal value added to circumvent US tariffs. Iyoha and Wen (2024) tackle this directly using product-level and firm-level transaction data. The results are nuanced. At the product level, around 16.5 percent of Vietnamese exports to the US in 2021 look consistent with rerouting. At the firm level — matching imports from China and exports to the US within the same firm, with a value-added filter — that share drops to 1.7 percent. The bulk of Vietnam's gains reflect genuine productive activity, including new investment drawn in by the trade diversion opportunity.

2.4 Mexico as a Beneficiary

Mexico's position in the trade war literature is more complicated than Vietnam's. The country entered the trade war period already as the second-largest source of US goods imports, deeply embedded in the US economy through three decades of NAFTA. By 2017,

roughly 80 percent of Mexican exports went to the United States, and Mexico had built substantial productive capacity in precisely the sectors that would face the largest Chinese tariffs: automotive components, computers, electrical machinery, industrial machinery. That pre-existing integration creates a fundamental identification problem — separating the tariff shock itself from the pre-existing supply relationships that positioned Mexico to benefit in the first place.

Utar, Zurita and Torres (2025), published in the Review of Economics and Statistics, provide the most rigorous firm-level evidence on Mexico's response. Drawing on administrative data covering the universe of Mexican firms in international trade, matched to the IMMEX programme registry, they show that the tariff shock did generate a significant increase in Mexican exports to the US — but exclusively among IMMEX-registered firms already embedded in global value chains. Non-GVC firms showed nothing. Within GVC manufacturing, gains clustered in skill- and technology-intensive industries — chemicals, computers, aerospace, automotive — not in the labour-intensive categories where Vietnam dominated. The main channel was expansion of existing product lines, not entry into new tariffed products.

Arora, Saharan and Tomar (2025) add a structural layer. Using transaction-level customs data from S&P Panjiva for Mexican firms active in the China–Mexico–US corridor, they show that even the simplest form of trade adjustment — low-processing rerouting of Chinese goods — remained negligible for roughly 2.5 years after the shock, picking up sharply only in 2021. The bottleneck was physical: warehousing and cross-docking capacity at major US–Mexico border crossings was saturated after 2018, with industrial vacancy rates below 4 percent — the operational floor for commercial real estate. New capacity came online only after a multiyear construction cycle, with a delivery spike in 2021 absorbed almost immediately. For our purposes, this matters: even absent genuine productive gains, Mexico should have shown some tariff-driven response if logistics had not been binding. The infrastructure constraint offers a structural explanation for why our product-level regressions find Mexico unresponsive within the 2015–2021 window.

2.5 Methodological Lineage and Contribution

The identification strategy follows the shift-share design of Autor, Dorn and Hanson (2013). Their approach interacts industry-level import shocks with local area specialisation patterns to construct exposure measures that vary across regions. The key assumption is that national-level shocks are exogenous to local outcomes, while pre-existing shares are predetermined. Applied here, the logic maps directly: the shock is the product-level tariff increase set by the USTR on strategic grounds, and the pre-existing shares are China's US import shares in 2015–2017. Their product — the Exposure variable — captures the intensity of the trade diversion opportunity across products, predetermined relative to the post-war outcomes we seek to explain.

Three things distinguish this paper from existing work. First, Mexico and Vietnam are estimated simultaneously in the same regression, on the same data, with the same exposure variable and fixed effects — enabling a direct coefficient comparison no prior study has attempted. Second, a three-specification diagnostic explicitly separates the effect of pre-existing export presence from the tariff shock itself, using the initial export level control as a transparent identification test. Third, the micro-level findings of Utar et al. (2025) and Arora et al. (2025) are integrated into the interpretation of product-level results, connecting aggregate patterns to firm-level and infrastructure-level mechanisms.

3. Data and Exposure Variable

3.1 Trade Data: BACI

The primary data source is BACI (Base pour l'Analyse du Commerce International), a harmonised bilateral trade database produced by CEPII. The core problem BACI solves is that import and export declarations filed by the two sides of a transaction routinely diverge — due to CIF versus FOB valuation conventions, reporting lags, and misclassification. BACI reconciles these discrepancies by weighting each side of the transaction by the reporting reliability of the country, producing a single harmonised trade flow per country-product-year. For product-level analysis, where raw Comtrade data are noisy, this reconciliation matters.

The version used here is BACI HS12 V202601, based on the 2012 revision of the Harmonised System. The sample covers exports to the United States over 2015–2021. The year 2018 is excluded from the main analysis: the Section 301 tariffs were phased in across four tranches throughout that year, making it impossible to classify 2018 observations cleanly as pre- or post-shock. Including it would contaminate both periods. The pre-war period is therefore defined as the average over 2015–2017, and the post-war period as the average over 2019–2021.

The dependent variable is the log change in average export values between the two periods:

$$\Delta \log(X_{cp}) = \log(X_{cp}^{post} + 1) - \log(X_{cp}^{pre} + 1)$$

where X_{cp} denotes exports from country c in product p , measured in thousands of US dollars. The addition of 1 inside the log accommodates the large share of zero or near-zero trade flows at the HS6 level — a standard transformation in product-level trade regressions. The estimation sample covers 314,705 country-product observations across 96 HS2 product chapters.

The addition of 1 inside the log is a standard transformation in product-level trade regressions to accommodate zero trade flows. However, as Chen and Roth (2024) note, $\log(1+X)$ transformations are not unit-invariant and should not be interpreted as

approximating percentage effects when the extensive margin is active — a caveat that applies here given the large share of zero flows in the sample.

3.2 Tariff Data: Section 301 Measures

The tariff shock is constructed from the US Section 301 measures imposed on Chinese imports between July 2018 and September 2019, in response to USTR findings of unfair Chinese trade practices — intellectual property violations, forced technology transfer, and discriminatory licensing against US firms. The measures were implemented in four tranches:

- **List 1** (July 2018): ~\$34 billion of imports — industrial machinery, aerospace components, intermediates — at 25 percent above the pre-existing MFN rate.
- **List 2** (August 2018): ~\$16 billion — semiconductors, chemicals, railway equipment — also at 25 percent.
- **List 3** (September 2018): ~\$200 billion — consumer electronics, furniture, food, manufactures — initially at 10 percent, raised to 25 percent in May 2019. The largest tranche by coverage.
- **List 4A** (September 2019): ~\$300 billion of remaining imports including smartphones, laptops, clothing, footwear — imposed at 15 percent, reduced to 7.5 percent under the Phase One Agreement of January 2020. List 4B was suspended.

For each HS6 product, the tariff shock ΔTariff_p is the ad valorem rate increase applied to Chinese imports above the pre-existing MFN rate. Products not targeted by any list receive zero. The tariff data are drawn from publicly available USTR lists, harmonised to HS12 nomenclature, and matched to BACI at the six-digit level, following standard practice in the literature (Fajgelbaum et al., 2020, 2021).

A key feature of this variable is its plausible exogeneity. Product selection was driven by the USTR's strategic objective of pressuring China on technology transfer and intellectual property — not by the export performance of Mexico or Vietnam in those products. This supports treating ΔTariff_p as an exogenous source of variation in the trade diversion opportunity facing third-country exporters.

3.3 Construction of the Exposure Variable

The central explanatory variable captures the intensity of the trade diversion opportunity created by the tariff shock at the product level. Following Autor, Dorn and Hanson (2013) and its trade war applications in Fajgelbaum et al. (2020, 2021), the exposure variable is defined as:

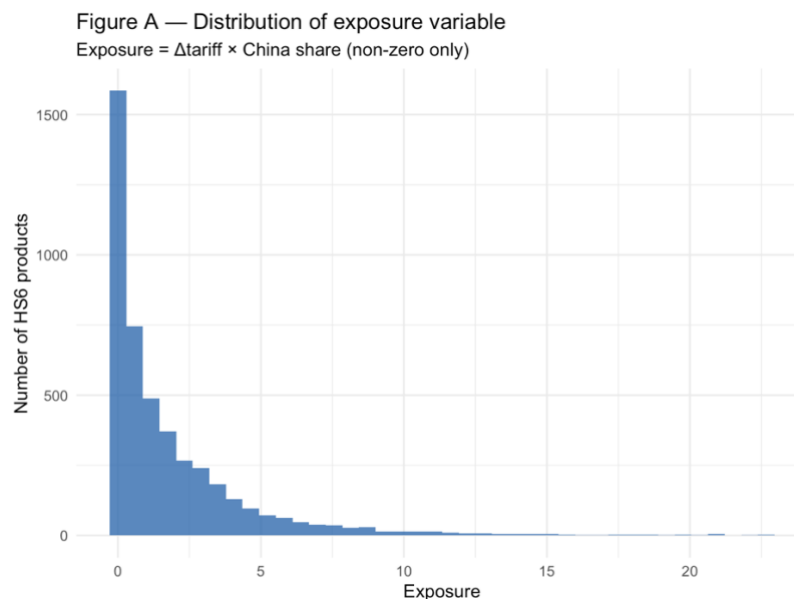
$$\text{Exposure}_p = \Delta\text{Tariff}_p \times \text{ChinaShare}_p$$

where ΔTariff_p is the Section 301 tariff increase for product p , and ChinaShare_p is China's share of total US imports in product p during the pre-war period (2015–2017), computed as

China's average exports to the US divided by total US imports from all countries in that product.

The logic behind this construction is straightforward. A high tariff alone creates no diversion opportunity if China was not a significant supplier — it simply reduces a negligible trade flow. A large Chinese market share matters only if a tariff increase actually creates a relative price advantage for alternative suppliers. The product of the two components captures exactly what we want: the opportunity for diversion is highest where US reliance on China was greatest and tariffs hit hardest, and zero where either condition fails.

ChinaShare_p is computed from pre-war averages rather than a single year to reduce the influence of year-specific fluctuations. Products with no recorded Chinese exports to the US in 2015–2017 receive $\text{ChinaShare}_p = 0$ and therefore $\text{Exposure}_p = 0$, even if they face a positive tariff — consistent with the logic that a tariff on a product China did not supply creates no diversion opportunity. The variable is defined for the full universe of HS6 products in BACI, including zero-exposure products, ensuring that non-targeted goods serve as a control group rather than being dropped from the sample.



The figure shows the right-skewed distribution of exposure: most products have zero or near-zero exposure, while a small number of sectors (electronics HS85, machinery HS84, furniture HS94) have very high exposure values. This motivates the use of the full sample rather than restricting to exposed products.

3.4 Descriptive Statistics

The exposure variable is heavily concentrated. Around 60 percent of HS6 products have zero exposure — either not targeted by Section 301 or products where China held a negligible pre-war market share. Among non-zero products, the distribution is strongly right-skewed: a small number of sectors combine large tariff increases with dominant

Chinese market shares, and the top decile accounts for a disproportionate share of the total diversion opportunity.

The high-exposure tail is dominated by electrical machinery and equipment (HS85), machines and mechanical appliances (HS84), and furniture (HS94) — sectors where China built dominant positions over two decades and where US tariff increases were largest. These are also sectors where Mexico and Vietnam have significant, though quite different, productive capabilities.

The dependent variable $\Delta \log(\text{exports})$ is approximately symmetric around zero across country-product pairs, reflecting gains and losses independent of the tariff shock. Mean export growth is positive for both Mexico and Vietnam over the period, consistent with aggregate evidence. The regression tests whether that growth is disproportionately concentrated in high-exposure products. Figure B, presented in Section 5, gives a visual answer: Vietnam's mean export growth rises sharply with exposure; Mexico's does not.

4. Empirical Strategy

4.1 The Estimating Equation

The baseline equation relates the log change in exports from country c in product p to the United States to the product-level exposure measure, interacted with country indicators for Mexico and Vietnam:

$$\Delta \log(X_{cp}) = \beta_1 \text{Exposure}_p + \beta_2 (\text{Exposure}_p \times \text{Mexico}_c) + \beta_3 (\text{Exposure}_p \times \text{Vietnam}_c) + \delta (\Delta \text{Tariff}_p \times \text{China}_c) + \alpha_{hs2} + \varepsilon_{cp}$$

The parameters of interest are β_2 and β_3 . β_1 captures the baseline export growth response of all other exporters to a unit increase in exposure — the average trade diversion effect for the rest of the world. β_2 measures Mexico's additional response relative to this baseline: positive and significant means Mexico benefited disproportionately in exposed sectors, above the average third-country response. β_3 does the same for Vietnam.

The term $\Delta \text{Tariff}_p \times \text{China}_c$ interacts the tariff shock directly with an indicator for Chinese exporters. This serves as instrument validation: if the exposure variable correctly identifies sectors where Chinese competitiveness was penalised, products with larger tariff increases should show larger contractions in Chinese exports. A negative and significant δ confirms this. The choice to use ΔTariff_p alone rather than the full Exposure variable for this validation term is discussed in Section 4.2.

α_{hs2} denotes HS2-level fixed effects, absorbing unobserved sector-level determinants of export growth common to all countries — shifts in US demand at the chapter level, other

tariff policy changes, sectoral differences in production technology. Identification therefore comes from within-sector, cross-product variation in exposure, not from between-sector differences.

4.2 Three Specifications and Their Rationale

The paper uses three specifications as a diagnostic tool. They differ along two dimensions: (1) whether the log of pre-war export levels is included as a control, and (2) how the China validation term is constructed. Table 2 presents all three side by side.

Specification 1: With Initial Export Control

The first specification augments the baseline with the log of pre-war export levels:

$$\Delta \log(X_{cp}) = \beta_1 \text{Exposure}_p + \beta_2 (\text{Exposure}_p \times \text{Mexico}_c) + \beta_3 (\text{Exposure}_p \times \text{Vietnam}_c) + \gamma \log(X_{cp}^{\text{pre}}) + \alpha_{hs2} + \varepsilon_{cp}$$

$\log(X_{cp}^{\text{pre}})$ controls for mean reversion: country-product pairs with high initial export levels tend to grow more slowly, and failing to account for this could bias the exposure coefficients downward if high-exposure sectors overlap with sectors where countries already exported heavily. This is the standard specification in the literature (Fajgelbaum et al., 2021; Choi and Nguyen, 2023). Here, both Mexico ($\hat{\beta}_2 \approx 0.169^{***}$) and Vietnam ($\hat{\beta}_3 \approx 0.286^{***}$) appear as large, significant beneficiaries.

Specification 2: Removing the Initial Export Control

The second specification drops $\log(X_{cp}^{\text{pre}})$. This is a deliberate diagnostic choice, not an oversight.

The log of pre-war export levels captures not just mean reversion but also pre-existing integration. A country already exporting heavily in a product before the trade war — because it had developed productive capacity and supply chain relationships in that sector — will have a high $\log(X_{cp}^{\text{pre}})$. Including it absorbs the information that the country was already well-positioned. The interaction $\text{Exposure}_p \times \text{Mexico}_c$ then captures only the additional response above that pre-existing position.

For Mexico, this distinction is crucial. Pre-war export levels in the most exposed sectors — automotive, electronics, machinery — were already very high. Controlling for $\log(X_{cp}^{\text{pre}})$ absorbs Mexico's pre-existing dominance; the coefficient on $\text{Exposure} \times \text{Mexico}$ then measures whether Mexico grew faster than expected given that dominance. When the control is removed, Mexico's coefficient collapses to 0.004 — statistically indistinguishable from zero. Mexico did not respond to the tariff shock as a shock. It continued supplying sectors where it was already the dominant alternative to China.

Vietnam tells a different story. Without $\log(X_{cp}^{pre})$, Vietnam's coefficient remains large and significant (0.197***). Vietnam was not simply large in exposed sectors before the war — it grew disproportionately in response to the shock. This is genuine trade diversion.

Specification 3: The Preferred Specification

The third specification drops $\log(X_{cp}^{pre})$ and replaces the China validation term with $\Delta\text{Tariff}_p \times \text{China}_c$ rather than $\text{Exposure}_p \times \text{China}_c$.

The reason is as follows. Since $\text{Exposure}_p = \Delta\text{Tariff}_p \times \text{ChinaShare}_p$, adding $\text{Exposure}_p \times \text{China}_c$ to the regression creates — for Chinese observations — a regressor equal to $\Delta\text{Tariff}_p \times \text{ChinaShare}_p$. But ChinaShare_p is derived from China's pre-war exports to the US, which are directly related to the dependent variable for Chinese observations. This creates a mechanical collinearity between the regressor and the outcome, making the estimate difficult to interpret.

Replacing it with $\Delta\text{Tariff}_p \times \text{China}_c$ eliminates this problem. ΔTariff_p contains no information about China's pre-war market share — it reflects only the USTR's policy decision on which products to target and at what rate. The interaction then tests a clean hypothesis: do Chinese exporters contract disproportionately in sectors where the tariff increase was larger, controlling for sector fixed effects and the average third-country response? A negative $\hat{\delta}$ confirms this without any mechanical link to ChinaShare_p .

In the preferred specification: $\hat{\delta} = -1.774^{***}$, $\hat{\beta}_3 = 0.196^{***}$ (Vietnam), $\hat{\beta}_2 = 0.003$ (Mexico, ns). This specification is both methodologically cleaner and empirically more informative.

4.3 Identification and the Parallel Trends Assumption

The causal interpretation rests on an assumption analogous to parallel trends: absent the tariff shock, export growth of Mexico and Vietnam in exposed product categories would not have differed systematically from that of other exporters in the same categories. In practice, this requires that Exposure_p be uncorrelated with unobserved product-level determinants of export growth that differ specifically for Mexico and Vietnam.

The main identification threat is that USTR product selection was correlated with pre-existing trade dynamics — for instance, if targeted products were already losing Chinese market share, or if Mexico and Vietnam were already gaining in those categories. The trade war literature documents that Section 301 targets were chosen primarily on strategic grounds — technology transfer, intellectual property — rather than product-level trade performance (Fajgelbaum et al., 2020; Bown, 2021), supporting the plausible exogeneity of ΔTariff_p .

A formal pre-trend test runs the baseline specification over the pre-war period only, treating 2015 as "pre" and 2016–2017 as "post," so that the dependent variable $\Delta \log(X_{cp}^{pre})$ entirely precedes the shock. If identification holds, $\hat{\beta}_2$ and $\hat{\beta}_3$ should be statistically indistinguishable from zero. They are not: both Mexico ($\hat{\beta}_2 = 0.122$) **and Vietnam** ($\hat{\beta}_3 = 0.085$) show significant pre-trends, meaning both were already growing faster in $Exposure_p$ -intensive sectors before the shock. This is an important caveat, discussed in detail in Section 6.4.

The pre-trends do not invalidate the results, but they qualify them. Post-war estimates are substantially larger — $\hat{\beta}_2 = 0.003$ versus 0.122 for Mexico once $\log(X_{cp}^{pre})$ is removed; $\hat{\beta}_3 = 0.197$ versus 0.085 for Vietnam — suggesting the shock amplified or redirected pre-existing dynamics rather than simply continuing them. The pre-trend pattern also reinforces the Mexico interpretation: significant $\hat{\beta}_2$ with $\log(X_{cp}^{pre})$ included, near-zero without it — consistent with gains driven by pre-existing integration, not by the tariff shock itself.

4.4 Fixed Effects and Clustering

The baseline specification includes HS2 sector fixed effects α_{hs2} , grouping products into 96 broad chapters — Chapter 84 (machinery and mechanical appliances), Chapter 85 (electrical machinery), Chapter 94 (furniture). These absorb any unobserved factors affecting export growth equally across all countries within a chapter: shifts in US demand, broad-sector cost changes, industry-wide trends.

An alternative uses HS4 fixed effects α_{hs4} (1,224 headings), providing finer sectoral control — absorbing variation within narrower product groups such as "computers and peripheral equipment" (HS 8471) rather than across all machinery. The trade-off is standard: finer fixed effects absorb more confounders but consume more identifying variation. Both levels are reported in Table 3.

Note that α_{hs2} and α_{hs4} cannot be included simultaneously. Every HS4 heading belongs to exactly one HS2 chapter, so the two sets of fixed effects are perfectly collinear — including both would prevent identification. They are therefore estimated in separate specifications. A third robustness check adds country fixed effects α_c alongside α_{hs2} , absorbing all time-invariant country-level determinants of export growth — institutional quality, infrastructure, trade openness, overall competitiveness. Identification then comes entirely from within-country, cross-product variation in $Exposure_p$.

Standard errors are clustered two-ways by exporter country and HS6 product. This accounts for two sources of residual correlation simultaneously: within-country correlation across products (a country-specific shock affecting all its exports), and within-product correlation across countries (a product-specific demand shock affecting all exporters in that category). Clustering along only one dimension would yield downward-biased standard errors. In the China validation regressions — estimated on Chinese exporters only — two-way clustering is not applicable; standard errors are clustered by HS6 product.

4.5 Temporal Specifications

Three temporal specifications assess robustness to the choice of post-war period. The baseline post-period spans 2019–2021, capturing medium-term trade flow adjustment following the shock. This window allows exporters sufficient time to reallocate production, build supply chain relationships, and scale up capacity — making it the most appropriate window for measuring genuine trade diversion rather than short-run price effects.

The first robustness check excludes 2020, retaining 2019 and 2021 only. The COVID-19 pandemic caused unprecedented disruptions to global trade flows that year and may confound identification. If baseline results were driven by pandemic-era shifts rather than trade diversion, excluding 2020 should materially weaken the coefficients. Stability under this restriction supports a trade diversion interpretation.

The second robustness check restricts the post-period to 2019 only, isolating the first full year after the largest Section 301 tranches took effect. This tests whether diversion was already visible in the short run or emerged only as supply chains adjusted over time. The 2019-only results are informative: Vietnam remains significant ($\hat{\beta}_3 = 0.137^{***}$) even in the short run, while Mexico shows marginal significance ($\hat{\beta}_2 = 0.044^{***}$) that largely disappears in the longer window. This pattern is consistent with Mexico's response being driven by existing GVC relationships that could activate quickly in 2019 but did not generate sustained additional growth through 2020–2021.

5. Results

5.1 Main Results

Table 1 presents the preferred specification across three temporal windows — no initial export control, $\Delta\text{Tariff}_p \times \text{China}_c$ as validation term, α_{hs2} fixed effects, two-way clustering. The discussion focuses on Column 1 (baseline 2019–2021); Columns 2 and 3 establish robustness.

The coefficient on Exposure_p in Column 1 is 0.010^{**} , indicating that a one-unit increase in tariff exposure is associated with approximately 1 percentage point of additional export growth to the US for the average third-country exporter, relative to the sector baseline. This baseline trade diversion effect is positive and significant across all three windows, rising to 0.027 in the 2019-only specification — consistent with an immediate reallocation of US import sourcing following the shock, with some dampening over the longer horizon.

The coefficient on $\text{Exposure}_p \times \text{Vietnam}_c$ is $\hat{\beta}_3 = 0.196^{***}$ in the baseline. Vietnam's export growth in exposed sectors exceeded the rest of the world by approximately 20 percentage points per unit of exposure, above the 1 percentage point baseline. Given average exposure values of 2–3 units for tariff-affected products, this implies Vietnam outgrew the

global average by 40–60 percentage points in the most exposed sectors — an economically large effect. The coefficient holds at 0.206*** excluding 2020 and 0.137*** in the 2019-only window, confirming that gains were visible immediately and sustained throughout the period.

The coefficient on $\text{Exposure}_p \times \text{Mexico}_c$ is $\hat{\beta}_2 = 0.003$ (SE = 0.005, ns) in the baseline — the central empirical result of the paper. In the no-Covid specification, Mexico becomes significant (0.018***); in the 2019-only window, it is strongly significant (0.044***). This temporal pattern is informative: Mexico showed a measurable positive response in 2019 that did not persist through 2020–2021, consistent with existing GVC firms scaling up immediately in response to tariff-induced demand shifts without creating additional long-run capacity — and possibly with some reversal in 2020 as pandemic disruptions hit GVC-intensive sectors (automotive, electronics) particularly hard.

The coefficient on $\Delta\text{Tariff}_p \times \text{China}_c$ is $\hat{\delta} = -1.774$ *** (SE = 0.100), confirming that products facing larger tariff increases experienced significantly larger contractions in Chinese exports, after controlling for sector trends. This validates Exposure_p : the tariff shock is systematically associated with reduced Chinese market share in the US. Combined with Vietnam's positive response in the same sectors, the China validation provides direct evidence of trade diversion in the strict sense — Chinese losses and Vietnamese gains concentrated in the same exposed products.

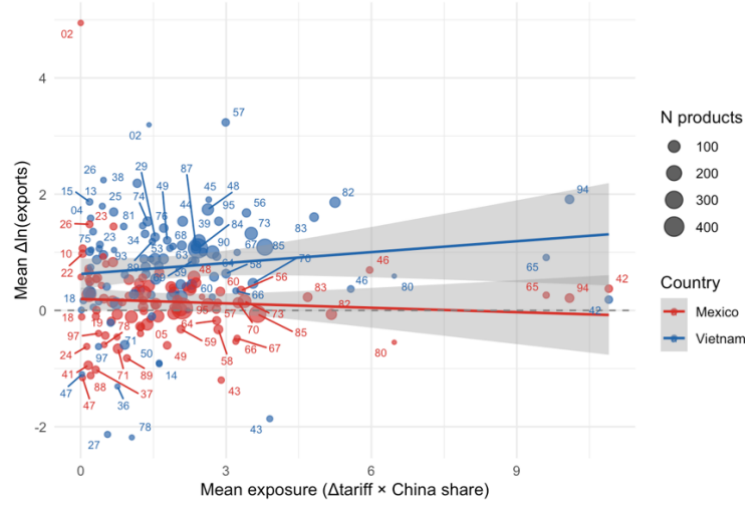
Table 1 — Main Results: Preferred Specification

Dependent variable: $\Delta \log(\text{exports to US})$. No initial export control. HS2 fixed effects. Two-way clustering: exporter $\times$ HS6.

	(1) Baseline	(2) No Covid	(3) 2019 Only
<i>Exposure</i>	0.0103** (0.0032)	0.0156*** (0.0034)	0.0268*** (0.0035)
<i>Exposure $\times$ Mexico</i>	0.003 (0.005)	0.018*** (0.005)	0.044*** (0.005)
<i>Exposure $\times$ Vietnam</i>	0.196*** (0.005)	0.206*** (0.005)	0.137*** (0.004)
<i>$\Delta\text{Tariff} \times \text{China}$</i>	-1.774*** (0.100)	-1.167*** (0.107)	0.063 (0.107)
HS2 Fixed Effects	Yes	Yes	Yes
Observations	314,705	303,854	283,358
R²	0.0072	0.0084	0.0140

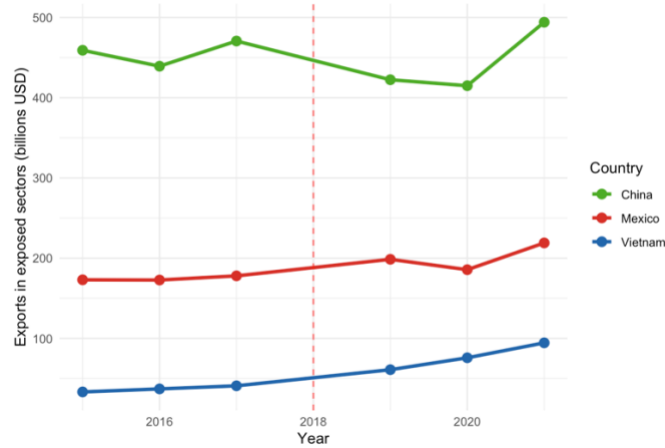
*Two-way clustered SE (exporter $\times$ HS6) in parentheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Column (1) is the preferred specification. Post-war period: 2019–2021 (Baseline), 2019 and 2021 (No Covid), 2019 only (2019 Only).*

Figure B — Export changes vs exposure by HS2 sector
Baseline period (2015–2017 → 2019–2021). Size = N HS6 products.



This figure plots mean $\Delta \log(\text{exports})$ against mean exposure by HS2 sector, separately for Mexico (red) and Vietnam (blue), with bubble size proportional to the number of HS6 products. The upward-sloping trend line for Vietnam and the flat/negative line for Mexico visualise the main regression result. This is the most important figure in the paper.

Figure D — Exports in highly exposed sectors (2015–2021)
Sectors above median exposure. Billions USD.



Insert from fig_D_exposed.png. Shows the evolution of total exports to the US in sectors above median exposure, by country. China declines after 2018, Vietnam rises strongly, Mexico grows moderately.

5.2 Sensitivity: The Role of the Initial Export Control

Table 2 presents the three-specification comparison. The contrast across columns is diagnostic — it reveals the mechanism behind each country's apparent gains, not merely a robustness check.

****Column 1**** includes $\log(X_{cp}^{pre})$. Both Mexico ($\hat{\beta}_2 = 0.169^{***}$) and Vietnam ($\hat{\beta}_3 = 0.286^{***}$) appear large and highly significant. The $R^2 = 0.102$ is substantially higher than in the other specifications, reflecting the fact that $\log(X_{cp}^{pre})$ mechanically absorbs much of the variation in $\Delta \log(X_{cp})$ through the mean reversion channel. Taken at face value, Column

1 suggests both countries benefited strongly from the shock — but this conclusion requires scrutiny.

****Column 2**** drops $\log(X_{cp}^{pre})$. Vietnam remains large and significant ($\hat{\beta}_3 = 0.197^{***}$), falling only modestly from 0.286— a reduction of roughly 31 percent. Mexico collapses: from 0.169^{***} to $\hat{\beta}_2 = 0.004(\text{ns})$ — a reduction of 98 percent. The interpretation is straightforward. Almost the entire apparent Mexico effect in Column 1 was captured by Mexico's pre-existing position in exposed sectors. Once that position is no longer held fixed, the association between Exposure_p and Mexico's export growth is essentially zero. For Vietnam, 69 percent of the effect survives — indicating genuine responsiveness to the shock, not amplification of pre-existing presence.

****Column 3**** adds $\Delta\text{Tariff}_p \times \text{China}_c$. The coefficients on Mexico ($\hat{\beta}_2 = 0.003, \text{ns}$) and Vietnam ($\hat{\beta}_3 = 0.196^{***}$) are essentially unchanged from Column 2, confirming that the preferred specification is stable and that the China validation term does not affect the primary parameters of interest. The validation coefficient itself is $\hat{\delta} = -1.774^{***}$, as discussed in Section 4.2.

5.3 Robustness: Alternative Fixed Effect Structures

Table 3 (Appendix) presents the preferred specification under three alternative fixed effect structures, confirming that the main findings are not sensitive to the level of sectoral granularity.

Column 1 reproduces the baseline with α_{hs2} (96 sectors). Column 2 replaces these with α_{hs4} (1,224 headings), so identification comes from within-HS4 variation in Exposure_p after absorbing demand shocks at the 4-digit level. The results are identical to two decimal places: $\hat{\beta}_3 = 0.196^{***}$ (Vietnam), $\hat{\beta}_2 = 0.003$ (Mexico). Robustness to α_{hs4} confirms the findings are not driven by broad sector-level compositional differences.

Column 3 adds country fixed effects α_c alongside α_{hs2} — the most demanding specification. Identification comes entirely from within-country, cross-product variation in Exposure_p , after absorbing all time-invariant country-level determinants of export growth. Country-level dummies for Mexico and Vietnam are collinear with α_c and drop out; only $\text{Exposure}_p \times \text{Mexico}_c$ and $\text{Exposure}_p \times \text{Vietnam}_c$ are identified. Results: $\hat{\beta}_3 = 0.099^{***}$ (Vietnam), $\hat{\beta}_2 = -0.002$ (Mexico). The attenuation of Vietnam's coefficient from 0.196 to 0.099 is expected — α_c absorbs some country-level component of the trade diversion response — but Vietnam remains positive and highly significant even under this demanding test, while Mexico remains indistinguishable from zero.

A final check restricts the sample to exposed products only ($\text{Exposure}_p > 0$, $N = 293,783$), verifying that results are not driven by unexposed products anchoring the fixed effects. The

findings are essentially unchanged: $\hat{\beta}_3 = 0.196^{***}$ (Vietnam), $\hat{\beta}_2 = 0.003$ (Mexico), $\hat{\delta} = -2.027^{***}$ ($\Delta\text{Tariff}_p \times \text{China}_c$).

5.4 China Validation

Table 4 (Appendix) presents the China validation regression, estimated on the subsample of Chinese exporters ($N \approx 4,890$). The estimating equation is:

$$\Delta \log(X_{\text{China},p}) = \delta \cdot \Delta \text{Tariff}_p + \alpha_{hs2} + \varepsilon_p$$

The coefficient on ΔTariff_p is $\hat{\delta} = -1.075^{**}$ (SE = 0.411) in the baseline, -0.924^* in the no-Covid specification, and -0.370 (ns) in the 2019-only window. The negative and significant estimates confirm that products facing larger tariff increases experienced measurable contractions in Chinese exports, after controlling for sector trends. The insignificance in 2019 only is consistent with a lagged adjustment: Chinese exporters may have maintained volumes in the short run by absorbing margins or drawing down inventories, with the contraction materialising more fully over 2019–2021.

Two things make this result important. First, it validates ΔTariff_p as a source of genuine variation — the shock is systematically associated with reduced Chinese market share, not randomly distributed across products. Second, the combination of China's negative response and Vietnam's positive response in the same exposed sectors constitutes direct evidence of trade diversion in the strict sense. Vietnam did not merely grow faster in tariff-exposed products — it grew faster in the exact products where China was simultaneously losing ground. That joint pattern is considerably more compelling than either piece of evidence alone.

6. Discussion

6.1 Vietnam: Genuine Trade Diversion

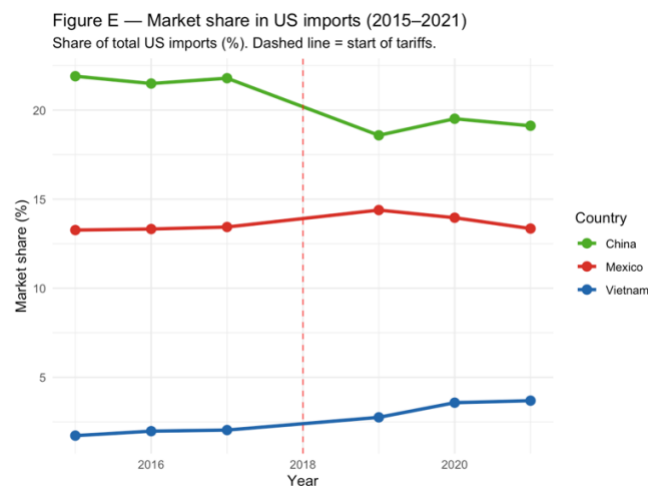
The results paint a consistent picture of Vietnam as a genuine trade diversion beneficiary. The large positive coefficient on $\text{Exposure}_p \times \text{Vietnam}_c$ survives the removal of $\log(X_{cp}^{pre})$, alternative fixed effect structures, and the addition of the China validation term — making it difficult to attribute to anything other than a genuine reallocation of US import sourcing toward Vietnamese products in exposed sectors.

The mechanism is straightforward. Before the trade war, Vietnam had established itself as a competitive exporter in labour-intensive and medium-technology manufacturing — textiles, garments, footwear, basic electronics assembly, plastics, furniture. Its advantages over China were based on lower labour costs (Vietnamese manufacturing wages in 2018 were roughly one-third of Chinese wages), geographic proximity to Chinese industrial clusters

facilitating component sourcing, and a young industrial workforce. Following WTO accession in 2007 and deeper integration into regional supply chains, Vietnam had built the productive infrastructure to serve as an alternative supplier across many of these categories.

When US tariffs created a sudden price wedge between Chinese and non-Chinese goods, US importers had an immediate incentive to diversify sourcing. For many products on Lists 1–3 — furniture (HS94), plastics (HS39), electronics assembly (HS85) — Vietnam offered a credible and rapidly scalable alternative. Dang et al. (2024) show that gains were concentrated in sectors where existing capacity could be quickly expanded, not in sectors requiring new capital investment or technology transfer — consistent with this picture.

Vietnam's gains also appear to reflect genuine productive activity rather than tariff circumvention. Iyoha and Wen (2024) show that rerouting — Chinese goods re-exported through Vietnam with minimal value added — accounted for at most 1.7 percent of Vietnamese exports at the firm level. Mayr-Dorn et al. (2023) find positive employment and wage effects in exposed Vietnamese districts, confirming that export gains translated into real economic activity. Our product-level coefficient on $\text{Exposure}_p \times \text{Vietnam}_c$ is consistent with these micro-level findings: genuine reallocation, not statistical artifact or tariff evasion.



Shows China's market share declining from approximately 22% to 19% after 2018, while Vietnam's rises from 2% to 3.5%. Mexico's share remains roughly flat around 13-14%. This figure provides direct visual evidence of the market share reallocation that drives the regression results.

6.2 Mexico: Pre-existing Integration, Not Trade Diversion

Mexico's insignificance in the preferred specification is the most important and novel finding of this paper. It runs counter to the popular narrative of Mexico as a trade war beneficiary — but the point is not that Mexico lost. Mexico did benefit in aggregate, as Figure C shows. The distinction is about mechanism.

Mexico's export growth to the US over 2018–2021 was real. Exports grew in both exposed and non-exposed sectors. Automotive — long integrated with US manufacturing through

NAFTA-era supply chains — continued to expand as US automakers deepened production in Mexico. Electronics and machinery followed the same logic. But this growth was not caused by the tariff shock. It was the structural deepening of a supply chain relationship decades in the making.

The firm-level evidence of Utar et al. (2025) maps directly onto this interpretation. Gains accrued exclusively to IMMEX-registered GVC firms — firms already formally embedded in export-oriented production networks before the trade war. The sectors where Mexican GVC firms gained — chemicals, computers, automotive, aerospace — are precisely those where US–Mexico integration had been most advanced under NAFTA. When US firms sought alternative suppliers after 2018, they turned to partners they already knew, in supply chains that already existed. No new relationship needed to be built.

The temporal pattern reinforces this reading. Mexico shows marginal significance in 2019 only ($\hat{\beta}_2 = 0.044^{***}$) but zero effect in the 2019–2021 baseline. The 2019 signal reflects the immediate response of existing GVC relationships: US firms already working with Mexican IMMEX suppliers simply ordered more in 2019. But that initial bump did not translate into sustained additional growth, because it involved no new supply relationships or productive capacity. By 2020–2021, the tariff-driven demand shift had been absorbed into the pre-existing trajectory — a trajectory driven by NAFTA integration, not by the trade war.

6.3 The Logistics Constraint: Evidence from Arora et al. (2025)

Arora et al. (2025) document a striking fact about the US–Mexico trade corridor after the shock: despite the immediate tariff incentive to reroute Chinese goods through Mexico — a margin requiring no new capital investment — such rerouting remained negligible for roughly 2.5 years, accelerating only in 2021.

The explanation is a physical bottleneck. Mexico-domiciled carriers are legally restricted to commercial zones within 25–50 miles of US border crossings, meaning all goods must be cross-docked at the border — transferred from Mexican to US trucks in warehousing facilities near ports of entry. After the tariff shock, demand for this capacity surged but supply was already saturated: industrial vacancy rates at El Paso, Laredo, and Otay Mesa fell below 4 percent by 2019 — effectively stock-out. New warehouse space requires 1.5–2 years of planning, permitting, and construction; the delivery spike that relaxed the constraint did not arrive until 2021.

This has a direct implication for our results. Our post-war window covers 2019–2021, which includes the two years (2019–2020) during which the logistics constraint was binding. Even if US firms had strong incentives to increase Mexican sourcing, the physical inability to scale cross-docking volumes would have prevented this from appearing in the trade data. The constraint lifted only in 2021 — the last year of our window — too late to generate a significant average effect over the full period.

This logistics story complements rather than competes with the pre-existing integration story. Together they provide a two-layer account of Mexico's zero. The integration story explains why apparent gains in specifications including $\log(X_{cp}^{pre})$ reflect prior positioning rather than the shock. The logistics story explains why even genuinely shock-driven flows were physically constrained within our window. Both point to the same conclusion: the tariff shock did not generate new trade flows for Mexico over 2019–2021.

6.4 Pre-trend Concerns and Causal Interpretation

The pre-trend test in Section 4.3 shows that both Mexico and Vietnam were already growing faster in tariff-exposed sectors before the trade war ($\hat{\beta}_2 = 0.122$, $\hat{\beta}_3 = 0.085$), formally violating the parallel trends assumption required for a strict causal interpretation.

This should be contextualised. Both countries had been on a trajectory of rising US supply chain integration throughout the 2010s — Mexico in automotive and electronics, Vietnam in manufacturing and electronics assembly — precisely in the sectors that would become most exposed to Chinese tariffs. Some pre-existing differential growth is therefore structurally expected, not evidence that the post-war results are spurious.

What matters is the magnitude gap. For Vietnam, the pre-trend coefficient is 0.085 while the post-war estimate is 0.196— more than twice as large. A simple continuation of the pre-existing trend would have predicted roughly 0.085 in the post-war period. The additional 0.111 is consistent with the tariff shock generating genuine additional export growth above the pre-existing trajectory.

For Mexico, the concern is less acute in the preferred specification but remains relevant for Column 1. The pre-trend coefficient is 0.122, the post-war coefficient 0.169— a gap of roughly 0.047. This modest positive residual, conditional on pre-existing export levels, is consistent with some tariff-driven demand increase dominated by the integration effect that $\log(X_{cp}^{pre})$ absorbs.

The results should therefore be read as capturing the combined effect of pre-existing productive capacity and tariff-induced reallocation, not as a pure causal estimate of trade diversion. The case is strongest for Vietnam: post-war coefficient well above the pre-trend, significant even without $\log(X_{cp}^{pre})$, and micro-level confirmation from Dang et al. (2024) and Mayr-Dorn et al. (2023). For Mexico, the evidence consistently points to pre-existing integration: zero in the preferred specification, substantial pre-trend, and firm-level gains concentrated among IMMEX firms already embedded before the shock (Utar et al., 2025).

7. Conclusion

This paper estimates the differential export response of Mexico and Vietnam to the US–China trade war using product-level BACI data covering 314,705 country-product

observations. The central finding is clear: Vietnam responded dynamically to the tariff shock, exhibiting approximately 20 percentage points of additional export growth per unit of exposure relative to the rest of the world. Mexico's product-level response is statistically indistinguishable from zero in the preferred specification.

The distinction matters because it reveals that the two most-cited trade war beneficiaries gained through fundamentally different mechanisms. Vietnam captured genuine trade diversion: US import sourcing was reallocated toward Vietnamese products in the most penalised sectors, generating gains visible at the product level, robust to alternative specifications, and confirmed by the China validation showing simultaneous contractions in Chinese exports. Mexico's aggregate gains reflect the activation of pre-existing GVC relationships built through decades of NAFTA integration — not a dynamic response to the shock itself. When $\log(X_{cp}^{pre})$ is removed, stripping away the pre-existing integration advantage, Mexico's coefficient collapses to zero.

The three-specification diagnostic — contrasting results with and without $\log(X_{cp}^{pre})$, and using $\Delta\text{Tariff}_p \times \text{China}_c$ rather than $\text{Exposure}_p \times \text{China}_c$ as the validation term — offers a methodological contribution transferable to other settings where the goal is to separate a policy shock from pre-existing structural relationships. The logic is transparent: a country whose coefficient survives the removal of $\log(X_{cp}^{pre})$ responded to the shock; one whose coefficient collapses benefited from prior integration.

The findings carry broader implications. The capacity to capture trade diversion depends critically on the nature of prior supply chain integration. Countries like Vietnam — with competitive cost structures and the ability to scale rapidly in targeted sectors — can create new trade relationships in response to new price signals. Countries like Mexico — already deeply embedded in the tariffing country's supply chains — may benefit in aggregate, but through structural deepening rather than shock-driven diversion. The logistics constraint documented by Arora et al. (2025) adds a further layer: even the most capital-light forms of trade adjustment can be delayed by physical infrastructure bottlenecks outside firms' control.

Future work could extend the analysis by incorporating input-output data — from WIOD or OECD TiVA — to build an alternative exposure measure based on upstream production linkages rather than import shares. This would capture the supply chain dimension of diversion and distinguish between final goods diversion (replacing Chinese finished goods) and intermediate goods diversion (replacing Chinese components), which likely carry different economic implications for beneficiary countries.

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Appendix

A. Regression Tables

Tables 2 through 4 report the robustness and validation results discussed in Section 5. Table 2 is the most important for interpreting the mechanism: it demonstrates that Mexico's significance in the standard specification (Column 1) is entirely driven by the initial export control absorbing its pre-existing integration advantage, while Vietnam's significance is genuine and robust to the removal of this control.

Table 2 — Sensitivity: Role of the Initial Export Level Control

Dep. var.: $\Delta \log(\text{exports to US})$. Baseline period 2019–2021. HS2 fixed effects. Two-way clustering.

	(1) With control	(2) No control	(3) Preferred
<i>Exposure</i>	0.013** (0.004)	0.011** (0.003)	0.010** (0.003)
$\log(X_p^{c,pre})$	−0.202*** (0.016)	—	—
<i>Exposure</i> × <i>Mexico</i>	0.169*** (0.018)	0.004 (0.005)	0.003 (0.005)
<i>Exposure</i> × <i>Vietnam</i>	0.286*** (0.013)	0.197*** (0.004)	0.196*** (0.005)
$\Delta \text{Tariff} \times \text{China}$	—	—	−1.774*** (0.100)
Observations	314,705	314,705	314,705
R²	0.1016	0.0067	0.0072

Column (3) is the preferred specification. The large drop in R² from Column (1) to Columns (2)–(3) reflects the removal of log initial exports, which absorbs mechanical mean reversion. The coefficients of interest are stable or more informative after this removal.

Table 3 — Robustness: Alternative Fixed Effect Structures

Preferred specification throughout. Baseline period 2019–2021.

	HS2 FE	HS4 FE	HS2 + Country FE
<i>Exposure</i> × <i>Mexico</i>	0.003 (0.005)	0.003 (0.005)	−0.002 (0.005)
<i>Exposure</i> × <i>Vietnam</i>	0.196*** (0.005)	0.196*** (0.005)	0.099*** (0.005)

	HS2 FE	HS4 FE	HS2 + Country FE
$\Delta\text{Tariff} \times \text{China}$	-1.774*** (0.100)	-1.774*** (0.100)	—
Observations	314,705	314,705	314,705
<i>Country FE absorbs the Mexico and Vietnam dummies; interaction terms remain identified from within-country cross-product variation in exposure. *** $p < 0.001$.</i>			

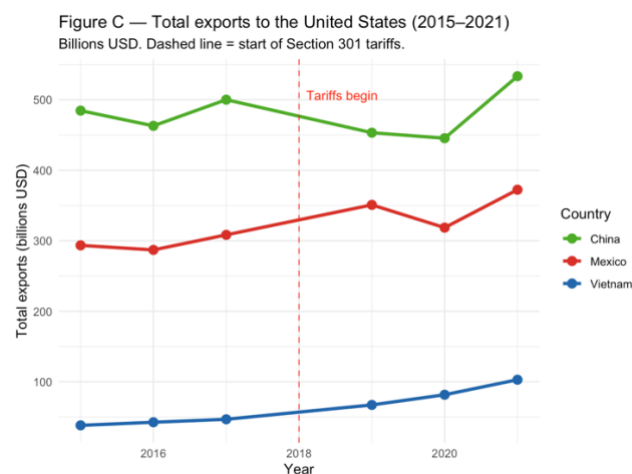
Table 4 — China Validation Regression

Dep. var.: $\Delta\log(\text{Chinese exports to US})$. Chinese exporters only. HS2 fixed effects. Clustering by HS6.

	Baseline	No Covid	2019 Only
ΔTariff	-1.075** (0.411)	-0.924* (0.412)	-0.370 (0.415)
HS2 Fixed Effects	Yes	Yes	Yes
Observations	4,890	4,873	4,831

*SE clustered by HS6. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Expected sign: negative. The insignificance in 2019 only is consistent with a lagged adjustment of Chinese exports to the tariff shock.*

B. Additional Figures



Aggregate context: China declining slightly, Vietnam growing strongly, Mexico growing moderately.