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Trade Diversion, Supply-Chain Reconfiguration, and Rerouting During the U.S.–China Trade War*

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Abstract

How did the 2018 U.S.–China trade war affect bystander economies embedded in global value chains? Using Thai customs data from 2013 to 2023, we document sizable trade diversion toward Thailand, a major third-country exporter with extensive trade links to both the United States and China. Thai exports to the U.S. expanded more in products facing larger U.S. tariff increases on Chinese goods. This response was delayed, emerging only after three to four years, and was concentrated in capital goods within selected manufacturing sectors. We show that trade diversion was strongly mediated by global value chains: the products that expanded the most were those with pre-existing supply-chain linkages to China. Firm-level evidence suggests that the U.S. tariffs also lead to both increased imports of Chinese-sourced inputs and the transshipment of Chinese goods through Thailand. Nevertheless, after netting out transshipment and imported input content, we find that trade diversion generated substantial domestic value-added and employment gains. In contrast, Chinese retaliatory tariffs had limited spillover effects. Our findings show that the spillover effects of the trade war operated through supply-chain linkages and delivered meaningful real gains to a bystander economy.

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

JEL Classifications: F13, F14

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1 Introduction

The 2018 U.S.–China trade war was a large and unexpected shock that propagated through the global economy. While large literature examines its direct effects on the United States (U.S.) and China, a separate and active strand of literature studies the impact on third countries. In a world of fragmented production, tariffs do not merely reallocate trade between the two countries involved; they alter sourcing decisions, reshape supply chains, and generate new opportunities and constraints for economies embedded in global value chains. Fajgelbaum et al. (2024), Alfaro and Chor (2023) and Dang et al. (2023), among others, have documented trade diversion toward bystander economies, including Vietnam and Mexico, which are able to substitute for Chinese products in the U.S. markets. However, less is known about mechanisms that drive such trade diversion, as it might reflect trade rerouting and their deepened supply chain integration with China rather than the comparative advantage of these nations alone (Freund et al., 2024; Alfaro and Chor, 2023; Iyoha et al., 2024; Garred and Yuan, 2025). To the extent that these channels matter, it raises a further question of how much domestic value-added gains bystander economies actually receive as trade war beneficiaries.

We study these issues in the context of Thailand, a highly open and trade-dependent emerging economy in Southeast Asia, with a trade-to-GDP ratio exceeding 100 percent. Thailand provides a natural setting for examining the spillover effects of the trade war. It maintains strong trade links with both the United States and China, participates extensively in regional production networks, and has a diversified manufacturing base. Over the past decade, Thailand's export orientation toward the U.S. market increased sharply: the U.S. share of Thai exports rose from just over 10 percent before the trade war to around 18 percent in 2023. This increase occurred alongside a rise in imports from China, which accounted for about one-fourth of Thailand's total imports in the most recent period. These features make Thailand a useful case for studying both the trade-diversion effects of the U.S.–China trade war and the mechanisms through which those effects operate.

To answer these questions, we analyze both product-level and firm-level trade data from Thailand's transaction-level customs records for 2013–2023. Using product-level tariff changes imposed by the United States and China during the trade war, and exploiting variation in tariff exposure across HS 6-digit products, we first estimate the effects of U.S. and Chinese tariffs on Thai exports across destination markets. We also examine whether these export responses can be explained by Thailand's pre-existing supply chain links vis-à-vis China and other ASEAN countries. Using firm-level data, we then study two channels through which the U.S.–China trade war affects Thai exporters: the transshipment of Chinese goods and deeper supply-chain integration with China. Our paper makes two main contributions to the literature. First, while prior work has studied these channels largely in isolation — Iyoha et al. (2024) and Ngoc and Wie (2025) examine trade rerouting through Vietnam, and Garred and Yuan (2025) and Utar et al. (2025) focus on Chinese-sourced inputs — we examine both channels simultaneously within a single empirical setting, allowing us to assess their relative quantitative importance across sectors and to comprehensively assess the U.S.'s indirect link with China through a third country. Second, we go beyond documenting gross export responses to ask whether trade diversion generates real domestic gains. After netting out transshipment and imported input content, we examine the domestic value-added effects of the trade war on Thai exporters — an issue that, despite its policy relevance, remains underexplored in the third-country spillovers literature.

We find three main results. First, U.S. tariffs on Chinese goods generated economically meaningful trade diversion toward Thailand. Thai exports to the United States rose more in products facing larger U.S. tariff increases on Chinese competitors, consistent with substitution away from Chinese suppliers in the U.S. market. U.S. tariffs also appear to have increased Thai exports to ASEAN countries. By contrast, Chinese retaliatory tariffs had limited spillover effects overall, with at most some negative effect on Thai exports to China. The response to U.S. tariffs was not immediate. It emerged only after three to four years, suggesting that trade diversion operated through gradual adjustments in sourcing relationships rather than through an immediate reallocation of orders.

Second, trade diversion was highly uneven across products and was shaped by production networks. The strongest export responses to the U.S. market are concentrated in capital goods, particularly in machinery, electrical equipment, and transportation-related sectors. By contrast, the increase in Thai exports to ASEAN was concentrated in raw materials and intermediate inputs in chemicals, plastics, and rubber, consistent with deeper regional supply-chain integration. At the product level, the goods that expanded most in the U.S. market were not simply those in which Thailand had comparative advantage. They were also disproportionately products with pre-existing supply-chain links to China, suggesting that global value chains mediated how trade diversion unfolded.

Third, firm-level evidence shows that the expansion of Thai exports to the U.S. was accompanied by both transshipment of Chinese goods and greater use of Chinese-sourced inputs, with the latter indicating deeper supply-chain integration with China. These adjustments in transshipment and input sourcing occurred mainly through extensive margins. By contrast, intensive-margin adjustments explain firms' expansion of exports to the U.S. These two channels are estimated to be quantitatively important, and exist in several industries, including petrochemical, metal, electronics, machinery, and automotive industries. We also observe a substantial increase in imports of Chinese inputs among firms in the electrical appliance industry, but no evidence of transshipment is found for this industry. More importantly, the U.S. tariffs have resulted in a greater share of Chinese input content of Thai exports in many of these industries, implying a lesser role of domestic value-added. Yet, after accounting for transshipment and imported input content, we continue to find large, positive effects on the domestic content of Thai exports to the U.S., as well as widespread increases in firm employment. The evidence, therefore, suggests that the trade war did not merely reroute trade flows on paper. It also generated real gains for a bystander economy embedded in regional production networks.

This paper contributes to the growing literature on third-country spillovers from trade policy shocks. Fajgelbaum et al. (2024) show that many bystander countries increase exports to the U.S. and to the rest of the world, with countries such as Vietnam, Thailand, Korea, and Mexico among the main beneficiaries. Similarly, Alfaro and Chor (2023) and Alfaro et al. (2025) document a substantial reallocation of global supply chains, as

U.S. sourcing has been reallocated away from China and toward other locations, notably Mexico and Vietnam. In addition, U.S. imports have become more upstream, which indicates some production reshoring.[1]

The main contributions of our paper go to the second strand of the literature, which shows that the trade war does not necessarily reduce dependence on China. Countries whose exports to the U.S. expand often also increase imports from China (Alfaro and Chor, 2023; Goldberg and Reed, 2023; Freund et al., 2024; Alfaro et al., 2025; Gopinath et al., 2025). As highlighted by Freund et al. (2024), this pattern may reflect either transshipment or deeper supply-chain integration with China. Evidence of trade rerouting, however, appears to be mixed. While Iyoha et al. (2024) provide evidence of trade rerouting through Vietnam, driven in part by new establishments and Chinese-owned firms, Ngoc and Wie (2025) find rather limited detour. Meanwhile, Freund (2025) shows that transshipment of Chinese goods, following the U.S. tariffs, has been greater through Vietnam than Mexico.

Other studies emphasize production relocation and shifts in input sourcing by third countries. In the context of Mexico, Utar et al. (2025) find that firms participating in global value chains expand both exports to the U.S. and imports from the U.S. and Asia, the patterns consistent with nearshoring. For Vietnam, Beason et al. (2025) show that the trade war is associated with an increase in Vietnamese firms' exports, imports as well as outsourcing-related exports of final products. More broadly but more related to Chinese input imports, Garred and Yuan (2025) document inflows of Chinese manufacturing investment and Chinese-produced parts to third countries who have simultaneously increased their U.S. market share, whereas Shen (2026) finds a notable rise in the value-chain path from China to Mexico and Vietnam and subsequently to the U.S., based on the multi-country input-output table.[2] For Thailand, Hayakawa (2026) shows that the country has increased imports of upstream products from China to produce the downstream, but his analysis focuses solely on the electronic sector. Our paper contributes to this strand of literature by studying transshipment and supply-chain integration jointly within a single empirical framework and examining whether they affect domestic value added gains of Thai exports.

Our method for computing domestic value-added of firm exports is in the same spirit as Kee and Tang (2016) and Iyoha et al. (2024), who explore the case of China and Vietnam, respectively. Similar to ours, the latter paper documents a rise in Chinese input content share along with the decline in domestic content of firms' exports to the U.S. over the past decade. Utar et al. (2025) also examine the impact of U.S.-China trade war on Mexican firms' net exports to the U.S., but the imports considered are mainly those same products that the firms also export, so as to indicate the role of transshipment. Furthermore, a handful of papers, including Utar (2026) and Rotunno et al. (2026), have found positive employment effects on third countries such as Mexico and Vietnam. We report a similar finding and show that such increases are broad-based across many sectors.

[1] 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.

[2] Literature also discusses an important role of foreign investment. For example, Wu (2025) attributes Vietnam's export gains in part to Chinese investment in manufacturing, and Elhan-Kayalar et al. (2024) show that foreign affiliates play a central role in reshaping Vietnam's trade after the dispute.

Finally, our paper relates to the broader literature on the effects of the U.S.–China trade war on the U.S. and Chinese economies. Fajgelbaum et al. (2020) document a sharp decline in U.S. imports, while Amiti et al. (2020), Cavallo et al. (2021), and Fajgelbaum et al. (2020) show that tariff increases are largely passed through to U.S. prices. Handley et al. (2025) find that U.S. exports also fall because higher tariffs raise input costs, and Huang et al. (2023) show that U.S. firms with stronger supply-chain links to China experience declines in firm value. On the Chinese side, Jiao et al. (2024) find that exporters partly offset lost U.S. sales by expanding into the European Union, though with limited gains in other markets.[3] Our paper complements this work by shifting attention from the directly targeted countries to a bystander economy embedded in regional production networks.

The rest of the paper proceeds as follows. Section 2 provides background on the 2018 U.S.–China trade war. Section 3 describes the data and the construction of the main variables. Section 4 presents the main product-level evidence, including average treatment effects, dynamic responses, and heterogeneity across products. Section 5 presents firm-level evidence on transshipment, changes in sourcing toward Chinese inputs and domestic content of Thai exports. Section 6 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 dollar of Chinese imports at a 25-percent 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 a 10-percent rate, and in response, China levied duties on 60 billion dollar of U.S. imports.

The trade war intensified in 2019, due to the U.S. announcement of 15-percent 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.

[3] Fajgelbaum and Khandelwal (2022) and Caliendo and Parro (2022) provide surveys of the literature on the economic effects of the trade war.

and around 110 billion dollar of U.S. exports to China were subject to elevated tariff rates, which account for 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.[4]

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 until 2024, with limited liberalization.

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

3 Data and Stylized Facts

3.1 Data

The empirical analysis in this paper mainly relies on comprehensive administrative data from Thailand's Customs Department, over the period 2013 to 2023. The dataset includes records of both Thai 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 System (HS) code 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 only transactions with reporting units in kilograms or pieces; and, focus only on trade with Thailand's major trading partners.[5] All trade values are recorded in both Thai baht and U.S. dollar; in this analysis, we use trade values in 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 collapse the data to the annual frequency

[4]The waves of U.S. and Chinese tariffs targeted different mixes of products. More than 80 percent of U.S. 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).

[5]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.

to reduce volatility and zero trade flows, and further clean the data by focusing on products with existing transactions in every year prior to the trade war. We are, as a result, left with around 3,765 products at the HS-6 level.[6]

We construct four mutually exclusive export categories based on export destinations: exports to the U.S., exports to China, exports to ASEAN and exports to the rest of the world (ROW). This categorization enables us to assess various channels of the trade-war impact on Thai exports, especially the trade diversion effects arising from changes in relative market access conditions.

To measure Thai exporters' exposure to the trade war, we use the tariff dataset assembled by Fajgelbaum et al. (2024), which record the full set of retaliatory tariff actions implemented by the U.S. and China during 2018–2019. The data report applied ad valorem tariff rates at the HS-10 level.

We construct two product-level measures of exposure: changes in U.S. tariffs on Chinese goods and changes in Chinese tariffs on U.S. goods. To align the tariff data with our trade data, we aggregate tariff changes from the HS-10 to the HS-6 level. For each HS-6 product i, the exposure measure is defined as a weighted average of the corresponding HS-10 tariff changes as of end-2019 relative to the pre-war period. The weights are based on import shares over 2013–2017. For U.S. tariffs on Chinese goods, the weights are the shares of U.S. imports from China in HS-10 product j within HS-6 category i. For Chinese tariffs on U.S. goods, the weights are the shares of China's imports from the U.S. in HS-10 product j within the same HS-6 category. We obtain these weights from Fajgelbaum et al. (2024) and Bown (2021), respectively. As a robustness check, we also consider tariff exposure constructed using simple unweighted averages. These measures capture the extent to which each product is exposed to the bilateral tariff escalation and, hence, the extent to which Thai exporters may have faced either trade-diversion opportunities or adverse demand shocks.

In addition, we use tariff and trade data from the WITS and UN Comtrade databases to compute the tariff rates imposed by destination countries on Thailand's HS-6 exports. These tariffs enter the regressions as control variables. In most cases, they are based on Most-Favored-Nation (MFN) rates. The main exception is U.S. tariffs on Thai products, some of which increased in early 2018. For these tariffs, we rely directly on the data reported in Fajgelbaum et al. (2024).

3.2 Stylized Facts

Table 1 summarizes the sectoral composition of Thai exports, using averages for 2022 and 2023 to provide a more stable picture of recent trade patterns. The table reports export composition both overall and across Thailand's major destination markets: the U.S., China, and ASEAN. Machinery and electrical equipment account for more than 36 percent of total Thai exports and are especially important in exports to the U.S. and ASEAN. In the U.S. market, these two sectors together account for around 57 percent of Thai exports. Thailand also exports substantial agricultural products and plastics and rubber products, much of which are

[6]Summary statistics of the variables used in product-level regression are reported in Table A.2 in the Appendix.

Table 1: Thai Exports by Sectors

Sector	Total Value	Total Share	U.S. Value	U.S. Share	China Value	China Share	ASEAN Value	ASEAN Share
Agriculture	1204	15.3%	140	9.3%	336	32.7%	287	15.4%
Apparel	189	2.4%	40	2.7%	12	1.2%	50	2.7%
Chemicals	389	5.0%	23	1.5%	63	6.2%	154	8.2%
Electrical	1508	19.2%	511	33.9%	104	10.1%	268	14.3%
Machinery	1298	16.5%	346	23.0%	116	11.3%	251	13.4%
Materials	502	6.4%	47	3.1%	26	2.5%	166	8.9%
Metals	429	5.5%	84	5.6%	48	4.7%	104	5.6%
Minerals	73	0.9%	1	0.0%	8	0.7%	46	2.5%
Miscellaneous	275	3.5%	72	4.8%	25	2.5%	38	2.0%
Plastics & rubbers	976	12.4%	175	11.6%	260	25.3%	202	10.8%
Transportation	1006	12.8%	67	4.4%	29	2.8%	303	16.2%
All sectors	7851	100%	1506	100%	1028	100%	1869	100%

Note: The table reports average values (in billions of Thai baht) and the share of Thai exports to the world, the U.S., 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).

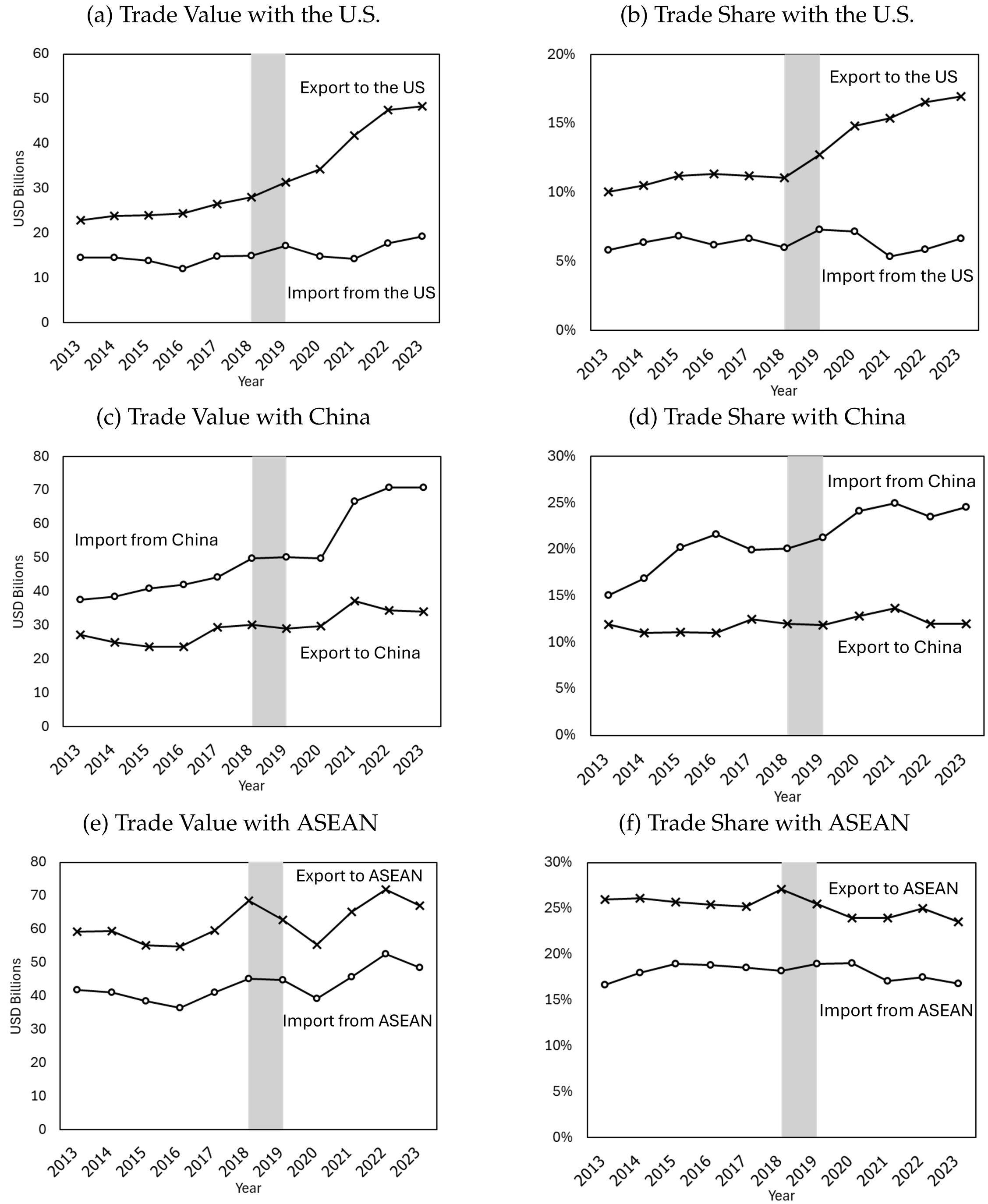
destined for China. In addition, a large share of transportation products, including automobiles and auto parts, is exported to neighboring ASEAN countries, as shown in Table A.1 in the Appendix.

Figure 1 shows the evolution of Thai exports and imports by major destination and source countries. Exports to the U.S., China, and ASEAN all increased over the sample period, despite the 2018–2019 trade war and the COVID-19 pandemic, which temporarily disrupted trade with China and ASEAN. Exports to the U.S. expanded particularly strongly. The U.S. share of Thai exports rose from around 10 percent before the trade war to almost 20 percent in recent years, a pattern suggestive of trade diversion. On the flipped side of the coin, imports from China also increased materially, especially after 2021. This pattern may reflect an influx of Chinese products into Thailand, the potential transshipment of Chinese goods to the U.S., or deeper supply-chain integration with China. We will examine this issue in Section 5.

Figure 2 shows the distribution of weighted-average tariff increases from the U.S.–China trade war across sectors at the HS 6-digit level. Panel (a) reports U.S. tariff increases on Chinese goods. Most affected Chinese HS-6 products faced tariff increases of 25 percent, which is also the maximum increase in nearly every sector. Tariff increases were relatively smaller in agriculture, where the median increase was around 15 percent. Despite this concentration around 25 percent, there remains substantial within-sector and economy-wide variation in tariff exposure, which helps identify the trade-war effects of interest.

Panel (b) reports Chinese tariff increases on U.S. goods. Because Chinese retaliatory tariffs covered a smaller set of products, median tariff increases were lower than U.S. tariff increases in all sectors. The lowest median increase appears in transportation, reflecting China's decision to suspend retaliatory tariffs on imports of U.S. automobiles and auto parts in early 2019. The more limited coverage of Chinese tariff hikes generates substantial variation in tariff exposure both within and across sectors.

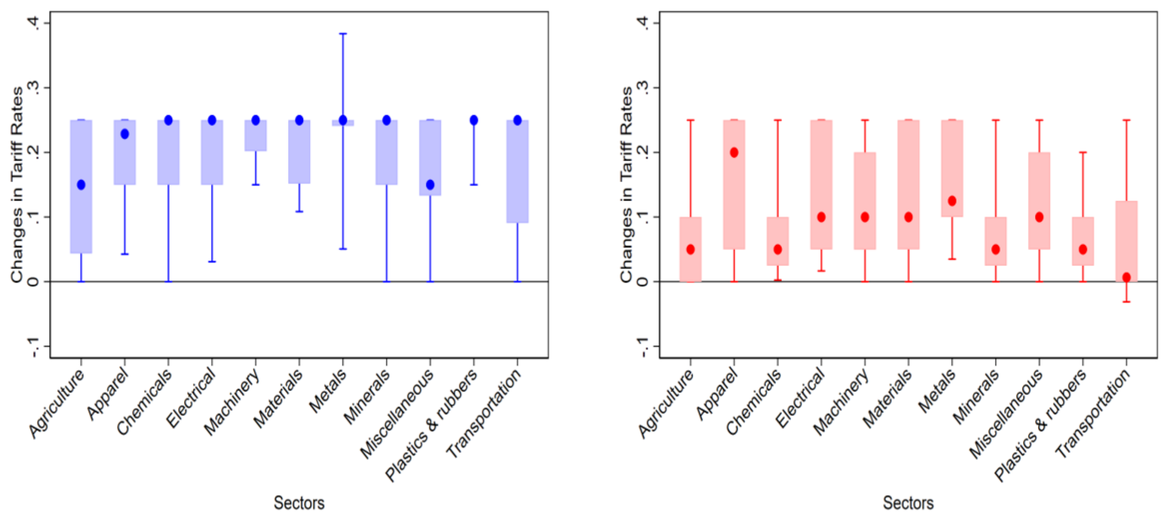
Figure 1: Values and Shares of Thai Exports and Imports by Destination and Source Countries



Note: The left-hand panels show the annual values in US dollar terms of Thai exports to (imports from) certain destination (source) countries over time. The right-hand panels report their shares to the corresponding total Thai exports or imports. Source: The Bank of Thailand

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

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



Note: This Figure reports the set of tariff changes imposed by the U.S. (Panel A) and China (Panel B), by sectors. 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 at the end of 2019 relative to the pre-war period 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).

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

This section outlines the empirical framework used to estimate the impact of the U.S.–China trade war on Thailand's export performance and presents the corresponding results.

4.1 Baseline Specification

Our baseline specification is estimated at the HS-6 product-by-year level, separately for each export destination d. We estimate the following equation:

$$EX_{it}^{d} = \beta^{\mathrm{US}} \left(\mathrm{Post}_{it} \times \Delta\tau_i^{\mathrm{US}}\right) + \beta^{\mathrm{CN}} \left(\mathrm{Post}_{it} \times \Delta\tau_i^{\mathrm{CN}}\right) + \mathbf{X}_{it}^{d\prime}\gamma^{d} + \varepsilon_{it}^{d}, \tag{1}$$

where EX_{it}^{d} denotes Thailand's export value of HS-6 product i to destination d in year t. To account for zero trade flows, we transform the dependent variable using the inverse hyperbolic sine, $\ln\left[x + \left(x^2+1\right)^{0.5}\right]$. The variable Post_{it} is an indicator equal to one in years when product i is exposed to tariff increases associated with the trade war, and zero otherwise. The variable $\Delta\tau_i^{\mathrm{US}}$ denotes the increase in U.S. tariffs on Chinese goods for product i, while $\Delta\tau_i^{\mathrm{CN}}$ represents the increase in Chinese tariffs on U.S. goods. The control vector $\mathbf{X}_{it}^{d}$ includes the tariff rates imposed by destination country d on Thai exports, product fixed effects absorbing time-invariant determinants of product-level trade flows, and time fixed effects capturing common macroeconomic shocks. The variable ε_{it}^{d} is the error term. Standard errors are clustered at the HS-6 product level.

We estimate the model for total exports and, separately, for four destination markets: the U.S., China, ASEAN, and the rest of the world. The coefficients of interest, β^{US} and β^{CN}, capture the differential change in Thai exports for products more exposed to the bilateral U.S.–China tariff shocks relative to less exposed products. In the regression for total exports, these coefficients summarize the net effect of the tariff war on Thailand's overall export performance, combining trade substitution with other spillover channels across destinations. A positive coefficient indicates that Thai exports expand in response to the trade war, either by capturing displaced demand or by benefiting from the global reallocation of trade flows.

In the specification for exports to the U.S., β^{US} measures the extent to which Thai goods substitute for Chinese products in the U.S. market. A positive estimate implies that Thai exporters gain market share as U.S. tariffs displace Chinese competitors, consistent with the substitution or trade diversion effects documented by Fajgelbaum et al. (2024) and Khandelwal (2023). The same interpretation applies to β^{CN} in the regression for exports to China. However, either coefficient may be negative if, for example, Thai exports are complementary to U.S. or Chinese goods. In that case, lower bilateral trade between the U.S. and China may reduce Thai exports through weaker joint demand or disrupted supply chain linkages.

In the regressions for other destinations, namely ASEAN and the rest of the world, β^{US} and β^{CN} may reflect a broader set of channels. One possibility is an export supply spillover: expanded sales to the U.S. or China may lower marginal costs through economies of scale and thereby support exports to third markets.

Table 2: The Effect of the U.S.–China Trade War on Thai Exports by Destination

Dep. Var.: Thai Export Value	Total (1)	USA (2)	China (3)	ASEAN (4)	ROW (5)
$\text{Post}_{it} \times \Delta\tau_i^{US}$	0.400*	0.628*	0.629	0.387*	0.544*
	(0.207)	(0.354)	(0.457)	(0.224)	(0.278)
$\text{Post}_{it} \times \Delta\tau_i^{CN}$	-0.119	-0.467	-1.115**	-0.049	0.077
	(0.227)	(0.377)	(0.434)	(0.262)	(0.311)
Observations	33,990	15,235	13,299	29,601	22,770
Adjusted R^2	0.854	0.795	0.772	0.804	0.806

Notes: Standard errors in parentheses are clustered at the HS-6 product level. All regressions control for tariffs the destination country imposes on Thai exports, HS-6 product fixed effects, and year fixed effects. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

Another is sourcing diversification, whereby foreign buyers shift purchases toward Thai suppliers in response to the trade war. Supply chain effects may also operate in the opposite direction. If reduced exports from China or the U.S. lower global demand for Thai intermediate goods and raw material, the coefficients may be negative. By the same logic, β^{US} in the regression for exports to China may capture weaker demand for Thai inputs previously embodied in Chinese exports to the U.S., while β^{CN} in the regression for exports to the U.S. may reflect reduced demand for Thai components embodied in U.S. goods sold to China.

Table 2 reports the baseline estimates of the impact of the U.S.–China trade war on Thailand's exports. Columns (1) through (5) present results for total exports, and exports to the U.S., China, ASEAN, and the rest of the world, respectively. In Column (1), which reports the responses of Thailand's total exports, only the U.S. tariffs are positive and statistically significant. Given the estimated coefficient at 0.4, it implies that for products facing a 25-percentage-point increase in U.S. tariffs on Chinese goods, Thai exports grow by about 10.5 percentage points more than exports of non-targeted products. This finding suggests that Thailand expands total exports in product categories where Chinese firms face higher trade barriers. By contrast, the coefficient on Chinese retaliatory tariffs is not statistically significant.

In Column (2), the coefficient on U.S. tariffs on Chinese goods is 0.63. These estimates suggest that Thai firms expand their market share in the U.S. in product categories where Chinese suppliers are disadvantaged by the tariff shock, providing evidence consistent with trade diversion toward Thailand. This expansion in Thai exports to the U.S. may also help explain the increase in Thailand's total exports reported in Column (1). The finding is in line with Fajgelbaum et al. (2024), who show that Thailand is among the countries that benefited from export opportunities created by the trade war. However, while their analysis focuses on contemporaneous effects, our estimates capture export responses over a five-year post-shock horizon and therefore point to more persistent changes in global trade patterns. The estimated impact is also economically important, as it implies that Thai exports of products subjected to a 25-percentage-point increase in U.S. tariffs grow by about 25.5 percentage points more than exports of non-targeted products. By contrast, we find no statistically significant effect of Chinese retaliatory tariffs on Thai exports to the U.S., mirroring the result for total exports.

Despite the positive response of Thai exports to the U.S., Column (3) shows that Thai exports to China decline with greater exposure to Chinese tariffs on U.S. goods. This finding suggests that Thailand does not experience meaningful trade diversion into the Chinese market. One possible interpretation is that Thai exports are complementary to the affected U.S. goods, so that China's tariffs reduce demand for related Thai products. Alternatively, Chinese firms may have expanded domestic production of the affected goods and, as a result, become less reliant on imports. However, this result is not robust to using non-weighted tariffs as trade-war exposure, as shown in Table A.4 in Appendix.

Thai exports to ASEAN and the rest of the world, by contrast, appear to respond positively to U.S. tariffs on Chinese goods. In Column (4), the coefficient on U.S. tariffs is 0.39 for Thai exports to ASEAN, while in Column (5) the corresponding coefficient for exports to the rest of the world is 0.54. One possible interpretation, consistent with Fajgelbaum et al. (2024), is that Thai firms may benefit from downward supply curve, as firms expand export opportunities not only in the U.S., but also the ASEAN markets given geographical proximity. Another possibility is that these patterns reflect deeper regional value chain integration, whereby stronger production linkages within the region help support the substitution of Chinese goods in the U.S. market. By contrast, the coefficients on Chinese tariffs on U.S. goods are not statistically significant in both columns, suggesting that Chinese retaliation had only limited spillover effects on Thai exports to third markets.

4.2 Dynamic Effects

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

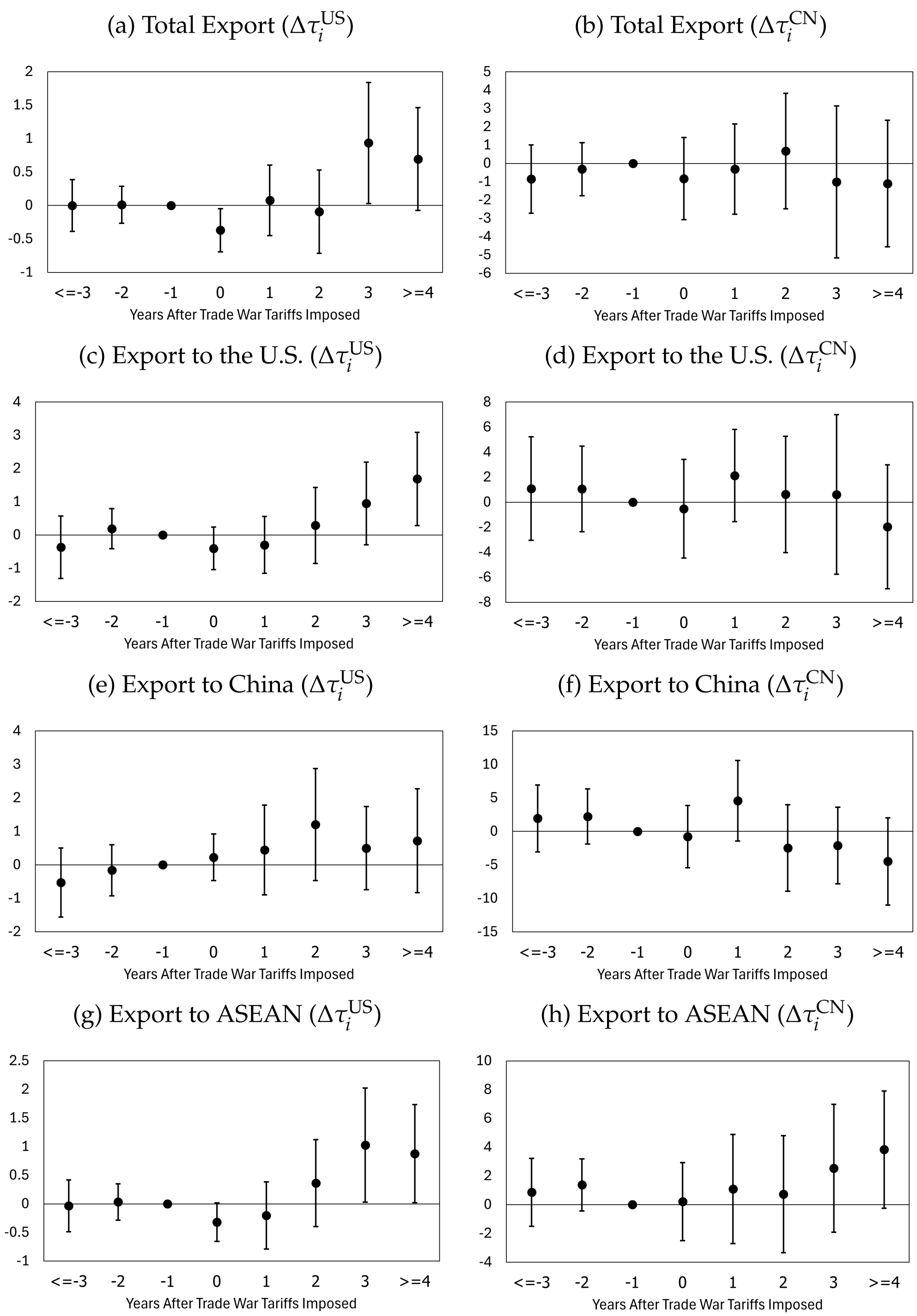
The extended regression is as follows:

$$EX_{it}^{d} = \sum_{k=-3}^{4} \beta_k^{\mathrm{US}} \left(\mathrm{Dur}_{it}^{\mathrm{US},k} \times \Delta\tau_i^{\mathrm{US}} \right) + \sum_{k=-3}^{4} \beta_k^{\mathrm{CN}} \left(\mathrm{Dur}_{it}^{\mathrm{CN},k} \times \Delta\tau_i^{\mathrm{CN}} \right) + \mathbf{X}_{it}^{d\prime} \gamma^d + \varepsilon_{it}^{d}, \tag{2}$$

where $\mathrm{Dur}_{it}^{\mathrm{US},k}$ and $\mathrm{Dur}_{it}^{\mathrm{CN},k}$ are sets of indicator variables equal to one when year t is k years relative to the onset of the U.S. and Chinese tariff measures affecting product i, respectively, with binning at the end-points.[7] The coefficients β_k^{US} and β_k^{CN}, therefore, capture the differential effect of U.S. and Chinese tariff shocks on Thai exports at event time k, relative to the pre-treatment period. This event-study specification also allows us to assess the presence of pre-trends. 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.

[7] For example, for products first exposed to U.S. tariffs in 2018, $\mathrm{Dur}_{i,2018}^{\mathrm{US},0} = 1$, $\mathrm{Dur}_{i,2019}^{\mathrm{US},1} = 1$, and $\mathrm{Dur}_{i,2020}^{\mathrm{US},2} = 1$, and so on.

Figure 3: Event-Study Estimates of the Dynamic Effects of the 2018 U.S.–China Trade War on Thai Exports



Notes: Each row corresponds to a separate regression for a given export destination. In every regression, we include the full set of event-time interactions for both U.S. tariffs on Chinese goods and Chinese tariffs on U.S. goods, as specified in Equation (2). The left and right panels within each row plot the corresponding event-study coefficients for these two tariff measures. The bands represent 95-percent confidence intervals.

Because the dynamic specification yields a large number of coefficients, we summarize the estimates graphically in Figure 3. For total exports, the response is clearly delayed. In Panel (a), the effect of U.S. tariffs on Chinese goods becomes positive only in the third year after the tariff shock. The estimated effect in the fourth year is only marginally significant, but remains economically large. The results, thus, imply rather delayed impact of the trade war. By contrast, Panel (b) shows no clear pattern in response to Chinese retaliatory tariffs. Thai exports to the U.S. display a similarly delayed response to U.S. tariffs on Chinese goods, as shown in Panel (c). The estimated coefficients become statistically significant only in the fourth year after the tariff shock. By contrast, Panel (d) shows no statistically significant response of Thai exports to the U.S. to Chinese retaliatory tariffs.

A different pattern emerges for exports to China. Although Table A.4 reports a significant average effect of Chinese retaliatory tariffs, Panel (f) shows no statistically significant dynamic response. Meanwhile, Thai exports to ASEAN also respond with a delay to U.S. tariffs on Chinese goods, as shown in Panel (g), broadly mirroring the pattern observed for exports to the U.S. Overall, the event-study estimates indicate that Thai export responses to the trade war are gradual, with statistically significant effects appearing only for U.S. tariffs on Chinese goods, not for Chinese retaliatory tariffs.

4.3 Product-Level Heterogeneity

To better understand the aggregate export responses, we next examine heterogeneity across products. This exercise helps identify which segments of the economy are most responsive to tariff-induced reallocation and, in turn, which products drive the destination-specific responses of Thai exports to the trade war. As before, we focus on exports to the U.S., China, and ASEAN.

We consider heterogeneity along two dimensions. First, we distinguish between agricultural and manufacturing products. Within manufacturing, we further separate products into three broad groups: (i) chemicals, plastics, and rubbers; (ii) machinery, electrical equipment, and transportation; and (iii) other manufacturing products. Second, motivated by the prominence of global value chains, we classify products by end use into (i) capital goods, (ii) consumer goods, (iii) raw materials and intermediate inputs, and (iv) other products. We implement these exercises by interacting tariff exposure with indicators for the relevant product categories. To be precise, for each product category g, we estimate

$$EX_{it}^{d} = \beta_g^{\mathrm{US}} \left(\mathrm{Post}_{it} \times \Delta\tau_i^{\mathrm{US}} \times D_i^g \right) + \beta_g^{\mathrm{CN}} \left(\mathrm{Post}_{it} \times \Delta\tau_i^{\mathrm{CN}} \times D_i^g \right) + \mathbf{X}_{it}^{d\prime}\gamma^d + \varepsilon_{it}^{d}, \tag{3}$$

where D_i^g represents the category product i falls within.

Table 3 presents estimates for agricultural and manufacturing products, while Table 4 reports estimates by product type. For U.S. tariffs on Chinese goods, we shown that while their impact on total Thai exports of agricultural products is relatively larger than that for manufacturing products, the estimate is weakly significant and becomes modest and insignificant when we consider exports across destinations. Only the

Table 3: Heterogeneous Effects of the U.S.–China Tariffs on Thai Exports: Sector

	Total Exports		Exports to the U.S.		Exports to China		Exports to ASEAN	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
U.S. tariffs on Chinese goods:								
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Agr.}_i$	0.691*	0.783**	-0.264	-0.226	-0.588	0.491	0.040	0.234
	(0.392)	(0.393)	(1.066)	(0.671)	(0.949)	(0.823)	(0.782)	(0.569)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Mfg.}_i$	0.357*		0.752**		0.839*		0.460**	
	(0.211)		(0.374)		(0.507)		(0.231)	
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Chem./Plast./Rub.}_i$		1.157***		1.328*		0.344		1.127***
		(0.372)		(0.789)		(0.741)		(0.352)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Mach./Elec./Transp.}_i$		0.956**		1.472***		0.552		0.489
		(0.389)		(0.547)		(0.639)		(0.409)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Other mfg.}_i$		-0.145		0.220		0.635		0.105
		(0.231)		(0.391)		(0.530)		(0.257)
Chinese tariffs on U.S. goods:								
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Agr.}_i$	-0.331	-0.260	0.866	0.929	-1.206	-0.497	0.208	0.404
	(0.547)	(0.548)	(1.071)	(0.957)	(1.075)	(0.915)	(0.845)	(0.703)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Mfg.}_i$	-0.068		-0.729*		-1.110**		-0.095	
	(0.240)		(0.401)		(0.470)		(0.273)	
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Chem./Plast./Rub.}_i$		0.481		-1.991		-0.600		1.074**
		(0.537)		(1.308)		(1.224)		(0.456)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Mach./Elec./Transp.}_i$		-1.071*		-0.559		-0.427		-0.636
		(0.553)		(0.661)		(0.611)		(0.580)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Other mfg.}_i$		0.409		-0.424		-1.624***		0.078
		(0.282)		(0.478)		(0.619)		(0.339)
Observations	33,990	33,990	15,235	15,235	13,299	13,299	29,601	29,601
Adjusted R^2	0.854	0.855	0.795	0.796	0.772	0.772	0.804	0.805

Notes: Each reported coefficient corresponds to the interaction between Post_{it}, the tariff exposure measure, and the indicated product category. Agr. = agricultural products; Mfg. = manufacturing products; Chem./Plast./Rub. = chemicals, plastics, and rubbers; Mach./Elec./Transp. = machinery, electrical equipment, and transportation; Other mfg. = other manufacturing products. Standard errors in parentheses are clustered at the HS-6 product level. All regressions control for tariffs the destination country imposes on Thai exports, HS-6 product fixed effects, and year fixed effects. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

coefficients for manufacturing products are significant across export destinations. In particular, the estimates are as high as 0.752 for exports to the U.S., and 0.460 for exports to ASEAN, potentially explaining the positive responses of Thai exports to these two markets and driving the overall trade diversion.

The sectoral breakdown sharpens this result further. For U.S. tariffs on Chinese goods, the largest coefficients for total exports appear in chemicals, plastics, and rubbers (1.157) and in machinery, electrical equipment, and transportation (0.956). For exports to the U.S., the largest effect is again found in machinery, electrical equipment, and transportation, with a coefficient of 1.472. The estimate implies that, for products within these sectors and facing a 25-percentage-point tariff increase, their exports expand by 37.8 percent more than non-targeted products. Since many of these products are classified by the U.S. government as high-technology products that the U.S. aims to reduce its exports and imports with China, the result means that trade diversion effects take place and so the U.S. still imports these products from elsewhere. The estimated impact for the chemical, plastic and rubber products is also large at 1.328 but only weakly significant. For exports to China, the estimated magnitudes are smaller and not statistically different from zero. Finally, for exports to ASEAN, the response is concentrated in chemicals, plastics, and rubbers, where

Table 4: Heterogeneous Effects of the U.S.–China Tariffs on Thai Exports: Product Type

	Total Exports (1)	Exports to the U.S. (2)	Exports to China (3)	Exports to ASEAN (4)
U.S. tariffs on Chinese goods:				
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Capital}_i$	0.881**	1.120*	1.988**	0.412
	(0.445)	(0.647)	(0.773)	(0.470)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Consumer}_i$	0.934***	0.319	0.881	0.403
	(0.258)	(0.454)	(0.568)	(0.315)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Raw mat./interm.}_i$	0.359	0.680	0.196	0.838***
	(0.281)	(0.537)	(0.583)	(0.305)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Other}_i$	0.728	0.319	1.130	0.631
	(0.568)	(0.913)	(1.386)	(0.678)
Chinese tariffs on U.S. goods:				
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Capital}_i$	-1.453**	0.057	-2.023**	-0.757
	(0.660)	(0.810)	(0.813)	(0.678)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Consumer}_i$	0.222	-0.271	-0.782	0.702*
	(0.293)	(0.496)	(0.630)	(0.377)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Raw mat./interm.}_i$	0.052	-0.898	-0.912	-0.400
	(0.337)	(0.668)	(0.667)	(0.379)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Other}_i$	-0.261	-0.255	-2.262	-0.493
	(0.721)	(1.200)	(1.491)	(0.865)
Observations	33,990	15,235	13,299	29,601
Adjusted R^2	0.855	0.795	0.772	0.804

Notes: Each reported coefficient corresponds to the interaction between Post_{it}, the tariff exposure measure, and the indicated product type. Raw mat./interm. = raw materials and intermediate inputs; Consumer = consumer goods; Capital = capital goods; Other = other products. Standard errors in parentheses are clustered at the HS-6 product level. All regressions control for tariffs the destination country imposes on Thai exports, HS-6 product fixed effects, and year fixed effects. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

the coefficient reaches 1.127.

By contrast, the results for Chinese retaliation are more mixed across sectors. Similar to the baseline result shown in Table A.4, the manufacturing coefficient is negative for exports to China at -1.110, while the corresponding effects on total exports and exports to ASEAN are not statistically different from zero. For exports to the U.S., While the manufacturing coefficient is negative, the sectoral estimates show no statistically significant effects. Delving deeper into manufacturing sectors, we find a large and statistically significant negative effect of exports to China for other manufacturing products, with a coefficient of -1.624. However, positive responses can be observed for exports of chemicals, plastics, and rubbers to ASEAN, where the coefficient reaches 1.074.

Generally, Table 3 shows that the largest export responses to the U.S. tariffs are concentrated in Thai manufacturing, especially in machinery, electrical equipment, transportation, and chemicals-related sectors. By contrast, the effects associated with Chinese retaliatory tariffs are generally either negative or not statistically distinguishable from zero.

Table 4 reports heterogeneous effects by product type. For the effects of U.S. tariffs on Chinese goods, the largest coefficient for total exports is found in consumer goods (0.934), followed closely by capital goods (0.881). When the analysis is conducted by destination, a clearer pattern emerges. For exports to the U.S., the largest coefficient is on capital goods, at 1.120. By contrast, for exports to ASEAN, the strongest response is concentrated in raw materials and intermediate inputs, with a coefficient of 0.838.

The responses of Thai exports to ASEAN deserve further attention, as positive export responses are mainly raw material and intermediate inputs within the chemical, plastic and rubber sectors. This differs from exports to the U.S., where capital goods within the machinery, electrical equipment and transportation enjoy trade diversion. This finding is not consistent with the conjecture put forth by Fajgelbaum et al. (2024) that firms may benefit from economies of scale as they expand their production and exports to the U.S., allowing them to extend their exports to other destinations as well. Instead, it may reflect strengthened regional supply chain integration, as Thai firms export more of inputs to ASEAN nations, whose firms may use these inputs for producing goods destined for the U.S. More research is, however, needed to verify this hypothesis.

The effects of Chinese tariffs on U.S. goods present a different pattern. While most estimates appear to be insignificant, the responses of exports to China tend to be negative for capital goods, the coefficient reaching -2.023. This results in the large, significant responses of total Thai exports of capital goods. In ASEAN markets, the estimated effects are generally modest, with the main exception being consumer goods, for which the coefficient is 0.702.

Overall, this pattern is consistent with a combination of trade diversion in higher-value manufacturing sectors and regional supply-chain adjustment in intermediate goods. By contrast, the effects associated with Chinese retaliatory tariffs are generally negative, especially for capital goods in the Chinese market.

4.4 Potential Mechanisms

This subsection examines several mechanisms that may help explain which Thai products expand in response to U.S. tariffs on Chinese goods. In particular, we consider three potential channels. First, products in which Thailand has a stronger comparative advantage may be better positioned to capture market share in the U.S. when Chinese competitors face higher tariffs. Second, Thai exporters may benefit more in product categories where Chinese firms experienced larger losses of U.S. market share. Third, products that gain from the trade war may be those with stronger supply chain linkages to China or to regional economies, which could facilitate production reallocation and export expansion.

The first mechanism relates to the comparative advantage of Thai products. The idea is that, within product categories exposed to higher U.S. tariffs on Chinese goods, Thai exporters are more likely to gain market share in the U.S. when they are among the most competitive alternative suppliers. To capture this channel, we construct a revealed comparative advantage measure at the HS-6 product level. The measure is based on whether Thailand's exports of product i account for a relatively large share of its total exports to the U.S., compared with the corresponding share of the rest of the world's exports to the U.S., excluding Thailand.

The measure is formally defined as

$$RCA_i^{\text{US}} = \frac{EX_{i,\text{pre}}^{\text{TH,US}} / \left(\sum_i EX_{i,\text{pre}}^{\text{TH,US}}\right)}{\left(\sum_{j\neq TH} EX_{i,\text{pre}}^{\text{j,US}}\right) / \left(\sum_{j\neq TH}\sum_i EX_{i,\text{pre}}^{\text{j,US}}\right)},$$

where $EX_{i,\text{pre}}^{\text{TH,US}}$ denotes Thailand's exports of product i to the U.S. during the pre-trade-war period, and $EX_{i,\text{pre}}^{\text{j,US}}$ denotes exports of product i from country j to the U.S. during the same period. We compute this measure using UN Comtrade data for 2013–2017. We then convert the index into a dummy variable equal to one if $RCA_i^{US} > 1$, and zero otherwise.

The second mechanism is that, within product categories exposed to higher U.S. tariffs on Chinese goods, Thai exporters may gain more in products where Chinese firms experience larger declines in U.S. market share. To capture this channel, we construct a dummy variable at the HS-6 product level equal to one if China's decline in U.S. market share for product i between 2017 and 2023 exceeds the average decline across products, and zero otherwise.

The third mechanism operates through production-network integration. Within product categories exposed to higher U.S. tariffs on Chinese goods, Thai exporters may gain more in products that are more closely tied to China or neighboring economies through regional supply chains, as such linkages can ease production relocation and support export growth. To measure this channel, we follow Freund et al. (2024) and use the intra-industry trade index as a proxy for supply chain integration (Grubel and Lloyd, 1975):

$$GLI_i^{CN} = 1 - \frac{|EX_{i,\text{pre}}^{\text{TH,CN}} - EX_{i,\text{pre}}^{\text{CN,TH}}|}{EX_{i,\text{pre}}^{\text{TH,CN}} + EX_{i,\text{pre}}^{\text{CN,TH}}}, \qquad GLI_i^{ASEAN} = 1 - \frac{|EX_{i,\text{pre}}^{\text{TH,ASEAN}} - EX_{i,\text{pre}}^{\text{ASEAN,TH}}|}{EX_{i,\text{pre}}^{\text{TH,ASEAN}} + EX_{i,\text{pre}}^{\text{ASEAN,TH}}},$$

where $EX_{i,\text{pre}}^{\text{TH,CN}}$ and $EX_{i,\text{pre}}^{\text{TH,ASEAN}}$ denote Thailand's exports of product i to China and ASEAN, respectively, during the pre-trade-war period, while $EX_{i,\text{pre}}^{\text{CN,TH}}$ and $EX_{i,\text{pre}}^{\text{ASEAN,TH}}$ denote exports of product i from China and ASEAN, respectively, to Thailand during the same period.

The measures GLI_i^{CN} and GLI_i^{ASEAN} capture the extent of two-way trade between Thailand and China, and between Thailand and ASEAN, respectively, within product category i. We compute the index at the HS 4-digit level, which makes it more suitable for capturing vertical production linkages and broader supply chain integration across countries.[8] A well-known caveat in the literature is that the GLI index may also reflect horizontal integration, that is, two-way trade in differentiated varieties rather than purely vertical supply chain relationships.

Table 5 reports the estimation results. Columns (1)–(4) examine each mechanism separately, while Columns (5) and (6) include all three mechanisms jointly, using GLI_i^{CN} in Column (5) and GLI_i^{ASEAN} in Column (6). First, revealed comparative advantage in the U.S. market is a robust predictor of Thai export gains. The coefficient on $\text{Post}_{it} \times \Delta\tau_i^{US} \times RCA_i^{US}$ ranges from 0.366 to 0.485 across specifications. This pattern

[8]For example, Thai firms may import inputs from China, such as parts of diodes (HS854190), use them to produce final or downstream goods, such as LEDs (HS854140), and then export part of that output back to China.

Table 5: The Effect of U.S.–China Tariffs on Thai Exports: Product Characteristics.

	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}}$	0.241	0.500	0.243	0.064	-0.251	-0.285
	(0.393)	(0.374)	(0.409)	(0.467)	(0.460)	(0.500)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{RCA}_i^{\text{US}}$	0.366**				0.485**	0.414**
	(0.152)				(0.196)	(0.186)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{CN}_i^{\text{Loss}}$		0.297			-0.212	-0.190
		(0.339)			(0.419)	(0.417)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{GLI}_i^{\text{CN}}$			1.371**		1.622**	
			(0.629)		(0.648)	
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{GLI}_i^{\text{ASEAN}}$				1.144*		1.130*
				(0.607)		(0.606)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}}$	-0.529	-0.489	-0.483	-0.457	-0.552	-0.513
	(0.376)	(0.377)	(0.378)	(0.376)	(0.377)	(0.375)
Observations	15,235	15,235	15,224	15,235	15,224	15,235
Adjusted R^2	0.814	0.814	0.814	0.814	0.814	0.814

Notes: Standard errors in parentheses are clustered at the HS-6 product level. All regressions control for tariffs the destination country imposes on Thai exports, HS-6 product fixed effects, and year fixed effects. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

suggests that the gains from trade diversion are concentrated in product categories where Thailand already has a relatively strong position in the U.S. market.

Second, Chinese market-share losses in the U.S. do not appear to be a robust predictor of Thai export gains. The estimated coefficient is 0.297 in Column (2), but becomes -0.212 and -0.190 in Columns (5) and (6), respectively. None of these estimates is statistically different from zero. This pattern suggests that Thai export growth is not driven primarily by products in which Chinese suppliers lost the most U.S. market share. Rather, the relevant margin appears to be Thailand's own competitiveness rather than the mechanical displacement of Chinese exporters.

Third, supply chain linkages matter quantitatively. In Column (3), the interaction between tariff exposure and GLI_i^{CN} has a coefficient of 1.371, and this increases to 1.622 in Column (5). Similarly, in Column (4), the interaction with GLI_i^{ASEAN} has a coefficient of 1.144, and remains similar at 1.130 in Column (6). These estimates indicate that Thai export gains are strongest in products with deeper two-way trade linkages with China and ASEAN, consistent with the view that regional production networks facilitated reallocation toward Thailand after the tariff shock.

Overall, the table suggests that the products benefiting most from U.S. tariffs on Chinese goods are not simply those in which Chinese firms lost market share, but rather those in which Thailand is already relatively competitive in the U.S. market and, in particular, those more deeply embedded in regional supply chains. Meanwhile, the coefficient on $\text{Post}_{it} \times \Delta\tau_i^{CN}$ is not statistically different from zero in any specification. This pattern reinforces the earlier finding that Chinese retaliatory tariffs do not generate comparable gains for Thai exports to the U.S.

5 Firm-Level Evidence

While the previous section shows that Thai exports to the U.S. increase in more highly exposed product categories, these gains may reflect either the transshipment of Chinese goods through Thailand or deeper supply chain integration with China (Alfaro and Chor, 2023; Freund et al., 2024). Both channels may help firms circumvent trade barriers, but they differ sharply in their implications for Thailand's economy. Transshipment generates little, if any, domestic value added. By contrast, supply chain integration may still support domestic production if firms in Thailand undertakes part of the value-creating activity while relying more heavily on Chinese inputs. For example, multinational firms may relocate production stages from China to Thailand and continue to source raw material and intermediate inputs from China for goods exported to the U.S.

A related question is whether the observed trade diversion translates into domestic value-added gains for Thailand. Even if exports to the U.S. expand, the aggregate gains to the Thai economy may have been limited if that expansion primarily reflects administrative rerouting or high dependence on imported Chinese inputs. We therefore turn to firm-level evidence to distinguish between these channels and to assess whether export growth is accompanied by increases in domestic value added and employment.

5.1 Firm-Level Data

To distinguish between transshipment and supply-chain integration in the Thai case, we move from product-level to firm-level analysis. We construct firm-level exposure to the trade war by aggregating product-level tariff changes using each firm's pre-war export composition as weights.[9]

First, we construct each firm's exposure to U.S. tariffs on Chinese products:

$$\Delta\tau_f^{\text{US}} = \frac{\sum_i EX_{f,i,\text{pre}}^{\text{Total}} \Delta\tau_i^{\text{US}}}{\sum_i EX_{f,i,\text{pre}}^{\text{Total}}}, \tag{4}$$

where $EX_{f,i,\text{pre}}^{\text{Total}}$ denotes firm f's total exports of product i during the pre-war period (2013–2017), and $\Delta\tau_i^{\text{US}}$ represents the increase in U.S. tariffs on Chinese exports of product i. This measure captures the extent to which firm f's pre-war export basket is concentrated in products for which Chinese exporters faced higher tariffs in the U.S. market.

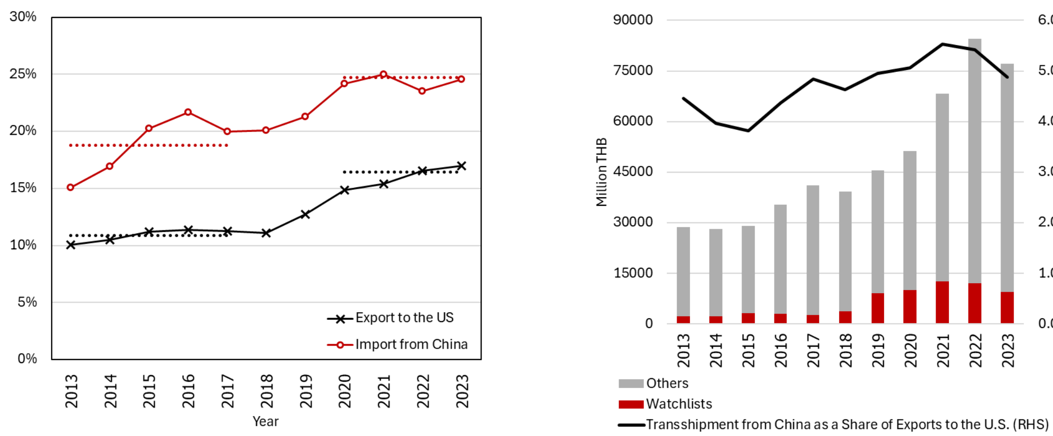
Second, because we focus on firms that export to the U.S. market, we control for each firm's exposure to U.S. tariffs that are directly imposed on Thai products. We define this exposure as

$$\tau_{f,t}^{\text{US,TH}} = \frac{\sum_i EX_{f,i,\text{pre}}^{\text{US}} \tau_{i,t}^{\text{US,TH}}}{\sum_i EX_{f,i,\text{pre}}^{\text{US}}}, \tag{5}$$

where $EX_{f,i,\text{pre}}^{\text{US}}$ denotes firm f's exports of product i to the U.S. during the pre-war period (2013–2017), and

[9] Summary statistics for the firm-level variables are reported in Table A.3 in the Appendix.

Figure 4: Potential Transshipment of Chinese Products through Thailand



(a) Thai Export Share to the U.S. and Thai Import Share from China

(b) Transshipment from China

Notes: Figure 4a plots the annual share of Thai exports to the U.S. in total Thai exports and the annual share of Thai imports from China in total Thai imports. Source: Bank of Thailand. Figure 4b reports the value of transshipment of Chinese products exported to the U.S. via Thailand over the period 2013–2023. The red bars indicate transshipment of products on the Department of Foreign Trade watchlist.

$\tau_{it}^{\text{US,TH}}$ denotes the tariff rate imposed by the U.S. on Thai exports of product i in year t. This variable controls for direct changes in U.S. market access faced by Thai exporters.

5.2 Transshipment and Input Sourcing

Figure 4a plots the share of Thai exports destined for the U.S. and the share of Thai imports sourced from China. Both series trend upward after the onset of the 2018 trade war. In particular, the share of imports from China in Thailand's total imports rises from just under 20 percent in the pre-war period to about 25 percent in recent years. One possible interpretation is that Chinese goods, facing reduced competitiveness in the U.S. market, were redirected toward Thailand and other third countries. At the same time, evidence from other emerging economies points to two related channels: the transshipment of Chinese goods (Iyoha et al., 2024) and a shift in sourcing toward Chinese inputs (Utar et al., 2025).

To examine the potential transshipment and shifts in input sourcing, we estimate the following regression specification:

$$y_{ft} = \beta \left(\text{Post}_{ft} \times \Delta\tau_f^{\text{US}} \right) + \mathbf{X}'_{ft}\gamma + +\varepsilon_{ft}, \tag{6}$$

where y_{ft} denotes an outcome for firm f in year t. The variable Post_{ft} is a binary indicator that equals one after firm f is exposed to U.S. tariff increases on Chinese products, and zero otherwise. The firm-level tariff exposure measure $\Delta\tau_f^{\text{US}}$ is defined using the firm's pre-war export basket. The vector $\mathbf{X}_{ft}$ includes the firm's exposure to U.S. tariffs directly imposed on Thai products, firm fixed effects and year fixed effects, respectively, and ε_{ft} is the error term.

We examine three sets of outcome variables. The first is firm f's exports to the U.S., $EX^{\mathrm{US}}_{f,t}$, which are similarly transformed using the inverse hyperbolic sine. The second measures potential transshipment of Chinese products to the U.S. through Thailand. Following Iyoha et al. (2024), we measure firm f's transshipment of product i from China to the U.S. in year t as the minimum of its imports of that product from China, $IM^{\mathrm{CN}}_{f,i,t}$, and its exports of the same product to the U.S., $EX^{\mathrm{US}}_{f,i,t}$:[10]

$$TRSM_{f,i,t} = \min\left\{IM^{\mathrm{CN}}_{f,i,t}, EX^{\mathrm{US}}_{f,i,t}\right\}. \tag{7}$$

We aggregate this measure across products to obtain firm-level transshipment:

$$TRSM_{f,t} = \sum_i TRSM_{f,i,t}. \tag{8}$$

Based on the formula above, Figure 4b shows that the value of Chinese products transshipped to the U.S. through Thailand increased over time and reached about 5 percent of Thai exports to the U.S. during 2022–2023. This magnitude is comparable to the transshipment ratios documented for Vietnam by Iyoha et al. (2024).

The third set of dependent variables captures input sourcing from China. To examine whether the trade war increases supply-chain integration with China, we study firm f's imports of Chinese inputs,

$$\sum_k IM^{\mathrm{CN}}_{f,k,t},$$

where we restrict product k to raw materials and intermediate inputs, and exclude products that firm f also exports to the U.S. This restriction helps distinguish input sourcing from the direct rerouting of finished goods.

The results, reported in the top panel of Table 6, show that firms more exposed to U.S. tariffs on Chinese goods increase their exports to the U.S. relative to less exposed firms. This finding confirms the product-level evidence of trade diversion. At the same time, we find evidence that increased exports to the U.S. are in part associated with both the transshipment of products from China and the increased supply chain integration with China. Column (2) shows that U.S. tariffs on Chinese goods significantly increase the value of Chinese products transshipped through Thailand to the U.S.. The effect remains statistically significant when transshipment is measured as a share of the firm's total exports to the U.S. in Column (3). These results suggest that some of the observed increase in Thai exports reflects rerouting rather than domestic production. As a result, the gains accruing to the Thai export sector may be smaller than what gross export growth alone

[10] This firm-level measure is conservative. It may understate the true extent of transshipment if rerouting occurs across firms within Thailand. For example, one firm may import a product from China and sell it domestically to another firm, which then exports it to the U.S. Iyoha et al. (2024) also compute this rerouting measure at the provincial level, which can capture within-province transactions across firms. Since our measure is constructed at the firm level, it should be interpreted as a lower-bound estimate of potential transshipment.

Table 6: Evidence of Transshipment and Supply Chain Effects

	EX_{ft}^{US}	Transshipment		Import of Chinese Inputs		
	Value	Value	Ratio to EX_{ft}^{US}	Value	Ratio to EX_{ft}^{Total}	Ratio to Revenue
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Overall estimates						
$\mathrm{Post}_{ft} \times \Delta\tau_f^{US}$	7.879***	2.646***	0.045*	4.439***	0.054	0.016
	(1.159)	(0.560)	(0.026)	(0.837)	(0.039)	(0.010)
Observations	62,975	62,975	43,953	62,975	54,621	50,705
Adjusted R^2	0.442	0.634	0.659	0.646	0.543	0.663
Panel B. Sectoral estimates						
Manufacturing:						
Food	7.741***	0.065	0.015	2.029	0.028	-0.003
	(2.222)	(1.008)	(0.038)	(1.483)	(0.049)	(0.011)
Apparel	-5.056*	0.609	0.028	-5.260**	0.106	0.050**
	(2.651)	(1.228)	(0.061)	(2.340)	(0.089)	(0.019)
Rubber&Wood	8.499***	2.875**	0.036	3.189*	-0.015	-0.008
	(2.499)	(1.212)	(0.039)	(1.936)	(0.074)	(0.015)
Petrochemical	10.970***	3.388***	0.075	7.743***	0.151**	0.027*
	(2.103)	(1.159)	(0.055)	(1.739)	(0.067)	(0.015)
Metal	14.761***	6.171***	0.021	8.674***	0.203**	0.062***
	(2.234)	(1.380)	(0.058)	(2.072)	(0.102)	(0.022)
Electrical Appliances	11.745***	1.931	-0.103	7.377***	0.328***	0.106***
	(2.667)	(1.852)	(0.090)	(2.540)	(0.115)	(0.040)
Electronics	20.227***	9.011***	0.039	13.399***	0.279**	0.123***
	(3.329)	(2.499)	(0.076)	(3.345)	(0.125)	(0.032)
Machinery	11.542***	4.659***	0.087	7.414***	0.206**	0.029
	(2.345)	(1.366)	(0.075)	(1.833)	(0.082)	(0.018)
Automotive	9.573***	3.188**	0.151**	5.356***	0.062	0.027*
	(2.199)	(1.443)	(0.076)	(1.813)	(0.076)	(0.015)
Other Manufacturing	0.711	1.332	0.018	1.177	0.063	0.009
	(2.274)	(1.164)	(0.048)	(1.807)	(0.066)	(0.014)
Non-manufacturing:						
Agri&Food&Mining	2.610	0.623	-0.023	1.871*	-0.144***	-0.020
	(2.328)	(0.714)	(0.036)	(1.048)	(0.053)	(0.014)
Automotive Trade	12.095***	5.956***	0.123	6.532**	-0.182	-0.018
	(3.637)	(2.306)	(0.096)	(3.003)	(0.119)	(0.017)
Wholesale Trade	5.505***	1.130	0.063	2.722**	-0.006	-0.007
	(1.978)	(0.983)	(0.049)	(1.319)	(0.083)	(0.018)
Retail Trade	8.482***	3.278**	-0.005	4.145**	0.065	-0.036
	(2.737)	(1.442)	(0.060)	(1.702)	(0.147)	(0.040)
Other Trade	-2.010	0.771	0.046	-1.036	-0.048	-0.022
	(2.306)	(0.942)	(0.049)	(1.461)	(0.086)	(0.021)
Observations	62,975	62,975	43,953	62,975	54,621	50,705
Adjusted R^2	0.447	0.635	0.659	0.648	0.544	0.664

Notes: This Table reports the effects of U.S. tariff changes on Thai exports to the U.S. (Column 1), exports to the U.S. identified as being transshipment of Chinese products (Column 2–3) and imports of Chinese inputs (Column 4–6). The dependent variables in Column 5 and 6 are winsorized at their 99 percentiles. Panel B reports sectoral estimates from regressions that interact $\mathrm{Post}_{ft} \times \Delta\tau_f^{US}$ with sector indicators. Standard errors in parentheses are clustered at the firm level. All regressions control for a firm's exposure to U.S. tariffs on Thai exports. Firms are classified into 13 sectors based on the International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4 at 2 or 3 digits as shown in parentheses. Manufacturing sectors consist of 8 industries: food (10-12), apparel (13-15), rubber&wood (16-17, 221), petrochemical (19-21, 222), metal (24-25), electrical appliances (26), electronics (27), machinery (28), automotive (29-30), and other. For non-manufacturing sectors, they are 5 industries: agri&food&mining (01-03, 05-09, 462-463, 473-472), automotive trade (45), wholesale trade (46), retail trade (47), and other. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively. All regressions include Firm and Industry×Time fixed effects. Industry×Time FEs are specified separately for non-manufacturing and manufacturing industries.

Table 7: Evidence of Transshipment and Supply Chain Effects: Extensive Margin

	EX^{US}_{ft}	Transshipment	Import of Chinese Inputs
	(1)	(2)	(3)
Panel A. Overall estimates			
$\text{Post}_{ft} \times \Delta\tau^{US}_{f}$	0.454***	0.175***	0.277***
	(0.072)	(0.039)	(0.052)
Observations	62,975	62,975	62,975
Adjusted R^2	0.304	0.569	0.573
Panel B. Sectoral estimates			
Manufacturing:			
Food	0.469***	0.025	0.177*
	(0.128)	(0.068)	(0.095)
Apparel	-0.257	0.051	-0.302**
	(0.165)	(0.088)	(0.142)
Rubber&Wood	0.469***	0.197**	0.204*
	(0.148)	(0.085)	(0.118)
Petrochemical	0.592***	0.229***	0.462***
	(0.129)	(0.080)	(0.107)
Metal	0.802***	0.383***	0.514***
	(0.132)	(0.092)	(0.122)
Electrical Appliances	0.629***	0.159	0.395***
	(0.153)	(0.122)	(0.145)
Electronics	1.010***	0.553***	0.723***
	(0.187)	(0.170)	(0.183)
Machinery	0.634***	0.323***	0.443***
	(0.142)	(0.095)	(0.117)
Automotive	0.531***	0.206**	0.317***
	(0.130)	(0.098)	(0.111)
Other Manufacturing	0.000	0.086	0.116
	(0.138)	(0.085)	(0.116)
Non-manufacturing:			
Agri&Food&Mining	0.203	0.053	0.174**
	(0.146)	(0.052)	(0.071)
Automotive Trade	0.713***	0.319**	0.399**
	(0.229)	(0.151)	(0.180)
Wholesale Trade	0.375***	0.067	0.185**
	(0.130)	(0.069)	(0.083)
Retail Trade	0.557***	0.239**	0.256**
	(0.180)	(0.100)	(0.112)
Other Trade	-0.132	0.059	-0.070
	(0.151)	(0.067)	(0.096)
Observations	62,975	62,975	62,975
Adjusted R^2	0.308	0.570	0.575

Notes: This Table reports the extensive-margin effects of U.S. tariff changes on Thai exports to the U.S. (Column 1), exports to the U.S. identified as being transshipment of Chinese products (Column 2) and imports of Chinese inputs (Column 3). The dependent variable is a dummy variable, which takes values of one whenever a firm engages in each of the operations above, and zero otherwise. Panel B reports sectoral estimates from regressions that interact $\text{Post}_{ft} \times \Delta\tau^{US}_{f}$ with sector indicators. Standard errors in parentheses are clustered at the firm level. All regressions control for a firm's exposure to U.S. tariffs on Thai exports. Firms are classified into 13 sectors based on the International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4 at 2 or 3 digits. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively. All regressions include Firm and Industry×Time fixed effects. Industry×Time FEs are specified separately for non-manufacturing and manufacturing industries.

Table 8: Evidence of Transshipment and Supply Chain Effects: Intensive Margin

	EX_{ft}^{US}	Transshipment		Import of Chinese Inputs		
	Value	Value	Ratio to EX_{ft}^{US}	Value	Ratio to EX_{ft}^{Total}	Ratio to Revenue
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A. Overall estimates						
$\text{Post}_{ft} \times \Delta\tau_f^{US}$	1.002***	1.921**	0.035	2.051***	-0.013	-0.002
	(0.261)	(0.754)	(0.028)	(0.755)	(0.066)	(0.014)
Observations	34,162	34,162	34,162	34,162	34,162	32,307
Adjusted R^2	0.815	0.737	0.650	0.831	0.720	0.761
Panel B. Sectoral estimates						
Manufacturing:						
Food	0.974**	-0.900	0.002	2.294	-0.055	-0.022
	(0.446)	(1.195)	(0.039)	(1.459)	(0.076)	(0.015)
Apparel	-1.312**	2.100	0.027	0.930	0.245	0.060**
	(0.582)	(1.577)	(0.064)	(1.354)	(0.155)	(0.030)
Rubber&Wood	1.274**	2.499	0.031	-0.069	-0.096	-0.034
	(0.518)	(1.535)	(0.041)	(1.541)	(0.144)	(0.022)
Petrochemical	1.487***	2.485	0.079	3.626***	-0.143	0.001
	(0.472)	(1.573)	(0.058)	(1.327)	(0.120)	(0.017)
Metal	1.813***	4.186**	-0.003	2.359	0.059	0.001
	(0.525)	(1.655)	(0.060)	(1.674)	(0.147)	(0.030)
Electrical Appliances	0.837	0.973	-0.050	2.033	0.232	0.068
	(0.643)	(1.796)	(0.090)	(1.360)	(0.181)	(0.050)
Electronics	3.094***	6.480***	0.047	0.945	-0.008	0.084**
	(0.976)	(2.502)	(0.072)	(1.376)	(0.178)	(0.033)
Machinery	1.213**	2.812*	0.059	3.209**	0.371**	0.040
	(0.489)	(1.573)	(0.079)	(1.380)	(0.170)	(0.029)
Automotive	1.324**	2.684	0.087	3.491***	0.026	0.030
	(0.626)	(1.642)	(0.079)	(1.332)	(0.120)	(0.023)
Other Manufacturing	0.436	2.765**	0.041	2.099	0.111	0.023
	(0.502)	(1.387)	(0.050)	(1.605)	(0.113)	(0.022)
Non-manufacturing:						
Agri&Food&Mining	0.529	-0.146	-0.029	0.979	-0.135	-0.015
	(0.449)	(1.048)	(0.035)	(1.269)	(0.089)	(0.021)
Automotive Trade	0.789	5.253**	0.127	3.320	-0.007	0.030
	(1.206)	(2.182)	(0.111)	(2.439)	(0.153)	(0.061)
Wholesale Trade	0.352	1.625	0.065	2.455*	0.046	-0.020
	(0.506)	(1.406)	(0.055)	(1.428)	(0.160)	(0.025)
Retail Trade	0.753	1.528	-0.017	-0.462	-0.623**	-0.134
	(0.743)	(2.014)	(0.062)	(1.862)	(0.316)	(0.101)
Other Trade	-0.364	0.959	0.072	-0.570	0.036	-0.060
	(0.593)	(1.628)	(0.056)	(1.620)	(0.170)	(0.039)
Observations	34,162	34,162	34,162	34,162	34,162	32,307
Adjusted R^2	0.816	0.737	0.651	0.831	0.720	0.762

Notes: This Table reports the effects of U.S. tariff changes on Thai exports to the U.S. (Column 1), exports to the U.S. identified as being transshipment of Chinese products (Column 2–3) and imports of Chinese inputs (Column 4–6), focusing on intensive margins. The sample only includes firms that export to the U.S. for more than six years and omits observations with zero export values. The dependent variables in Column 5 and 6 are winsorized at their 99 percentiles. Panel B reports sectoral estimates from regressions that interact $\text{Post}_{ft} \times \Delta\tau_f^{US}$ with sector indicators. Standard errors in parentheses are clustered at the firm level. All regressions control for a firm's exposure to U.S. tariffs on Thai exports. Firms are classified into 13 sectors based on the International Standard Industrial Classification of All Economic Activities (ISIC) Revision 4 at 2 or 3 digits. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively. All regressions include Firm and Industry×Time fixed effects. Industry×Time FEs are specified separately for non-manufacturing and manufacturing industries.

would imply.

Columns (4)–(6) examine whether more exposed firms increase their reliance on Chinese inputs. The value of Chinese input imports rises significantly among firms more exposed to U.S. tariffs on Chinese goods. Because these inputs may be used to produce goods sold in markets other than the U.S., we also scale Chinese input imports by a firm's total exports and total revenue. These ratios also capture whether firms have shifted their sourcing patterns toward Chinese inputs, rather than simply expanding overall production. We, however, fail to find any significant impact on both ratios: that is, the trade war does not result in shifts in import sourcing patterns in overall.[11]

The positive export response to U.S. tariffs is broad-based across sectors, as shown in Column (1) in the lower panel of Table 6. The largest coefficient is estimated for electronics, followed by metals. The evidence on transshipment and supply-chain integration with China is more concentrated. Sectors that see significant increases in the value of both transshipment and imports of Chinese inputs include petrochemicals, metals, electronics, machinery, and automotive products. In Column (4), greater Chinese input content in response to U.S. tariffs is also evident in electrical appliances. Importantly, we also observe a significant increase in the Chinese input content shares for most of these sectors, implying that firms rely more on inputs from China in their production.

For non-manufacturing sectors, the value of transshipment and Chinese input imports increases in some industries, such as automotive trade and retail trade, but the evidence is less clear once these measures are scaled by total exports or revenue. These results indicate that the mechanisms behind Thailand's export expansion are concentrated in specific manufacturing sectors. In these sectors, increased exports to the U.S. appear to be accompanied by both rerouting from China and deeper input sourcing from China.

The magnitudes of the full-sample estimates shown in Table 6 are relatively large,[12] which may reflect adjustment along the extensive margin. Firms that previously exported mainly to non-U.S. markets, or had little presence in the U.S. market, may have begun exporting to the U.S. after the trade war and hence recorded substantial sales growth in the U.S. market. To assess whether extensive margins account for these estimates, we conduct two further analyses. First, we directly test for extensive margins by using as a dependent variable the dummy variable that indicates whether a firm exports to the U.S., transships Chinese products to the U.S. or imports Chinese inputs in a given period. Second, we look instead at the intensive margins by restricting the sample to firms with an established presence in the U.S. market. In particular, we keep firms that export to the U.S. for at least seven years during the sample period and omit observations with zero U.S. exports.

Results for the extensive margins are reported in Table 7. By looking at the statistical significance of the

[11] This may be explained by the fact that exposed firms also increased input imports from other regions, including the U.S., ASEAN, and East Asia. As shown in Table A.8 in the Appendix, most of these effects are also not statistically significant when input imports are measured relative to firms' total exports or revenue.

[12] The sectoral estimates imply that firms exposed to a 10-percentage-point increase in U.S. tariffs on Chinese goods increase their exports to the U.S. by more than 600 percent in electronics and more than 300 percent in metals, relative to less exposed firms.

estimates, we find results to be consistent with those in Table 6. In overall, exposed firms expand their exports to the U.S. market while starting to engage in transshipment and import input from China. The estimates also appear to be economically important. A 10-percentage-point increase in firm exposure to U.S. tariffs raises the probability of exports to the U.S. by 4.5 percent. The positive responses of firm exports to the U.S. are also widespread across sectors, where significant evidence of transshipment and Chinese input sourcing is more concentrated in certain sectors such as petrochemical, metal, electronics, machinery, automotive, etc. Large estimates are still found in the metal and electronic sectors

As shown in Table 8, the intensive-margin results show a much weaker pattern. U.S. tariffs on Chinese goods continue to exert a positive and statistically significant effect on firm exports to the U.S., although the coefficient is much smaller than in the full sample. For instance, for firms exposed to a 10-percentage-point increase in U.S. tariffs, exports to the U.S. rise by about 10 percent. This pattern suggests that the large full-sample estimate is to a large extent driven by entry into the U.S. market. Meanwhile, most sectoral export responses remain positive despite smaller coefficient estimates, especially within manufacturing. The main exception is electrical appliances, for which the coefficient becomes insignificant. The strongest effects continue to appear in electronics and metals, where a 10-percentage-point tariff increase raises firm exports to the U.S. by 36 percent and 20 percent, respectively. By contrast, the sectoral evidence on transshipment and Chinese input sourcing becomes much weaker: transshipment values rise significantly only in electronics and metals, while imports of Chinese inputs rise significantly only in petrochemicals, machinery, and automotive products. At the same time, we barely observe significant changes in shares of Chinese input content, which contrasts with findings for the full sample.

All in all, these results point to the occurrence of both transshipment and greater supply chain integration with China, which are mainly driven by extensive margins. Shifts in input sourcing shares are also evidenced in some manufacturing sectors. Meanwhile, intensive margins can explain the expansion of exports to the U.S., but much less so for the transshipment and input sourcing patterns.

5.3 Domestic Value Added

Given the evidence of transshipment and increased supply-chain integration with China, a natural question is whether trade diversion generated domestic value-added gains for the Thai economy. To address this question, we decompose firm exports to the U.S. into three components: domestic content, imported input content, and transshipped Chinese products.

For each firm f in year t, we compute the value of inputs from country j embodied in exports to the U.S. as

$$INPUT_{f,t}^{j,\text{US}} = \left(\frac{IM_{f,t}^{j}}{REV_{f,t} - TRSM_{f,t}} \right) \left(EX_{f,t}^{\text{US}} - TRSM_{f,t} \right), \tag{9}$$

where $IM_{f,t}^{j}$ denotes firm f's total imports of raw materials and intermediate inputs from country j, excluding imported products that are also exported by firm f. The variable $REV_{f,t}$ denotes firm revenue. The ratio $IM^j_{f,t}/REV_{f,t}$ therefore measures the country-j imported-input share in firm f's production. The second term is firm f's exports to the U.S. net of transshipped Chinese products.[13]

We then define the domestic content of firm f's exports to the U.S., $DC^{US}_{f,t}$, as total exports to the U.S. net of transshipped Chinese products and imported input content from all source countries:

$$DC^{US}_{f,t} = EX^{US}_{f,t} - TRSM_{f,t} - \sum_j INPUT^{j,US}_{f,t}. \tag{10}$$

We also define the domestic-content share of U.S.-bound exports as $DCS^{US}_{f,t} = DC^{US}_{f,t}/EX^{US}_{f,t}$, which measures the share of U.S.-bound exports accounted for by domestic content.

Figure 5 reports this decomposition over time and across industries. The figure shows that the domestic content of Thai exports to the U.S. declined between 2017 and 2023. The aggregate domestic content share fell from about 68 percent before the trade war to below 60 percent in 2023, a decline of roughly 8 percentage points. This decline is mainly driven by the rising share of inputs imported from China, shown in the yellow bars. By 2023, Chinese imported inputs accounted for about 17 percent of Thai exports to the U.S.

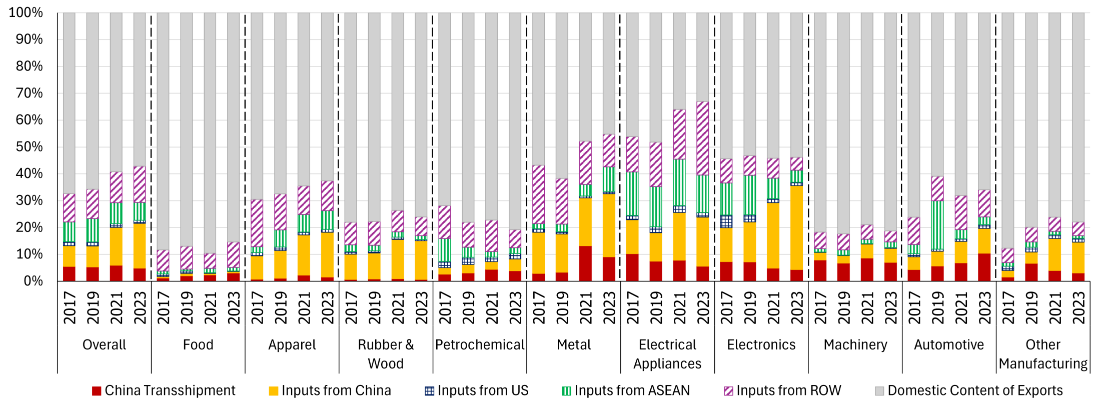
The domestic content share also varies substantially across sectors. It remains high in food manufacturing and non-manufacturing sectors, reaching about 85 percent and 95 percent in 2023, respectively. By contrast, domestic content accounts for less than half of gross exports in metals and electrical appliances. Several sectors exhibit a clear decline in domestic content over time. The pattern is especially pronounced in electrical appliances, whose domestic content stands at less than 40 percent over the latter three years due in part to rising Chinese content. For electronics sectors, we can observe a clear rising trend of Chinese input shares from 10 percent in 2017 to almost 30 percent in 2023. However, their domestic content shares stand still, since imports from other sources decline. This pattern is consistent with the regression results in Table 6, where both electronics and electrical appliance sectors have the largest estimated coefficients for Chinese input sourcing.

To assess whether the increase in Thai exports to the U.S. generated domestic value added, we examine how firms' domestic content of U.S.-bound exports responds to U.S. tariff shocks. We first estimate Equation 6 using $DC^{US}_{f,t}$ as the main dependent variable. Second, to gauge the magnitude of the effect, we estimate the same regression using firms' exports to the U.S. as the dependent variable. Third, we compare these two responses by examining the domestic-content share of firms' exports to the U.S., defined as $DC^{US}_{f,t}/EX^{US}_{f,t}$. Finally, we examine whether tariff exposure is associated with changes in firm employment. We obtain employment data from the Social Security Office, which are matched to customs records using firm identifiers. If the export expansion were driven entirely by transshipment, we would expect little or no response in

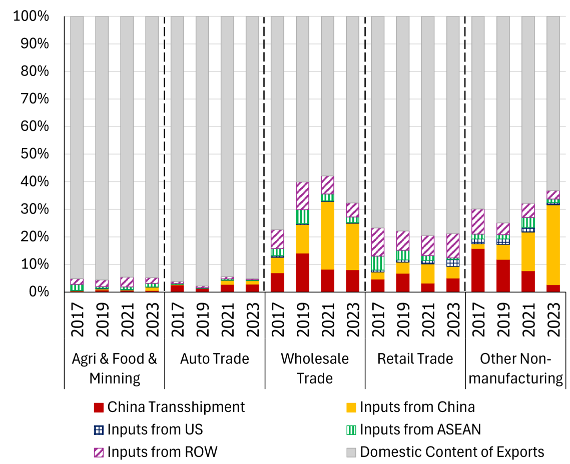
[13] Because firm imports and revenue come from different data sources, total imported inputs may exceed firm revenue for some observations. In such cases, we replace the denominator with the firm's total input imports, which implies zero domestic value added from exports. This adjustment may lead us to understate domestic content at both the firm level and in the aggregate.

Figure 5: The Decomposition of Thai Exports to the U.S. by Sources of Inputs

(a) Overall and Manufacturing



(b) Non-manufacturing



Note: This figure reports, across economic sectors, the decomposition of Thai exports to the U.S. based on sources of input content. Transshipped products from China are separated and shown in red.

domestic-content measures or employment.

Table 9 reports the effects of U.S. tariff exposure on firms' U.S.-bound exports, domestic content, domestic-content shares, and employment. Columns (1)–(4) report results for the full sample, which captures both extensive- and intensive-margin adjustments, while Columns (5)–(8) restrict attention to the intensive margin. Columns (2) and (6) show that, after accounting for transshipment and imported input content, the domestic content of firms' exports to the U.S. still responds positively to U.S. tariffs on Chinese goods.

The sector-level estimates in Panel B show a similar pattern. Domestic content in U.S.-bound exports rises significantly in many manufacturing sectors, particularly those that also exhibit positive export responses in Columns (1) and (5).[14] For these sectors, the estimated effects on domestic content are comparable to, or only slightly smaller than, the corresponding gross-export effects. This evidence implies that domestic content

[14]The main exceptions are rubber and wood, food, and automotive products, where the estimated effects on domestic content in the intensive-margin sample are statistically insignificant or only weakly significant.

Table 9: Domestic Value Added of Exports

	Full Sample				Intensive Margins			
	EX^{US}	DC^{US}	DCS^{US}	EMP	EX^{US}	DC^{US}	DCS^{US}	EMP
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A. Overall estimates								
$\text{Post}_{ft} \times \Delta\tau_f^{US}$	5.931***	5.286***	-0.015	0.542***	0.951***	0.979***	-0.000	0.616***
	(1.106)	(1.095)	(0.028)	(0.091)	(0.256)	(0.314)	(0.023)	(0.096)
Observations	54,339	54,339	40,761	48,816	30,963	30,963	30,963	27,397
Adjusted R^2	0.467	0.493	0.754	0.950	0.835	0.738	0.769	0.970
Panel B. Sectoral estimates								
Manufacturing:								
Food	6.400***	6.041***	-0.009	0.824***	1.009**	0.824*	-0.010	1.054***
	(2.076)	(2.078)	(0.041)	(0.172)	(0.436)	(0.493)	(0.032)	(0.162)
Apparel	-5.012**	-4.766*	-0.067	-0.329	-1.461**	-1.669**	-0.066	0.192
	(2.528)	(2.540)	(0.061)	(0.210)	(0.571)	(0.693)	(0.050)	(0.197)
Rubber&Wood	6.296***	6.130***	-0.018	0.716***	1.053**	0.848	-0.010	0.700***
	(2.303)	(2.305)	(0.042)	(0.210)	(0.494)	(0.537)	(0.033)	(0.178)
Petrochemical	8.188***	7.598***	0.043	0.760***	1.668***	1.874***	0.048	0.829***
	(2.005)	(2.008)	(0.054)	(0.141)	(0.446)	(0.577)	(0.043)	(0.147)
Metal	11.846***	10.597***	0.048	0.755***	1.643***	1.976**	0.049	0.717***
	(2.189)	(2.206)	(0.062)	(0.153)	(0.467)	(0.771)	(0.050)	(0.169)
Electrical Appliances	9.048***	9.249***	0.046	0.742***	0.576	-0.941	-0.025	0.590***
	(2.404)	(2.479)	(0.089)	(0.185)	(0.657)	(0.819)	(0.078)	(0.194)
Electronics	16.548***	14.947***	-0.031	0.766***	2.861***	2.739***	-0.003	0.744***
	(3.149)	(2.937)	(0.076)	(0.223)	(0.920)	(0.946)	(0.063)	(0.181)
Machinery	9.478***	7.746***	-0.080	0.614***	1.457***	1.224**	-0.011	0.606***
	(2.208)	(2.278)	(0.067)	(0.165)	(0.456)	(0.528)	(0.051)	(0.140)
Automotive	7.073***	5.898***	-0.085	0.269*	1.455**	1.134*	-0.010	0.400***
	(2.076)	(2.097)	(0.071)	(0.150)	(0.591)	(0.687)	(0.056)	(0.146)
Other Manufacturing	0.757	1.005	-0.040	-0.109	0.394	0.013	-0.057	0.060
	(2.166)	(2.153)	(0.051)	(0.212)	(0.485)	(0.602)	(0.041)	(0.217)
Non-manufacturing:								
Agri&Food&Mining	-0.144	-0.629	-0.001	0.434**	0.445	0.760	0.020	0.689***
	(2.247)	(2.203)	(0.039)	(0.214)	(0.468)	(0.549)	(0.033)	(0.228)
Automotive Trade	8.110**	8.643**	0.007	0.846**	0.286	0.695	-0.125	0.211
	(3.577)	(3.367)	(0.096)	(0.370)	(1.134)	(1.222)	(0.088)	(0.307)
Wholesale Trade	3.063	2.572	-0.047	0.234	0.166	0.411	-0.017	0.256
	(1.941)	(1.835)	(0.050)	(0.161)	(0.520)	(0.614)	(0.043)	(0.199)
Retail Trade	5.789**	4.211*	-0.023	0.704***	-0.015	0.775	0.001	0.350
	(2.675)	(2.555)	(0.077)	(0.224)	(0.692)	(0.976)	(0.076)	(0.274)
Other Trade	-1.831	-1.450	0.014	0.032	-0.400	-0.058	-0.027	-0.067
	(2.512)	(2.445)	(0.071)	(0.240)	(0.658)	(0.855)	(0.066)	(0.270)
Observations	54,339	54,339	40,761	48,816	30,963	30,963	30,963	27,397
Adjusted R^2	0.470	0.496	0.754	0.950	0.836	0.739	0.769	0.970

Notes: This Table reports the effects of U.S. tariff changes on firms' exports to the U.S. (Column 1), domestic content out of these exports (Column 2), the domestic-content share of exports to the U.S. (Column 3) and employment (Column 4). For intensive margins, the sample only includes firms that export to the U.S. for more than six years and omits observations with zero export values. Panel B reports sectoral estimates from regressions that interact $\text{Post}_{ft} \times \Delta\tau_f^{US}$ with sector indicators. Standard errors in parentheses are clustered at the firm product level. All regressions control for a firm's exposure to U.S. tariffs on Thai exports. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively. All regressions include Firm and Industry×Time fixed effects. Industry × Time FEs are specified separately for non-manufacturing and manufacturing industries.

accounts for a substantial portion of the expansion of Thai exports to the U.S.

Columns (3) and (7) show that the effects of U.S. tariff exposure on the domestic-content share of U.S.-bound exports are small and statistically insignificant. This pattern holds both overall and across sectors. These results indicate that, despite the transshipment and rising Chinese input content documented above, the expansion of U.S.-bound exports generated substantial domestic value added. Economically, the finding is consistent with a scale effect: firms increased U.S.-bound exports, the domestic-content share remained broadly unchanged, and domestic content therefore rose in levels.

Columns (4) and (8) show that tariff exposure is also associated with higher employment across many sectors, consistent with an expansion of real firm activity. The employment effects are strongest and most precisely estimated in manufacturing sectors. Several non-manufacturing sectors show estimates of comparable magnitude, but they are not statistically different from zero due to larger standard errors. The employment results hence point to another channel through which trade diversion and supply chain restructuring can generate domestic gains for the Thai economy. The finding is in line with Mayr-Dorn et al. (2026), who show that greater exposure to the trade war is associated with higher employment in traded industries at both the individual and district levels. Rotunno et al. (2026) also document that the US-China tariffs increase job creation in Vietnam at the firm level. A similar pattern emerges for Mexico, where Utar (2026) finds that higher US tariffs on China significantly increase manufacturing output and employment, driven by multinationals and their domestic affiliates operating under Mexico's export platform.

6 Conclusion

This research provides a comprehensive assessment of how the 2018 U.S.-China trade war reshapes trade flows for Thailand, a key third-party exporter. Leveraging detailed Thai customs data from 2013 to 2023, the empirical evidence demonstrates that U.S. tariffs on Chinese products spur a significant increase in Thai exports to the U.S., a result consistent with the trade-diversion hypothesis. However, this response is not immediate; a three-to-four-year delay occurs before these effects fully materialize, suggesting that the restructuring of global supply chains and the establishment of new sourcing relationships by U.S. importers is a gradual process. The gains from trade diversion are highly heterogeneous across sectors and product types, where the surge in exports to the U.S. is primarily driven by capital goods within the machinery, electrical equipment, and transportation sectors. Crucially, the products that successfully displace Chinese goods in the U.S. market are those with pre-existing supply chain links to China. In contrast, Chinese retaliatory tariffs on U.S. goods have minimal spillover effects on Thai exports, with only a slight negative impact on certain exports to China.

Firm-level analysis clarifies the mechanisms behind this export growth, revealing significant evidence of both the transshipment of Chinese goods through Thailand and increased regional supply chain integration. This integration is marked by a corresponding surge in imports of Chinese inputs, particularly in manufacturing industries such as petrochemicals, metal, electrical appliances, electronics, machinery, and automotive sectors. Notably, even when controlling for these channels—administrative rerouting and increased foreign-input intensity—large and positive trade-diversion effects on Thai exports to the U.S. persist.

Ultimately, these findings suggest that Thailand's role as a bystander in the trade war has resulted in meaningful economic contributions. The observed trade diversion is not merely a hollow expansion of gross flows; rather, it has contributed to domestic value-added expansion and a widespread increase in firm employment across various sectors. The results highlight that while trade diversion is strongly mediated by regional value chain dependencies, it remains a significant driver of domestic economic activity in the face of shifting global trade regimes.

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Appendix

Appendix A More Figures and Tables

Table A.1: Thai Sectoral Exports by Destination Countries

Sector	U.S.	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 U.S., 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.2: Product-level Summary Statistics

	N	Mean	S.D.	Min	Median	Max
$\Delta\tau^{US}$	33990	0.088	0.108	0	0	0.467
$\Delta\tau^{CN}$	33990	0.073	0.094	-0.25	0	0.25
Log(EX^{Total})	33990	19.071	3.05	0	19.303	27.439
Log(EX^{US})	15235	17.743	3.112	0	18.036	26.635
Log(EX^{CN})	13299	17.444	3.164	0	17.648	25.934
Log(EX^{ASEAN})	29601	18.099	2.9	0	18.316	26.274
Log(EX^{ROW})	22770	18.019	3.112	0	18.23	27.061
EX^{Total}	33990	2.04E+09	1.11E+10	0	1.21E+08	4.13E+11
EX^{US}	15235	6.57E+08	4.45E+09	0	3.40E+07	1.85E+11
EX^{CN}	13299	6.05E+08	3.37E+09	0	2.31E+07	9.16E+10
EX^{ASEAN}	29601	5.92E+08	2.89E+09	0	4.50E+07	1.29E+11
EX^{ROW}	22770	8.23E+08	5.65E+09	0	4.13E+07	2.83E+11
RCA^{US}	33990	0.44	0.496	0	0	1
CN Loss	33990	0.297	0.457	0	0	1
GLI^{CN}	33935	0.24	0.247	0	0.149	0.938
GLI^{ASEAN}	33990	0.454	0.279	0	0.47	0.995

Table A.3: Firm-level Summary Statistics

	N	Mean	S.D.	Min	Median	Max
Full Sample:						
$\Delta\tau^{US}$	62975	0.181	0.074	0	0.197	0.648
Log(EX^{US})	62975	11.543	7.939	0	14.898	25.997
Log(TRSM)	62975	2.835	5.855	0	0	23.878
TRSM Ratio to EX^{US}	43953	0.084	0.244	0	0	1
Log(Chinese Inputs)	62975	6.135	8.157	0	0	24.952
Chinese Inputs Ratio to EX^{Total}	54622	0.112	0.352	0	0	1.886
Chinese Inputs Ratio to Revenue	50746	0.026	0.086	0	0	1
Log(Domestic Content of EX^{US})	54371	11.733	7.839	0	15.089	25.206
Log(Employment)	48880	4.651	1.647	1.609	4.682	10.593
Domestic Content Ratio of EX^{US}	40821	0.812	0.288	0	0.960	1
EX^{US}	62975	1.51E+08	1.45E+09	0	1.48E+06	9.76E+10
TRSM	62975	7.35E+06	1.30E+08	0	0	1.17E+10
Chinese Inputs	62975	7.05E+07	6.71E+08	0	0	3.43E+10
Domestic Content of EX^{US}	54371	1.08E+08	7.90E+08	0	1.79E+06	4.42E+10
Employment	48880	383.394	1031.228	5	108	39860.83
Intensive margins:						
$\Delta\tau^{US}$	34162	0.181	0.074	0	0.202	0.648
Log(EX^{US})	34162	17.02	2.658	8.037	17.081	25.997
Log(TRSM)	34162	4.462	6.892	0	0	23.878
TRSM Ratio to EX^{US}	34162	0.077	0.229	0	0	1
Log(Chinese Inputs)	34162	9.164	8.55	0	12.434	24.952
Chinese Inputs Ratio to EX^{Total}	36550	0.113	0.337	0	0	1.886
Chinese Inputs Ratio to Revenue	34587	0.031	0.089	0	0	1
Log(Domestic Content of EX^{US})	30994	16.884	2.77	0	17.035	25.206
Log(Employment)	27451	4.942	1.665	1.609	5.048	10.593
Domestic Content Ratio of EX^{US}	32321	0.814	0.278	0	0.953	1
EX^{US}	34162	2.67E+08	1.96E+09	1547	1.31E+07	9.76E+10
TRSM	34162	1.29E+07	1.73E+08	0	0	1.17E+10
Chinese Inputs	34162	1.16E+08	8.87E+08	0	1.26E+05	3.43E+10
Domestic Content of EX^{US}	30994	1.82E+08	1.03E+09	0	1.25E+07	4.42E+10
Employment	32324	480.887	1222.031	5	148	39860.83

Table A.4: The Effect of the U.S.–China Trade War on Thai Exports by Destination (Unweighted Tariff)

Dep. Var.: Thai Export Value	Total (1)	USA (2)	China (3)	ASEAN (4)	ROW (5)
$\text{Post}_{it} \times \Delta\tau_i^{US}$	0.396*	0.744*	0.454	0.367	0.515*
	(0.220)	(0.386)	(0.462)	(0.238)	(0.303)
$\text{Post}_{it} \times \Delta\tau_i^{CN}$	0.284	0.043	-0.564	0.231	0.125
	(0.258)	(0.402)	(0.526)	(0.302)	(0.351)
Observations	33,990	15,235	13,299	29,601	22,770
Adjusted R^2	0.854	0.795	0.772	0.804	0.806

Notes: Standard errors in parentheses are clustered at the HS-6 product level. All regressions control for tariffs the destination country imposes on Thai exports, HS-6 product fixed effects, and year fixed effects. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

Table A.5: Heterogeneous Effects of the U.S.–China Tariffs on Thai Exports: Sector (Unweighted)

	Total Exports		Exports to the U.S.		Exports to China		Exports to ASEAN	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
U.S. tariffs on Chinese goods:								
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Agr.}_i$	0.854	0.934*	0.002	0.008	0.271	0.206	0.027	0.110
	(0.559)	(0.560)	(0.804)	(0.806)	(0.965)	(0.967)	(0.703)	(0.704)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Mfg.}_i$	0.321		0.822**		0.515		0.422*	
	(0.217)		(0.392)		(0.486)		(0.242)	
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Chem./Plast./Rub.}_i$		1.291***		1.345		0.191		1.085***
		(0.424)		(0.969)		(0.827)		(0.406)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Mach./Elec./Transp.}_i$		0.937*		1.682***		0.114		0.673
		(0.479)		(0.611)		(0.737)		(0.502)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Other mfg.}_i$		-0.268		0.217		0.566		-0.019
		(0.237)		(0.422)		(0.582)		(0.271)
Chinese tariffs on U.S. goods:								
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Agr.}_i$	-0.103	0.013	0.718	0.753	0.196	0.111	0.566	0.723
	(0.598)	(0.599)	(0.846)	(0.847)	(1.037)	(1.044)	(0.679)	(0.681)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Mfg.}_i$	0.341		-0.055		-0.692		0.190	
	(0.268)		(0.419)		(0.541)		(0.310)	
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Chem./Plast./Rub.}_i$		0.689		-0.860		-0.252		1.490***
		(0.564)		(1.347)		(1.269)		(0.506)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Mach./Elec./Transp.}_i$		-0.339		-0.130		0.229		-0.352
		(0.555)		(0.645)		(0.724)		(0.580)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Other mfg.}_i$		0.875***		0.186		-1.253*		0.617
		(0.306)		(0.499)		(0.702)		(0.377)
Observations	33,990	33,990	15,235	15,235	13,299	13,299	29,601	29,601
Adjusted R^2	0.854	0.855	0.795	0.796	0.772	0.772	0.804	0.805

Notes: Each reported coefficient corresponds to the interaction between Post_{it}, the tariff exposure measure, and the indicated product category. Agr. = agricultural products; Mfg. = manufacturing products; Chem./Plast./Rub. = chemicals, plastics, and rubbers; Mach./Elec./Transp. = machinery, electrical equipment, and transportation; Other mfg. = other manufacturing products. Standard errors in parentheses are clustered at the HS-6 product level. All regressions control for tariffs the destination country imposes on Thai exports, HS-6 product fixed effects, and year fixed effects. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

Table A.6: Heterogeneous Effects of the U.S.–China Tariffs on Thai Exports: Product Type (Unweighted)

	Total Exports (1)	Exports to the U.S. (2)	Exports to China (3)	Exports to ASEAN (4)
U.S. tariffs on Chinese goods:				
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Capital}_i$	0.975*	1.181	2.231**	0.743
	(0.548)	(0.753)	(0.895)	(0.583)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Consumer}_i$	0.854***	0.428	0.844	0.227
	(0.299)	(0.486)	(0.610)	(0.344)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Raw mat./interm.}_i$	0.366	0.863	0.135	0.842**
	(0.305)	(0.631)	(0.674)	(0.354)
$\text{Post}_{it} \times \Delta\tau_i^{\text{US}} \times \text{Other}_i$	0.489	0.053	-0.954	0.173
	(0.622)	(0.845)	(1.958)	(0.751)
Chinese tariffs on U.S. goods:				
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Capital}_i$	-0.895	0.500	-1.710*	-0.781
	(0.675)	(0.840)	(0.928)	(0.708)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Consumer}_i$	0.521	0.160	-0.453	0.980**
	(0.336)	(0.493)	(0.752)	(0.432)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Raw mat./interm.}_i$	0.382	-0.396	-0.640	0.019
	(0.361)	(0.683)	(0.705)	(0.402)
$\text{Post}_{it} \times \Delta\tau_i^{\text{CN}} \times \text{Other}_i$	0.491	0.893	0.533	0.505
	(0.670)	(0.984)	(1.910)	(0.814)
Observations	33,990	15,235	13,299	29,601
Adjusted R^2	0.855	0.795	0.772	0.804

Notes: Each reported coefficient corresponds to the interaction between Post_{it}, the tariff exposure measure, and the indicated product type. Raw mat./interm. = raw materials and intermediate inputs; Consumer = consumer goods; Capital = capital goods; Other = other products. Standard errors in parentheses are clustered at the HS-6 product level. All regressions control for tariffs the destination country imposes on Thai exports, HS-6 product fixed effects, and year fixed effects. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively.

Table A.7: The Effect of U.S.–China Tariffs on Thai Exports: Product Characteristics (Unweighted)

	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Post}_{it} \times \Delta\tau_i^{US}$	0.483	0.594	0.334	0.139	-0.034	-0.098
	(0.420)	(0.409)	(0.441)	(0.497)	(0.482)	(0.526)
$\text{Post}_{it} \times \Delta\tau_i^{US} \times \text{RCA}_i^{US}$	0.605*				0.759*	0.609
	(0.327)				(0.402)	(0.389)
$\text{Post}_{it} \times \Delta\tau_i^{US} \times \text{CN Loss}_i$		0.335			-0.044	-0.032
		(0.342)			(0.410)	(0.408)
$\text{Post}_{it} \times \Delta\tau_i^{US} \times \text{GLI}_i^{CN}$			1.422**		1.636**	
			(0.635)		(0.650)	
$\text{Post}_{it} \times \Delta\tau_i^{US} \times \text{GLI}_i^{ASEAN}$				1.221**		1.199*
				(0.615)		(0.613)
$\text{Post}_{it} \times \Delta\tau_i^{CN}$	0.013	0.014	0.040	0.043	0.007	0.015
	(0.403)	(0.406)	(0.403)	(0.402)	(0.405)	(0.404)
Observations	15,235	15,235	15,224	15,235	15,224	15,235
Adjusted R^2	0.795	0.795	0.795	0.795	0.796	0.795

Note: Standard errors in parentheses are clustered at the HS-6 product level. All regressions control for U.S. tariffs on Thai exports. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively. All regressions include HS6 and Time fixed effects.

Table A.8: Evidence on Regional Supply Chain Effects

	Full Sample			Intensive Margins		
	Value	Ratio to EX_{ft}^{Total}	Ratio to Revenue	Value	Ratio to EX_{ft}^{Total}	Ratio to Revenue
Import of U.S. Inputs:						
$\text{Post}_{f,t} \times \Delta\tau_f^{US}$	1.470**	-0.007	0.004	0.550	-0.010	0.004
	(0.623)	(0.021)	(0.005)	(0.678)	(0.020)	(0.007)
Observations	62,975	54,621	50,705	34,162	34,130	32,307
Adjusted R^2	0.636	0.609	0.595	0.788	0.772	0.672
Import of ASEAN Inputs:						
$\text{Post}_{f,t} \times \Delta\tau_f^{US}$	2.389***	0.048***	0.010	0.925	0.041**	0.009
	(0.705)	(0.016)	(0.007)	(0.764)	(0.016)	(0.009)
Observations	62,975	54,621	50,705	34,162	34,130	32,307
Adjusted R^2	0.662	0.550	0.549	0.812	0.731	0.623
Import of East Asia Inputs:						
$\text{Post}_{f,t} \times \Delta\tau_f^{US}$	4.166***	0.006	0.004	0.689	-0.115***	-0.026**
	(0.809)	(0.037)	(0.011)	(0.627)	(0.036)	(0.012)
Observations	62,975	54,621	50,705	34,162	34,130	32,307
Adjusted R^2	0.689	0.562	0.617	0.883	0.771	0.728

Note: This Table reports the effects of U.S. tariff changes on firm imports of inputs from certain sources. East Asia includes Japan, Korea and Taiwan. Standard errors in parentheses are clustered at the firm level. All regressions control for a firm's exposure to U.S. tariffs on Thai exports. *,**, and *** indicate the significance level of 0.10, 0.05, and 0.01, respectively. For intensive margins, the sample only includes firms that export to the US for more than six years and omits observations with zero export values. All regressions include Firm and Industry×Time fixed effects. Industry×Time FEs are specified separately for non-manufacturing and manufacturing industries.