DETERMINANTS OF VIETNAM’S EXPORTS: A GRAVITY MODEL APPROACH

By

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I confirm that this independent study has been carried out under my supervision and it represents the original work of the candidate.

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I would like to express my deep appreciation to Dr. Wanida Ngienthi, my research advisor, for her guidance and valuable suggestions during the entire duration of my research work. Her advice has been a great help in the completion of my paper.

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Hai Tho, Nguyen
November, 2013


ABSTRACT

This research paper employed the gravity model to investigate and analyze the determinants of Vietnam’s exports to its forty major exporting markets over the period of seventeen years, from 1995 to 2011. The Hausman test showed that the fixed effects model was the most appropriate approach to estimate the gravity regression. The results showed that Vietnam’s exports patterns followed the basic gravity model. In other words, Vietnam’s exports increased as its GDP and importing countries’ GDP increased. In contrast, transportation costs, as proxied by geographic distance, were found to have a negative impact on Vietnam’s exports. Vietnam’s FDI was surprisingly found to have a significantly negative relationship with Vietnam’s exports. The research’s results asserted the negative relationship between exports and real bilateral exchange rate, indicating that the depreciation of Vietnam Dong against the currencies of importing countries stimulated its exports. Importing countries’ GDP per capita and the Free Trade Agreements dummy variable were found to have no statistically significant influence on Vietnam’s exports. The results of this paper can be beneficial to the Vietnamese government and exporting companies in setting their exports goals and policies.
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CHAPTER I

GENERALITIES OF THE STUDY

1.1 Background of the Study

In 1986, DoiMoi – an economic and political reform policy was launched in Vietnam, which marked its transition from central planning and self-isolation to market mechanism and integration into the global economy (Tuan, 2009). In the early stages, major focuses of this policy were removing self-imposed barriers in order to liberalize the domestic market, and attracted new foreign investments. As presented in Figure 1, Vietnam’s trade openness index was increasing over the period 1995-2011, which showed that Vietnam’s economy was more integrated into the world economy and the world trade over time.

Figure 1.1: Vietnam’s trade openness index (Trade/GDP ratio)

Source: Vietnam’s General Statistics Office (2013a)
Since Vietnam opened its economy to the world, exporting activities have contributed a significant pie to its economic growth (Dang, 2010). In the hard time of economy, exports have helped to lift up the Gross Domestic Product (GDP) (Anh, 2012). As presented in Figure 2, exports have constantly increased its contribution to Vietnam’s GDP, especially in 2011 with about 78%.

**Figure 1.2: Percentage of Vietnam’s Exports to GDP**

![Bar Graph showing percentage of exports to GDP](chart.png)

Source: World Bank (2013a)

Vietnam has comparative advantages in exporting crude oil, textiles and garments, wooden products, agriculture products, leather shoes, fisheries, and electronic products. However, those products are easily affected by a reduction in price of competitors, notably China (Trung, 2013). Trung (2013) also pointed out that Vietnam’s exports would face many difficulties in the future because those products are suffering from a demand slowdown in the world.

This leads to a need for conducting a comprehensive research paper on what factors affect Vietnam’s exports, so that the Vietnamese government may generate
more suitable policies or solutions to improve its current exports situation. There were researchers identifying the determinants of Vietnam’s exports in the past using various research models. Most commonly identified factors are exchange rate, economic growth rate, GDP of importing countries, inflation rate, and inward FDI (Xuan & Xing, 2006, Hanh & Duc, 2009, Trang, Tam, & Nam, 2010).

The United States (U.S.), Europe, China, Japan, ASEAN, and some other countries (as listed in the appendix) are major exporting markets of Vietnam, which usually account for 80%-90% of Vietnam’s total exports value each year (Vietnam’s General Statistics Office, 2013b). This paper focused on finding out the determinants of Vietnam’s exports by using the Gravity model on data collected from 1995-2011 on these forty main exporting markets as listed in the appendix.

1.2 Statement of the Problem

Since export is considered as an engine of economic growth (Senhadji & Montenegro, 1999), it is important to conduct a research on finding out factors that might have an impact on exports of Vietnam. There has been empirical papers previously conducted on this topic. However, the results varied. Differences in results come from the fact that those researches were conducted over different periods of time, used different sample sizes, or used different research models. This paper conducted a comprehensive study on the possible determinants of Vietnam’s exports to its forty main exporting markets using the data from 1995 to 2011 in order to assert the results by using Gravity model. The newest available data were used so as to provide the most relevant and updated results.

Besides commonly considered variables of gravity model- GDP, GDP per capita, Distance, and Free Trades Agreements, this paper expanded its study to other two factors including Vietnam’s FDI and real bilateral exchange rate. The gravity model was chosen because it has been one of the most successful applications in the empirical trade (Bac, 2010).
1.3 Research Objectives

The study was designed to investigate the factors that have an impact on Vietnam’s exports by applying the gravity model.

1.4 Research Questions

What are the determinants of Vietnam’s exports by applying the gravity model?

1.5 Scope of the Research

Seven independent variables were taken into consideration about their potential effect on Vietnam’s exports to forty major exporting markets. This included Vietnam’s GDP, Vietnam’s FDI, distance from Vietnam to importing countries, importing country’s GDP, importing country’s GDP per capita, real bilateral exchange rate, and a dummy variable – FTAs between Vietnam and importers. The forty countries were selected because of their significant contribution to the total value of Vietnam’s exports each year. The research was conducted based on the newest available 17-year data (from 1995 to 2011) in order to provide the most relevant and updated results.

1.6 Limitations of the Research

a) The study has not covered all possible determinants

There were more than seven factors that have been identified in this study. These factors might have an impact on Vietnam’s exports. However, this study has not covered all factors. For example, competition from other countries’ exports of similar products might be a significant factor that affects Vietnam’s exports, such as China’s and Thailand’s. However, this factor was not taken into consideration in the
study. Under this research, impacts of those unmentioned factors were assumed to be minor or insignificant. Actually, this is an inevitable issue for all researches.

b) The study has only covered Vietnam’s forty major exporting markets

There are more than forty countries to which Vietnam exports. However, this study has not covered all of them due to lack of data during the examined period. This might not draw an exact picture about the determinants of Vietnam’s exports, but it is the closest image that can be done because the sample includes all top importers of Vietnam’s exported products.

1.7 Significance of the Study

The results of this study might be beneficial to the Vietnamese government in identifying which factors have positive and negative impacts on Vietnam’s exports. Therefore, the government can take appropriate actions to achieve their desired exporting goals through those factors. The study result may also be useful in the Vietnamese government’s plan of action for its future export activities. In other words, as they see potential changes in those determinants of exports in the future, they can better adjust their exporting strategies or plans consequently.

Exporting firms are the second group that can benefit from this paper. Exporting firm can enhance their exporting plans by anticipating or following changes in those determinants.

1.8 Definition of Terms

Exports: Exports represent the value of all goods and services that are provided to the rest of the world (World Bank, 2013a).

Gross Domestic Product: It is defined as the market value of all final goods and services produced within a country in a given period of
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<td>GDP per capita</td>
<td>It is calculated by dividing the gross domestic product by midyear population (World Bank, 2013b).</td>
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<tr>
<td>Free Trade Agreements:</td>
<td>They are forms of trade pacts between countries, which are set to eliminate tariffs, quotas and other trading barriers between those countries (Kepaptsoglou, Karlaftis, &amp; Tsamboulas, 2010).</td>
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<td>Real Bilateral Exchange Rate:</td>
<td>Bilateral exchange rate is the price at which the money of one country is exchanged for that of another country (Moffett, Stonehill, &amp; Eiteman, 2009). A bilateral real exchange rate is calculated as the product of the nominal exchange rate and relative price levels in each country (Ellis, 2001).</td>
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<td>Foreign Direct Investment:</td>
<td>“FDI is an investment of foreign assets into domestic structures, equipments, and organizations” (Aslanov, Gasimov, &amp; Isayeva, 2010)</td>
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CHAPTER II
REVIEW OF RELATED LITERATURE AND STUDIES

This section presents theories that are relevant and helpful in determining factors affecting Vietnam’s exports. More importantly, results and findings from various empirical studies on the determinants of exports in both Vietnam and other countries are discussed in details. Since this study emphasizes on the gravity model, the literature review focuses more on this model and empirical papers applying it.

2.1 Theoretical Review

2.1.1 Comparative Advantage Theory

Comparative advantage theory states that each country would be specialized in producing particular products for which it possess absolute advantage, then it can exchange those products for goods which are produced cheaper in other countries (Moffett et al., 2009). This theory provides a basis for explaining and justifying why international trade- import and export occurs, and why particular countries are most suitable for exports of particular goods and services. Clearly, a nation’s export is induced by its owing distinct advantages in production, such as cheap labor cost, high technology, etc. in comparison with other countries.

2.2 Article Review

2.2.1 Gravity Model

The gravity model was first introduced by Timmergen (1962) and Linneman (1966) to explain the international flows of trade. However, only empirical evidence was provided at that time. Later, it has been widely adopted by various researchers to analyze patterns and performance of international trade. Despite of its lack of
theoretical foundation, the gravity model has brought considerable empirical robustness and explanatory power for depicting trade flows, said Porojan (2001).

The model applies the universal gravitation law that was discovered in 1687 by Newton who proved that any two objects exert a gravitational force of attractive on each other. The magnitude of the force is proportional to the product of the gravitational masses of the objects, and inversely proportional to the square of the distance between them. This law was further applied to bilateral trade between two countries which states that the bigger and closer countries are to each other, the more trade will be conducted between them (Eita, 2008).

In McCallum’s study (1995), which is the basic foundation for this research paper’s model, he studied exports from each Canadian province to other provinces or to states in the U.S. using the 1988 data. The model is generalized below in linear form:

\[ \ln X_{ij} = \alpha + \beta_1 \ln Y_i + \beta_2 \ln Y_j + \beta_3 \delta_{ij} + \beta_4 \ln d_{ij} + \varepsilon_{ij}, \]

where \( X_{ij} \) is the exports from country i to country j; \( Y_i (Y_j) \) is the GDP of the country i (j); \( \delta_{ij} \) is a dummy variable that is equal to unity if trade is between two Canadian provinces and zero otherwise; \( d_{ij} \) is the distance between any two provinces or states. He found out that the domestic trade among Canadian provinces is 22 times larger than the cross-border trade between the Canadian provinces and the U.S. states. This is due to the border effects (U.S.-Canada). In other words, trading activities between two studied destinations were affected by the distance between them.

In case of Vietnam, Bac’s research paper (2010) is found to be closest to this study since he also applied gravity model on a panel data from 1986 to 2008 covering 15 largest exporting markets of Vietnam. He developed two gravity model- static and dynamic one. His models were modified from models of McCallum (1995), and Harris and Matyas (1998). The static gravity model is represented as follows:

\[ \ln \text{EXPO}_{it} = \Phi_1 + \Phi_2 \ln \text{INC}_t + \Phi_3 \ln \text{PINC}_{it} + \Phi_4 \ln \text{REMT}_i + \Phi_5 \text{ASEAN}_{it} + \Phi_6 \text{EXCH}_{it} + \varepsilon_{it}, \]

where \( \text{EXPO}_{it} \) is Vietnamese exports to country i in the year t; \( \text{INC}_t \) (\( \text{PINC}_{it} \)) is Vietnamese income (importing country’s income) proxied by GDP in the year t; \( \text{REMT}_i \) is the distance from Ho Chi Minh city to the biggest economic centre of country i; \( \text{ASEAN}_{it} \) is a dummy variable that is equal to unity if country i is the
member of ASEAN and 0 otherwise, $EXCH_{it}$ is the average real exchange rate between Vietnam’s currency and country i’s currency. The dynamic gravity model was modified by adding the independent variable- $EXPO_{it-1}$, which is Vietnam’s exports to country i in year t-1. The results showed that the dynamic model could fit the data better. There is a positive correlation between Vietnam’s exports and its importers’ income. Transportation costs (proxied by distance) had a significantly negative effect on Vietnam’s exports. Other factors, such as exchange rate and ASEAN membership also played an important role in determining Vietnam’s exports.

Additional variables were also included. For instance, in their researches, Bergstrand (1985) included population size, Oguledo and Macphee (1994) added price variable, and Harris and Matyas (1998) added exchange rates, into the model. In this study, besides basic variables- GDP and distance, other variables, which are discussed in the following part, are added in order to improve the basic formulation and better explain the dependent variable.

### 2.2.2 Dependent Variable

The dependent variable in this paper is Vietnam’s exports value to each forty major exporting markets. There are some empirical researches done to find out the factors determining exports of Vietnam. Factors which have positive impacts on Vietnam’s exports are commonly recorded as Vietnam’s GDP (Bac, 2010), Vietnam’s FDI (Xuan & Xing, 2006), importing country’s GDP (Bac, 2010) and income per capita, etc. On the other hand, factors having an inverse relationship with Vietnam exports are commonly found to be Bilateral exchange rate (Hanh & Duc, 2009), and Distance from Vietnam to its exporting markets (Bac, 2010), etc.

### 2.2.3 Independent Variable

Independent variables are classified into export side factors and import side factors.
Export side factors

Those factors reflect the export supply capacity of the exporting country, which include exporting country’s GDP, exporting country’s FDI, real bilateral exchange rate, and a dummy variable – FTAs between exporting country and each importing country. According to Fugazza (2004), countries having superior supply conditions are anticipated to export more.

2.2.3.1 Exporting country’s GDP

GDP is considered as a proxy of economic mass, which is a basic variable of gravity model. Bhagwati (1988) noted that an increment in GDP is generally corresponded by an expansion of trade. This can be understood in a way that when a nation produces more products, their exporting capacity will also increase.

Most empirical papers around the world support the idea that GDP has a positive impact on exports. In his paper, Eita (2008) found out that an increase in Namibia’s GDP caused exports to increase during the examination period of 1998-2006. In a more recent study, Aslanov et al. (2010) also found out that an increase in GDP led to higher exports, and vice versa, of three countries in South Caucasus, including Azerbaijan, Georgia and Armenia. Aurangzeb (2012) got the same result in Pakistan but basing on a longer time series data from 1981 to 2009. Majeed and Ahmad (2006) also conducted their studies in 75 countries and the results were asserted again that there is a positive relationship between GDP of a country and its exports.

2.2.3.2 Exporting country’s FDI

There has never been a single conclusion about the effect of FDI on export from previous studies because they showed different results. Some papers concluded that FDI inflow has a positive impact on a national exports while other found negative or insignificant impact.
It was found out that trade between South East Asian countries and the United States and Japan is positively impacted by inward FDI (Linda & Michael, 1998). Gunawardana and Sharma (2009), and Pemasiri and Sharma (2010) also pointed out that inward FDI has a significant positive influence on Australian manufacturing exports in the long-term. Specifically for Vietnam, Xuan and Xing (2006) concluded that FDI is one of the major factors that led to the rapid growth of Vietnam’s exports from 1990-2004. Hanh and Duc (2009) got a similar result. It states that higher FDI lead to higher export from 1990-2007. Some studies (Lipsey& Weis, 1984; Anwar & Nguyen, 2011) further showed that FDI and export are supportive of each other.

In contrast, Jeon (1992) and Sharma (2000) proved a negative relationship between exports of the host country and its inward FDI in Korea and India respectively. It is explained that those foreign-funded enterprises want to obtain the domestic market share by moving products for exports back to that host country (Liu &Shu, 2003). Furthermore, the relationship was found to be insignificant in Central and Eastern European countries by Hoekman and Djankov (1997), and in Ethiopia by Taye (2009).

2.2.3.3 Real bilateral exchange rate

Exchange rate is a fundamental determinant of a country’s trade. Therefore there are numerous empirical studies being conducted on how this variable would affect a country’s exports. In fact, some studies show positive impact of a national currency depreciation on its export while others show no impact. There are various results from previous research papers.

In their papers, Chen, Rau and Chiu (2011), and Aljebrin (2012), supported the idea that a fall in currency value makes costs of domestically produced goods lowered, which consequently enhances competitiveness in export in China and Saudi Arabia, respectively. In their research about Pakistan’s exports, Najia and Irfan (2012) also proved that the nation’s currency value influence its export volume inversely. In their papers, Tilak and Tan (1998) further explained that an appreciation in national currency would damage exports. However, it would be reduced due to the existence of high import content in the exporting products. For Vietnam specifically, Hanh and
Duc (2009) concluded that a real depreciation of Vietnamese currency versus the foreign currency led to increments in exports basing a panel data from 1990 to 2007.

The results do not always show that there is an inverse relationship between exports of a country and its currency value (proxied by bilateral exchange rate). In fact, in many papers, it was proven that there is no causality between these two variables. For instance, Miyao (2003) found no causality between exchange rate and exports in the mid 1980s in Japan, while Alam (2010) also found no impact of a real depreciation of Taka on exports of Bangladesh.

2.2.3.4 FTAs between exporting country and each importing country

FTAs have been widely used among countries in order to facilitate trading or reducing trading barriers among them, such as North American Free Trade Agreement (NAFTA), and ASEAN FTA. Predicting effects of the FTAs on trade among involved parties has become one of major application of the gravity model (Baier & Bergsrand, 2007). Most research papers showed that the existence of FTAs helped increase exports the (trading) value of a country to its FTA partners.

Assarson (2005) found out that South Africa’s exports to the European Union increased by 75% between 1999 and 2004 due to the creation of European Union – South Africa free trade agreement. In another paper, Korinek and Melatos (2009) showed that the creation of FTAs increased the trade of agricultural products (proxied by exports) among those countries involved, by applying the gravity model. Hur, Alba, and Park (2010) also proved in their researches conducted in 96 countries covering the period 1960-2000 that FTAs have a significant positive influence on exports between FTA partners.

However, it was interestingly found that Vietnam’s exports were affected negatively by the ASEAN free trading agreements (Bac, 2010). This study also applied the gravity model on a data period of 1995-2006. This could be explained that exports of Vietnam to ASEAN are basically underexploited. In his research, Hatab et al. (2010) even found that the regional trade agreements could not help in determining exports volume of Egyptian agricultural products (i.e. there is no statistically significant relationship between exports and trade agreements).
Import side factors

These factors describe the accessibility of foreign markets and their importing capacity. Redding and Venables (2003) proved that supply capacity conditions and foreign market access are equally vital for export development of a country. Import side factors are comprised of importing country’s GDP, importing country’s GDP per capita, and distance.

2.2.3.5 Importing country’s GDP

While exporting country’s GDP represents productive capacity of exporters, importing country’s GDP measures absorptive capacity of importers (Hatab, Romstad, & Huo, 2010). Even if there has been conflicts in results of empirical papers on the relationship between the exports of one country with the GDP of its trading partners, a positive relationship between those two variables are expected to have.

In most researches applying the gravity model, the results revealed that an increase in importing country’s GDP would lead to an increase in the export volume of the exporting country. For example, in the study, which tested 20 countries including European Union members, Chile and four members of Mercosur plus, Martinez-Zarzoso and Nowak-Lehman (2001), by gravity model, found out that GDP of importing countries has a positive effect on export value of exporters. In the case of Vietnam, Bac (2010) again confirmed that the importing country’s GDP has a positive relationship with exports (of Vietnam), by applying the gravity model. In other studies, using different models, the results still supported the positive relationship between these two variables. For instance, Ong, Yoong, Lim, and Tong (2009) found out that the real GDP of Japan and the US have a positive impact on Thailand’s real exports, while Anh and Thang (2008), and Tien (2009) found similar results in Vietnam.

However, it was surprisingly found in another research done by Trang et al. (2010) that GDP of importing countries do not affect Vietnam’s exports of different
product groups much. Their paper also used the gravity model with a panel data from 2004 to 2008 on Vietnam’s 61 importing countries.

2.2.3.6 Importing country’s GDP per capita

Importing country’s GDP per capita is a proxy of country developing and market potential (Fugazza, 2004). It is normally expected that an increase in GDP per capita of importing country will lead to a greater demand for products from the exporter, said Hatab et al. (2010).

There are various results regarding the relationship between exports of a country and GDP per capita of its importers. The variety in the empirical results comes from the fact that different countries exporting different products, which are consequently influenced differently by GDP per capita of their importing partners.

Hermawan (2011) applied both standard and augmented gravity model to find out the determinants of Indonesia’s textile products exports. The paper found out that there was a positive and significant relationship between trading partners’ per capita income (proxied by total GDP/population) and Indonesia’s exports of textile products.

In contrast, Eia (2008) found out that an increase in importer’s GDP per capita led to a decrease in Namibia’s exports to its 38 trading partners basing on annual data from 1998 to 2006. In other words, there is an inverse relationship between the two variables in Namibia.

In their studies, Hatab et al. (2010) found out that Egyptian agricultural exports to their major trading partners from 1994 to 2008 were not statistically influenced by the importer’s GDP per capita. Even if this study only covered Egyptian agricultural exports rather than total exports, it could still be a good reference for Vietnam because agricultural products are also one of the country’s major export products.

2.2.3.7 Distance

Distance between an exporter and its importers is used as a proxy for transportation costs. This is the basic variable of the gravity model. It is normally
stated that as countries stay far from each other, the transportation costs between them are higher. Consequently, they tend to trade less.

Eita (2008) proved in his study that Namibian exports decreased as the distance got larger. Hatab et al. (2010) found in their research that transportation costs, proxied by distance, influenced Egyptian agricultural exports negatively, based on time series data from 1994-2008. Weldemariam (2009) and Orindi (2011) also found out that exports reduced as distance between them and their importers got larger in Ethiopia and Kenya, respectively. In the case of Vietnam, Bac (2010) concluded in his research which was conducted from 1991 to 2006, that an increase in geographical distance between Vietnam and its trading partners tends to reduce Vietnam’s exports to those countries. Similarly, Rahman (2010) found out that the distance had a negative, but insignificant, impact on Bangladesh’s exports. His study was conducted on a panel data of Bangladesh’s 31 major trading partners from 1972 to 1999. All of the above papers applied the gravity model.

Table 2.1 summarizes the findings about the relationship between the dependent variable, which are exports, and independent variables, which are Vietnam’s GDP, Vietnam’s FDI, distance from Vietnam to importing countries, importing country’s GDP, importing country’s income per capita, real bilateral exchange rate, and a dummy variable – FTAs between Vietnam and importers, from the above-mentioned empirical researches.

Table 2.1: Summary of Relationship between the Dependent Variable and Independent Variables

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Relationship with the Dependent Variable- Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td></td>
<td>Eita, 2008</td>
</tr>
<tr>
<td>2. Exporting</td>
<td>Lipsey and</td>
</tr>
</tbody>
</table>
| Country’s inward FDI | Weis, 1984  
Linda and Michael, 1998  
Xuan and Xing, 2006  
Gunawardana and Sharma, 2009  
Hanh and Duc, 2009  
Pemasiri and Sharma, 2010  
Anwar and Nguyen, 2011 | Sharma, 2000  
Djankov, 1997  
Taye, 2009 |
|---|---|---|
| 3. Real Bilateral Exchange Rate | Tilak and Tan, 1998  
Tri, 2006  
Khedhiri and Bouazizi, 2007  
Chen et al., 2011  
Aljebrin, 2012  
Najia and Irfan, 2012  
Hanh and Duc, 2009 | Miyao, 2003  
Alam, 2010 |
| 4. Free Trade Agreements | Korinek and Melatos, 2009  
Hur, Alba, and Park, 2010  
Assarson, 2005 | Bac, 2010  
Hatab et al., 2010 |
Khedhiri and Bouazizi, 2007  
Anh and Thang, 2008  
Ong et al., 2009  
Tien, 2009  
Bac, 2010  
Ibrahim, 2011  
Aljebrin, 2012 | Trang et al. 2010 |
Hatab et al., 2010 |
| 7. Distance | | Eita, 2008  
Rahman, |
• Weldemaria, 2009
• Hatab et al., 2010
• Bac, 2010
• Orindi, 2011

Referring to findings and results of empirical papers about the relationship between exports and each independent variable, Table 2.2 describes an expectation about the relationship between Vietnam’s exports and each considered independent variable in this study. It is predicted that Vietnam’s exports will have a significantly positive relationship with Vietnam’s GDP, Vietnam’s FDI, importing country’s GDP, importing country’s GDP per capita, real bilateral exchange rate, and FTAs variables. In contrast, Vietnam’s exports are anticipated to have a significantly negative relationship with distance variable.

Table 2.2: Expectations of the Relationships between the Dependent Variable and Independent Variables

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Expected Relationship with Vietnam’s exports</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td>1. Vietnam’s GDP</td>
<td></td>
</tr>
<tr>
<td>2. Vietnam’s FDI</td>
<td></td>
</tr>
<tr>
<td>3. Real Bilateral Exchange Rate</td>
<td></td>
</tr>
<tr>
<td>4. Free Trade Agreement between Vietnam and its forty exporting markets</td>
<td>X</td>
</tr>
<tr>
<td>5. Importing country’s GDP</td>
<td></td>
</tr>
<tr>
<td>6. Importing country’s GDP per capita</td>
<td></td>
</tr>
<tr>
<td>7. Distance</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author (2013)
CHAPTER III
RESEARCH METHODOLOGY

This chapter describes in details the process of data collection, methodology, and hypotheses of the research.

3.1 Data Collection

The annual data covered forty importers for the period from 1995 to 2011 with one dependent variable and six independent variables, and a dummy variable (a total of n = 680, N = 40, and T = 17). All variables were expressed in natural logarithm except the real bilateral exchange rate and the dummy variable. The forty major importers of Vietnam are listed in the appendix, which altogether contributes approximately 80%-90% of Vietnam’s exports each year during the examination period.

The dependent variable, Vietnam’s exports to each country, were collected from Vietnam’s General Statistics Office (http://www.gso.gov.vn). While the data on GDP, GDP per capita, nominal bilateral exchange rate, Consumer Price Index (CPI), and FDI were collected from World Bank database (http://data.worldbank.org). Since the nominal bilateral exchange rate between Vietnam Dong and other currencies were not available, they were calculated indirectly by dividing the VND/ 1USD rate for X/1USD, where X is the number of an importing country’s currency units per one unit of USD. The real bilateral exchange rate was calculated using the following formula developed by Ellis (2001):

$$r_{i,t} = e_{i,t} \times \frac{P_{i,t}}{P_{t}}$$

where $P_t$ is the consumer price index of Vietnam at time $t$; $P_{i,t}$ is the consumer price index of foreign country $i$ at time $t$; and $e_{i,t}$ is the nominal bilateral exchange rate between Vietnam dong and foreign currency $i$ at time $t$, which is expressed as the number of Vietnam Dong units per one unit of foreign currency $i$. The base year for CPI is 2005.
The dummy variable- FTAs was especially collected from Vietnam Trade Promotion Agency (http://www.viettrade.gov.vn/en/). The distance between Hanoi and other studied capital cities were taken from the Indo’s website (http://www.indo.com/distance/).

3.2 Methodology

3.2.1 Specifications of the model

Bac’s model (2010) is the most relevant foundation for developing this paper’s model. Two more variables were added, which are Vietnam’s inward FDI value and GDP per capita of importing countries. The FTAs and distance variables were slightly modified from Back’s study.

FDI has been commonly studied in empirical papers and usually found to have positive impacts on exports. Inwards FDI is expected to improve production capacity of Vietnam, which consequently enhances its exporting capacity. Including FDI into the model is anticipated to better explain the dependent variable – Vietnam’s exports. Importing country’s GDP per capita is another variable that was added into the model. Instead of the economic mass (proxied by GDP), the income level of residents in exporting countries (proxied by GDP per capita) was also considered to see how this variable influences Vietnam’s exports.

Bac (2010) considers whether the studied trading partner is a member of ASEAN or not, whereas in the present paper, the free trade agreements between Vietnam and the studied trading partners were considered. It is perceived to provide better and wider information about the effects of trade agreements on Vietnam’s exports.

Distance variable used in the present paper is the geographical distance between Hanoi (Vietnam’s capital) to the biggest economic center of each trading partner. In Bac’s paper, Ho Chi Minh city was used instead.

After making adjustments and modifications, the model of the present study is developed as shown below:
\[ \ln \text{EXP}_{it} = \beta_0 + \beta_1 \ln \text{VNGDP}_t + \beta_2 \ln \text{ICGDP}_i + \beta_3 \ln \text{VNFDI}_t + \beta_4 \text{REXCH}_{it} + \beta_5 \ln \text{ICGDPPC}_i + \beta_6 \ln \text{DIS}_i + \beta_7 \text{FTAs}_i + \mu_{it}, \]

where \( \ln \text{EXP}_{it} \) is logarithm of Vietnam’s total exports to country \( i \) at the year \( t \); \( \ln \text{VNGDP}_t \) is logarithm of Vietnam’s GDP at the year \( t \); \( \ln \text{ICGDP}_i \) is logarithm of importing country \( i \)’s GDP at the year \( t \); \( \ln \text{VNFDI}_t \) is logarithm of Vietnam’s FDI at the year \( t \); \( \text{REXCH}_{it} \) is the real bilateral exchange rate between Vietnam Dong and country \( i \)’s currency at the year \( t \); \( \ln \text{ICGDPPC}_i \) is logarithm of importing country \( i \)’s GDP per capita at the year \( t \); \( \ln \text{DIS}_i \) is logarithm of distance between Hanoi capital to each importing country’s biggest economic center; \( \text{FTAs}_i \) is a dummy variable, which is equal to unity if Vietnam and a importing country has any form of FTA, and 0 otherwise; \( \mu_{it} \) is the error term, and \( \beta_0, \ldots, \beta_7 \) are parameters to be estimated. Table 3.1 provides measurements on those variables in details.

Table 3.1: Measurement of Variables

<table>
<thead>
<tr>
<th>Symbols</th>
<th>Descriptions</th>
<th>Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXP(_{it})</td>
<td>Vietnam’s total exports to country ( i )</td>
<td>Total value of Vietnam’s exported goods and services to country ( i ) at the year ( t ), which is measured in US dollar.</td>
</tr>
<tr>
<td>VNGDP(_t)</td>
<td>Vietnam’s Gross Domestic Product</td>
<td>Total value of final goods and services being produced within Vietnam for a specific period of time (a year), which is measured in US dollar.</td>
</tr>
<tr>
<td>VNFDI(_t)</td>
<td>Foreign Direct Investment into Vietnam</td>
<td>Total market value of investment from foreign companies and countries that Vietnam receives for a certain period of time (a year), which is measured in US dollar term.</td>
</tr>
<tr>
<td>REXCH(_{it})</td>
<td>Real Bilateral Exchange Rate</td>
<td>It is measured by multiplying the nominal bilateral exchange rate between Vietnam Dong and the foreign currency ( i ) with a ratio of foreign country’s CPI divided by</td>
</tr>
</tbody>
</table>
Vietnam’s CPI at time $t$.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIS$_i$</td>
<td>Distance between Hanoi to capital city of the importing country $i$ The geographical distance between Hanoi and each importing country’s biggest economic center, which is measured in kilometer term.</td>
</tr>
<tr>
<td>ICGDP$_{it}$</td>
<td>Importing Country $i$’s Gross Domestic Product Total market value of final goods and services being produced in country $i$ at the year $t$, which is measured in US dollar.</td>
</tr>
<tr>
<td>ICGDPPC$_{it}$</td>
<td>Importing Country $i$’s GDP per Capita It is measured by dividing country $i$’s GDP for its midyear population, which is in dollar term.</td>
</tr>
<tr>
<td>FTA$_{it}$</td>
<td>Free Trade Agreements between Vietnam and Importing Country $i$ It is equal to 1 if there is any forms of free trade agreements between Vietnam and each studied forty exporting markets, and 0 otherwise.</td>
</tr>
</tbody>
</table>

### 3.2.2 Estimation process

In this study, it was not necessary to run serial correlation tests because it was only a problem in macro panels with over 20-30 years data (Oscar, 2013). According to Oscar (2013), cross-sectional dependence problem is also not much of a problem in micro panels. Furthermore, unit root tests for micro panels (i.e. small number of time periods and a large number of cross-sectional units), do not receive much concerns from researchers like that for macro panels (Baltagi & Kao, 2000). Therefore, those tests were exempted.

The Breusch-Pagan Lagrange multiplier test (LM test) was run in order to decide whether a random effects regression or a simple OLS regression should be used. The null hypothesis is that variances across entities is zero (i.e. a simple OLS regression is appropriate). If the null hypothesis of LM test is rejected (i.e. p-value is less than 0.05), the random effects regression should be used.

The Hausman test was used to examine whether the random effects is consistent and efficient. If the null hypothesis of Hausman test is rejected (i.e. p-value
is less than 0.05), the random effects is not appropriate and the fixed effects model should be used instead. One of the problems associated with the fixed effects model is that time-invariant variables like distance will be automatically omitted, which is not a case for random effects model. Then the coefficient of distance variable will be especially reported basing on the random effects model.

Heteroskedasticity causing estimators inefficient, is only available to be checked in the fixed effects model. The null hypothesis is that variance is constant. If the null is rejected (i.e. p-value is less than 0.05), there exists the heteroskedasticity issue. The “robust” option was used to control for heteroskedasticity in both random and fixed effects model.

3.3 Research Hypotheses

Each independent variable might or might not have an impact on the dependent variable. In testing this, hypotheses were set for each individual relationship between the independent variable and the dependent variable.

H10: There is no significant linear relationship between Vietnam’s exports and Vietnam’s GDP.

H1a: There is significant linear relationship between Vietnam’s exports and Vietnam’s GDP.

H20: There is no significant linear relationship between Vietnam’s exports and importing country’s GDP.

H2a: There is significant linear relationship between Vietnam’s exports and importing country’s GDP.

H30: There is no significant linear relationship between Vietnam’s exports and Vietnam’s FDI

H3a: There is significant linear relationship between Vietnam’s exports and Vietnam’s FDI.
H4$_0$: There is no significant linear relationship between Vietnam’s exports and Vietnam’s real bilateral exchange rate.

H4$_a$: There is significant linear relationship between Vietnam’s exports and Vietnam’s real bilateral exchange rate.

H5$_0$: There is no significant linear relationship between Vietnam’s exports and importing country’s GDP per capita.

H5$_a$: There is significant linear relationship between Vietnam’s exports and importing country’s GDP per capita.

H6$_0$: There is no significant linear relationship between Vietnam’s exports and distance between Vietnam and importing country.

H6$_a$: There is significant linear relationship between Vietnam’s exports and distance between Vietnam and importing country.

H7$_0$: There is no significant linear relationship between Vietnam’s exports and FTAs dummy variable.

H7$_a$: There is significant linear relationship between Vietnam’s exports and FTAs dummy variable.
This chapter discusses in details the results after estimating the equation based on the methodology. There are two main parts. Part 1 reports the results of the Breusch-Pagan Lagrange multiplier test, Hausman test, and testing for Heteroskedasticity. Part 2 discusses the estimated gravity regression using the preferred model from Hausman test. Relationships between the dependent variable and each independent variable are also analyzed in details in this part.

4.1 Results of the Breusch-Pagan Lagrange Multiplier Test, the Hausman Test, and Checking for Heteroskedasticity

Table 4.1 represents the results of the Breusch-Pagan Lagrange multiplier test. It indicates that a random effects regression is more appropriate than a simple OLS regression (i.e. the null hypothesis of zero variances across entities is rejected).

<table>
<thead>
<tr>
<th>Breusch and Pagan Lagrange multiplier test for random effects</th>
<th>logexp[countryc,t] = Xb + u[countryc] + e[countryc,t]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated results:</td>
<td>Var</td>
</tr>
<tr>
<td>logexp</td>
<td>.656521</td>
</tr>
<tr>
<td>e</td>
<td>.0499073</td>
</tr>
<tr>
<td>u</td>
<td>.095502</td>
</tr>
<tr>
<td>Test: Var(u) = 0</td>
<td>chi2(1)</td>
</tr>
<tr>
<td>p &gt; chi2 = 0</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Table 4.2 represents the Hausman test results, which indicates that the fixed effects model is preferred to the random effects model because the probability is less than 0.05 (i.e. the null hypothesis of a consistent and efficient random effects model is rejected). In other words, the random effects model is suffering from the violation of the Gauss-Markov theorem and end up with biased and inconsistent estimates, in
contrast, the fixed effects still remains unbiased and consistent (Park, 2010). Since the fixed effects model is chosen based on Hausman test results, the time-invariant variable like distance will not be estimated (Oscar, 2013).

Table 4.2: Hausman test results

<table>
<thead>
<tr>
<th></th>
<th>fixed</th>
<th>random</th>
<th>(b-B)</th>
<th>sqrt(diag(V_b-V_B))</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>logvngdp</td>
<td>1.775462</td>
<td>1.715533</td>
<td>0.0099296</td>
<td>0.0691846</td>
<td></td>
</tr>
<tr>
<td>logvnfd</td>
<td>-2.2608017</td>
<td>-3.378508</td>
<td>0.0570491</td>
<td>0.0126177</td>
<td></td>
</tr>
<tr>
<td>ftaa</td>
<td>-0.0363612</td>
<td>0.6328501</td>
<td>-0.0682113</td>
<td>0.0166566</td>
<td></td>
</tr>
<tr>
<td>rexch</td>
<td>9.23e-06</td>
<td>0.0000107</td>
<td>-1.45e-06</td>
<td>1.07e-06</td>
<td></td>
</tr>
<tr>
<td>logicgdp</td>
<td>2.564262</td>
<td>0.637751</td>
<td>1.930502</td>
<td>3.195346</td>
<td></td>
</tr>
<tr>
<td>logicgdppc</td>
<td>-2.405171</td>
<td>-1.518352</td>
<td>-2.253336</td>
<td>0.5081306</td>
<td></td>
</tr>
</tbody>
</table>

Table 4.3: The result of heteroskedascity check

<table>
<thead>
<tr>
<th></th>
<th>fixed</th>
<th>random</th>
<th>(b-B)</th>
<th>sqrt(diag(V_b-V_B))</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>logvngdp</td>
<td>1.775462</td>
<td>1.715533</td>
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<td>0.0126177</td>
<td></td>
</tr>
<tr>
<td>ftaa</td>
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<td>0.6328501</td>
<td>-0.0682113</td>
<td>0.0166566</td>
<td></td>
</tr>
<tr>
<td>rexch</td>
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<td>0.0000107</td>
<td>-1.45e-06</td>
<td>1.07e-06</td>
<td></td>
</tr>
<tr>
<td>logicgdp</td>
<td>2.564262</td>
<td>0.637751</td>
<td>1.930502</td>
<td>3.195346</td>
<td></td>
</tr>
<tr>
<td>logicgdppc</td>
<td>-2.405171</td>
<td>-1.518352</td>
<td>-2.253336</td>
<td>0.5081306</td>
<td></td>
</tr>
</tbody>
</table>

The test result for heteroskedascity is displayed in Table 4.3, which shows that there is a presence of heteroskedascity in this study’s panel data (i.e. p is less than 0.05). In other words, the variance is not constant. As mentioned in the estimation process, the “robust” option can be used to solve for this problem.

Table 4.3: The result of heteroskedascity check

<table>
<thead>
<tr>
<th></th>
<th>fixed</th>
<th>random</th>
<th>(b-B)</th>
<th>sqrt(diag(V_b-V_B))</th>
<th>S.E.</th>
</tr>
</thead>
<tbody>
<tr>
<td>logvngdp</td>
<td>1.775462</td>
<td>1.715533</td>
<td>0.0099296</td>
<td>0.0691846</td>
<td></td>
</tr>
<tr>
<td>logvnfd</td>
<td>-2.2608017</td>
<td>-3.378508</td>
<td>0.0570491</td>
<td>0.0126177</td>
<td></td>
</tr>
<tr>
<td>ftaa</td>
<td>-0.0363612</td>
<td>0.6328501</td>
<td>-0.0682113</td>
<td>0.0166566</td>
<td></td>
</tr>
<tr>
<td>rexch</td>
<td>9.23e-06</td>
<td>0.0000107</td>
<td>-1.45e-06</td>
<td>1.07e-06</td>
<td></td>
</tr>
<tr>
<td>logicgdp</td>
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<td>0.637751</td>
<td>1.930502</td>
<td>3.195346</td>
<td></td>
</tr>
<tr>
<td>logicgdppc</td>
<td>-2.405171</td>
<td>-1.518352</td>
<td>-2.253336</td>
<td>0.5081306</td>
<td></td>
</tr>
</tbody>
</table>

4.2 Gravity Model Estimation Results

Table 4.4 represents the estimated equation by both the random effects model and the fixed effects model. According to Hausman test results in Table 4.2, the fixed effects model is better for estimating the relationships between Vietnam’s exports and other seven independent variables. Accordingly, interpretation of the results focuses more on the fixed effects model.
Table 4.4: Gravity Model Estimation Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Fixed Effects Model</th>
<th>Random Effects Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>logvngdp</td>
<td>1.725462 (8.98) ***</td>
<td>1.715533 (9.84) ***</td>
</tr>
<tr>
<td>logvnfdi</td>
<td>-0.2608017 (-2.81) ***</td>
<td>-0.3178508 (-3.38) ***</td>
</tr>
<tr>
<td>logicgdp</td>
<td>2.564262 (2.11) **</td>
<td>0.6337591 (5.99) ***</td>
</tr>
<tr>
<td>logicgdppc</td>
<td>-2.405171 (-2.01)</td>
<td>-0.1518352 (-0.83)</td>
</tr>
<tr>
<td>logdis</td>
<td>----</td>
<td>-1.070503 (-4.85) ***</td>
</tr>
<tr>
<td>ffas</td>
<td>-0.0343612 (-0.34)</td>
<td>0.0338501 (0.34)</td>
</tr>
<tr>
<td>rexch</td>
<td>9.23e-0.6 (2.34) **</td>
<td>0.0000107 (2.77) ***</td>
</tr>
<tr>
<td>constant</td>
<td>-27.57177 (-3.23) ***</td>
<td>-9.78504 (-6.32) ***</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.7942</td>
<td>0.7841</td>
</tr>
<tr>
<td>Observations</td>
<td>680</td>
<td>680</td>
</tr>
</tbody>
</table>

Notes: ***/**/* significant at 1%/5%/10% level. Z and t-statistics are in parentheses.

Table 4.4 shows that under the fixed effects model, the dependent variable—Vietnam’s exports has statistically significant relationships with five independent variables—Vietnam’s GDP, Vietnam’s FDI, importing country’s GDP, real bilateral exchange rate, and distance because their p-value is less than 0.05. In contrast, it has no statistically significant relationships with importing country’s GDP per capita and FTAs because their p-value is more than 0.05. The detail of the gravity regression results with the fixed effects model are shown in Appendix 2.

The coefficient sign for Vietnam’s GDP variable is reported to be positive as expected. In other words, holding all other independent variables constant, a 1%
increase in Vietnam’s GDP causes a 1.72% increase in Vietnam’s exports approximately. This finding is consistent with the findings of Eita (2008), Bac (2010), and Aurangzeb (2012) that there is a positive relationship between exports of a country and its GDP. Looking at the coefficient of importing country’s GDP, it is also reported to be positive as expected. This means that holding all other variables constant, a 1% increase in importing country’s GDP leads to an approximate increase of 2.56% in Vietnam’s exports. This result is consistent with the findings of Anh and Thang (2008), Tien (2009), and Bac (2010) that there is a positive relationship between the exports of a country and GDP of its trade partners. Under the fixed effects model, the time-invariant variables like distance were automatically dropped. In other words, their effects cannot be estimated. Since distance is one of the main variables of gravity model, its effect should be considered in this paper. Therefore, the coefficient of distance, was taken from the random effects model estimation, and was recorded to be negative as predicted. This finding is consistent with the literature about the gravity model, that as a country stays far from its trade partners (i.e. transportation costs are higher), it tends to trade less and vice versa (Eita, 2008; Hatab et al., 2010; Bac, 2010). These findings of positive relationships between Vietnam’s exports and Vietnam’s GDP, and between Vietnam’s exports and Importing country’s GDP, and negative relationship between Vietnam’s exports and distance, are consistent with the main idea of the gravity model that as the size of economies increases and geographical distance reduces, bilateral trades are increased.

The coefficient of Vietnam’s FDI is found to be negative, which is not the expected result of this study. This result means that holding all other variables constant, a 1% increase in inward FDI into Vietnam causes an approximate 0.26% decrease in its exports. This finding is supported by Jeon (1992) and Sharma (2000). As explained by Liu and Shu (2003) that foreign-funded enterprises might want to obtain and dominate domestic markets rather than exports. Therefore they move products for exports back. This might also be the case of Vietnam where inward FDI is for the purpose of obtaining domestic market rather than exports. Therefore there is a negative relationship between Vietnam’s exports and its inward FDI.

The coefficient for the importing country’s GDP per capita variable is negative. This means that an increase in the importing country’s GDP per capita
causes Vietnam’s exports to decrease. However, as mentioned earlier that the p-value of this variable is more than 0.05 indicating that importer’s GDP per capita is not a statistically explanatory variable for exports (Hatab et al., 2010). This result is not consistent with the study’s expectation.

The FTAs variable is also found to have no statistically significant impact on Vietnam’s exports because the p-value is more than 0.05. This result is contradictory to this study’s expectation. Most of the FTAs of Vietnam are between Vietnam and ASEAN countries, which is considered a small market for Vietnam’s exported products in comparison with non-ASEAN countries like the U.S., European, China, and Japan. As Vietnam is more integrated into trades with non-ASEAN countries than that with ASEAN members, this might explain why the FTAs variable is not statistically significant enough to explain the development of Vietnam’s exports. In other words, trade gains from FTAs has been minimal (Hatab et al., 2010).

The coefficient for real bilateral exchange rate is found to be positive as expected. It means that an increase in the real bilateral exchange rate (i.e. Vietnam dong depreciates against foreign currencies), causes an increase in Vietnam’s exports. This finding is also consistent with most empirical papers, such as Tri (2006), and Hanh and Duc (2009) that there is a negative relationship between a country’s exports and its currency value.
CONCLUSION, IMPLICATIONS AND FURTHER STUDY

After the Doi Moi policy was launched in 1986, Vietnam has become more integrated into the global trades. Parallel to this, Vietnam’s exports have gained more successes and become more important to its economy. Recognizing the importance of exports in Vietnam’s economy, this study was designed to find out the factors influencing Vietnam’s exports to its forty major exporting markets.

The gravity model approach was chosen to find out the factors that have impacts on Vietnam’s exports, which is considered as one of the most successful application in explaining bilateral trades. The period of 1995 to 2011 was chosen because the study geared towards providing the most updated results. Besides basic variables of the gravity model- Vietnam’s GDP, importing country’s GDP and distance, additional variables including Vietnam’s FDI, importing country’s GDP per capita, real bilateral exchange rate, FTAs, were included in order to improve the basic formulation and better explain the dependent variable.

The Hausman test has been conducted and it was found out that the fixed effects model is preferred than the random effects model to estimate the gravity regression. Therefore, the results have been interpreted based on the fixed effects model estimation. The effect of distance variable was especially explained using the coefficient from the random effects model because it could not be estimated in the fixed effects model.

The results have shown that Vietnam’s exports patterns follow the basic gravity model. In other words, Vietnam’s exports increases in proportion to its GDP and importing countries’ GDP, and it decreases in proportion to its distance to those trading partners. The results imply that in order to expand its exports, Vietnamese government and exporting companies should focus on promoting exports to rich economies, which are located in a close distance. Furthermore, since a long distance, which is a proxy of high transportation costs, is a barrier that discourages trade between countries, finding ways to reduce the transportation costs is important in overcoming such barrier. Key points to reduce transportation costs included the improvement of transportation infrastructure as well as logistics system.
Vietnam’s FDI is reported to have a significant negative relationship with its exports. This finding indicates that foreign investments into Vietnam might be for obtaining domestic markets rather than for producing exports. The similar results have been found in other countries like Korea (Jeon, 1992) and India (Sharma, 2000). In fact, this relationship is subject to changes if another research period was chosen because the objectives of foreign-funded enterprises might have changed then. In contrast, the importing countries’ GDP per capita was found to be a statistically insignificant determinant of Vietnam’s exports. This implies that exports follow the GDP pattern centering on the overall economy size, rather than the GDP per capita pattern centering on the richness of residents in the importing countries (Hatab et al., 2010). The FTAs dummy variable was also found to be an insignificant factor in determining Vietnam’s exports. This result indicates that the trades gained from FTAs were too small to explain Vietnam’s exports. The result further implies that Vietnam is under-exploiting its advantages of holding free trade agreements with countries in the region because most FTAs were found to be between Vietnam and ASEAN members. However, the reason might be that most countries in the region are exporting quite similar products. Thus, bilateral trades among them cannot be developed further even if they hold free trade agreements. In short, it is expected that in the future when Vietnam succeeds in signing FTAs with big trading partners, such as the European members and the United States, the FTAs variable can have a more explanatory power to Vietnam’s exports. It is not surprising that the real bilateral exchange rate has a significant and positive relationship with Vietnam’s export. In other words, a depreciation of Vietnam dong versus importing countries’ currencies causes an increase of Vietnam’s exports. This result indicates that in order to achieve its export goals, Vietnamese government can take appropriate actions in response to depreciation or appreciation of its currency against foreign currencies.

In a report done by World Bank (2013c), it shows that Vietnam’s total exports rose by 16% in the first half of 2013 compared to the same period last year. This increase in exports could be projected basing on either its positive relationship with Vietnam’s GDP as found in this study, which is recorded to grow at 5.25% in the second quarter of 2013, or its negative relationship with Vietnam Dong value as proven in this study, which is reported to depreciate by 1.6% over the past 12 months.
(World Bank, 2013c). This shows that up to a certain extent the findings of this study can explain the growth in Vietnam’s exports in the first half of 2013.

Thus, the results of this research paper regarding the determinants of Vietnam’s exports might be useful and supportive for both Vietnamese government and exporting companies in setting their export goals and policies. However, referring the study alone is not enough. In other words, besides the findings of this study, the Vietnamese government and exporting companies should conduct researches on many other aspects related to exports in order to have a better inference. This includes the development of Vietnam’s transportation infrastructures, the effect of domestic demand, or the competition from other exporters, etc. Furthermore, more comprehensive policy recommendations can be configured to improve the performance of Vietnam’s exports in the international market. Also, it should be noted that the costs and benefits of each action should be taken into consideration carefully. For instance, a depreciation of Vietnam Dong might help to increase exports, but it raises the burden of foreign debts on both the government and exporting firms.

Further researches should be conducted on the basis of solving the limitations of this study. It can expand to study more variables, such as competition from China’s exports and the importance of logistics, to provide better inference, or expand the sample size by increasing either number of importing countries or number of time periods to draw more accurate results. The study can also be modified to find out the determinants of Vietnam’s exports to specifically interested exporting market like the U.S. or Japan.

BIBLIOGRAPHY


APPENDIX

1. List of Vietnam’s forty major exporting markets

**ASEAN**
- Cambodia
- Indonesia
- Laos
- Malaysia
- Philippines
- Singapore
- Thailand

**European Union**
- Bulgaria
- Czech Rep.
- Poland
- Austria
- Germany
- Belgium
- Hungary
- Italy
- Netherlands
- Slovenia
- Denmark
- Spain
- France
- United Kingdom
- Sweden

**Others**
- United States
- China
- Japan
- New Zealand
- Australia
- Russian Federation
- India
- Saudi Arabia
- Korea, Rep.
- Hong Kong
- Ukraine
- Norway
- Switzerland
- Canada
- United States
- Mexico
- Algeria
- South Africa

2. Gravity regression with the fixed effects model
3. Gravity regression with the random effects model

| logexp | Coef. | Robust Std. Err. | t | P>|t| | [95% Conf. Interval] |
|---------|-------|-----------------|---|-----|------------------|
| logvngdp | 1.725462 | .1921005 | 8.98 | 0.000 | 1.336902 - 2.114022 |
| logvd | -0.2608017 | .0592899 | -2.81 | 0.006 | -.4643029 -.2733005 |
| ftas | -.0343612 | .0998426 | -0.34 | 0.733 | -.2363119 .1675985 |
| rech | 9.23e-06 | 3.94e-06 | 2.34 | 0.024 | 1.25e-06 .0000172 |
| logicgdppc | 2.564362 | 1.214334 | 2.11 | 0.041 | .108039 5.020485 |
| _cons | 2.405171 | 1.198898 | -2.01 | 0.052 | -4.830171 .0198286 |

**R-sq:** within = 0.7942  
**Observations per group:** min = 17  
**between = 0.1900  
**overall = 0.2239  
**max = 17  
**corr(u_i, X) = 0 (assumed)  
**Random effects u_i ~ Gaussian  
**Wald chi2(7) = 616.69  
**Prob > chi2 = 0.0000

| logexp | Coef. | Robust Std. Err. | z | P>|z| | [95% Conf. Interval] |
|---------|-------|-----------------|---|-----|------------------|
| logvngdpc | .30903399 | .04573329 | 6.75 | 0.000 | .2018299 .4162439 |
| loggan | .22317557 | .04573329 | 4.90 | 0.000 | .13317557 .31317557 |
| logexp | Coef. | Robust Std. Err. | z | P>|z| | [95% Conf. Interval] |
|---------|-------|-----------------|---|-----|------------------|
| logvngdp | 1.175533 | .1742754 | 6.75 | 0.000 | 1.373599 2.075106 |
| logvnfdi | -.3187508 | .0993428 | -3.20 | 0.001 | -.5103752 -.1373263 |
| ftas | .0338501 | .1009871 | 0.34 | 0.737 | -.1640312 .2317821 |
| rech | .0000001 | 3.52e-06 | 0.00 | 1.000 | 3.13e-06 .0000002 |
| logicgdppc | .6337591 | 1.058124 | 5.99 | 0.000 | .4263705 .8411477 |
| logdis | -.510503 | .3203377 | -1.60 | 0.109 | -.110352 -.710652 |
| _cons | 1.070503 | .3203377 | -3.34 | 0.001 | -.6102749 .7502571 |

**R-sq:** within = 0.7942  
**Observations per group:** min = 17  
**between = 0.1900  
**overall = 0.2239  
**max = 17  
**corr(u_i, X) = 0 (assumed)  
**Random effects u_i ~ Gaussian  
**Wald chi2(7) = 616.69  
**Prob > chi2 = 0.0000