The Factors Affecting Trade Balance in Vietnam

Minh Uyen Thi Tran

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The Factors Affecting Trade Balance in Vietnam

MINH UYEN THI TRAN

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ABSTRACT

Currently, the world trade was decreasing very strongly and must face with the influence of financial crisis, civil conflict and natural disasters. In that context, AEC became more attractive with the foreign investors. But, this area was face with the impact of natural disasters and then had significant impact on trade. So, there are many countries in this area must facing with the trade deficits for a long time especially in the poor countries and developing countries. Vietnam is one of country must facing with the trade deficits problems for a long time. In 2011, Vietnam’s exports value were estimated at $96.2 billion, rising 33% and imports value were at $105.7 billion, rising 24.7% compare with last year. There were trade deficits in Vietnam in 2011 but it hit the lowest level within the last 5 years. Namely, it was $9.5 billion, falling 23% compare with last year. Political unstable is one of the reason that limit the foreign investors, facing with a lot of natural disasters problems, there are a lot of multinational corporations in industry and then impact on trade in Vietnam. The main objectives of this study are examined about the factors impact on trade balance in Vietnam including oil price, foreign direct investment (FDI), government spending, domestic price, manufacturing growth rate and agricultural growth rate by using the monthly data during the period 2002 – 2011. The expected benefit of the study are understand the factors that affect trade balance in Vietnam for the relevant parties to improve Vietnam competiveness; And useful for the policy makers to adjust the policies appropriately with the economy’s situation in Vietnam. This study used regression with logarithmic form to determine the impact of six factors on trade balance in Vietnam. And statistical program used to analyze the data. The regression
result showed that there is only domestic price variable impact on trade balance in Vietnam. Domestic price had negative impact on trade balance in Vietnam. The other factors include oil price, foreign direct investment, government spending, manufacturing growth rate and agricultural growth rate had no impact on trade balance in Vietnam. According to the result, there are some recommendations to solve the trade deficits problem in Vietnam. Namely, nowadays Vietnam must import 70% oil and gas in the outside. The government should have the policy to control the demand of oil in the domestic by using the other energies instead improve the operation of producing oil in the domestic. Besides that, the government should keep the policies stable to attractive more investors and should have policies to support export such as investment incentive, taxes incentive. The mainly limitations of this study are including: there might be some missing factors that this study didn’t examined, further research should be adding more; The study used 110 observations, further research should be adding more observations for the analysis; In this study just examine only factors impact on trade balance, it will be beneficial to explain factors impact trade balance if examine the impact of the same set of factors on export and import. Further research should be use export and import as the dependent variables as well.
ACKNOWLEDGEMENTS

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Minh Uyen Thi Tran
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CHAPTER 1

INTRODUCTION

This chapter will present an overview about trade in the world, in AEC and especially in Vietnam in 2011. After that, the factors affecting trade balance in Vietnam will be presented. All of these factors will be explained in the basic contents as the following topics:

1.1 Background of the study
1.2 Objectives of the study
1.3 The scope of the study
1.4 Expected benefit of the study
1.5 The research questions
1.6 Operational definitions
1.1 Background of the study

In the recent year, international trade becomes more important in every economy. And there are many problems that all the multinational enterprises must face. Especially the government, they must know how to control the economy on the right ways.

In 2011, world trade growth decreased very strongly. The global economy was face with the influence of natural disasters, financial uncertainty and civil conflict. Namely, Earthquake in Japan 2010 and flooding in Thailand 2011 were impact on global supply chain. There was an expected the slowdown of in trade after these crisis. Besides that, there was an impact of fears of sovereign default in the euro area weighed heavily in the closing months of the year. The supply of oil is the important factor that affects the world trade. At this time, there was civil war in Libya that reduced the oil supplies and contributed to sharply higher price. All of these factors combined to produce below average growth in world trade in 2011 (World Trade Organization report 2012).

In the context of global economic crisis, Southeast Asian is one of area that is not too much impact on. Global uncertainly, notably reduced confidence in the US fiscal policy and continued Euro-area debt crisis, Asia area, especially Southeast Asian become attractive market for the investors. In 2011, all of the countries in AEC (Asean Economic Community), especially Thailand, were facing with the flooding affected the region adversely. Besides that, the earthquake in Japan also impact on AEC. The Great Tohoku Earthquake had a temporary impact on activity and exports in some countries such as Indonesia, the Philippines and Thailand, but in general the magnitude of the negative impact appears to have been short – time in 2010.

Vietnam is a country that is evaluated one of the large market share in AEC. Total exports in 2011 were estimated at $96.2 billion, rising by 33% compare with last year, became the highest growth within the last 14 years. The impressive figure was resulted from the increase in most item’s prices as well as firm’s attempts to expand the global market share. Besides that, import value in this year reached $105.7 billion, climbing by 24.7% over the same period last year. Owing to the strong growth of exports, 2011 trade deficit was hit the lowest level within the last 5 years. It was $9.5 billion, falling by 23% over the same figure last year. However, the decrease in deficit
was partly because of the deceleration of domestic production. Therefore, deficit reduction was not sustainable (Southeast Asian economic outlook 2011).

So, what factors impact trade balance and what the consequences are. In this study will examine the factors affecting trade balance in Vietnam.

The first factor that affecting trade balance is oil price. Oil is the essential energy resource for production activities in every country, especially in developing countries like Vietnam.

The response of difference economies to an increase in oil price will depend on the quantities of imports in that country, the strength of current account, the control of domestic demand management, the ability of that country to find other energy instead of oil. A country that can response with a high price of oil, limit the import of oil, that country will have more ability to reduce the balance of payment deficits or trade deficits (Velde 2007).

Hassan and Zaman (2012) on their results showed that there is a negative and significant relation between oil prices and the trade balance in both short – time and long – time. It indicates that with the increase in oil price, the cost of materials and capital goods increase and then trade deficits (trade imbalance). Another results showed that, oil price had impact significant especially in poor countries, developing countries and oil importing countries. Poorer countries are more vulnerable to the oil price increase because they are relatively more oil intensive (Velde 2007).

The second factor affecting trade balance is foreign direct investment (FDI). Orr (1991) found the result that an increase in FDI of U.S manufacturing will have positive impact with the trade balance. The same result with Orr, Wilamoski and Tinkler’s (1999) result by using OLS approach showed that, there is a small positive effect on the U.S trade balance with Mexico from increased FDI. Another case in Pakistan, Gulzar (2012) found the same result that FDI influences the trade balance and has a positive impact on the trade balance.

The third factor that could impact on the trade balance is Government spending. Ravn et al., (2007) found that an increase in government spending produces an expansion in output, an expansion in consumption, and decrease of the trade balance. Besides that, with the same result of Ravn et all., (2007), Beetsma et al., (2007) showed that an increase in government spending will lead to an increase in GDP. The trade balance
will be decrease because imports increase and export fall. Thus, the trade balance will be trade deficits.

The fourth factor affecting trade balance is Domestic price. M. Kandil (2009) showed the result that a high price expectation will cause a decrease in export, an increase in import and a decrease in competiveness. Thus a high domestic price will lead a decreasing of trade balance (trade deficits). Wilson and Takacs (1979) found that trade flows adjusted differently to a change in price.

The fifth factor impact on trade balance is Manufacturing growth rate. There were a few studies tell about the impact of this factor on the trade balance. Orr (1991) researched about the manufacturing growth rate of U.S during 1980s. At that time, many investors oversea invest in U.S, especially in manufacturing, which increases the FDI of this country. Thus, manufacturing industry in U.S became developed. This caused an increase in the trade balance of U.S. After that, Gulzar (2011) examined the factors influencing the trade balance of Pakistan. He found that manufacturing in one of factors which had positive impact on trade balance. Namely, when the manufacturing growth rate is increasing, it will lead an increasing on the balance of trade.

The sixth factor impact on trade balance is Agricultural growth rate. Agricultural is one of factor very important in the developing and poor countries. Araji and White (1990) determined about “the impact of agricultural on United States Export”. They found that the export of agricultural products is one of the few areas where the U.S. enjoys positive trade balance. The same result with Araji and White (1990), Gulzar (2011)’s empirical evidence showed that there is impact of agricultural growth rate on the trade of balance. Namely, agricultural growth rate has a positive impact towards trade balance. In the final, agricultural growth rate is one of factor that could help decrease the trade deficits on Pakistan.

This study will determine the factors affecting trade balance only, and will not determine in the services balance area. Especially in two factors, manufacturing growth rate and agricultural growth rate will examine on products. Base on table 1.1 is as the following:
Table 1.1 Import of goods and services

<table>
<thead>
<tr>
<th>Year</th>
<th>Services</th>
<th>Goods</th>
<th>% of Goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>3698</td>
<td>19734</td>
<td>18.74%</td>
</tr>
<tr>
<td>2003</td>
<td>4050</td>
<td>25194</td>
<td>16.08%</td>
</tr>
<tr>
<td>2004</td>
<td>4739</td>
<td>31470</td>
<td>15.06%</td>
</tr>
<tr>
<td>2005</td>
<td>4472</td>
<td>36408</td>
<td>12.28%</td>
</tr>
<tr>
<td>2006</td>
<td>5108</td>
<td>44410</td>
<td>11.50%</td>
</tr>
<tr>
<td>2007</td>
<td>6785</td>
<td>60697</td>
<td>11.18%</td>
</tr>
<tr>
<td>2008</td>
<td>7956</td>
<td>80714</td>
<td>9.86%</td>
</tr>
<tr>
<td>2009</td>
<td>8187</td>
<td>69949</td>
<td>11.70%</td>
</tr>
<tr>
<td>2010</td>
<td>9921</td>
<td>83780</td>
<td>11.84%</td>
</tr>
<tr>
<td>2011</td>
<td>11859</td>
<td>104461</td>
<td>11.35%</td>
</tr>
</tbody>
</table>

Import of services in every year is not significant compare with import of goods. The highest is import of services equal to 18.74% import of goods in 2002 and the lowest is import of services equal to 9.86% import of goods in 2008.

Besides that, the export of goods and services are as the following:

Table 1.2 Export of goods and services

<table>
<thead>
<tr>
<th>Year</th>
<th>Services</th>
<th>Goods</th>
<th>% of Goods</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>2948</td>
<td>16704</td>
<td>17.65%</td>
</tr>
<tr>
<td>2003</td>
<td>3272</td>
<td>20142</td>
<td>16.24%</td>
</tr>
<tr>
<td>2004</td>
<td>3867</td>
<td>25984</td>
<td>14.88%</td>
</tr>
<tr>
<td>2005</td>
<td>4176</td>
<td>31726</td>
<td>13.16%</td>
</tr>
<tr>
<td>2006</td>
<td>5100</td>
<td>39606</td>
<td>12.88%</td>
</tr>
<tr>
<td>2007</td>
<td>6030</td>
<td>48313</td>
<td>12.48%</td>
</tr>
<tr>
<td>2008</td>
<td>7006</td>
<td>62685</td>
<td>11.18%</td>
</tr>
<tr>
<td>2009</td>
<td>5766</td>
<td>57096</td>
<td>10.10%</td>
</tr>
<tr>
<td>2010</td>
<td>7460</td>
<td>71656</td>
<td>10.41%</td>
</tr>
<tr>
<td>2011</td>
<td>8879</td>
<td>95178</td>
<td>9.33%</td>
</tr>
</tbody>
</table>
Base on table 1.2, the export of services is insignificant with export of goods. Namely, the highest is the export of services equal to 17.65% export of goods in 2002 and the lowest is the export of services equal to 9.33% export of goods in 2011. Therefore, this study will examine the factors impact on trade balance in Vietnam.

So, it’s very interesting to examine the same ways or difference ways that all these factors impact on the trade balance in Vietnam.

1.2 Objectives of the study

The objectives of this study are to examine:

(1) the effect of oil price on trade balance;
(2) the effect of foreign direct investment (FDI) on trade balance;
(3) the effect of government spending on trade balance;
(4) the effect of domestic price on trade balance;
(5) the effect of manufacturing growth rate on trade balance;
(6) the effect of agricultural growth rate on trade balance.

1.3 The scope of the study

For this study, the factors that affect trade balance in Vietnam will be examined include: oil price, FDI, government spending, domestic price, manufacturing growth rate, agricultural growth rate by monthly during the period 2002 – 2011.

Especially in recent year, Vietnam start to exploitation the oil, so this might effect on Vietnam’s economy, more clearly this might effect on trade balance in Vietnam that it’s still not available in another research before. Besides that, the economy of Vietnam was opening in these several years, and this is the time to attractive more investors join into Vietnam. So there are benefits to examine how FDI can impact on trade balance in Vietnam.

1.4 Expected benefit of the study

(1) Understand the factors that affect trade balance in Vietnam in order for the relevant parties to enhance the Vietnam competiveness.
Help for the government control the economy in Vietnam, and drive the economy go in the right way. Useful for the people who make the policies to adjust the policies appropriately with the economy’s situation.

**1.5 The research questions**

1. How does the oil price affect the trade balance?
2. How does the FDI affect the trade balance?
3. How does the government spending affect the trade balance?
4. How does the domestic price affect the trade balance?
5. How does the manufacturing growth rate affect the trade balance?
6. How does the agricultural growth rate affect the trade balance?

**1.6 Operational definitions**

**Trade balance:** The balance of trade, or net exports (sometimes symbolized as NX), is the difference between the monetary value of exports and imports of output in an economy over a certain period. It is the relationship between a nation's imports and exports. A positive balance is known as a trade surplus if it consists of exporting more than is imported; a negative balance is referred to as a trade deficit or, informally, a trade gap. The balance of trade is sometimes divided into a goods and a services balance.

**Oil price:** in this study, oil price is the price of selling crude oil in the world per barrel (159 liters)

**Foreign direct investment:** Foreign direct investment (FDI) is direct investment into production in a country by a company in another country, either by buying a company in the target country or by expanding operations of an existing business in that country.

**Government spending:** Government spending (or government expenditure) includes all government consumption and investment but excludes transfer payments made by a state. Government acquisition of goods and services for current use to directly satisfy individual or collective needs of the members of the community is classed as government final consumption expenditure. Government acquisition of
goods and services intended to create future benefits, such as infrastructure investment or research spending, is classed as government investment (gross fixed capital formation). Government expenditures that are not acquisition of goods and services, and instead just represent transfers of money, such as social security payments, are called transfer payments. The first two types of government spending, final consumption expenditure and gross capital formation, together constitute one of the major components of gross domestic product.

**Domestic price:** The price at which a commodity trades within a country, in contrast to the world price. For those commodities not benefitting from some form of price support, the domestic price is determined by supply and demand. For commodities that receive price support, the domestic price is usually set by the loan rate or some comparable support level that serves as a price floor in the marketplace working in conjunction with any import quota that may be in effect.

**Manufacturing growth rate:** In manufacturing, the number of goods that can be produced during a given period of time. Alternatively, the amount of time it takes to produce one unit of a good. In construction, the rate which workers are expected to complete a certain segment such as a road or building. The production rate will depend on the speed at which workers are expected to operate, generally categorized as slow, average or fast.

**Agricultural growth rate:** The amount of increase agricultural that a specific variable has gained within a specific period and context.
CHAPTER 2

LITERATURE REVIEW

There are a lot of factors which affect trade balance that some authors found empirical evidence before. In this chapter will introduce more exactly about some factors that could affect trade balance in Vietnam. Besides that, methodology and model will be used to prove how these factors effect on trade balance. The topics of this chapter as following:

2.1 Theory
2.2 Literature review
   2.2.1 Oil price
   2.2.2 Foreign direct investment (FDI)
   2.2.3 Government spending
   2.2.4 Domestic price
   2.2.5 Manufacturing growth rate
   2.2.6 Agricultural growth rate
   2.2.7 Trade balance
2.3 Conceptual framework and hypotheses
   2.3.1 Conceptual framework
   2.3.2 Hypotheses
2.1 Theory

There are two main relating trade balance including international trade and Specification of the OLS Regression Model.

Firstly is the international trade. According the classical foreign trade theory of Adam Smith and Ricardo, trade presents in every countries with a comparative advantage by providing specialization in production. But the theory “Classical foreign trade theory” had criticized in many countries – many economics. With the result in the real life of these economics, it shows that this theory is not appropriate, especially in the poor countries that want to be developing or developed countries (Serin 1981). That’s mean the hypothesis of foreign trade is not relevant in the developing countries.

Young (1991) estimates that when two countries are engaged in trade, as in the comparative advantage model, developed countries will in a high – tech goods and developing countries will in a low – tech goods. And in the result, the effect of free trade will increase the economic growth in developed countries and decrease the economic growth in developing countries.

According Lamfalussy (1963) showed the effect of export on economic growth include Export – led Growth models. In this theory, Export – led growth is significant for three reasons: (1) Export growth rate is a significant determinant of investment; (2) if export does not increase as much as the need for import, the balance of payment or the balance of trade will inhibitive the economic growth rate; (3) if the national market is more smaller, the foreign demand will be more important for the businessman to reach to the economies scale.

According to Thirlwall and Hussain (1982) economic growth is determined by the income elasticity of import and export demand. If the income elasticity of export is bigger in a country the economy will growth faster.

Secondly is Specification of the OLS Regression Model.

OLS Regression Model:

Ordinary least squares (OLS) is a statistical technique that uses sample data to estimate the true population relationship between two variables.

Recall that:
1) \( E(Y_i \mid X_i) = \beta_0 + \beta_1 X_i \) is the population regression line

2) \( Y_{\hat{(i)}} = b_0 + b_1 X_i \) is the sample regression equation

OLS allows us to find \( b_0 \) and \( b_1 \).

Consider the following scatter plot diagram that shows the actual, observed data points in a sample:

Many lines could fit through these data points. We want to determine the line with the "best fit". Mean that, recall that \( e_i(\hat{ }) \), the residual, represents the distance between the sample regression line and the observed data point, \((X_i, Y_i)\). The line that minimizes the sum of these distances is the one that gives us the best fit.

However, some of the values of the residuals are negative in sign while others are positive. If we sum the residuals, positive values will cancel out negative values so the sum will not accurately reflect the total amount of error.

To solve this problem we square the residuals before we add them together.
The Method of least squares: (OLS) produces a line that minimizes the sum of the squared vertical distances from the line to the observed data points.

\[ \sum e_i^2 = e_1^2 + e_2^2 + e_3^2 + \ldots + e_n^2 \]

where \( n \) is the sample size

The sum of the residuals (unsquared) is exactly zero. (Later, you can use this bit of information to check your work.)

The Specification:
The specification is the selection of explanatory variables and the transformations. The simplest linear model is

\[ Y = \alpha + \beta X + \varepsilon \]

which specifies a linear relationship between the dependent variable \( y \) and the single explanatory variable \( x \).

Nonlinear Relationships:
By transforming the dependent variable or the explanatory variable, the linear model can handle nonlinear relationships. For example, one could alter the simple model above by replacing the explanatory variable \( x \) with the transformed variable \( \sqrt{X} = Z \):

\[ Y = Y + \delta \sqrt{X} + \varepsilon = Y + \delta Z + \varepsilon \]

The transformation specifies a strongly diminishing influence of \( X \) on \( Y \) such that for large values of \( X \) further increases in \( X \) leave \( Y \) virtually unchanged.

Other transformations:

\[ Y = \alpha + \beta \ln(X) + \varepsilon \]

Transforming the Dependent Variable:

One can transform the dependent variable: \( \ln(Y) = \alpha + \beta X + \varepsilon \) to \( \ln(Y) = \alpha + \beta \ln(X) + \varepsilon \) (The log transformation is often applied to all the explanatory variables as well. Such specifications are called log-linear or log-log models).

Linear Model:
\[ Y = \alpha + \beta X + \varepsilon \]

Impact of a unit change in X: \( \frac{dy}{dX} = \beta \). Elasticity = percent change in y for a percent change in X:

\[
\text{Elasticity} = \frac{dY}{dX} \cdot \frac{1}{Y} = \beta \frac{X}{Y}
\]

Log-linear model:

Log-linear models are statistical models for the analysis of qualitative data, then the sample space is finite and the data are usually presented in a contingency table (Fabio 2003).

Log-Log model:

\[
\ln(Y) = \alpha + \beta \ln(x) + \varepsilon
\]

Or

\[
Y = \exp(\alpha + \beta \ln(X) + \varepsilon)
\]

Impact of a unit change in X:

\[
\frac{dY}{dX} = \exp(\alpha + \beta \ln(X) + \varepsilon) \cdot \beta \frac{1}{X} = \beta \frac{Y}{X}
\]

Elasticity:

\[
\text{Elasticity} = \frac{dY}{dX} \cdot \frac{1}{Y} = \beta \frac{X}{Y}
\]

2.2 Literature review

2.2.1 Oil price

Oil is one of the energy get more important position in every economics, especially in the big industrial economies such as United State, Japan. That’s the reason the oil price become a big problem in those economics. Because it impacts on the national economics, and specifically on the imports, exports. There are difference argues created the contradictory result of the impact of oil price on the trade balance. Some argues show that oil price has positive influence on trade balance. Opposite, the
other argues showed that oil price has negative influence or no impact on trade balance (Akpan 2007).

Tsen (2009) showed that an increase in oil price would lead to a decrease or an increase on the trade balance, it depends on that economy is the net oil importing or the net oil exporting. Thus the coefficient of oil price could be a positive or negative sign. Namely, that country is the net oil exporting, an increase in oil price would lead to an increase in trade balance. If that country is the net oil importing, an increase in oil price would lead to a decrease on trade balance. Same result of Tsen (2009), Abeysinghe (2001) showed that, all most of the economies in the research are net oil importers. And there is negative impact on economy growth in both direct and indirect ways. The result also showed that, the impact of oil price on growth may not important for a large economy like U.S but it could have a critical role in small economies or undeveloped economies.

By using the global Macroeconomic models in the period from 1970 to 2000 to find out the impact of higher oil price on the oil – importing countries such as India, Thailand, Philippines, Pakistan, Korea. The results showed that an increase in oil price will lead an increase of production cost of goods and services in that country. And an increase in oil price will lead an increase in the relative price of energy input and putting the pressure on profit. The results also showed that a change of oil price in the long – terms will influence on the finance market. The constant oil price increase will bring a transfer of around 25% of gross domestic product (GDP) from the oil importer to the oil exporter in the global economics for a long time. That’s mean there is a transfer income from oil consumers to the oil supplier across countries (Mussa 2000).

In the other research, Kilian (2007) showed that, an increase in oil price will lead an increase in shipping rates, created a largely inelastic supply of suitable ship, increase the demand for shipping services from the increase of global activity. Or the evidence of Lee and Ni (2002) found that most of the firms in U.S. industries will be shock in the demand of their products rather than shocks in the cost of their production if the price of oil increasing. More clearly, the demand of their products will be decrease when the oil price is increase.
By research about the impact of change of external balance in Pakistan from 1998 to 2002. The result showed that the negative impact of oil price in the export will lead an increase in import price of oil. After that, increase the cost of the industrial raw materials in a high level and reduce the export. The result of analysis also showed that the price shock of oil has negative impact significant on the socioeconomic (Ahmed and Donoghue 2010). In the empirically examine the relationship between oil price and output factor, Malik (2008) showed that there is strong instable relationship between oil price and output. Some countries can decrease the consumption of oil to deal with an increase in the oil price, and decrease the oil – dependent in their countries, save a lot of foreign currencies on oil consumption. The continuity increase in the international oil price will have negative impact on the balance of payment (BOP), on the budget of the government and added the inflation on that economy. Baffes (2007) studied about the effect of oil price on the price of 35 commodities of international trade in the period 1960 – 2005. The results showed that, the fluctuation of oil price will impact significant response on the trade commodities. The relationship between the oil price and primary commodities will be positive.

By determine the impact of the increase in oil and gasoline price, Thanh et al., (2009) showed that, when the oil and gas prices increased will lead a negative impact on demand of the consumers, increase the pressure of the producers to increase the price on production industry.

Mohammad (2010) examined about the impact of oil price on export earning in Pakistan from 1975 to 2008. By using the vector error correction model (VECM), the results showed that the oil price has a negative relationship to export earnings. There is a significant impact on export earnings. The review also shows that an increase in oil price will have negative influence on the current account of Pakistan. And an increase in oil price has a negative influence on export, due to the cost of the goods increase, for example cost of produce, cost of transportation.

Sanchez (2011) examined the effects of rising oil prices on 6 oil – importing countries includes Thailand, Tanzania, Bangladesh, Kenya, El Salvador and Nicaragua from 1990 to 2008 by using dynamic computable general equilibrium model (CGE). The results found similar with the results of Mohammad (2010). It showed that an increase of oil price in the long – run will lead a high cost of goods that produce for export. Decrease export and increase import, worsen the trade balance.
All the literature about oil price above to support for this study and help to find out the effect of oil price fluctuation on the trade balance of Vietnam. In order to analyze the data to find down how can oil price fluctuation impact on the trade balance.

In this study, oil price expects to have a negative affecting the trade balance in Vietnam according to Akpan (2007), Mohammad (2010) and Sanchez (2011).

2.2.2 Foreign direct investment (FDI)

One of the factors could affect trade balance is foreign direct investment. There are a few studies and research that examined about the impact of FDI on trade balance.

There are research examined about the relationship between FDI and Trade balance, bring about an assertion result that there is an effect of FDI on exports (Blomstrom 1988, Pfaffermayr 1994, Lin 1995).

The research in the trade balance effects of foreign direct investment in United State Manufacturing, Orr (1991) showed a lot of result for the impact of FDI on the trade balance. During the latter half of the 1980s, the rapid growth in foreign control of United State manufacturing assets suggest the consequence that FDI is likely impact on the trade balance. One of the realities at that time is the exception for the Japanese investors who established automobile assembly plants in their country, the almost foreign investors generally chose the way to acquiring existing United State firms to enter the United State market rather than to setup the new firms in this market. Estimate about 93% of annual foreign direct investment outlays for manufacturing to acquisition United State firms in this period. The transferring ownership of existing firms doesn’t add directly the capacity of production in the national industry. The FDI through acquisitions seemly not lead to an impact immediately and significantly on import or an expansion on export.

However, the foreign owners expect to improve the profit from the acquired United State firms, the large FDI flows during the latter half of 1980s were increase the important source of investment on United State, especially in manufacturing industrial of United State.

A second important in the impact of FDI flow in the United State trade balance is that the investment on nontrade – goods industries are more heavily than trade goods industries. An investment on nontrade – goods heavily will lead an expansion of
export, besides that these nontrade – goods manufacturing industries seemly not for the result improve the trade balance in the short – terms.

For the effect on export, the other result showed that an increase in foreign ownerships of United State manufacturing firms will lead an expanse significant on export of United State, meaning an increase in FDI will impact an increase on export volume, an increase the nominal value, and finally an increase in trade balance.

More clearly, by examine the role of FDI in promoting economic growth in the industrial countries and developing countries during the period 1970 – 1989, Borensztein et al., (1998) showed that, FDI is an important factor that could become the vehicle of technology transfer which could contribute an increase to economic growth more than domestic investment.

Furthermore in the other research, Feder (1983), Ram (1985), Salvatore and Hatcher (1991) showed that the productivity of exports is increase because that economy exploits and uses the capacity better and the economies of scale better. They also showed that, export has the ability reduce the flowing of foreign currencies to the outside, creating more advantage to import the modern technologies and production methods.

Examine about the impact of foreign direct investment and trade on economic growth, Makki (2004) showed that, FDI has a strong positive impact on trade. FDI is the main factor that could bring more transfer in advanced technologies to developing countries.

For the impact on import, Orr (1991) hypothesized that FDI should lead to lower United State import. But, the empirical results showed that there is no decreasing significant in imports when the foreign ownerships of United State manufacturing increase. And in several years after that when the investment took a place, an increase in FDI will impact an increasing on imports.

The trade balance effects of FDI in selected industries. In the result of statistical analysis showed that there is likely limit impact of FDI in the latter half of the 1980s on trade balance in the long – terms. FDI in the latter half of the 1980s lead an improvement of trade balance in the long – terms (improve $20 billion).

Some researches showed that FDI and export can be substitutes or complements and the effect of FDI on import can’t anticipation (Markusen 1983, Helpman 1984).
In this study, FDI expects to have a positive affecting trade balance in Vietnam according to Orr (1991).

2.2.3 Government spending

In this study will examine the effect of government spending on trade balance. There are a few studies to find out this impact. So, if government spending more than government earning, this mean budget deficits, so what’s happen between the poor countries, the developing countries and the developed countries, especially with a developing countries like Vietnam.

Baxter and King (1993) found that there are some differences between all kinds of economics that impact trade balance. The negative wealth affects an increase in current and future taxes. This result will bring about a rise in labor supply, lower real wages and after that rise in output. This output means the demand in the short – terms. Besides that, an increase of government spending will lead an increase in gross domestic product (GDP) of that national.

The same result of Baxter and King (1993), Ramey and Shapiro (1998) examined about costly capital reallocation and the effect of Government spending. Their results showed that an increase in government spending will have response fail to increase in consumption and real wages. That’s mean when an economy had government spending shock, an increasing in real wages and consumption cannot happen. But, in some cases there are difference results. One of cases is the research of Blanchard and Perotti.

Blanchard and Perotti (2002) had the research the same area with Baxter and King (1993). By using the context of SVAR models, the result showed that with a positive government spending shock, the consumption and real wages will be increase. More particularly with the research in export and import, Blanchard and Perotti showed that, an increasing in government spending shock will lead an increasing on imports and exports very strongly.

The result of Blanchard and Perotti seem difference of Baxter and King (1993), Ramey and Shapiro (1998). Finally, there are impact of public spending (government spending) on consumption and real wages, but how it could impact depend on the specific situation of that economies.
Galí et al., (2007) studied about “Understanding the effects of government spending on consumption”. Their result showed that the consequences of an increase of government spending on the public budget and the consumption depend on Ricardian equivalence is broken or not.

With another research, Monacelli and Perotti (2006) showed the result that there is an equivocal effect on the trade balance towards an increase in government spending. Depending on how falling private consumption are. And depend on the real exchange rate at that time depreciation or appreciation. More clearly, Muller (2004) in their research showed that an increasing in government spending will lead an improving on trade balance. With import, Giuliodori and Beetsma (2004) by using European data, their result showed that, an increasing in government spending will lead an increasing in import.

In this study will find out the affecting of government spending on the trade balance. Namely, government spending is independent variables and the trade balance is the dependent variable. Therefore, government spending could have either a positive or negative affecting trade balance in Vietnam. However, in this study, government spending expects to have a negative affecting trade balance according to Ramey and Shapiro (1998), Blanchard and Perotti (2002).

2.2.4 Domestic price

There are a few of researches to examine the effect of domestic price on the balance of trade. The domestic include the consumer price index (CPI) and the producer price index (PPI). But generally, in almost of research they’re just use the consumer price index (CPI) to find down the impact of the domestic price on the trade balance. An increase or decrease of CPI will impact on an increase or decrease of the demand of the consumers, thus impact on trade balance. Besides that, an increase or decrease of PPI will impact on an increase or decrease of output, and after that impact on trade balance. Kandil (2009) examined the effect of domestic price inflation on Balance of Payment (BOP). The results showed that higher price inflation will lead to decrease competitiveness, decrease export and increase import. But export is not exactly decrease like the result above with an increase in price. In some cases, the result likely is difference. The empirical evidence showed that there is an increase in export even though the price still increasing. In these cases, export likely has more
effect from other factors, not only an increase on price. The import appears in this case to be more dominant in determine the response of the balance of trade towards an increase in price. Imports appear more responsive towards an effect of higher price inflation more than lower price inflation. The evidence showed that, an increase in price for a long – terms will impact import with a random fluctuation in the developing countries. Totally, an increase in the domestic price will effect on an increase of import in a short – terms and long – terms.

However, in the final result, Kandil showed that price inflation doesn’t appear to be an important determinant of the trade balance. Another way, price inflation doesn’t impacts significant towards the trade balance in many developing countries.

Wilson and Takacs (1979) found out the result that there is the response of trade flows towards a change in prices by using quarterly import and export to analysis in six countries include Japan, Canada, Germany, United Kingdom, France and United States from 1957 to 1971 when these countries used the fixed exchange rate regime. The evidence showed that trade flows adjust differently towards a change in prices.

Oskooee (1986) examined that trade flows are more responsive towards change in the relative prices in the long – terms.

So, support by all the literature review above, there is appearance the affecting of domestic price on the trade balance. This study examines the effect of this factor on trade balance in Vietnam – a developing country, and expects a negative affecting of domestic price on trade balance according to Kandil (2009).

### 2.2.5 Manufacturing growth rate

Manufacturing growth rate is one of factor of economic growth rate. Manufacturing growth rate has a role to improve the economy, especially on the trade balance. Orr (1991) studied about the trade balance effects of foreign direct investment in United State Manufacturing. He examined that there is impact of manufacturing on the trade patterns. And there is positive effect of manufacturing on the trade balance. Namely, an increase in manufacturing will lead an increase on the trade balance.

Hussain (2005) suggested that the increase import of machinery is one of the factors responsible for the trouble balance of trade. His evidence empirical showed that the
trade deficit reached 3.5 billion dollar in 9 months because of an increasing in oil price and import machinery.

Gulzar (2011) studied about the factors influencing the trade balance of Pakistan. There are two major which the export source in Pakistan include sports industry and textile industry. And there are many Multinational corporations (MNCs) operate in Pakistan, and the long – term impact come goes beyond, opposite to trade balance. His empirical result showed that, manufacturing growth rate has positive impact on the trade balance, reducing the trade deficits in Pakistan.

So, in this study will examine the affecting of manufacturing growth rate in Vietnam. Maybe there is something the same cases in Pakistan or something difference.

In this study, manufacturing growth rate expects to have a positive affecting trade balance according to Orr (1991) and Gulzar (2011).

2.2.6 Agricultural growth rate

There are a few of studies to find out the impact of Agricultural growth rate on the balance of trade. Agricultural growth rate has an impact significantly on the trade balance, especially on the poor countries, underdeveloped countries or developing countries which has the agricultural growth rate higher more than manufacturing growth rate.

Some research showed that an increase on agricultural productivity will bring more benefit to the producers, as well as the domestic consumers and the foreign consumers of agricultural products. Besides that decreasing imports of agricultural products and increasing export of agricultural products (Araji 1980, Norton and Davis 1981, White 1987, Araji and White 1990).

Thornton (1997) found that there is relationship between agriculture and economic growth that related to trade (include import and export).

Thungsuwan and Thompson (2003) and Vohra (2006) studied about the export – led economic growth. Their result showed that there is a positive impact between economic growth and export agricultural products in the short – terms and long – terms.

Tiffin and Irz (2006) used co-integration approach, panel time series through unit root, Granger causality approach to analysis in 85 countries and found out that
agriculture growth can lead in growth of the Gross domestic products (GDP), especially in the developing countries.

In another research, Konya and Singh (2009) examined the relationship between international trade and the domestic product (include agricultural and manufacturing products) in India during 1950 – 2003 base on vector error correction model (VECM). The result showed that agricultural can support in economic growth in India.

Gulzar (2011) examined the factors impact on trade balance in Pakistan, and one of these factors is Agricultural growth rate. Agricultural is a major source of export in Pakistan. With the development of technology has increase the agricultural growth rate. But inside that, the population in Pakistan increase bring out an increase in demand of agricultural products. The consequence of the research showed that agricultural growth rate has a positive impact on the trade balance, and reduce the trade deficits in Pakistan.

Agricultural is a major that bring more profit from export revenue, especially for the developing countries, particular in Vietnam. This study will find out the affecting of this factor in Vietnam’s economic and how it affects this country. In this study, agricultural growth rate expects to have a positive affecting trade balance according to Thungsuwan and Thompson (2003), Vohra (2006), Gulzar (2011).

### 2.2.7 Trade balance

This study will examine six factors affecting trade balance include oil price, foreign direct investment (FDI), government spending, domestic price, manufacturing growth rate, agricultural growth rate – both of them are independent variables, and the trade balance is the dependent variable.

The trade balance (or net exports) is the difference between the monetary value of exports and imports of output in an economy over a certain period.

It is the relationship between imports and exports in an economy. A positive balance is known as a trade surplus if it consists of exporting more than is imported and a negative balance is referred to as a trade deficits.

In the international trade, export refers to selling goods and services produced in the home country to the other markets (Joshi 2005). An economic can growth if they’re possible to generate foreign exchange earnings. Namely, the economic can develop if
the exports of that country can grow up or development and have a positive trade balance. Exports develop not only generate the foreign exchange earnings, it generate an development of infrastructures, decrease the unemployment, develop the domestic industries, increase the domestic production, increase the quality and quantities of the products, improve the living standard in that country (Rahimi 1997). According Rakauskienë (2006), his study showed that an increase in the export volumes will have a positive impact on the development of that area and the individuals of the economy. Exports have become a major source of the national income for many countries, especially the small countries, developing countries, open economics, and one of the source of survival, growth for many small, medium, and large – size enterprises (Sena 2004, Kearney 2004, Beck 2006).

One of the factors more important of trade balance is imports. Import is a key factor, for example import is in the sourcing strategies of the firms through the world (Thomas and Grosse 2005). In their study on Mexico, they found that an increase in import come before an increase in export.

The imports of production in oversea will lead an increase of domestic products, improving the quality of the products of the domestic firms, growing the demand (Aker 2008).

Besides that, the imports increase the reliability of the input supply, lower purchasing cost (raw material, services, goods), increase the product quality (Leonidou 1998, Aker 2008).

Tilelioglu and Al – Waqfi (1994) examined about structure and determinants of imports demand in small open less developed countries in Jordan. By analysis the trade position and the capacity to import in Jordan during the period of 1968 – 1987, their empirical showed that Jordan's imports are highly income elastic and price inelastic which implies an adverse effect on the trade deficits.

Kandil (2009) examined about the relation between financial flows and the trade balance in developing countries. One of his results supported that the random fluctuation of trade balance in many developing countries will lead to unequal of financing and created a wide deficit in trade balance.

Mundell (1971), Dornbusch (1973), Frenkel and Rodriguez (1975) showed the results that there is a balance of payments deficit result from the excess demand of goods,
services and assets, reflecting an excess supply for money more than the demand for money.

Gulzar (2011) examined about the factors on trade balance in Pakistan. The empirical showed that in Pakistan, trade balance is in deficits position continuous for a long – time. This problem comes from the imbalance between the value of imports and exports. Namely in Pakistan case, the value of import is higher more than the value of export. Thus, it makes the trade balance negative. Pakistan is an agricultural country with 70% population of this country working on this major. For this reason, almost the products in export are agriculture products. Besides that, almost the products in import are technology and manufactured goods. The value differential between other factors lead continuously trade deficits for Pakistan’s economy.

This study will examine the affecting of six factors on trade balance in Vietnam including oil price, FDI, government spending, domestic price, manufacturing growth rate and agricultural growth rate.

2.3 Conceptual framework and hypotheses

2.3.1 Conceptual framework

According to previous studies and literature review, there were many factors that affected trade balance such as oil price, FDI, government spending, domestic price, manufacturing growth rate, agriculture growth rate. This conceptual framework was developed base on the literature reviews, related theories and previous studies. The independent variables include Oil price, FDI, Government spending, Domestic price, Manufacturing growth rate, Agricultural growth rate and dependent variable is Trade balance. The conceptual framework of this study is as the following:
2.3.2 Research hypotheses

Base on literature reviews and conceptual framework above, there are link between trade balance and oil price, FDI, government spending, domestic price, manufacturing growth rate, agricultural growth rate as follows.

According to Akpan (2007) showed that oil price have negative influence on trade balance. More clearly, Mohammad (2010), by examining the impact of oil price on export in Pakistan, showed that an increase in oil price will increase the cost of goods, cost of transportation. This will have negative influence on the trade balance. So, base on these literatures, oil price is expected to have negative affecting trade balance in Vietnam.

H1: The oil price will have negative affecting trade balance.
This study expects to see that FDI will have a positive effect on trade balance in Vietnam. Base on the literature review such as Makki (2004) showed that FDI has a strong positive impact on trade. Especially, this is the mainly factor that could bring more technology advantage. By examining the factors impact on trade balance in Pakistan, Gulzar (2012) found that FDI has a positive impact on the trade balance.

H2: The FDI will have positive affecting trade balance.

Base on the previous literature, this study expects that government spending will have a negative effect on trade balance in Vietnam. A study by Giuliodori and Beetsma (2004) showed that government spending has a positive impact on import and a negative impact on trade balance. Same result with Giuliodori and Beetsma, the finding of Ravn et al. (2007) showed that an increase in government spending will lead to a decrease of trade balance.

H3: The Government spending will have negative affecting trade balance.

There are a few previous studies examined about the effect of domestic price on trade balance. In this study, domestic price is expected to have a negative effect on trade balance in Vietnam. Base on Kandil (2009) showed that an increase in domestic price will lead to an increase in import and a decrease in export, which will later decrease the trade balance. In the other words, domestic price will have a negative impact on trade balance.

H4: Domestic price will have negative affecting trade balance.

According to Gulzar (2011), manufacturing growth rate has a positive impact on trade balance and reduce trade deficits situation in Pakistan. More clearly, Orr (1991) showed that there is an impact of manufacturing on trade. An increase in manufacturing will increase trade balance. So, this study expects to see a positive impact of manufacturing growth rate on trade balance in Vietnam.

H5: The manufacturing growth rate will have positive affecting trade balance.

This study expects that agricultural growth rate will have a positive effect on trade balance in Vietnam. Base on the literature such as Orr (1991) showed that manufacturing has positive impact on trade. After that, Gulzar (2011) who examined factors impact on trade balance in Pakistan, an increase in agricultural growth rate
will lead to an increase in trade balance or agricultural growth rate has a positive impact on trade balance.

H6: The agricultural growth rate will have positive affecting trade balance.
CHAPTER 3

RESEARCH METHODOLOGY

In this chapter will present about the methodology to analyze relating research questions and hypotheses, conceptual framework. The topics are as following:

3.1 Type of research design
3.2 The Model
3.3 Date collection variables
3.4 Data analysis procedures
3.1 Type of research design

Quantitative method will be employed in this study. This study will collect the monthly data for all the independent variables and dependent variables during the period 2002 – 2011.

3.2 The Model

There are a lot of models that many articles use to find out the factors impact on the trade balance. Log – log model regression used in this study. Log – log model is the combination of the linear-log and log-linear cases. In other words, the interpretation is given as an expected percentage change in $Y$ when $X$ increases by some percentage (Benoit 2011).

There are six factors in this study including oil price, foreign direct investment (FDI), government spending, domestic price, manufacturing growth rate and agricultural growth rate impact on trade balance.

This study used regression with logarithmic form ($ln$) to determine the impact of six factors on trade balance.

Regression with Logarithmic:

$$ln(Y) = \alpha_0 + \alpha_1 ln(X_1) + \alpha_2 ln(X_2) + \alpha_3 ln(X_3) + \alpha_4 ln(X_4) + \alpha_5 ln(X_5) + \alpha_6 ln(X_6) + \epsilon$$

Where:

$Y$: Dependent or response variable;

$X_1, X_2, \ldots, X_6$: Independent or explanatory variable. Multiplying $X$ by $e$ will multiply expected value of $Y$.

$\alpha_0$: the constant;

$\alpha_1, \alpha_2, \ldots, \alpha_6$: some coefficients give a change in $X_1, X_2, \ldots, X_6$ how much the expectation of $Y$ to change by.

Model application:

Independent variables are including oil price, FDI, government spending, domestic price, manufacturing growth rate, agricultural growth rate.
Dependent variable: The model of this study employs the ratio of export to import instead of trade balance as the dependent variable. Because there are 2 types of trade balance include nominal trade balance and real trade balance. The real trade balance depends on the real exchange rate, the real domestic income, and the real foreign income and opposite (Yusoff 2010). The ratio of export to import could be view as both nominal and real cases. Besides that, trade balance has positive or negative or equal to zero also. According to mathematical, negative or zero value can’t calculate to logarithmic. In the other hand, by using the ratio in logarithmic form will make the Marshall Lerner – condition more exactly than approximately (Onafowora 2003, Colton 2012). The trade balance equation is as the following:

\[
\ln \left( \frac{X}{M} \right) = \alpha_0 + \alpha_1 \ln(OP) + \alpha_2 \ln(FDI) + \alpha_3 \ln(GS) + \alpha_4 \ln(DP) + \alpha_5 \ln(MGR)
+ \alpha_6 \ln(AGR) + \varepsilon
\]

Where:
X: Export;
M: Import;
OP: Oil price;
FDI: Foreign direct investment;
GS: Government spending;
DP: Domestic price;
MGR: Manufacturing growth rate;
AGR: Agricultural growth rate.

3.3 Data collection variables

Total there are six independent variables and one dependent variable in this study. For every variable, data will be collected monthly during the period 2002 – 2011. Because of the source of data was limited before 2002.

- Trade balance will collected monthly during the period 2002 - 2011 from the International Financial Statistics (IFS).
- Oil price will be collected monthly during the period 2002 - 2011 from the world oil price resource.

- Foreign direct investment (FDI) will be collected monthly during the period 2002 – 2011 from General Statistics Office of Vietnam.

- Government spending will be collected monthly during the period 2002 - 2011 from General Statistics Office of Vietnam.

- Domestic price will be collected monthly during the period 2002 - 2011 from General Statistics Office of Vietnam.

- Manufacturing growth rate will be collected monthly during the period 2002 - 2011 from General Statistics Office of Vietnam.

- Agricultural growth rate will be collected monthly during the period 2002 - 2011 from General Statistics Office of Vietnam.

3.4 Data analysis procedures

In this study statistical program will be used to analyze the data. The procedures are as the following:

(1) Use Correlations Matrix to check for Multicollinearity problem which is the problem of high correlation between independent variables.

(2) Use White heteroskedasticity to check for the heteroskedasticity problem which is the problem of the variance of residual is unstable.

(3) Use Durbin – Watson statistic to check for Auto-correlations problem which is the problem of high correlation among residuals.

(4) Use Ordinary Least Squares to run regression.

(5) Analyze the results.
CHAPTER 4

DATA ANALYSIS AND RESULT

This chapter presented the statistics result of the factors impact on trade balance in Vietnam. This study used the data by monthly during the period 2002 – 2011 for all of the factors include dependent variable trade balance and independent variables oil price, FDI, government spending, domestic price, manufacturing growth rate, agricultural growth rate. The topics are as following:

4.1 Descriptive Statistics
4.2 Multicollinearity Test
4.3 Heteroskedasticity Test
4.4 Durbin – Watson statistic
4.5 Regression result and interpretation
4.1 Descriptive Statistics

To provide a useful summary of security returns when running empirical and analysis data, this study used descriptive statistics function. Descriptive statistics are ways of summarizing large sets of quantitative (numerical) information. Namely, The Mean or average is probably the most commonly used method of describing central tendency. To compute the mean, need to add up all the values and divide by the number of values. The Median is the score found at the exact middle of the set of values. One way to compute the median is to list all scores in numerical order, and then locate the score in the center of the sample. The Standard Deviation is a more accurate and detailed estimate of dispersion because an outlier can greatly exaggerate the range. The Standard Deviation shows the relation that set of scores has to the mean of the sample. Maximum is the highest value in the sequence data. Minimum is the lowest value in the sequence data. Observations are the total sample that the researcher using. The results show in Table 4.1:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Std. Dev.</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln(X/M)</td>
<td>-0.1724</td>
<td>-0.1729</td>
<td>0.1800</td>
<td>-0.5836</td>
<td>0.1188</td>
<td>110</td>
</tr>
<tr>
<td>ln(OP)</td>
<td>4.0365</td>
<td>4.1353</td>
<td>4.8971</td>
<td>2.9694</td>
<td>0.4999</td>
<td>110</td>
</tr>
<tr>
<td>ln(FDI)</td>
<td>19.9117</td>
<td>19.8382</td>
<td>23.5083</td>
<td>14.4033</td>
<td>1.5078</td>
<td>110</td>
</tr>
<tr>
<td>ln(GS)</td>
<td>21.1899</td>
<td>21.0718</td>
<td>22.1840</td>
<td>20.1524</td>
<td>0.5258</td>
<td>110</td>
</tr>
<tr>
<td>ln(DP)</td>
<td>4.6130</td>
<td>4.6103</td>
<td>4.6435</td>
<td>4.5971</td>
<td>0.0090</td>
<td>110</td>
</tr>
<tr>
<td>ln(MGR)</td>
<td>4.6128</td>
<td>4.6232</td>
<td>5.3537</td>
<td>3.9375</td>
<td>0.1726</td>
<td>110</td>
</tr>
<tr>
<td>ln(AGR)</td>
<td>4.6051</td>
<td>4.6107</td>
<td>5.8981</td>
<td>2.8684</td>
<td>0.2456</td>
<td>110</td>
</tr>
</tbody>
</table>

With the dependent variable ln(X/M), the descriptive results in Table 4.1 show that, during the period 2002 – 2011, ratio of export to import displays the financial performance of Vietnam. The average of ln(X/M) is -0.1724 unit, and its standard deviation is 0.1188. The lowest of ln(X/M) is -0.5836 unit and the highest is 0.1800 unit.

With the independent variables include OP, FDI, GS, DP, MGR and AGR. The results in the table 4.1 show that, the average of ln(OP) is 4.0365 units and its
standard deviation is 0.4999 unit. The lowest of $\ln(OP)$ is 2.9694 units and its highest price is 4.8971 units. Variable FDI displays the capital from the foreign investors of the economy. The average of $\ln(FDI)$ is 19.9117 units, and its standard deviation is 1.5078 units. The lowest investment 14.4033 units and its highest is 23.5083 units. Variable GS displays the financial performance of the economy. The average of $\ln(GS)$ is 21.1899 units and its standard deviation is 0.5258 unit. The lowest of $\ln(GS)$ is 20.1524 units and its highest is 22.1840 units. Variable $\ln(DP)$ displays the consumer price index of the economy. The average of $\ln(DP)$ is 4.6130 units and its standard deviation is 0.0090 unit. The lowest of $\ln(DP)$ is 4.5971 units and its highest is 4.6435 units. Variable MGR displays the growth rate of manufacturing in the economy. The average of $\ln(MGR)$ is 4.6128 units and its standard deviation is 0.1726 unit. The lowest of $\ln(MGR)$ is 3.9375 units and its highest is 5.3537 units. Variable AGR displays the growth rate of agricultural in the economy. The average of $\ln(AGR)$ is 4.6051 units and its standard deviation is 0.2456 unit. The lowest of $\ln(AGR)$ is 2.8684 units and its highest is 5.8981 units.

4.2 Multicollinearity Test

This study uses Correlation Matrix Test to check for the correlation between independent variables and determine whether there is multicollinearity between independent variables. The results show in the Table 4.2 as the following:

<table>
<thead>
<tr>
<th>Variables</th>
<th>$\ln(OP)$</th>
<th>$\ln(FDI)$</th>
<th>$\ln(GS)$</th>
<th>$\ln(DP)$</th>
<th>$\ln(MGR)$</th>
<th>$\ln(AGR)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$\ln(OP)$</td>
<td>1.00000</td>
<td>0.69814</td>
<td>0.692919</td>
<td>0.407210</td>
<td>0.022562</td>
<td>0.002662</td>
</tr>
<tr>
<td>$\ln(FDI)$</td>
<td>0.69814</td>
<td>1.00000</td>
<td>0.545301</td>
<td>0.197088</td>
<td>0.142876</td>
<td>0.029001</td>
</tr>
<tr>
<td>$\ln(GS)$</td>
<td>0.69292</td>
<td>0.545301</td>
<td>1.000000</td>
<td>0.145405</td>
<td>0.140178</td>
<td>0.082989</td>
</tr>
<tr>
<td>$\ln(DP)$</td>
<td>0.40721</td>
<td>0.19709</td>
<td>0.145405</td>
<td>1.000000</td>
<td>-0.120214</td>
<td>0.011102</td>
</tr>
<tr>
<td>$\ln(MGR)$</td>
<td>0.02256</td>
<td>0.14288</td>
<td>0.140178</td>
<td>-0.120214</td>
<td>1.000000</td>
<td>0.069809</td>
</tr>
<tr>
<td>$\ln(AGR)$</td>
<td>0.00266</td>
<td>0.02900</td>
<td>0.082989</td>
<td>0.011102</td>
<td>0.069809</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

The results from table 4.2 above show that, the correlations between all the independent variables below the limit value set of the multicollinearity. It means less than 0.8. Namely, the correlation between $\ln(OP)$ and $\ln(FDI)$ is equal to 0.69814 and
lower than 0.8. Mean that, there is no multicollinearity problem between $\ln(\text{OP})$ and $\ln(\text{FDI})$. The correlation between $\ln(\text{OP})$ and $\ln(\text{GS})$ is equal to 0.692919 and less than 0.8. So, there is no multicollinearity problem between $\ln(\text{OP})$ and $\ln(\text{GS})$. The correlation between $\ln(\text{OP})$ and $\ln(\text{DP})$ is equal to 0.407210 and less than 0.8. So, there is no multicollinearity problem between $\ln(\text{OP})$ and $\ln(\text{DP})$. The correlation between $\ln(\text{OP})$ and $\ln(\text{MGR})$ is equal to 0.022562 and lower than 0.8. Then, there is no multicollinearity problem between $\ln(\text{OP})$ and $\ln(\text{MGR})$. The correlation between $\ln(\text{OP})$ and $\ln(\text{AGR})$ is equal to 0.002662 and lower than 0.8. Then, there is no multicollinearity problem between $\ln(\text{OP})$ and $\ln(\text{AGR})$. The correlation between $\ln(\text{FDI})$ and $\ln(\text{GS})$ is equal to 0.545301 and less than 0.8. So, there is no multicollinearity problem between $\ln(\text{FDI})$ and $\ln(\text{GS})$. The correlation between $\ln(\text{FDI})$ and $\ln(\text{DP})$ is equal to 0.197088 and less than 0.8. Mean that, there is no multicollinearity problem between $\ln(\text{FDI})$ and $\ln(\text{DP})$. The correlation between $\ln(\text{FDI})$ and $\ln(\text{MGR})$ is equal to 0.142876 and less than 0.8. Mean that, there is no multicollinearity problem between $\ln(\text{FDI})$ and $\ln(\text{MGR})$. The correlation between $\ln(\text{FDI})$ and $\ln(\text{AGR})$ is equal to 0.029001 and less than 0.8. Mean that, there is no multicollinearity problem between $\ln(\text{FDI})$ and $\ln(\text{AGR})$. The correlation between $\ln(\text{GS})$ and $\ln(\text{DP})$ is equal to 0.145405 and less than 0.8. Mean that, there is no multicollinearity problem between $\ln(\text{GS})$ and $\ln(\text{DP})$. The correlation between $\ln(\text{GS})$ and $\ln(\text{MGR})$ is equal to 0.140178 and less than 0.8. Mean that, there is no multicollinearity problem between $\ln(\text{GS})$ and $\ln(\text{MGR})$. The correlation between $\ln(\text{GS})$ and $\ln(\text{AGR})$ is equal to 0.082989 and less than 0.8. So, there is no multicollinearity problem between $\ln(\text{GS})$ and $\ln(\text{AGR})$. The correlation between $\ln(\text{DP})$ and $\ln(\text{MGR})$ is equal to -0.120214 and less than 0.8. So, there is no multicollinearity problem between $\ln(\text{DP})$ and $\ln(\text{MGR})$. The correlation between $\ln(\text{DP})$ and $\ln(\text{AGR})$ is equal to 0.011102 and lower than 0.8. Mean that, there is no multicollinearity problem between $\ln(\text{DP})$ and $\ln(\text{AGR})$. The correlation between $\ln(\text{MGR})$ and $\ln(\text{AGR})$ is equal to 0.069809 and lower than 0.8. Mean that, there is no multicollinearity problem between $\ln(\text{MGR})$ and $\ln(\text{AGR})$.

In the overall, there are no multicollinearity problems between independent variables. All the 6 independent variables include OP, FDI, GS, DP, MGR and AGR can be used to run regression.
4.3 Heteroskedasticity Test

Heteroskedasticity is used to determine the problem of the unstable variance residual. In the other words, this study used Heteroskedasticity to verify the appearance of the error unstable variance in the model or not. The Heteroskedasticity problem will be impact on the regression result.

The result of Heteroskedasticity Test of dependent variable \( \ln \left( \frac{X}{M} \right) \) (Appendices 4) shows that, Probability (Probability = 0.325928) of \( \ln \left( \frac{X}{M} \right) \) is greater than the limit standard set of Heteroskedasticity, \( \alpha=0.05 \). So, there are no Heteroskedasticity problem. Therefore, this model can use to run the regression analysis.

4.4 Durbin – Watson statistics

Auto-correlation is a statistical test that using to determine whether a random number generator is producing independent random numbers in a series. The Auto-correlation Test is concerned with the dependence between numbers in a series. This study uses Durbin – Watson statistic to test the existing of Auto-correlation problems in the from the regression analysis.

The statistic of Durbin Watson always is in the range from 0 to 4. If the values of Durbin – Watson statistic aren’t in this range, that mean there are Auto-correlation problem. By checking values from Durbin – Watson statistics value table (Appendices 3) with 110 observations and 6 independent variables in this study. The results find out that \( d_L=1.550 \) and \( d_U=1.803 \). Mean that, the range of Durbin – Watson statistics in this study is between \( d_L=1.550 \) and \( (4 - d_U)=2.197 \). If the results of Durbin – Watson statistics Test are in the range between 1.550 and 2.197, there will be no Auto-correlation problem.

Durbin-Watson Statistics result of dependent variable TB shows (Appendices 5) that, the Durbin-Watson statistic (DW=0.833551) is not in the range from 1.550 to 2.197. Mean that there are Auto-correlation problem in this regressive analysis and needs to solve this auto-correlation problem. Thus, this model needs to solve the problem by using ARMA process. As the result (Appendices 6), Durbin-Watson statistic (DW = 1.879506) is more than \( d_L = 1.550 \) and less than \( (4-d_U) = 2.197 \). Hence, there is no auto-correlation problem in this model. This model can use to run regression analysis.
4.5 Regression result and interpretation

The regression result is in Table 4.3 as the following:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>11.39671</td>
<td>5.745155</td>
<td>1.983707</td>
<td>0.0500</td>
</tr>
<tr>
<td>ln(OP)</td>
<td>0.063840</td>
<td>0.053198</td>
<td>1.200038</td>
<td>0.2329</td>
</tr>
<tr>
<td>ln(FDI)</td>
<td>-0.000584</td>
<td>0.007687</td>
<td>-0.076011</td>
<td>0.9396</td>
</tr>
<tr>
<td>ln(GS)</td>
<td>-0.016834</td>
<td>0.025516</td>
<td>-0.659727</td>
<td>0.5109</td>
</tr>
<tr>
<td>ln(DP)</td>
<td>-2.466108</td>
<td>1.231936</td>
<td>-2.001815</td>
<td>0.0480*</td>
</tr>
<tr>
<td>ln(MGR)</td>
<td>-0.018006</td>
<td>0.037464</td>
<td>-0.480629</td>
<td>0.6318</td>
</tr>
<tr>
<td>ln(AGR)</td>
<td>6.45E-05</td>
<td>0.032660</td>
<td>0.001975</td>
<td>0.9984</td>
</tr>
</tbody>
</table>

R-squared 0.410830  F-statistic 10.06109  Prob(F-statistic) 0.000000

* = significant at level of 5%

According the result, the Probability is equal to 0.000000 and less than 5%. Mean that, all the independent variables in this model can be using to determine their impact on the dependent variable $\ln\left(\frac{X}{M}\right)$ at significant 5%. R-squared is equal to 0.410830. Mean that, from the equation 1, the estimate equation can explain the change of independent variable $\ln\left(\frac{X}{M}\right)$ by 41.0830%.

There are one significant variable include domestic price – $ln(DP)$. The relationship direction can be explained as the following:

The probability of $ln(DP)$ is equal to 0.0480 and lower than 5% or significant at level 5%. The coefficient of $ln(DP)$ is equal to -2.466108 mean that $ln(DP)$ has negative impact on $\ln\left(\frac{X}{M}\right)$ or domestic price has negative impact on trade balance in Vietnam. If the domestic price is increasing 1 unit, the trade balance will be decreasing -2.466108 units.

However, there are 5 insignificant variables include OP, FDI, GS, MGR and AGR. The relationship direction can be explained as the following:
OP has positive relationship to trade balance. FDI has negative relationship to trade balance; GS has negative relationship to trade balance; MGR has negative relationship to trade balance and AGR has positive relationship to trade balance.

In the overall, there is negative impact of domestic price on trade balance in Vietnam.

The other factors include OP, FDI, GS, MGR and AGR have no impact on trade balance in Vietnam.
CHAPTER 5

SUMMARY AND DISCUSSIONS

This chapter will present the conclusion of the study base on the model, the method and the resource of statistic result in chapter 4. Namely what the factors impact on trade balance are, what factor are not impact on trade balance, and how they can impact on. After that discussion about the consequences of the factors impacted on trade balance in Vietnam. How they can impact on the economy of Vietnam and how to control all of these problems. And the last thing is the limitation of this study. The topics are as the following:

5.1 Summary
5.2 Discussions
   5.2.1 Oil price
   5.2.2 FDI
   5.2.3 Government spending
   5.2.4 Domestic price
   5.2.5 Manufacturing growth rate
   5.2.6 Agricultural growth rate
5.3 Implication for the study
5.4 Research recommendation
5.5 Limitations and Further Research
5.1 Summary

This research studied about the factors impact on Trade balance in Vietnam during the period 2002 – 2011. Base on the monthly data collected from 2002 to 2011, include 110 months. The source of data is including the financial information, economic information and agro-industrial information.

Some statistics function applied to analyze the data of each factor. First, the study used the descriptive statistics approach to summarize and describe all the data series before run the analysis. Then, Correlations Matrix approach used to find out the multicollinearity problem between independent variables. Hence, Heteroskedasticity test used to check problem of the variance of residual is unstable. After that, this study used Durbin – Watson statistic to check for the problem of high correlation among residuals.

In the result for the factors impact on trade balance in Vietnam, the study found out that there was domestic price factor. Because its probability was significant at level 5%. Domestic price had negative impact on trade balance in Vietnam. Summarize for testing hypothesis is in Table 5.1 as the following:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Statistical Significant</th>
<th>Directional Relationship</th>
<th>Direction is the same as expected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil price</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FDI</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government spending</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Domestic price</td>
<td>✓</td>
<td>_</td>
<td>✓</td>
</tr>
<tr>
<td>Manufacturing growth rate</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural growth rate</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

From the table 5.1, the hypotheses summary of study about the factors impact trade balance in Vietnam. It found that the changing of Domestic price had negative impact on Trade balance in Vietnam. The hypothesis H4 is accepted.
Oil price, FDI, government spending, manufacturing growth rate and Agricultural growth didn’t impact trade balance, the hypotheses rejected.

5.2 Discussions

From the result in chapter 4, there is only domestic price that affects trade balance in Vietnam, and had a negative impact. The others factors didn’t impact trade balance. Thus, this part will discuss more about the reasons for the result.

5.2.1 Oil price

The first factor used to determine its impact on trade balance in Vietnam is oil price. According the result, there is no impact of oil price on trade balance, the hypothesis rejected. The result of this study was not consistent as results from previous papers.

From the results of the impact of oil price on export and import Tsen (2009) showed that, an increase in oil price would lead to a decrease on trade balance if that country is net oil importing, and would lead to an increase on trade balance if that country is net oil exporting. Besides that, Baffes (2007) found that the fluctuation of oil price will impact significant response on the trade commodities. Especially is the positive impact on trade of primary commodities. In the other hand, Akpan (2007), Mohammad (2010) and Sanchez (2011) showed that there was a negative impact of oil price on trade balance. So, the non – impact of oil price on trade balance in Vietnam can explain that, in Vietnam, the government still controls the price of oil in the domestic. In the other word, the oil price in Vietnam doesn’t put in the floating regimen. So, an increasing or decrease of oil in the world doesn’t impact in Vietnam. Besides that, the fluctuation of oil price almost impact on transportation. According to Dai Bieu Nhan Dan online magazine, transportation cost held 8.87%. So, this is the reason that oil price had no impact on trade balance in Vietnam.

5.2.2 FDI

From the result in chapter 4, there is no impact of FDI on trade balance in Vietnam, the hypothesis rejected. And, this result is difference with the literature reviews such as Blomstrom (1988), Pfaffermayr (1994), Lin (1995). However, Orr (1991) showed that there is likely limit impact of FDI on trade balance in long – term.
But in the short – term FDI seemly not lead to an impact on import and expansion export. But in this situation, the political instability is the reason that created a large barrier for the foreign investors to invest in Vietnam. In these 10 years from 2002 – 2011, the FDI of Vietnam was very low, especially decreasing quite strongly from 2008 to 2011. In 2011, FDI was decreased 78.16% compared to 2008. This is the reason that FDI had no impact on trade balance in Vietnam.

### 5.2.3 Government spending

According the result, there is no impact of Government spending on trade balance, hypothesis rejected. This result seemly is not consistent with literature reviews. Such as the negative impact showed by Ramey and Shapiro’s (1998) result, Blanchard and Perotti’s (2002) result or the positive impact showed by Muller’s (2004) result.

Vietnam is one of countries that must facing with the worst consequences of climate changes. In 5 years during the period 2002 – 2007, there were 750 people die and disappear per year because of the disasters, estimate lost 1% - 1.5% GDP of Vietnam. To explain for this situation, almost the spending of government used to remedy the disasters such as flooding, storms, droughts. Besides that, the government budget was used for repair and improve infrastructure such as bridges and road, flood control dike. So, there was no impact on trade balance in Vietnam even though the government spending increasing.

### 5.2.4 Domestic price

Following the result, there is negative of domestic price on trade balance in Vietnam, hypothesis accepted. Mean that, an increase of domestic price will lead a decrease on trade balance or increase the imports in Vietnam. Such as Wilson and Takacs (1979), Oskooee (1986) showed that there is impact of domestic price on trade balance. More clearly, Kandil’s (2009) research, his result showed that there is a negative impact of domestic price on trade balance. To explain for this situation, when the domestic price is increasing, the price level of all the products will be increased. The cost of import raw – material, goods will be increased, improve the value of imports. The cost of the products that produce in the domestic will be increase also, create more problems for the enterprises to export and sell the products. In the other words, export will be decrease.

### 5.2.5 Manufacturing growth rate
As the result above, there is no impact of manufacturing growth rate on trade balance in Vietnam, the hypothesis rejected. This result seemly is difference with the literature reviews. Such as Orr (1991) showed that there is positive effect of manufacturing on the trade balance and Gulzar (2011) showed the result same with Orr. Mean that, if manufacturing growth rate is increased, the export will be increased and then trade balance will be increase. But, in this study, the manufacturing growth rate didn’t impact trade balance. To explain for this situation, in manufacturing area, even though the volume of manufacturing products is increasing but the inventories are always very large and this number is increasing. Besides that, export and import of manufacturing products are insignificant with the trade balance. And there are no large orders for manufacturing products, besides that almost the local companies were still passive in the way to find out more orders for the companies. That’s the reason manufacturing growth rate didn’t impact trade balance in Vietnam.

5.2.6 Agricultural growth rate

According the result above, there is no impact of agricultural growth rate on trade balance in Vietnam, hypothesis rejected. This result seemly is difference with the literature reviews. Such as Araji (1980), Norton and Davis (1981), White (1987), in their results showed that an increase on agricultural productivity will lead a decreasing imports of agricultural products and increasing export of agricultural products.

There are some reasons to explain for this situation in Vietnam. First, agricultural of Vietnam was facing climate disaster. The volume of agricultural products is depending on season. Thus, the growth rate of agricultural is quite weak. Second, because of Vietnam situation, when the price of agricultural products is decreasing, the famers will not sell their products and wait until when the price of products increase, they’ll decide to sell them. These 2 reasons above is the mainly reasons which explain for the insignificant impact of agricultural growth rate on trade balance.

5.3 Implication for the study

This study used six factors to determine their impact on trade balance in Vietnam by using regression with logarithmic form during the period 2002 – 2011 include oil price, FDI, government spending, domestic price, manufacturing growth rate and
agricultural growth rate. This research found out exactly which factors can impact trade balance in Vietnam, and the result can help improve trade balance.

From the result of this study, there is a negative impact of domestic price on trade balance in Vietnam, meaning that, an increasing domestic price will lead to and decrease of trade balance.

Domestic price is one of factors that are very important. The domestic price is increasing in Vietnam. Mean that, Vietnam must facing with the trade deficits for a long time. To solve this problem, domestic price is one of factors needs to pay special attention, and find the ways to decrease this factor.

Besides that, oil price is one of the important energies in every country in the world, especially in the developing countries and poor countries. Therefore, when the oil price is increasing, normally it will impact worsen on trade balance in all of the countries especially the countries need more oil consumption for their production. In this situation, the oil price in Vietnam doesn’t put in the floating regimen. 70% energy that uses in Vietnam is oil and gasoline. If the government still control the price of this energy it will better for the consumer in Vietnam, and decreasing trade deficits was happen for a long time. Besides that, there is a disadvantage for the government. That is the government must spend more budgets to support the price of this energy in the domestic when its price increase in the world. Hence, the budget deficits will be happen. So this is an important factor that needs to pay attention. On the other hand, Vietnam needs to find the other energy sources to take a place of oil. Decrease the demand of oil in the domestic. Besides that, improve the operation of produce oil in Vietnam. The findings of this study suggest that oil price is an important factor to solve the trade deficits problem in Vietnam.

5.4 Research recommendation

According to the result, there is domestic price which had negative impact on trade balance in Vietnam. The other factors didn’t impact trade balance including oil price, FDI, government spending, manufacturing growth rate and agriculture growth rate. Base on the results, here are some recommendations that this study suggest:
The government should have the policy to limit the dependent of trade balance on this oil price. Such as, limit the distribution of oil and the demand of oil in the domestic by using the other energies instead. Besides that, the government should spend more budgets to support and encourage the local company to produce and export the products to another country and expand the business to the other countries.

Besides that, the government should keep the policies stable (do not adjust the policies in a short – time) to attract more foreign investors, especially in the projects to exploit the crude oil.

For export, the government should have some policies to support export. Such as investment incentive, taxes incentive, support the enterprises to set up and expand their business to the other area by create policies loan with the low-interest rate.

For import, the government should have the policy to limit the import goods, decrease the cost of transport and decrease the impact of oil price on import. Besides that, the government should support the local company increase producing, to ensure the output enough for the local consumers.

5.5 Limitations and Further Research

The mainly limitations of this study are including:

First, there are a lot of factors impacted on trade balance. But in this study just researched in six factors include oil price, FDI, government spending, domestic price, manufacturing growth rate and agricultural growth rate. There might be some missing factors that this study didn’t examined. In further research should be adding more factors when examined the factors impact on trade balance to find out more results.

Second, the study used totally 110 observations during the period 2002 – 2011. Further research should add more observations for the analysis.

Third, trade balance is the difference between exports and imports. It will be beneficial to explain factors that affect trade balance if the impact of the same set of the factors is examined on exports as well as imports. But in this study just examine only factors impact on trade balance. So, further research should use exports and imports as the dependent variables as well.
In general, the analysis and the result of this study are very clearly. This study also provides some implications and recommendations. It will be useful for the government in Vietnam or organizations that make policies. Besides that, this study also provides some information to contribute further research. Further research can use the information, suggestion and result of this study to support or improve the research in the same or the other areas. Besides that, this study provides more information about the trade balance in Vietnam, especially the factors that impact it.
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APPENDICES
## APPENDICES 1

Descriptive statistics

Sample: 2002M01 2011M12

<table>
<thead>
<tr>
<th></th>
<th>$ln\left(\frac{X}{M}\right)$</th>
<th>$ln(OP)$</th>
<th>$ln(FDI)$</th>
<th>$ln(GS)$</th>
<th>$ln(DP)$</th>
<th>$ln(MGR)$</th>
<th>$ln(AGR)$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>-0.172408</td>
<td>4.036536</td>
<td>19.91170</td>
<td>21.18993</td>
<td>4.612995</td>
<td>4.612825</td>
<td>4.605059</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.180022</td>
<td>4.897093</td>
<td>23.50828</td>
<td>22.18397</td>
<td>4.643525</td>
<td>5.353733</td>
<td>5.898128</td>
</tr>
<tr>
<td>Minimum</td>
<td>-0.583620</td>
<td>2.969388</td>
<td>14.40330</td>
<td>20.15243</td>
<td>4.597138</td>
<td>3.937480</td>
<td>2.868389</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.118833</td>
<td>0.499925</td>
<td>1.507763</td>
<td>0.525848</td>
<td>0.009028</td>
<td>0.172619</td>
<td>0.245621</td>
</tr>
<tr>
<td>Skewness</td>
<td>-0.148238</td>
<td>-0.308985</td>
<td>-0.314666</td>
<td>0.071981</td>
<td>1.166200</td>
<td>0.099949</td>
<td>-2.159478</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>5.084271</td>
<td>2.075775</td>
<td>3.767842</td>
<td>1.911915</td>
<td>4.236590</td>
<td>8.660496</td>
<td>31.30358</td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>20.31372</td>
<td>5.665355</td>
<td>4.517515</td>
<td>5.521328</td>
<td>31.94237</td>
<td>147.0387</td>
<td>3757.169</td>
</tr>
<tr>
<td>Probability</td>
<td>0.000039</td>
<td>0.058855</td>
<td>0.104480</td>
<td>0.063250</td>
<td>0.000000</td>
<td>0.000000</td>
<td>0.000000</td>
</tr>
<tr>
<td>Sum</td>
<td>-18.96484</td>
<td>444.0190</td>
<td>2190.287</td>
<td>2330.892</td>
<td>507.4295</td>
<td>507.4108</td>
<td>506.5565</td>
</tr>
<tr>
<td>Sum Sq. Dev.</td>
<td>1.539213</td>
<td>27.24182</td>
<td>247.7951</td>
<td>30.14024</td>
<td>0.008885</td>
<td>3.247907</td>
<td>6.575951</td>
</tr>
<tr>
<td>Observations</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
<td>110</td>
</tr>
</tbody>
</table>
### APPENDICES 2

Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>ln(OP)</th>
<th>ln(FDI)</th>
<th>ln(GS)</th>
<th>ln(DP)</th>
<th>ln(MGR)</th>
<th>ln(AGR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ln(OP)</td>
<td>1.000000</td>
<td>0.698140</td>
<td>0.692919</td>
<td>0.407210</td>
<td>0.022562</td>
<td>0.002662</td>
</tr>
<tr>
<td>ln(FDI)</td>
<td>0.698140</td>
<td>1.000000</td>
<td>0.545301</td>
<td>0.197088</td>
<td>0.142876</td>
<td>0.029001</td>
</tr>
<tr>
<td>ln(GS)</td>
<td>0.692919</td>
<td>0.545301</td>
<td>1.000000</td>
<td>0.145405</td>
<td>0.140178</td>
<td>0.082989</td>
</tr>
<tr>
<td>ln(DP)</td>
<td>0.407210</td>
<td>0.197088</td>
<td>0.145405</td>
<td>1.000000</td>
<td>-0.120214</td>
<td>0.011102</td>
</tr>
<tr>
<td>ln(MGR)</td>
<td>0.022562</td>
<td>0.142876</td>
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APPENDICES 3

Models with an intercept (from Savin and White 1977)

*Durbin-Watson Statistic: 5% Significance Points of dL and dU*

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Durbin-Watson Statistic: 5% Significance Points of dL and dU (continued)
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_Durbin-Watson Statistic: 5% Significance Points of dL and dU (continued)_

*dU* is the number of regressors excluding the intercept.
APPENDICES 4

Heteroskedasticity Test

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Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 05/01/13   Time: 23:31
Sample: 2002M01 2011M02
Included observations: 110

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Adjusted R-squared 0.014338  S.D. dependent var 0.025268
S.E. of regression 0.025087  Akaike info criterion -4.430294
Sum squared resid 0.061675  Schwarz criterion -4.135696
Log likelihood 255.6662  F-statistic 1.144140
Durbin-Watson stat 1.448329  Prob(F-statistic) 0.336267
APPENDICES 5

Durbin – Watson Statistic

Dependent Variable: $\ln\left(\frac{X}{M}\right)$
Method: Least Squares
Date: 05/01/13   Time: 23:37
Sample (adjusted): 2002M01 2011M02
Included observations: 110 after adjustments

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>19.43075</td>
<td>6.616792</td>
<td>2.936582</td>
<td>0.0041</td>
</tr>
<tr>
<td>$\ln(OP)$</td>
<td>0.052677</td>
<td>0.040942</td>
<td>1.286629</td>
<td>0.2011</td>
</tr>
<tr>
<td>$\ln(FDI)$</td>
<td>-0.006003</td>
<td>0.010664</td>
<td>-0.562870</td>
<td>0.5747</td>
</tr>
<tr>
<td>$\ln(GS)$</td>
<td>-0.018392</td>
<td>0.030865</td>
<td>-0.595877</td>
<td>0.5526</td>
</tr>
<tr>
<td>$\ln(DP)$</td>
<td>-4.176991</td>
<td>1.408164</td>
<td>-2.966267</td>
<td>0.0037</td>
</tr>
<tr>
<td>$\ln(MGR)$</td>
<td>-0.027791</td>
<td>0.067305</td>
<td>-0.412920</td>
<td>0.6805</td>
</tr>
<tr>
<td>$\ln(AGR)$</td>
<td>0.019561</td>
<td>0.046112</td>
<td>0.424213</td>
<td>0.6723</td>
</tr>
</tbody>
</table>

R-squared 0.080597  Mean dependent var -0.172408
Adjusted R-squared 0.027039  S.D. dependent var 0.118833
S.E. of regression 0.117215  Akaike info criterion -1.388090
Sum squared resid 1.415158  Schwarz criterion -1.216241
Log likelihood 83.34493  F-statistic 1.504864
Durbin-Watson stat 0.833551  Prob(F-statistic) 0.183901
Regression Result

Dependent Variable: $\ln\left(\frac{X}{M}\right)$

Method: Least Squares

Date: 05/05/13   Time: 17:59

Sample (adjusted): 2002M02 2011M02

Included observations: 109 after adjustments

Convergence achieved after 7 iterations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>11.39671</td>
<td>5.745155</td>
<td>1.983707</td>
<td>0.0500</td>
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<tr>
<td>$\ln(\text{OP})$</td>
<td>0.063840</td>
<td>0.053198</td>
<td>1.200038</td>
<td>0.2329</td>
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<tr>
<td>$\ln(\text{FDI})$</td>
<td>-0.000584</td>
<td>0.007687</td>
<td>-0.07011</td>
<td>0.9396</td>
</tr>
<tr>
<td>$\ln(\text{GS})$</td>
<td>-0.016834</td>
<td>0.025516</td>
<td>-0.659727</td>
<td>0.5109</td>
</tr>
<tr>
<td>$\ln(\text{DP})$</td>
<td>-2.466108</td>
<td>1.231936</td>
<td>-2.001815</td>
<td>0.0480</td>
</tr>
<tr>
<td>$\ln(\text{MGR})$</td>
<td>-0.018006</td>
<td>0.037464</td>
<td>-0.480629</td>
<td>0.6318</td>
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<tr>
<td>$\ln(\text{AGR})$</td>
<td>6.45E-05</td>
<td>0.032660</td>
<td>0.001975</td>
<td>0.9984</td>
</tr>
<tr>
<td>AR(1)</td>
<td>0.619883</td>
<td>0.080874</td>
<td>7.664823</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared 0.410830   Mean dependent var -0.172487
Adjusted R-squared 0.369996  S.D. dependent var 0.119379
S.E. of regression 0.094754  Akaike info criterion -1.804500
Sum squared resid 0.906814  Schwarz criterion -1.606970
Log likelihood 106.3452  F-statistic 10.06109
Durbin-Watson stat 1.879506  Prob(F-statistic) 0.000000

Inverted AR Roots .62
Miss. Minh Uyen Thi Tran was born on June 04, 1988 at Hue province of Vietnam. She received Bachelor Degree of Business Administration majoring from Hung Vuong University in Ho Chi Minh city, Vietnam 2010.