Determinants of Vietnamese Product Export to Asean Members

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Abstract

This paper employs the gravity model to investigate and analyze the determinants of Vietnam's exports to ASEAN countries over a period of nineteen years, from 1997 to 2015. The results show that the increase in the GDP of Vietnam and of trading countries, Vietnam's population and the large population of importing countries, the change of real exchange rates, the regional free trade treaties that Vietnam signed, the shared borders and being landlocked with the importing countries, all have different influences on Vietnam's export of different product groups. The results of this paper may be beneficial to the Vietnamese government and exporting companies in setting their export goals and policies.

Keywords: Vietnam; economic integration; ASEAN; gravity model.

1. Introduction

Vietnam is a developing country with a rapidly changing economy. Economic integration with other countries has brought growth and development, but also poses major new challenges for the national economy. In the modern era, business globalization and international integration are the engines of economic growth for all nations. Cooperation and consolidation of countries deeply impacts both the individual countries and all nations worldwide. In the opinion of most policy makers, integration is the best chance for reform and innovation. Globalization and international economic integration not only create opportunities for developing countries, they also force them to face challenges. Removing tariff barriers to facilitate global free trade is a big challenge, for example. Reducing tariffs not only affects tax policy in general; more important is its role in transforming the national economic structure and modernizing the social economic policy of the state. In addition, globalization leads to extra competition in trade. The reduction of tariff barriers has increased global competition. To develop more fully in this new business environment, Vietnamese enterprises must reform non-stop, improve technology, and adopt new practices such as building brand recognition and value. These are powerful strategies for adaptation as the global economy continues to evolve. Government policies have an important role to play in fostering the social and economic conditions that enable the nation to execute these strategies.

Understanding the benefits of economic integration, on July 28th, 1995, Vietnam became an official member of ASEAN. So far, together with other ASEAN members, Vietnam has put a lot of effort in attempting to establish the free trade area of ASEAN (AFTA) and AEC (2015). After over twenty years of "*Doi moi*", it is the first time Vietnam has taken part in a regional economic cooperation. Vietnam-ASEAN trading relations have considerably improved. ASEAN member countries have become increasingly important business partners of Vietnam. The average growth rate of Vietnam-ASEAN trade is at 20-25% per year. Hence, the important issue now is how to increase exports to a high rate in the coming time. To do this, we need to understand clearly the factors influencing the export value of Vietnam to ASEAN countries.

Relating to this there have been many researches conducted in the field of export and factors impacting on it. Some studies concentrate on Vietnam's export (Dao Ngoc Tien, 2010; Thai Tri Do, 2006; Nguyen Bac Xuan, 2010; Trang and Nam, 2011) or the impact of ASEAN members on trade (Heo and Kien, 2009; Ruzita, Zarina and Norma, 2009; Kim, 2010). However, most of these papers concentrate on Vietnam's total export value. These researches, therefore, can only give general results; and there is still little known of scrupulous impacts on the export value of different product groups of various factors. Although a rich field of literature on the Vietnamese economy is available, further studies are needed. This paper aims at addressing those effects in detail.

In this paper, product groups will be classified based on the Standard International Trade Classification (SITC) method of the United Nations. And the research will use a gravity model - which is applied widely for international trade analysis – for the period from 1997 to 2015.

The purpose of this paper is to answer two main questions: (i) What are the determinants of Vietnam's export value for different product groups to ASEAN countries? (ii) What are the differences in the directions of the impact that these determinant cause for export value in the case of each product group? Based on these analyses, the paper will suggest some useful solutions for the Vietnamese government to improve export effectively to ASEAN countries.

2. Literature review

One of the most useful empirical approaches in trade, especially liberal trade is the gravity model. The model was first used by *Tinbergen* in 1962 based on Newton's law of physics, which equates that the gravitational attraction between two objects is the product of their masses divided by the distance between them. The simplest form of gravity model in international trade is expressed as:

$$F_{ij} = \varphi \ (M_i * M_j/D_{ij})$$

In which, F_{ij} indicates the exports, imports or trade volume from country i to country j, depending on the author's purpose. M_i and M_j are the economic mass of each country, for example: Gross Domestic Product (GDP) or GDP per capital. D_{ij} measures the distance between country i and country j; and φ is a constant of proportionality. Since the late 1970s, the gravity equation has been improved in order to be used for different purposes. Carrere (2006) uses a gravity model to assess ex-post regional trade agreements with 130 countries and panel data over the period 1962 - 1996. His results mention that a correct number of dummy variables allows for identification of Vinerian trade creation and trade diversion effects, while the estimation method takes into account the un-observable characteristics of each pair of trade partner countries, the endogeneity of some of the explanatory variables as well as a potential selection bias. Results also show that regional agreements have generated a significant increase in trade between members, often at the expense of the rest of the world.

Heo and Doanh (2009) examine the impacts of AFTA on trade flows in Vietnam and Singapore. Their results show that both Vietnam and Singapore's trade with the rest of the world after joining AFTA has increased faster than their trade with ASEAN countries. AFTA will not lead to trade increasing immediately because of dissimilarities in income level, demand patterns, infrastructures and trade policies, but integration and globalization will have enhanced communication, broken down cultural barriers, and facilitated transactions. Heo and Doanh also conclude that physical distance plays a very important role in terms of trade due to transport costs. Language and ex-colonizers will be advantages in trade, and GDP gaps among members are a negative impact on bilateral trade.

Trang and Nam (2011) evaluate changes in exports based on impact factors by using the Tobit estimation method with 61 of Vietnam's importing partners from 2004 to 2008. In their result, the economic growth of Vietnam, the population of importing countries, economic distance, the increment of the real exchange rate value, free trade agreements and the factor of sharing a common land border have a clear positive impact on the export value of all groups. In contrast, the geographical distance has negative impacts on all groups. Based on those results, three groups of solutions to boost

Vietnam's export value are given: promoting the supply of goods; adjusting Vietnam's exporting market; and managing the policies of the exchange rate and international cooperation.

Heo and Kien (2009), instead of using total trade data, estimated the impacts of AFTA on Korean trade flows with disaggregated sectorial data, focusing on analyzing the impacts of AFTA on Korean exports by using data on Korean exports to ASEAN countries, using a system GMM estimator. They found that the impacts of the AFTA dummy seem to differ substantially across sectors. There are 5 out of 15 selected sectors which have negative impacts on exports from Korea to ASEAN countries whereas the remaining sectors have both negative and positive impacts but without statistical significance. There is a sector in which the estimated coefficient is positive and statistically significant as well. Since the gravity model was employed in economics, different extensions have been suggested to the basic model to obtain more reliable estimates of international trade flows.

Nguyen Bac Xuan (2010) in his paper, used the gravity estimation technique to investigate the determinants of Vietnamese export performance in a panel data framework. His results demonstrate that the gravitational attraction between the local and destination economies, transport costs and exchange rate are the important factors which affect Vietnamese exports. Besides, ASEAN membership seems also to have been linked to Vietnam's export flows, especially since it started to deepen its integration into the regional economy. In addition, transport costs play a significant part

in the Vietnamese export performance. Higher transport costs hinder export activities and conversely, reduced transport costs support Vietnamese exports. However, the effect of transport costs on Vietnamese exports tends to decrease over time and Nguyen's results imply that the government needs also to pay adequate attention to destination markets with cheaper transport costs.

Thai Tri Do (2006), in his paper, finds the factors influencing the level of trade between Vietnam and twenty-three European countries in the OECD, and evaluates whether there are potentials for growth in trade between Vietnam and those countries. Using the gravity model with panel data and random fixed effect estimation covering the period of twelve years from 1993 to 2004, his results indicate that the bilateral trade flows between Vietnam and EC23 are driven by economic size, market size and exchange rate volatility. However, distance and history seem to have no effect on bilateral trade between Vietnam and EC23. He also mentions that there is evidence of a small but significant negative effect of the real exchange rate on bilateral trade between Vietnam and EC23 confirming that exchange rate volatility does have an impact on trade. His results suggested that Vietnam needs to sign bilateral trade agreements with individual countries in EC23.

To determine the impacts of ASEAN membership on Cambodia's trade flows, Kim (2010) estimated with two equations derived from the gravity model using annual data from 1994 to 2004 from a sample of 20 main trading countries of Cambodia, including Australia, Belgium, Canada, China, Hong Kong (China), France, Germany, Ireland, Italy, Japan, Korea,

Figure 1: Gravity model in international trade
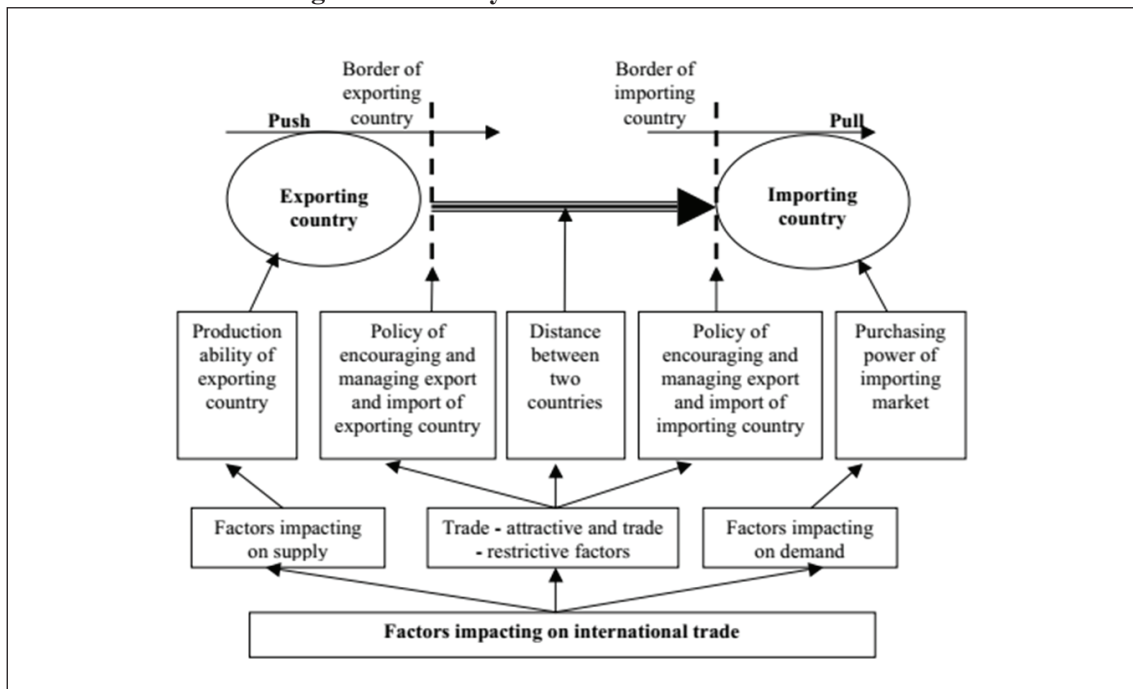
Source: Dao Ngoc Tien (2010)

Malaysia, the Netherlands, Singapore, Spain, Switzerland, Thailand, the U.K, the U.S and Vietnam. The impacts of its own GDP appear to be at least 4 times as great as those of the partners' GDP. As expected in the gravity model, the geographical indices are powerful in explaining the pattern of Cambodia's trade. Although ASEAN membership shows a rather curious relationship with trade in the whole period sample, a positive sign is detected while the effect of sharing a borderline becomes insignificant. Kim also recommends that the government of Cambodia may consider pursuing bilateral trade or multilateral trade agreements within the region.

In the same way, Lee, Koo, and Park (2008) analyze the impacts of FTAs on China, Japan, and Korea separately in terms of trade diversion. They estimated the effects of regional trading blocs on the exports of China, Japan and Korea, with two different models of the gravity equation: the static gravity model and the dynamic partial adjustment model of bilateral trade. As a result, a diversion effect is observed in small blocks such as BAFTA (China, Japan and Korea), CACM (China), CAN (China), CEFTA (China and Japan), CEMAC (China, Japan and Korea), CIS (Japan), COMESA (Korea), EAEC (Japan), EFTA (China), GCC (China), MERCOSUR (Japan), SAPTA (Japan), SPARTECA (China and Korea), and UE-MOA WAENU (Japan and Korea). Their empirical results show that Japan and Korea's fear of discrimination and trade diversion is baseless, while China's fear is grounded only to a

limited extent.

3. Methodology and hypotheses

To evaluate impacts of regional and global integration on the Vietnamese economy, especially liberal trade, the gravity model is the standard way. Based on the original model, Dao Ngoc Tien (2010) in his paper classified determination of trade flows in three main groups: factors impacting demand; factors impacting supply, and trade - attractive and trade - restrictive factors.

With factors impacting demand and supply, the GDP and population of a country usually are the most suitable candidates. Economic scale or size is measured by the national incomes of trading countries. The greater the economic size of a country, the larger is its potential ability to supply and demand. Thus, larger countries tend to trade more with each other and countries that are of similar size also trade more (Feenstra, 2006). In this research, we use multiplying GDP (export's GDP* import's GDP); multiplying GDP represents the economic size of the two countries, also representative of the productive possibility and market size; so the larger countries - with large production possibilities - are the most likely to reach economies of scale leading to increased exports of competitive advantage. Also large domestic markets have the possibility to absorb more imports, so the increase multiplied GDP has the possibility to lead to an increase in the volume of bilateral trade and it is expected that the coefficient is estimated to be greater than zero. We give:

Hypothesis 1: (export's GDP import's GDP) significantly influences Vietnamese exports and has different impacts on the export of different product groups.*

Most empirical studies mention that population has a deep impact on the trading process. Population is used to estimate the market size of each country, which is a factor affecting international trade. The larger the market the more it trades, so the market size is expected to turn out with a positive sign. A larger population of trading partners will lead to a bigger domestic market and more potential customers. The positive effects of population are found in Carrere (2006), Kien and Hashimoto (2005). But on the other hand, the bigger absorption effect of this domestic market causes less reliance on international trade transactions, indicating a negative impact on bilateral trade. The negative impacts of population in both importing and exporting countries is found in Martinez-Zarzoso and Nowak-Lehmann (2003). In Vietnam's case, all empirical studies such as those of Dao Ngoc Tien (2008), Thai Tri Do (2006), Trang and Nam (2011), show a positive relationship of exports with these factors. Hence, we give two hypotheses as follows.

Hypothesis 2: Vietnam's population will significantly impact Vietnam's export. We expect the population variable will be positive and have different impacts on the export of different product groups.

Hypothesis 3: The population of trading partners will have a positive impact on Vietnam's export and have different impacts on the export of different product groups.

Distance and borders between trading partners play a very important role due to the transaction costs of goods since greater distance increases transaction costs. Especially, having the same borders will reduce this cost to a min-

imum. McCallum (1995) investigated whether national borders matter for trade. He examined the trade patterns of Canadian provinces showing that borders matter because the typical Canadian province trades 22 times more with other provinces than with American states of a given size and distance. His results show that whatever the reasons may be and whatever the future may hold, the fact that even the relatively innocuous Canada-U.S. border continues to have a decisive effect on continental trade patterns suggests that national borders in general continue to matter. Actually, the distance factor reflects the cost of international transactions of goods and services and brings negative effects to trade, according to Bougheas (1999), Clarete et al. (2003) and Martinez-Zarzoso (2003). Hence, we give four hypotheses as follows.

Hypothesis 4: The distance between Vietnam and its trading partners will have a negative impact on Vietnamese export and have different impacts on the export of different product groups.

Hypothesis 5: Border will have a positive impact on Vietnamese export and have different impacts on the export of different product groups.

Hypothesis 6: Landlock will have a positive impact on Vietnamese export and have different impacts on export of different product groups.

With policy makers, the exchange rate is a very important tool for controlling the trading process. Krugman and Obstfeld (2008) showed that the depreciation of domestic currency against foreign currencies will lead to an increase in domestic exports and reduce imports because the price of export goods in the international market will be cheaper, but the

price of import goods in the domestic market will become more expensive. Micco, Stein and Ordoñez (2003) evaluate the impact of common currency and exchange rates by using the gravity model for 22 industrial countries of the European Union with a sample from 1992 to 2002. Their results show that monetary union is of great importance, not only for the current EMU members, but also for the rest of the EU. In addition, the exchange rate has a significant impact on bilateral trade. In this paper, the author introduces the real exchange rate as a control variable to capture the relative price effects. Hence, we have:

Hypothesis 7: The real exchange rate will have a positive impact on Vietnamese export and have different impacts on the export of different product groups.

Heo and Kien (2009), Nguyen Bac Xuan (2010), Ruzita, Zarina and Norma (2009), Kim (2010) confirmed the importance of ASEAN integration with its members in their paper. Jayasinghe and Sarker (2007) show that regional economic integration has deep impacts on trade. Hence, we give the most important hypothesis: *Economic integration has significantly influenced Vietnam's trade flows*. We test the hypothesis with three integrations namely AFTA, ATIGA, GMS (Greater Mekong Sub region). We define '*economic integration*' broadly enough to include any lateral trade agreements. Therefore, we have the following hypotheses.

Hypothesis 8: AFTA will have a positive impact on Vietnamese export and have different impacts on the export of different product groups.

Hypothesis 9: ATIGA will have a positive

impact on Vietnamese export and have different impacts on the export of different product groups.

Hypothesis 10: GMS will have a positive impact on Vietnamese export and have different impacts on the export of different product groups.

From the theory and the necessity of testing some hypotheses stated above, we construct the model as follows:

$$EX_{ij} = A \times \left(GDP_{it} \times GDP_{jt}\right)^{\beta_1} \times POP_{it}{}^{\beta_2}$$
$$\times POP_{jt}{}^{\beta_3} \times DIS_{ij}{}^{\beta_4} \times ER_{ijt}{}^{\beta_4} \times$$
$$e^{\beta_6 \times BORDER} \times e^{\beta_7 \times LANDLOCK} \times$$
$$e^{\beta_8 \times AFTA} \times e^{\beta_9 \times ATIGA}$$
$$\times e^{\beta_{10} \times GMS} \times e^{u_{ij}t} \quad (1)$$

Then after taking the natural log of model (1), we have model (2):

$lnEX_{ij} = \beta_0 + \beta_1 ln(GDP_{it}*GDP_{jt}) + \beta_2 lnPOP_{it} + \beta_3 lnPOP_{jt} + \beta_4 lnDIS_{ij} + \beta_5 lnER_{ijt} + \beta_6 BORDER + \beta_7 LANDLOCK + \beta_8 AFTA + \beta_9 ATIGA + \beta_{10} GMS + u_{ijt}$ (2)

In which:

EX_{ij}: is the export value of group k from Vietnam to country j in year t

k receives the value: 0; 1; 2; 3; 4; 5; 6; 7; 8 as SITC code, besides, k also receives the value of primary products (total sum of Vietnamese export value of SITC 0; 1; 2; 3; 4) and manufactured products (total sum of Vietnamese export value of SITC 5; 6; 7; 8)

A: Trade-attractive/ restrictive coefficient of trade flow between Vietnam and country j

GDP_{it}, GDP_{jt}, POP_{it}, POP_{jt}: Gross Domestic Product and population of country j (Vietnam) respectively in year t

DIS_{ij}: is the geographical distance between Vietnam and country j

ER_{ijt}: is the real exchange rate USD/VND in year t (the value of USD in VND)

LANDLOCK: is a dummy variable and receives value of 1 if the trading country j is landlocked, 0 if otherwise.

BORDER: is a dummy variable and receives value of 1 if country j and Vietnam share a common land border, and receives value 0 if vice versa.

AFTA: is a dummy variable and receives value of 1 if after 2003 and ATIGA will be 1 for the years following years 2010. The author chose those years as it was in these years a significant tariff elimination of FTAs had been practically undertaken in Vietnam.

GMS: is a dummy variable and receives value of 1 if country j and Vietnam are members of the GMS simultaneously and 0 otherwise at time t.

4. Data

The model is estimated with the data from the period from 1997 to 2015. The value of the export of different product groups is generalized based on SITC classification with the data collected from the Vietnam General Custom Office (here we only consider 9 groups of SITC classification; those are: SITC 0; 1; 2; 3; 4; 5; 6; 7; 8 and 2 bigger groups that are primary and manufactured product groups. The data of GDP in current USD are collected from the General Statistics Office of Vietnam (GSO), and population are collected from World Bank data. The data of economic integrations are collected

from different sources. The data of geographical distance are from Dao Ngoc Tien (2010). The data of exchange rate value are collected from IMF.

5. Results and discussion

The author estimates the gravity model for Vietnam over a period of 19 years, from 1997 through 2015 with the other 9 trading partners in ASEAN. The objective of the study was to examine the determinants of exports of Vietnam to ASEAN.

Tables 1 and 2 present descriptive statistics and correlation analyses for the main variables included in the analysis. The correlation coefficients' matrix reveals that most of the independent variables had low correlations (less than 0.5) with the dependent variables except for GDP_{ijt} (0.6811) and POP_{jt} (0.5281). Meanwhile, among the independent variables, it was observed that most of the variables produced low coefficients, except for DIS_{ij} and LANDLOCK (0.7250). In addition, most of the in-

dependent variables had positive relationships with the dependent variable, except for the GMS which had a negative correlation with exports (r = 0.0782).

The objective of the study was to examine the determinants of service export in selected developing Asian countries. The method used for estimating the model was a static linear panel analysis which consists of pooled ordinary least square regression (OLS), fixed and random effects. However, to choose the best model, several tests needed to be performed. The first test was the Breusch and Pagan Lagrangian multiplier (LM), which was used to choose between random effects and pooled OLS. The results from the Breusch-Pagan test indicated a preference for a random effects model to pooled OLS in the estimation model. As there are country-specific effects, the pooled OLS model shown in Table A (see Appendix) was considered to be unacceptable. (P_value <0.05)

Next, the Hausman test was carried out to

Table 1: Summary statistics

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
$lnEX_{it}$	171	19.36	2.29	9.79	22.33
$lnGDP_{ijt}$	171	6.42	0.09	6.22	6.57
$lnPOP_{it}$	171	18.235	0.063	18.124	18.334
$lnPOP_{jt}$	171	16.719	1.839	12.644	19.367
$lnDIS_{ij}$	171	7.266	0.538	6.167	8.017
$lnER_{it}$	171	-5.420	3.458	-9.725	-0.281
BORDER	171	0.22	0.42	0	1
LANDLOCK	171	0.89	0.32	0	1
AFTA	171	0.68	0.47	0	1
ATIGA	171	0.32	0.47	0	1
GMS	171	0.44	0.49	0	1

Source: Author's calculation

Table 2: Correlation coefficient between the variables

	$lnEX_{it}$	$lnGDP_{ijt}$	$lnPOP_{it}$	$lnPOP_{jt}$	$lnDIS_{ij}$	$lnER_{it}$	BORDER	LANDLOCK	AFTA	ATIGA	GMS
$lnEX_{it}$	1.0000										
$lnGDP_{ijt}$	0.6811	1.0000									
$lnPOP_{it}$	0.4293	0.5968	1.0000								
$lnPOP_{jt}$	0.5281	0.5038	0.0451	1.0000							
$lnDIS_{ij}$	0.1228	0.5243	0.0000	0.0999	1.0000						
$lnER_{it}$	0.2011	-0.1900	0.0019	0.3867	-0.3711	1.0000					
BORDER	0.0289	-0.5810	0.0000	-0.2097	-0.6971	0.6681	1.0000				
LANDLOCK	0.0931	0.4456	0.0000	0.2188	0.7250	-0.4754	-0.6614	1.0000			
AFTA	0.3342	0.4822	0.8194	0.0366	0.0000	-0.0069	-0.0000	-0.0000	1.0000		
ATIGA	0.3620	0.4996	0.7863	0.0358	0.0000	-0.0003	0.0000	0.0000	0.4615	1.0000	
GMS	-0.0782	-0.4162	0.0000	0.1032	-0.8748	0.4191	0.5976	-0.3953	0.0000	-0.0000	1.0000

Source: Author's calculation

choose between random effects and fixed effects. The result in Table B (see Appendix) clearly shows that the null hypothesis failed to be rejected (P_value = 0.1467 > 0.05), and therefore it was concluded that the random effects model was the appropriate model.

Before using the random effects model, it was necessary to perform a diagnostic test on the serial correlation. This was done by performing Wooldridge's serial correlation test. Table C (see Appendix) shows that the null hypothesis of no first order autocorrelation is rejected if p is less than 0.05. The result was p = 0.4113 > 0.05, indicating that there is no significant serial correlation of the residuals. Thus, the best model was the random effects model (REM).

We apply the random effects model to account for the censored data. We pool all of the data from 1997 to 2015 in all of the regressions.

The result in Table 3 shows that with Hypothesis 1, GDP_{ijt} which measures the economies of scale, is seen to have a positive sign in the export equation. The coefficients of the GDP_{ijt} variable are positive and are significant for all product groups (except SITC 4). So we can conclude that if the GDP of Vietnam and the GDP of a country importing goods from Vietnam increase then the export value of all product groups increase.' In other words, holding all other independent variables constant, a 1% increase in GDP_{ijt} causes a 72,57 percent increase in SITC 3 products exports of Vietnam and SITC 4 increases the least (4,28 percent).

For the variable of Vietnam's population, as can be seen in Table 3, the coefficients of $lnPOP_{it}$ have the signs that are varied for different product groups. In detail, if POP_{it} in-

Table 3: Estimation result (REM)

Variable	Primary product group					Manufactured product group			
	SITC0	SITC1	SITC2	SITC3	SITC4	SITC5	SITC6	SITC7	SITC8
$lnGDPit_{jt}$	37.923***	39.938***	41.916***	72.570***	4.284	23.151***	25.749***	49.280***	36.326***
	(12.73)	(9.41)	(12.47)	(18.15)	(0.49)	(12.14)	(10.78)	(14.72)	(15.14)
$lnPOP_{it}$	-18.357***	-10.319	-17.119***	-31.338***	7.893	5.587*	5.191	-10.926**	-5.489
	(-4.00)	(-1.59)	(-3.36)	(-5.61)	(0.80)	(1.88)	(1.40)	(-2.11)	(-1.46)
$lnPOP_{jt}$	0.1717	0.027	-0.093	-0.262	1.148***	0.687***	0.703***	0.244*	0.335***
	(1.50)	(0.16)	(-0.69)	(-1.53)	(3.20)	(9.11)	(7.63)	(1.89)	(3.57)
$lnDIS_{ij}$	-3.443***	-1.009	1.928*	2.825***	5.046**	-0.693	1.901**	-4.464***	-0.168
	(-3.56)	(-0.76)	(1.81)	(2.41)	(2.18)	(-1.11)	(2.41)	(-4.07)	(-0.21)
$lnER_{it}$	-0.073	-0.125	-0.219***	-0.398***	-0.851***	-0.268***	-0.423***	-0.158*	-0.379***
	(-0.98)	(-1.23)	(-2.61)	(-4.00)	(-4.38)	(-5.59)	(-7.06)	(-1.89)	(-6.25)
BORDER	5.721***	6.605***	4.830***	12.349***	9.729***	6.150***	6.818***	5.649***	6.908***
	(10.38)	(9.18)	(7.79)	(17.65)	(8.46)	(17.17)	(15.33)	(9.05)	(15.33)
LANDLOCK	2.975***	0.828	-3.069***	-2.147*	-0.115	1.114*	-2.316***	2.739***	-0.171
	(3.27)	(0.67)	(-3.06)	(-1.94)	(-0.05)	(1.90)	(-3.13)	(2.66)	(-0.23)
AFTA	-0.119	0.115	-0.874**	-0.214	-0.054	0.055	-0.312	-0.569	-0.839***
	(-0.31)	(0.23)	(-2.05)	(-0.47)	(-0.07)	(0.22)	(-1.01)	(-1.31)	(-2.69)
ATIGA	0.266	-0.286	-0.242	-2.249***	1.812***	-0.413*	-0.207	-0.438	-0.534*
	(0.73)	(-0.60)	(-0.61)	(-5.35)	(2.69)	(-1.78)	(-0.71)	(-1.07)	(-1.80)
GMS	-3.839***	-1.254	1.101	1.589*	2.085	-0.905*	1.259**	-2.916***	-0.139
	(-5.24)	(-1.23)	(1.37)	(1.79)	(1.18)	(-1.92)	(2.10)	(-3.53)	(-0.23)
Constant	128.343	-49.505	46.608	103.799	-223.540	-244.078***	-270.213***	-74.254	-123.708*
	(1.63)	(-0.45)	(0.54)	(1.11)	(-1.39)	(-4.80)	(-4.27)	(-0.84)	(-1.92)
F	571.60	319.85	332.20	601.23	192.77	1384.77	1006.02	738.77	742.47

Notes:

*	: p value lower than 10%
**	: p value lower than 5%
***	: p value lower than 1%
( )	: z statistic value
SITC 0	: Food and live animals
SITC 1	: Beverages and tobacco
SITC 2	: Crude materials, inedible, except fuels
SITC 3	: Mineral fuels, lubricants and related materials
SITC 4	: Animal and vegetable oils, fats and waxes
SITC 5	: Chemicals and related products, n.e.s
SITC 6	: Manufactured goods classified chiefly by material
SITC 7	: Machinery and transport equipment
SITC 8	: Miscellaneous manufactured articles

Source: Author's calculation

creases, then the export value of SITC 0 (food and live animals), SITC 1 (beverages and tobacco), SITC 2 (crude materials, inedible, except fuels), SITC 3 (mineral fuels, lubricants and related materials), SITC 7 (machinery and transport equipment) and SITC 8 (miscellaneous manufactured articles) all decrease while the export value of the others increase. In other words, Vietnam's population has much negative impact on the Primary product group rather than on the Manufactured product group. SITC 3 and SITC 0 have levels decrease the most, 31,34 percent and 18,36 percent respectively. Hence, with Hypothesis 2, POP_{it} has a different effect on different product groups.

For the variable of the importing countries' population, as can be seen in Table 3, the coefficients in all models are positive (except SITC 2 and SITC 3). In other words, the greater the population of the importing country, the greater the value of exports that Vietnam can export to that country. This indicates that the direction of positive impacts on Vietnamese exports on population in the import partner transgresses the direction of all negative impacts from an increase in domestic production restricting imports from other countries. Moreover, as the forceful impact on population in the importing country on export value happens for SITC 4 and SITC 6, we can give reason for the necessity of Animal and vegetable oils, fats and waxes in SITC 4 and Manufactured goods classified chiefly by material in SITC 6 — the intensity of production using these goods as raw material inputs. Because of that, the enlargement of population in the importing country leads to a sharp increase in the supply of labor to widen the production of labor-intensive production as

well as demand for the essential goods for life. Hence, it raises demand for this group rapidly. From that, this factor forces the importation of these groups from Vietnam. Beside that, when adding up all effects, the level of impacts on the importing country's population on Vietnam's export value in manufactured products is greater and more significant than in the case of primary products. This result reaffirms the different effects of an importing country's population on Vietnam's export of different products. The similarity in exports of ASEAN countries in the primary product group is high, such as in Thailand and Vietnam who have the highest competition for the primary product group in ASEAN.

With regard to geographical distance, this determinant has different impacts on different product groups. In detail, geographical distance has a negative impact on the export value of SITC 0, SITC 1, SITC 5, SITC 7, SITC 8 and has a positive impact on the export value of SITC 2, SITC 3, SITC 4, SITC 6. Comparing impacts of this determinant on the export value of different product groups manifests the compliance with economic theory and shows the strongest impact of this factor in the model for SITC 0 (food and live animals) in particular and for the primary product groups in general. This fact is reflected in high absolute values of negative coefficients with a low level of p value (p value is smaller than 1% means a high level of significant explanation of geographical distance in the models). To clarify this fact, we give the reason that the quality of food and live animals is influenced much more by transportation time in comparison with that of other groups, so the further the geographi-

cal distance, the much less the export value of these products of Vietnam than in the case of other products. This result reflects that the further the distance from the importing country to Vietnam, the more difficulty there is in the export of Vietnam's products, then the lower the export value. In contrast with many recent papers for other countries showing the fader role of geographical distance due to advances in transportation and telecommunication, this result reveals the ineffective operation of the transportation system as well as telecommunications in Vietnam and matches the advanced expectation.

In consideration of exchange rate's influences, the coefficients are negative in all product groups and the p values of the variables are mostly lower than 5% and 1% (except SITC 0 and SITC 1). Nonetheless, in the model for the group SITC 0 (Food and live animals) and SITC 1 (Beverages and tobacco), the p value of the variable's coefficient is greater than 10%; this means that the variable is not significant in explaining changes in the export value of groups SITC 0 and SICT 1. It can be explained that the products in group SITC 0 are essential consumption products, so the elasticity of demand for these products with respect to price is not high. And as a consequence, the role of the exchange rate is blurred in the variation of the export value of this group while it is very important in the case of other groups. As for the Exchange rate variable, the impact is stronger in the case of the manufactured product group than in the case of the primary product group. Similar to the above explanation, the fact is that the elasticity of demand for manufactured products with respect to price is relatively higher than that of primary products. This implies that devaluation of the VND leads to a reduction in Vietnam product groups' export. This contradicts the theory that a low value of domestic currency leads to higher exports. However, the major portion of Vietnam's exports depends on imports of intermediate inputs. Higher prices of these inputs might increase the price of exported products and thus reduce exports. For this reason, we can see hypothesis 3 is irrational, the depreciation of the Vietnamese dong makes the export value of different Vietnamese export groups decrease differently.

The next variable in the models is common border. This determinant has a positive impact on the export value of all groups showing the highest level of significance as well as the greatest absolute value of coefficients in the table. Indeed, this variable has a correlation with the variable of geographical distance. However, because of its representation for many other factors, such as similarity of tradition, of culture, of neighbor relationship this variable is still remains in the models. And the result indicates the positive impacts of this factor as expected. In other words, Vietnam's export value of different product groups to the countries sharing a common border is greater than others in conditions of *ceteris paribus*. In more depth, the export value of primary products is influenced much more than manufactured products. This fact is shown in the value of p being lower than 1% and the high value of the coefficients at 12.349 for SITC 4 and 9.729 for SITC 5, while these numbers in the case of the manufactured product group are only approximately 6. Hence, with this hypothesis, $BORDER_{ij}$ has a positive affect on all product groups.

Similarly, with regard to LANDLOCK, this determinant has a different impact on different product groups. Vietnam and trading countries which share sea access have a positive affect on the export value of product groups SITC 0, SITC 1, SITC 5, SITC 7 and have a negative affect on the export value of product groups SITC 2, SITC 3, SITC 4, SITC 6, SITC 8. So, the export value of primary products is influenced much more than manufactured products. In detail, the export value of SITC 2 is negatively influenced the highest with a level of reduction of 3,069 percent when LANDLOCK changes 1 unit. It can be explained that for landlocked countries, efficient sea transportation is important for successful integration into international markets. Vietnamese seaports are high in potential but weak in practice. The operation of the Vietnamese port system is only better than three other countries (Myanmar, Cambodia, Brunei). So, Vietnam's sea transportation does not promote efficiently export of the products group.

With regard to the variable of regional economic integration, this factor in the models for different product groups has coefficients varied in many directions.

Both AFTA and ATIGA aim to promote trade in the region by reducing barriers to intra-ASEAN trade. The result shows that these two variables have different impacts on different product groups in which the export value of primary products is influenced much more than manufactured products. The coefficients are negative in most product groups and the p values of the variables are mostly higher than 10%.s This result reflects that influences of free trade often are two-sided. On the one hand, free trade helps to create large markets and encourage production and exports. Under the CEPT Agreement, ASEAN member states give each other preferential tariff rates of 0-5%. This helps Vietnamese products access a regional market that incorporates many substantial advantages: a population of more than 600 million, convenient transportation systems and relatively moderate requirements on product quality. Moreover, the reduction in import tariffs or duties lowers investment costs, thereby enhancing the competitiveness of Vietnamese products in the regional market. On the other hand, if the domestic economy as a whole is not strong and competitive enough, many economic sectors may forfeit even in the home market. Put simply, the home market will shrink and lots of enterprises that are rather weak and uncompetitive will be in danger of bankruptcy. Besides, throughout the realization of CEPT, changes in the trade structure will also arise and originate trade losses. The reason is that the regional trade liberalization allows intra-regional trade at lower prices due to lower tariff rates. Meanwhile, the same products produced by a non-ASEAN country at lower or equal production costs may become more expensive. This blocks inflows of goods from non ASEAN countries into Vietnam, thereby inducing a loss in taxation revenue (import duties) and raising import prices instead of lowering these. According to many economic researchers, compliance with CEPT will enhance Vietnam's ASEAN import and export value with lower increases in exports than in imports.

The Greater Mekong Subregion (GMS) comprises Cambodia, the Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand,

Viet Nam, and Yunnan Province and Guangxi Zhuang Autonomous Region in the People's Republic of China (PRC). Rapid growth in the GMS countries has been fueled partly by greater integration with the rest of the world. However, the estimated results show that the GMS variable has different effects on different product groups. In detail, the export value of primary products is influenced negatively much more than manufactured products. Specially, SITC 0 (Food and live animals) is negatively influenced the highest with the level of reduction being 3,839 percent when GMS changes 1 unit. The reason is that the smaller GMS economies—the CLM countries (Vietnam)—still largely export primary and low value-added goods, such as garments. This fact, combined with the low degree of intra-industry trade in these countries, makes it evident that the CLM countries are not yet part of the regional production networks for the assembly of electronics, machinery, and transport equipment. In this context, improving regional connectivity through hard infrastructure and through trade and transport facilitation will not only help integrate the CLM countries into production networks but also help them move up the value chain.

6. Policy implication

Based on the discussion above, this part of the paper will present a combination of groups of solutions aimed at spurring the export value of all product groups of Vietnam.

The solutions for the supply of goods for exporting

The first point of this sub section is given based on the result of the positive impact of Gross Domestic Product (GDP) of both Viet-nam and other countries' imports on the export of all groups, especially for the case of manufactured goods. This result implies that if the Vietnamese economy transforms its structure more in to this sector, the contribution of GDP to export will be stimulated and there will be many more products for export than otherwise.

Secondly, as can be seen from the estimation result part, Vietnam's population does not contribute much to export due to low productivity, so we need to increase the effectiveness of this factor. We needs to enhance labor productivity in all aspects by all means: improve the quality of training human resources; develop the education service systems; construct a reasonable training program structure; and quickly solve the problem of the lack and low quality of labor in the production of the sectors which are for export.

Thirdly, it is necessary to move the export product structure of Vietnam into the manufactured group. This point comes from the fact that the export growth of primary groups cannot remain at a constant level when the GDP of importing countries grows because of the specific characteristic of this group. Moreover, the ability of Vietnam to produce these goods (mostly are raw materials and fuel) is also at the level of upper restraint. Thus, we need to move the concentration of export into the group of textiles, footwear, electronic products, and computer and article products… which are the goods having potential and high price indices for export. The concentration should be put into both the quantity and quality of these products. However, together with moving the concentration, we still need to boost the quality of the primary group because of restraints in

forcing export quantities means that the only way to retain a high export value for them is to increase their quality with a higher price.

Fourthly, improve the competitive advantage of domestic firms. Economic integration brings many benefits to the Vietnamese economy, and it also poses challenges for Vietnamese enterprises. Lowering tariffs and other trade barriers will stimulate Vietnamese exports, but also opens local Vietnamese markets to stiff competition from foreign firms. Improving domestic competitiveness is a vital priority for Vietnam. The problem set includes the following items: (i) most Vietnamese firms do not have enough market information because information channels are inadequate. Business plans are often based on very limited experience and on personal feelings. Business plans not founded on facts and solid experience can be ruinous for the enterprises following them; (ii) approximately 90% of Vietnamese enterprises are small. Vietnam lacks large, multinational firms and the country is generally unable to benefit from economies of scale in commerce; (iii) most private companies in Vietnam operate on limited capital. Capital shortages dictate that enterprises will not have enough money to improve equipment and infrastructure. This in turn dictates that Vietnamese companies will never be able to compete in areas where modern equipment and techniques are required in order to be competitive; (iv) management capability in Vietnamese enterprises is very weak, and labor skill levels are low. Human resources are a very important factor for success in any company. Although significant numbers of Vietnamese personnel have been trained in advanced countries to date, a great deal of work

remains to be done in this area.

In the present era of trade agreements and economic integration with trading partners, Vietnamese firms must be prepared to change rapidly. They must constantly update market information and seek new markets. The Vietnamese government must make the business environment more transparent, and must develop easily accessible, highly reliable business information channels. Personnel training in advanced countries must be expanded, and the government must provide financial support for enterprises facing capital shortages and stiff foreign competition.

The solutions impacting on demand of goods

The average ASEAN GDP-weighted growth rate since 2000 has been 5.2% per annum - this is notable not just because it is faster than the global average of 3.8% per annum, but also because of its stability. The GDP of ASEAN countries will expand in the future, as along with its stable footing, intra-regional ASEAN trade will grow quickly. Vietnam's export to ASEAN countries will increase. Vietnam needs to gain opportunities, tariff barriers will be lifted; non-tariff barriers will be reduced to facilitate the movement of Vietnamese goods, services, capital and skilled labor within the ASEAN region. Not only will an opportunity to access and expand the intra-regional market, with around 625 million people and an annual GDP of USD 3 trillion, be opened up, ASEAN is also an intersection of many bilateral trade agreements between the region and external partners and other regions across the world. Hence, businesses can access external markets with great economic scale, such as China, the

Republic of Korea, Japan, Australia, New Zealand, India and Hong Kong via existing FTAs of ASEAN+1, and the ASEAN-Hong Kong Agreement and the Regional Comprehensive Economic Partnership (RCEP) in the future.

Besides, the results show that importing countries' population has positive impacts on product groups export. So, Vietnam should priority focus on export markets with large populations in the regional area of ASEAN. A higher population means a bigger market, and more potential customers will bring more chances for Vietnamese exports.

The solutions for increasing trade - attractive factors and reducing trade - restrictive factors

Firstly, based on the result of distance's negative impacts on export values, Vietnam needs to develop a transportation system and infrastructure to facilitate export, especially for primary products, which are influenced most negatively by geographical distance. The Vietnamese government should assist exporting enterprises by improving public infrastructure, developing sea transportation and simplifying existing customs clearances.

Secondly, because the factor of sharing a common border has a positive impact on all groups, Vietnam should exploit firstly all markets that it shares a common border with, especially the Laos market and Cambodian market. With the common border, we have many advantages such as close distance, similarity of culture leading to similar demands for goods, close neighbor relationship and close cooperation of politics. These factors easily remove barriers to trade for Vietnam and make exports flow more smoothly to neighboring countries

than to others.

Thirdly, managing the exchange rate to promote export. The exchange rate is a very important tool for controlling the trading process. The depreciation of domestic currency against foreign currencies will theoretically cause an increase in domestic exports and a reduction in imports because the price of export goods in the international market will be cheaper, and the price of imported goods in the domestic market will become more expensive. Vietnamese policy makers have used the foreign exchange rate as a tool to control the trading problem. They have often depreciated the exchange rate with the goal of reducing the trade deficit. But depreciating the exchange rate does not really increase exports, but rather just reduces imports a bit. In addition, depreciating the Vietnamese domestic currency causes many problems, including currency dollarization, gold hoarding versus necessity spending, and distrust of the domestic currency. Many Vietnamese firms require payment in dollars to protect themselves from exchange rate depreciation. And many Vietnamese find other investment channels to protect their currency value, such as buying gold or foreign currency or assets. Although the interest rate for the dollar is very low, many people prefer saving dollars over VND savings. Since the result is the negative impact on export value due to the depreciation of the Vietnam dong, the implication here is that Vietnam should give careful consideration in devaluing the domestic currency. The application of this method needs a careful consideration of other negative consequences—such as inflation or the retaliation of other countries. Thus, we need to use this policy in a flexible way suitable to

a particular situation as well as with different objects of economic development in different periods. The currency depreciation policy must be replaced by other solutions to make prices cheaper and to enlarge the export market. Technology transfers and upgrades, training more highly skilled labor, greater focus on R&D efforts, helping enterprises build their brands, helping enterprises access new markets, all are superior strategies to simple currency depreciation.

The empirical study shows that the progress in the integration of Vietnam in terms of trade volume since the establishment of AFTA and then ATIGA is fairly modest among the ASEAN member countries. Therefore, accelerating exports to ASEAN and establishing a trade balance are considered as a one of the most critical issues for Vietnam for years to come. On the one hand, Vietnam should endeavor to deepen its export volume, especially of manufactured and semi-manufactured goods, and to concentrate on directly commercialized goods instead of goods for re-export, in order to strengthen export efficiency. On the other hand, Vietnam should effectively set out requirements on exports to ASEAN in exchange for imports from ASEAN. Most of the imported goods from ASEAN are now motorbike parts and fertilizers. For example, Vietnam should ask exporting countries to import Vietnamese goods, such as

rice, peanut core, and cashews, etc. Importantly, these two policies should be accompanied by a further continuing enhancement of product quality so that Vietnamese products can be firmly traded in the entire ASEAN market so the severe competition of imported goods from ASEAN does not impede domestic sectors. Generally speaking, AFTA does not have a direct impact on the import-export relations of Vietnam. Equivalently, AFTA will not create any extremely quick momentum or fundamental changes for Vietnam's trade unless there are improvements in the structure of domestic production. However, together with movements in economy and society, domestic demand for consumer goods will change. Over the past few years of "*Doi moi*", these changes have been seen to be considerably large both in terms of structure and quantity. Vietnam should take advantage of ASEAN's Free Trade Agreements. Since 2012 ASEAN has been in negotiations with its six FTA partners to establish a Regional Comprehensive Economic Partnership that would cover India, Korea, Japan, China, Australia and New Zealand, in addition to all ASEAN member states. The bloc has also begun FTA talks with the European Union. Acting independently of the bloc, a handful of ASEAN members—Brunei, Malaysia, Singapore and Vietnam - are involved in the wide-ranging Trans-Pacific Partnership (TPP) negotiations, which are expected to be completed in 2013.

APPENDIX

Table A: The Breusch and Pagan Lagrangian multiplier

```
     Breusch and Pagan Lagrangian multiplier test for random effects

             EXPORT[ID,t] = Xb + u[ID] + e[ID,t]

             Estimated results:
                                        Var        sd = sqrt(Var)

                 EXPORT  │    5.248395           2.290937
                      e  │    .4571509           .6761294
                      u  │    .4454627           .6674299

             Test:   Var(u) = 0
                                   chibar2(01) =     8.20
                                   Prob > chibar2 =   0.0021
```

Source: Author's calculation

Table B: Hausman test

```
. hausman fe re

                  ───── Coefficients ─────
                   (b)          (B)            (b-B)       sqrt(diag(V_b-V_B))
                   fe           re          Difference          S.E.

       GDPijt  │  6.726813     17.00513      -10.27832        3.981006
         ER1   │  .2028364     .0538663      .1489701         .0382682
        AFTA   │  .1276903     -.199797      .3274873            .
       ATIGA   │  .298421      -.0268816     .3253026            .

                         b = consistent under Ho and Ha; obtained from xtreg
             B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                    chi2(4) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                           =       6.80
               Prob>chi2 =      0.1467
               (V_b-V_B is not positive definite)
```

Source: Author's calculation

Table C: Wooldridge's serial correlation test

```
Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
    F(  1,      8) =      0.751
          Prob > F =      0.4113
```

Source: Author's calculation

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