The 2018 US-China Trade War and Trade Diversion: Evidence from Thai Customs Data

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1 July 2025

Preliminary draft
Prepared for the Bank of Thailand's Academic Symposium 2025

Abstract

The 2018 U.S.–China trade war marked a major shift in global trade patterns, yet its effects on third-country exporters remain incompletely understood. We examine Thailand's export response to the trade war using transaction-level customs data on Thai exports from 2013 to 2023. Exploiting cross-product variation in the magnitude and timing of tariff changes across HS-6 products, we identify trade reallocation through substitution and spillover channels. We find that, in response to U.S. tariffs on Chinese products, Thailand experienced a substantial increase in exports to both the United States and ASEAN, consistent with trade diversion. The effects emerge with a delay and are particularly large for manufacturing goods in U.S. strategic sectors. We also find suggestive evidence of potential transshipment of Chinese goods to the United States. In contrast, Chinese retaliatory tariffs show limited spillover effects, with some delayed negative impact on Thai exports to China.

Keywords: Trade War, Trade Diversion, Tariffs, Supply Chains, Transshipment, Thailand, US, China

JEL Classifications: F13, F14

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1 Introduction

As the world's two largest economies imposed retaliatory tariffs on hundreds of billions of dollars in bilateral trade, the resulting escalation reshaped supply chains, altered market access, and created substantial uncertainty for exporters worldwide. Although much of the existing literature has focused on the direct effects of these tariffs on the United States and China,[1] relatively little is known about how third-party countries responded to these shocks. Understanding how firms in third-party countries adjusted to the reconfiguration of global trade flows is essential to assess the broader welfare consequences of trade wars and to inform policy responses in open economies facing similar disruptions.

This paper examines the case of Thailand, a trade-dependent emerging economy in Southeast Asia. Thailand offers a valuable lens on third-country effects because of its strong integration into both Chinese and U.S. supply chains, diversified manufacturing base, and strategic location within ASEAN. Although Thailand was not a direct participant in the trade dispute, the conflict posed both risks and opportunities. On the one hand, Thai exporters could benefit from trade diversion if they could substitute for US or Chinese suppliers in global markets. However, as a supplier of intermediate goods to both countries, Thailand was vulnerable to upstream supply chain disruptions. For instance, if Chinese firms lost access to US markets, their demand for Thai inputs may have declined.

In addition to these indirect spillovers, Thailand was itself subject to direct protectionist measures during the period. Several Thai products—including solar panels, washing machines, steel, and aluminum—were targeted by U.S. safeguard tariffs, while China implemented adjustments to its Most Favored Nation (MFN) schedule that affected the competitiveness of Thai exports. These developments underscore the importance of distinguishing between the effects of third-country tariff shocks and direct trade policy actions aimed at Thailand. Accordingly, our empirical framework incorporates both channels, but will mainly focus on the spillover effects from the retaliatory tariffs.

This paper investigates the extent to which Thai exporters benefited from trade diversion resulting from the U.S.–China trade war. Using transaction-level customs data from 2013 to 2023, we examine how Thai exports respond to product-level tariff variation. Exploiting variations in the timing and magnitude of tariff changes at the HS 6-digit level, we estimate the impact of U.S. and Chinese tariffs on Thai exports across destination markets.

Applying a difference-in-differences framework, we find evidence consistent with trade diversion towards Thailand. Specifically, Thai exports to U.S. increase in product categories more exposed to the U.S. tariffs on Chinese goods, implying that Thai exports substitute for Chinese goods in the U.S. market. The U.S. tariffs also lead to higher Thai exports to ASEAN countries, consistent with the downward sloping supply curve, as emphasized in Fajgelbaum et al. (2024), and greater regional value chain integration. However, the export

[1] See, for example, Amiti et al. (2019) and Fajgelbaum et al. (2020).

response is not uniform across destination markets, as we find no significant increase in Thai exports to China, Japan, Europe, or the rest of the world. Meanwhile, the China's retaliatory tariffs show limited spillover effects onto Thai exports.

Exploring the timing of these effects, we show Thai exports to the U.S. did not respond immediately to the U.S. tariffs. Instead, the positive effect only appears in the second and third years after the tariffs were introduced, consistent with a gradual restructuring of U.S. supply chains. This delayed response suggests that trade diversion gained momentum over time as U.S. importers searched for and established new sourcing relationships. In contrast, though the average treatment effects of Chinese retaliatory tariffs are insignificant, we observe some delayed negative impact on Thai exports to China.

To better understand which products drive the aggregate and destination-specific export responses to U.S.–China tariff shocks, we examine heterogeneity in the trade-war impact across different product groups. Our results reveal that larger exports to the U.S. and ASEAN are mainly driven by non-commodity manufacturing goods that are part of U.S. strategic industries. The results for Chinese retaliation are more mixed, as we find positive responses of agricultural exports to ASEAN but declining exports of non-commodity manufacturing products to China. Last, given increased Chinese imports that occur alongside the export expansion, we highlight transshipment of Chinese goods to the U.S. as a potential explanation, as opposed with supply chain integration with China.

This paper mainly contributes to the growing literature on third-country spillovers from trade policy shocks. Fajgelbaum et al. (2024) show that many bystander countries increased exports to the US and to the rest of the world in response to the tariffs. Countries that operate along downward-sloping supplies whose exports substitute US and China, e.g., Vietnam, Thailand, Korea and Mexico, are among the larger beneficiaries of the trade war. Similarly, Alfaro and Chor (2023) point to a great reallocation of global supply chains, as US sourcing has been reallocated away from China and toward other locations, notably Mexico (nearshoring) and Vietnam. In addition, US imports has become more upstream, which indicates some production reshoring. Meanwhile, Flaaen et al. (2020) show that antidumping duties imposed by the U.S. against South Korea and China, that occurred in a few years leading up to the trade war were accompanied by production relocation to other export platform countries.[2] Our paper, therefore, provides additional results in the context of Thailand to shed light on how rising geopolitical tensions—particularly the U.S.–China trade war—have reshaped global trade flows.

However, the trade war may not reduce U.S. dependence on supply chain links to China, since imports from China also improve for those countries with larger exports to the US (Alfaro and Chor, 2023; Freund et al., 2024). This potentially reflects transshipment and/or increased supply chain integration with China. Among papers that emphasize this issue, Iyoha et al. (2024) show evidence of rerouting in the context of Vietnam, driven

[2]Based on the empirical framework of Fajgelbaum et al. (2024), Khandelwal (2023) shows that India fails to reap any export opportunities from the trade war.

by new establishments and Chinese-owned enterprises. Hayakawa (2024), meanwhile, identifies input-output linkages for the general and electric machinery industries, shows that, among Southeast Asian nations, Thailand increased imports of downstream products from China to produce the downstream. For Mexico, Utar et al. (2023) show that GVC participant firms, particularly foreign MNEs, increased exports to the U.S. as well as imports from China, while Wang and Hannan (2023) find a positive impact on input demand due to higher tariffs imposed on Chinese downstream industries. As opposed to Hayakawa (2024), the results appear to support the role of transshipment.

Last, this paper relates to the broader literature that studies the impact of 2018-19 US-China trade war on the U.S. and Chinese economies. Fajgelbaum et al. (2020), for example, document a significant decline in U.S. imports. Several studies report that U.S. importers, producers and consumers face a large passthrough of tariff rates onto product prices (Amiti et al., 2020; Cavallo et al., 2021; Fajgelbaum et al., 2020). Handley et al. (2020) further show that U.S. exports also decline because U.S. firms faced higher import costs, while Huang et al. (2023) observe the decline in firm value for the U.S. firms with large supply chain linkages with China. On the impact on Chinese exporters, Jiao et al. (2024) find that their exports to the EU moderately increased to compensate for the decline in U.S. sales, but exports to other markets are barely affected. Fajgelbaum and Khandelwal (2022) and Caliendo and Parro (2022) both offer a survey of research on the economic impacts of the trade war.

The rest of the paper proceeds as follows. Section 2 provides an overview of the 2018 U.S.–China trade war. Section 3 describes the data sources and the construction of the main variables. Section 4 presents estimation results, including average treatment effects, dynamic responses over time, and nonlinearities in the export adjustment. Section 5 investigates heterogeneous effects across different product groups. Section 6 examines the possibility of transshipment of imports from China. Finally, Section 7 concludes.

2 Background: The 2018 U.S.–China Trade War

The U.S.–China trade war began in 2018 as a series of escalating tariff actions between the world's two largest economies. The first tariff increases began in February 2018, when the U.S. imposed safeguard tariffs on 8 billion dollar of solar panel and washing machine imports. This was followed by additional tariffs in March 2018 that targeted aluminum, iron and steel products, amounting around 48 billion dollar of imports. These tariffs targeted many countries, not only China. China and other trade partners, such as Canada, Mexico and the EU, imposed retaliatory tariffs in response.

Subsequent rounds of tariffs by the U.S. mainly targeted China. Citing unfair trade practices and intellectual property violations by China, under the Trade Act of 1974, Section 301 investigations, the U.S. imposed five rounds of tariff hikes. The first wave of tariffs was imposed in July 2018, targeting 34 billion of Chinese imports at a 25% rate. In

August 2018, another 16 billion dollar worth of commodities faced tariff rate increases of 25 percent. China responded immediately with retaliatory tariffs of an equivalent value on U.S. goods, primarily agricultural products. By September 2018, the U.S. imposed tariffs on an additional 200 billion dollar of Chinese goods at 10% rate, and in response, China levied duties on 60 billion of U.S. imports.

The trade war intensified in 2019, due to the U.S. announcement of 15% tariffs on additional 100 billion dollar worth of Chinese products, which broadens the coverage of products subjected to tariffs to nearly all sectors, including many consumer goods. In addition, the products targeted in the third-wave list also faced higher tariffs at 25 percent. By the end of 2019, over 360 billion dollar of Chinese exports to the U.S. and around 110 billion dollar of U.S. exports to China were subject to elevated tariff rates (around two-thirds of total U.S. imports from China and over 50 percent of total China imports from the U.S., respectively). As shown in Bown (2021), during these periods, the weighted average tariff rates facing Chinese products exported to the U.S. and the U.S. products exported to China have been raised from 3.1 and 8.0 percent to around 20 percent, respectively.[3]

In January 2020, the two countries signed the "Phase One" agreement, which paused further escalation and led to modest reductions in tariff rates on some products. However, most tariffs remained in place. The onset of the COVID-19 pandemic in early 2020 diverted global attention and disrupted trade volumes, but the underlying tariff regime persisted. Despite changing administrations in the U.S., the core structure of the trade barriers remained largely unchanged through 2023, with limited liberalization.

Overall, the 2018–2020 period featured sustained trade policy uncertainty, prolonged tariff exposure, and significant reconfiguration of global supply chains. For third countries like Thailand, these developments created both risks and opportunities, as firms and consumers in the U.S., China, and elsewhere adjusted sourcing strategies in response to altered price signals and increased geopolitical tensions.

3 Data

The empirical analysis in this paper relies on comprehensive administrative data from Thailand's customs authority, covering the universe of international trade transactions over the period 2013 to 2023. The dataset includes records of both exports and imports at the transaction level. Each observation contains information on trade values, physical quantities, destination or origin country, and product classification based on the Harmonized

[3]The waves of US and Chinese tariffs targeted different mixes of products. More than 80 percent of US imports from China of intermediate inputs faced new tariffs of 25 percent. But, several consumer products, such as clothes, toys and sports equipment faced lower or no tariffs. In contrast, China's tariff retaliation disproportionately focused on agricultural and seafood products. China avoided imposing tariffs on key inputs such as semiconductors and semiconductor manufacturing equipments, as well as autos (Bown, 2021).

System (HS) at the 11-digit level. Given the raw data, we initially exclude gold exports and imports; exclude transactions with values less than 1,500 baht; keep transactions with reporting units in kilograms or pieces; and, focus only on trade with Thailand's major trading partners.[4] All trade values are recorded in both Thai baht (THB) and US dollar (USD); in this analysis, we use trade values in Thai baht.

To harmonize the Thai customs data with international trade policy databases and ensure comparability across countries, we aggregate all trade flows to the HS-6 digit level, which represents the international standard for product-level analyses in trade policy research. We further collapse the data to the quarterly frequency to reduce volatility and zero trade flows, and further clean the data by focusing on products with existing transactions in every year before the trade war. We are, as a result, left with 3,765 products at the HS-6 levels.

We construct three mutually exclusive export categories based on destination: exports to the U.S., exports to China, and exports to the rest of the world (ROW), which can be further classified into more detailed export destinations. This categorization enables us to assess both direct and indirect exposure to the trade war, and to trace potential trade diversion effects arising from changes in relative market access conditions.

Table A.1 in the Appendix shows some facts regarding the sectoral distribution of Thai exports in overall and to three major export destinations, i.e., the U.S., China and ASEAN. Over 40 percent of Thai exports are from 'machinery' and 'electrical equipment' sectors, where The U.S. and ASEAN are their major importers. In particular, they account for around 60 percent of total Thai exports in the U.S. market. Thailand also exports a great deal of 'agricultural' and 'plastic & rubbers' products, mainly to China. Additionally, a large share of goods from the 'transportation' sector, including autos and auto parts, are exported to neighboring countries in ASEAN, as confirmed by Table A.2.

Figure A.1 shows trend of Thai exports over time. Exports to all three major export destinations exhibit growth during the sample periods. This comes despite the trade war in 2018-19 and the occurrence of COVID-19 pandemic, the latter causing a temporary drop in trade with ASEAN and China. Exports to the U.S., however, show a strong expansion, suggestive of trade diversion, resulting in an increase in the share of U.S. exports from around 10 percent to almost 20 percent of total Thai exports. On the flipped side of the coin, imports from China materially rise, especially after 2021. This may indicate the flooding of Chinese products into the Thai economy or the potential transshipment of Chinese goods to the U.S.. We will examine this in Section 6.

To measure exposure to trade policy shocks, we merge the Thai customs data with two

[4] 51 countries in total including Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Cambodia, Canada, Chile, China, Colombia, Czech Republic, Denmark, Ecuador, Finland, France, Germany, Hong Kong, Hungary, India, Indonesia, Israel, Italy, Japan, Korea, Kuwait, Lao PDR, Malaysia, Mexico, Myanmar, Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Poland, Qatar, Russian Federation, Saudi Arabia, Singapore, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Turkey, UAE, United Kingdom, United States, Vietnam.

external sources of tariff information. The first is the dataset compiled by Fajgelbaum et al. (2024), which systematically records the universe of retaliatory tariff actions taken by the U.S. and China between 2018 and 2019, including applied ad valorem rates at the HS-10 level. The second source is the extended database constructed by Bown (2021), which documents tariff adjustments (at the 8-digit level) and policy announcements beyond the initial phase of the trade war.

For each of the HS-6 products, we compute four measures of trade policy exposure: (i) U.S. tariffs on Chinese imports, (ii) Chinese tariffs on U.S. imports, (iii) US tariffs on Thai exports, and (iv) Chinese tariffs on Thai exports. The first two measures capture third-country tariff shocks that may create reallocation opportunities for Thai exporters, while the latter two, to be used as controlled variables, reflect direct protectionist actions against Thailand.

The computation of the first and third measures relies on data from Fajgelbaum et al. (2024), where we compute weighted averages of the 10-digit tariff rates using as weight the share of U.S. imports of Chinese and Thai HS-10 products within the corresponding HS-6 product category during 2013-2017. Using data from Bown (2021), the second measure is computed as weighted averages of the 8-digit tariff rates using the share of Chinese imports of U.S. products in 2017 as weights. For Chinese tariffs on Thai exports, we compute simple averages of ad valorem Most-Favoured Nation (MFN) tariff rates. These tariff exposure measures vary at the HS-6 product level and over time, and are assigned to Thai export flows accordingly.

Figure A.2 in the Appendix shows, for each sector, the variations in the weighted-average U.S. tariffs imposed on China, and weighted-average China tariffs imposed on the U.S. at HS-6 levels. Panel (a) suggests that the majority of HS-6 products face tariff exposure of 25 percent due to the U.S. tariffs, which is also the maximum tariff increases in almost every sector. The relatively lower tariff adjustments can be observed in the 'agricultural' sector, with median tariff increases of around 15 percent. Despite the observations above, there remain variations of tariff increases within each sector and for the whole economy, that can help with the identification of the trade-war impact of interest. In Panel (b), given the smaller coverage of Chinese tariffs on U.S. products, the median tariff increases are lower than those by the U.S. in all sectors. The lowest is in the 'transportation' sector, as China decided to suspend retaliation tariffs on imports of U.S. autos and parts at the beginning of 2019. This rather limited coverage of products facing tariff hikes creates significant variations in tariff exposures within and across industries.

4 Export Responses to the U.S.–China Trade War

This section describes the empirical framework used to estimate the impact of the U.S.–China trade war on Thailand's export performance. The identification strategy leverages two key sources of variation: (i) differences in product-level exposure to tariff

increases resulting from the bilateral escalation of trade tensions between the U.S. and China, and (ii) the staggered timing of tariff implementation across multiple rounds between 2018 and 2019.

The first dimension introduces cross-sectional variation, as tariff increases differed in magnitude and coverage across HS-6 product categories, as evident in Figure A.2. The second dimension adds a dynamic element, enabling us to track the evolution of Thailand's export responses over time. These variations allow us to compare changes in Thai exports across products with differing degrees of exposure to the trade war, both before and after the imposition of tariffs.

Importantly, Thai exports were not subject to any major, exclusive changes in tariff treatment by either the U.S. or China during the trade war period. This institutional feature enables us to isolate the indirect, general-equilibrium effects of the trade war—such as trade diversion and demand reallocation—from direct effects driven by changes in Thailand's market access.

4.1 Baseline Specification

Our baseline specification is estimated at the HS 6-digit product-by-destination-by-quarter level. We estimate the following regression:

$$y_{it}^{d} = \beta_1 \left(\text{Post}_{it} \times \Delta\tau_{it}^{US\to CN}\right) + \beta_2 \left(\text{Post}_{it} \times \Delta\tau_{it}^{CN\to US}\right) + \boldsymbol{\beta} \cdot \mathbf{X}_{it} + \epsilon_{it}, \tag{1}$$

where y_{it}^{d} denotes the logarithm of export value to destination d for HS-6 product i at time t. The variable Post_{it} is a binary indicator that equals one for periods the product i faces tariff increases due to the trade war, and zero otherwise. The variables $\Delta\tau_{it}^{US\to CN}$ and $\Delta\tau_{it}^{CN\to US}$ represent the cumulative increase in tariffs imposed by the U.S. on imports from China and by China on imports from the U.S., respectively. The cumulative increases are measured relative to the baseline tariff rates in place before the trade war began.

The vector $\mathbf{X}_{it}$ includes time-varying controls for the applied tariff rates imposed by the U.S. and China on Thai exports. The specification also incorporates time fixed effects to capture common macroeconomic shocks and product-by-quarter fixed effects to control for seasonal fluctuations in product-level trade flows. The variable ϵ_{it} is the error term. We estimate the model for total exports as well as separately for six export destinations: the U.S., China, Japan, Europe, ASEAN, and the rest of the world.

The coefficients of interest, β_1 and β_2, identify the differential change in Thai exports of products more exposed to the bilateral US–China tariff shocks relative to less exposed products. The specification thus provides a test of both substitution and spillover channels arising from the trade war. In the regression for total exports, these coefficients summarize the net effect of bilateral tariff shocks on Thailand's overall export performance, aggregating substitution and spillover channels across all destinations. A positive coefficient suggests that Thai exports expanded in response to rising geopolitical tensions, either by capturing

Table 1: The Effect of U.S.–China Trade War on Thai Exports by Destination.

	Dependent Variable: Log Thai Export Value						
	Total	USA	China	Japan	Europe	ASEAN	ROW
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\text{Post}_{it} \times \Delta\tau_{it}^{US \to CN}$	0.750**	1.624**	0.128	0.340	-0.053	0.873**	-0.211
	(0.346)	(0.709)	(0.775)	(0.561)	(0.613)	(0.371)	(0.503)
$\text{Post}_{it} \times \Delta\tau_{it}^{CN \to US}$	0.646*	0.526	-1.101	-0.226	0.235	0.614	0.290
	(0.365)	(0.550)	(0.730)	(0.521)	(0.599)	(0.432)	(0.507)
$\tau_{it}^{US \to TH}$	-0.737	-2.536**	-2.075	-3.173***	-2.715**	-1.725**	-2.184**
	(0.560)	(1.166)	(1.475)	(1.114)	(1.180)	(0.727)	(1.043)
$\tau_{it}^{CN \to TH}$	-0.496	1.038	-0.127	1.504	1.682	-0.101	1.816*
	(0.603)	(1.157)	(1.486)	(1.010)	(1.068)	(0.747)	(1.040)
Observations	135,960	60,940	53,196	77,176	57,552	118,404	91,080
R-squared	0.756	0.658	0.616	0.673	0.685	0.704	0.701
Adjusted R-squared	0.732	0.623	0.578	0.640	0.654	0.674	0.671
HS6 x Quarter FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Standard errors in parentheses are clustered at the HS-6 product level. All regressions control for U.S. and Chinese tariffs on Thai exports. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

displaced demand or by benefiting from global reallocation.

In the equation for exports to the U.S., β_1 reflects the extent to which Thai goods substitute for Chinese products in the U.S. market. A positive estimate indicates that Thai exporters gained market share as U.S. tariffs displaced Chinese competitors—consistent with substitution effects highlighted by Fajgelbaum et al. (2024) and Khandelwal (2023). The same logic applies for β_2 in the equation for exports to China. However, both coefficients may also be negative if Thai exports are complements to U.S. or Chinese goods. In this case, reduced bilateral trade may weaken Thai exports through joint demand or supply chain linkages.

In regressions for other destinations—Japan, Europe, ASEAN, and the rest of the world—β_1 and β_2 may capture different trade channels, such as spillover effects associated with export supply curve. These channels include scale economies, whereby expanded production for U.S. or Chinese markets lowers marginal costs and facilitates exports elsewhere. Alternatively, foreign buyers may respond to the trade war by diversifying their sourcing portfolios. Supply chain effects are also plausible: if declining exports from China or the U.S. reduce global demand for Thai intermediates, the coefficients may be negative. For example, β_1 in the regression for exports to China may capture reduced demand for inputs previously re-exported to the U.S., while β_2 in the regression for exports to the U.S. may reflect disruptions in Chinese-sourced components embedded in Thai goods.

Table 1 presents the baseline estimates of the impact of the U.S.–China trade war on Thailand's exports, where Columns (1) through (7) report results for total exports, the United States, China, Japan, Europe, ASEAN, and the rest of the world (ROW),

respectively. Standard errors are clustered at the HS-6 level.

Column (1) presents the results for Thailand's total exports. Only the tariff interaction terms for the U.S. tariff actions are positive and statistically significant at the 95-percent level. The coefficient on U.S. tariffs on Chinese goods is 0.75. This finding suggests that Thailand increased exports in product categories where Chinese firms faced heightened trade barriers. One plausible explanation is that U.S. importers sought to diversify their sourcing in response to tariff-induced uncertainty, reallocating demand toward alternative suppliers such as Thailand. The coefficient on Chinese retaliation is 0.65, indicating that the trade war may generate broad-based gains for Thai exporters, however the estimate is only weakly significant.

Thai exports to the US potentially explain increased exports to the world in response to U.S. tariffs on Chinese goods. In Column (2), the coefficient on U.S. tariffs on Chinese goods is large and statistically significant at 1.62. This result is consistent with the interpretation that Thai firms expanded market share in the U.S. in product lines where Chinese suppliers faced tariff-induced disadvantages, and therefore points to strong evidence of trade diversion. The finding is in line with Fajgelbaum et al. (2024), who earlier show that Thailand is among the countries that reaped export opportunities amid the trade war. Whereas their paper considers merely the contemporaneous impact, our results are, however, based on the post-event periods of five years, suggestive of longer-term implications that the trade war may have on global trade patterns. Nevertheless, we do not find any significant impact from Chinese retaliation on Thai exports to the U.S., in line with the finding with respect to total exports.

Despite significant responses of Thai exports to the U.S., Column (3) suggests that exports to China do not react to U.S.-China tariff actions. Neither of the tariff interaction terms is statistically significant, while the coefficient on China tariffs even turns negative. This suggests that Thailand did not experience measurable trade diversion into the Chinese market. One possible explanation is that Thai firms were unable to effectively substitute for U.S. exporters in the affected product categories, or that Chinese import demand remained stable in the short run.

Responses of Thai exports to the rest of the world are mostly muted and insignificant. The exception is strong and statistically significant effects for exports to ASEAN nations, as shown in Column (6). In particular, Thai exports to ASEAN increased by 0.87 in response to U.S. tariffs on Chinese goods. The coefficient for Chinese tariffs on U.S. goods is also large at 0.61, but insignificant. These results are in line with greater regional value chain integration (friendshoring) that could facilitate substitutions of Chinese products in the U.S. market. In addition, as emphasized in Fajgelbaum et al. (2024), Thai exports may benefit from downward supply curve, and expand export opportunities not only in the U.S., but also the ASEAN markets given geographical proximity. In columns (4) and (5), we show that Thai exports to Japan and Europe, two major destinations of Thai exports, do not significantly respond to both retaliatory actions.

4.2 Dynamic Effects

Next, we examine how the impact of the U.S.–China trade war on Thai exports evolved over time. To do so, we extend the baseline specification by replacing the post-treatment indicator with a set of quarter-specific indicators. This event-study approach allows us to trace the dynamic adjustment of Thai exports relative to a pre-treatment baseline.

The extended regression is as follows:

$$y_{it}^{d} = \sum_{k=-1}^{4} \beta_{k}^{US\to CN} \left(\text{Dur}_{k} \times \Delta\tau_{it}^{US\to CN}\right) + \sum_{k=-1}^{4} \beta_{k}^{CN\to US} \left(\text{Dur}_{k} \times \Delta\tau_{it}^{CN\to US}\right) + \boldsymbol{\beta}'\mathbf{X}_{it} + \varepsilon_{it}^{d}, \tag{2}$$

where Dur_k is a set of indicator variables that group quarters into yearly durations relative to the treatment period, the first quarter when product i faced a tariff increase. To be precise, $\text{Dur}_0 = 1$ if quarter t is within the first year post-treatment (i.e., quarters 0 to 3), $\text{Dur}_1 = 1$ if t is within the second year (quarters 4 to 7), and $\text{Dur}_2 = 1$ for the third year (quarters 8 to 11), and so on. To allow for a pre-trend test, we include the dummy Dur_{-1} which takes the value 1 in the four quarters preceding the treatment period. The coefficients $\beta_k^{US\to CN}$ and $\beta_k^{CN\to US}$ measure the differential impact of U.S. and Chinese tariff changes on Thai exports in duration k, relative to the pre-treatment baseline.

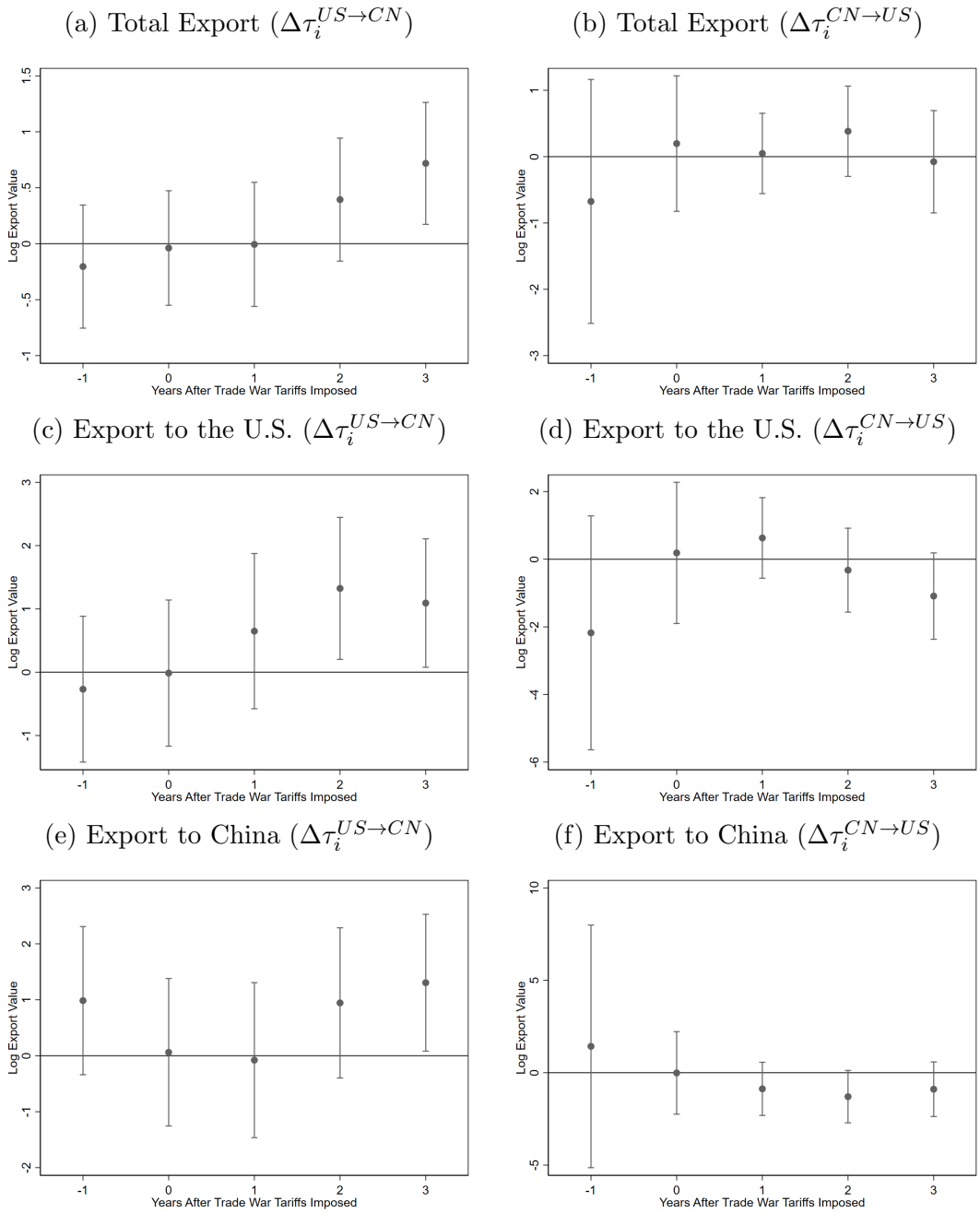
This specification allows us to assess both the timing and persistence of trade diversion effects. A gradual rise in the coefficients after the trade war would suggest adjustment frictions or delayed reallocation of trade flows. In contrast, an immediate and sustained increase would be consistent with rapid substitution away from U.S. and Chinese suppliers. The absence of significant pre-trends would support the identifying assumption that, conditional on controls, Thai exports would have evolved similarly across products with different levels of tariff exposure in the absence of the trade war.

Figure 1 sheds light on the dynamic export response by destination. In the case of total exports, the adjustment is more gradual. In Panel (a), a positive effect in response to the U.S. tariffs imposed on Chinese products emerges in the third year after the introduction of U.S. tariffs on China. This delayed response aligns with the average treatment effect of 0.75 reported in Table 1. The estimated impact four years after tariff shocks is weakly significant, but remains large. The results, thus, imply rather persistent impact of the trade war. In contrast, no discernible pattern is observed in response to Chinese retaliatory tariffs (Panel (b)).

Thai exports to the United States exhibit a delayed but pronounced response to U.S. tariffs on China (Panel (c)). A positive effect arises in the second and third years, suggesting that trade diversion gained momentum as U.S. importers restructured their supply chains. This dynamic pattern is consistent with the average treatment effect of 1.62 reported in Table 1. Once again, we do not observe any significant impact from China tariffs to the U.S., as shown in Panel (d).

For exports to China, a different pattern emerges. While Table 1 reports no significant

Figure 1: Dynamic Effects of the U.S.–China Trade War on Thai Exports



Note: Each panel plots quarterly interaction coefficients from Equation (2), estimated at the product-destination level. The y-axis measures the differential change in Thai exports associated with a one-unit increase in tariff exposure. The x-axis denotes time (year) relative to the quarter of tariff implementation. The bands represent 95% confidence intervals.

average effect of Chinese retaliatory tariffs, the dynamic specification reveals a negative and statistically significant impact beginning in year two and then in year four (Panel (f)). This negative response may reflect the complementarity between Thai and U.S. products for those U.S. goods that become exposed to China tariffs. Alternatively, it may indicate

that Chinese producers may be able to expand production of the affected goods and become less reliant on imports.

5 Product-Level Heterogeneity

In this section, we examine heterogeneity in the product-level responses to US-China tariff adjustments to gain added insights into which products drive the aggregate and country-level trade responses to tariff shocks. We focus on three export destinations, including the U.S., China and ASEAN, where significant trade responses are observed, and consider heterogeneous responses along four dimensions.

First, export responses may differ between manufacturing and agricultural sectors. Second, we differentiate between commodity versus non-commodity goods, since these two product groups may differ in terms of demand elasticities. We follow Gopinath et al. (2020) by classifying broadly the commodities as HS chapters 1–27, and 72–83, which comprise animal, vegetable, food, mineral and metal products. However, classifying in this way yield slight difference between agricultural products and commodities, as the latter only additionally include mineral and metal products.

Third, we examine the differential responses in products classified by the U.S. as advanced technology products (ATP). In 1989, the US Census Bureau introduced the ATP classification to track trade in high-technology products. For the U.S., one of the stated geopolitical goals of the trade war was to reduce its imports and exports of sensitive technology products with China. We pin down these advanced technology products, using broad 2-digit industries.[5] Last, in an era of global value chains, we differentiate products into 'raw material and intermediate inputs', 'consumer goods' and 'capital goods'. We explore these four dimensions by interacting tariff exposure with a dummy variable indicating whether a product falls within certain categories.[6]

Figure 2 shows heterogeneous export responses to the U.S. tariffs on Chinese products. Focusing first on Thai exports to U.S. (panel (b)), which react positively in aggregate, we find that the responses are significant for non-commodity manufacturing and capital goods, with estimates close to or above 2.0 for capital goods. Among these products, the impact of the U.S. tariffs is only significant for strategic industries. This implies that although the U.S. government attempts to protect these industries from Chinese imports, trade diversion effects take place and so the U.S. still imports these products from elsewhere. In panel (c), we still do not find any significant impact on exports to China. On exports to ASEAN, although we similarly find relocation towards technology and non-commodity manufacturing products, they are mainly raw material and intermediate goods (panel (d)). This latter finding may reflect strengthened regional supply chain integration, as Thai firms export more of inputs to ASEAN nations as opposed final consumer products. In

[5]HS-2: 28, 29, 30, 38, 84, 85, 87, 88, 90, 93, 98

[6]Full regression estimates can be found in Tables A.4–A.7 in the Appendix

panel (a), sectoral results for overall export responses are mostly in line with those found for exports to major destinations. However, a puzzle emerges as responses of consumer goods appear to be the largest and significant.

The results for Chinese retaliation are more mixed across sectors, as shown in Figure 3. While most estimates appear to be insignificant, the responses of exports to China tend to be negative for non-commodity manufacturing products (panel (c)). Large negative estimates are observed for capital goods as well as raw material and intermediate inputs. On the other hand, we find positive export responses to ASEAN but only for agricultural commodity and consumer products. We note that U.S. agricultural products all face large retaliatory tariffs increases. Thus, whether Thai products are subsequently channeled through China to substitute for U.S. goods remains an interesting question to be further explored.

These results highlight meaningful sectoral heterogeneity in Thailand's export response to the U.S.–China trade war. Thai manufacturing firms appear to have gained from the imposition of U.S. tariffs on Chinese goods, especially in regional and U.S. markets. In contrast, agricultural exporters seem to have benefited from trade realignments triggered by Chinese retaliation.

6 Evidence of Transshipment

While the previous section shows higher exports to the US among tariffed products, this may reflect potential transshipment of imports from China and/or increased supply chain integration with China (Alfaro and Chor, 2023; Freund et al., 2024). Both can serve as means to circumvent tariffs or other trade restrictions, with the former contributing to fewer or no value-added towards the Thai economy. Figure A.3 plots the shares of U.S. exports and Chinese imports, both of which exhibit a rising trend after the 2018 trade war. Through the following specification, we examine whether imports from China explain Thai exports to the U.S. among tariffed products in the post-tariff periods:

$$\begin{aligned} y_{it}^{US} = \beta_1 \left(im_{st}^{CN} \times \text{Tariffed}_i^{US \to CN} \times \text{Post}_{it} \right) + \beta_2 \left(im_{st}^{CN} \times \text{Tariffed}_i^{US \to CN} \right) \\ + \beta_3 im_{st}^{CN} + \beta_4 \left(\text{Tariffed}_i^{US \to CN} \times \text{Post}_{it} \right) + \boldsymbol{\beta} \cdot \mathbf{X}_{it} + \epsilon_{it}, \end{aligned} \tag{3}$$

where $\text{Tariffed}_i^{US \to CN}$ is the dummy variable indicating whether the product is among those that experience higher U.S. tariffs on Chinese goods.

In the same spirit as Freund et al. (2024), we explore two different levels of Chinese imports, i.e., at the HS-6 and HS-2 levels. While the former indicates the possibility of transshipment as firms re-export imported Chinese goods (of similar HS-6) to the U.S., the latter also includes the potential for supply chain integration with China. For example, Chinese firms may set up factories in Thailand and import needed inputs (e.g.,

Table 2: Evidence of Transshipment and Supply Chain Effects

	(1)	(2)	(3)	(4)
Import HS6 from China$_{it}$	0.031			
	(0.049)			
... × Tariffed$_i$	-0.039			
	(0.051)			
... × Tariffed$_i$ × Post$_{it}$	0.062***			
	(0.012)			
Import HS2 from China$_{it}$		-0.022		
		(0.021)		
... × Tariffed$_i$		0.013		
		(0.023)		
... × Tariffed$_i$ × Post$_{it}$		0.038***		
		(0.009)		
Lagged import HS6 from China$_{it}$			0.029	
			(0.054)	
... × Tariffed$_i$			-0.048	
			(0.055)	
... × Tariffed$_i$ × Post$_{it}$			0.059***	
			(0.011)	
Lagged import HS2 from China$_{it}$				-0.017
				(0.027)
... × Tariffed$_i$				0.003
				(0.028)
... × Tariffed$_i$ × Post$_{it}$				0.036***
				(0.009)
Tariffed$_i$ × Post$_{it}$	-0.724***	-0.542**	-0.702***	-0.518**
	(0.252)	(0.259)	(0.246)	(0.254)
Observations	60,940	60,940	59,555	59,555
R-squared	0.658	0.658	0.662	0.661
Adjusted R-squared	0.624	0.624	0.627	0.626
HS6 x Quarter FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: Standard errors in parentheses are clustered at the HS-6 product level. All regressions control for U.S. and Chinese tariffs on Thai exports. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

HS854190: parts of diodes) from China to produce output (e.g., HS854140: LED) for export purposes. Therefore, increases in Thai exports to the U.S. will be accompanied by greater imports of Chinese products from broader categories such as products with the similar HS-2 classification. From the equation above, β_1 will be the coefficient of interest.

Results, as reported in Table 2, show that increased imports from China, both in two and six digits, are significantly correlated with exports to the U.S.. The effect of Chinese imports at the 6-digit level appear to be around twice more important, as reflected by the higher coefficient. The findings potentially imply larger roles of product transshipment from China through Thailand, as opposed to supply chain integration with China. In Columns 3 and 4, we use lagged Chinese imports to account for time lags in producing and exporting products using Chinese inputs. Results are similar to when contemporaneous Chinese imports are used. This evidence of transshipment or trade re-routing means that

the Thai export sector may not reap gains from trade diversion as much, despite the significant expansion of exports to the U.S.. It, however, differs from Hayakawa (2024), who documents greater demand for upstream products from China, in the context of machinery industries.

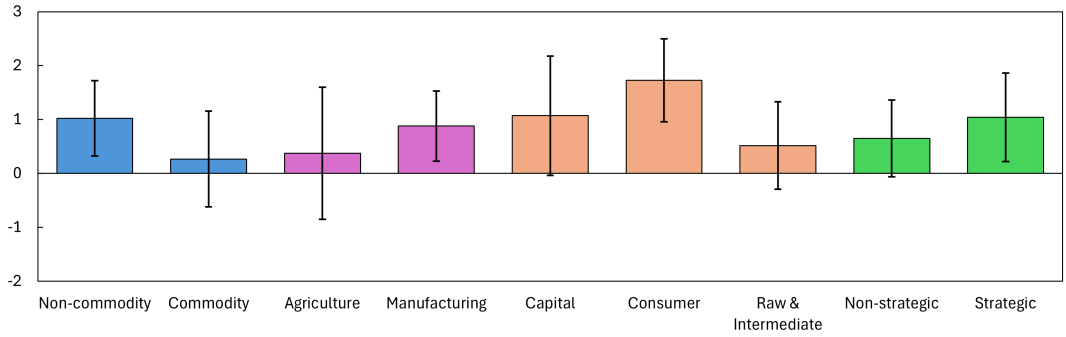
7 Conclusion

The 2018 US-China trade war significantly reshaped global trade patterns, and this paper provides evidence on how third-party exporting countries, specifically Thailand, responded to these tensions. Leveraging detailed Thai customs data from 2013 to 2023 and employing a difference-in-differences framework, our study estimates the impact of U.S. and Chinese tariff increases on Thai exports at the HS-6 level. We find robust evidence of trade diversion: Thailand experienced a substantial increase in exports to U.S., as well as to ASEAN. This increase was particularly notable in product categories highly exposed to US tariffs on Chinese goods. The positive effect on Thai exports to the U.S. emerged with a delay, appearing in the second and third years after the tariffs were introduced, consistent with a gradual restructuring of US supply chains as importers sought alternative sourcing relationships. In contrast, we observed negative responses of exports to China to the Chinese retaliatory actions, but with some delays. In addition, we highlight that greater exports to U.S. may only reflect transshipment of Chinese products.

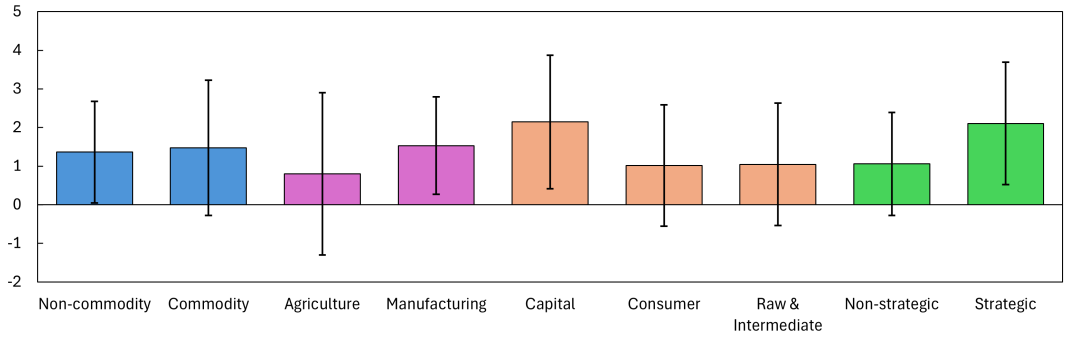
Building on these findings, future research could explore several avenues to deepen our understanding of trade war impacts. First, it would be valuable to identify further channels underlying the trade war's effects, especially those related to global supply chains. For instance, investigating whether reduced US demand for Chinese products subsequently lowers Chinese demand for inputs or upstream products from Thailand, which would require the integration of input-output tables to map supply linkages across countries. Second, delving deeper into the heterogeneity of the trade war's impact is crucial. This includes examining whether higher exports to the U.S. occurred in sectors where Thailand possesses a comparative advantage, or if benefits were reaped by sectors with initially low export volumes to the U.S. that subsequently expanded production. It is also worth investigating if these gains are concentrated in sectors where China lost significant market share in the U.S. market. Lastly, a firm-level analysis could offer granular insights into the types of firms that increased exports to the U.S., the roles of extensive versus intensive margins in this expansion, and whether firms of Chinese nationality played a part. Such analysis could also shed light on observable trade re-routing at the firm level.

Figure 2: Heterogeneous Effects of U.S. tariffs on Chinese Products ($\Delta\tau_i^{US\to CN}$) on Thai Exports across Different Product Groups

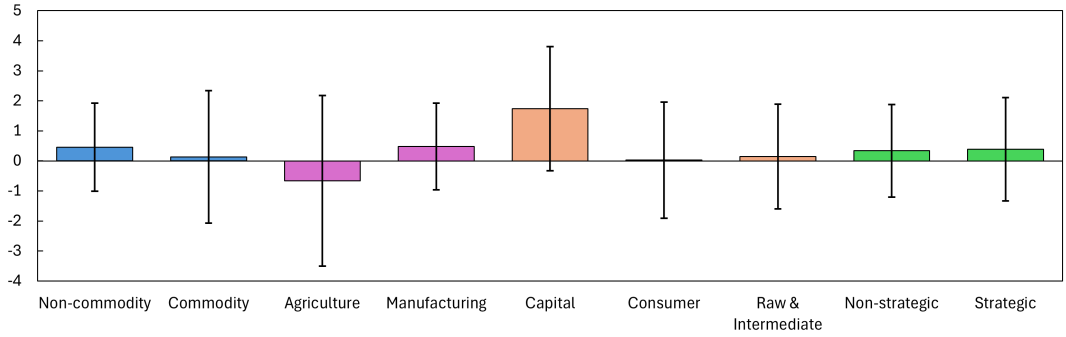
(a) Total Export



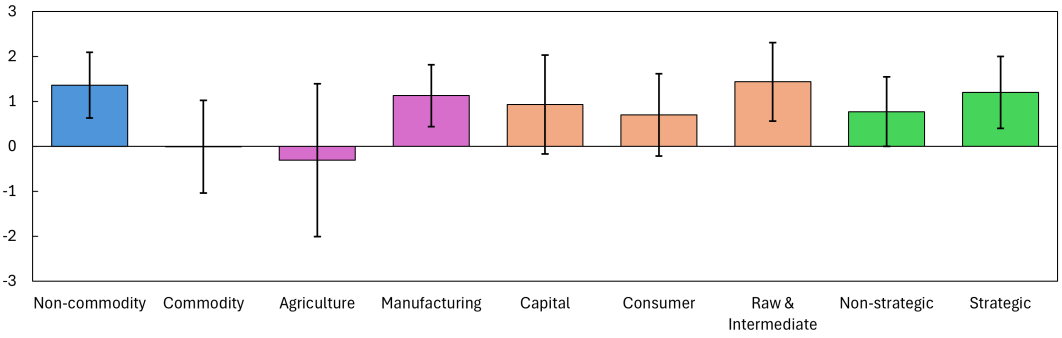
(b) Export to the US



(c) Export to China



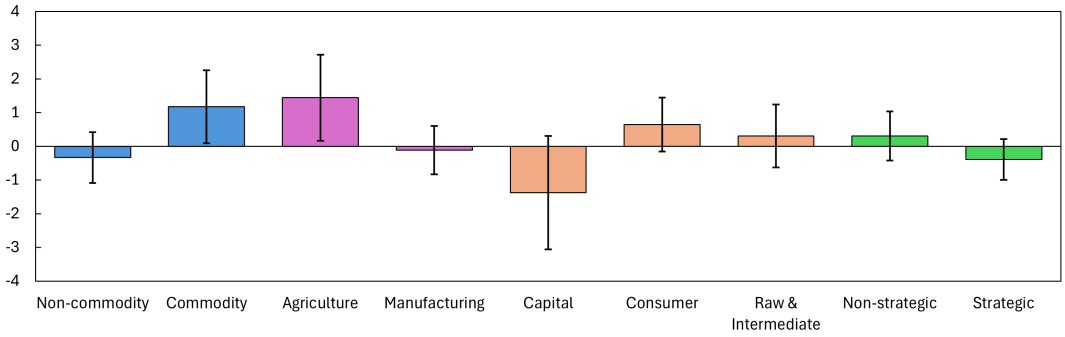
(d) Export to ASEAN



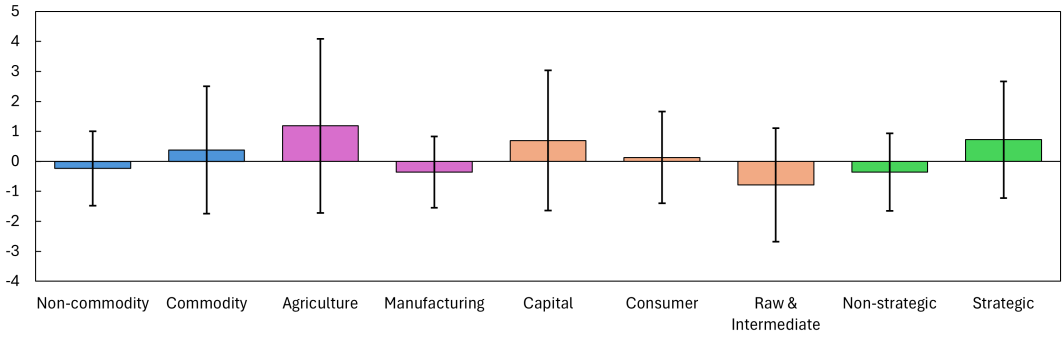
Note: This Figure reports the effects of U.S. tariff changes on Thai exports of each product group. 95-percent confidence intervals are computed based on standard errors from the Wald test, which are clustered at the HS-6 product level. Details of coefficient estimates are shown in Tables A.4-A.7.

Figure 3: Heterogeneous Effects of China tariffs on U.S. Products ($\Delta\tau_i^{CN\to US}$) on Thai Exports across Different Product Groups

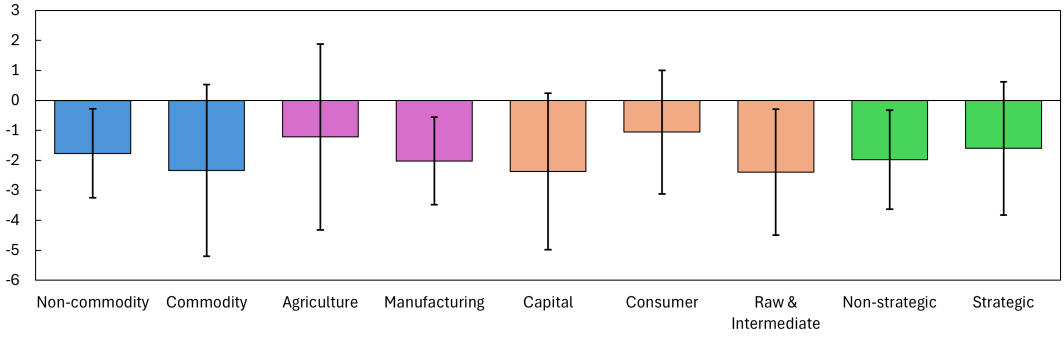
(a) Total Export



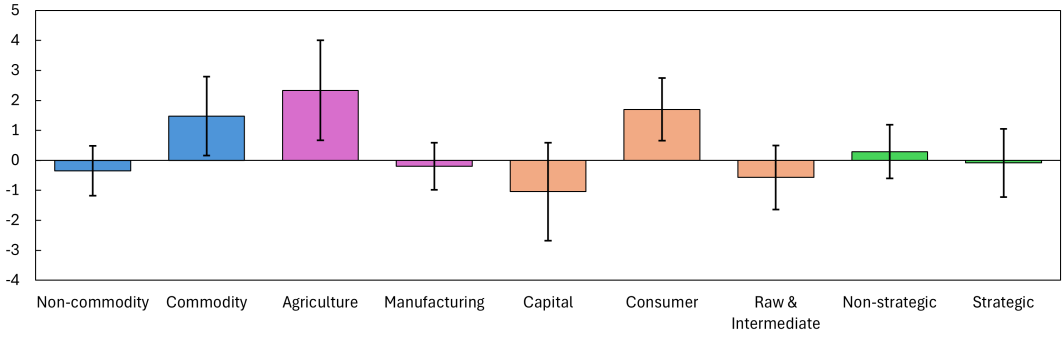
(b) Export to the US



(c) Export to China



(d) Export to ASEAN



Note: This Figure reports the effects of China tariff changes on Thai exports of each product group. 95-percent confidence intervals are computed based on standard errors from the Wald test, which are clustered at the HS-6 product level. Details of coefficient estimates are shown in Tables A.4-A.7.

References

Alfaro, Laura and Davin Chor, "Global Supply Chains: The Looming "Great Reallocation"," NBER Working Papers 31661, National Bureau of Economic Research, Inc September 2023.

Amiti, Mary, Stephen J. Redding, and David E. Weinstein, "The Impact of the 2018 Tariffs on Prices and Welfare," *Journal of Economic Perspectives*, Fall 2019, *33* (4), 187–210.

_ , _ , and _ , "Who's Paying for the US Tariffs? A Longer-Term Perspective," *AEA Papers and Proceedings*, May 2020, *110*, 541–546.

Bown, Chad P., "The US–China trade war and Phase One agreement," *Journal of Policy Modeling*, 2021, *43* (4), 805–843.

Caliendo, Lorenzo and Fernando Parro, "Chapter 4 - Trade policy," in Gita Gopinath, Elhanan Helpman, and Kenneth Rogoff, eds., *Handbook of International Economics: International Trade, Volume 5*, Vol. 5 of *Handbook of International Economics*, Elsevier, 2022, pp. 219–295.

Cavallo, Alberto, Gita Gopinath, Brent Neiman, and Jenny Tang, "Tariff Pass-Through at the Border and at the Store: Evidence from US Trade Policy," *American Economic Review: Insights*, March 2021, *3* (1), 19–34.

Fajgelbaum, Pablo D. and Amit K. Khandelwal, "The Economic Impacts of the US–China Trade War," *Annual Review of Economics*, August 2022, *14* (1), 205–228.

_ , Pinelopi K. Goldberg, Patrick J. Kennedy, Amit K. Khandelwal, and Daria Taglioni, "The US-China Trade War and Global Reallocations," *American Economic Review: Insights*, June 2024, *6* (2), 295–312.

_ , _ , _ , and _ , "The Return to Protectionism," *The Quarterly Journal of Economics*, 2020, *135* (1), 1–55.

Flaaen, Aaron, Ali Hortaçsu, and Felix Tintelnot, "The Production Relocation and Price Effects of US Trade Policy: The Case of Washing Machines," *American Economic Review*, July 2020, *110* (7), 2103–2127.

Freund, Caroline, Aaditya Mattoo, Alen Mulabdic, and Michele Ruta, "Is US trade policy reshaping global supply chains?," *Journal of International Economics*, 2024, *152* (C).

Gopinath, Gita, Emine Boz, Camila Casas, Federico J. Díez, Pierre-Olivier Gourinchas, and Mikkel Plagborg-Møller, "Dominant Currency Paradigm," *American Economic Review*, March 2020, *110* (3), 677–719.

Handley, Kyle, Fariha Kamal, and Ryan Monarch, "Rising Import Tariffs, Falling Export Growth: When Modern Supply Chains Meet Old-Style Protectionism," Working Papers 20-01, Center for Economic Studies, U.S. Census Bureau January 2020.

Hayakawa, Kazunobu, "Do Exports to the US Increase Imports from China during the US–China Tariff War?," IDE Discussion Papers 946, Institute of Developing Economies, Japan External Trade Organization(JETRO) November 2024.

Huang, Yi, Chen Lin, Sibo Liu, and Heiwai Tang, "Trade networks and firm value: Evidence from the U.S.-China trade war," *Journal of International Economics*, 2023, *145* (C).

Iyoha, Ebehi, Edmund J Malesky, Jaya Y Wen, Sung-Ju Wu, and Bo Feng, "Exports in Disguise: Trade Re-Routing During the US-China Trade War," Technical Report, Harvard Business School Working Paper 2024.

Jiao, Yang, Zhikuo Liu, Zhiwei Tian, and Xiaxin Wang, "The Impacts of the U.S. Trade War on Chinese Exporters," *The Review of Economics and Statistics*, November 2024, *106* (6), 1576–1587.

Khandelwal, Amit K., "The US-China Trade War and India's Export Response," *India Policy Forum*, 2023, *19* (1), 181–222.

Utar, Hâle, Alfonso Cebreros Zurita, and Luis Bernardo Torres Ruiz, "The US-China Trade War and the Relocation of Global Value Chains to Mexico," Technical Report 2023.

Wang, Mengqi and Swarnali A Hannan, "Trade Diversion Effects from Global Tensions—Higher Than We Think," IMF Working Papers 2023/234, International Monetary Fund November 2023.

Appendix

Appendix A More Figures and Tables

Table A.1: Thai Exports by Sectors

	Total		US		China		ASEAN	
Sector	Value	Share	Value	Share	Value	Share	Value	Share
Agriculture	1204	17.6%	140	9.7%	336	33.6%	287	18.3%
Apparel	189	2.8%	40	2.8%	12	1.2%	50	3.2%
Chemicals	389	5.7%	23	1.6%	63	6.3%	154	9.8%
Electrical	1508	22.0%	511	35.5%	104	10.4%	268	17.1%
Machinery	1298	19.0%	346	24.0%	116	11.6%	251	16.0%
Materials	502	7.3%	47	3.3%	26	2.6%	166	10.6%
Metals	429	6.3%	84	5.83%	48	4.8%	104	6.6%
Minerals	73	1.1%	1	0.0%	8	0.8%	46	3.0%
Miscellaneous	275	4.0%	72	5.0%	25	2.5%	38	2.4%
Plastics & rubbers	976	14.3%	175	12.2%	260	26.0%	202	12.9%
Transportation	1006	14.7%	67	4.6%	29	2.9%	303	19.4%
All sectors	6845	100%	1439	100%	999	100%	1566	100%

Note: The table reports average values (in billions of Thai baht) and the share of Thai exports to the world, the US, China and ASEAN between 2022 and 2023 across sectors. Sectors are classified according to two-digit HS codes: Agriculture (1-24), Minerals (25-27), Chemicals (28-38), Plastics & rubbers (39-40), Materials (41-49, 68-71), Apparel (50-67), Metals (72-83), Machinery (84), Electrical (85), Transportation (86-89), Miscellaneous (90-97).

Table A.2: Thai Sectoral Exports by Destination Countries

Sector	US	China	ASEAN	ROW	Total
Agriculture	11.6%	27.9%	23.8%	36.6%	100%
Apparel	21.2%	6.4%	26.3%	46.0%	100%
Chemicals	5.9%	16.3%	39.6%	38.3%	100%
Electrical	33.9%	6.9%	17.8%	41.4%	100%
Machinery	26.7%	8.9%	19.3%	45.1%	100%
Materials	9.4%	5.2%	33.1%	52.4%	100%
Metals	19.5%	11.3%	24.2%	45.0%	100%
Minerals	0.7%	10.3%	63.1%	25.9%	100%
Miscellaneous	26.3%	9.2%	13.7%	50.8%	100%
Plastics & rubbers	17.9%	26.6%	20.7%	34.7%	100%
Transportation	6.6%	2.9%	30.1%	60.3%	100%

Note: The table reports the average share of Thai sectoral exports to the US, China and ASEAN between 2022 and 2023 across destination countries. Sectors are classified according to two-digit HS codes: Agriculture (1-24), Minerals (25-27), Chemicals (28-38), Plastics & rubbers (39-40), Materials (41-49, 68-71), Apparel (50-67), Metals (72-83), Machinery (84), Electrical (85), Transportation (86-89), Miscellaneous (90-97).

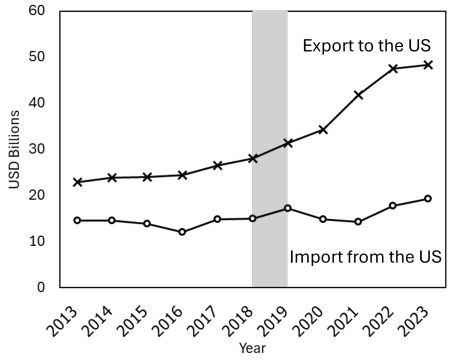
Table A.3: Descriptive Statistics

	N	Mean	Std. Dev.	1st	50th	99th
Log Export to						
- Total	135,960	16.56	4.10	0.00	17.18	25.75
- USA	60,940	14.81	4.77	0.00	15.83	24.75
- China	53,196	14.33	5.05	0.00	15.43	24.00
- Japan	77,176	14.60	4.73	0.00	15.58	23.49
- Europe	57,552	14.67	4.64	0.00	15.62	23.75
- ASEAN	118,404	15.51	4.03	0.00	16.17	24.43
- ROW	91,080	15.32	4.45	0.00	16.09	25.46
Log HS6 Import from China	60,940	15.79	4.81	0.00	17.00	24.68
Log HS2 Import from China	60,940	20.79	5.89	0.00	21.66	26.02
$\tau^{US \to CN}$	74,160	0.19	0.11	0.00	0.25	0.63
$\Delta\tau^{US \to CN}$	74,160	0.16	0.11	0.00	0.22	0.65
$\tau^{CN \to US}$	74,160	0.17	0.13	-0.03	0.14	0.90
$\Delta\tau^{CN \to US}$	74,160	0.10	0.09	-0.25	0.08	0.25
$\tau^{US \to TH}$	74,160	0.02	0.05	0.00	0.00	0.50
$\Delta\tau^{US \to TH}$	74,160	0.00	0.02	0.00	0.00	0.50
$\tau^{CN \to TH}$	74,160	0.08	0.06	0.00	0.07	0.65
$\Delta\tau^{CN \to TH}$	74,160	-0.02	0.04	-0.27	0.00	0.00

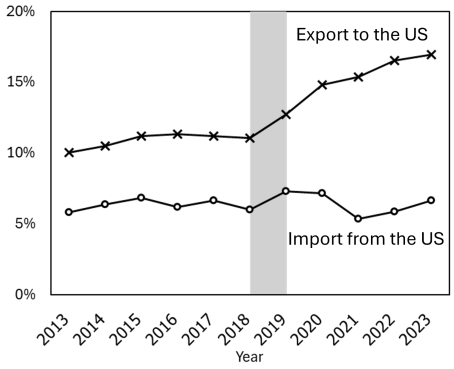
Note: This table presents summary statistics of log exports to major destination countries, based on data used for estimation after outlier removal. Tariff rates and their changes are calculated using data from 2017 onward.

Figure A.1: Values and Shares of Thai Exports and Imports by Destination and Source Countries

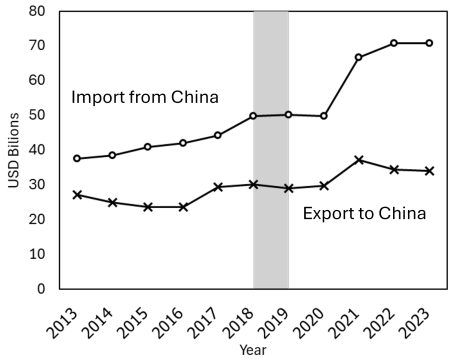
(a) Trade Value with the U.S.



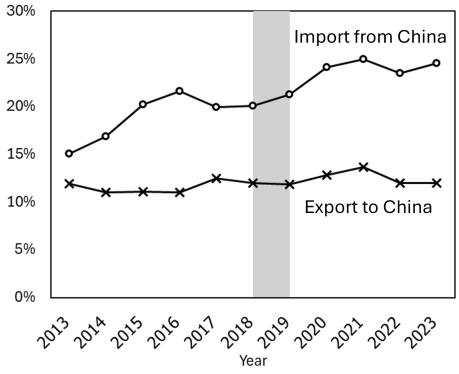
(b) Trade Share with the U.S.



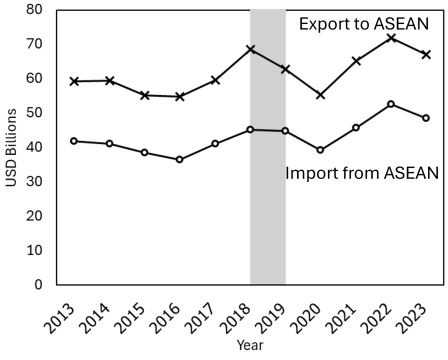
(c) Trade Value with China



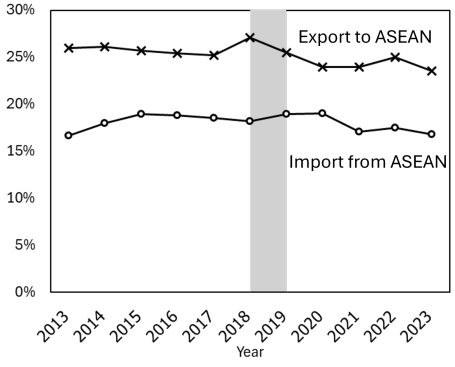
(d) Trade Share with China



(e) Trade Value with ASEAN



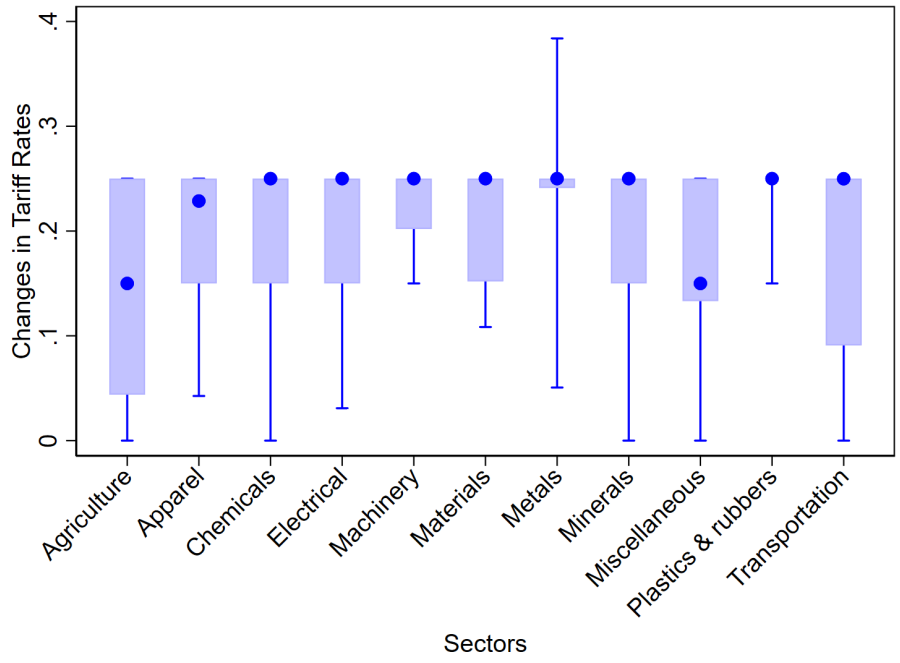
(f) Trade Share with ASEAN



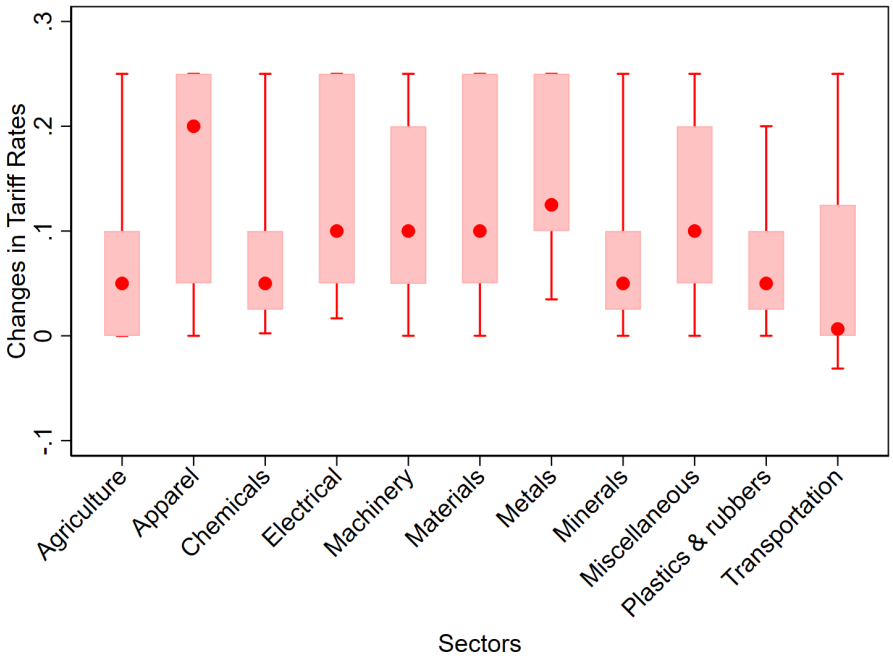
Note: Panels (a), (c) and (e) of this Figure show the annual values of Thai exports in US dollar terms to (imports from) certain destination (source) countries over time. Panels (b), (d) and (f) report their shares to the corresponding total Thai exports or imports.
Source: The Bank of Thailand

Figure A.2: Additional Tariffs from The 2018 U.S.–China Trade War

(a) U.S. tariffs on Chinese Products ($\Delta\tau^{US\to CN}$)



(b) Chinese tariffs on U.S. Products ($\Delta\tau^{CN\to US}$)



Note: This Figure reports the set of tariff changes imposed by the U.S. (Panel A) and China (Panel B), by sector. The solid dots indicate the median tariff increase, the boxes denote the 25^{th} and 75^{th} percentiles, and whiskers show the 10^{th} and 90^{th} percentiles based on tariff changes in 2023 relative to pre-war periods at HS-6 product levels. Sectors are classified according to two-digit HS codes: Agriculture (1-24), Minerals (25-27), Chemicals (28-38), Plastics & rubbers (39-40), Materials (41-49, 68-71), Apparel (50-67), Metals (72-83), Machinery (84), Electrical (85), Transportation (86-89), Miscellaneous (90-97).

Table A.4: Heterogeneous Effects of the Trade War: Total Exports

	Manufacturing (1)	Commodity (2)	Strategic (3)	Non-capital (4)
$\text{Post}_{it} \times \Delta\tau_{it}^{US \to CN}$	0.375	0.914**	0.648*	1.070*
	(0.624)	(0.387)	(0.363)	(0.566)
... $\times$ Manufacturing_i	0.504			
	(0.603)			
... $\times$ Commodity_i		-0.313		
		(0.411)		
... $\times$ Strategic_i			0.395	
			(0.433)	
... $\times$ Consumer_i				0.657
				(0.589)
... $\times$ $\text{Raw and Intermediate}_i$				-0.552
				(0.602)
$\text{Post}_{it} \times \Delta\tau_{it}^{CN \to US}$	1.441**	-0.224	0.309	-1.379
	(0.650)	(0.414)	(0.373)	(0.859)
... $\times$ Manufacturing_i	-1.550**			
	(0.714)			
... $\times$ Commodity_i		0.806		
		(0.589)		
... $\times$ Strategic_i			-0.702	
			(0.674)	
... $\times$ Consumer_i				2.025**
				(0.912)
... $\times$ $\text{Raw and Intermediate}_i$				1.684*
				(0.963)
Observations	135,960	135,960	135,960	131,912
R-squared	0.756	0.756	0.756	0.756
Adjusted R-squared	0.732	0.732	0.732	0.732
HS6 x Quarter FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: Standard errors in parentheses are clustered at the HS-6 product level. All regressions include U.S. and Chinese tariffs on Thai exports. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

Table A.5: Heterogeneous Effects of the Trade War: Exports to the U.S.

	Manufacturing (1)	Commodity (2)	Strategic (3)	Non-capital (4)
$\text{Post}_{it} \times \Delta\tau_{it}^{US \to CN}$	0.799	0.911	1.056	2.144**
	(1.071)	(0.717)	(0.682)	(0.881)
... $\times$ Manufacturing_i	0.731			
	(0.912)			
... $\times$ Commodity_i		0.913		
		(0.667)		
... $\times$ Strategic_i			1.050	
			(0.698)	
... $\times$ Consumer_i				-1.129
				(0.896)
... $\times$ $\text{Raw and Intermediate}_i$				-1.097
				(0.880)
$\text{Post}_{it} \times \Delta\tau_{it}^{CN \to US}$	1.187	-0.362	-0.358	0.695
	(1.480)	(0.704)	(0.661)	(1.193)
... $\times$ Manufacturing_i	-1.544			
	(1.579)			
... $\times$ Commodity_i		0.721		
		(1.035)		
... $\times$ Strategic_i			1.080	
			(1.166)	
... $\times$ Consumer_i				-0.564
				(1.382)
... $\times$ $\text{Raw and Intermediate}_i$				-1.479
				(1.512)
Observations	60,940	60,940	60,940	59,004
R-squared	0.658	0.658	0.658	0.657
Adjusted R-squared	0.623	0.623	0.624	0.622
HS6 x Quarter FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: Standard errors in parentheses are clustered at the HS-6 product level. All regressions include U.S. and Chinese tariffs on Thai exports. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

Table A.6: Heterogeneous Effects of the Trade War: Exports to China

	Manufacturing (1)	Commodity (2)	Strategic (3)	Non-capital (4)
$\text{Post}_{it} \times \Delta\tau_{it}^{US \to CN}$	-0.664	0.239	0.336	1.739*
	(1.449)	(0.806)	(0.787)	(1.052)
... $\times$ Manufacturing_i	1.141			
	(1.425)			
... $\times$ Commodity_i		0.249		
		(0.800)		
... $\times$ Strategic_i			0.048	
			(0.821)	
... $\times$ Consumer_i				-1.713
				(1.198)
... $\times$ $\text{Raw and Intermediate}_i$				-1.597
				(1.013)
$\text{Post}_{it} \times \Delta\tau_{it}^{CN \to US}$	-1.220	-2.058**	-1.979**	-2.370*
	(1.578)	(0.895)	(0.843)	(1.331)
... $\times$ Manufacturing_i	-0.800			
	(1.693)			
... $\times$ Commodity_i		0.498		
		(1.242)		
... $\times$ Strategic_i			0.380	
			(1.370)	
... $\times$ Consumer_i				1.313
				(1.613)
... $\times$ $\text{Raw and Intermediate}_i$				-0.025
				(1.684)
Observations	60,940	60,940	60,940	59,004
R-squared	0.658	0.658	0.658	0.657
Adjusted R-squared	0.623	0.623	0.624	0.622
HS6 x Quarter FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

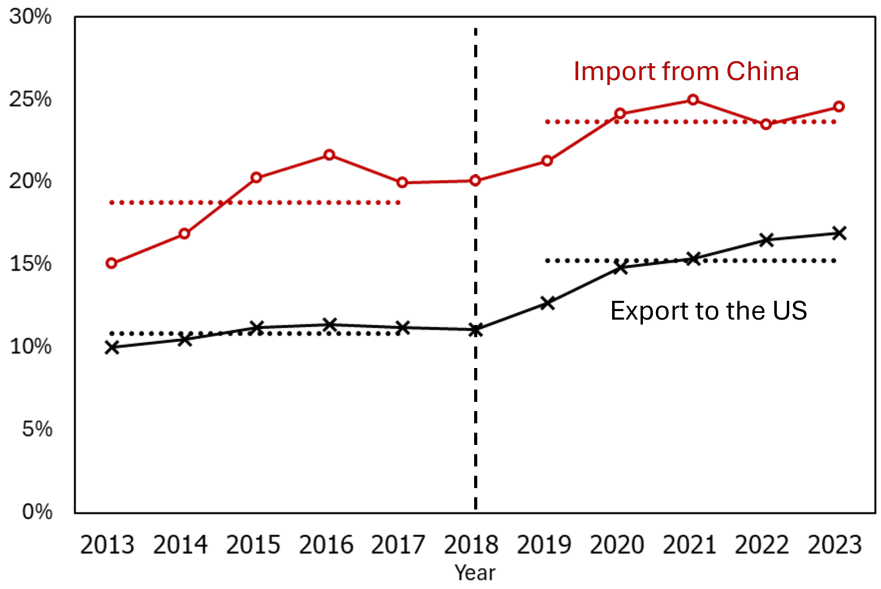
Note: Standard errors in parentheses are clustered at the HS-6 product level. All regressions include U.S. and Chinese tariffs on Thai exports. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

Table A.7: Heterogeneous Effects of the Trade War: Exports to ASEAN

	Manufacturing (1)	Commodity (2)	Strategic (3)	Non-capital (4)
$\text{Post}_{it} \times \Delta\tau_{it}^{US \to CN}$	-0.308	1.389***	0.775*	0.934*
	(0.869)	(0.410)	(0.396)	(0.562)
... $\times$ Manufacturing_i	1.437*			
	(0.860)			
... $\times$ Commodity_i		-1.076**		
		(0.442)		
... $\times$ Strategic_i			0.429	
			(0.428)	
... $\times$ Consumer_i				-0.232
				(0.637)
... $\times$ $\text{Raw and Intermediate}_i$				0.503
				(0.586)
$\text{Post}_{it} \times \Delta\tau_{it}^{CN \to US}$	2.336***	-0.510	0.293	-1.045
	(0.852)	(0.482)	(0.454)	(0.834)
... $\times$ Manufacturing_i	-2.530***			
	(0.906)			
... $\times$ Commodity_i		1.635**		
		(0.652)		
... $\times$ Strategic_i			-0.379	
			(0.690)	
... $\times$ Consumer_i				2.746***
				(0.940)
... $\times$ $\text{Raw and Intermediate}_i$				0.476
				(0.977)
Observations	118,404	118,404	118,404	115,104
R-squared	0.704	0.704	0.704	0.703
Adjusted R-squared	0.674	0.674	0.674	0.673
HS6 x Quarter FE	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes

Note: Standard errors in parentheses are clustered at the HS-6 product level. All regressions include U.S. and Chinese tariffs on Thai exports. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

Figure A.3: Thai Export Share to the U.S. versus Import Share from China



Note: This Figure reports the annual shares of Thai exports to (imports from) the U.S. as a ratio of total Thai exports (imports).
Source: The Bank of Thailand