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Rewiring Global Value Chains: Friendshoring, Nearshoring, and the Politics of Supply Chain Realignment in the United States-China Trade War

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Abstract

Understanding how the United States (US)–China trade war affects Asia-Pacific Economic Cooperation (APEC) economies is crucial for policymakers and firms, as it informs strategies to enhance trade resilience and optimize participation in global value chains (GVCs). This study assesses the impact of the trade war on exports, emphasizing nearshoring and friendshoring as strategic responses. Economies are classified based on geographic proximity and perceived political or economic alignment with the two major powers. Using a random-effects panel data model covering all the 21 APEC members from 2013 to 2022, the study examines trade flow adjustments before and during the trade war, accounting for heteroscedasticity and structural variations across countries. Results indicate heterogeneous effects: economies geographically close to the US, such as Mexico and Canada, experienced significant gains through nearshoring, while countries strategically aligned with either China or the US, such as Vietnam and Taiwan, benefited from friendshoring. Findings highlight that both geographic proximity and strategic alignment enhance integration into GVCs, facilitating resilience and export growth amidst geopolitical disruptions. By linking geopolitical factors, supply chain strategies, and export performance, the study provides practical insights for policymakers and firms aiming to optimize trade outcomes under

increasing global uncertainty. The evidence suggests that proactive engagement in nearshoring and friendshoring can strengthen export capacities and promote sustainable participation in evolving GVCs.

Keywords: *nearshoring, friendshoring, trade war, APEC, global value chains*

1. Introduction

For several decades, the rise of China has generated significant spillovers worldwide, particularly affecting neighboring Asian economies with strong links to it. In this context, Global Value Chains (GVCs) have created opportunities for comparative advantages, technological transfers, and industrial upgrading. For example, Southeast Asian economies have benefited both directly and indirectly from their relationship with China, leveraging its growing market demand and integration into international production networks. However, while China's rapid economic growth has been advantageous for some countries, recent export restrictions resulting from the trade war—especially those imposed by the United States—have disrupted GVCs, leading to substantial trade and gross domestic product (GDP) losses for several economies (Cerdeiro et al., 2023).

According to Caliendo et al. (2022), from 2000 until the onset of the trade war, there was a steady increase in Chinese imports into the US market, driven primarily by two factors. First, China's accession to the World Trade Organization (WTO) in 2001 provided greater certainty regarding preferential tariffs for the US market. Second, ongoing improvements in the productivity of Chinese manufactured products, particularly electronics, played a significant role. Since the trade war began, escalating tariffs—halted temporarily in January 2020—have compounded pre-existing US challenges related to unemployment and rising inflation, with American consumers largely bearing the costs due to the inelastic demand for Chinese goods (Caliendo et al., 2022).

The primary cause of the trade war has been the growing trade deficit between China and the US, which has favored China. Since China's accession to the WTO, Chinese exports to the US increased eightfold between 2000 and 2013,

whereas US exports to China only doubled (Parsapour, 2024). The interdependence in global trade extends beyond these two powers, making the decoupling process highly complex and with far-reaching implications for the global economy. Political leaders in the US have sought to align other countries against China, with bipartisan consensus framing China as a strategic rival.

Moreover, the US has enacted sanctions targeting China's intellectual property practices. China's response, including tariffs on the American automotive sector, was directed at domestic economic and political objectives, while promoting nationalism and internal unity—a strategy recurrently employed by the Chinese Communist Party (Mallick, 2018; Zeng, 2019). The pass-through of tariffs has also affected US producer and consumer prices, reshaping the global market and increasing incentives for nearshoring and friendshoring (Fajgelbaum et al., 2021).

Despite increasing research on nearshoring and friendshoring, current studies largely focus on individual countries or specific sectors, overlooking the differentiated impacts within a regional block like the Asia-Pacific Economic Cooperation (APEC). In particular, prior analyses rarely examine how geographic proximity, political alignment, and GVC integration interact to shape trade and investment outcomes across member economies. This leaves a gap in understanding which APEC economies are best positioned to benefit from strategic relocation under trade war pressures and how policy interventions can enhance these gains.

Against this backdrop, several critical questions emerge regarding the differential benefits of nearshoring and friendshoring for APEC members. Specifically: How do APEC economies leverage geographic proximity or strategic alliances to enhance exports under trade war pressures? To what extent do perceptions of political or economic friendship with China or the US influence trade advantages? Which levels of integration into GVCs are necessary for economies to maximize these benefits? And how do these dynamics vary across regions and sectors within the APEC framework? Addressing these questions is essential to understand how APEC economies can capitalize on current geopolitical shifts while navigating complex international trade constraints.

Building on these research questions, this study aims to analyze how APEC economies can leverage geographic proximity and strategic alliances to maximize the benefits of nearshoring and friendshoring amid the ongoing trade war between China and the United States. Specifically, it seeks to examine the influence of political and economic alignment with major powers on trade advantages, assess the role of integration into GVCs in enhancing export performance, and identify the regional and sectoral variations in capturing these opportunities. By addressing these objectives, the research provides a structured framework to understand how APEC economies can strategically respond to trade disruptions, upgrade their export structures, and strengthen their participation in both regional and global value chains.

This research contributes by providing a comprehensive analysis of nearshoring and friendshoring across APEC economies, addressing the gap in current literature regarding how geographic proximity, political alignment, and GVC integration interact to determine trade and investment outcomes. While previous studies focus on individual countries, this study highlights the differentiated benefits that emerge within a regional economic block, offering a structured framework to understand which economies are best positioned to capitalize on trade war–induced opportunities. The findings also provide actionable insights for policymakers seeking to enhance competitiveness, attract foreign direct investments (FDIs), and strengthen export-oriented production under conditions of geopolitical uncertainty.

2. Theoretical Framework

Classical international trade theories, such as the Comparative Advantage Theory and the Heckscher-Ohlin Model, have long provided foundational explanations for global trade patterns. According to the Comparative Advantage Theory, a country's exports are determined by its specialization in producing goods where it holds a relative efficiency edge. Similarly, the Heckscher-Ohlin Model posits that nations export goods that make intensive use of their abundant production factors, such as labor, land, or capital. These

frameworks have historically guided trade policy and firm-level production decisions.

However, in the contemporary geopolitical environment, these models are insufficient to explain the strategic relocation of production in response to trade wars, sanctions, or political alignments (Escaith, 2022; Nedumpara, 2024). Nearshoring and friendshoring introduce political, strategic, and risk-based criteria that fundamentally reshape global production networks, challenging the predictive power of traditional trade theory.

Krugman's Geography Theory emphasizes that geographic concentration of production fosters efficiency gains and competitive advantages, yet this concentration is increasingly contingent on geopolitical stability and infrastructure quality. Companies are relocating to APEC economies such as Mexico, Vietnam, and Taiwan, drawn by robust industrial clusters and proximity to major markets (Krugman, 1991; Chan, 2024).

While Krugman provides a strong theoretical lens, it underestimates the role of political alignment and trust in determining production site selection under conditions of trade uncertainty. Similarly, Porter's Global Value Chains Theory highlights how production is increasingly distributed across regions to exploit local comparative advantages, including labor, raw materials, and technology. Yet, Porter's framework does not fully account for the strategic recalibration of GVCs induced by trade wars and sanctions (Zeng et al., 2022; Utar et al., 2023).

Nearshoring—relocating production closer to end markets—addresses logistical inefficiencies, reduces transportation costs, and enhances supply chain responsiveness. This approach has gained renewed importance in the wake of the COVID-19 pandemic, global trade wars, and other external shocks (Posta, 2022; Ciuriak, 2023). Beyond operational efficiency, nearshoring can enhance regional economic integration, particularly in trade blocs like the United States-Mexico-Canada Agreement (USMCA) and the European Union (EU). However, its benefits are highly context-dependent: successful nearshoring requires adequate infrastructure, skilled labor, regulatory stability, and governance capacity (Alfaro et al., 2023; Chor, 2024). Importantly, nearshoring does not automatically

guarantee economic resilience; economies with weak institutional frameworks or labor market rigidities may experience limited gains.

Friendshoring, a more recent concept introduced by US Treasury Secretary Janet Yellen, adds a political dimension to nearshoring. Firms prioritize countries that are not only geographically proximate but also politically aligned or strategically trustworthy (Nedumpara, 2024; Basundoro et al., 2023). Friendshoring is increasingly adopted as a risk mitigation strategy, particularly in response to the US–China trade war, sanctions, and global geopolitical volatility. While friendshoring can reduce exposure to political and economic risks, it may introduce economic trade-offs: relocating to politically aligned but higher-cost regions can reduce cost-efficiency, particularly in sectors where traditional comparative advantages remain entrenched in China or other low-cost countries (Mykyta, 2025; Morales, 2025). Table 1 provides a comparative overview of the conceptual criteria differentiating nearshoring and friendshoring.

Table 1. Conceptual Criteria Differentiating Nearshoring and Friendshoring

Criterion	Nearshoring (example cases)	Friendshoring (example cases)
Location	Geographical proximity reduces transport costs and delivery times. *E.g., Mexico–US integration under USMCA.*	Strategic alignment overrides distance. *E.g., Malaysia–US semiconductor supply chains during trade war.*
Cost	Lower labor and logistics costs enhance competitiveness. *E.g., Vietnam attracting firms relocating from China.*	Reliability prioritized even at higher costs. *E.g., Canada–US energy trade and diversification away from China.*
Political Risk	Reduced exposure to geopolitical frictions by staying close to main markets. *E.g., Mexico leveraging USMCA.*	Shared institutions and alliances mitigate disruption risks. *E.g., Malaysia within ASEAN and U.S. partnerships.*

Notes: *This table is based on the conceptual distinctions between nearshoring and friendshoring in recent trade and policy debates. Nearshoring emphasizes geographic and cost-based advantages, while friendshoring prioritizes political alignment and supply chain security, adapted from Posta (2022), Ciuriak (2023), Nedumpara (2024), and Basundoro et al. (2023).*

3. Literature Review

The US–China trade war (2018–2020) exemplifies how geopolitical conflicts drive strategic relocation in GVCs. Policies such as tariffs and sanctions incentivized firms to explore alternative production sites outside China, including Mexico and Vietnam (Utar et al., 2023; Posta, 2022). Zeng et al. (2022) highlight that sunk costs are higher for firms deeply integrated with Chinese GVCs, demonstrating uneven impacts across sectors and regions. Mexico leveraged its manufacturing base and USMCA integration to capitalize on nearshoring opportunities, while Vietnam benefited from increased US imports as firms diversified supply chains (Alfaro et al., 2023; Chor, 2024). Similarly, China continued to invest in Vietnam and Taiwan, ensuring its indirect participation in US supply chains and highlighting the resilience of strategic FDI flows (Chan, 2024; Lovely, 2024).

While Poilly and Tripier (2025) demonstrate that tariff volatility shocks in the US reduced trade and heightened precautionary savings, thereby transmitting disruptions to partner countries, subsequent studies show that these shocks did not have homogeneous effects across economies. Alessandria et al. (2025) highlight that the initial overreaction of markets reflected unrealistic expectations of a short-lived conflict; once these expectations faded, trade diversification accelerated and nearshoring gained traction. Benguria and Saffie (2024) further reveal that the industrial supplies sector was most affected, but importantly, trade flows were reallocated toward East Asia, with Thailand, Malaysia, and Vietnam emerging as alternative hubs. Similarly, Freund et al. (2024) emphasize that countries like Mexico became primary beneficiaries of nearshoring due to their geographic proximity to the US.

This pattern suggests that the reallocation of trade and investment was not limited to aggregate flows but reshaped the strategic positioning of specific economies. Vortherms et al. (2024) demonstrate that foreign firms exited tariff-targeted industries in the US and China, relocating to nearby markets, while Hopewell (2025) interprets such moves as part of a broader unilateral strategy by the US to reconfigure supply chains. Flores (2024) extends this argument by showing that Malaysia and Vietnam, leveraged their geopolitical positioning to attract investment and enhance regional cohesion, consolidating their role within

restructured GVCs. Capello et al. (2024) provide further nuance by stressing that relocation decisions toward Mexico or Southeast Asia depend on whether firms prioritize cost efficiency or quality upgrading, underscoring the heterogeneity of nearshoring drivers.

Crucially, Selwyn et al. (2025) argue that Vietnam, Mexico, and Malaysia exemplify the differentiated outcomes of nearshoring: their repositioning within global production networks was facilitated by the U.S.–China trade war, but the magnitude of benefits hinged on domestic reforms and institutional capacity. In this sense, these cases confirm Javorcik et al.'s (2024) view that friendshoring is not merely about geopolitical alignment but also about reducing exposure to vulnerabilities in global value chains. Blažek and Lypianin (2023) remind us that these strategies should ultimately be interpreted as adaptive responses to systemic geopolitical decoupling, rather than as purely economic choices.

On the other hand, studies by Baqaee & Malmberg (2025) and Rodríguez-Clare et al. (2025) quantify welfare losses from trade wars, highlighting disproportionate effects on export-dependent economies. However, these analyses often treat the global economy as a static system, neglecting adaptive strategies by firms and governments. Auray et al. (2024) show that discretionary monetary policies can amplify trade war costs, yet fail to consider coordinated policy interventions across trade blocs. Henrika et al. (2025) and Kalu et al. (2025) emphasize rising input costs and inflation but under-theorize industrial upgrading, technological adaptation, and supply chain resilience mechanisms that some economies exploit to mitigate trade disruptions.

Within APEC, trade wars can act as both constraint and catalyst. Ji & Tong (2025) and Iglesia et al. (2025) illustrate Vietnam and Thailand's export redirection successes, yet their findings understate the fragility of these gains, which depend on governance quality, infrastructure readiness, and labor market conditions. Hong & Lee (2025) and Sierra et al. (2025) underscore that temporary export surges—like Brazil's tariff-induced gains—often dissipate due to structural weaknesses. This underscores that nearshoring and friendshoring outcomes are highly contingent on local institutional and infrastructural capacities.

Other studies highlight vulnerabilities introduced by fragmented GVCs. Maihold (2025), Charpin & Cousineau (2024), and Attinasi et al. (2024) emphasize protectionist backlash, policy reversals, and strategic ambiguity as risks that may undermine nearshoring and friendshoring. Mykyta (2025) and Morales (2025) note inflationary consequences and cost escalations associated with shorter supply chains, while Dachs et al. (2025) and Grover & Vézina (2025) show that geography and political alignment drive FDI inflows, yet benefits require strong domestic institutional frameworks. Asnafi & Choiri (2024) and Kumar et al. (2025) argue that APEC's geographic proximity and governance structures support nearshoring, but inter-APEC power asymmetries may constrain smaller economies from fully exploiting these opportunities.

Indeed, strategic industrial policies, including China's "Made in China 2025" initiative, dual circulation strategy, and the Belt and Road Initiative, demonstrate the interplay of domestic policy and international GVC dynamics. These initiatives foster self-reliance, infrastructure development, and new market creation, which interact with friendshoring and nearshoring trends to shape trade flows (Ciuriak, 2023; Basundoro et al., 2023). Importantly, these policies illustrate that GVC restructuring is not merely economic but embedded in broader political and strategic considerations, reinforcing the critical role of institutional quality, governance, and geopolitical alignment in determining which APEC economies benefit from emerging trade patterns.

Indeed, the literature demonstrates that nearshoring and friendshoring present significant, heterogeneous opportunities for APEC economies. However, gains are conditional on institutional quality, governance capacity, infrastructure, sectoral competitiveness, and geopolitical alignment. Existing studies often oversimplify trade war impacts, under-theorize firm-level adaptations, or neglect institutional heterogeneity. This research addresses these gaps by critically evaluating how APEC economies leverage proximity, alliances, and GVC integration to capitalize on nearshoring and friendshoring, situating the analysis within both economic and geopolitical frameworks.

This research hypothesizes that the US-China trade war affects APEC economies differently depending on their GVC integration and geopolitical

alignment. Economies close to either major power, such as Mexico and Vietnam, are expected to benefit from nearshoring, while APEC members perceived as allies of the US or China are likely to gain through friendshoring. The extent of these effects depends on each economy's integration into GVCs, infrastructure, and institutional capacity.

4. Method

This study employs a comprehensive panel data framework, leveraging cross-sectional time-series data for all 21 APEC economies over the period 2013–2022. The ten-year span is strategically subdivided into two sub-periods to capture the differential impact of trade tensions: 2013–2017 represents a relatively stable period prior to the escalation of the US–China trade war, while 2018–2022 corresponds to the heightened trade conflict phase. A dummy variable (TW) is constructed, taking a value of '0' for the pre-conflict period and '1' for the trade war period, enabling a systematic evaluation of the causal impact of the trade war on APEC member exports, distinguishing baseline conditions from periods of geopolitical disruption.

Data are organized in a strongly balanced panel format using Stata 16, where the cross-sectional dimension is defined by the 'economy' variable and the temporal dimension by the 'year' variable. All categorical identifiers for economies were numerically encoded to facilitate estimation procedures. This panel structure allows control for both cross-sectional heterogeneity and temporal dynamics, ensuring that observed effects are not confounded by unobserved country-specific factors or time-varying shocks.

The analysis begins with a detailed descriptive exploration of export values to China and the US. Density plots are used to visualize distributional properties, detect outliers, and evaluate temporal shifts. Summary statistics—including mean, standard deviation, minimum, maximum, and between- and within-group variations—are computed for all economies. Export values are further categorized into thresholds to identify economies demonstrating exceptional

nearshoring or friendshoring performance, providing initial evidence of structural shifts in global value chains.

To quantify the trade war's impact, random effects panel regressions serve as the primary tool, complemented by fixed effects specifications for robustness. The Hausman test is conducted to determine the most appropriate model; results confirm the suitability of random effects estimation. Robust standard errors are employed to correct for heteroskedasticity, ensuring consistent and efficient parameter estimates. The primary models are specified as follows:

Exports to China:

$$IM_{it}^{China} = \alpha_i + \beta TW_{it} + \gamma CV_{it} + \varepsilon_{it} \qquad (1)$$

Exports to the US:

$$IM_{it}^{US} = \alpha_i + \beta TW_{it} + \gamma CV_{it} + \varepsilon_{it} \qquad (2)$$

where $IM_{it}{}^{china}$ and IM_{it}^{US} represent exports from economy i to China and the US in year t, respectively; TW_{it} is the trade war dummy; CV_{it} is a vector of control variables including GDP per capita and population; α_i captures unobserved economy-specific effects; and ε_{it} is the idiosyncratic error term. The coefficient β measures the main impact of the trade war, particularly through nearshoring and friendshoring channels. To capture heterogeneity, four complementary models are estimated for each export destination:

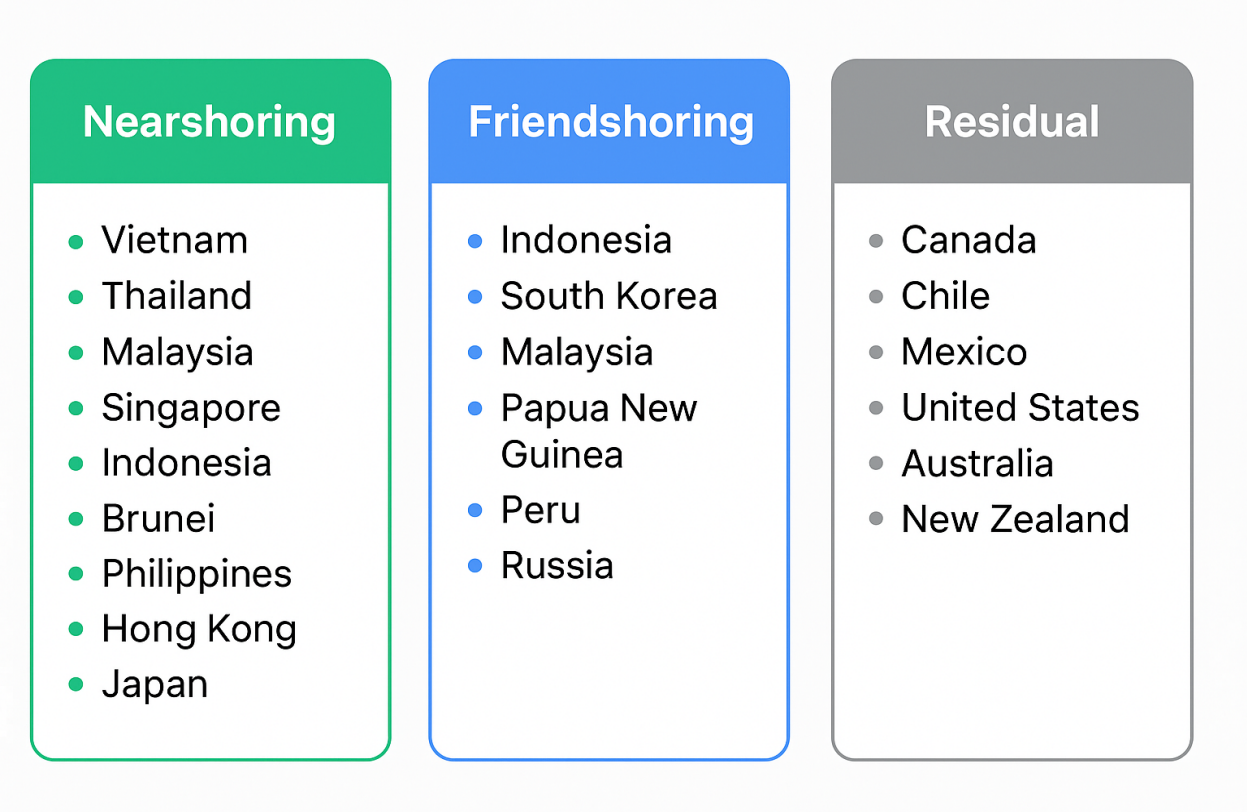
- *All Economies Model:* Includes all 20 exporting economies to the target market.
- *Nearshoring Model:* Economies geographically proximate to the target market. For China, this includes Southeast and East Asian economies and Russia; for the US, Canada and Mexico.
- *Friendshoring Model:* Economies aligned politically or strategically with the target power. For China, selected APEC economies include Indonesia, South Korea, Malaysia, Papua New Guinea, Peru, and Russia; for the US,

selected economies include Australia, Canada, New Zealand, Japan, South Korea, the Philippines, Taiwan, Chile, Mexico, Peru, and Vietnam.

- *Residual Economies Model:* Economies neither classified as nearshoring nor friendshoring, serving as a control group.

To provide a clear and objective framework for the empirical analysis, Figure 1 and Figure 2 present the classification of APEC economies exporting to China and the US, respectively, according to their trade strategy: nearshoring, friendshoring, or residual.

Figure 1. Classification of APEC Economies Exporting to China by Trade Strategy (2013–2022)*



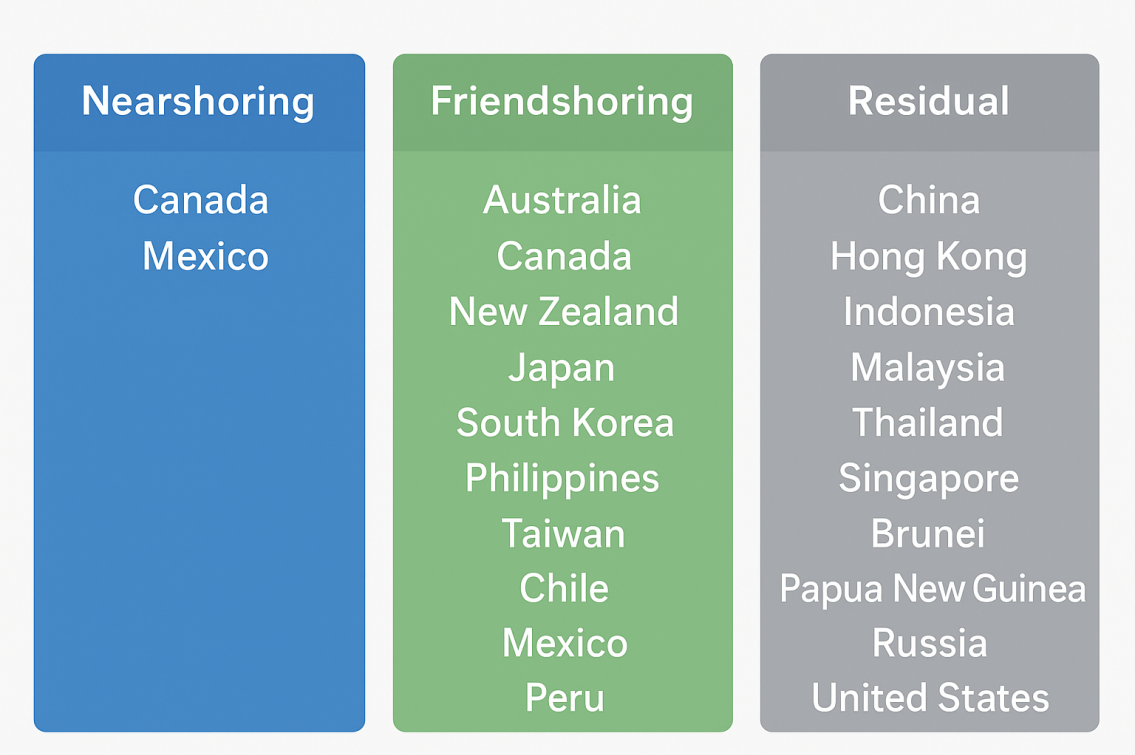
***Notes:** This figure categorizes APEC economies exporting to China into nearshoring, friendshoring, and residual groups. Nearshoring economies are geographically proximate to China, friendshoring economies maintain strong strategic or economic ties, and other economies serve as a control group.*

Nearshoring economies are defined based on geographic proximity to China, mainly in East and Southeast Asia, and Russia (Liu & Woo, 2021; ADB, 2020). Friendshoring economies were selected considering strategic alignment, political ties, and participation in Chinese-led initiatives like the Belt and Road (World Bank, 2021; UNCTAD, 2020). Residual economies include those neither geographically proximate nor strategically aligned. This classification provides a transparent framework to analyze trade patterns and the impact of the US–China trade war on APEC exports.

To provide a clear and objective classification of APEC economies in relation to China, the economies are grouped into three categories: nearshoring, friendshoring, and other/residual economies. Nearshoring economies are defined based on geographic proximity to China, primarily including East and Southeast Asian countries and Russia. These countries—Vietnam, Thailand, Malaysia, Singapore, Indonesia, Brunei, the Philippines, Hong Kong, Japan, South Korea, Taiwan, and Russia—benefit from logistical and trade advantages due to their closeness to China, facilitating shorter supply chains and faster market access.

Friendshoring economies are those that maintain strong strategic, political, or economic relations with China. This group includes Indonesia, South Korea, Malaysia, Papua New Guinea, Peru, and Russia. For example, Peru has been integrated into China's Belt and Road Initiative through major infrastructure investments such as the Chancay Port. South Korea and Malaysia have maintained stable diplomatic and economic ties, while Russia and Papua New Guinea have developed closer strategic partnerships with China.

Figure 2. Classification of APEC Economies Exporting to the US by Trade Strategy (2013–2022)



Notes: *Economies are categorized into nearshoring, friendshoring, and residual groups. Nearshoring includes countries geographically close to China, while friendshoring comprises economies with strategic or political alignment with China. This classification allows a clear and transparent analysis of export patterns during the US–China trade war. Nearshoring economies are geographically proximate to the US, i.e., Canada and Mexico (US Census Bureau, 2022; OECD, 2021).*

Friendshoring economies are identified based on political alignment, democratic systems, free trade agreements with the US, and strategic partnerships (World Bank, 2021; UNCTAD, 2020). Residual economies include APEC members not classified as nearshoring or friendshoring. This classification supports robust analysis of trade patterns amid US–China trade tensions.

To provide a clear and objective framework for analyzing APEC exports amid the US–China trade tensions, economies were classified into nearshoring, friendshoring, and residual groups for each target market. For exports to China, nearshoring economies were defined based on geographic proximity, including Southeast Asian nations (Vietnam, Thailand, Malaysia, Singapore, Indonesia, Brunei, and the Philippines), East Asian economies (Hong Kong, Japan, South Korea, and Taiwan), and Russia (World Bank, 2021; UNCTAD, 2020).

Friendshoring economies were identified according to strategic alignment and investment relationships with China, resulting in Indonesia, South Korea, Malaysia, Papua New Guinea, Peru, and Russia being classified as friendshoring, while the remaining economies were assigned to the residual category. Similarly, for exports to the US, nearshoring economies include Canada and Mexico due to their geographic proximity (US Census Bureau, 2022; OECD, 2021). Friendshoring economies were selected based on long-standing political, economic, and strategic ties with the United States, including Australia, Canada, New Zealand, Japan, South Korea, the Philippines, Taiwan, Chile, Mexico, Peru, and Vietnam.

Random versus fixed effects are compared to ensure model consistency. Heteroskedasticity-robust standard errors are applied, multicollinearity diagnostics conducted, and sensitivity analyses performed by modifying the composition of nearshoring and friendshoring groups. These checks guarantee the reliability of coefficient estimates and support rigorous inference.

The methodological design integrates classical trade theories (comparative advantage, Heckscher-Ohlin) with contemporary concepts in global value chains. Nearshoring and friendshoring are operationalized as empirically testable phenomena, connecting macroeconomic trade data with policy-relevant implications. This approach allows us to examine not only correlations but also the mechanisms through which proximity and strategic alignment influence APEC exports amid the US–China trade war.

5. Results

The results are organized in two main sections, reflecting APEC exports to China and to the United States, clearly illustrating the differential impacts of the US-China trade war. For exports to China, nearshoring economies such as Taiwan, South Korea, Japan, Vietnam, and Indonesia, along with friendshoring economies like Peru and Russia, experienced significant gains, while less integrated or distant economies showed minimal changes. Descriptive statistics and histograms highlight the concentration of trade among high-performing economies, with the trade war variable confirmed as highly significant in panel regressions for nearshoring and friendshoring groups.

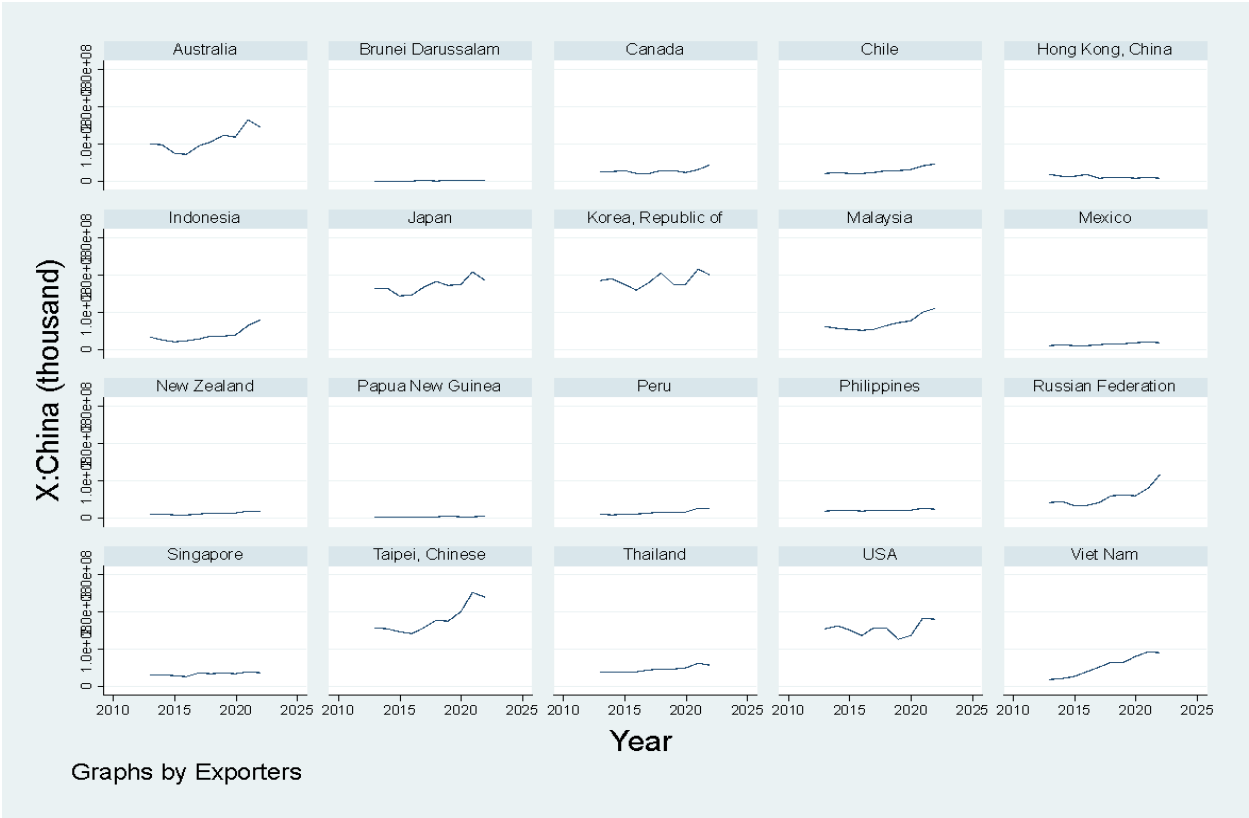
Similarly, exports to the US reveal robust growth for nearshoring partners, Canada and Mexico, and for friendshoring economies including Vietnam, Taiwan, South Korea, and Japan, whereas other economies benefited little. Overall, the findings demonstrate that the trade war's effects are heterogeneous but systematic: proximity to major markets, strategic alignment, and integration into global value chains determine which economies capture trade gains. This two-part structure clarifies the selective nature of trade diversion and provides a coherent framework for understanding nearshoring and friendshoring dynamics in APEC.

5.1. APEC Exports to China

Since the onset of the trade war, several APEC economies have shown a marked increase in exports to China, particularly Australia, Indonesia, Malaysia, Russia, Taiwan, and Vietnam (see Figure 3). These trends suggest emerging nearshoring or friendshoring opportunities linked to China's changing trade dynamics. Although geographically close to China, near economies like Thailand and the Philippines experienced minimal export gains, highlighting that proximity alone does not guarantee nearshoring benefits, which also depend on integration into GVCs and sectoral specialization.

In contrast, Vietnam shows substantial export growth, while Indonesia and Malaysia display moderate increases. Taiwan stands out with the highest export growth, followed by Russia. For economies more distant from China, Australia has experienced a consistent rise in exports that predates the trade war but intensified thereafter. Canada, New Zealand, and Papua New Guinea show minimal changes, whereas the US, Chile, Mexico, and Peru display slight upward trends.

Figure 3. APEC exports to China (2013–2022)



Notes: *Trends in APEC exports to China, showing marked increases in Australia, Indonesia, Malaysia, Russia, Taiwan, and Vietnam, contrasted with more stable patterns in other economies.*

Data are definitive and prepared with ITC calculations based on US Census Bureau statistics since January 2015, obtained from UN Comtrade Database (2024) <https://comtradeplus.un.org>.

5.1.1 Descriptive Statistics

Average exports to China among the 20 APEC economies were USD 60.7 billion, with a standard deviation of USD 63 billion, reflecting substantial heterogeneity in trade performance. Brunei recorded the minimum export value of USD 89,804 in 2013, indicative of its small economic size and limited integration into GVCs, while Taiwan reached the maximum export value of USD 250 billion in 2021, highlighting its strong manufacturing base and extensive trade networks.

The trade war variable is coded as 0 for the pre-trade war period (2013–2017) and 1 for the trade war years (2018–2022), capturing the temporal effect of this policy shock on exports. The average population of exporting economies is 75.5 million, with a wide dispersion across countries, from 411,702 in Brunei to 333 million in the United States, illustrating the role of "gravity" in trade patterns. Similarly, GDP per capita averages USD 26,179, ranging from USD 2,333 in Papua New Guinea to USD 82,808 in Singapore, reflecting the differences in economic capacity to engage in international trade and influencing the scale and direction of export flows.

Table 2. Descriptive statistics of exports to China and related variable, 2013–2022*

Variable	Mean	Std. Dev.	Min	Max	Observations
Exports to China	60.7e+06	63.1e+06	89 804	250e+06	200
between		62.4e+0.6	5.604	185e+06	20
within		16.1e+06	6.80275	132e+06	10
Trade war	0.5	0.5012547	0	1	200
between		0	0.5	0.5	20
within		0.5012547	0	1	10
Population	75.5e+06	86.6e+06	411702	333e+06	199
between		88.4e+06	431448.7	326e+06	20
within		2614377	63.5e+06	85.7e+06	9.95
GDP per capita	26 179	21 373	2 333	82 808	200
between		21 554	2 602	64 294	20
within		3 636	17 373	44 693	10

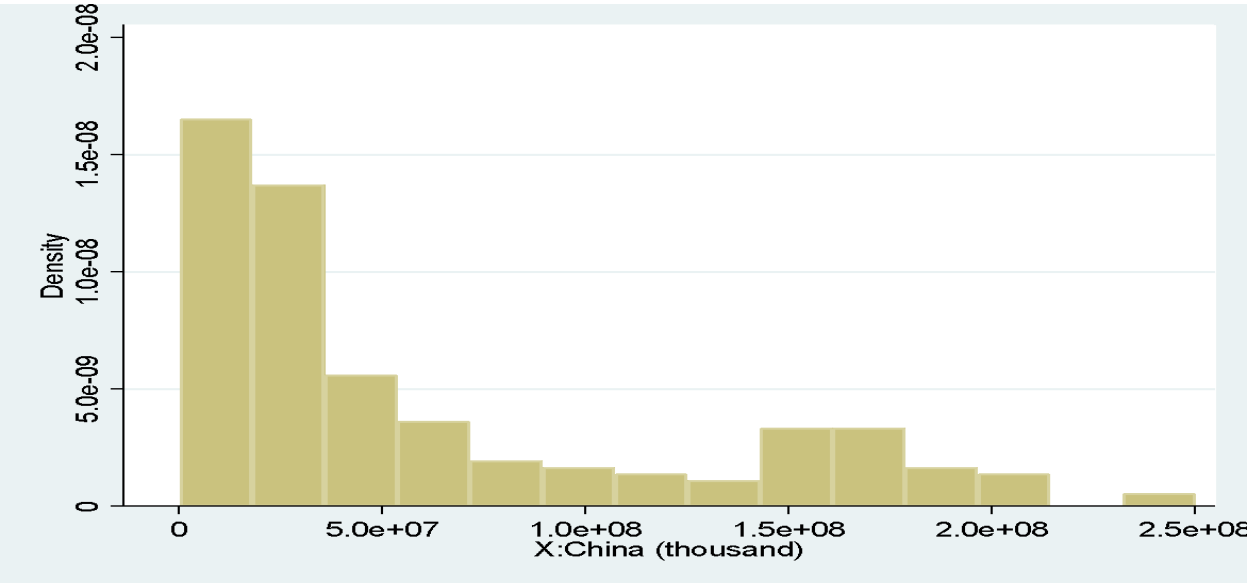
***Notes:** The data presented in table 2 is a summary of the results of the analyses of key variables (exports, trade war dummy, population, and GDP per capita), including mean, standard deviation, minimum, and maximum values across APEC economies.*

Table reports mean, standard deviation, minimum, maximum, and number of observations for the variables used in the empirical analysis. Between- and within-panel variation values are omitted for clarity but available upon request. Data are definitive and prepared with ITC calculations based on US Census Bureau statistics since January 2015, obtained from UN Comtrade Databas (2024) <https://comtradeplus.un.org>.

The histogram of exports shows a positively skewed distribution, with most countries exporting less than USD 50 billion, indicating that a majority of APEC economies maintain relatively modest trade volumes with China. Mid-range exporters, between USD 50 and 100 billion, include Vietnam, Indonesia, and Thailand, reflecting the growing role of Southeast Asian economies in regional supply chains.

The largest exporters—Australia, Japan, Russia, the US, and Taiwan—dominate the higher export ranges, highlighting the concentration of trade among economies with advanced manufacturing capabilities, strong integration into GVCs, and strategic geographic or economic ties to China. In particular, the substantial export growth of Taiwan and other East Asian economies underscores the nearshoring effect, where geographically proximate countries have benefited disproportionately from shifts in trade patterns resulting from the US–China trade war (see Figure 4).

Figure 4. Distribution of APEC exports to China



Notes: *Most APEC economies export less than USD 50 billion, while a few large exporters—Australia, Japan, Russia, the U.S., and Taiwan—dominate higher trade levels.*

Data are definitive and prepared with ITC calculations based on US Census Bureau statistics since January 2015, obtained from UN Comtrade Database (2024) <*https://comtradeplus.un.org*>.

5.1.2 Trade War Effects

A random-effects panel regression was employed to evaluate the impact of the US–China trade war on APEC economies' exports, with robust standard errors to account for heteroskedasticity. The trade war variable is highly significant at the one per cent level across all models, confirming its substantial effect on trade flows. Notably, nearshoring economies—such as Taiwan, South Korea, Japan, Vietnam, and Indonesia—exhibit higher coefficients compared to friendshoring economies (Indonesia, Peru, Russia), indicating that geographic proximity to China and deeper integration into global value chains amplify the

benefits of trade disruptions. Economies classified as neither nearshoring nor friendshoring show no statistically significant impact, suggesting that the trade war's positive effects are concentrated among economies with strong trade linkages or strategic positioning (see Table 3).

Table 3. Effect of the trade war on exports to China by economy type

Exports to China	All APEC economies	Nearshoring economies	Friendshoring economies	Others economies
War trade	*1.4e+07***	*1.9e+07***	*1.6e+07***	*0.96e+07*
	(1.9+06)	*(4.70e+06)*	*(524)*	*(7.18e+05)*
Population	*0.287***	*423.5*	*225.3*	*1001****
	(0.130)	*(643.4)*	*(584.6)*	*(249)*
GDP per capita	*6.9e+02**	*0.155*	*0.277**	*0.240***
	(3.9+02)	*(0.196)*	*(0.134)*	*(0.099)*
Constant	*1.8e+07*	*4.0e+07**	*2.70e+07*	*-9.1e+06*
	(1.3+07)	*(2.3e+07)*	*(3.03e+07)*	*(1.4e+07)*

Notes: *The trade war significantly boosted exports from nearshoring and friendshoring economies, while the effect on other economies was weaker. The table reports regression coefficients with robust standard errors in parentheses. Statistical significance levels: p<0.1 (), p<0.05 (), p<0.01 (). Data are definitive and prepared with ITC calculations based on US Census Bureau statistics since January 2015, obtained from UN Comtrade Datebase (2024) <https://comtradeplus.un.org>.*

Indeed, the regression results and observed export patterns demonstrate that the trade war's impact is heterogeneous: economies closely linked to global value chains or strategically positioned geographically experience the largest gains, while less integrated or distant economies see limited or no benefit. This emphasizes the importance of both proximity and GVC participation in determining trade war outcomes for APEC economies. While internal factors such as domestic reforms or FDI inflows may contribute, the observed export growth for Vietnam and Mexico during 2018–2022 is primarily associated with nearshoring and

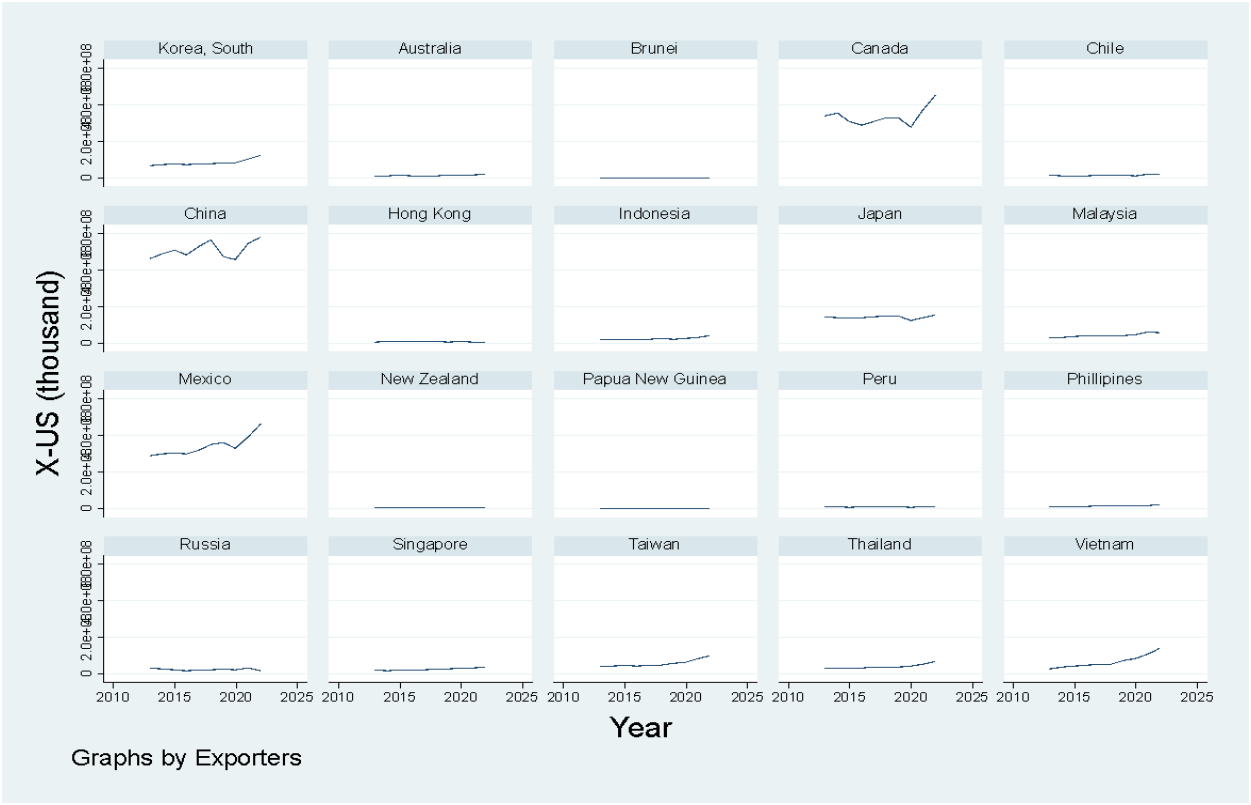
friendshoring dynamics, as reflected in panel regression coefficients.

5.2 APEC Exports to the United States

Exports to the US illustrate the heterogeneous effects of the trade war. China remains the largest exporter, with a sharp decline in 2019–2020 followed by a strong rebound in 2021–2022. Nearshoring economies, particularly Mexico and Canada, show heightened volatility but substantial gains, reflecting their strategic proximity to the US. Friendshoring economies, including Vietnam, Taiwan, Japan, and South Korea, display steady export growth, leveraging comparative advantages in high-tech sectors and integration into GVCs.

In contrast, less integrated or resource-based economies, such as Chile and Peru, show limited export growth, while Russia experiences declines due to geopolitical sanctions. Even politically aligned countries like Australia and New Zealand exhibit only modest export increases, and Canada shows strong but volatile gains, indicating that friendshoring benefits are influenced not just by political alignment but also by sectoral composition, pre-existing trade linkages, and capacity to absorb nearshoring or friendshoring inflows. These patterns demonstrate that geographic proximity, sectoral specialization, and integration into global value chains jointly determine which APEC economies capture trade war gains (see Figure 5).

Figure 5. APEC exports to the U.S. (2013–2022)



Notes: *Exports from Mexico, Canada, Vietnam, Taiwan, South Korea, and Japan rose notably during the trade war, while China's exports fell sharply in 2019–2020 but rebounded afterward.*

Data are definitive and prepared with ITC calculations based on US Census Bureau statistics since January 2015, obtained from UN Comtrade Database (2024) <https://comtradeplus.un.org>.

5.2.1 Descriptive Statistics

Average exports from APEC economies to the US amount to USD 85.8 billion, with a standard deviation of USD 138 billion, indicating substantial variation across countries. This average is notably higher than exports to China, reflecting the US' position as the largest single export market for many economies in the region.

Among the sample, Brunei recorded the lowest export value at USD 13.9 million, underscoring its limited integration into global value chains, while China dominates with exports totaling USD 576 billion, highlighting its vital role in trade flows.

The average population of exporting economies stands at 129 million, with GDP per capita averaging USD 23,551, suggesting that both large and economically developed countries contribute disproportionately to US-bound trade. These figures provide an important context for understanding which economies are poised to benefit from nearshoring or friendshoring dynamics, given their market size, economic capacity, and existing trade linkages (Tsee able 4).

Table 4. Descriptive statistics of exports to the US and related variables, 2013–2022

Variable	Mean	Std. Dev.	Min	Max	Observations
Exports to the US	85.8e+06	138e+06	13 991	576e+06	200
between		140e+0.6	45 476	506e+06	20
within		20.8e+06	30.2e+06	208e+06	10
Trade war	0.5	0.5012547	0	1	200
between		0	0.5	0.5	20
within		0.5012547	0	1	10
Population	129e+06	299e+06	411 702	1 412e+06	199
between		305e+06	431 448.7	1 390e+06	20
within		4459878	97.9e+06	147e+06	9.95
GDP per capita	23 551	19 920	2 333	82 808	200
between		20 099	2 602	64 294	20
within		3 331	14 903	42 065	10

Notes: *Table 4 presents the summary of the results on the analyses of the key variables (exports, trade war dummy, population, and GDP per capita), including mean, standard deviation, minimum, and maximum values across APEC economies.*

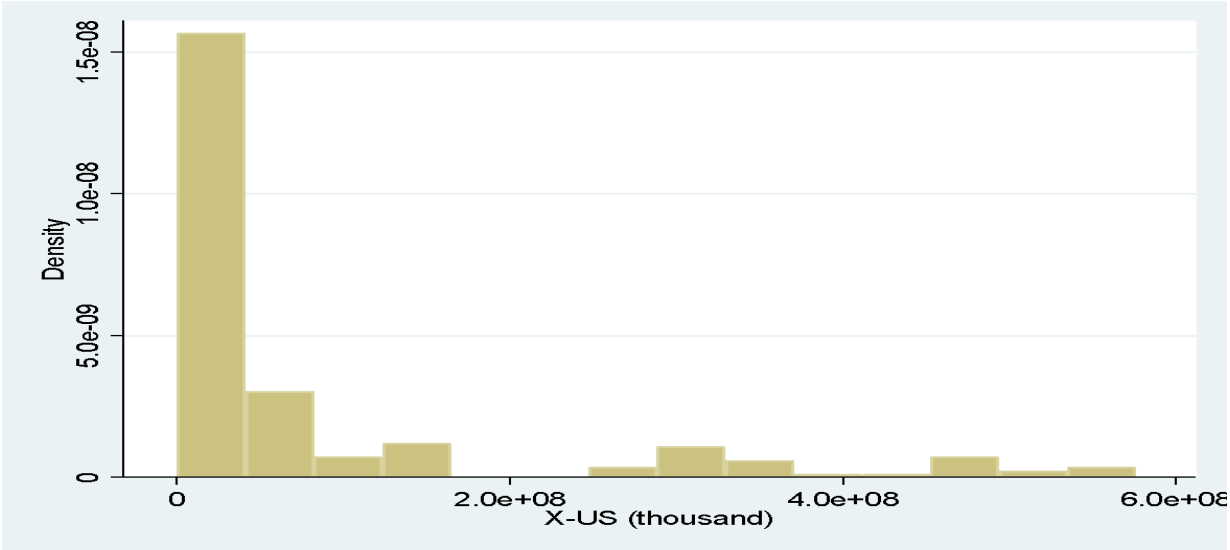
The report also includes the mean, standard deviation, minimum, maximum, and number of observations for the variables used in the empirical analysis. Between- and within-panel variation values are omitted for clarity but available upon request. Data are definitive and

prepared with ITC calculations based on US Census Bureau statistics since January 2015, obtained from UN Comtrade Database (2024): <https://comtradeplus.un.org>.

The histograms of exports to the US reveal a positively skewed distribution, with the majority of APEC economies clustered in the lower range of zero to USD 200 billion. China, Canada, and Mexico emerge as the largest exporters, reflecting their established trade capacities and deep integration into GVCs. Smaller economies, including Brunei, Papua New Guinea, and New Zealand, remain in the lower end of the distribution, indicating limited export volumes.

Vietnam's export performance is particularly remarkable, increasing from USD 25.9 billion in 2013 to USD 135.9 billion in 2022, highlighting its rapid integration into US-bound trade networks and its role as a key friendshoring partner. Other notable increases are observed for Taiwan, South Korea, and Japan, further illustrating the concentration of export growth among strategically aligned and economically capable economies within the APEC region (see Figure 6).

Figure 6. Distribution of APEC exports to the US



Notes: *Exports are highly concentrated, with China, Canada, and Mexico dominating, while Vietnam shows the fastest growth as a key friendshoring partner.*

Data are definitive and prepared with ITC calculations based on US Census Bureau statistics since January 2015, obtained from UN Comtrade Database (2024): <https://comtradeplus.un.org>.

5.2.2 Trade War Effects

The regression analysis presented in Table 5 robustly demonstrates the differential effects of the US-China trade war across APEC economies. Model 1, which examines all 20 APEC economies, reveals that the trade war variable is statistically significant at the five per cent level, confirming a general positive impact on exports to the US since 2018. Population also emerges as a significant factor, suggesting that larger economies are better positioned to leverage labor and scale advantages within GVCs. While GDP per capita is not significant in this aggregated model, the overall results underscore that economies integrated into GVCs have been the primary beneficiaries of the trade disruption.

Table 5. Effect of the trade war on exports to the US by economy type

Exports to China	All APEC economies	Nearshoring economies	Friendshoring economies	Others economies
War trade	1.1e+07**	4.3e+07***	0.9e+07**	0.4e+07
	(460)	(4e+06)	(4.1e+06)	(2.6e+06)
Population	0.386***	3.788***	2.64*	0.371***
	(0.030)	(1.4e+06)	(1.55)	(0.015)
GDP per capita	1162.4	8657***	2780	563**
	(923.3)	(3181)	(1992)	(261)
Constant	319e+04	-2.3e+08	-1.38e+08	-2.31e+07
	(1.8e+07)	(2.1e+08)	(8.78e+07)	(1.67e+07)

Notes: *Nearshoring economies experienced the strongest trade gains, while effects on other groups were modest or insignificant.*

The report presents the regression coefficients with robust standard errors in parentheses. Statistical significance levels: p<0.1 (), p<0.05 (), p<0.01 (). Data are definitive and prepared with ITC calculations based on US Census Bureau statistics since January 2015, obtained from UN Comtrade Database (2024) <https://comtradeplus.un.org>.

Focusing on nearshoring economies in Model 2 (Canada and Mexico), the trade war variable achieves significance at the one per cent level, reflecting strong export growth to the US. These results highlight that geographic proximity amplifies the benefits of supply chain realignments, with both population and GDP per capita contributing positively to export performance. Despite the small sample size, this model clearly indicates that nearshoring economies have captured substantial trade opportunities created by tariff-driven disruptions, validating the hypothesis that proximity and integration into GVCs enhance trade resilience. While domestic reforms or FDI inflows may also play a role, the observed export growth for Mexico during 2018–2022 is primarily associated with nearshoring dynamics, as confirmed by panel regression coefficients.

In Model 3, encompassing friendshoring economies (e.g., Australia, New Zealand, Japan, South Korea, Vietnam), the trade war effect remains significant at the five per cent level. Exports from these countries to the U.S. have increased steadily, reflecting the strategic advantage of politically and economically aligned partners in a context of global trade tensions. Conversely, Model 4, which includes economies neither nearshoring nor friendshoring (e.g., Brunei, Papua New Guinea, China, Russia), shows no significant trade war effect, reinforcing the conclusion that gains from the US–China trade conflict are concentrated among economies with strong GVC linkages or strategic alignment. Collectively, these results provide compelling evidence that the trade war's impact is both selective and economically meaningful, offering valuable insights for policymakers and international trade strategists.

6. Discussions

The findings of this research diverge from those of Cerdeiro et al. (2023), who analyzed both direct and indirect benefits of China's economic rise, particularly for Asian economies integrated into GVCs, and highlighted the constraints imposed by US tariffs starting in 2018. Similarly, our study examines Asian economies such as Vietnam, Taiwan, South Korea, and Indonesia, which have

benefited from access to both the US and Chinese markets. Our results indicate that the most integrated economies, such as Taiwan and Vietnam, are the greatest beneficiaries.

There are notable parallels with Freund et al. (2023), who observed that tariffs on Chinese technological products led to increased US exports from economies with comparative advantages in these sectors, including Taiwan and South Korea, and emphasized the advantages for countries with large populations. However, unlike Freund et al., who argue that low-GDP-per-capita countries experience export gains due to lower labor costs, our findings reveal a positive correlation between higher GDP per capita and increased exports, consistent with the gravity model of international trade.

Wai-chung Yeung et al. (2023) discuss how the rise of fabless production has shifted international trade patterns. Our analysis, however, highlights more pronounced export growth from economies such as Australia, New Zealand, the Philippines, and Vietnam to China, and from South Korea, Canada, Mexico, and Vietnam to the US, emphasizing the role of Chinese infrastructure investments, particularly in Mexico, rather than solely fabless production. Concerning China's "Made in China 2025" plan, our results show significant increases in exports to China from Taiwan, South Korea, Vietnam, Australia, and New Zealand.

Alfaro et al. (2023) report that Mexico's exports grew while China's exports to the U.S. declined as a result of the trade war. Our research confirms this trend only at the onset of the conflict; more recently, China's exports to the U.S. have rebounded. While both studies recognize Vietnam's strong export performance, our results also highlight substantial gains for Taiwan, which has increased exports to both major markets.

The introduction of China's "dual circulation" doctrine, aimed at self-sufficiency (China, 2023), appears contradicted by the rise in imports from Southeast Asia, East Asia, Oceania, Latin America, and Russia, as well as the continued growth of Chinese exports to the US Our findings suggest that infrastructure projects under the Belt and Road Initiative, such as the Chancay Port in Peru, will further enhance exports from participating economies.

Utar et al. (2023) propose a substitution relationship between Mexican and Chinese exports to the US. The current study corroborates on this idea at the start of the trade war, observing reductions in Chinese exports alongside increases from Mexico. However, unlike Utar et al., it did not find evidence of strengthened trade between Mexico and China.

Posta (2022) focuses on a smaller subset of Southeast Asian economies as cost-effective alternatives for relocating manufacturing from China. By contrast, our study examines 21 economies across multiple regions, confirming broader trends in nearshoring and friendshoring, with smaller economies increasing exports to major markets. Escaith (2022) emphasizes that FDI and export benefits are uneven due to weak global institutions, a pattern reflected in our findings, where Vietnam, Mexico, Taiwan, Indonesia, and South Korea gained the most, while Brunei, Chile, Papua New Guinea, and Peru gained less due to limited GVC integration.

Chor (2024) identifies Mexico and Vietnam as primary beneficiaries of nearshoring and friendshoring using detailed HS4-digit data and satellite imagery. While the findings in this study corroborates that Vietnam and Mexico benefits more from nearshoring and friendshoring, it was found out that Vietnam's gains are broader, encompassing both US and Chinese markets, whereas Mexico's expansion is largely toward the US. Coutino (2024) discusses triangular trade between China, Mexico, and the US, noting indirect trade flows. The results similarly indicate periods of simultaneous increases in exports from China and Mexico to the US, highlighting the complex dynamics of rerouted trade. Iyoha et al. (2004) identify Vietnam as a transit point for Chinese exports to the US, observing a positive correlation between US tariffs on China and re-exported products. Although the study did not quantify rerouted products, it observed similar increases in Vietnamese exports, reflecting broader economic benefits.

The findings, moreover, support Chan (2024), showing that Taiwan and Vietnam's integration with China in GVCs has driven export growth, with Taiwan replacing some Chinese products in the US market. Consistent with Basundoro et al. (2023), firm relocation from China to Southeast and South Asia, aided by low transport costs and incentives, underlies Indonesia and Vietnam's increased

exports to both markets. Furthermore, Gopinath et al. (2024) noted a fragmentation of globalization into US- and China-centered blocs, it was observe that APEC economies maintain strong trade flows with both, with countries like Australia and New Zealand increasing exports to China, reflecting economic pragmatism over political alignment.

While Vietnam and Mexico experienced notable export growth during 2018–2022, our analysis indicates that this was primarily linked to nearshoring and friendshoring dynamics. Nevertheless, due to data limitations—lack of disaggregated sectoral trade, FDI, or domestic reform indicators—the role of internal factors, or gains, concentrated in manufacturing, agriculture, or resource-based products cannot be fully determined or assessed. Future studies incorporating detailed sectoral and investment data could clarify both the drivers of export growth and the distribution of benefits across industries.

Future research should address the current limitations by incorporating disaggregated sectoral trade data, as well as information on domestic reforms and foreign direct investment. Such analyses would allow a more precise assessment of how different industries and internal policies influence export performance, and would clarify the relative roles of nearshoring, friendshoring, and domestic factors in shaping trade outcomes across APEC economies.

7. Conclusions

The main focus of this research is the ongoing shifts in international trade as a result of the trade war between the US and China. These shifts have benefitted certain APEC economies closely linked to these two major powers, particularly Vietnam, Mexico, Taiwan, and Indonesia, which have shown substantial growth in exports and FDI. Nearshoring and friendshoring trends are evident, with economies integrated into GVCs and strategically positioned geographically gaining the most. Exports to China increased notably for Taiwan, Vietnam, Indonesia, Malaysia, Russia, and Australia, while exports to the US were strongest among nearshoring partners such as Canada and Mexico. In contrast, economies with

limited integration into GVCs, including Brunei, Papua New Guinea, Peru, and Chile, experienced smaller gains, largely due to reliance on raw materials.

These findings underscore the need for differentiated policies tailored to each type of economy. Developing APEC economies, such as Vietnam, Indonesia, and Mexico, should expand manufacturing capacities in sectors where they hold comparative advantages, including electronics, machinery, and processed foods. Investments in ports, logistics corridors, and industrial zones can facilitate trade flows with both China and the US, while targeted tax incentives can attract FDI and strengthen export-oriented production.

Small or neutral economies, such as Brunei, Papua New Guinea, and New Zealand, would benefit from creating specialized industrial zones focused on niche exports, offering regulatory simplifications to attract FDI, and promoting regional partnerships that allow partial integration into GVCs despite smaller domestic markets.

Resource-exporting economies, including Peru and Chile, should focus on value addition in primary sectors by establishing manufacturing and logistics hubs, encouraging investment in processing industries, and pursuing trade agreements that facilitate the export of higher-value goods. Such strategies would reduce dependence on raw material exports and enhance competitiveness in global markets.

Finally, the analysis confirms that friendshoring is durable and stable: regression results show that Vietnam and other allied economies consistently increase exports to strategic partners even during the US–China trade war, indicating that these patterns are driven by long-term strategic and political factors rather than temporary shocks.

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Notes

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