INSTITUTE OF DEVELOPING ECONOMIES

IDE DISCUSSION PAPER No. 865

The Substitution Effect of Preferential Tariffs on Non-tariff Measures: Evidence from Vietnam

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September 2022

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Keywords: Non-tariff measures; Preferential tariffs; Vietnam

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The Substitution Effect of Preferential Tariffs on Non-tariff Measures: Evidence from Vietnam[§]

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1. Introduction

In October 2017, Vietnam introduced inspection requirements for engine displacement and safety in imported cars. As a member of ASEAN, Vietnam signed the ASEAN Trade in Goods Agreement (ATIGA) in 2009[1] and reduced or eliminated tariffs for goods from ASEAN. In particular, Vietnam was scheduled to reduce/eliminate the ATIGA tariffs in 2018. Since the elimination of ATIGA tariffs for cars in 2018, (foreign) carmakers in Vietnam were planning to import cars made in other ASEAN members (e.g., Thailand) rather than produce

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[1] It entered into force in May 17, 2010, and enhanced and superseded the Agreement on Common Effective Preferential Tariff Scheme for the ASEAN Free Trade Area (CEPT/AFTA) signed in 1992.

cars in Vietnam. However, the introduction of the aforementioned requirements rendered the importation of automobiles less profitable or technically impossible, even though these requirements may enhance consumer protection. There was substantial doubt that this non-tariff measure (NTM) was implemented to prevent an increase in car imports and encourage domestic production. In short, new NTMs might be introduced instead of tariff reduction/elimination in Vietnam.

Many studies have investigated the relationship between tariffs and NTMs. From a theoretical point of view, both substitution and complementary relationships could exist. For example, if import penetration rates are not high and imported goods compete with domestic goods, the reduction in tariffs induces the introduction of NTMs to maintain trade barriers (Yu, 2000; Anderson and Schmitt, 2003; Limão and Tovar, 2011). In contrast, trade barriers, such as tariffs and NTMs, are lowered for products with high import penetration rates because the lower consumer prices are beneficial for consumers and the negative effects on domestic producers are minimal (Essaji, 2010). Consequently, the relationship between tariffs and NTMs becomes an empirical question. Most empirical studies in the literature have found a complementary relationship.[2]

This study empirically investigates the effects of ATIGA tariffs on NTMs in Vietnam. Specifically, we examine tariffs and NTMs in Vietnam at the product level (six- or eight-digit level in the harmonized system (HS)) from 2012 to 2018. Using the database created by the United Nations Conference on Trade and Development (UNCTAD), we explore various types of NTMs in Vietnam. While most existing studies shed light on the role of the most favored nation (MFN) rates or applied tariffs, we examine the role of preferential tariffs, that is, ATIGA tariffs. We also investigate the effects of various preferential tariffs, including ATIGA tariffs and ASEAN+1 free trade agreement (FTA) tariffs. These preferential tariffs are applied to specific countries (i.e., FTA member countries). Thus, we can identify the country in which preferential tariffs are more likely to change NTMs in Vietnam.

Our findings can be summarized as follows: First, we estimate the gravity equation for Vietnam's imports before examining the relationship between the tariffs and NTMs. Our findings reveal that although the reduction in ATIGA tariffs increases imports, introducing some types of NTMs, especially price control and finance measures, decreases them. Second, a reduction in ATIGA tariffs induces the introduction of price control measures. Third, when ATIGA tariffs decrease, the pre-shipment inspection, non-automatic licensing, and finance measures will more likely be eliminated for products in which Vietnam has high export competitiveness. Fourth, the introduction of NTMs in Vietnam is significantly impacted not only by ATIGA tariffs but also by ASEAN+1 FTA tariffs. Nevertheless, compared with

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[2] Some empirical studies in this literature include Beverelli et al. (2019), Dean et al. (2009), Goldberg and Pavcnik (2005), Lee and Swagel (1997), Feinberg and Reynolds (2007), Moore and Zanardi (2011), Bown and Tovar (2011), Ketterer (2016), Beverelli et al. (2014), Orefice (2017), Herghelegiu (2018), Broda et al. (2008), Kee et al. (2009), Ronen (2017), and Niu et al. (2020).

ASEAN+1 FTA tariffs, ATIGA tariffs have significantly negative effects on various NTMs. Moreover, the price control measures are sensitive to preferential tariff reductions. Except for those of China, all preferential tariffs significantly and negatively impact the price control measure. Lastly, we found that the reduction of ATIGA tariffs also reduces MFN tariffs.

We mention three more strands of literature related to our study. As mentioned, before by examining the relationship between tariffs and NTMs, we investigate their effects on trade. Many scholars, such as Debaere and Mostashari (2010), Disdier et al. (2015), and Xu et al. (2020), have investigated the effect of tariffs on trade, and they mostly found the trade-hurting effect. Studies on the effect of NTMs on trade, for example, Bratt (2017) and Disdier et al. (2008), found a trade-impeding effect. We also examine the effect of preferential tariffs on MFN tariffs. Several studies (e.g., Limão, 2006; Estevadeordal et al., 2008; Karacaovali and Limao, 2008; Calvo-Pardo et al., 2009) examined this effect. Although they found both positive and negative effects, the positive effect is known as the tariff-complementarity effect (e.g., Bagwell and Staiger, 1999; Ornelas, 2008).

The remainder of this paper is organized as follows. Section 2 explains our empirical framework, Section 3 presents our estimation results, and Section 4 concludes the paper.

2. Empirical Framework

This section explains our empirical framework for investigating the relationship between tariffs and NTMs in Vietnam. The study period was from 2012 to 2018. Although the data on tariffs are obtained from the World Integrated Trade Solution (WITS), we draw data on NTMs from the Global Database on Non-Tariff Measures maintained by the UNCTAD.[3] Based on the existence of NTMs in Vietnam, we focus on six types of NTMs: (i) A: sanitary and phytosanitary (SPS) measures or B: technical barriers to trade (TBT) measures (*SPS/TBT*); (ii) C: pre-shipment inspection and other formalities (*Inspection*); (iii) E: non-automatic licensing, quotas, prohibitions, and other quantity control measures (*Licensing*); (iv) F: price control measures including additional taxes and charges (*Price*); (v) G: finance measures (*Finance*); and (vi) H: measures affecting competition (*Competition*).

Our baseline equation is specified for product p in year t as follows.

$$NTM(i)_{pt} = \alpha \times \ln(1 + ATIGA_{pt}) + \delta_p + \delta_t + \epsilon_{pt} \qquad (1)$$

Our study's model was formalized as a linear probability model. Based on the availability of NTM data, we define the product at the HS six-digit level. We estimate this equation for

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each type (*i*) of NTMs separately. The dependent variable, $NTM(i)_{pt}$, is a binary variable that takes the value of 1 if NTM type *i* is introduced in product *p* in year *t*, regardless of its target country. *ATIGA* is Vietnam's ATIGA tariff rate. For example, if the rate is 10%, *ATIGA* assumes a value of 0.10. Since the data on tariffs are available at Vietnam's tariff-line level (e.g., HS eight-digit level), we take a simple average of tariff-line level tariffs at an HS six-digit level. Coefficient α is of this study's interest. A positive sign indicates a complementary relationship between ATIGA tariffs and NTMs, whereas a negative sign indicates a substitution relation. We also introduce product fixed effects (δ_p) and year-fixed effects (δ_t), which control for product characteristics (e.g., agricultural goods, materials, or manufactured goods) and national-level shocks, respectively. We estimate this equation using the ordinary least squares (OLS) method.

We extend equation (1) in various ways. First, we examined the role of Vietnam's export competitiveness. Specifically, we estimate the following equation:

$$NTM(i)_{pt} = \alpha \times \ln(1 + ATIGA_{pt}) + \beta \times \ln(1 + ATIGA_{pt}) \times RCA_{p2010} + \delta_p + \delta_t + \epsilon_{pt} \quad (2)$$

We capture Vietnam's export competitiveness using the revealed comparative advantage (RCA) index, RCA_{p2010}. We compute this index using global trade data (*WRCA*) or intra-ASEAN trade data (*ARCA*). To avoid simultaneity bias, we measure these variables in 2010, before our study years. We may expect that a substitution relationship is more likely to be found in those products in which Vietnam does not have export competitiveness. The data on trade used to compute the RCA indices are obtained from the BACI database in CEPII.[4] Second, we examine other preferential tariffs, including ASEAN+1 FTAs with China, India, Japan, and South Korea. In this examination, we uncover which country preferential tariffs are more likely to change the NTMs in Vietnam.

This study has two empirical issues. First, we aggregate SPS (A) and TBT (B) owing to their similar rules. In addition, there are some other types of NTMs in the classification by UNCTAD. For example, we do not cover contingent trade protective measures (D), because this type does not exist in Vietnam during our study period. In addition, we do not examine trade-related investment measures (I) or export-related measures (H) because we focus on Vietnam's imports. Second, the possible endogeneity issue of ATIGA tariffs is worth discussing. If the ATIGA tariffs and NTMs are simultaneously determined, unobserved shocks to both become sources of endogeneity bias. However, the schedule of ATIGA tariffs was determined in the negotiation of ATIGA with other ASEAN member states, that is, before 2010.[5] Thus, as long as product fixed effects are controlled for, the exogenous nature of the ATIGA variable will be strong, compared with MFN tariffs, which can be changed

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[4] http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=37

[5] Article 1.2. in the protocol published on January 31, 2003, states that "import duties on products in the Inclusion Lists of Cambodia, Lao PDR, Myanmar and Viet Nam shall be eliminated not later than 1 January 2015, with flexibility however allowed for import duties on some sensitive products to be eliminated not later than 1 January 2018." For more details about ATIGA, see https://asean.org/our-communities/economic-community/trade-in-goods/.

anytime as long as it is below the bound rate. The same is applicable for other preferential tariffs, that is, tariffs in ASEAN+1 FTAs, because these FTAs entered into force before our study period.

Before moving on to the empirical results section, we provide a brief overview of imports, tariffs, and NTMs in Vietnam. Figure 1 illustrates the proportion of Vietnam's 2018 imports from the seven largest economies. The import data are retrieved from the ASEAN Stats Data Portal. China accounts for 28% of the 2018 imports, followed by Korea, ASEAN, Japan, Taiwan, USA, and India. Since 2016, imports from China have decreased marginally, but they still account for more than 25% of the total imports. Meanwhile, the percentage of imports from ASEAN decreased from 18% in 2012 to 13% in 2018. In contrast, the share of imports from Korea increased from 14% in 2012 to 20% in 2018. As is well known, large Korean multinational corporations, such as Samsung Electronics Co., Ltd., have production factories in Vietnam. They import intermediate goods from Korea, assemble them into finished goods, and export them globally.

=== Figure 1 ===

Figure 2 depicts the simple average of the MFN and preferential tariffs. Although MFN tariffs show few changes, the preferential tariffs have gradually decreased. In 2018, the ATIGA tariffs were almost zero. During our study period, preferential tariffs with South Korea significantly reduced from nearly 8% in 2012 to nearly 1% in 2018. Meanwhile, Figure 3 shows the changes in NTMs. The share of products with SPS/TBT remained high, whereas financial measures and measures affecting competition have marginally changed. One observation is that although the total number of products with these NTMs changed marginally, many products have newly introduced or eliminated these NTMs during the study period. The share of products with other measures has gradually increased. A relatively large increase can be observed from 2016 to 2017, just before the final stage of tariff reduction under the ATIGA regime.

=== Figures 2 & 3 ===

3. Empirical Results

This section presents our estimation results. Before examining the relationship between NTMs and tariffs, we begin with their effects on imports to examine how these border "barriers" change imports. To achieve this, we estimate the following simple equation:

$$X_{pt} = \exp\left(\gamma_1 \times \ln\left(1 + ATIGA_{pt}\right) + \gamma_2 \times \ln\left(1 + MFN_{pt}\right) + \sum_i \rho(i) \times NTM(i)_{pt} + \delta_p + \delta_t\right)$$
$$+ \, \epsilon_{pt} \qquad (3)$$

where the dependent variable is the import value of product p from ASEAN in year t. *MFN* represents MFN tariff rates. This equation is estimated using the Poisson pseudo-maximum likelihood (PPML) method. In this estimation, product p was defined at the HS eight-digit level. Import data were obtained from the ASEAN Stats Data Portal. In 2017, tariff data from the WITS were recorded in HS 2012, whereas import data are collected in HS 2017. Since we cannot link tariff data with import data at an eight-digit level, we exclude the year 2017 and focus on the 2012–2016 and 2018 periods.[6]

Table 1 presents the PPML estimation results. Standard errors are clustered at the HS six-digit level. In column (I), we introduce only ATIGA tariffs to examine the net effect on imports. The coefficient is significantly negative, indicating that a one-percentage-point reduction in ATIGA tariffs increases imports by 3.7%. Thus, although the reduction of ATIGA tariffs may induce the introduction of NTMs, as examined later, its net effect is trade-enhancing. In columns (II)–(IV), we add the NTM dummy variables. We introduce ATIGA tariffs alone in column (II), MFN tariffs alone in column (III), and both tariffs in column (IV). Both tariffs have significant coefficients. However, the signs of these coefficients differ. The coefficients for ATIGA tariffs are significantly negative, whereas those for MFN tariffs are significantly positive. For example, the ATIGA tariffs in column (IV) indicate that a one-percentage-point reduction in ATIGA tariffs increases imports by 7.2%. By contrast, MFN tariffs show that a one-percentage-point reduction in MFN tariffs decreases imports by 7.4%.[7]

=== Table 1 ===

Among the NTM variables, significant coefficients can be found in *Inspection*, *Price*, and *Finance*, although the results are slightly different across columns. The first variable has positive coefficients, whereas the latter two have negative coefficients. The former result may indicate that enhancing consumer protection through inspection measures increases imports. In contrast, price control and financial measures have become significant barriers

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[6] The possibility of reverse causality between NTMs and imports is noted in this equation. For instance, an increase in imports may induce governments to introduce NTMs. Notwithstanding, we do not instrument NTM variables due to the dearth of convincing instruments for numerous types of NTMs.

[7] According to Hayakawa and Yoshimi (2020), this decrease in imports may be because the reduction of MFN tariffs encourages preferential tariff users to switch to the MFN tariff regime. Due to the fact that MFN tariffs are higher than preferential tariffs, imports under the MFN regime are likely to be lower than imports under preferential regimes. Thus, switching to the MFN regime may result in a decline in imports, despite an increase in the number of exporters utilizing MFN tariffs.

to imports. For example, column (III) indicates that the introduction of price control measures significantly decreases imports by 33% (= exp(−0.397)−1). Meanwhile, the other three types of NTMs, namely, *SPS/TBT, Licensing*, and *Competition*, do not significantly affect imports in Vietnam. In summary, all types of NTMs do not necessarily decrease imports in Vietnam.

Next, we estimated equation (1). The OLS results are presented in the upper panel of Table 2. The coefficients for ATIGA tariffs are significantly positive for *SPS/TBT, Inspection, Finance*, and *Competition*, significantly negative for *Price*, and insignificant for *Licensing*. Namely, when ATIGA tariffs were reduced, Vietnam introduced price control measures (i.e., the substitution relationship). By contrast, SPS/TBT, pre-shipment inspection, finance measures, and measures affecting competition were eliminated (i.e., the complementary relationship). The absolute magnitude of the coefficient is much larger for price control measures than for other types of NTMs. Thus, in Vietnam, price control measures are most sensitive to changes in preferential tariffs. In the analysis presented in Table 1, we found that introducing price control measures decreases imports by 33%. Although our use of the linear probability model prevents quantitative evaluation, the results in Tables 1 and 2 have an interesting implication: tariff reduction under the ATIGA regime increases imports as a direct effect but decreases those as an indirect effect by inducing the introduction of price measure controls.[8] Thus, if the latter effect is larger than the former, the net effect decreases imports.

=== Table 2 ===

In the lower panel of Table 2, we introduce the MFN tariffs (ln (1+MFN)). The results for the ATIGA tariffs are qualitatively unchanged compared to the upper panel of Table 2. The MFN tariffs have significant coefficients for *Price, Finance*, and *Competition*. Thus, the reduction in MFN tariffs tends to eliminate price control and competition-related measures while introducing finance measures. The former result indicates the elimination of trade barriers in terms of both general tariffs and NTMs, which is favorable for consumers. However, ATIGA and MFN tariffs have contrasting effects on price control and finance measures. Particularly, the price control measure is likely to be introduced when reducing tariffs against other ASEAN countries.

Before estimating equation (2), we estimate equation (1) for the product categories. First, we estimate this separately for intermediate and final goods. We categorize the products as "Final goods" with 12, 41, 51, 61, 62, 63, 112, 122, 521, and 522 in the Broad Economic Categories (BEC) classification. The rest of the products are categorized into "Intermediate goods." The results are presented in Table 3. The result of the financial measure for final goods is not available because financial measures are not imposed on those

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[8] As shown in column (I) in Table 1, the net total effect of ATIGA tariffs is at least trade-enhancing.

goods. An interesting contrast can be observed in *Inspection*, *Licensing*, and *Price*. In these three NTMs, the coefficients of ATIGA tariffs are positive for intermediate goods and negative for final goods. The reduction of ATIGA tariffs decreases the pre-shipment inspection, licensing, and price control measures in the upstream process, but increases those measures in the downstream process. This contrast may indicate that the Vietnamese government protects downstream firms.

=== Table 3 ===

Second, we estimate equation (1) by industry. The coefficients of the ATIGA tariffs are listed in Table 4. We can observe differences in the results across industries. SPS/TBT is likely to be introduced for chemical products, base metals, and transportation equipment. It would be interesting not to have significantly negative results in the agricultural and food industries. Inspection and licensing measures have been introduced for the mining, machinery, and transport equipment industries. Meanwhile, price measures have been introduced for the agriculture, food, mining, and transport equipment industries. The chemical industry tends to adopt financial measures. Overall, more types of NTM are likely to be introduced in the transport equipment industry when the ATIGA tariffs are reduced. As indicated in the example mentioned in Section 1, the transport equipment industry is a highly sensitive sector and tends to be protected by trade policy measures, including tariffs and NTMs.[9]

=== Table 4 ===

The OLS estimation results for equation (2) are presented in Table 5. In the upper panel, we use the RCA index based on the global trade data (*WRCA*). An index based on intra-ASEAN trade data (*ARCA*) is used in the lower panel. Table 2 reveals a significantly negative coefficient for *Price*. Table 5 indicates that introducing price control measures is not significantly related to Vietnam's export competitiveness. On the contrary, the interaction term has significantly positive coefficients for *Inspection*, *Licensing*, and *Finance*. Thus, when ATIGA tariffs decrease, the pre-shipment inspection, non-automatic licensing, and finance measures are more likely to be eliminated for products in which Vietnam has high export competitiveness. The magnitude of the coefficient in these measures is slightly larger when using the RCA index based on intra-ASEAN trade than when using the RCA index based on global trade data. This result may indicate that the effect of the ATIGA tariffs is more sensitive to competitiveness against other ASEAN countries. In summary, international competitiveness seems to play a significant role in the effect of tariff reductions on NTM introduction. If domestic firms are more competitive, then the effect of tariff reductions on

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[9] Indeed, RCA indices are low in transport equipment.

imports will be smaller. Thus, the government may not need to protect domestic firms by introducing new NTMs and may prefer to benefit consumers by providing lower consumer prices.

=== Table 5 ===

Next, as mentioned in the previous section, we introduce preferential tariffs in some ASEAN+1 FTAs into equation (1). Owing to the absence of data on preferential tariffs in Japan and India, we dropped the 2012 observations. The results are presented in Table 6. Our findings can be summarized as follows: the effects of the ATIGA tariffs on pre-shipment inspection and non-automatic licensing measures are significantly negative. Thus, the estimators in Table 2 may suffer from upward bias due to the omission of other preferential tariffs. Significantly negative effects can be found for SPS/TBT in preferential tariffs with Korea, pre-shipment inspection in preferential tariffs with China, price control measures in preferential tariffs with India, Japan, and Korea, and financial measures in preferential tariffs with India. ATIGA has significantly negative effects on many types of NTMs, that is, three types, compared to ASEAN+1 FTAs. The Vietnamese government may guard against the increase in imports, especially from other ASEAN member states, rather than from plus-one countries. This result may be because market access with plus-one countries mainly affects trade with them, whereas access among ASEAN countries affects not only intra-ASEAN trade but also competition among ASEAN countries to attract foreign direct investment from countries outside ASEAN. Furthermore, price control measures are more sensitive to reductions in preferential tariffs than other NTM types. Except for those in China, all preferential tariffs significantly and negatively affect the price control measure.

=== Table 6 ===

Finally, we also regress MFN tariffs on ATIGA tariffs to examine the relationship between general tariffs and preferential tariffs. In addition to NTMs, MFN tariffs can also be affected by the ATIGA tariff schedule. Specifically, by replacing the dependent variable with logged MFN tariffs in equation (2), we estimate the following:

$$\ln\left(1 + MFN_{pt}\right) = \alpha \times \ln\left(1 + ATIGA_{pt}\right) + \beta \times \ln\left(1 + ATIGA_{pt}\right) \times RCA_{p2010}$$
$$+\delta_p + \delta_t + \epsilon_{pt} \qquad (4)$$

The product is again defined at the HS six-digit level. Table 7 presents the OLS estimation results. The coefficients for ATIGA tariffs are estimated to be significantly positive, indicating a reduction in MFN tariffs, along with an ATIGA tariff reduction. Thus, in Vietnam, we observe a complementary relationship between MFN and FTA tariffs.

Moreover, the interaction term with the RCA index is significantly positive only in column (III). This indicates that the reduction in ATIGA tariffs decreases MFN tariffs more greatly for products with higher export competitiveness among ASEAN countries. In sum, tariff reductions under the ATIGA regime increase imports from both ASEAN and non-ASEAN countries due to the availability of preferential tariffs and reduction of MFN tariffs, respectively. Due to the increase in imports from non-ASEAN countries, the increase in imports from ASEAN may not be large, especially when these two kinds of imports have a substitution relationship.

=== Table 7 ===

4. Concluding Remarks

This study empirically investigates the effects of ATIGA tariffs on NTMs in Vietnam from 2012 to 2018. We first show the significant effects of ATIGA tariffs and NTMs on Vietnam's imports. Second, we found significant effects of the ATIGA tariffs on introducing some types of NTMs. Third, not only ATIGA tariffs but also ASEAN+1 FTA tariffs have significant effects on the introduction of NTMs in Vietnam. Finally, we found a complementary relationship between ATIGA tariffs and MFN tariffs. Our results imply that the reduction in ATIGA tariffs has a direct trade-enhancing effect and an indirect trade-impeding effect by inducing price control measures. Therefore, part of the trade creation effect of preferential tariffs is offset by the introduction of new NTMs. In contrast, although introducing the pre-shipment inspection measure has a trade-enhancing effect, a reduction in ATIGA tariffs decreases the likelihood of this measure. In summary, tariff reduction under the FTA regime has both a direct and an indirect effect on trade with FTA partners by changing NTMs. It also changes trade with non-FTA partners by changing MFN tariffs. Consequently, the overall effects of FTA tariffs should be evaluated comprehensively.

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Table 1. Gravity Regressions on ATIGA Tariffs

	(I)	(II)	(III)	(IV)
ATIGA	-3.686***	-3.343***		-7.184***
	[0.936]	[1.086]		[1.853]
MFN			6.207***	7.428***
			[1.892]	[1.732]
SPS/TBT		-0.04	-0.058	-0.035
		[0.080]	[0.076]	[0.073]
Inspection		0.272**	0.351**	0.098
		[0.113]	[0.149]	[0.126]
Licensing		-0.044	-0.034	-0.107
		[0.109]	[0.121]	[0.113]
Price		-0.221	-0.228	-0.397**
		[0.185]	[0.218]	[0.199]
Finance		-0.565***	-0.585***	-0.512***
		[0.129]	[0.133]	[0.135]
Competition		-0.185	-0.528	-0.448
		[0.400]	[0.606]	[0.439]
Number of obs.	50,689	49,276	49,246	49,246
Pseudo R-squared	0.714	0.716	0.725	0.729

Notes: This table reports the estimation results obtained using the Poisson pseudo-maximum likelihood method. ***, **, and * indicate the 1%, 5%, and 10% levels of statistical significance, respectively. Standard errors clustered by harmonized system (HS) six-digit codes are reported in the parentheses. We control for HS six-digit fixed effects and year fixed effects in all specifications. ATIGA = ASEAN Trade in Goods Agreement; MFN = most favored nation; SPS/TBT = sanitary and phytosanitary/technical barriers to trade.

Table 2. OLS Regressions on ATIGA Tariffs

	SPS/TBT	Inspection	Licensing	Price	Finance	Competition
Model (i)						
ATIGA	0.166***	0.372**	0.212	-1.005***	0.061***	0.153***
	[0.063]	[0.150]	[0.146]	[0.129]	[0.013]	[0.057]
Number of obs.	36,435	36,435	36,435	36,435	36,435	36,435
R-squared	0.6630	0.2960	0.5540	0.4430	0.5020	0.9960
Model (ii)						
ATIGA	0.167**	0.369**	0.211	-1.174***	0.067***	0.123***
	[0.065]	[0.149]	[0.149]	[0.112]	[0.013]	[0.045]
MFN	-0.003	0.017	0.009	1.103***	-0.041***	0.194***
	[0.059]	[0.089]	[0.160]	[0.156]	[0.005]	[0.071]
Number of obs.	36,435	36,435	36,435	36,435	36,435	36,435
R-squared	0.6630	0.2960	0.5540	0.4450	0.5020	0.9960

Notes: This table reports the estimation results obtained using the ordinary least squares (OLS) method. ***, **, and * indicate the 1%, 5%, and 10% levels of statistical significance, respectively. Robust standard errors are reported in the parentheses. In all specifications, we control for product- and year-fixed effects. ATIGA = ASEAN Trade in Goods Agreement; MFN = most favored nation; SPS/TBT = sanitary and phytosanitary/technical barriers to trade.

Table 3. OLS Regressions on ATIGA Tariffs: Intermediate Goods versus Final Goods

	SPS/TBT	Inspection	Licensing	Price	Finance	Competition
Intermediate goods						
ATIGA	0.094	1.923***	1.379***	0.482***	0.078**	0.236**
	[0.123]	[0.148]	[0.169]	[0.171]	[0.030]	[0.116]
Number of obs.	22,386	22,386	22,386	22,386	22,386	22,386
R-squared	0.67	0.324	0.562	0.479	0.503	0.976
Final goods						
ATIGA	0.182***	-1.121***	-0.320*	-1.579***		0.092*
	[0.064]	[0.151]	[0.172]	[0.127]		[0.051]
Number of obs.	14,049	14,049	14,049	14,049		14,049
R-squared	0.602	0.431	0.554	0.472		0.998

Notes: This table reports the estimation results obtained using the ordinary least squares (OLS) method. ***, **, and * indicate the 1%, 5%, and 10% levels of statistical significance, respectively. Robust standard errors are reported in the parentheses. In all specifications, we control for product- and year-fixed effects. We categorize the products as "Final goods" with 12, 41, 51, 61, 62, 63, 112, 122, 521, and 522 in the BEC. The rest of the products are categorized into "Intermediate goods." ATIGA = ASEAN Trade in Goods Agreement; SPS/TBT = sanitary and phytosanitary/technical barriers to trade.

Table 4. Coefficients for ATIGA Tariffs by Industry

	SPS/TBT	Inspection	Licensing	Price	Finance	Competition
Agriculture	0.224**		0.494	-2.079***		
Food	0.062**	1.203***	0.228	-0.308***		0.559**
Mining	0.196	-0.622*	-5.632***	-2.794***		0.355
Chemical products	-1.196***	4.033***	3.350***	0.556***	-0.850***	
Leather products	1.207*		1.172			
Wood or Paper	1.766***	0.350***	1.742***	1.367***	0.437***	0.000
Apparel	0.162	0.025**	0.582**	0.298***		
Precision metals	-0.06	0.133**	0.546*	0.399***	0.532***	
Base Metal	-1.683***	1.632***	-0.504*		1.065***	
Machinery		-0.753**	-0.953*	0.426***	0.135***	
Transport equipment	-0.800***	-1.797***	-1.372***	-0.618***		
Precision machinery	2.653***		2.564***	4.237***		0.000
Miscellaneous	3.005***	-0.108	1.564***	1.313**		1.820***

Notes: This table reports the estimation results obtained using the ordinary least squares. We estimate equation (1) by industry and report only the coefficient for the ASEAN Trade in Goods Agreement (ATIGA) tariffs. ***, **, and * indicate 1%, 5%, and 10% statistical significance levels, respectively, which are based on robust standard errors. SPS/TBT = sanitary and phytosanitary/technical barriers to trade.

Table 5. OLS Regressions: Vietnam's Export Competitiveness

	SPS/TBT	Inspection	Licensing	Price	Finance	Competition
Panel (a)						
ATIGA	0.166***	0.288*	0.147	-0.981***	0.055***	0.156***
	[0.064]	[0.155]	[0.152]	[0.134]	[0.014]	[0.058]
ATIGA * WRCA	0.000	0.069***	0.054	-0.02	0.005***	-0.003
	[0.013]	[0.018]	[0.040]	[0.030]	[0.001]	[0.003]
Number of obs.	36,435	36,435	36,435	36,435	36,435	36,435
R-squared	0.6630	0.2960	0.5540	0.4430	0.5020	0.9960
Panel (b)						
ATIGA	0.165**	0.214	0.079	-1.103***	0.049***	0.152***
	[0.070]	[0.161]	[0.162]	[0.132]	[0.015]	[0.056]
ATIGA * ARCA	0.001	0.103**	0.087*	0.063	0.008***	0.000
	[0.019]	[0.046]	[0.045]	[0.039]	[0.002]	[0.008]
Number of obs.	36,435	36,435	36,435	36,435	36,435	36,435
R-squared	0.6630	0.2960	0.5540	0.4430	0.5020	0.9960

Notes: This table reports the estimation results obtained using the ordinary least squares (OLS) method. ***, **, and * indicate 1%, 5%, and 10% statistical significance levels, respectively. Robust standard errors are reported in parentheses. In all specifications, we control for product- and year-fixed effects. *WRCA* (*ARCA*) indicates Vietnam's RCA indices using exports to the world (ASEAN). ATIGA = ASEAN Trade in Goods Agreement; SPS/TBT = sanitary and phytosanitary/technical barriers to trade.

Table 6. OLS Regressions on Other Preferential Tariffs

|	SPS/TBT	Inspection	Licensing	Price	Finance	Competition
ATIGA	0.054	-0.617***	-0.957***	-0.698***	-0.01	0.046
	[0.069]	[0.136]	[0.129]	[0.170]	[0.016]	[0.031]
China	-0.002	-0.201***	0.109	1.274***	0.029***	0.017*
	[0.055]	[0.066]	[0.087]	[0.113]	[0.007]	[0.011]
India	0.128	0.311***	0.459***	-1.358***	-0.028***	0.027***
	[0.089]	[0.067]	[0.108]	[0.151]	[0.008]	[0.010]
Japan	0.259***	1.219***	0.937***	-0.311**	0.047***	0.050**
	[0.074]	[0.096]	[0.116]	[0.156]	[0.010]	[0.020]
Korea	-0.074**	0.857***	0.727***	-0.503***	0.096***	-0.017
	[0.035]	[0.049]	[0.062]	[0.074]	[0.009]	[0.012]
Number of obs.	31,230	31,230	31,230	31,230	31,230	31,230
R-squared	0.6240	0.3550	0.6240	0.4870	0.6030	0.9960

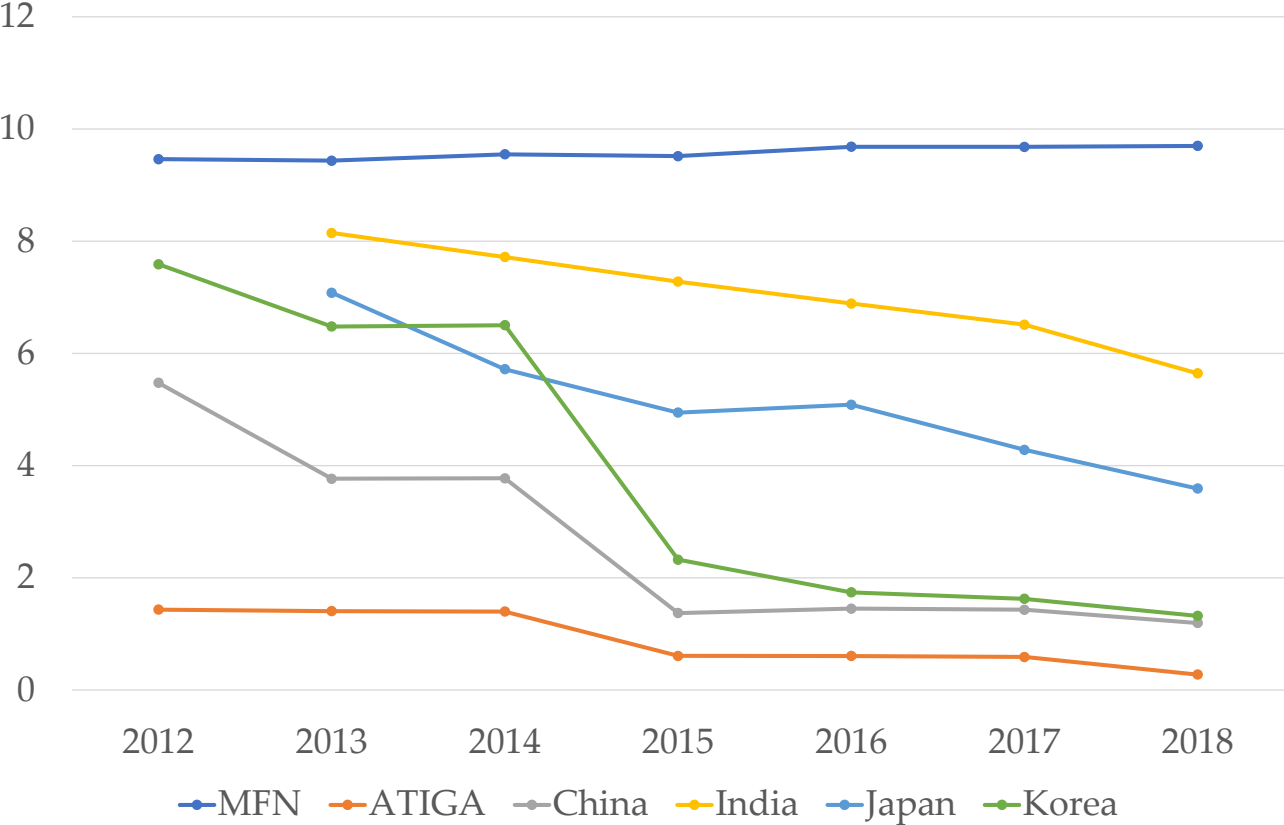*Notes*: This table reports the estimation results obtained using the OLS method. ***, **, and * indicate 1%, 5%, and 10% statistical significance levels, respectively, Robust standard errors are reported in the parentheses. In all specifications, we control for product- and year-fixed effects. ATIGA = ASEAN Trade in Goods Agreement; SPS/TBT = sanitary and phytosanitary/technical barriers to trade.

Table 7. OLS Regressions of MFN Tariffs

	(I)	(II)	(III)
ATIGA	0.153***	0.153***	0.138***
	[0.026]	[0.026]	[0.023]
ATIGA * WRCA		0.000	
		[0.002]	
ATIGA * ARCA			0.010**
			[0.004]
Number of obs.	36,435	36,435	36,435
R-squared	0.9860	0.9860	0.9860

Notes: This table reports the estimation results obtained using the ordinary least squares (OLS) method. ***, **, and * indicate 1%, 5%, and 10% statistical significance levels, respectively. Robust standard errors are reported in the parentheses. In all specifications, we control for product- and year-fixed effects. *WRCA* (*ARCA*) indicates Vietnam's RCA indices using exports to the world (ASEAN). ATIGA = ASEAN Trade in Goods Agreement; MFN = most favored nation.

Figure 1. Shares of Imports from Major Economies in Vietnam (%)
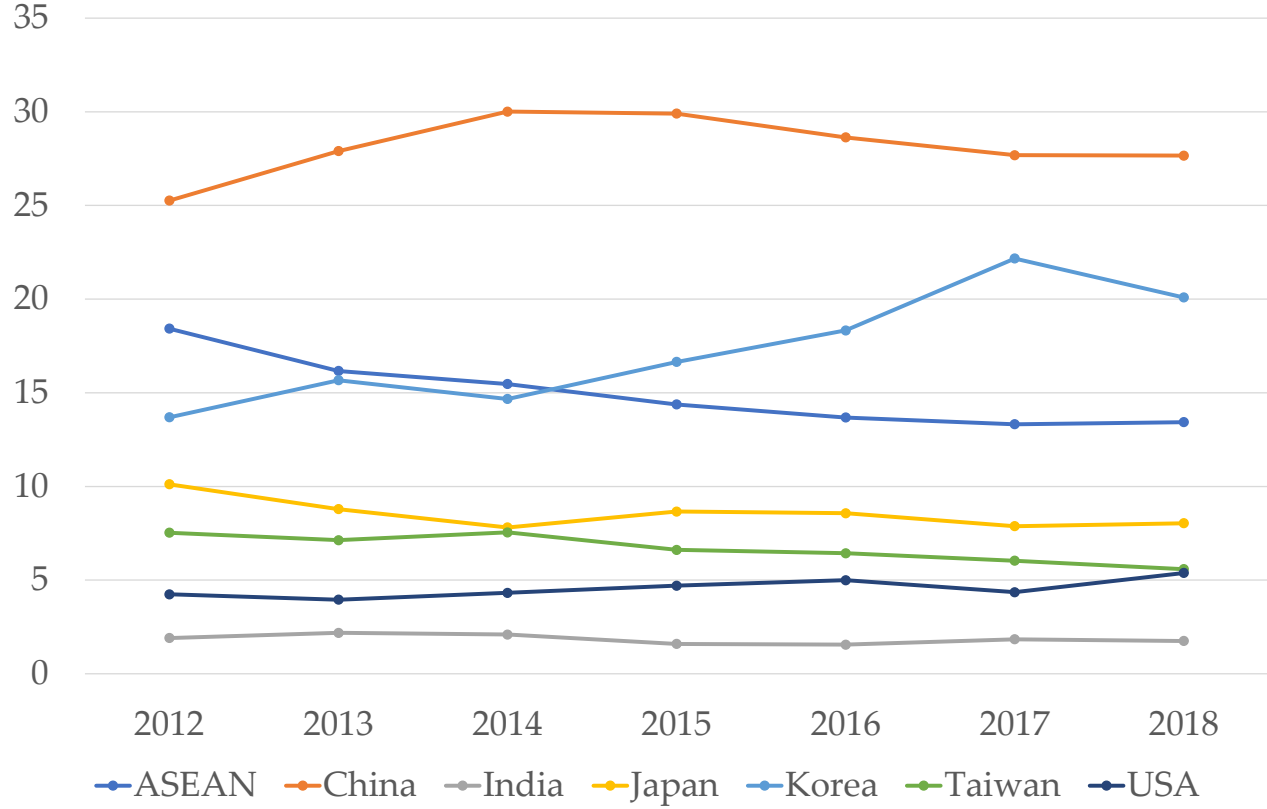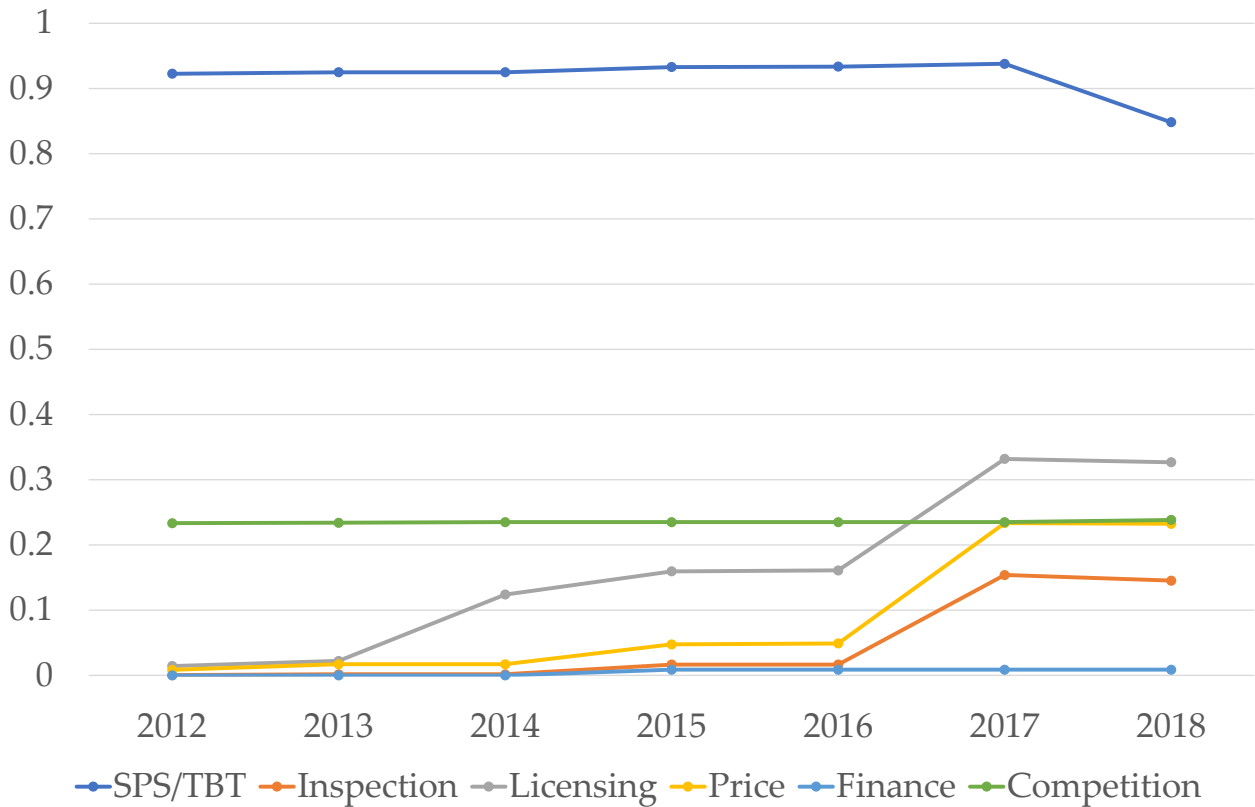
Figure 2. Tariffs in Vietnam in the 2010s (%)

MFN = most favored nation; ATIGA = ASEAN Trade in Goods Agreement.

Figure 3. Non-tariff measures (NTMs) in Vietnam in the 2010s: The Share of the Products with NTMs out of All Products

SPS/TBT = sanitary and phytosanitary/technical barriers to trade.