

Trade Wind Series

Trade-at-Risk: ASEAN+3 Export Vulnerabilities to Rising US Tariffs¹

November 21, 2025

I. Introduction

1. The ASEAN+3 region's long-standing export-led growth strategy is facing renewed headwinds. For decades, the region benefited substantially from globalization, leveraging trade openness, cost advantages and the United States as a key export market to enhance export competitiveness and drive economic development (AMRO 2020). While the US–China trade conflict that escalated in 2018 raised concerns about the durability of this model, some regional economies managed to benefit from the resulting trade reconfiguration (Zhao and Ho 2023). However, with the reescalation of trade tensions this year, the resilience of trade-dependent economies in the region is once again being put to the test.

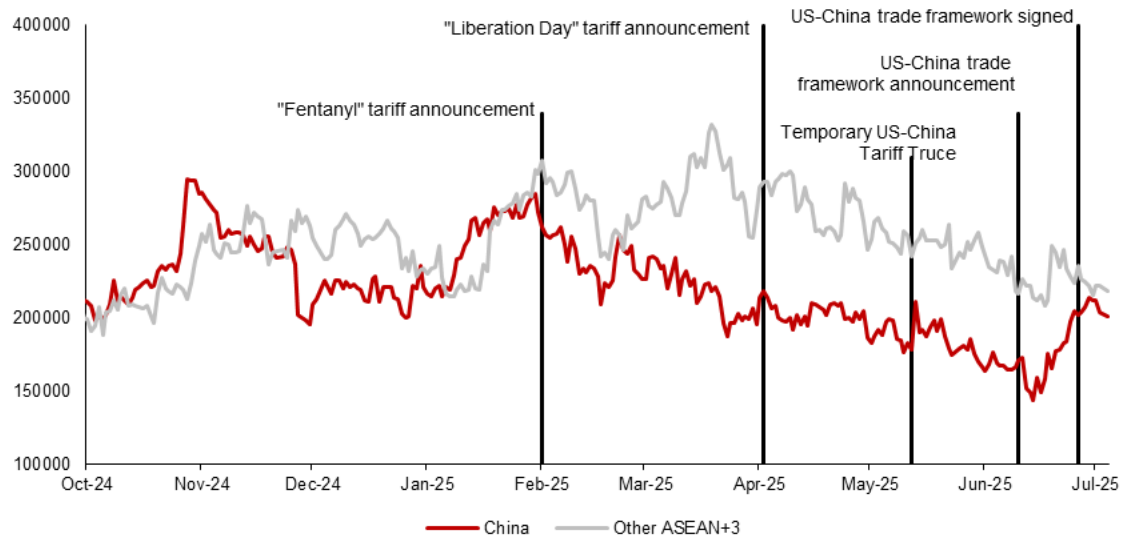
2. Trade tensions have re-escalated following the start of US President Trump's second term, marked by the announcement of reciprocal tariffs on a global scale. ASEAN+3 has been significantly affected, with several economies facing elevated effective tariff rates following the latest US tariff announcements and bilateral trade deals. As details of the tariff implementation continue to unfold and their legal validity remains under review, uncertainty regarding the future trajectory of US's trade policy will continue to cast a shadow over global trade. This unpredictability, coupled with the potential for further escalation, underscores the need to assess the export risks faced by ASEAN+3 economies amid rising trade restrictions from the US.

3. The disruptive impacts of the latest tariff measures and heightened uncertainty are already visible in trade flows between the ASEAN+3 region and the United States. Direct US–China shipments spiked in early November as firms rushed to front-load goods ahead of expected duties (Figure 1). Since the first “fentanyl” tariffs took effect between February and June 2025, China trade volumes on the direct route to the

¹ Prepared by Yin Fai Ho, Laura Britt-Fermo, and Toan Long Quach (all Macro-Financial Research Group); authorized by Abdurrohman (Deputy Director). The authors would like to thank Wee Chian Koh, Chunyu Yang, Pim-orn Wacharaprapapong, and Poh Lynn Ng for insightful suggestions and feedback, as well as Catharine Kho, Anthony Tan, Allen Ng, Jerry Huang, Jorge Antonio Chan-Lau for useful comments. The views expressed herewith are the authors' and do not necessarily represent those of AMRO or AMRO management. Unless otherwise indicated, the analysis is based on information available up to September 2025. For brevity, Brunei Darussalam as “Brunei” and Hong Kong, China, as “Hong Kong” in the text.

US had fallen steadily to half their early October levels. In contrast, shipments routed through the rest of the region had increased steadily, suggesting trade diversion and supply chain adjustments. Nevertheless, this momentum was reversed by the announcement of reciprocal tariffs in April, which triggered a decline of about 30 percent from the March peak. Recent trade deals, such as the announcement of a US-China trade framework in early June, resulted in only a modest recovery for shipments from China while the impact to the rest of the region remained muted.

Figure 1. ASEAN+3: Estimated Trading Tonnages to the US
(30-day moving average, proxied tonnages)



Sources: MarineTraffic; and AMRO staff calculations.

Note: Data as of July 6, 2025. Tonnage is estimated following the method discussed in del Rosario and Quach (2020). Data included containers arrived at the US. The date refers to the date of arrival to a port in the US. The underlying data is available to member authorities via [AMRO's ARTEMIS platform](#).

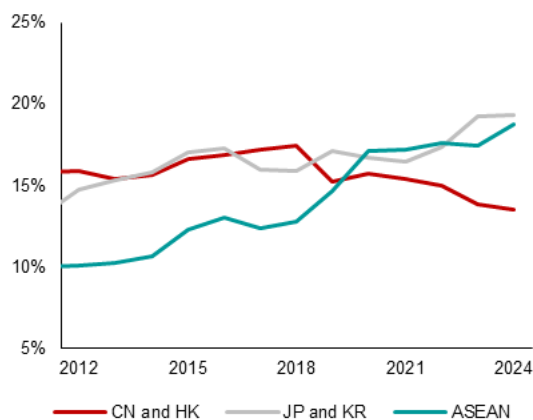
4. Understanding trade elasticity is central to evaluating the responsiveness of trade flows to changes in relative prices and tariffs. The magnitude of the effects of tariff increases depends critically on trade elasticity, which measures the responsiveness of import demand and export supply to changes in prices. Goods with high price elasticity of demand are particularly sensitive to tariffs. Conversely, goods with low price elasticity of demand experience smaller reductions in trade volumes, as consumers react less to price changes (Salvatore 2019; Feenstra 2016). These elasticities are critical for modeling **trade vulnerabilities**—how susceptible countries are to external shocks such as tariff hikes—which is the focus of this paper.

5. This note analyzes how vulnerable ASEAN+3 exports are to rising trade friction from the US. Exports of the ASEAN+3 economies can be affected directly via their bilateral exposure and composition in relation to the US market as US consumers purchase fewer foreign products amid rising prices. Certain exports are more trade-elastic than others—these products face a larger decline in demand in response to rising trade costs. At the same time, regional exports can also be indirectly affected through other economies by weaker US demand given the region's high participation in global value chains (GVCs) (Zhao and Ho 2024). In subsequent sections, a trade-at-risk indicator is constructed by mapping economy-level trade-weighted elasticities with country-specific trade exposures, both direct and indirect, to identify the relative export vulnerabilities of regional economies to an increasingly uncertain global trade landscape.

II. Direct Trade Exposure and Export Product Mix to the US

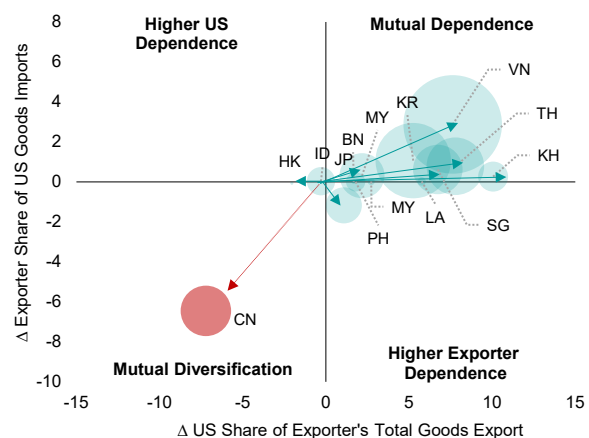
6. Since the US-China trade tensions escalated, the trade relationship between the US and individual ASEAN+3 economies have diverged. China's exports to the US have declined gradually, from 17 percent in 2018 to 14 percent in 2024, reflecting the ongoing rebalancing of trade links between the two largest economies (Figure 2). This shift has incentivized multinational corporations to diversify production through the "China+1" strategy, relocating supply chains from China to neighboring economies (Maciejewska and Alifandi 2023). As a result, the US market's share of ASEAN exports has grown significantly since then, from 13 percent to 19 percent during the same period.

Figure 2. ASEAN+3: Share of US-bound Exports over Total Exports (Percent)



Sources: National authorities via Haver Analytics; and AMRO staff calculations
Note: CN and HK = China and Hong Kong, China, JP = Japan, KR = Korea.

Figure 3. Selected ASEAN+3: Shift in Exposure of US-bound Exports from 2018 to 2024



Sources: IMF Direction of Trade via Haver Analytics; and AMRO staff calculations.
Note: The bubble positions show the changes in the U.S. share of each economy's total goods exports and in each economy's share of U.S. total goods imports, between 2018 and 2024. Bubble size denotes the change in the value of exports to the U.S. Blue bubbles indicate increases in exports, while red denotes declines. BN = Brunei Darussalam, CN = China and Hong Kong, China, JP = Japan, KR = Korea, ID = Indonesia, MY = Malaysia, TH = Thailand, PH = Philippines, SG = Singapore, VN = Vietnam.

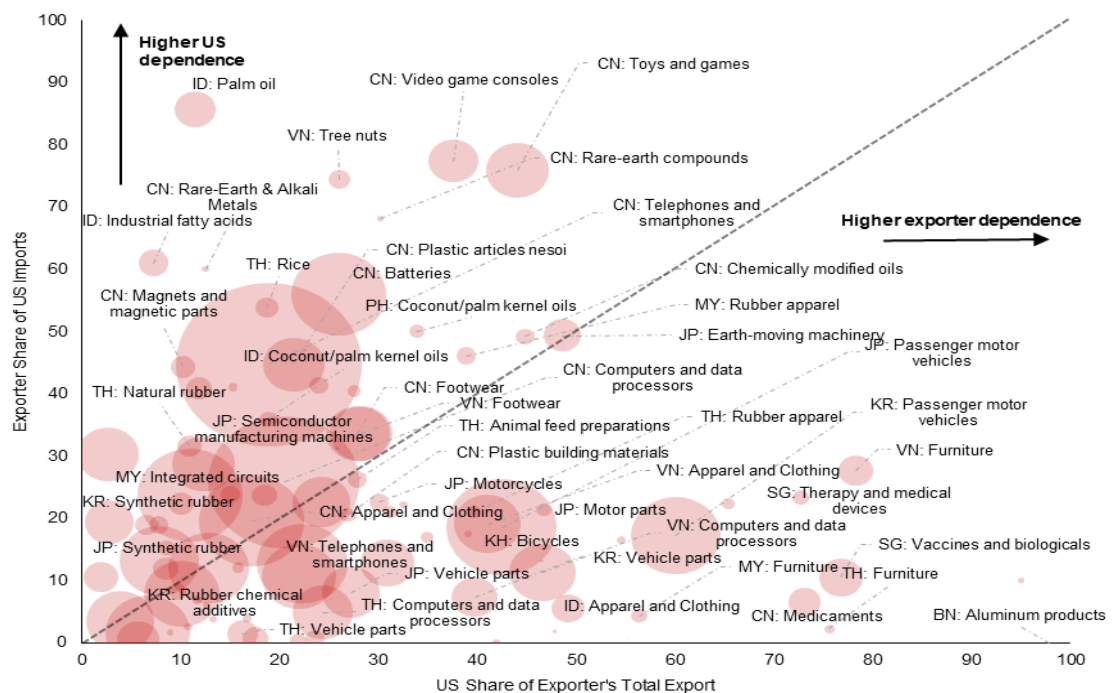
7. This shift toward the US market has resulted in greater dependence for most regional economies, with the notable exception of China. Since 2018, both China and the United States have diversified away from each other—as reflected in China's movement toward the Mutual Diversification quadrant (bottom-left) in Figure 3. Meanwhile, the export profiles of other major ASEAN+3 economies—including Indonesia, Korea, Thailand and Vietnam—have shifted toward the half of the chart denoting deeper US integration. These economies have, on average, shifted toward the Mutual Dependence quadrant as the share of their exports to the US market increased.

8. However, a significant portion of ASEAN+3 exports to the US comprise consumer goods that are discretionary, such as furniture, footwear, apparel, toys, and recreational products. Products in this category only collectively account for a small proportion of US household expenditure—at less than 5 percent—and are thus particularly vulnerable to losing market share when consumer sentiment shifts (US BLS 2024; Coggins, Adams, and Alldredge 2025). In response to rising prices driven by

tariffs, US consumers may reduce or reprioritize their spending. Meanwhile, exporters' exposure to the US market varies between economies and industries:

- Several Chinese export categories—most notably toys, batteries, phones, and rare-earth compounds—exhibit dominance in both the U.S. and global markets. These products command approximately 40 (for China's telephones) to 75 percent (toys) of total U.S. import share and 28 to 60 percent of global exports. China's role as the principal supplier in these sectors renders substitution from alternative sources difficult. (Figure 4 and 5).
- Exposure risk is amplified for products that are both highly dependent on the US and lack strong competitive positioning in the global market. For example, furniture exports from Vietnam exhibit a high dependency on the U.S. market, with approximately 80 percent of their output destined for American consumers. Despite this reliance, the economy accounts for less than 30 percent of U.S. furniture imports and only 11 percent of the total global supply (Figure 4 and 5). This asymmetry underscores the United States' broad range of alternative suppliers.
- Passenger vehicles from Japan and Korea show a more nuanced case: automobiles typically entail considerable financial outlays, accounting for about 7 percent of average US consumer expenditure, and are considered to fall between discretionary and essential spending. Nevertheless, with the US absorbing 40 to 60 percent of total passenger vehicle exports from these two economies, their automobile sectors remain highly exposed to demand shifts in the US market.

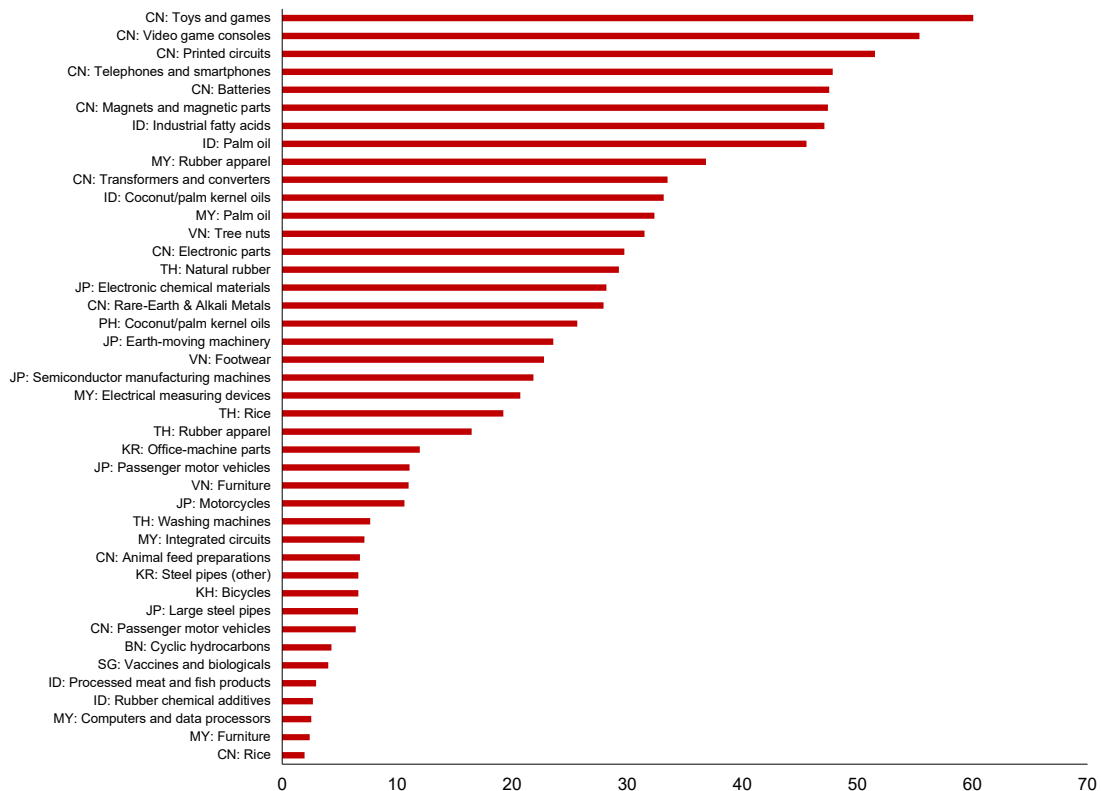
Figure 4. Selected ASEAN+3 Goods Exports: Relative Dependency with the US in 2024



Sources: Global Trade Atlas; and AMRO staff calculation; data as of May 2025.

Note: The calculations are based on the US and global import data. Goods are at the HS-4 level and, with agriculture products, garments, textiles, and steel products merged for simplicity. The bubble size refers to the export values to the US in 2024. BN = Brunei Darussalam, CN = China and Hong Kong, China, JP = Japan, KR = Korea, ID = Indonesia, MY = Malaysia, TH = Thailand, PH = Philippines, SG = Singapore, VN = Vietnam.

**Figure 5. Selected ASEAN+3 Goods Exports: Share of Global Supply, 2024
(Percent)**



Sources: Global Trade Atlas; and AMRO staff calculation; data as of May 2025.

Note: The calculations are based on the US and global import data. Goods are at the HS-4 level and, with agriculture products, garments, textiles, and steel products merged for simplicity. BN = Brunei Darussalam, CN = China and Hong Kong, China, JP = Japan, KR = Korea, ID = Indonesia, MY = Malaysia, TH = Thailand, PH = Philippines, SG = Singapore, VN = Vietnam.

9. On the other hand, intermediary or industrial input products are expected to remain resilient amid trade uncertainties due to their importance to the US supply chain. Products such as rare-earth, critical minerals and specialty metals, primarily imported from China, not only maintain a strong share in the US market but also have critical applications in high-tech and industrial usages. In fact, rare-earth trade has been considered an important factor in the trade negotiations between China and the US. Indonesia's palm oil exports, which are crucial for food manufacturing, biofuel production, and beauty products, also maintain a strong US market position, supported by Indonesia's global leadership in this sector. In addition, ASEAN+3 economies supply a significant share of US's semiconductor and integrated circuit imports—primarily from Korea, Malaysia, and Vietnam—which are vital to US technology value chains. Collectively, the region accounts for around 45 percent of total U.S. semiconductor imports and 75 percent of circuit imports.

10. The export product mix of the region affects its vulnerability to US's tariff adjustments as well. The sensitivity of exports to rising costs varies given differences in trade elasticity across products (Box 1).² Higher tariffs could potentially drive-up prices of foreign goods in the US if and when they are passed on to American consumers, especially when exporters are no longer able to absorb these cost increases by cutting

² Estimates of product-level elasticities from [Utoktham and others \(2020\)](#), are estimated using a Limited Information Maximum Likelihood approach following Soderbery (2015), employing bilateral import value and quantity data.

Box 1. Mapping of Product-level Trade Elasticities

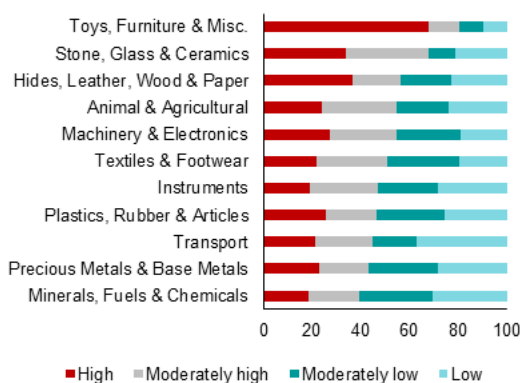
The sensitivity of exports to trade friction can be quantified using trade-weighted import elasticities. An economy's trade elasticity of a specific product captures the extent of the shift in import demand from a particular source market in response to relative price changes. Using product-level trade elasticity estimates of the US market by [Utoktham and others \(2020\)](#), products are classified into four categories of import elasticity—high, moderately high, moderately low, and low.^{1/} Economies exporting products of low import elasticity are likely to be less vulnerable to rising trade tariffs.

Trade elasticity varies across types of products according to their broad HS classifications.

Differences in elasticities across product categories are influenced by the necessity of the product, availability of substitutes in the market and the level of product complexity.

- Imports of toys and furniture tend to be highly elastic (Box Figure 1). Most of the toys and furniture products generally fall into higher-elasticity categories as they are considered low-tech products with abundant substitutes and are largely discretionary purchases.
- In contrast, petrochemical products tend to be less elastic as they served as essential intermediate inputs across multiple value chains, ranging from fertilizers in agricultural products to crude oil in manufacturing and transportation.
- Products in textiles & footwear and machinery & electronics tend to have more balanced elasticity distribution. Products in the former category range from highly-elastic headgear and babies' garment to lowly-elastic garment inputs such as cotton and raw silk. Meanwhile, products in the latter category such as electronic integrated circuits which require higher degree of sophistication to produce tend to be less elastic compared to products that require simpler production processes such as telecommunication devices (Box Figure 2).

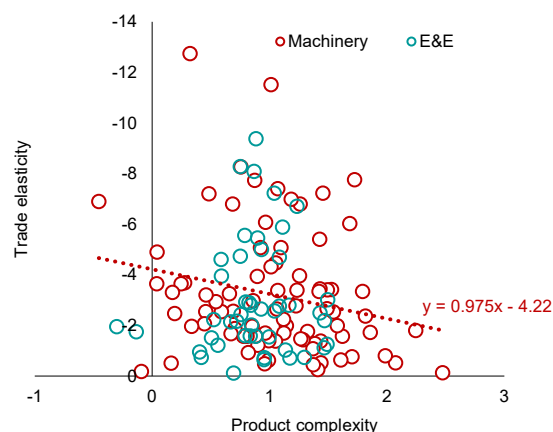
Box Figure 1. Types of Products by Trade Elasticity Classification
(Percent of total; trade elasticity value)



Sources: [Utoktham and others \(2020\)](#); and AMRO staff calculations.

Note: The chart refers to the breakdown of the share of products within each trade elasticity classification across broad product categories (based on HS). The trade elasticities used here are specific to the US market.

Box Figure 2. Machinery and Electronics: Trade Elasticity and Product Complexity
(Index; trade elasticity value)



Sources: [Utoktham and others \(2020\)](#); Atlas of Economic Complexity; and AMRO staff calculations.

Note: Each bubble represents a HS4-level product. The Product Complexity Index ranks the diversity and sophistication of the productive know-how required to produce a good.

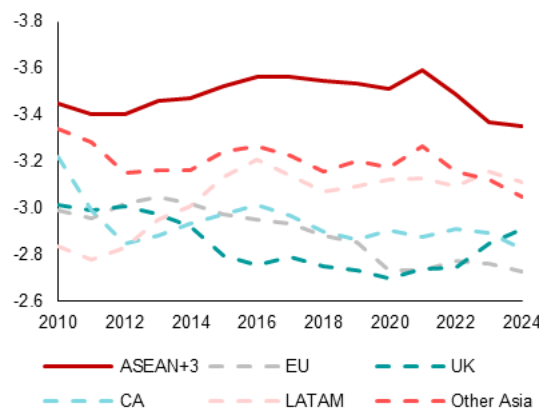
^{1/} Products are grouped based on their position along the trade elasticity distribution. High-elastic products are found in the top 25th percentile, moderately high-elastic products between the top 25th percentile and median, moderately low-elastic products between the median and bottom 25th percentile, and low-elastic products in the bottom 25th percentile.

profit margins. When higher import costs are partially or fully passed on in the form of higher final goods prices *ceteris paribus*, this would encourage consumers to reduce spending on imported products and/or switch to cheaper domestic or foreign alternatives depending on the availability of substitutes and its relative importance in the consumer basket. Regional economies that export more highly trade-elastic products can be more vulnerable to a decline in US consumer demand if there are ready substitutes in the global market for the US to shift to, and if prices of their exports increase as a result. At the same time, economies can also be significantly affected despite having a less elastic export mix if their export exposure to the US is a substantial share of total exports, as discussed in the previous section. A more nuanced view on the vulnerability of regional exports to US trade restrictions (the main focus of which is primarily in the form of tariffs in this study) can therefore be measured by their respective trade-weighted elasticities.³

III. Vulnerabilities to Rising US Trade Barriers

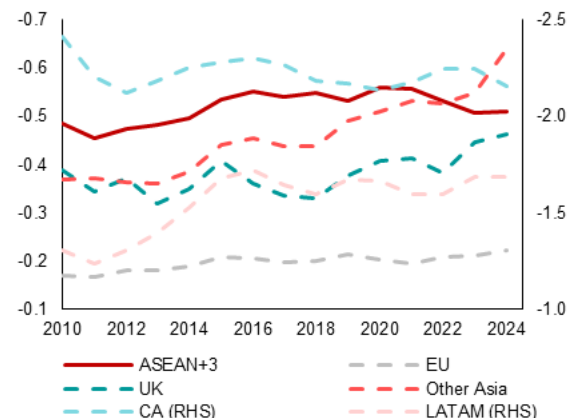
11. The overall direct vulnerability of ASEAN+3 to US trade actions have remained moderate over the years despite a relatively sensitive product mix. The region has been exporting a higher share of trade-elastic products to the US, that is, the trade-weighted elasticity of ASEAN+3 has been comparatively higher than other major regions (Figure 6). As discussed earlier, these products include low-tech products, such as toys and furniture, and high-tech telecommunication products. After accounting for the exposure in terms of its share of US exports, the region's overall export vulnerability to US trade policy actions appears to be more moderate as compared to other geographic blocs (Figure 7).

Figure 6. Selected Economies: Trade-weighted Elasticity of Exports to US, 2010–24
(Trade elasticity value)



Sources: [Utoktham and others \(2020\)](#); Global Trade Atlas; and AMRO staff calculations.
Note: ASEAN+3 excludes Lao PDR and Myanmar. EU refers to the 27 countries in the European Union. LATAM refers to Argentina, Brazil and Mexico. Other Asia refers to India and Taiwan, Province of China. CA = Canada; UK = United Kingdom.

Figure 7. Selected Economies: Trade-weighted Elasticity of Exports to the US Scaled by Total Exports, 2010–24
(Trade elasticity value)



Sources: [Utoktham and others \(2020\)](#); Global Trade Atlas; and AMRO staff calculations.
Note: ASEAN+3 excludes Lao PDR and Myanmar. EU refers to the 27 countries in the European Union. LATAM refers to Argentina, Brazil and Mexico. Other Asia refers to India and Taiwan, Province of China. CA = Canada; UK = United Kingdom.

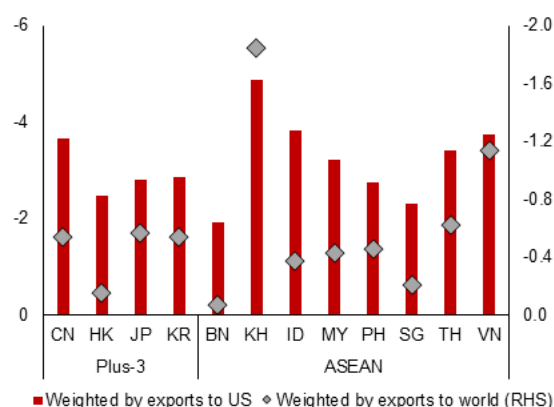
³ An economy's trade-weighted elasticity for US exports measures the sensitivity of its domestic exports to the US market based on the weight of each product to total US exports. The trade-weighted elasticity of US exports as a share in total exports measures the sensitivity of its exports to the US market based on the weight of each US-bound product to total exports. The former measures the extent which ASEAN+3 exports to the US can be affected depending on the export structure of the individual economy while the latter assess the same after accounting for the economy's export exposure to the US market.

12. Sensitivity to rising U.S. trade tariffs can vary significantly across individual ASEAN+3 economies. While regional aggregates may obscure country-specific vulnerabilities, a disaggregated analysis of U.S.-bound exports in 2024 reveals patterns that align with individual economies' product-level dependencies on the U.S. market:

- Cambodia stood out as the most vulnerable to US tariff shocks. It has the most highly elastic export mix and largest direct exposure to the US market in the region (Figure 8 and 9). In particular, the US is a key market for Cambodia's garment exports, many of which can be highly sensitive to prices.
- Among the other ASEAN economies, Vietnam and Thailand exports to the US have a relatively high sensitivity to US tariff adjustments as well. Both economies have significant trade exposures to the US market, especially in highly trade-elastic products such as telecommunication devices and furniture (Appendix Table 1).
- Except for Hong Kong, the exports of Plus-3 economies face a comparatively similar level of risks from US trade policy actions. Japan and Korea export a substantial share of automotive products which tend to have a moderately high trade elasticity. While China has a lower export exposure to the US, a significantly large share of its exports are highly elastic products like telecommunication devices and toys.

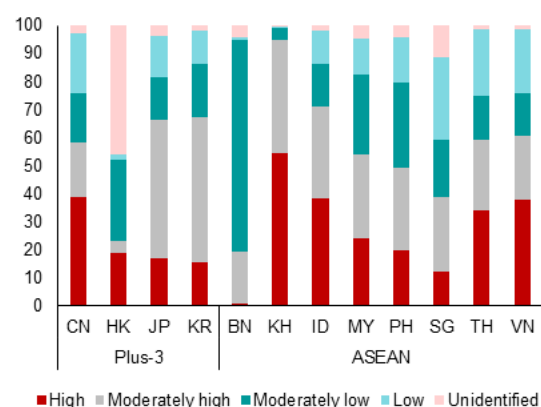
13. Exports to the US from the rest of ASEAN+3 economies appear to be moderately vulnerable to changes in US tariffs, given their less elastic export mixes and lower exposures to the US market relative to their total exports.

Figure 8. Selected ASEAN+3: Trade-weighted Elasticity of US-bound Exports, 2024
(Trade elasticity value)



Sources: [Utoktham and others \(2020\)](#); Global Trade Atlas; and AMRO staff calculations.
Note: BN = Brunei; CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KH = Cambodia; KR = Korea; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand; VN = Vietnam.

Figure 9. Selected ASEAN+3: Share of US-bound Exports by Trade-weighted Elasticity Classification, 2024
(Percent of exports to US)

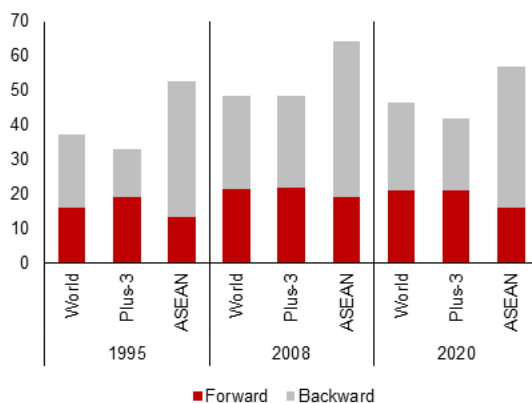


Sources: [Utoktham and others \(2020\)](#); Global Trade Atlas; and AMRO staff calculations.
Note: BN = Brunei; CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KH = Cambodia; KR = Korea; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand; VN = Vietnam.

14. Apart from direct trade exposures, the ASEAN+3 exports can also be indirectly affected by rising trade tariffs from the US via the impact of tariff changes to other economies. With the US being an important source of final demand and ASEAN+3's high degree of GVC integration, any decline in US import demand will

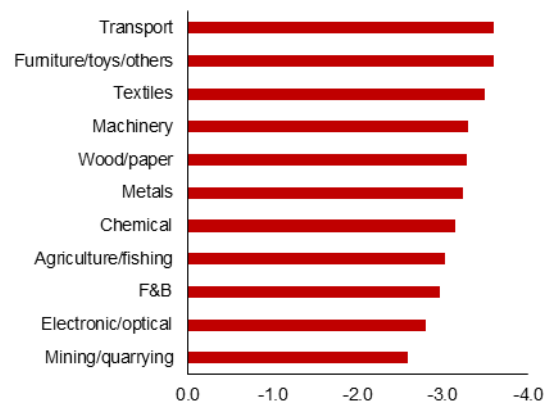
eventually slow regional exports to other economies through these GVC linkages and would ultimately also weigh on ASEAN+3 trade and economic growth (Figure 10). Economies that are located at the upstream end of the US GVC, despite not directly delivering a high share of exports to the US, remain susceptible to increased trade “destruction” costs due to weaker demand for their intermediate exports—goods which are at various stages of manufacturing, to be used to produce final goods that subsequently make their way to the US consumer market (Johnson and Noguera 2012). Regional economies that are heavily reliant on the US as a final demand market, especially in highly-trade elastic industries such as transport and furniture, are more vulnerable to US tariff shocks (Figure 11). As was the case for direct trade exposure considerations, such dependencies can be assessed further by estimating the trade-weighted elasticities of regional economies in terms of the domestic value-added of their exports to the US market.⁴

Figure 10. Selected ASEAN+3: Participation in Global Value Chains, 1995–2020
(Percent)



Sources: OECD TiVA; and AMRO staff calculations.
Note: Plus-3 includes China, Hong Kong, Japan and Korea. ASEAN excludes Lao PDR and Myanmar.

Figure 11. Selected ASEAN+3: Average Trade Elasticity by Economic Activity
(Trade elasticity value)



Sources: [Utoktham and others \(2020\)](#); OECD TiVA; and AMRO staff calculations.

15. Unsurprisingly, economies with higher domestic value-added shares for their exports to the US and which are mainly exporting in higher trade-elastic industries, are likely to face greater trade risks. After accounting for individual economies’ reliance on the US market from the GVC perspective, which is represented by the domestic value added (DVA) in US’s final demand as a share of gross exports of each economy, the results suggest that:

- Cambodia remains the most at risk to US tariff shocks due to its high reliance on the US market for final demand (Figure 12). In line with nominal export data, the economy remains the most exposed to US’s trade regulatory changes and uncertainties via the garment industry (Figure 13).
- China and Japan remain highly susceptible through their significant reliance to US demand. Japan remains heavily dependent on the US market, especially for its

⁴ Product-level trade elasticities are mapped to major economic activity categories in the OECD TiVA database based on the corresponding ISIC codes.

automotive exports sector. Meanwhile, China continues to be highly involved in the GVCs for US-bound products owing to the “China+1” strategy, as Chinese firms relocate part of their downstream production to other developing countries in response to higher US tariffs on China (Freund and others 2023).

- Indonesia and the Philippines are highly vulnerable through indirect GVC linkages but their direct export exposures to the US are lower. For Indonesia, its role as a key regional supplier of primary goods embeds its intermediate inputs into a wide range of products that eventually reach the US market (ADB 2019). The Philippines, meanwhile, is deeply integrated into the semiconductor GVC, particularly in the assembly, packaging, and testing (A&T) segment. Processed chips serve as critical intermediate inputs for global electronics manufacturers whose final products are destined for US consumers.
- Vietnam is often perceived as highly exposed to U.S. tariff hikes given its substantial export share to the United States—the second largest in the region after Cambodia. However, this vulnerability becomes less so once we account for GVC dynamics. A significant portion of Vietnam’s exports to the U.S. embodies low domestic value added, indicating heavy dependence on imported inputs. This structural feature places Vietnam in a downstream, lower-end position within the GVC.⁵ Despite becoming a major beneficiary to the trade reconfiguration over the years, Vietnam’s exports to the US have a low domestic value-added in the economy, reflecting a high reliance on foreign inputs and a downstream or low-end position in the GVC (Zhao and Ho 2024).

Figure 12. Selected ASEAN+3: Trade-weighted Elasticity and Share of Domestic Value-added Exports to US, 2020

(Trade elasticity value; percent of gross exports)

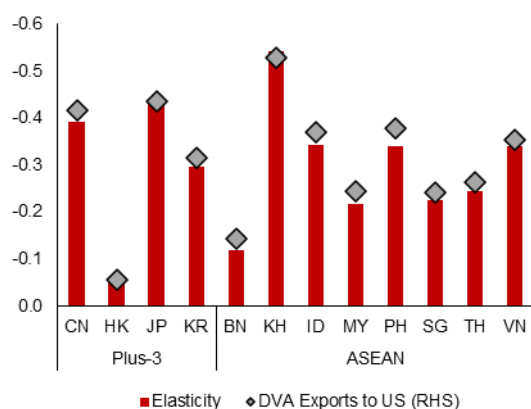
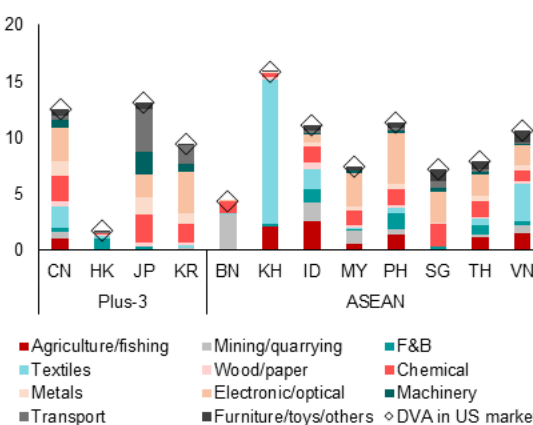


Figure 13. Selected ASEAN+3: Share of Domestic Value-added Exports to US by Economic Activity, 2020
(Percent of gross exports)



Sources: Utoktham and others (2020); OECD TIVA; and AMRO staff calculations.

Note: BN = Brunei; CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KH = Cambodia; KR = Korea; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand; VN = Vietnam.

Sources: Utoktham and others (2020); OECD TIVA; and AMRO staff calculations.

Note: BN = Brunei; CN = China; HK = Hong Kong; ID = Indonesia; JP = Japan; KH = Cambodia; KR = Korea; MY = Malaysia; PH = the Philippines; SG = Singapore; TH = Thailand; VN = Vietnam.

⁵ It is important to highlight a caveat: there is a discrepancy in the reference years of the data used in the two analyses. The weighted average trade elasticities based on domestic value-added are calculated using 2020 data, whereas the nominal export elasticities are computed using 2024 data.

16. A trade-at-risk indicator is constructed to classify regional economies according to their risk exposure to US trade policy actions. The risks faced by economies to rising US tariffs, which we denote in this paper as trade-at-risk, are classified empirically using k-means clustering into four distinct clusters—high, moderately high, moderately low, or low risk—based on the estimated trade weighted elasticities and the two factors we have discussed, the direct exposure and the level of domestic value-added of its exports to the US.⁶ High-risk economies are assessed to be more susceptible to export losses when the US raises its tariffs and vice versa. The clustering analysis results support this thesis and suggest the following:

- ASEAN+3 economies face relatively lower risks from export losses in an environment of higher US tariffs as compared to Canada and Mexico, but the region's level of risks is broadly similar to other major economies in the world (Figure 14). Canada and Mexico, being the largest trading partners of the US, are classified as high-risk economies given their huge exposure via both direct trade and GVC linkages.⁷
- Cambodia and Vietnam, as discussed earlier, face the highest level of risk in the region due to their reliance on the US market and their highly elastic product mix. In contrast, Brunei, Hong Kong, and Singapore are expected to face the lowest risk, in comparison with the rest of the region, similar to that of Australia, Argentina, and the EU.⁸
- Meanwhile, the rest of the region faces moderately low risk, given their considerable exposure but less elastic export product mix to the US market.

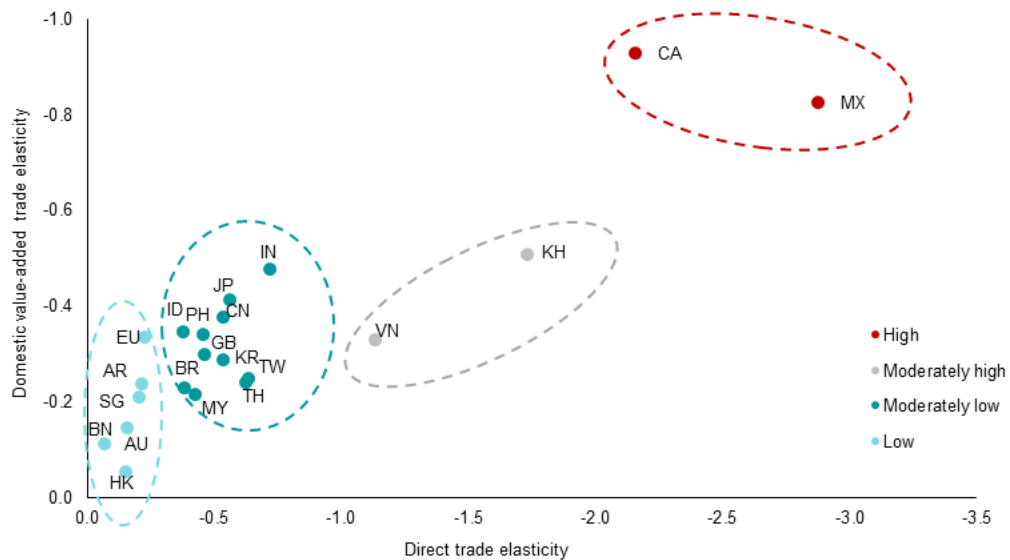
17. Other factors can determine the overall trade risks faced by regional economies. While the trade-at-risk clusters highlight differences in risks faced by regional economies to US trade shocks, the actual impact will ultimately be dependent on the tariff rates that are eventually imposed. On the other hand, further escalation of trade tensions resulting from retaliatory tariffs and non-tariff barriers by other economies will aggravate the slowdown in global trade, putting at risk regional economies that are highly integrated into international trade. Beyond trade, an increasingly uncertain geo-economic landscape will weigh on investments, undermining the economic prospects of regional economies even further.

⁶ Clusters are identified using the k-means algorithm, following Hartigan and Wong (1979), which groups economies based on their similarities in their risk exposures according to their direct and domestic value-added trade-weighted elasticities of US export share to total exports. Major economies with a wide range of elasticities are included to enhance cluster stability and ensure a more comprehensive representation. The clustering results are robust, yielding consistent groupings across 100 different random seeds.

⁷ Tariffs, however, were paused on imports that meet the rules of origin of the United States-Mexico-Canada Agreement (USMCA). The 25 percent tariff applies to products deemed to be made in Canada and Mexico that do not meet the requirements of USMCA rules of origin. Hence, some argue that the effective US tariff increases these economies face may be quite small as most of the goods they export to the US are compliant with the USMCA. This aspect, however, is not within the purview of the current research which measure trade-at-risk or vulnerability as a combination of direct exposure (in terms of product mix and shares, and domestic value added) with no reference to the differential level of tariffs across economies.

⁸ The measurement of risk level here is focused on individual economies' sensitivity to US trade policy shocks based on their export exposure and export product mix. It does not consider the specific tariff rates by individual product and the growth implications from a slowdown in global trade.

Figure 14: Selected Economies: Trade-at-risk Clusters Based on Trade-weighted Elasticities of US Export Share in Total Exports
(Trade elasticity value)



Sources: Utoktham and others (2020); Global Trade Atlas; OECD TiVA; and AMRO staff estimates.

Notes: Clustering is calculated using k-means clustering (Hartigan and Wong 1979) based on direct and domestic value-added trade-weighted elasticities of US exports in 2024. EU refers to the 27 countries in the European Union. AR = Argentina; AU = Australia; BR = Brazil; BN = Brunei; CA = Canada; CN = China; HK = Hong Kong; ID = Indonesia; IN = India; JP = Japan; KH = Cambodia; KR = Korea; MY = Malaysia; MX = Mexico; PH = the Philippines; SG = Singapore; TH = Thailand; TW = Taiwan; UK = United Kingdom; VN = Vietnam.

IV. Conclusion

18. ASEAN+3's reliance on trade integration with the US is becoming a source of vulnerability as US trade policy becomes increasingly unpredictable. Given the uncertainty surrounding the future trajectory of US trade policy, it is important to evaluate each economy's exposure and vulnerability to potential policy shifts. While the trade-at-risk clusters show that ASEAN+3 countries are not all highly susceptible to US trade policy actions as in the case of Canada and Mexico, several ASEAN+3 economies face moderately higher risks than others due to their larger dependence on the US market, a more elastic product mix of their US-bound exports, and/or the higher domestic value added of their exports to the US.

19. The findings from this analytical note point out a need to assess trade policy and strategies based on both direct and indirect exposures to tariff shocks. Higher direct export exposure and stronger GVC linkages with the US put regional trade at risk. Economies with high direct export exposure to the US market such as Cambodia and Vietnam face risks of lower export demand when US appetite for imports wane amid higher import prices, especially for products with higher trade-weighted elasticities. At the same time, economies that are indirectly connected via GVCs to the US as a final demand market, such as Indonesia and the Philippines, will also face negative spillovers on trade from a weakness in US demand for their products.

20. It is important to consider the export structure of individual economies as well. Among economies with comparable exposure to the US market, those with a higher proportion of highly trade-elastic exports are generally more vulnerable to tariff shocks than those with a more diversified export base. Furthermore, economies whose exports are heavily concentrated in specific sectors—such as Cambodia in textiles or Japan in automobiles—face heightened risks from sector-targeted tariffs. These highlight the importance of diversifying exports, particularly for economies that export specific types of goods in high concentrations and which, to a large part, are destined for the US market.

Appendix Table 1. Selected ASEAN+3 Economies' US Exports at HS4-Digit Level, 2024
(Top five largest exports to the US)

Economy	HS4 Code	HS4 Description	Share of US Exports	Trade Elasticity	Product Complexity
China	8517	Telephone Sets Incl Smartphones And Oth Phones For Cellular Networks/Other Wireless Networks; Oth Apparatus For The Trans/Recep Of Voice/Image/Data	11.6	-5.6	0.8
	8471	Automatic Data Processing Machines And Units Thereof; Magnetic Or Optical Readers, Machines For Transcribing And Processing Coded Data, Not Elsewhere Specified Or Included	8.2	-0.6	1.0
	8507	Electric Storage Batteries, Including Separators Therefor; Parts Thereof	4.1	-0.7	1.3
	9503	Toys Not Elsewhere Specified Or Included; Scale Models Etc.; Puzzles; Parts And Accessories Thereof	3.1	-11.4	0.1
	8708	Parts And Accessories For Tractors, Public-Transport Passenger Vehicles, Motor Cars, Goods Transport Motor Vehicles And Special Purpose Motor Vehicles	2.1	-5.0	1.0
Hong Kong	7115	Articles Of Precious Metal Or Of Metal Clad With Precious Metal Not Elsewhere Specified Or Included	19.3	-1.7	0.0
	7113	Articles Of Jewelry And Parts Thereof, Of Precious Metal Or Of Metal Clad With Precious Metal	11.6	-11.0	0.3
	7102	Diamonds, Whether Or Not Worked, But Not Mounted Or Set	3.4	-1.7	-1.3
	8517	Telephone Sets Incl Smartphones And Oth Phones For Cellular Networks/Other Wireless Networks; Oth Apparatus For The Trans/Recep Of Voice/Image/Data	2.9	-5.6	0.8
	7103	Precious And Semiprecious Stones (No Diamonds), Not Strung, Mounted Etc.; Ungraded Precious And Semiprecious Stones (No Diamonds) Strung For Transport	2.6	-2.0	-1.4
Japan	8703	Motor Cars And Other Motor Vehicles Designed To Transport People (Other Than Public-Transport Type), Including Station Wagons And Racing Cars	27.1	-2.9	1.0
	8708	Parts And Accessories For Tractors, Public-Transport Passenger Vehicles, Motor Cars, Goods Transport Motor Vehicles And Special Purpose Motor Vehicles	4.8	-5.0	1.0
	3002	Human And Animal Blood, Prepared; Antisera Other Blood Frctns Immunological Prod; Vaccines, Txns, Cultures Of Micro-Organisms (Exc Yeasts) & Like Prod	3.6	-1.1	1.9
	8429	Self-Propelled Bulldozers, Angledozer, Graders, Levelers, Scrapers, Mechanical Shovels, Excavators, Shovel Loaders, Tamping Machines And Road Rollers	3.6	-2.5	0.2
	8443	Printing Machinery (Including Ink-Jet Printing Machines, Except Those Of 8471); Machines For Uses Ancillary To Printing; Parts Thereof	2.1	-2.6	1.1
Korea	8703	Motor Cars And Other Motor Vehicles Designed To Transport People (Other Than Public-Transport Type), Including Station Wagons And Racing Cars	28.4	-2.9	1.0
	8473	Parts And Accessories Not Elsewhere Specified Or Included For Typewriters And Other Office Machines Of Headings 8469 To 8472	5.3	-3.3	1.4
	8708	Parts And Accessories For Tractors, Public-Transport Passenger Vehicles, Motor Cars, Goods Transport Motor Vehicles And Special Purpose Motor Vehicles	4.9	-5.0	1.0
	8523	Prepared Unrecorded Media (Other Than Motion-Picture Film) For Sound Recording Or Similar Recording Of Other Phenomena	4.1	-2.8	1.2
	2710	Petroleum Oils& Oils From Bituminous Mins (Other Than Crude)& Products Therefrom, Not Elsewhere Specified Or Included, Containing 70% (By Weight) Or More Of These Oils; Waste Oils	3.4	-2.6	-0.7
Brunei	2902	Cyclic Hydrocarbons	69.0	-1.9	0.7
	2710	Petroleum Oils& Oils From Bituminous Mins (Other Than Crude)& Products Therefrom, Not Elsewhere Specified Or Included, Containing 70% (By Weight) Or More Of These Oils; Waste Oils	17.8	-2.6	-0.7
	3102	Mineral Or Chemical Fertilizers, Nitrogenous	3.6	-1.5	-1.6

	7306	Tubes, Pipes And Hollow Profiles Not Elsewhere Specified Or Included (Open Seamed Or Welded, Riveted Or Similarly Closed), Of Iron Or Steel	1.5	-1.4	-0.7
	8479	Machines And Mechanical Appliances Having Individual Functions, Not Elsewhere Specified Or Included; Parts Thereof	0.6	-1.8	2.2
Cambodia	4202	Travel Goods, Vanity Cases, Binocular And Camera Cases, Handbags, Wallets, Cutlery Cases And Similar Containers, Of Various Specified Materials	14.1	-3.0	-0.7
	8541	Semiconductor Devices; Photosensitive Semiconductor Devices Incl Photovoltaic Cells; Light-Emitting Diodes (Led); Mounted Piezo-Elec Crystals; Parts	10.6	-4.8	0.6
	6110	Sweaters, Pullovers, Sweatshirts, Waistcoats (Vests) And Similar Articles, Knitted Or Crocheted	7.0	-4.9	-1.3
	9405	Luminaires And Lighting Fittings Incl Searchlights, Spotlights, Parts; Illuminated Signs, Name-Plates Etc With Permanently Fixed Light Source, Parts	5.9	-3.3	0.8
	4011	New Pneumatic Tires, Of Rubber	5.7	-8.0	0.4
Indonesia	1511	Palm Oil And Its Fractions, Whether Or Not Refined, But Not Chemically Modified	5.4	-2.8	-1.9
	6403	Footwear, With Outer Soles Of Rubber, Plastics, Leather Or Composition Leather And Uppers Of Leather	4.6	-1.9	-0.3
	8543	Electrical Machines And Apparatus, Having Individual Functions, Not Elsewhere Specified Or Included; Parts Thereof	3.8	-2.5	1.4
	8517	Telephone Sets Incl Smartphones And Oth Phones For Cellular Networks/Other Wireless Networks; Oth Apparatus For The Trans/Recep Of Voice/Image/Data	3.5	-5.6	0.8
	4011	New Pneumatic Tires, Of Rubber	3.1	-5.2	0.4
Malaysia	8542	Electronic Integrated Circuits And Microassemblies; Parts Thereof	18.1	-1.3	1.5
	8517	Telephone Sets Incl Smartphones And Oth Phones For Cellular Networks/Other Wireless Networks; Oth Apparatus For The Trans/Recep Of Voice/Image/Data	8.6	-5.6	0.8
	8473	Parts And Accessories Not Elsewhere Specified Or Included For Typewriters And Other Office Machines Of Headings 8469 To 8472	7.3	-3.3	1.4
	8523	Prepared Unrecorded Media (Other Than Motion-Picture Film) For Sound Recording Or Similar Recording Of Other Phenomena	6.5	-2.8	1.2
	8541	Semiconductor Devices; Photosensitive Semiconductor Devices Incl Photovoltaic Cells; Light-Emitting Diodes (Led); Mounted Piezo-Elec Crystals; Parts	6.2	-1.2	0.6
Philippines	8473	Parts And Accessories Not Elsewhere Specified Or Included For Typewriters And Other Office Machines Of Headings 8469 To 8472	7.9	-3.3	1.4
	8544	Insulated Wire, Cable And Other Insulated Electrical Conductors; Optical Fiber Cables, Of Individually Sheathed Fibers, With Conductors Etc. Or Not	7.5	-2.0	-0.3
	8542	Electronic Integrated Circuits And Microassemblies; Parts Thereof	6.7	-1.3	1.5
	8523	Prepared Unrecorded Media (Other Than Motion-Picture Film) For Sound Recording Or Similar Recording Of Other Phenomena	6.6	-2.8	1.2
	8471	Automatic Data Processing Machines And Units Thereof; Magnetic Or Optical Readers, Machines For Transcribing And Processing Coded Data, Not Elsewhere Specified Or Included	6.4	-0.6	1.0
Singapore	3002	Human And Animal Blood, Prepared; Antisera Other Blood Frctns Immunological Prod; Vaccines, Txns, Cultures Of Micro-Organisms (Exc Yeasts) & Like Prod	26.6	-1.1	1.9
	3004	Medicaments (Except Vaccines Etc., Bandages Or Pharmaceuticals), Of Products (Mixed Or Not) For Therapeutic Etc. Uses, In Dosage Or Retail Sale Form	8.0	-2.7	0.8
	2106	Food Preparations Not Elsewhere Specified Or Included	6.2	-1.7	0.1
	2934	Nucleic Acids And Their Salts, Other Heterocyclic Compounds	5.4	-2.0	1.4
	2710	Petroleum Oils& Oils From Bituminous Mins (Other Than Crude)& Products Therefrom, Not Elsewhere Specified Or Included, Containing 70% (By Weight) Or More Of These Oils; Waste Oils	4.5	-2.6	-0.7
Thailand	8517	Telephone Sets Incl Smartphones And Oth Phones For Cellular Networks/Other Wireless Networks; Oth Apparatus For The Trans/Recep Of Voice/Image/Data	13.8	-5.6	0.8
	8471	Automatic Data Processing Machines And Units Thereof; Magnetic Or Optical Readers, Machines For	10.8	-0.6	1.0

		Transcribing And Processing Coded Data, Not Elsewhere Specified Or Included			
	4011	New Pneumatic Tires, Of Rubber	5.7	-5.2	0.4
	8541	Semiconductor Devices; Photosensitive Semiconductor Devices Incl Photovoltaic Cells; Light-Emitting Diodes (Led); Mounted Piezo-Elec Crystals; Parts	5.5	-1.2	0.6
	8504	Electrical Transformers, Static Converters Or Inductors; Power Supplies For Adp Machines Or Units; Parts Thereof	3.8	-1.6	1.0
Vietnam	8471	Automatic Data Processing Machines And Units Thereof; Magnetic Or Optical Readers, Machines For Transcribing And Processing Coded Data, Not Elsewhere Specified Or Included	11.6	-0.6	1.0
	8517	Telephone Sets Incl Smartphones And Oth Phones For Cellular Networks/Other Wireless Networks; Oth Apparatus For The Trans/Recep Of Voice/Image/Data	10.6	-5.6	0.8
	9403	Furniture, Not Elsewhere Specified Or Included (Other Than Seats, Medical, Surgical, Dental Or Veterinary Furniture) And Parts Thereof	5.5	-11.6	0.2
	8473	Parts And Accessories Not Elsewhere Specified Or Included For Typewriters And Other Office Machines Of Headings 8469 To 8472	4.6	-3.3	1.4
	8541	Semiconductor Devices; Photosensitive Semiconductor Devices Incl Photovoltaic Cells; Light-Emitting Diodes (Led); Mounted Piezo-Elec Crystals; Parts	4.1	-1.2	0.6

Sources: [Utoktham and others \(2020\)](#); Global Trade Atlas; UN Comtrade; UNCTAD; and AMRO staff calculations.

Note: Unidentified export items have been excluded from the list.

References

- ASEAN+3 Macroeconomic Research Office (AMRO). 2020. "ASEAN+3 in the Global Value Networks." Chapter 2. ASEAN+3 Regional Economic Outlook. Singapore, April.
<https://amro-asia.org/asean3-regional-economic-outlook-areo-2020>.
- Asian Development Bank (ADB). 2019. "The Evolution of Indonesia's Participation in Global Value Chains." Manila, October.
<https://www.adb.org/publications/evolution-indonesia-participation-global-value-chains>
- Coggins, Becca, Adams, Christina, and Alldredge, Kari. 2025. "An Update on US Consumer Sentiment: In Response to Tariffs, Most Consumers Plan to Adjust Spending." May 30.
<https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/the-state-of-the-us-consumer>.
- Feenstra, R. 2016. Advanced International Trade: Theory and Evidence, 2nd Edition.
- Freund, Caroline, Aaditya Mattoo, Alen Mulabdic, and Michele Ruta. 2023. "Is US Trade Policy Reshaping Global Supply Chains?" Policy Research Working Paper 10593, World Bank Group, Washington, D.C.
<https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099812010312311610/idu0938e50fe0608704ef70b7d005cda58b5af0d>.
- Hartigan, J. A., and M. A. Wong. 1979. "Algorithm AS 136: A K-Means Clustering Algorithm." *Journal of the Royal Statistical Society. Series C (Applied Statistics)* 28, no. 1: 100–108.
<https://doi.org/10.2307/2346830>.
- Johnson, Robert C., and Guillermo Noguera. 2012. "Accounting for Intermediates: Production Sharing and Trade in Value Added." *Journal of International Economics* 86 (2): 224–36.
- Maciejewska, Agnieszka and Alifandi, Anton. 2023. "ASEAN as a China Plus One Destination: Current Situation and Risk Outlook." S&P Global *Blog*, July 25.
<https://www.spglobal.com/market-intelligence/en/news-insights/research/asean-china-plus-one-destination-current-situation-risk-outlook>.
- Salvatore, D. 2019. International Economics, 13th edition.
- Soderbery, Anson. 2015. "Estimating Import Supply and Demand Elasticities: Analysis and Implications." *Journal of International Economics* 96 (1): 1–17.
- US Bureau of Labor Statistics (BLS). 2024. "Consumer Expenditures—2023". Economic News Release, Washington D.C., September 25.
<https://www.bls.gov/news.release/cesan.htm>.

Utoktham, Chorthip, Alexey Kravchenko, and Yann Duval. 2020. "New Global Estimates of Import Demand Elasticities: A Technical Note." ESCAP Publications, United Nations Economic and Social Commission for Asia and the Pacific, Bangkok, July 15.

<https://repository.unescap.org/items/12cabdfd-d230-4a39-9315-14ad1e0acf64>.

Zhao, Hongyan, and Yin Fai Ho. 2023. "Has the Shifting Trade Landscape Changed the China-ASEAN Nexus?" AMRO Analytical Note, ASEAN+3 Macroeconomic Research Office, Singapore, September 11.

<https://amro-asia.org/has-the-shifting-trade-landscape-changed-the-china-aseannexus>.

Zhao, Hongyan, and Yin Fai Ho. 2024. "How are ASEAN and China Leveraging Their Positions in Global Value Chains?" AMRO Analytical Note, ASEAN+3 Macroeconomic Research Office, Singapore, March 19.

<https://amro-asia.org/how-are-asean-and-chinaleveraging-their-positions-in-global-value-chains>.