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Impact of Protectionism on ASEAN Exports Amid the Pandemic

Weilin Lu[1] Banh Thi Hang[2]

Abstract

This paper investigates the impact of recently implemented trade protectionist measures on ASEAN countries' exports since the onset of the COVID-19 pandemic, using monthly export data alongside trade protectionism measures at the HS-6 digit product level. Empirical analysis reveals that ASEAN's exports subject to a new protectionist measure decreased by approximately 0.4 percent on average. Our back-of-the-envelope estimates suggest that, protectionism shaved about USD 9.8 billion off ASEAN's export value for the period from January 2020 to September 2023. Behind-the-border measures proved more harmful than outright import restrictions, and their negative impact was strongest during the pandemic and intensified further in the post-pandemic period compared to pre-COVID-19 effect. Country-level analysis shows a particularly significant negative impact in the Philippines, Singapore, Thailand, and Vietnam, while sectoral breakdowns show that chemicals, machinery, metals, and textiles suffered the steepest declines. With the Trump administration's announcement of "Liberation Day" tariffs in April 2025, featuring expanded product coverage and intensifying tariff duties, there is a heightened risk that ASEAN exports will face broader and more prolonged protectionist disruptions than those observed in our study once the measures take effect.

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1. Introduction

Global trade and trade liberalization have been documented as crucial drivers of productivity (Alcalá & Ciccone, 2004; Pavcnik, 2002) and economic growth (Dollar, 1992; Bhagwati & Srinivasan, 2002; Wacziarg & Welch, 2008), especially for developing countries (Broda et al., 2017). According to the World Bank's estimation, trade liberalization has significantly lifted around 1 billion people out of poverty and enabled many developing countries to integrate into the global economy, with about a 1% increase in trade openness boosting per capita income by 0.2% (World Bank, 2020).

However, during the COVID-19 pandemic, global trade experienced a sharp decline, falling nearly 16 percent in the second quarter of 2020 (World Bank, 2023). Another slowdown soon followed in 2021 due to renewed COVID-19 outbreaks, lockdowns, and significant supply chain disruptions (Bonadio et al., 2021). The situation even worsened with Russia-Ukraine war started in February 2022, which further disrupted global supply chains and trade, particularly in sectors dependent on specialized inputs from Russia and Ukraine.

The COVID-19 pandemic and subsequent lockdowns have had far-reaching effects, not only on macroeconomic factors like global trade, triggering both supply and demand shocks (Muellbauer, 2020; Maria del Rio-Chanona et al., 2020), but also at the firm level (Li et al., 2020). These challenges and rising inflationary pressures have spurred a global increase in trade protectionism as nations seek to stabilize their economies and protect domestic industries. This holds vital implications for ASEAN countries. On the one hand, ASEAN countries have been deeply embedded in global value chains (GVCs) (Yamaguchi, 2018). On the other hand, ASEAN's role in GVCs is heavily concentrated in downstream economic activities, making these countries particularly vulnerable to protectionist measures (George et al., 2021). Amid this, it is necessary to quantify the effects of the rising protectionism on the ASEAN-6's exports.[3]

This paper first explores recent trends in protectionism affecting the ASEAN-6 countries and their exports. We subsequently apply the difference-in-differences (DiD) method to bilateral export data to examine the impact of protectionist trade policies on export performance.

[3] The ASEAN-6 countries include Indonesia, Malaysia, the Philippines, Singapore, Thailand, and Vietnam. We focus the analysis on these countries because of several reasons: 1) these are the largest and most developed economies within ASEAN; 2) they are the primary recipients of FDI and major financial and manufacturing hubs of the region; and 3) they are deeply integrated into global supply chains. Changes in global trade policies or supply chain shifts due to trade war or the pandemic could impact these countries significantly.

Utilizing comprehensive data from the Global Trade Alert (GTA) database and granular bilateral trade data, we investigate the effects of import restrictions and behind-the-border measures on ASEAN exports at both annual and monthly levels. Our study focuses on quantifying these impacts, examining variations across individual countries and sectors, and evaluating how the COVID-19 pandemic has influenced trade protectionism and its consequences on exports. The results indicate that protectionist measures, particularly behind-the-border policies, significantly reduce ASEAN exports, with these effects being more pronounced during and after the COVID-19 pandemic. The most affected sectors—machinery, chemicals, metals, and textiles—collectively account for a substantial share of ASEAN's total exports.

This paper is relevant to several strands of existing literature. Firstly, we add to the body of work on the impacts of protectionism. While previous studies have explored the effects of protectionism on the macro economy (Barattieri et al., 2021), FDI (George & Lu, 2024), and international trade (Henn & McDonald, 2014), our research provides new evidence on the impact of protectionist policies on exports from the perspective of ASEAN countries. Additionally, we contribute to the literature examining the relationship between crises and protectionism. Protectionist measures are generally known to rise during economic downturns, consistent with extensive evidence suggesting that protectionism is countercyclical (Bohara & Kaempfer, 1991; Auray et al., 2023). For example, Bown and Crowley (2013) document increased protectionist trend during the Global Financial Crisis, while Georgiadis and Gräb (2016) show that countries continued adopting trade-restrictive policies during recessions even after the 2008 crisis.

The remainder of the paper is organized as follows. Section 2 describes the data used. Section 3 provides an overview of protectionism affecting the ASEAN-6 and the region's export dynamics. Section 4 outlines the empirical strategy, followed by the empirical results presented in Section 5. Finally, Section 6 concludes.

2. Data

This paper utilizes the trade protectionism policies, which are sourced from the Global Trade Alert (GTA) database. The GTA categorizes these protectionist measures into three groups: red, amber, and green. Red measures are those that clearly discriminate against foreign interests, amber measures likely have a discriminatory effect, and green measures are designed to either

liberalize trade or enhance transparency. The GTA database offers detailed information for each measure, including (i) the protectionism source country (who implements the policy), (ii) the protectionism destination country (who are targeted), (iii) the specific products impacted, identified at the 6-digit Harmonized System (HS) level, (iv) the implementation date and, if applicable, the removal date, and (v) a comprehensive description of the measure.

Table 2.1 Protectionist Measures Classifications

Import Restrictions	Tariff and Import Bans	*Import Tariff*
		Quota
		Import Ban
		Competitive Devaluation
	Trade Defense Measure	
	Non-tariff Barriers	*Non-Tariff Measure*
		Technical Barrier to Trade
	Discriminatory Purchasing	*Localization Requirement*
		Public Procurement
Behind-the-border Measures	Bailout/State Aid	
	Import Subsidy	
Export Restrictions	Export Taxes or Restrictions	
Export Support	Export Incentive	
	Trade Finance	

Source: Henn and McDonald (2014). Note: The correspondence details referenced can be found in Evenett, S. J., & Fritz, J. (2020).

Following Henn and McDonald (2014) and George and Lu (2024), we first categorize these protectionist measures into four main groups: import restrictions, behind-the-border measures, export restrictions, and export support. Import restrictions are further broken down into four subcategories: import tariffs and bans, trade defense mechanisms, non-tariff barriers, and discriminatory procurement practices. Behind-the-border measures encompass bailout or state aid programs as well as import subsidies. Export restrictions mainly include export taxes and other limiting policies. Conversely, export support refers to initiatives such as export incentives and trade finance designed to boost foreign demand for domestic goods. These classifications

and their respective subcategories are detailed in Table 2.1. Since the trade data are reported monthly, we aggregate the daily protectionism records, grouping by the originating country, target country, type of protectionism measure, and 6-digit HS product code, to produce a monthly series. As this paper examines the effects of protectionist measures imposed on ASEAN countries on their exports, we focus on the two categories most likely to matter: behind-the-border measures and import restrictions.

Our annual bilateral trade data is sourced from the CEPII BACI database. This database provides detailed yearly information on bilateral trade value at the 6-digit level HS product-importer-exporter level. Additionally, we have access to a more granular dataset that tracks bilateral trade on a monthly basis from January 2020 to September 2023. This higher frequency data allows us to capture more variations, enabling a more nuanced analysis of trends and more precise estimations.

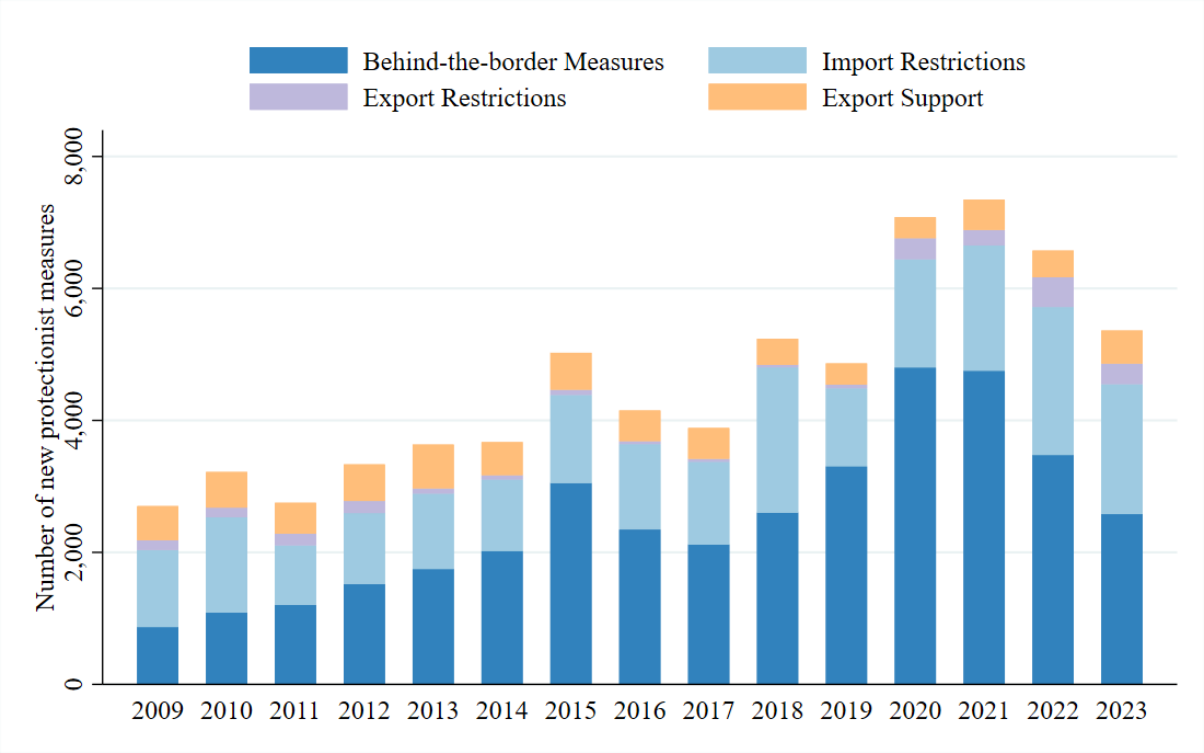
3. Summary Statistics

In this section, we provide an overview of recent trends in protectionism affecting the ASEAN-6 countries and their exports. We also discuss the composition of ASEAN-6 markets and industries, highlighting key developments and sectoral patterns in the context of rising trade protectionism.

3.1 Overview of Protectionism

Regarding the specific protectionist measures adversely impacting ASEAN-6 countries, Figure 3.1 illustrates the annual number of newly implemented measures from 2009 to 2023. These measures are classified into four categories as detailed in Section 2: Behind-the-border Measures, Import Restrictions, Export Restrictions, and Export Support. The figure highlights a consistent upward trend in protectionist actions, with a notable increase beginning around 2018 and peaking in 2021 possibly due to the COVID-19 pandemic. The subsequent decline in 2022 and 2023 suggests an easing of protectionist activity as the effects of the COVID-19 pandemic subsided.

Figure 3.1 Protectionist Measures Adversely Affecting ASEAN-6 Countries



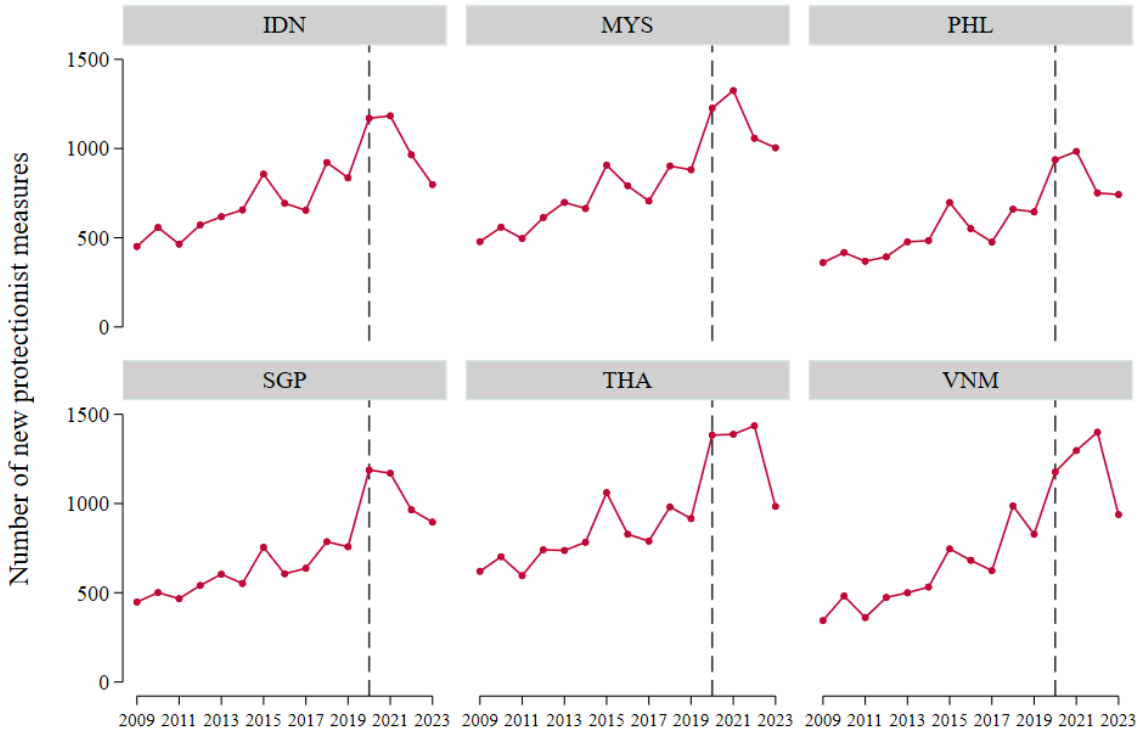
Source: Global Trade Alert (GTA) database and ACI staff calculations.

A closer look at the composition of protectionist measures reveals that behind-the-border actions consistently represent the largest share. Indeed, these measures dominated over the years, increasing significantly, and were particularly prevalent at the onset of the COVID-19 pandemic in 2020 and 2021. During this period, governments increasingly relied on behind-the-border measures, such as significant bailouts and state aid, to stabilize their economies and shield domestic industries. For example, the US Congress approved four rounds of bailouts amounting to USD 3.8 trillion, and the Federal Reserve Board introduced programs valued at USD 2.3 trillion in response to the COVID-19 crisis (Elenev, Landvoigt, and Van Nieuwerburgh, 2022). Export support and restrictions are less common but remain part of the overall trade policy shifts.

Further insights into country-specific trends are provided in Figure 3.2, detailing protectionist measures targeting individual ASEAN-6 countries—Indonesia (IDN), Malaysia (MYS), the Philippines (PHL), Singapore (SGP), Thailand (THA), and Vietnam (VNM). Each panel in Figure 3.2 focuses on one ASEAN-6 country, capturing the evolving dynamics of protectionism they have faced. Across the board, there is a clear upward trajectory in the number of protectionist measures over time, with significant spikes around 2018 coinciding with the

escalation of US-China trade tensions. Following the onset of the COVID-19 pandemic in 2020, all of these countries saw a further increase in protectionist actions. Particularly notable are the experiences of Thailand and Vietnam, which have been subjected to the highest levels of protectionist measures among the ASEAN-6. Unlike the other countries, which saw a notable decline in protectionist actions against their exports after 2021, Thailand and Vietnam continued to encounter an increasing number of protectionist measures imposed on their exports throughout 2022, with these measures only beginning to decrease in 2023.

Figure 3.2 Protectionist Measures by ASEAN-6 Destination Countries

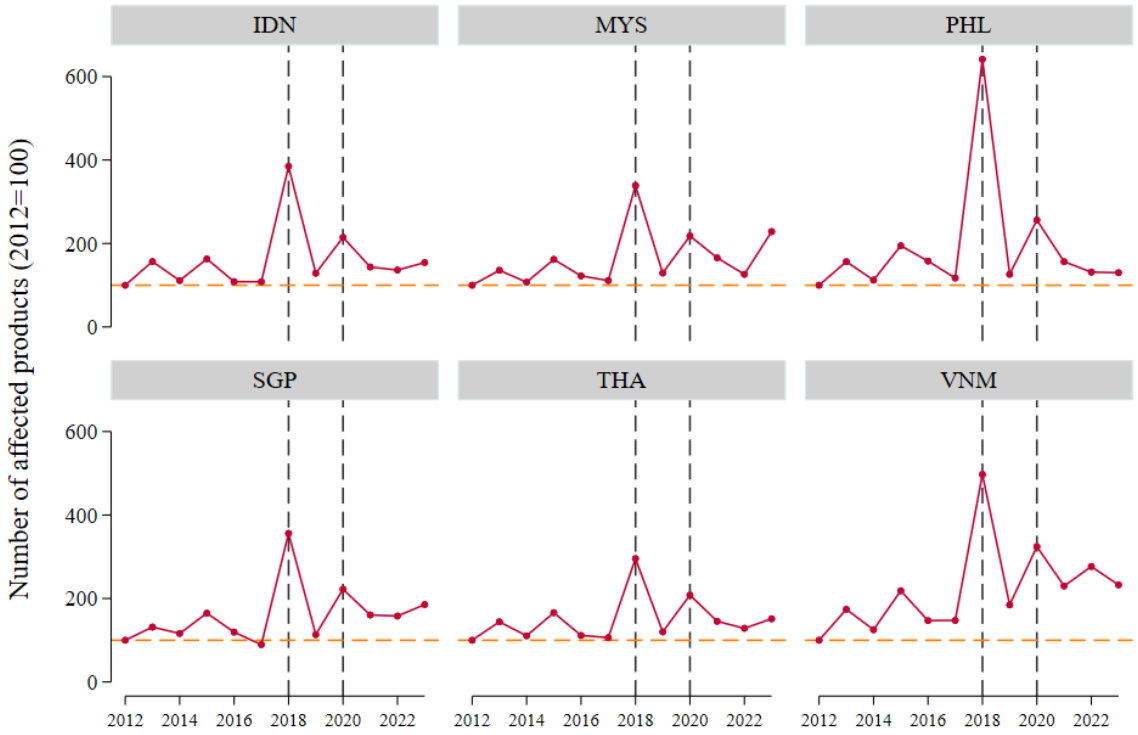


Source: Global Trade Alert (GTA) database and ACI staff calculations.

In the GTA database, one single protectionist policy can simultaneously impact multiple 6-digit HS products. Therefore, in addition to counting the number of policies implemented, it is crucial to examine the dynamics of how many products are affected. Figure 3.3 presents the standardized number of products impacted by protectionist measures across six ASEAN countries with all values normalized to the level observed in 2012. A clear pattern emerges across all panels, particularly the sharp increase in affected products around 2018. This spike can be attributed to the European Union's (EU) tightening of the import tariff policy in

November 2018, as recorded in the EU online integrated customs tariff database (TARIC) database. Specifically, this import restriction act imposed by the EU affected 1706 6-digit HS product categories[4]. According to the GTA database, these changes affected all the ASEAN-6 countries. Beyond this 2018 spike, another major increase was observed in 2020, coinciding with the onset of the COVID-19 pandemic. During this period, countries enacted numerous protectionist measures to safeguard their domestic industries, leading to a significant rise in the number of affected products. However, following this peak in 2020, the trend shows a gradual decline in the number of products impacted by such measures. Vietnam, again, stands out for having sustained higher number of affected products, even post-pandemic, compared to the other countries.

Figure 3.3 Number of Affected Products by ASEAN-6 Destination Countries



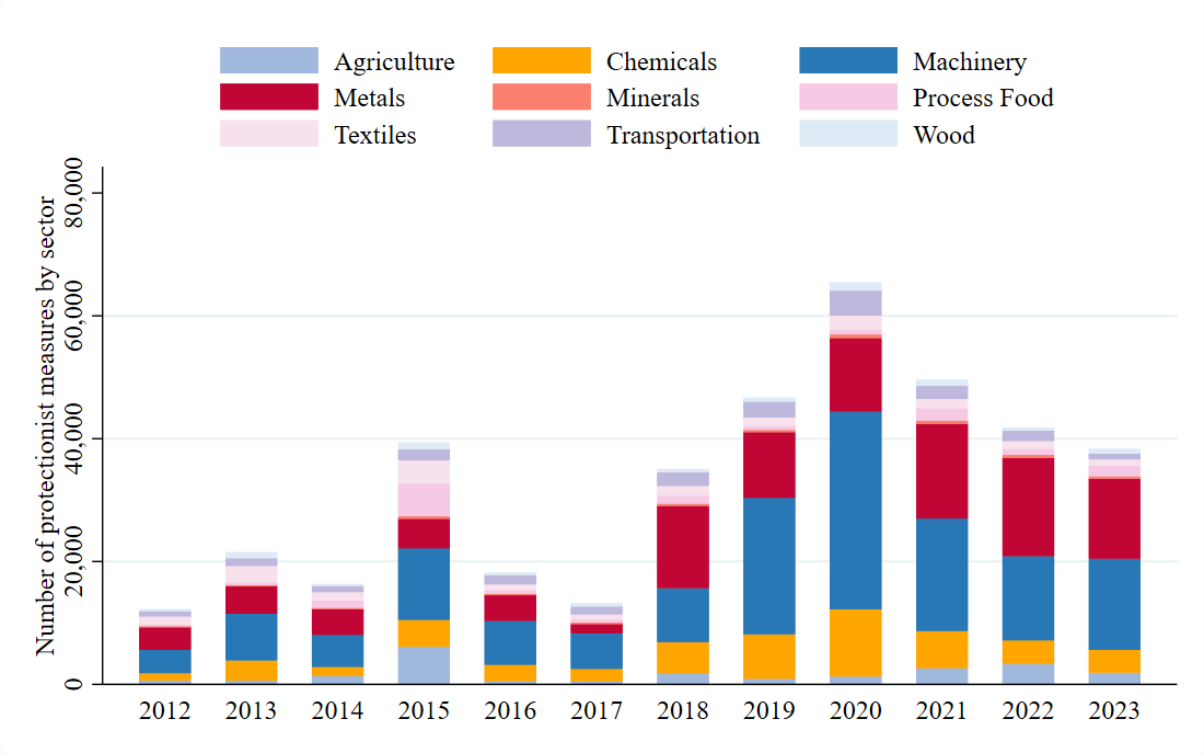
Source: Global Trade Alert (GTA) database and ACI staff calculations.

There was also a steady increase in the number of protectionist measures in various sectors from 2012, peaking in 2020, and then tapering off somewhat in the following years (Figure

[4] The act documented in the GTA database is identified by the ID 39654, referred to hereafter as "Act 39654."

3.4).[5] To ensure clarity and balance in the visualization, EU Act 39654 has been omitted in Figure 3.4, as its inclusion would result in the number for 2018 being extremely higher than in other years. We follow the approach of Henn and McDonald (2014) by categorizing each HS 6-digit level product into one of nine broad sectors: Agriculture, Chemicals, Machinery, Metals, Minerals, Processed Food, Textiles, Transportation, and Wood.[6] The machinery and metals sectors were those with the highest number of protectionist measures. Additionally, the number of protectionist measures within the chemicals sector saw a significant spike in 2020. This increase is likely related to government pharmaceutical bailouts during the COVID-19 pandemic. On the other hand, agriculture, minerals, textiles, and processed food were among the sectors with fewer protectionist measures, especially during the pandemic. The subsequent years showed a slight decline, yet the levels remained elevated compared to the pre-2018 period, indicating sustained protectionist tendencies across multiple sectors.

Figure 3.4 Number of Affected Products by Sector (without Act 36954)



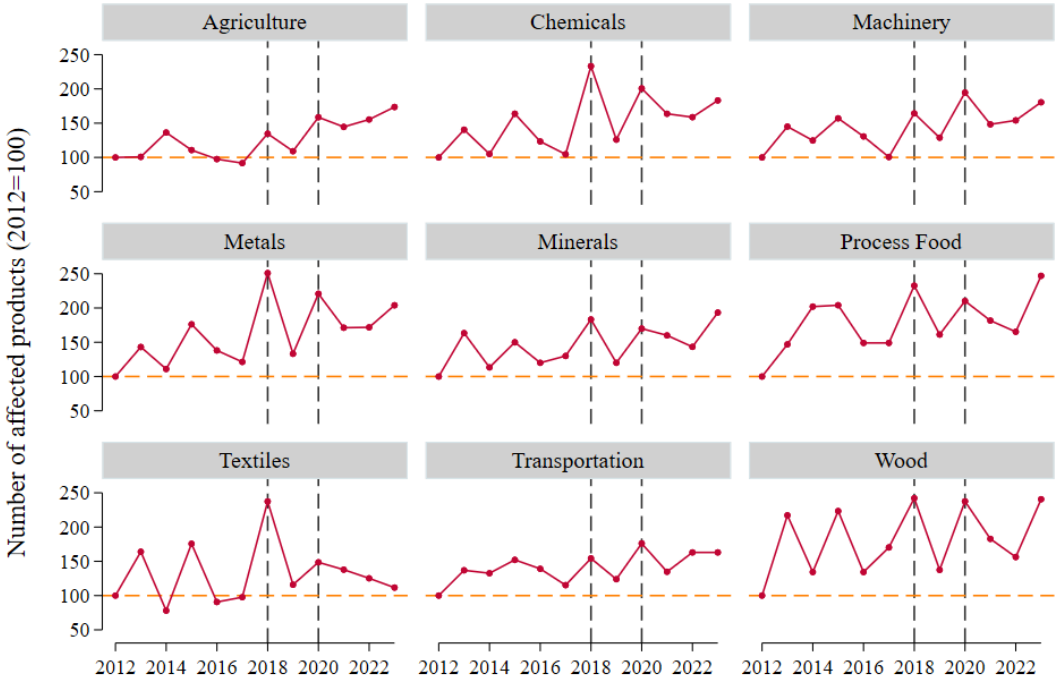
Source: Global Trade Alert (GTA) database and ACI staff calculations.

[5] The number of protectionist measures shown in Figure 3.4 represents the sum of product-level measures for each sector. Since a single protectionist measure can impact multiple products at once, the figures presented in Figure 3.4 differ from those in Figure 3.1.

[6] We assigned HS 2-digit product lines to the following broad sectors: Agriculture (01-15), Processed Food (16-24), Minerals (25-27), Metals (68-83), Wood (44-49, 92, 94, 97), Chemicals (28-40), Textiles (41-42, 50-67), Machinery (84, 85, 90, 91, 93, 95, 96), and Transportation (86-89).

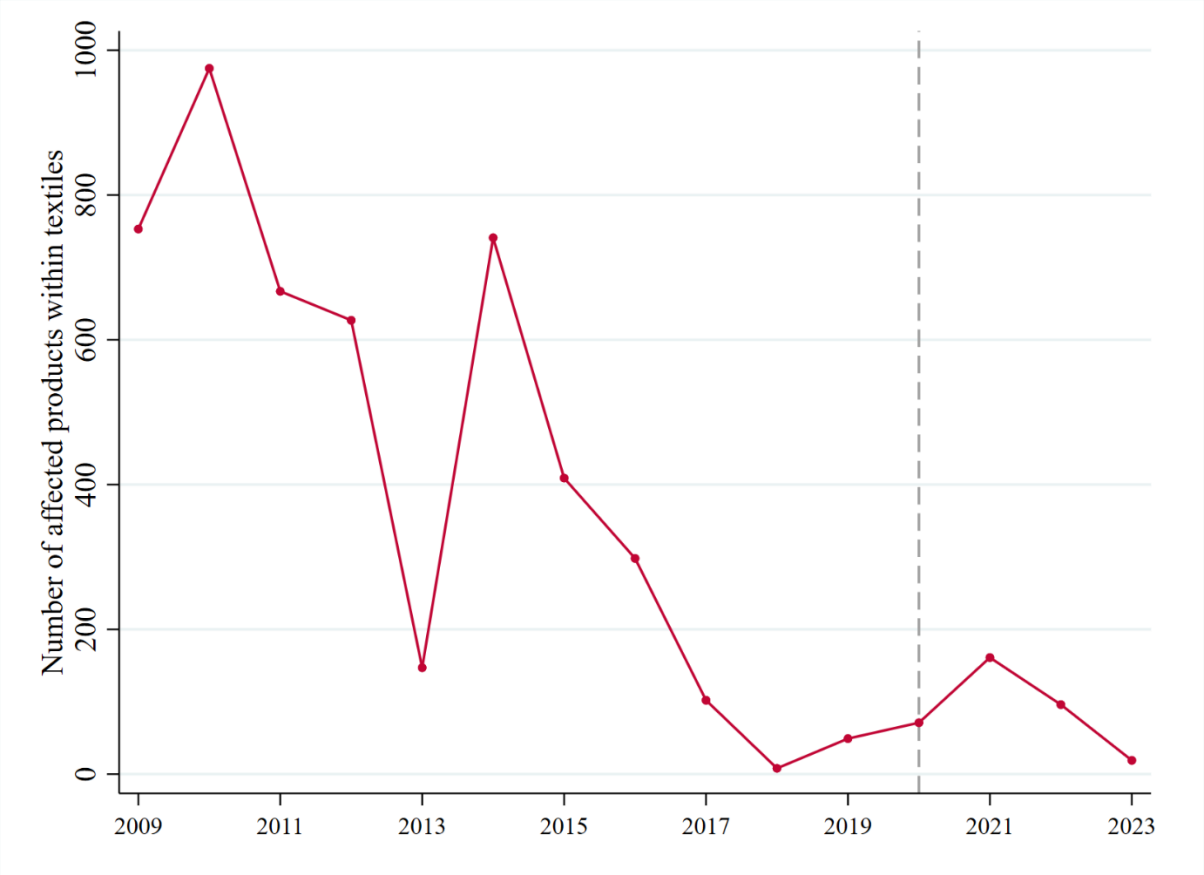
Similarly, despite fluctuations over time, the number of affected products across sectors shows an overall increasing trend compared to the values in 2012, with noticeable peaks in 2018 and 2020 (Figure 3.5). As discussed previously, the 2018 spikes in multiple sectors, including chemicals, metals, and textiles align with the changes in trade policies and tariffs during that time, such as the EU's increased protectionist measures and global trade tensions (e.g., the US-China trade war). The 2020 peaks in sectors like chemicals, machinery, and metals reflect the impact of the pandemic on global supply chains and the subsequent increase in protectionism, as countries attempted to protect their domestic industries. After the sharp increases in 2020, all sectors saw a reduction in the number of affected products, indicating that countries may have eased protectionist measures as global trade began recovering post-pandemic. However, the trend appears to rise again in 2022, except in the textiles sector, likely due to escalating geopolitical tensions and the adoption of de-risking strategies. This decline may be linked to the US's "friend-shoring" policy, which seeks to reduce reliance on China by shifting supply chains to emerging markets like Vietnam. This strategic shift likely contributed to the reduction in protectionist measures targeting textile products (see Figure 3.5.1), as the US and other countries began to favor alternative sourcing strategies in response to geopolitical and economic considerations.

Figure 3.5 Number of Affected Products (2012=100) by Sector



Source: Global Trade Alert (GTA) database and ACI staff calculations.

Figure 3.5.1 Number of Textile Products Affected by US Protectionism in ASEAN-6

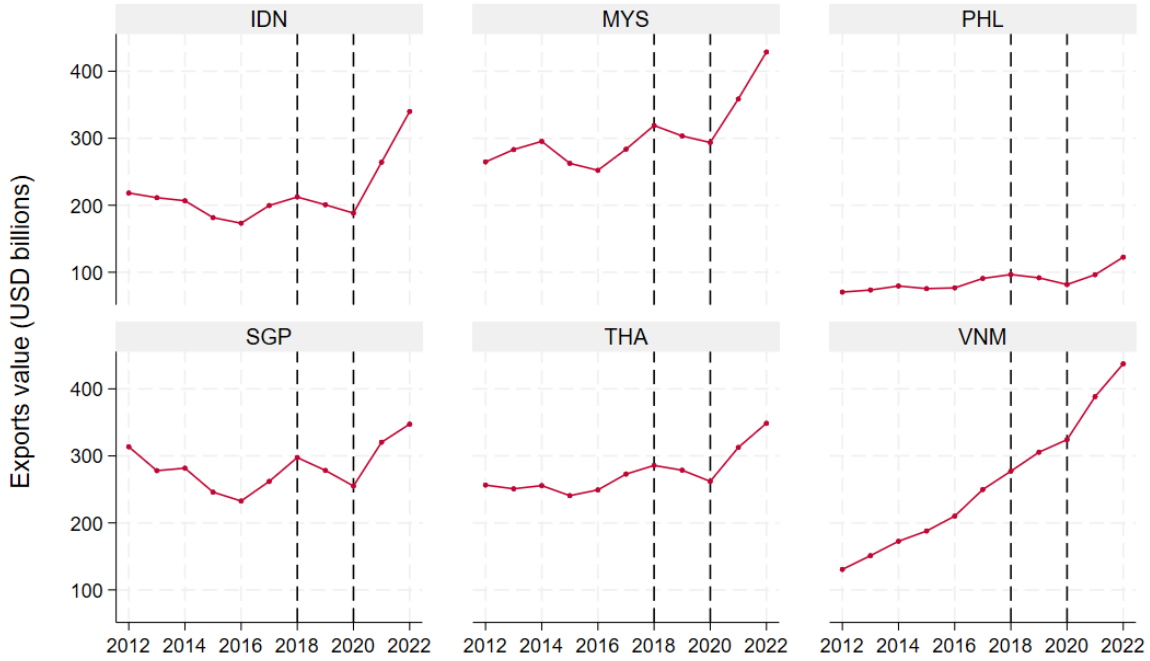


Source: Global Trade Alert (GTA) database and ACI staff calculations.

3.2 Overview of ASEAN-6 Exports

In this section, we discuss key summary statistics on ASEAN's export dynamics. Overall, all six ASEAN countries in the sample experienced a notable increase in export values post-2020, with the most significant rises observed in Vietnam, Indonesia, and Malaysia (Figure 3.6). Vietnam demonstrated strong and consistent growth in export values throughout 2012-2022, nearly quadrupling its export value during the period. Indonesia, Malaysia and Singapore experienced dips in 2016 and 2020 but quickly recovered in the following years. Thailand had a relatively stable pattern with considerable growth occurring after 2020, while the Philippines showed the slowest growth, with export values remaining under USD 100 billion throughout most of the period. The post-2020 surge in all countries may reflect recovery or a shift in global trade dynamics after the pandemic.

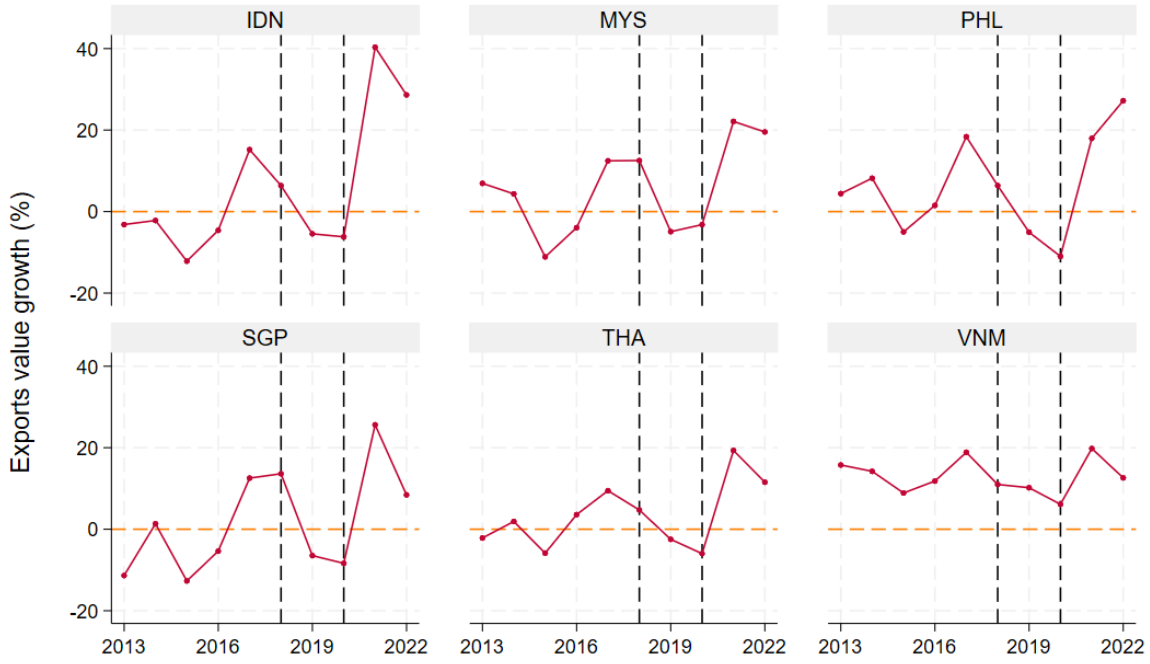
Figure 3.6 Exports by ASEAN-6 Exporter



Source: CEPII BACI database and ACI staff calculations.

However, when examining annual export growth rates, there are wild fluctuations across most countries, with several experiencing sharp spikes in 2021 – likely signalling a recovery following the disruptions caused by the pandemic as discussed above (Figure 3.7). All countries, except Vietnam, displayed volatile growth patterns, with dips into negative growth in various years, particularly in 2015, and again in 2019 and 2020. Not surprisingly, Vietnam stood out with the most stable and consistent growth, maintaining positive export growth throughout the period without extreme peaks or significant dips. Overall, the post-2020 period stands out across all countries with strong export growth, potentially indicating a recovery after the onset of the pandemic.

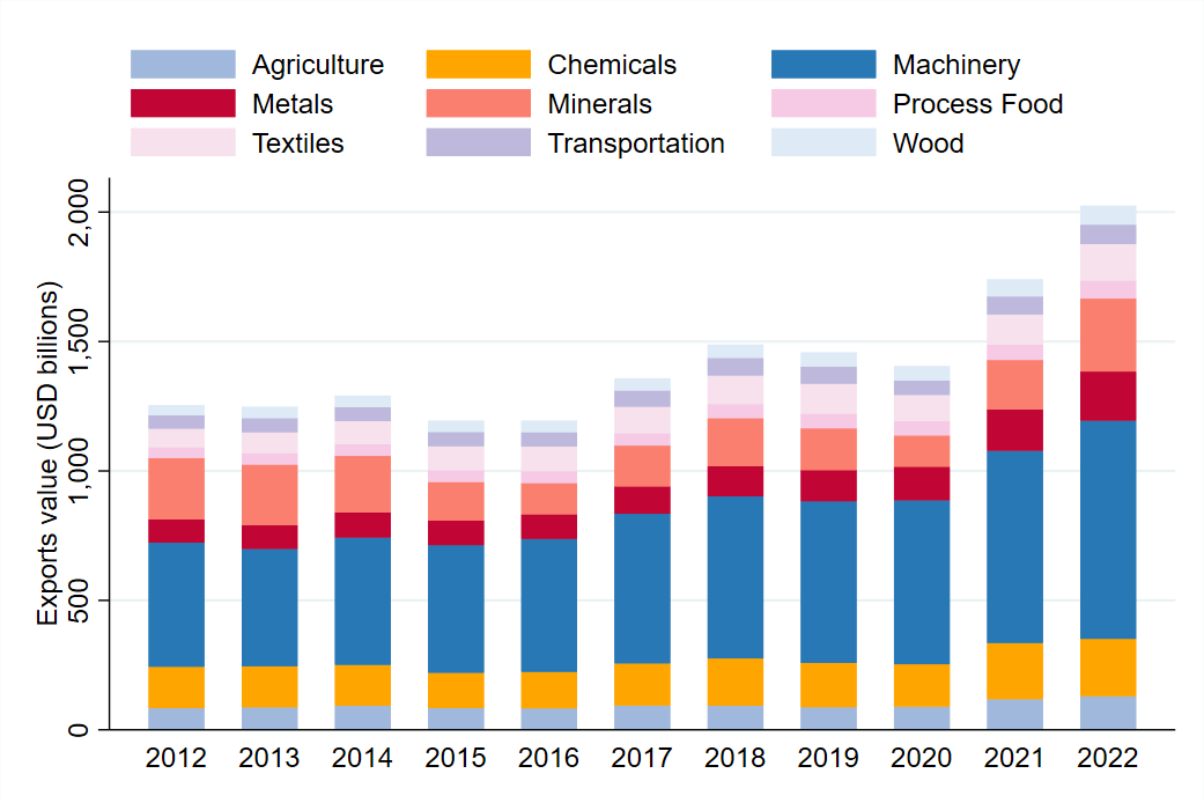
Figure 3.7 Annual Growth of ASEAN-6's Exports



Source: CEPII BACI database and ACI staff calculations.

Figure 3.8 provides a detailed breakdown of the export composition by sector for the ASEAN-6 countries from 2012 to 2022. The data shows that machinery consistently holds the largest share of exports throughout the period, indicating its crucial role in the region's trade. Chemicals, minerals, and metals also represent significant portions of ASEAN-6's exports. The chemicals sector, in particular, has seen consistent growth, contributing a notable share to the export values each year. Metals and minerals also maintain a strong presence, with their shares fluctuating slightly over the years but showing a steady increase after 2020. Other sectors such as textiles, wood, agriculture, transportation, and processed food remain smaller contributors but show consistent and stable levels of exports throughout the period. Post-2020 shows a clear acceleration in export values across almost all sectors. This increase is most evident in Machinery, Metals, and Processed Food, indicating a strong recovery and increased demand across the industries after the pandemic.

Figure 3.8 ASEAN-6's Exports by Sector

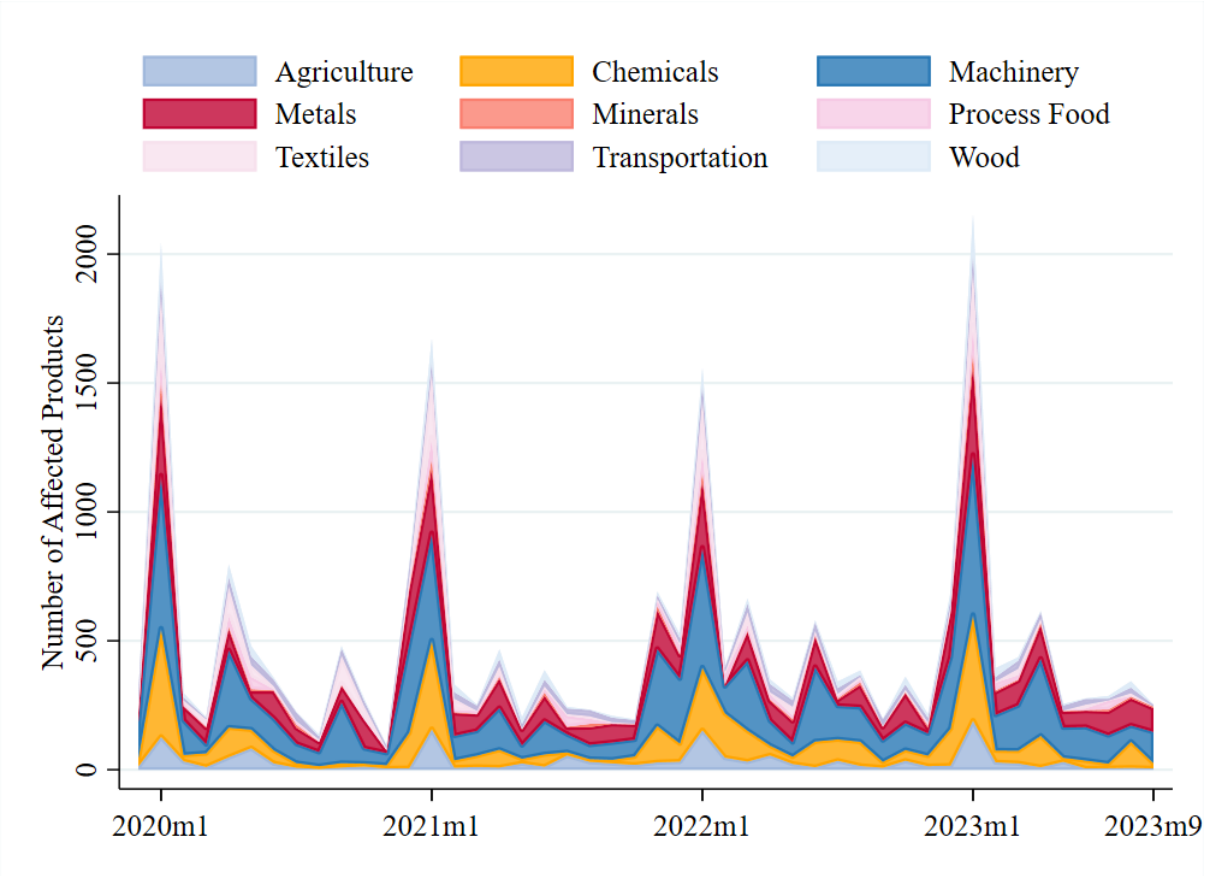


Source: CEPII BACI database and ACI staff calculations.

3.3 Protectionism and ASEAN-6 Exports

This section presents descriptive statistics on the relationship between protectionism and exports at the monthly level. The analysis focuses on the period from January 2020 to September 2023, as monthly trade data is available for this timeframe. A pattern of cyclical disruptions is evident across multiple sectors, with noticeable recurring spikes in during the first months of 2020, 2021, 2022, and 2023, as shown in Figure 3.9. The sectors most affected are machinery, chemicals, and metals, suggesting that these industries are particularly vulnerable to disruptions. After each spike, the number of affected products decreases substantially, showing the easing of factors caused the disruptions.

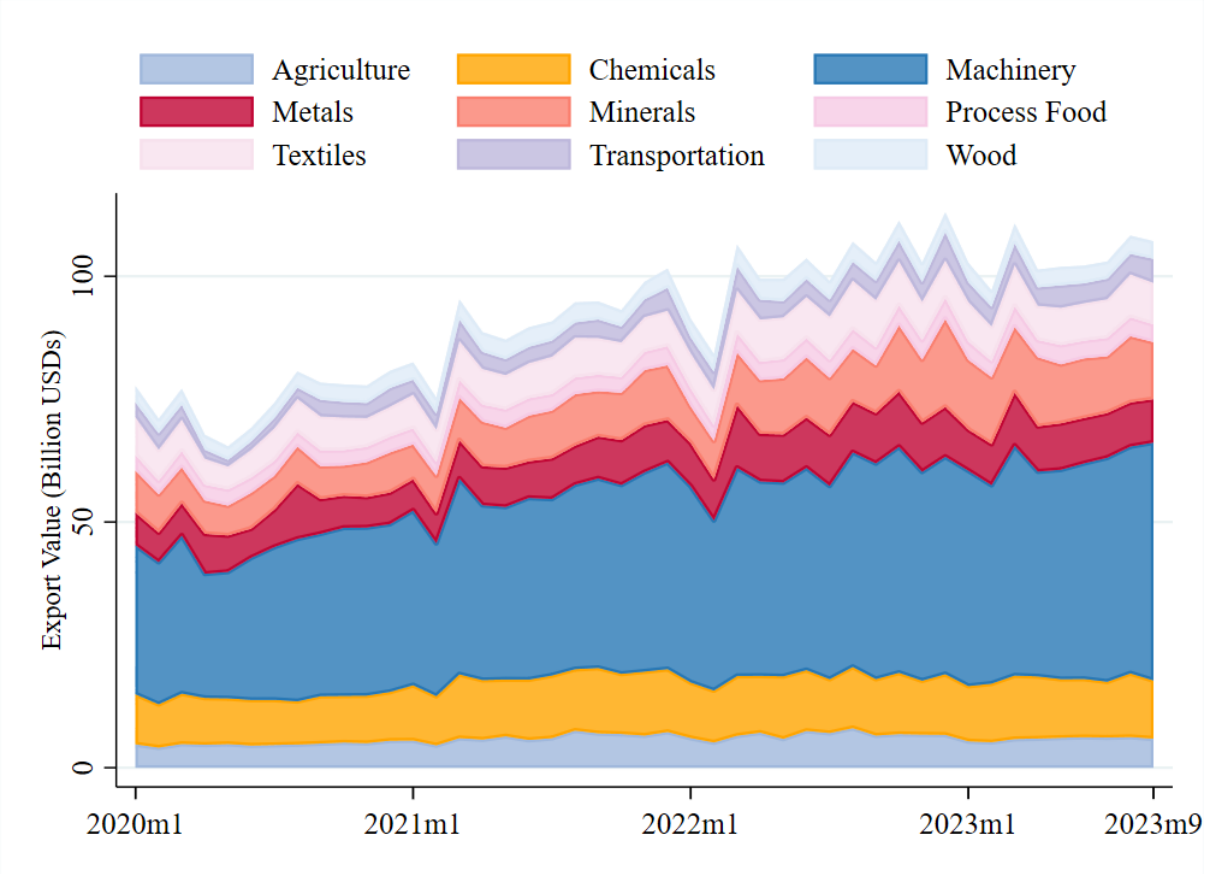
Figure 3.9 Monthly Protectionist Measures Adversely Affecting ASEAN



Source: Global Trade Alert (GTA) database and ACI staff calculations.

On the other hand, the monthly export value exhibits a clear upward trend, with fluctuations but consistent growth across sectors (Figure 3.10). Similar to Figure 3.8, machinery dominates the export value throughout the period, followed by metals, chemicals, and minerals. Notable fluctuations in export values are observed at the start of each year from 2020 to 2023, with declines in export values coinciding with the rise of protectionism during the same periods. Specifically, each spike in protectionism observed in January from 2020 to 2023 is followed by a decline in exports in the subsequent February. Additionally, between 2022 and 2023, there are five distinct spikes in protectionism, and during each corresponding period, exports experience five corresponding declines. This correlation raises a natural question: is there a causal relationship between the rise of protectionism and the decline in exports? The empirical research design is presented in Section 4 to address this question.

Figure 3.10 Sectoral Distribution of ASEAN-6's Export Value



Source: CEPII BACI database and ACI staff calculations.

4. Empirical Research Design

4.1 Baseline Specification

Following Baier and Bergstrand (2007) and Henn and McDonald (2014), we use the gravity equation to evaluate the impact of the protectionist measures targeting ASEAN-5 countries[7] on their export, as follows:

$$Export_{ijpt} = \exp\left(\delta_{ijp} + \gamma_{ijt} + \theta_{ipt} + \vartheta_{jpt} + \beta\, ProtCount_{ijpt} + \epsilon_{ijpt}\right) \quad (1)$$

where $Export_{ijpt}$ represents the export of good p (at HS 6-digit level) from country i (ASEAN-5 countries) to import country j at year-month t. $ProtCount_{ijpt}$ is the main independent

[7] Here, we focus exclusively on five ASEAN countries—Indonesia, the Philippines, Singapore, Thailand, and Vietnam—as granular trade data are available only for these countries.

variable of interest, denoting the number of protectionist measures still in effect for product *p* at time *t*, implemented by the import country *j* and targeting export country *i*. If a protectionist measure was implemented before period *t* and remained in effect until time *t*, it will still be counted in month *t*. In this paper, we focus solely on import restrictions and behind-the-border measures implemented by other countries, as the other two forms of protectionist measures—export restrictions and export support—are less likely to affect a country's exports.

Control variables include exporter-importer-product fixed effects (δ_{ijp}), exporter-importer-time fixed effects (γ_{ijt}) which absorb both time-invariant and monthly-varying country-pair specific effects that may affect the export of ASEAN-5, such as the distance, cultural affinities, and political alignment, exporter-product-time fixed effects (θ_{ipt}), and importer-product-time fixed effects (ϑ_{jpt}). The error term is denoted by ϵ_{ijpt}.

After taking the logarithm of both sides, we obtain the equation (2), shown as follows:

$$ln(Export_{ijpt}) = \delta_{ijp} + \gamma_{ijt} + \theta_{ipt} + \vartheta_{jpt} + \beta\ ProtCount_{ijpt} + \varepsilon_{ijpt} \quad (2)$$

The coefficient of interest, β, quantifies the percentage change in product-level exports for each additional protectionist measure implemented. The coefficient is expected to be negative, as protectionism targeting ASEAN is likely to deter ASEAN's exports.

4.2 Impact of COVID-19 Pandemic

To examine the impact of protectionist measures across different periods, we analyze their effects during three distinct timeframes: before, during, and after the pandemic. The estimation equation is specified as follows:

$$\ln(Export_{ijpt}) = \delta_{ijp} + \gamma_{ijt} + \theta_{ipt} + \vartheta_{jpt} + \beta_1\ ProtCount_{ijpt} + \beta_{21}\ ProtCount_{ijpt} \times Before_{ij\tau} + \beta_{22}\ ProtCount_{ijpt} \times After_{ij\tau} + \varepsilon_{ijpt} \quad (3)$$

$Before_{ij\tau}$ is a dummy variable equal to 1 if it corresponds to the period before COVID-19, and $After_{ij\tau}$ is a dummy variable that takes the value of 1 if it corresponds to the period after COVID-19. The omitted category represents the period during COVID-19. To identify the COVID-19 period, we use the COVID-19 stringency index data from the Oxford Covid-19 Government Response Tracker (OxCGRT). The OxCGRT database provides comprehensive daily stringency index data covering over 180 countries from 2020 through 2022.

In our empirical approach, we first calculate monthly averages of the daily stringency index for each ASEAN-5 country from January 2020 to December 2022 (presented in Appendix Table A.2). March 2020 stands out, with the Philippines recording the highest average stringency index of 100 – the peak of COVID-19 restrictions. Therefore, for each country-pair (i, j) and month τ, we construct two binary variables based on the March 2020 ASEAN-5 average stringency benchmark. $Before_{ij\tau} = 1$ if in 2020 each country i and j's monthly mean stringency index is less than or equal to the March 2020 ASEAN-5 mean. Similarly, $After_{ij\tau} = 1$ if in any post-2020 month the monthly mean stringency index of each country i and j is also less than or equal to the March 2020 benchmark. If both $Before_{ij\tau}$ and $After_{ij\tau}$ are 0 for a given month, the period is classified as during the pandemic.

Thus, β_1 captures the impact of the rise in protectionism on exports during the pandemic. β_{21} and β_{22} reflects the effect of protectionism on exports before and after the pandemic relative to the pre-pandemic period, respectively. Specifically, $\beta_1 + \beta_{21}$ reveals the effect before the pandemic, while $\beta_1 + \beta_{22}$ shows the effect in post-pandemic era. We also control for additional variables and fixed effects as in equation (2).

4.3 Heterogeneity in the Impact by Exporter and Sector

In the previous analysis, Figures 3.2 and 3.6 illustrate differing trends in protectionism and exports among the ASEAN-5 countries. To further examine the heterogeneity in export responses to protectionist measures within this group, we estimate the following specification:

$$ln(Export_{ijpt}) = \delta_{ijp} + \gamma_{ijt} + \theta_{ipt} + \vartheta_{jpt} + \sum_{i=1}^{5} \beta_i \left(ProtCount_{ijpt} \times Dest_i\right) + \varepsilon_{ijpt} \quad (4)$$

where $Dest_i$ is the protectionism destination country (also the export country) dummy and the coefficient β_i measures the ASEAN-5 country-specific export response to the protectionism in country *i*.

In Section 3, Figures 3.9 and 3.10 illustrate divergent trends in protectionism and exports across various sectors. To explore the heterogeneity in sectoral responses, we adopt the classification criteria detailed in Section 3, to categorize each HS 6-digit level product into one of nine broad sectors. We then assess the impacts by estimating the following specifications:

$$ln(Export_{ijpt}) = \delta_{ijp} + \gamma_{ijt} + \theta_{ipt} + \vartheta_{jpt} + \sum_{p=1}^{9} \beta_p \left(ProtCount_{ijpt} \times Sector_p\right) + \varepsilon_{ijpt} \quad (5)$$

where $Sector_p$ is the sector dummy taking the value of one for each specific sector, and the coefficient β_p investigates the corresponding sector-specific export response to the protectionism.

5. Empirical Analysis

5.1 Baseline Results

Tables 5.1 and 5.2 presents the baseline analysis of how protectionism has impacted ASEAN-5 exports, using the estimation from Equation (2). Table 5.1 displays the marginal effects of import restrictions and behind-the-border measures on ASEAN-5 exports. The findings show that both types of protectionist measures have a negative and statistically significant impact on exports, with product-level exports declining by approximately 0.28% and 0.92% in response to each additional import restriction and behind-the-border measure, respectively. Table 5.2 summarizes the overall impact of total protectionist measures, showing that each additional measure leads to an average decline of 0.44% in ASEAN-5 exports. This effect remains statistically significant, reinforcing the detrimental influence of protectionism on the region's trade.

The table also reports the number of new protectionist measures affecting ASEAN-5 countries in September 2023 (the latest date covered by our dataset), alongside the product-level trade observations impacted during that period. As shown in Figure 3.1, over 80% of these measures are behind-the-border measures, highlighting their prominence as the main form of protectionism affecting ASEAN. Combined with the results in Table 5.1, it is clear that behind-the-border measures not only dominate but also have a more severe impact on ASEAN-5 exports. To quantify the real effects, we multiplied the product-level regression coefficients by the value of monthly trade affected by these protectionist measures in September 2023, as shown in the last columns of Tables 5.1 and Table 5.2. Our conservative estimate suggests that almost USD 0.28 billion in exports in September 2023 was lost due to increasing protectionism. When disaggregated by type, the decline is even more pronounced, with import restrictions accounting for about USD 0.12 billion and behind-the-border measures causing a USD 0.42 billion reduction in exports. Similarly, we also computed the aggregate impact for the whole period from January 2020 to September 2023 in Tables 5.3 and 5.4. Our calculation suggest that, protectionism shaved about USD 9.8 billion off ASEAN's export value for this period.

Table 5.1 Baseline Regression Results and Trade Impact Estimates for September 2023[8]

	ln(Export)	Number of Measures	Affected Observations	Affected Monthly Trade (Million, Sep 2023)	Aggregate Monthly Trade Impact (Million)
Import Restrictions (IR)	-0.00282*** (0.000814)	76	19.68%	49,643	-139.80
Behind-the-border Measures (BBM)	-0.00919*** (0.00224)	402	7.67%	46,407	-424.53
Total		478	27.35%	96,050	-564.33
Observations	4,231,113				
R-squared	0.894				
Exporter-Product-Month FEs	Yes				
Importer-Product-Month FEs	Yes				
Exporter-Importer-Month FEs	Yes				
Exporter-Importer-Product FEs	Yes				
Clusters	Exporter-Importer				

Notes: *** denotes statistical significance at 1% level, ** 5% level, * 10% level, and the robust standard errors clustered at the exporter-importer (country-pair) level are shown in parentheses.

[8] The details of the number of protectionist measures are in the Appendix.

Table 5.2 Alternative Regression and Trade Impact Estimates for September 2023[9]

	ln(Export)	Number of Measures	Affected Observations	Affected Monthly Trade (Million, Sep 2023)	Aggregate Monthly Trade Impact (Million)
IR+BBM	-0.00435*** (0.0013)	478	23.06%	64,448	-279.74
Observations	4,231,113				
R-squared	0.894				
Exporter-Product-Month FEs	Yes				
Importer-Product-Month FEs	Yes				
Exporter-Importer-Month FEs	Yes				
Exporter-Importer-Product FEs	Yes				
Clusters	Exporter-Importer				

Notes: *** denotes statistical significance at 1% level, ** 5% level, * 10% level, and the robust standard errors clustered at the exporter-importer (country-pair) level are shown in parentheses.

[9] Given that certain trade flows may be simultaneously affected by both import restrictions and behind-the-border measures, we conduct an alternative regression to provide a more parsimonious estimate. It is important to note that the affected monthly trade flows are not a simple sum of the values reported in Table 5.1, as some flows may be subject to multiple measures at the same time.

Table 5.3 Baseline Results and Calculation of Aggregate Trade Impact

	ln(Export)	Number of Measures	Affected Observations	Aggregate Affected Trade (Million, Jan 2020-Sep 2023)	Aggregate Trade Impact (Million, Jan 2020-Sep 2023)
Import Restrictions (IR)	-0.00282*** (0.000814)	6,041	18.86%	1,688,246	-4,754
Behind-the-border Measures (BBM)	-0.00919*** (0.00224)	12,666	7.56%	1,623,113	-14,848
Total		18,707	26.42%	3,311,359	-19,602
Observations	4,231,113				
R-squared	0.894				
Exporter-Product-Month FEs	Yes				
Importer-Product-Month FEs	Yes				
Exporter-Importer-Month FEs	Yes				
Exporter-Importer-Product FEs	Yes				
Clusters	Exporter-Importer				

Notes: *** denotes statistical significance at 1% level, ** 5% level, * 10% level, and the robust standard errors clustered at the exporter-importer (country-pair) level are shown in parentheses.

Table 5.4 Alternative Regression and Calculation of Aggregate Trade Impact

	ln(Export)	Number of Measures	Affected Observations	Aggregate Affected Trade (Million, Jan 2020-Sep 2023)	Aggregate Trade Impact (Million, Jan 2020-Sep 2023)
IR+BBM	-0.00435*** (0.0013)	18,707	22.27%	2,266,473	-9,838
Observations	4,231,113				
R-squared	0.894				
Exporter-Product-Month FEs	Yes				
Importer-Product-Month FEs	Yes				
Exporter-Importer-Month FEs	Yes				
Exporter-Importer-Product FEs	Yes				
Clusters	Exporter-Importer				

Notes: *** denotes statistical significance at 1% level, ** 5% level, * 10% level, and the robust standard errors clustered at the exporter-importer (country-pair) level are shown in parentheses.

5.2 Impact of COVID-19 Pandemic

Next, we examine the impact across different periods, with a particular focus on whether it varies significantly before, during, and after the COVID-19 pandemic. We define these periods using the stringency data from the OxCGRT, which monitors government responses such as travel restrictions and workplace closures during the pandemic. Table 5.5 presents the regression results based on equation (3). The coefficients suggest that protectionism had a statistically significant negative impact on ASEAN-5 exports during the pandemic. However, prior to COVID-19, this impact was not significant. Interestingly, the effect intensified in the post-pandemic period.

Table 5.5 Regression Results Based on Equation (3)

	ln(Export)
$ProtCount_{ijpt}$	-0.00269**
	(0.00136)
$ProtCount_{ijpt} \times Before_{ij\tau}$	0.000404
	(0.000378)
$ProtCount_{ijpt} \times After_{ij\tau}$	-0.000748**
	(0.000374)
Observations	4,225,215
R-squared	0.894
Exporter-Product-Month FEs	Yes
Importer-Product-Month FEs	Yes
Exporter-Importer-Month FEs	Yes
Exporter-Importer-Product FEs	Yes
Clusters	Exporter-Importer

Notes: *** denotes statistical significance at 1% level, ** 5% level, * 10% level, and the robust standard errors clustered at the exporter-importer (country-pair) level are shown in parentheses.

To further clarify the effects over these different periods, Table 5.6 computed the impact for each period based on the estimated coefficients in Table 5.5. This table confirms that protectionism had an insignificant impact on exports before the pandemic. However, during and after the pandemic, each additional protectionist measure reduced ASEAN-5 exports by approximately 0.27% and 0.34%, respectively.

Table 5.6 Impacts Across Different Periods

	ln(Export)
β_1 (During)	-0.00269**
	(0.00136)
$\beta_1 + \beta_{21}$ (Before)	-0.00228
	(0.00157)
$\beta_1 + \beta_{22}$ (After)	-0.00343***
	(0.00119)
Observations	4,225,215
R-squared	0.894
Exporter-Product-Month FEs	Yes
Importer-Product-Month FEs	Yes
Exporter-Importer-Month FEs	Yes
Exporter-Importer-Product FEs	Yes
Clusters	Exporter-Importer

Notes: *** denotes statistical significance at 1% level, ** 5% level, * 10% level, and the robust standard errors clustered at the exporter-importer (country-pair) level are shown in parentheses.

5.3 Heterogeneity in the Impact Across ASEAN-5 Exporters

Are some ASEAN-5 countries more responsive to global protectionism than others? To answer this question, we estimate Equation (4) with the dummy $Dest_i$ equal to one for ASEAN-5 exporter i and zero otherwise and the result is reported at Table 5.7. To illustrate the effect across ASEAN-5 countries, Figure 5.1 presents both the point estimates of the coefficients and the confidence intervals at 90% (darker orange bars) and 95% significance levels (lighter orange bars). The horizontal axis represents the magnitude of the effect, with negative values indicating a reduction in exports due to protectionist measures. The red vertical line at zero serves as a reference point, marking the threshold between negative impacts and non-significant effects. Each country's export response is depicted with these confidence intervals.

The results presented in Figure 5.1 reveal clear heterogeneity in how ASEAN-5 countries respond to protectionism. Specifically, Indonesia's exports do not exhibit a statistically significant sensitivity to rising protectionist measures, setting it apart from other ASEAN-5 countries. This difference may reflect Indonesia's comparatively larger domestic market and

diversified export markets, potentially buffering its economy against export protectionism measures.

Table 5.7 Heterogeneity Across ASEAN-5 Exporters

	ln(Export)
$ProtCount_{ijpt} \times Indonesia_j$	-0.00151
	(0.00128)
$ProtCount_{ijpt} \times Philippines_j$	-0.00646***
	(0.00138)
$ProtCount_{ijpt} \times Singapore_j$	-0.00570***
	(0.00169)
$ProtCount_{ijpt} \times Thailand_j$	-0.00522***
	(0.00155)
$ProtCount_{ijpt} \times Vietnam_j$	-0.00361***
	(0.00104)
Observations	4,231,113
R-squared	0.894
Exporter-Product-Month FEs	Yes
Importer-Product-Month FEs	Yes
Exporter-Importer-Month FEs	Yes
Exporter-Importer-Product FEs	Yes
Clusters	Exporter-Importer

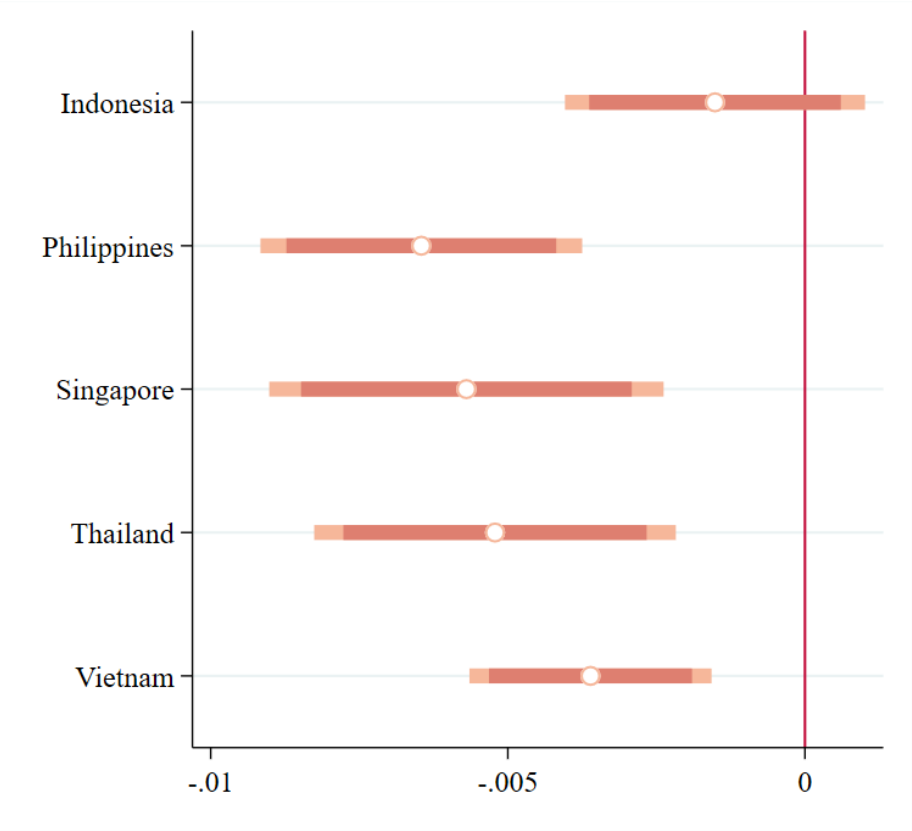
Notes: *** denotes statistical significance at 1% level, ** 5% level, * 10% level, and the robust standard errors clustered at the exporter-importer (country-pair) level are shown in the parentheses.

In contrast, the Philippines is notably vulnerable, registering the most substantial decline in exports due to increased protectionism. This heightened sensitivity could be attributed to the country's export structure, heavily concentrated in sectors such as electronics and semi-conductors, which are particularly susceptible to global supply chain disruptions and targeted trade barriers.

Singapore, Thailand, and Vietnam also exhibit significant impacts, albeit to varying degrees. Singapore's substantial exposure is likely influenced by its strategic role as a global trade and logistics hub, making it more susceptible to shifts in international trade policies. Thailand's export sector, largely reliant on automotive and electronics industries, similarly faces pronounced risks from global trade restrictions.

Vietnam, while impacted, shows comparatively greater resilience. This relative robustness could stem from Vietnam's active participation in numerous free trade agreements, effective diversification of export markets, and increasing attractiveness as an alternative manufacturing hub amidst global supply chain reconfigurations.

Figure 5.1 Heterogeneity Across ASEAN-5 Destination Countries



Source: ACI staff estimations. Notes: Figure 5.1 displays the coefficients and the 90% and 95% confidence intervals. The darker orange shade represents the 90% confidence interval, while the lighter orange shade indicates the 95% confidence interval.

The heterogeneity in the impact on ASEAN-5 countries underscores the importance of tailored policy responses. Countries significantly impacted by global protectionism, such as the Philippines, Singapore, and Thailand, might benefit from strategies that diversify export products and markets, invest in domestic industry resilience, and pursue deeper regional integration. Meanwhile, nations like Vietnam and Indonesia, which exhibit greater resilience or lower sensitivity, may prioritize maintaining or enhancing their existing trade policy frameworks to further safeguard against future protectionist trends.

5.4 Heterogeneity in the Impact Across Sectors

To assess sectoral heterogeneity in protectionism's effects on ASEAN-5's exports, we estimate Equation (5) including an interaction between protectionism measures and a dummy variable, $Sector_p$, which equals 1 for sector p and 0 otherwise. The estimated impacts are presented in Table 5.8, with the corresponding coefficient plots displayed in Figure 5.2. According to Figure 5.2[10], the export of minerals from ASEAN-5 was the most adversely affected by protectionism during the study period, with a 90% level of significance. Specifically, one additional protectionist measure targeting ASEAN-5's mineral products could lead to an average decline of approximately 21.3% in exports.

Considering minerals dominate the scale of negative effect among all the sectors and for convenience, we also provide a plot omitting this sector in Figure 5.3. Figure 5.3 reveals that other sectors, including textiles, chemicals, machinery, and metals, were also significantly affected by protectionism. This finding is particularly important for ASEAN-5 countries, as these sectors collectively account for about 70% of their total exports, with machinery alone contributing approximately 40%.

The prominence of the machinery sector in ASEAN-5's export portfolio, combined with its vulnerability to protectionist measures, raises important policy implications. Governments may need to prioritize resilience-building strategies in this sector, such as enhancing supply chain robustness, fostering technological upgrades, and securing access to alternative markets. The consistent exposure of sectors like chemicals, metals, and textiles also points to the need for broader trade diversification and risk management strategies. In addition, the outsized impact on the minerals sector, while possibly reflecting global strategic competition over critical resources, suggests that ASEAN-5 policymakers should monitor and address the geopolitical dimensions of trade protectionism.

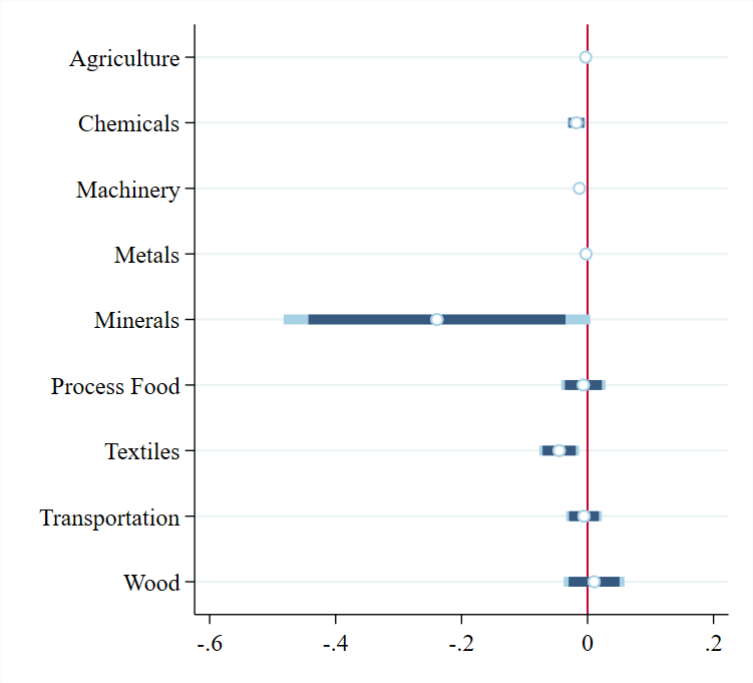
[10] We did not exclude the "others" sector when estimating Equation (5); we simply chose not to display its coefficient in Figures 5.2 and 5.3. Similarly, the "minerals" sector was included in the estimation of Equation (5), but its coefficient is omitted from Figure 5.3 for presentation purposes.

Table 5.8 Heterogeneity Across Sectors

	ln(Export)
$ProtCount_{ijpt} \times Agriculture_p$	-0.00284*
	(0.00152)
$ProtCount_{ijpt} \times Chemiclas_p$	-0.0177**
	(0.00721)
$ProtCount_{ijpt} \times Machinery_p$	-0.0129***
	(0.00286)
$ProtCount_{ijpt} \times Metals_p$	-0.00236***
	(0.000739)
$ProtCount_{ijpt} \times Minerals_p$	-0.239*
	(0.124)
$ProtCount_{ijpt} \times ProcessFood_p$	-0.00662
	(0.0178)
$ProtCount_{ijpt} \times Textiles_p$	-0.0450***
	(0.0160)
$ProtCount_{ijpt} \times Transporation_p$	-0.00563
	(0.0144)
$ProtCount_{ijpt} \times Wood_p$	0.0104
	(0.0245)
$ProtCount_{ijpt} \times Others_p$	-1.508*
	(0.780)
Observations	4,231,113
R-squared	0.894

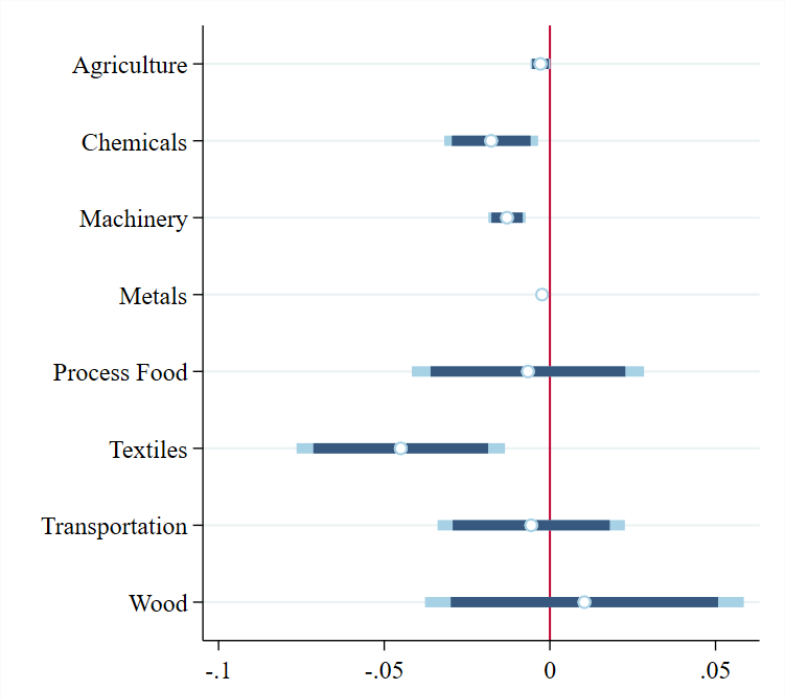
Notes: *** denotes statistical significance at 1% level, ** 5% level, * 10% level, and the robust standard errors clustered at the exporter-importer (country-pair) level are shown in the parentheses. The regression includes exporter-product-month FEs, importer-product-month FEs, Exporter-Importer-Month FEs, and Exporter-Importer-Product FEs.

Figure 5.2 Heterogeneity Across Sectors



Source: ACI staff estimations. Notes: The darker blue shade represents the 90% confidence interval, while the lighter blue shade indicates the 95% confidence interval.

Figure 5.3 Heterogeneity Across Sectors (Minerals Not Shown)



Source: ACI staff estimations. Notes: The darker blue shade represents the 90% confidence interval, while the lighter blue shade indicates the 95% confidence interval.

6. Conclusion

In the years leading up to the COVID-19 pandemic, ASEAN exports enjoyed relatively stable growth despite a global trend toward rising protectionism. The bloc had positioned itself as an open, trade-oriented region, benefitting from a web of free trade agreements, including the ASEAN Free Trade Area (AFTA) and participation in the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) of several member countries. These accords enabled member states to maintain tariff-free access to key markets while simultaneously reducing reliance on any single trading partner. Unlike China, which faced hundreds of adverse protectionist interventions globally, ASEAN countries were far less frequently targeted, partly due to their non-confrontational trade diplomacy. Vietnam and Malaysia, for instance, increasingly attracted export-oriented foreign investment seeking alternatives to China, a trend that accelerated with early signs of US-China trade tensions.

The COVID-19 pandemic has fundamentally altered the global trade landscape. Many countries imposed export restrictions on critical goods, most notably medical equipment and personal protective equipment, which disrupted global supply chains. ASEAN countries both imposed and were subject to such restrictions. The supply chain turmoil temporarily dampened exports, particularly in electronics, textiles, and automotive components. However, the pandemic also served to spotlight ASEAN's role in global manufacturing networks. With China under lockdown, several multinational firms sought to reroute production via ASEAN. This created an unusual dynamic: while exports initially fell, the region's importance as a secondary supply base rose. This study has provided a detailed examination of how export restriction measures have affected ASEAN exports, revealing that protectionism, particularly behind-the-border measures, has been the main form of protectionist measures within the region.

Our empirical results show that ASEAN exports subject to a new protectionist measure fell by roughly 0.4 percent on average. Behind-the-border interventions proved more damaging than tariff-based import restrictions. These adverse effects grew stronger during the COVID-19 pandemic and intensified further in the post-pandemic period compared with the pre-COVID era. Country-level estimates pinpoint the Philippines, Singapore, Thailand, and Vietnam as the most heavily impacted, while sectoral analysis highlights chemicals, machinery, metals, and textiles as the hardest-hit industries.

The intensified impact on ASEAN exports in the post-pandemic period can be attributed not only to sluggish Western demand but also to the surge in Chinese exports being redirected toward Southeast Asia. This has led to market saturation and price compression in key sectors such as electronics, steel, and textiles, squeezing margins for domestic producers and exporters across the region. Compounding these challenges is the return of former US President Donald Trump and his imposition of the sweeping "Liberation Day" tariff package in April 2025. The policy introduced punitive tariffs of up to 46% on ASEAN exports, directly targeting products like footwear, apparel, aluminum, electronics, and machinery, sectors where ASEAN had previously gained from supply chain diversification during the US-China trade war.

Unlike earlier trade measures, these tariffs are more aggressive in both scope and strategy. They are explicitly aimed at punishing economies perceived as beneficiaries of China's manufacturing decoupling. Moreover, in early July, Trump escalated this strategy by issuing formal tariff warning letters to 27 countries (as of July 12), including 9 of the 10 ASEAN member states—all except Singapore—stating that unless bilateral trade agreements were reached, new tariffs would take effect on August 1. These letters outline tariff rates ranging from 20% for Vietnam and the Philippines to as high as 40% for Laos and Myanmar, signaling a highly targeted and politically motivated protectionist campaign. This sharp escalation in both the number of products affected and the intensity of the tariffs is likely to generate broader and more persistent export disruptions than previous trade tensions and the pandemic. In light of this, ASEAN policymakers may need to enhance cooperation within ASEAN and with external partners by leveraging regional trade agreements and fostering intra-ASEAN trade integration as well as accelerating export diversification toward markets less susceptible to protectionist swings, such as the EU to help mitigate vulnerabilities. Additionally, industrial upgrading policies, particularly in digitalization, green manufacturing, and value-added production, should be prioritized to reduce dependence on low-cost, tariff-vulnerable exports to protect strategic sectors from external shocks.

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Appendices

Table A.1 The number of Protectionist Measures by Region of Implementing Country (Sep 2023)

		By Region of Implementing Country (Sep 2023)						
	Total	China	USA	EU+UK	America excl. USA	Asia excl. China	Africa	Europe excl. EU and UK
Total Protectionism Measures	**519**	**21**	**56**	**363**	**23**	**54**	**2**	**0**
Import Restrictions	**75**	**13**	**20**	**10**	**10**	**22**	**0**	**0**
Tariff and Import Bans	29	0	0	5	9	15	0	0
Import Tariff	29	0	0	5	9	15	0	0
Quota	0	0	0	0	0	0	0	0
Import Ban	**0**	0	0	0	0	0	0	0
Trade Defense Measure	1	0	0	0	1	0	0	0
Non-tariff Barriers	19	10	0	5	0	4	0	0
Non-Tariff Measure	19	10	0	5	0	4	0	0
Technical Barrier to Trade	0	0	0	0	0	0	0	0
Discriminatory Purchasing	26	3	20	0	0	3	0	0
Localization Requirement	8	3	5	0	0	0	0	0
Public Procurement	18	0	15	0	0	3	0	0
Behind-the-border Measures	**403**	**8**	**36**	**345**	**13**	**0**	**1**	**0**
Bailout/State Aid	403	8	36	345	13	0	1	0
Import Subsidy	0	0	0	0	0	0	0	0
Export Restrictions	**22**	**0**	**0**	**0**	**0**	21	1	0
Export Support	**19**	**0**	**0**	**8**	**0**	**11**	**0**	**0**
Export Incentive	0	0	0	0	0	0	0	0
Trade Finance	19	0	0	8	0	11	0	0

Source: Global Trade Alert (GTA) database and ACI staff calculations.

Table A.2 Stringency Index for All ASEAN-5 Countries

Month	Min	25th Percentile	Mean	75th Percentile	Max
2020m1	0	0	5.591548	11.11	25.93
2020m2	0	19.44	23.17241	28.7	47.22
2020m3	0	33.8	46.24213	50	100
2020m4	45.37	76.85	81.81247	96.3	100
2020m5	69.44	73.15	78.96394	82.41	96.3
2020m6	55.56	59.26	67.88953	71.76	79.63
2020m7	52.78	55.56	61.57465	62.5	79.63
2020m8	50	56.48	64.24929	77.31	79.63
2020m9	47.22	56.48	62.6194	68.98	81.02
2020m10	47.22	50.46	56.73806	65.28	72.69
2020m11	45.37	47.22	54.76013	68.06	68.98
2020m12	45.37	50.93	58.62071	66.2	68.98
2021m1	50.93	52.78	61.70413	68.06	74.54
2021m2	40.74	50.93	62.28964	71.76	76.85
2021m3	47.22	50.93	61.19497	71.76	81.02
2021m4	47.22	50.93	61.66767	71.76	81.02
2021m5	50.93	59.26	65.89368	71.76	77.31
2021m6	53.7	58.33	67.25806	74.54	77.31
2021m7	49.15	54.63	66.41064	71.76	79.17
2021m8	43.99	71.4	68.88593	78.53	79.17
2021m9	43.65	55.09	63.43027	72.69	78.49
2021m10	42.9	55.09	61.4451	67.94	78.65
2021m11	42.82	58.8	59.8036	68.06	78.38
2021m12	42.13	42.8	57.12071	66.86	70.83
2022m1	40.28	43.69	55.95922	65.19	69.44
2022m2	40.28	43.66	53.85507	60.77	66.67
2022m3	43.06	43.55	52.80497	58	66.67
2022m4	26.64	37.5	41.1656	46.65	63.89
2022m5	25.93	28.44	32.78477	37.5	43.15
2022m6	24.07	25.93	29.25627	30.58	41.88
2022m7	24.07	25.93	27.73987	29.94	30.58
2022m8	18.68	25.93	27.87819	29.63	30.48
2022m9	18.67	25.93	26.91127	29.96	30.41
2022m10	5.56	17.59	21.54684	29.91	30.35
2022m11	5.56	17.59	20.77833	25.42	32.19
2022m12	5.56	17.59	20.53335	25.41	32.16

Source: Oxford Covid-19 Government Response Tracker (OxCGRT) and ACI staff calculations.