

# How Free Trade Agreements Affect Exports and Imports in Vietnam

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**Abstract:** The important year of 1995 marked Vietnam's first integration as a member of ASEAN. By 2016, Vietnam had negotiated, signed, and implemented sixteen free trade agreements. They include both multilateral and bilateral free trade agreements such as the China-ASEAN, Vietnam-Chile, and Vietnam-Japan agreements. By signing free trade agreements Vietnam can increase trade flows in bilateral and multilateral developed-country FTA scenarios. Trade creation and diversion can be found in multilateral developing-country FTA scenarios and the author finds the impacts of each free trade agreement is different if analyzed for each 2-digit commodity.

*Keywords:* Free trade agreement, trade, import, export.

## 1. Introduction

A free-trade area is a region encompassing a trade bloc whose member countries have signed a free-trade agreement (FTA). Such agreements involve cooperation between at least two countries to reduce trade barriers - import quotas and tariffs - and to increase the trade of goods and services with each other (Wikipedia).

The opening index of the Vietnamese economy increased over time from 20% to 173% in the period 1985-2015. The reason for this can be explained by the signing of FTAs. Countries signing FTAs have the advantage not only in import and export goods and services by

reducing trade barriers, and increasing social welfare but also by bringing new competition for domestic firms with foreign firms in foreign and domestic markets. Until 2016 Vietnam signed and implemented 10 FTAs, finished negotiation of 2 FTAs, and is negotiating 4 other FTAs (VCCI). Do domestic firms take advantage of trade agreement opportunities? And which kinds of goods and services trade most through FTAs? These are issues the author wants to find answers to in this paper.

The relationship between FTAs and international trade attracts the interest of researchers. Baier and Bergstrand (2007) mention some approaches to deal with the relationship between FTAs and trade, such as instrumental variables, control function and a penal approach [1]. They find that FTAs help increase trade flows fivefold. Chong and Hur (2008) use the hub and spoke concept to find

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this relationship [2]. They conclude that small and open economies prefer hub status to a free trade zone involving the same country group, and the hidden costs such as those incurred from wooing prospective members and domestic resistance can reduce benefit from FTAs. Hur et al. (2010) use panel data to investigate the effect of FTA and a hub and spoke system on trade [3]. They find the positive effect is higher in non-overlapping FTAs than in a hub and spoke system. McDonald and Walmsley (2008) focus on whether third parties would be affected by bilateral FTAs [4]. And they find that bilateral FTAs can bring noticeable adverse consequences for nations that are not a party in the FTA. Pan et al. (2008) analyze the effect of FTAs between Dominican Republic-Central and America-United States at an industry level [5]. They find that the U.S. cotton yarn and Caribbean cotton apparel industries to be positive while the U.S. cotton apparel industry suffers significant losses. Benedictis et al. (2005) analyze the effect of the Central European Free Trade Agreement (CEFTA) and the Baltic Free Trade Agreement (BFTA) on intra-European trade [6]. They use a gravity model with the GMM method and find the presence of intra-periphery agreements helped expand intra-periphery trade and limited the emergence of a “hub-and-spoke” relationship between Central and Eastern European Countries (CEECs) and the EU. Nguyen and Nguyen (2015) used three models to investigate the impact of FTAs on trade including a gravity model, an adjusted sample selection model, and the Poisson Pseudo Maximum Likelihood [7]. The results show a positive relationship between FTAs and trade outflow.

In this paper, I focus on analyzing the effect of each of the FTAs in which Vietnam is a negotiator (Vietnam directly takes part in the negotiation processes) on both export and import flow as pooled commodities as well as each of 97 two-digit commodities. There are two kinds of FTAs in which Vietnam is a member: bilateral trade agreements and

multilateral trade agreements. I use seven FTAs that are in force, two of them are bilateral trade agreements (Japan and Chile are partners in this kind) and multilateral otherwise (list in Table 1b). Trade creation results from bilateral FTAs. The increase of exports and imports results from the signing of bilateral FTAs. Exports to Japan and Chile increased over 300% and 60%, respectively. Multilateral FTAs can be separated into two groups. Group one includes Vietnam’s partners that are of a high income level (Korea, New Zealand, Australia) and the other group includes developing countries (ASEAN, China, and India). The effect of FTAs on Vietnam’s trade flows is the difference between them. The former helps to create both trade- in and out-flows. The latter is trade creation of imports in ACFTA but reduction in other developing-country FTAs, the opposite effects among developing-country FTAs also find in out flow. With two-digit commodities the coverage of commodities affected by each FTA is different among them. The greatest numbers are in the VJFTA and AFTA with 50%; the least are in the VCFTA with 10%. The effect of FTAs on trade flows is so different, some commodities are affected strongly from FTAs, and for some others there seems to be no evidence of effects.

## **2. Data discretion**

As mention in Part 1, Vietnam has signed and is negotiating sixteen FTAs, however some FTAs were signed in 2015 or after 2015, and some are continuing to be negotiated, so in this paper I only evaluate the impact on trade of seven FTAs. The names of the FTAs and the year signed are in the Appendix Table 1b.

Vietnam’s trade data with its partners is taken from Comtrade, including both import and export flows to and from Vietnam of two-digit goods from 1990 to 2015. The list of 97 two-digit commodities is in Appendix Table 1c. The advantage of this data is that goods can be downloaded with 6-digit HS codes for a lot of

countries and territories over a quite long period, including trade in and out-flow as well as some kinds of goods' classification such as the Harmonization System (HS) or Standard International Trade Classification (SITC) following each report. The disadvantage is trade data changes so much in the same bilateral trade as we change the reports, however. The differences of bilateral trade flows is because import flow is generally reported on the basis of Cost, Insurance and Freight, (CIF) while exports are reported on a Free on Board (FOB) basis. It causes change to the results when you change the reports.

Vietnam had trade relations with 240 countries and territories in 2013 (VCCI). I downloaded trade data from Comtrade between Vietnam and its partners - Vietnam's reported data is only from 2000, however, and some trade in- and out-flow with Vietnam's partners appearing very few times during the period. So I kept only 181 countries as the sample size and trade data that have FTAs with Vietnam come from their reports. Gravity data including GDP (Vietnam and its partners) and distance are used to analyze and these all come from CEPII. Information of FTAs (which FTA and when it was signed) is taken from the VCCI website. As Vietnam joined AFTA in 1995, it began to cut tariffs from 1999 (VCCI), so the true effects of FTAs on trade flows can happen before or after FTAs are signed.

Summation of the sample size is shown in Tables 1 and 2. These tables describe information of the variables used to estimate the relationship between trade flows and FTAs. The meaning of the notation is detailed in Part 3. X represents for the natural log of trade flows and FTAs Vietnam signed from 1995 as well as other control variables.

Table 1. Summary of import flow from Vietnam partners

Variable	Obs	Mean	Std. Dev.	Min	Max
X	115460	11.438	3.427	0.000	22.849
GDP <sub>k</sub>	115460	25.498	2.086	16.553	30.523

GDP <sub>Vn</sub>	115460	25.024	0.761	22.591	25.989
Dist <sub>k</sub>	115460	8.781	0.804	6.280	9.868
AIFTA	115460	0.037	0.188	0.000	1.000
AAZNFTA	115460	0.045	0.207	0.000	1.000
AKFTA	115460	0.066	0.247	0.000	1.000
ACFTA	115460	0.076	0.264	0.000	1.000
AFTA	115460	0.102	0.302	0.000	1.000
VJFTA	115460	0.006	0.075	0.000	1.000
VCFTA	115460	0.002	0.042	0.000	1.000

Table 2. Summary of export flow from Vietnam partners

Variable	Obs	Mean	Std. Dev.	Min	Max
X	76361	12.259	3.423	0.000	23.200
GDP <sub>k</sub>	76361	26.380	1.785	16.553	30.523
GDP <sub>Vn</sub>	76361	24.924	0.817	22.591	25.989
Dist <sub>k</sub>	76361	8.610	0.859	6.280	9.868
AIFTA	76361	0.047	0.212	0.000	1.000
AAZNFTA	76361	0.058	0.234	0.000	1.000
AKFTA	76361	0.088	0.283	0.000	1.000
ACFTA	76361	0.102	0.303	0.000	1.000
AFTA	76361	0.141	0.348	0.000	1.000
VJFTA	76361	0.008	0.092	0.000	1.000
VCFTA	76361	0.001	0.037	0.000	1.000

### 3. Methodology

The gravity model is the dominant model used to estimate the relationship between bilateral trade flows and market sizes and distances. This model is applied from the model mentioned by Tinbergen (1962) as follows:

$$F_{ij} = G \frac{M_i^{\beta_1} M_j^{\beta_2}}{D_{ij}^{\beta_3}} \quad (1)$$

Where  $F_{ij}$  is the bilateral trade flow between country  $i$  and country  $j$ ;  $M_i$  and  $M_j$  are GDP of country  $i$  and country  $j$ , respectively.  $D_{ij}$  is the distance between country  $i$  and country  $j$  and  $G$  is the intercept.

The distance between two countries is used as proxy for transportation costs when trade

flows are delivered. However, tariff barriers are also one of the important factors to prevent trade flows. Preferential schemes or liberalization of trade and investments bring advantages for bilateral trade because a lot of tariff lines and other provisions are removed after signing the FTAs. From equation 1, taking the natural log of its both sides and because I focus on the evaluation of the effect of FTA's on Vietnam's trade then, I add seven FTA-dummy variables. They are zero before FTAs are signed and one otherwise as in equation 2. In equation 2, besides controlling the market sizes by the GDP of Vietnam and its partners,

$$X_{ijkt} = \alpha_0 + \alpha_t + \alpha_i + \beta_1 Dist_k + \beta_2 GDP_{kt} + \beta_3 GDP_{jt} + \beta_4 AIFTA_{jt} + \beta_5 AANZFTA_{jt} + \beta_6 AKFTA_{jt} + \beta_7 ACFTA_{jt} + \beta_8 AFTA_{jt} + \beta_9 VJFTA_{jt} + \beta_{10} VCFTA_{jt} + \mu_{ijkt} \quad (2)$$

Where  $X_{ijkt}$  natural log of import and export value of good  $i$  to and from country  $j$  (Vietnam) from and to country  $k$  at time  $t$ ;  $Dist_k$  is log of distance between Vietnam and country  $k$ ;  $GDP_{kt}$  is log of GDP of country  $k$  at time  $t$ ;  $GDP_{jt}$  is log of Vietnam GDP at time  $t$ ;  $FTA$  is dummy variable as FTA signed between Vietnam and its partners at time  $t$  (both bilateral and multilateral FTAs), including Asian-India, Asian-Australia and New Zealand, Asian-Korea, Asian-China, Vietnam-Asian, Vietnam-Japan and Vietnam-Chile, respectively (abbreviation for each FTA are equivalent AIFTA, AANZFTA, AKFTA, ACFTA, AFTA, VJFTA, and VCFTA).  $\alpha_t$  and  $\alpha_i$  are fixed year effect and fixed commodity code effect, respectively;  $\mu_{ijkt}$ : error term. I use equation (2) to estimate the impact of FTA on trade for pooled goods, then for each of the 2-digit goods (excluding the fixed effect of commodity goods in the latter case).

#### 4. Estimation results

The estimation of the pool of trade affected by FTAs is shown in Table 3. As was the expectation of the sign of GDP and distance's

CEPII data also supplies other variables that also affect bilateral trade, such as common language. Vietnam does not have common language with any of its trade partners, however. Trade flows also are affected by economic shocks such as financial crises or other shocks. I control those effects by adding the fixed year effects. The value of trade also is different among commodity groups - for example, manufactured goods are traded more than agricultural goods. To control this effect I use the fixed commodity effect for the 97 2-digit commodities.

coefficients, they are statistically significant. The sign of the coefficients of GDP is positive for both import and export flows. If Vietnam and its partners' market size increase then trade flows increase. The distance coefficient is negative, trade flows decrease if transportation costs as distances increase.

Seven FTAs can be divided into two kinds of FTAs: bilateral FTAs (VJFTA and VCFTA) and multilateral FTAs otherwise. Bilateral FTAs are the so-called new generation of FTAs based on commitments between countries that are deeper and larger than in multilateral FTAs. The results prove that bilateral FTAs increase both Vietnam's imports and exports. The VJFTA and VCFTA coefficients are significantly positive. VJFTA helped increase trade to and from Japan over 300% and nearly 100%, respectively. VCFTA affected more trade to than from Chile. Multilateral FTAs are separated into multilateral FTAs with developed countries (AKFTA, AANZFTA), so-called as developed-country FTAs and with developing countries (AIFTA, ACFTA, and AFTA) so-called as developing-country FTAs. Both import and export flows increase in the case of developed-country FTAs, in the case of developing-country FTAs trade flows increase,

or decrease, or there is no evidence. Vietnam imports decrease in AIFTA, AFTA and increase in ACFTA. Exports increase in AFTA, there is no evidence in ACFTA.

Both bilateral agreements help Vietnam trade flows increase significantly. The results are not surprising because bilateral agreements cover more and deeper sectors. In the case of VJFTA, the agriculture sector is sensitive and Japan usually avoids negotiating agreements, but in this agreement Japan makes a lot of preference schemes for Vietnam. The level of tariff reduction from Japan creates advantages for Vietnam's exportation. The other reason is that industrial structures between Vietnam and

Japan are complementary to each other. Vietnam is strong in intensive labor whilst Japan is strong in intensive capital. Especially, Japan has the highest share of foreign direct investments (FDI) in Vietnam. Japanese firms import machines and technologies from Japan, and implement the production process in Vietnam, then export the final goods to Japan. Vietnam becomes as a part in a Japanese production chain. The effect of VCFTA on Vietnam's trade is also explained by it being complementary in the production process. While Vietnam exports finished goods to Chile, Chile exports raw materials for exporting products to Vietnam.

Table 3. Estimation results for pooled goods to and from Vietnam

	Dist <sub>k</sub>	GDP <sub>k</sub>	GDN <sub>VN</sub>	AIFTA	AANZFTA	AKFTA	ACFTA	AFTA	VJFTA	VCFTA	N
Export	-0.918*** (0.0132)	0.864*** (0.00372)	0.657*** (0.0422)	-0.714*** (0.0735)	0.727*** (0.0667)	0.844*** (0.0563)	-0.0596 (0.0556)	0.187*** (0.0449)	1.562*** (0.0992)	0.483*** (0.175)	115,460
Import	-1.454*** (0.0161)	0.920*** (0.00583)	0.643*** (0.0421)	-0.678*** (0.0802)	0.217*** (0.0739)	0.477*** (0.0616)	0.277*** (0.0602)	-0.146*** (0.0492)	0.665*** (0.107)	1.921*** (0.257)	76,361

\*\*\*, \*\*, \* are significant at 1%, 5%, and 10% level or less, respectively.

Standard errors in parentheses, N sample size.

The effects of multilateral FTAs are divided into two directions. Developed-country FTAs increase both Vietnam's trade in- and out-flows. The same effects do not find in developing country FTAs. Trade increases in developed country FTAs are also explained by complementation in industrial structures. Korea and Australia are capital intensive; both import labor-intensive goods from Vietnam and export capital intensity. Korea has the second largest share of FDIs in Vietnam, and FDIs help Korean firms to capture the advantages from Vietnam in products, and they then export produced goods to Korea. While the ASEAN countries are quite the same in structural products, they focus on producing labor-intensive goods like textiles, garments, apparel, or agriculture products. The similar industrial structures can be found in China and India, their advantages are their inexpensive, productive manpower. Competition between ASEAN

members is unavoidable. Vietnam's exportation to India and China in AIFTA and ACFTA neither decreases or there is no increase because other ASEAN countries also export similar products to these two markets and in this competition Vietnamese firms seem to have lower productivity and lose. The other reason is that Vietnam, the same as other Asian countries, signed a lot of FTAs and they are in force at the same time. Each FTA has differences in preferential schemes and requirements, such as rules of origin (ROOs). Multiple ROOs in overlapping FTAs pose a severe burden on small enterprises, which have less ability to meet the cost of the ROOs. Import reduction in AIFTA and AFTA in the "noodle bowl" FTA's scenario can come from choice of preferential schemes with other FTAs. Vietnamese firms switch from these FTAs to others or to non-members, creating trade diversion.

Vietnam and its FTA partners commit to create preference schemes on commodities traded but not all, meaning that preference schemes are not applied on all commodities. To know which commodities are affected by FTAs, I apply equation (2) for the 97 two-digit commodities in Table 1c and the results are shown in Table 4.

Following the columns I evaluate the effect of each FTA on each commodity. First, I explain some notations in Table 4. The plus mark (+) represents the significant positive relationship, the subtract mark (-) represent the significant negative relationship, N+ is insignificant positive coefficients, N- is insignificant negative coefficients, Z represents the no value of coefficients (no observations after signing FTA), N is observations in sample, and R<sup>2</sup> represents R-squared.

Notation Z appears in both bilateral FTAs, but varies so much however - in VJFTA only one time (commodity 2), and 58 and 39 times on import and export flows respectively in VCFTA. These numbers imply that the VCFTA between Vietnam and Chile, although having a positive impact, the range of effect is quite small. Only half of the commodities are traded between the two countries. If we add N- and N+, this ratio is smaller, only one-fifth of imported and one-sixth of exported commodities are truly affected by the VCFTA. The results cause a history of trade between the two countries. Before signing the FTA, bilateral trade between Vietnam and Chile owns a very small share of Vietnam's imports. For example in 2007 the import value from Chile was \$110.1 million while from Japan it was \$6,188.9 million. And as the previous paragraph confirms, Vietnam imports raw material that are used to produce exporting products such as commodities 3, 6, 8, 14, 15, 16, etc. and export commodities 36, 54, 55, 56, etc.

In VJFTA, commodity 2 is not traded between Vietnam and Japan. The reason may be come from the preferential scheme applying for commodity 2 in VJFTA that appears a lot of conventions of R and X (meaning of two these

conventions is excluding tariff commitments in VJFTA. Close to 60% of import and 45% of export commodities are not impacted by VJFTA. After ten years, 87.6% of the tariff lines are removed meaning that in 2019 this provision comes in force. My data are only to 2015, so the range of commodities affected is not large. The most important finding in VJFTA is 51/97 commodities that are a positive effect on exporting goods. This number is the greatest positive number in both import and export flows compared with other FTAs. In the list of 97 commodities, the first 20 commodities are agriculture products. Vietnam exports successfully eight of them to Japan and also this is the greatest positive number relating to agricultural products. Again this confirms Japan gives easier conditions for Vietnam's agricultural products. Last but not least, positive coefficients between import and export commodities happen in the same tariff line mostly (45%). This implies that trade between the two countries is in complementary goods. From the counting of the notations, this FTA is evaluated as a success in bilateral trade.

Multilateral agreements affect all commodities, although the insignificant effect is quite great for from 45 to 65% of commodities. The greatest number is in ACFTA, the second in AIFTA and the lowest number is in AFTA. So the aim of access to large markets such as China and India is not truly successful. In the international arena, Vietnam's competitiveness is modest. Developing-country FTAs affect commodities differently. In AIFTA most commodities are negatively significant both for imports and exports (one-third of the commodities). Only 8 and 5 are positive in imports and exports, respectively. And reductions happen in both agricultural and manufactured products. The number of commodities impacted in ACFTA and AFTA are quite similar (except import flows in ACFTA). An interesting point in two of these FTAs is that 16/27 commodities that have a significant effect have the opposite sign in import flow. This proves that Vietnam firms

switch from AFTA to VCFTA or trade diversion occurs in AFTA. Developed-country FTAs affect positively both imports and exports. Trade creation in import flows occurs with the greatest number of commodities in AKFTA (39 items). And again the same sign of coefficients of import and export in both AKFTA and AANZFTA happen in the same tariff lines. This refers to the complementary goods traded between Vietnam and those two partners (50% of the commodities).

Following the tariff lines I evaluate the effect of all FTAs on each commodity. From the column sum, I can find evidence that no commodity is impacted by all FTAs and also at least two FTAs affect one commodity. The total numbers of coefficients for each commodity affected by FTA's are 14. Commodity 81, 83, and 86 have 12 insignificant or non-effect coefficients but they still are impacted by two different FTAs. Two FTAs affecting a commodity also happen in case the total number is 10 or 11. And I find commodity 2 and 4 also are impacted by two FTAs. The greater number of the sum the less the number of FTAs that affect a commodity. So the five above commodities are least effected by FTAs. This result can occur when their trade volume with a non-member takes a greater share or their trade value before and after signing FTAs changes very little. The major export items increase through preferential schemes such as commodity 10 (cereals), 16, 48, 49 (papers and printed books), 56, 61 to 64 (textile, clothing, footwear) and 90. They are items in which Vietnam has comparative advantages. There are three items that are not impacted by FTAs in outflow, where two of five commodities the least affected are 81, 83 and the other 60. In import flow, the largest trade creation results from commodity 6, 44, and 47, and the largest trade diversion results from commodity 66, and is a little lower from commodity 43 and 64. From Table 4, the impact of FTAs on trade flows are only one sided or increase or decrease such as in item 2 only decrease, item 25, 33, and 38 only increase. I add the number of plus

and subtract marks. The sum from that calculation evaluates the number of FTAs that affect one commodity. This result is opposite in meaning with the sum of insignificant effect. The greater the number the more FTAs impact on a commodity. The results show that commodity 6, 8, 50, 57, and 66 are affected by the greatest number of FTAs.

## 5. Conclusions

Participation in FTAs helps to improve free trade by reducing trade barriers, and increase the development economy and welfare as classical trade theories mention. Vietnamese firms taking part in global plays in both foreign and domestic markets (flat markets) create not only opportunities to develop but also more pressure in competition. Exploiting opportunities from FTAs and reducing disadvantages also are outstanding requirements.

In signing FTAs Vietnam expects to increase trade flows. This is true in bilateral FTAs and developed-country FTAs, but for developing-country FTAs this expectation does not truly occur. Trade flows increase, or decrease, or there is no evidence to provide a conclusion. This result happens in multilateral FTAs because of the competition among members or trade diversion with non-members. Both exports and imports decrease in AFTA, imports decrease in AFTA and there is no evidence of exports in ACFTA. The success of bilateral FTAs and developed-country FTAs comes from industrial structures. They have complementary goods with Vietnam. Vietnam needs to exploit more advantages of FTAs by increasing more commodities traded through preferential schemes, especially in VCFTA in which only a low percentage of commodities are traded. FTAs also help Vietnam take its comparative advantage by exporting more commodities to other markets and reducing production costs by importing the factors with lower prices. However the aim of market access

is not really successful. Evidence from the number of commodities that are not affected by each FTA is quite great (from 45%-60%, in VCFTA it is 85%). Vietnam firms' productivity needs to increase to serve more markets, not only to move from one preferential scheme to another to take advantage.

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Table 4. Summary the estimation results for each FTA and each commodity

Commodity	AIFTA		AANZFTA		AKFTA		ACFTA		AFTA		VJFTA		VCFTA		Count				N	R^2	N	R^2		
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	“-” “+”	N- N+	Z	Sum	(1)	(2)				
1	-	-	+	+	-	N-	N-	N+	+	N-	N+	+	Z	Z	3	4	3	2	2	7	399	0.234	487	0.296
2	N+	N+	N-	N-	N-	N-	-	N+	-	-	Z	Z	Z	Z	3	0	4	3	4	11	758	0.395	528	0.253
3	N-	-	N+	+	N-	+	N+	-	N-	N+	+	N+	+	N+	2	4	3	5	0	8	1,049	0.346	1,879	0.587
4	-	+	+	-	N-	+	N+	-	+	N-	N-	N+	Z	-	4	4	3	2	1	6	782	0.163	659	0.284
5	-	N-	N+	N+	N+	N+	N-	N+	-	N-	N-	+	N-	Z	2	1	5	5	1	11	820	0.364	662	0.391
6	-	N-	+	+	-	+	+	N-	N-	-	+	+	+	N-	3	7	4	0	0	4	442	0.343	613	0.35
7	N+	-	N+	+	N-	N+	+	N+	-	+	N-	N+	N-	N+	2	3	3	6	0	9	558	0.337	1,171	0.589
8	N-	-	+	+	-	N-	+	+	N-	-	-	-	+	N-	5	5	4	0	0	4	798	0.124	1,748	0.563
9	+	N+	-	N+	N-	+	+	-	N-	N-	N+	N+	N-	N+	2	3	4	5	0	9	763	0.22	2,290	0.497
10	N+	N-	N+	+	-	N-	+	+	N-	+	-	N-	Z	N+	2	4	4	3	1	8	455	0.182	1,880	0.093
11	-	N+	+	N-	N-	N-	+	+	N-	-	N+	N+	N+	Z	2	3	4	4	1	9	649	0.243	1,201	0.423
12	N+	N-	N-	-	N-	N+	+	-	-	+	N-	N+	N-	N+	3	2	5	4	0	9	864	0.3	1,358	0.463
13	+	N+	-	N-	+	+	N+	+	N-	-	N-	+	-	Z	3	5	3	2	1	6	590	0.256	519	0.281
14	+	N+	N-	-	-	N+	+	-	N+	-	N-	N+	+	Z	4	3	2	4	1	7	262	0.158	883	0.483
15	N-	N+	N+	N+	N+	N+	N+	N+	+	-	N+	+	+	N+	1	3	1	9	0	10	749	0.249	659	0.409
16	N-	-	N+	+	N-	+	+	-	N-	+	N+	+	+	N-	2	6	4	2	0	6	619	0.334	1,573	0.513
17	N+	-	N-	+	N+	+	N-	N-	+	N+	-	+	N+	-	3	4	3	4	0	7	758	0.336	1,182	0.336
18	N+	N+	N-	N-	N+	+	N+	+	+	-	N+	+	Z	N+	1	4	2	6	1	9	575	0.278	489	0.307
19	-	-	+	+	+	+	N-	N-	+	N-	N+	+	Z	N+	2	6	3	2	1	6	795	0.342	1,711	0.455
20	-	-	N+	+	N-	N+	+	-	N+	-	-	N+	N+	N+	5	2	1	6	0	7	700	0.37	1,548	0.454
21	-	N-	+	+	+	N+	N+	N+	+	-	N+	+	Z	-	3	5	1	4	1	6	871	0.371	1,569	0.412
22	N-	-	+	+	N+	+	N-	-	N+	+	N-	+	+	N-	2	6	4	2	0	6	987	0.378	1,072	0.391
23	N+	N+	-	N+	N-	+	N+	N+	+	-	-	+	N+	N+	3	3	1	7	0	8	950	0.316	677	0.503
24	N-	N+	N+	N+	N+	-	N+	+	N+	N+	N-	+	Z	Z	1	2	2	7	2	11	670	0.311	681	0.143
25	N-	N-	N-	N+	N-	N+	N+	N-	+	N+	N-	+	N-	+	0	3	7	4	0	11	834	0.393	924	0.428
26	-	N+	+	N-	N+	N+	N+	N+	N-	-	+	N+	+	Z	2	3	2	6	1	9	389	0.29	294	0.444
27	-	-	N+	+	+	N+	N+	+	N-	N+	N-	+	Z	N-	2	4	3	4	1	8	882	0.508	817	0.411
28	+	N+	-	N-	N+	N-	N+	N+	N+	N-	N+	+	+	+	1	4	3	6	0	9	1,026	0.476	816	0.432
29	N+	N+	-	N-	+	N+	N+	N+	+	N-	N+	+	Z	Z	1	3	2	6	2	10	1,038	0.515	971	0.466

30	N+	N+	N-	N-	+	+	-	N-	N+	N-	-	+	N+	-	3	3	4	4	0	8	1,195	0.412	1,139	0.203
31	N-	N+	N+	N+	N+	+	+	N-	-	N-	+	+	N+	Z	1	4	3	5	1	9	769	0.112	450	0.331
32	-	N-	+	N+	N+	N+	N-	N+	+	N+	N+	+	N-	N+	1	3	3	7	0	10	1,051	0.545	1,052	0.419
33	N-	N+	N+	N+	+	+	N-	N-	+	N+	N-	+	N-	N-	0	4	6	4	0	10	954	0.497	1,407	0.421
34	N-	-	N-	+	+	N-	N-	N+	+	N+	N+	+	Z	N+	1	4	4	4	1	9	916	0.592	1,410	0.453
35	-	N-	N+	N+	N+	N+	N+	N-	N-	N+	N+	+	Z	+	1	2	3	7	1	11	855	0.44	732	0.487
36	+	N+	-		N+	N+	N+	N+	+	N-	-	+	Z	Z	2	3	1	5	2	8	299	0.19	183	0.339
37	N-	-	N-	+	N-	N-	N+	N-	N-	+	+	N-	Z	N-	1	3	8	1	1	10	547	0.438	635	0.264
38	N-	N+	N-	N-	N+	+	N-	N+	+	N+	N+	+	N+	N+	0	3	4	7	0	11	1,095	0.514	1,296	0.47
39	N-	N-	N+	N+	N+	N-	-	N+	+	+	N+	+	N-	N+	1	3	4	6	0	10	1,526	0.624	2,363	0.634
40	N-	N+	N-	N-	+	+	N+	+	N+	N+	+	N+	-	N-	1	4	4	5	0	9	1,187	0.591	2,166	0.558
41	N-	+	+	-	+	N+	-	+	-	-	N-	N-	N+	Z	4	4	3	2	1	6	988	0.384	717	0.325
42	N-	-	N+	+	N+	+	+	N-	-	N-	N-	N+	N-	N+	2	3	5	4	0	9	824	0.487	2,272	0.648
43	-	-	+	+	N-	N+	+	-	-	N+	-	N-	Z	Z	5	3	2	2	2	6	440	0.261	482	0.421
44	-	N-	+	N+	N-	N+	+	N+	+	-	N+	+	+	N+	2	5	2	5	0	7	1,363	0.294	2,023	0.676
45	-	-	+	N+	N-	N+	+	N-	-	N+	N+	N+	Z	Z	3	2	2	5	2	9	270	0.136	209	0.306
46	N-	-	N+	+	N-	+	+	-	-	-	-	N+	Z	N+	5	3	2	3	1	6	275	0.427	1,869	0.555
47	-	N+	+	N+	+	N+	-	N+	+	N-	+	+	N-	Z	2	5	2	4	1	7	705	0.315	143	0.489
48	-	-	+	+	+	+	N+	+	N+	N-	N+	+	-	N+	3	6	1	4	0	5	1,248	0.549	2,008	0.523
49	N-	-	N+	+	N+	+	N+	N-	N-	+	N+	+	-	N+	2	4	3	5	0	8	1,127	0.498	1,538	0.53
50	N+	+	-	-	N-	+	+	-	-	-	+	+	Z	N+	5	5	1	2	1	4	430	0.339	603	0.403
51	N+	N-	N-	N+	N-	+	+	N+	-	-	+	N+	Z	Z	2	3	3	4	2	9	681	0.344	344	0.296
52	+	N-	N-	N-	-	-	+	+	-	N-	N+	N+	Z	N+	3	3	4	3	1	8	1,078	0.229	1,015	0.356
53	N+	-	-	+	N-	+	+	+	-	-	+	N-	Z	Z	4	5	2	1	2	5	543	0.385	473	0.426
54	N+	N+	-	N-	+	N+	N-	N+	-	-	+	N+	Z	+	3	3	2	5	1	8	941	0.576	1,475	0.412
55	N+	N-	-	N-	N+	+	N+	N-	N-	N+	+	N+	Z	+	1	3	4	5	1	10	956	0.519	1,380	0.383
56	-	-	N-	+	+	+	N-	N+	N-	N-	N+	+	Z	+	2	5	4	2	1	7	888	0.539	1,431	0.314
57	N+	-	-	+	N-	+	+	-	+	-	+	+	Z	N+	4	6	1	2	1	4	576	0.481	1,035	0.453
58	N+	N+	-	N-	N+	+	N+	N-	-	N-	+	+	Z	N-	2	3	4	4	1	9	973	0.523	1,308	0.405
59	-	N+	N-	N-	+	+	N+	N+	-	N-	N+	N+	Z	N+	2	2	3	6	1	10	866	0.542	1,021	0.359

60	-	N+	+	N+	+	N+	N-	N+	-	N+	N+	N-	Z	Z	2	2	2	6	2	10	819	0.573	966	0.36
61	-	-	N+	+	N+	+	+	N-	-	-	N-	+	Z	N+	4	4	2	3	1	6	868	0.518	2,262	0.601
62	N-	-	N-	+	+	+	N+	-	-	N-	N-	+	-	N+	4	4	4	2	0	6	991	0.541	2,321	0.629
63	N-	N-	N-	N+	+	+	N+	N-	-	N-	+	+	Z	N+	1	4	5	3	1	9	998	0.592	2,188	0.418
64	-	-	N-	N+	+	+	N+	N-	-	+	-	N+	Z	+	4	4	2	3	1	6	749	0.521	2,464	0.636
65	-	-	+	+	+	+	N+	-	-	N+	N+	+	Z	N+	4	5	0	4	1	5	572	0.422	1,946	0.585
66	-	N-	+	+	-	+	+	-	-	-	-	N-	N-	N-	6	4	4	0	0	4	317	0.494	986	0.329
67	+	N-	-	N+	N-	+	+	-	-	-	N-	+	Z	N+	4	4	3	2	1	6	304	0.479	929	0.435
68	N+	N-	-	+	N+	N+	+	-	N-	N+	+	N+	Z	N-	2	3	3	5	1	9	895	0.586	1,503	0.455
69	N+	N-	-	+	N+	+	+	N-	N-	-	+	+	Z	N+	2	5	3	3	1	7	821	0.495	2,119	0.554
70	N+	-	-	+	+	+	N+	N+	+	+	+	+	Z	N+	2	7	0	4	1	5	952	0.593	1,640	0.622
71	-	-	+	+	N+	+	N-	-	-	N-	N+	N+	Z	N+	4	3	2	4	1	7	684	0.252	1,153	0.472
72	-	N+	N+	N-	N+	+	+	N+	N-	N+	+	N+	+	N-	1	4	3	6	0	9	1,361	0.374	981	0.455
73	N-	N-	N-	N+	+	+	N+	-	N+	+	N+	N+	N+	N-	1	3	4	6	0	10	1,306	0.517	1,987	0.601
74	N-	N-	N+	N+	+	N+	N+	N+	N+	-	+	+	+	-	2	4	2	6	0	8	900	0.429	868	0.502
75	N-	N+	N-	N-	N+	+	N-	N-	+	N-	N+	N-	Z	N-	0	2	8	3	1	12	377	0.222	156	0.417
76	-	N-	+	N+	N+	+	N-	N+	N-	N+	N+	+	-	N+	2	3	3	6	0	9	1,054	0.469	1,255	0.464
78	N-	N+	+	-	+	N+	N+	N+	-	N-	N+	N+	Z	Z	2	2	2	6	2	10	392	0.305	247	0.393
79	-	+	+	-	+	+	N-	N-	-	-	+	N+	Z	Z	4	5	2	1	2	5	445	0.272	791	0.402
80	-	N+	N+	N+	+	N+	N+	-	N-	+	+	+	Z	N-	2	4	2	5	1	8	323	0.344	449	0.304
81	N-	N+	N-	N-	+	N-	N-	N-	N-	N-	+	N+	Z	Z	0	2	8	2	2	12	367	0.343	402	0.341
82	N+	-	N-	+	+	N+	N+	N+	N-	N+	+	N+	Z	Z	1	3	2	6	2	10	1,016	0.553	1,610	0.521
83	N-	N-	N+	N+	+	N+	-	N+	N+	N-	N+	N+	Z	Z	1	1	3	7	2	12	940	0.6	1,592	0.557
84	N-	-	N+	N+	+	N-	N-	N-	+	+	+	N+	Z	Z	1	4	4	3	2	9	1,617	0.561	2,218	0.708
85	N-	-	N-	N+	+	N-	N-	N-	N+	+	+	N+	Z	Z	1	3	5	3	2	10	1,441	0.569	2,220	0.699
86	N+	N+	N-	N-	N+	N+	N+	N-	N-	+	N+	+	Z	Z	0	2	4	6	2	12	446	0.089	305	0.262
87	N+	N-	N-	N+	+	+	-	+	N+	N+	N+	+	Z	Z	1	4	2	5	2	9	1,058	0.529	1,740	0.542
88	N-	N-	N-	+	N-	N-	N+	-	N+	+	N+	N+	Z	Z	1	2	5	4	2	11	588	0.229	745	0.481
89	+	-	-	+	+	N+	N-	N+	N-	-	N-	N+	Z	Z	3	3	3	3	2	8	503	0.187	506	0.252
90	N-	-	N+	N+	+	+	N-	+	N+	+	N+	+	Z	Z	1	5	2	4	2	8	1,273	0.601	1,725	0.656
91	N-	N-	N+	+	+	-	-	N+	N-	-	N+	+	Z	Z	3	3	3	3	2	8	570	0.338	887	0.437
92	N-	-	N+	+	+	N+	-	N-	N-	N+	+	+	Z	Z	2	4	3	3	2	8	439	0.404	966	0.512
93	N-	N-	N-	+	N+	N-	N+	+	-	N+	N-	N+	Z	Z	1	2	5	4	2	11	264	0.304	260	0.384
94	-	-	N+	+	+	+	N-	N+	+	N+	N+	+	Z	Z	2	5	1	4	2	7	1,079	0.554	2,255	0.572

95	-	-	N+	+	+	+	N-	N-	N-	N-	N+	+	Z	Z	2	4	4	2	2	8	766	0.475	1,924	0.647
96	N+	-	-	+	+	N+	N-	+	-	N+	+	N+	Z	Z	3	4	1	4	2	7	1,015	0.508	1,904	0.624
97	N-	-	N+	+	N-	N+	N+	-	N+	+	N-	N+	Z	Z	2	2	3	5	2	10	389	0.256	1,014	0.401
99	N-	+	N+	N-	N+	-	N-	+	N+	+	+	+	Z	Z	1	5	3	3	2	8	864	0.492	936	0.414
<p>Note: (1): Import flow; (2): Export flow; N: sample size; -: Statistically significant negative coefficients;            +: Statistically significant positive coefficients; N-: insignificant negative coefficients; N+: insignificant positive coefficients; Z: no trade values after signing FTA</p>																								
Count "-"	31	37	18	7	7	4	9	22	30	28	11	1	6	5	R <sup>2</sup> : R-squared, Sum: sum of insignificant effects									
Count "+"	8	5	23	41	39	47	27	17	23	19	29	52	12	7										
Count N-	35	26	27	20	23	14	25	26	27	25	19	8	11	15										
Count N+	23	29	29	28	28	32	36	32	17	25	37	35	9	32										
Count Z	0	0	0	0	0	0	0	0	0	0	1	1	59	38										
Sum	58	55	56	48	51	46	61	58	44	50	57	44	79	85										

## Appendix

Table 1b. List of FTAs in model

1	ASEAN FTA (AFTA) (1995)
2	ASEAN – CHINA FTA (ACFTA) (2004)
3	ASEAN – KOREA (AKFTA) (2006)
4	VIETNAM – JAPAN ECONOMIC PARTNERSHIP AGREEMENT (VJEPA) (2009)
5	ASEAN – AUSTRALIA AND NEWZEALAND (AANZFTA) (2010)
6	ASEAN – INDIA (AIFTA) (2010)
7	VIETNAM – CHILE (VCFTA) (2012)

Source: VCCI.

Table 1c. List of 97 2-digit commodities

Code	Commodity	Code	Commodity
1	Live animals; animal products	50	Silk
2	Meat and edible meat offal	51	Wool, fine or coarse animal hair; horsehair yarn and woven fabric
3	Fish and crustaceans, molluscs and other aquatic invertebrates	52	Cotton
4	Dairy produce; birds eggs; natural honey;	53	Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn
5	Products of animal origin, not elsewhere specified or included	54	Man-made filaments; strip and the like of man-made textile materials
6	Live trees and other plants;	55	Manmade staple fibres
7	Edible vegetables and certain roots and tubers	56	Wadding, felt and non-wovens; special yarns, twine, cordage, ropes and cable...
8	Edible fruit and nuts; peel of citrus fruit or melons	57	Carpets and other textile floor coverings
9	Coffee, tea, mate and spices	58	Special woven fabrics; tufted textile fabrics; lace, tapestries; trimmings;
10	Cereals	59	Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable for industrial use
11	Milling products, malt, starches, inulin, wheat gluten	60	Knitted or crocheted fabrics
12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder	61	Articles of apparel and clothing accessories, knitted or crocheted
13	Lac, gums, resins, vegetable saps and extracts nes	62	Articles of apparel and clothing accessories, not knitted or crocheted
14	Vegetable plaiting materials; vegetable products not elsewhere specified or included	63	Other made up textile articles; sets; worn clothing and worn textile articles; rags
15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	64	Footwear, gaiters and the like, parts thereof
16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates	65	Headgear and parts thereof
17	Sugars and sugar confectionery	66	Umbrellas, sun umbrellas, walking sticks, seat sticks, whips, riding-crops
18	Cocoa and cocoa preparations	67	Bird skin, feathers, artificial flowers, human

			hair
19	Cereal, flour, starch, milk preparations and products	68	Stone, plaster, cement, asbestos, mica, etc. articles
20	Vegetable, fruit, nut, etc. food preparations	69	Ceramic products
21	Miscellaneous edible preparations	70	Glass and glassware
22	Beverages, spirits and vinegar	71	Pearls, precious stones, metals, coins, etc.
23	Residues, wastes of food industry, animal fodder	72	Iron and steel
24	Tobacco and manufactured tobacco substitutes	73	Articles of iron or steel
25	Salt; sulfur; earths and stone; plastering materials	74	Copper and articles thereof
26	Ores, slag and ash	75	Nickel and articles thereof
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	76	Aluminum and articles thereof
28	Inorganic chemicals	78	Lead and articles thereof
29	Organic chemicals	79	Zinc and articles thereof
30	Pharmaceutical products	80	Tin and articles thereof
31	Fertilizers	81	Other base metals; cements; articles thereof
32	Tanning, dyeing extracts, tannins, derivs, pigments etc.	82	Tools, implements, cutlery, spoons and forks, of base metal
33	Essential oils, perfumes, cosmetics, toiletries	83	Miscellaneous articles of base metal
34	Soaps, lubricants, waxes, candles, modelling pastes	84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof
35	Albuminoidal substances; modified starches; glues; enzymes	85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles
36	Explosives, pyrotechnics, matches, pyrophorics, etc.	86	Railway or tramway locomotives, rolling-stock and parts thereof
37	Photographic or cinematographic goods	87	Vehicles other than railway or tramway rolling stock

38	Miscellaneous chemical products	88	Aircraft, spacecraft, and parts thereof
39	Plastics and articles thereof	89	Ships, boats and other floating structures
40	Rubber and articles thereof	90	Optical, photo, technical, medical, etc. apparatus
41	Raw hides and skins (other than furskins) and leather	91	Clocks and watches and parts thereof
42	Articles of leather; saddlery and harness	92	Musical instruments; parts and accessories of such articles
43	Furskins and artificial fur; manufactures thereof	93	Arms and ammunition; parts and accessories thereof
44	Wood and articles of wood; wood charcoal	94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified or included; illuminated signs, illuminated name-plates and the like; prefabricated buildings
45	Cork and articles of cork	95	Toys, games and sports requisites; parts and accessories thereof
46	Manufactures of straw, of esparto or of other plaiting materials	96	Miscellaneous manufactured articles
47	Pulp of wood or of other fibrous cellulosic material; recovered (waste and scrap) paper or paperboard	97	Works of art, collectors pieces and antiques
48	Paper and paperboard; articles of paper pulp, of paper or of paperboard	99	Commodities not specified according to kind
49	Printed books, newspapers, pictures etc.		