TRADE BALANCE AND MARCOECONOMIC VARIABLES INTEGRATION: AN EMPIRICAL EVIDENCE ON ASEAN 5 FROM 1984 TO 2010

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DECLARATION

We hereby declare that:

(1) This undergraduate project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any applications for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contributions have been made by each group member in completing the research project.

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CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

Balance of Trade (BOT) is one of the crucial parts under Balance of Payments for each country. In this globalization era, transactions or trades across the country are common such as imports and exports. However a country's BOT is important because BOT can be use to determine economic growth. For example a least developed country may less on capital but more on labour force. Therefore a BOT surplus may fill in capital gap in the country to promote the economic growth and reduce unemployment rate. In other word, export may lead economy growth of a country. There is a real case of Japan economic development after World War 2 will be further discussed in Section 1.2 research backgrounds.

Moreover, the fluctuations of BOT had becomes a major concerns for developing countries. The aim of this paper is to study about BOT and Real Effective Exchange Rates (REER) in ASEAN-5 countries such as Malaysia, Thailand, Indonesia, Philippines and Singapore which was similarly exports oriented countries. Furthermore, this paper will also study other independent variables in details such as Foreign Direct Investment (FDI), Inflation (CPI), and Real Gross Domestic Product (RGDP).

In another perspective view, high foreign demand of domestic products is a gear to increase employment opportunities in the local market. Large foreign demand of domestic products also increased the demand of raw materials in the process of manufacturing products. However, high foreign demand may overall price and cost of production increased and bring inflation problem. In reality, unemployment and inflation cannot be solve in the mean time, therefore government only can be maintain the balanced or control these problems by applying related economic policy.

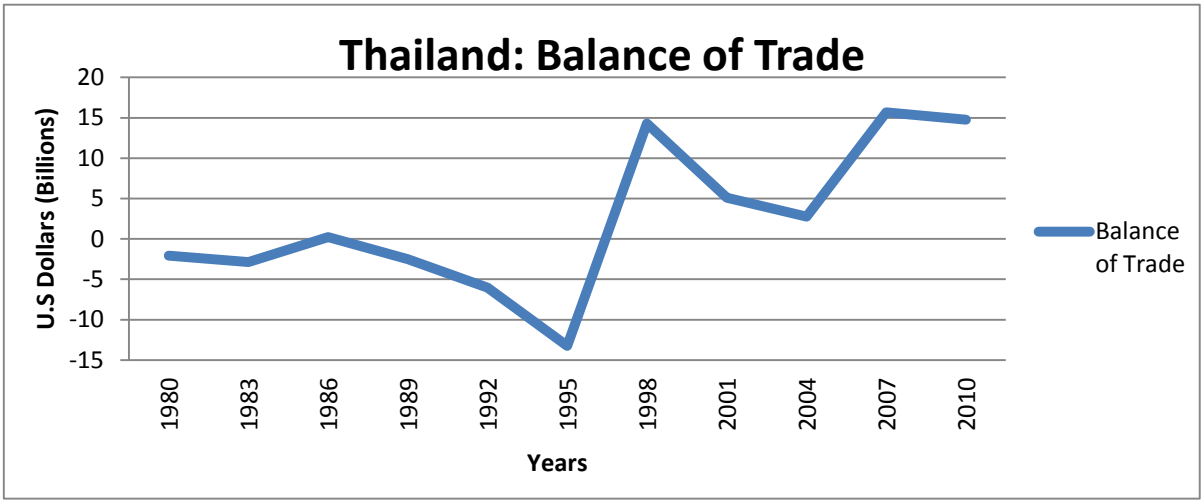
The effect of BOT surplus can be detected in foreign exchange markets. This scenario can be seen when foreign investors required high demand of home currency like Ringgit Malaysia (MYR) in the process of trading. For example, importers from United States sell United States Dollars (USD) to buy Ringgit Malaysia (MYR) in order to trade with exporters in Malaysia. High demand of a particular currency will lead to appreciation of particular currency. Therefore, exchange rate for MYR/USD decreased when MYR appreciated, for example RM3.80/USD to RM3.50/USD. Consequently, push up price level in International Market of Malaysia product. Thus, this paper seeks to analysis the changes of BOT due to fluctuation of exchange rate in ASEAN-5 countries.

Trend of Balance of Trade in ASEAN-5 Countries

1.1.1 Thailand

Figure 1.1.1 shows the movement of total Balance of Trade (BOT) in Thailand from year 1980 to 2010. From 1980 to 1995, the BOT recorded high deficit which is because the velocity of imports growing faster than exports. At the time, Thailand lack of advance technology and capital goods to produce high quality product efficiently. Therefore, Thailand forced to import large amount of capital goods and technology from other countries. According to Bhanupong (n.d.), from 1995 onwards, Thailand have BOT surplus throughout the years due to large capital inflow which is offsetting with the BOT deficit. After the financial crisis in 1997 to 1998, BOT started to drop significantly until 2004 with recorded $2.767 billion surplus. During financial crisis in 2007 to 2008, the BOT started to drop approximately $1 billion until 2010 because unstable politic environment in Thailand at the time.

Figure 1.1.1: Total Balance of Trade in Thailand from 1980 to 2010



Sources: Thailand Balance of Trade (2011).

1.1.2 Indonesia

Figure 1.1.2 shows the movement of total BOT in Indonesia from year 1980 to 2010. From year of 1980, a BOT surplus $2.9 billion started to decrease sharply to BOT deficit $6.7 billion in years 1983 due to falling oil prices in the early 1980 where Indonesia exports was dominated by gas and petroleum sectors. In addition, the gas exports also facing declined due to depression of world economy. Therefore, Indonesia government launched deregulation policies which expand the banking system with liberalization operations for foreign bank in 1983 to 1988 which intends to attract FDI and thus boots up BOT. According to IMF (1997) report, during period of financial crisis in 1997 to 1998, BOT was increasing with approximately $2 billion until year 2001 which benefits from International Monetary Fund's (IMF) package where IMF approved a stand-by-credit for Indonesia about US$10.14 billion on 5 November 1997. From year 2004 onwards, BOT was facing a dramatic increase which benefits from oil price increase until the peak and recorded the highest BOT surplus $10.494 billion in 2007. After the financial crisis in 2007 to 2008, BOT in Indonesia started to drop approximately $5 billion in 2010.

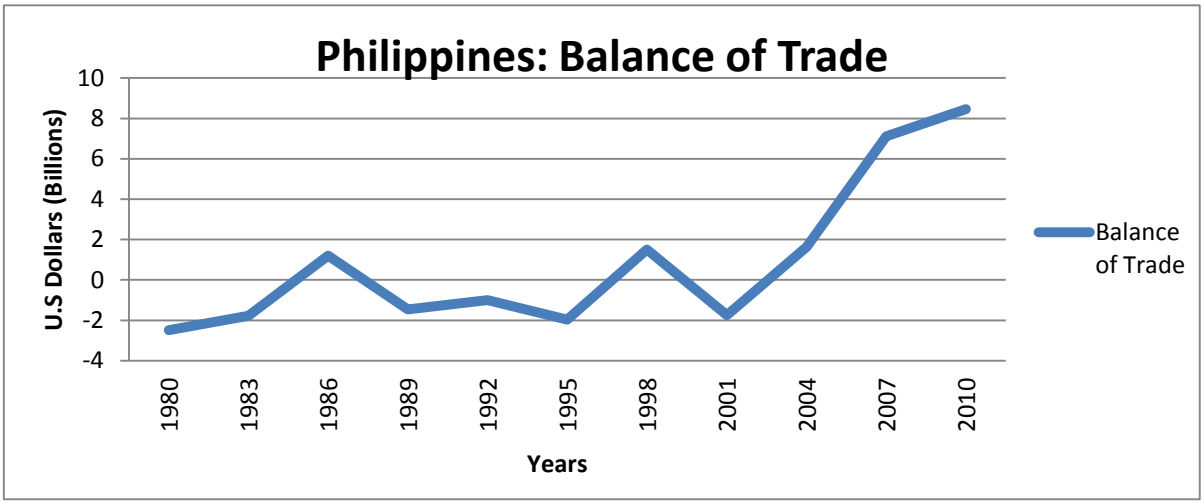
Figure 1.1.2: Total Balance of Trade in Indonesia from 1980 to 2010

Sources: Indonesia Balance of Trade (2011)

1.1.3 Philippines

Figure 1.1.3 shows the movement of total BOT in Philippines from year 1980 to 2010. The BOT of Philippines fluctuated in average with approximately $1 billion in the early 1980 to 2004. Similarly to other countries, BOT started to drop after financial crisis in 1997 to 1998. However, in the period of financial crisis 2007 to 2008, BOT in Philippines increased with a recorded $7.117 billion surplus in 2007. According to Norland (2009), Philippines government adopted more flexible and open policies reform of real side of economy in 1980s. Such as entry barriers are modestly relaxes with the increment in the number of bank branches. The second reform which the central bank of Philippines rehabilitates, commercial banks were forced to increase bank's capitalization ratio, and allow new foreign and domestic enter into the market. Hence, it lead strengthen in quality of prudential regulation.

Figure 1.1.3: Total Balance of Trade in Philippines from 1980 to 2010

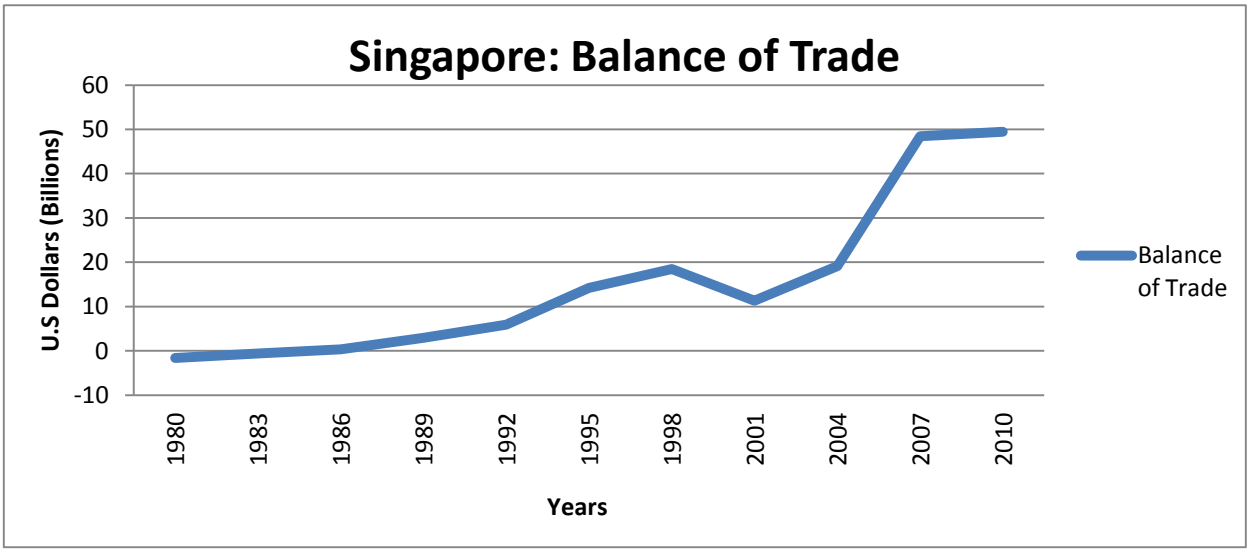


Sources: Philippines Balance of Trade (2011)

1.1.4 Singapore

Figure 1.1.4 shows the movement of total BOT in Singapore from year 1980 to 2010. According to Jin (2000) stated that since 1980, Monetary Authority of Singapore (MAS) had applied currency management policy. In 1980, Singapore was facing BOT deficit $1.577 billion and the trends show that BOT was dramatic increasing until the peak in 1998 with an $18.495 billion surplus. During financial crisis in 1997 and 1998, the BOT started to drop until 2001 with a recorded $11.294 billion. However, BOT in Singapore was increasing flatly with recorded approximately $1 billion during financial crisis in 2007 to 2008. According to Iddamalgoda & Siriwardana (2003) mentioned that, during the peak surplus period 2004 to 2007, currency of Singapore dollar kept appreciating, Therefore, MAS intended to control the fluctuations of currency by buying large amount of foreign currency.

Figure 1.1.4: Total Balance of Trade in Singapore from 1980 to 2010

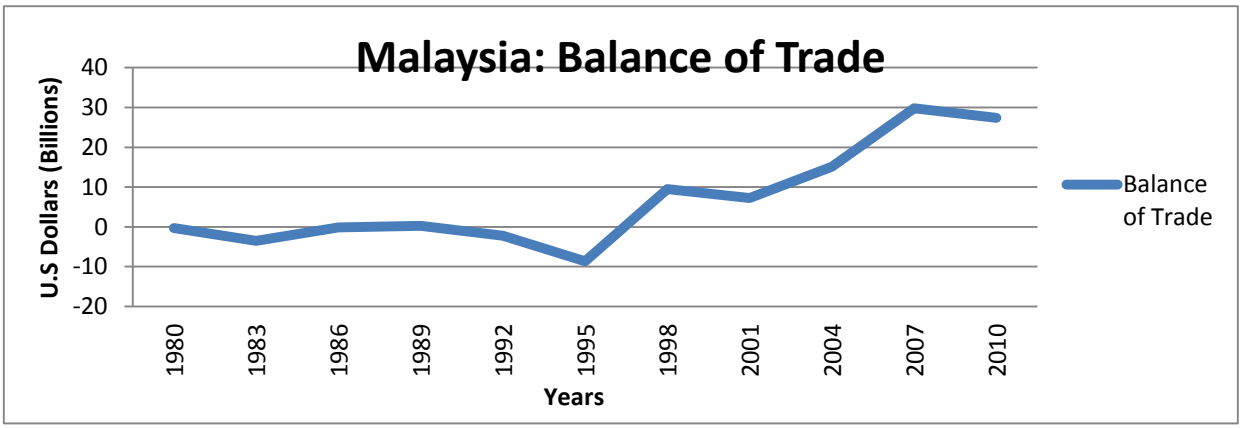


Sources: Singapore Balance of Trade (2011)

1.1.5 Malaysia

Figure 1.1.5 shows the movement of BOT in Malaysia from year 1980 to 2010. The trends in the chart show an unstable movement of BOT in Malaysia. In 1995, MYR was depreciating relative to Japanese Yen, and therefore push down the BOT from a deficit $8.644 billion, because of "Look East" policy, Malaysia import a lot of capital goods from Japan. Therefore, Japanese Yen appreciated against MYR and caused a significant impact to BOT. The similarity during financial crisis in period of 1997-1998 and 2007-2008, the BOT in Malaysia dropped approximately $2 billion. According to Sundaram (2006), government of Malaysia tried to defend MYR and peg the currency on 2nd September 1998. In addition, the large depreciation of MYR had been caused devaluation of Malaysian assets; share prices especially in exchange market such as Kuala Lumpur Stock Exchange (KLSE) and Composite Index (KLCI) were decreasing from 1300 points to 262 points in between 1997 to 1998. Consequently, Malaysia overall money and capital market collapse and caused economy downturns and backward. There is a lot of people were facing bankruptcy and unemployment rate high. According to Nanto (1998), the BOT surplus help Malaysia recover from Asian Financial Crisis.

Figure 1.1.5: Total Balance of Trade in Malaysia from 1980 to 2010



Sources: Malaysia Balance of Trade (2011)

1.2 Research Background: The Raise of Japan

Japan is a well developed and high economic growth country. Based on World Bank recorded data in 2010, Japan Gross Domestic Product (GDP) achieved USD$5458.83 billion which is contributed 8.87% of the world economy. In the aspect of BOT, Japan has done a very good performance which recorded USD$195.75 billion. By comparing Japan's GDP with ASEAN developing countries such as Malaysia USD$237.79 billion, Philippines USD$199.58 billion, Indonesia USD$706.55 billion, Thailand USD$318.52 billion and developed country likes Singapore USD$208.76 billion, Japan still rank in the highest position.

According to Okita (n.d.) studies, after the World War 2, Japan entered into a very hardship and depressed condition. Million of Japanese civilian sacrificed and died in the war. The consequences of war has brought a decreased of country's wealth where homes, buildings, infrastructures and even a city Hiroshima destroyed. In further, Japanese civilian's living standard has dropped bombastically due to high numbers of unemployed, homeless, orphans and hunger people. Therefore, the whole economy system in Japan has collapsed and unable to function. Even more, economy market in ASEAN also been halted.

However, it is amazing that Japan was so fast recover, revival and even expansion from the distressed and loss. Curiously, how Japan did that? Actually, the secret of success behind the rehabilitation is due on Foreign Trade.

The Japan's foreign trade with other countries grows rapidly although Japan faced difficulties and obstacles due to political issues after World War 2. Japan lost ASEAN markets and nearby markets such as China. Consequently, Japan to be compelled to import raw materials from other countries relatively far away. Therefore, cost of production increased due to expensive raw materials. However in 1960, Japan was able to keep up with the changes of world market and succeed in diversified its export trade. Year after year, the restriction or barrier from nearby country became loosen and enable Japan to reduce cost of import. This

advantage allowed Japan to stimulate domestic economic activity and boosted up export trade. Therefore, Japan strived to produce high quality products and enhance export trade in order to achieve higher income per capita and low unemployment rate.

Furthermore, there is one message can be getting through the historical story of Japan where a rise of a country is not occasionally, but it depends on certain factors and crucial variables such as exports and imports. After the World War 2, Japan succeeds recovered from the distressed and able to convert from less developed country to become developed country. The main reason behind the story is because of the BOT surplus, and the capital inflow allowed Japan to boost up economic growth. Lesson from Japan was trade surplus will help the country from undeveloped country convert to developed country. Therefore, this paper try to study the factor affecting trade surplus for ASEAN 5 namely, Malaysia, Singapore, Thailand, Philippines and Indonesia which have similar background with Japan.

1.3 Problem Statement

Theoretically, if a country's currency appreciates would lead to trade deficit; in contrast, if currency depreciates would lead to trade surplus of the country. However, this theory does not match and fulfill the condition of economy system.

According Rose (1991) stated that there is an evidence to show that the BOT is significantly affected by the REER. The researcher stated that the relationship between the bilateral merchandise BOT and Real Effective Exchange Rate (REER) among several countries but the result show that no evidence of the J-curve effect.

Other researcher like Bryant, Helliwell & Hooper (1989) stated that the role of the REER and the model suggests that a drop in the value of the dollar caused by monetary expansion or changes in market expectations will provide little or no

improvement in the BOT. BOT effect of an REER movement depends on what caused the exchange rate. Similarly, Liew, Lim & Hussain (2003) stated that ASEAN-5 (Malaysia, Philippines, Singapore, Thailand, Indonesia), BOT is affected by real money rather than REER.

However, there is an argument by other researcher Bahmani-Oskooee (2001) who was stated that there is significant between REER and BOT in long run and this result same with Ball, Burns & Laury (1977) which show the REER depreciation will only have a long-run impact upon the BOT.

1.4 Research Objective

The general objective of this research is to investigate the relationship between REER and BOT among ASEAN-5 namely Thailand, Singapore, Malaysia, Philippines and Indonesia. The objectives of the study are listed as follows:

1. To examine the long run relationships between different types of issues such as FDI, RGDP, REER, CPI, BOT in the ASEAN-5.

2. To examine the short run causality between FDI, RGDP, REER, CPI and BOT in ASEAN-5.

3. To decompose the impact of FDI, RGDP, REER, CPI, BOT in ASEAN-5.

1.5 Significance of the Study

The significance of the study on the long run relationship and short run causality between REER and others variables which might affect BOT among the ASEAN-5 countries contribute many important information and guideline to certain group of players involve in the market such as the hedgers, speculators, and policymaker of the country.

According to Hull (2012) stated that those players in the markets such as hedgers will use financial derivatives to protect themselves where to reduce the potential risk that they might face in the future. Thus, this study provides a guideline to those players to analyze and make decision with higher percentage accuracy in the foreign exchange market whether is in long run or short run. Other corporations such as Import or Export Corporation also can refer this study as a reference for better understanding about the trend of REER in future markets. By using this study, the players can knew all about what are the factors which will affect the BOT among the ASEAN-5.

Besides, policymaker intends to stabilize economies and prevent inflation and fluctuations of REER by controlling money supplies. Thus, this study enables policymaker to identify the most available strategy to stabilize currency exchange rate and reduce inflation at the same time. A U.S. dollars is a major foreign currency exchange in the world and the foreign reserve of each country. This study important to policymaker in managing uncertainty changes in foreign exchange markets. For example, trade deficit is a sign for policymaker whether implement fiscal policy or monetary policy to promote export.

1.6 Chapter Layout

Firstly, this paper had conducted the overview of this paper which is background of the dependent variable, research background, objective of the study and this paper also reviews on the significance of the study in chapter 1. Next, Chapter 2 will conduct the literature review of the dependent variables and independent variables which the paper is mainly focus on it. Meanwhile, this paper also would discuss on the methodology theory on the method in the following chapter. Besides, this paper will also conduct data collection method; data processing and data analysis method and data analysis in Chapter 4. Lastly, in Chapter 5, this paper also discusses the policy implications, limitations of this paper and recommendations for the future research or further study.

1.7 Conclusion

From the Chapter 1, this paper aims to know does the REER is the main variables which will affect the BOT among the ASEAN-5 countries. It also believes that there are other variables which might affect the BOT of the country. According to Airey (1978) stated that there are a few factors which will affect the BOT of the country such as household demand which affect the supply from the suppliers, exchange rate, gross domestic products and etc.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This paper had presented the research background, problem statement, general objectives, and significance of this study in Chapter 1. This chapter aims to discuss and provide relevant literature review on the dependent variable and independent variables which is BOT, GDP, FDI, and REER. Due to the objective of this paper, this chapter cover on does independent variables will affect or have any relationship on dependent variables. There are five parts in this chapter and this chapter discuss separately about does the independent variables have long run or short run relationship with the dependent variable which is BOT. First and foremost, the first part is cover a number of studies about the dependent variable which is BOT and another few parts would cover by the independent variables of this paper which is REER, GDP and FDI. The few parts are reviewing on how the independent variables affect the dependent variable, BOT in term of long run or short run.

2.1 Review of the Prior Empirical Studies

2.1.1 Balance of Trade (BOT)

Generally, assumed if a country has a trade surplus, it means that the country is doing well which is in HubPages (2012). If a country has trade deficits for some period of time, it means that the country might face some troubles. The trouble facing by the country is they will highly rely on the willingness of foreigners to buy assets. If foreigners are not willing to invest or buy assets in the country which facing trade deficit, their currency will be drop significantly. Thus, their products are relatively cheaper than other countries. According to HubPages

(2012), those countries who facing trade surplus, their exports market will be reduced when their currency is appreciates significantly. Thus, their products will be expensive than other countries.

There are various factors affect the BOT. There are numerous studies about the relationship between the Exchange Rate (ER) and BOT. Firstly, according to Himarios (1989) and Bahmani-Oskooee (2001), in the theory, ER has a direct effect on the BOT because of the nominal depreciation or appreciation of ER. Besides, according to Greenwood (1984), Mahdavi and Sohrabian (1993), Rahman and Mustafa (1996), Rahman, Mustafa, and Burckel, (1997) although the theory stated that ER has a direct effect on the BOT but there are several of studies have found weak relationship between the ER changes and BOT. Some of the countries have proved that changes in ER have affected BOT but some of the countries shows that the impact of ER changes on BOT are still unclear. A study conducted by Liew, Lim and Hussain (2003) on ASEAN-5 countries shows that the BOT is not affected by ER but real money because many studies has found weak relationship between the exchange rate changes and BOT.

Some of the researchers are studies about the relationship between the ER and the BOT. The view of devaluation can improves the BOT is supported by Gylfason and Risager (1984), Bahmani-Oskooee (1985), and Himarios (1989). The devaluation of the currency can improves the BOT because the exports of the country will be increase due to their product's price is relatively cheaper than other countries. A study conducted by Miles (1979), Haynes and Stone (1982) and Bahmani-Oskooee (1991, 1992 & 1994) have challenged the view of devaluation can improves the BOT or they provide evidence that the Marshall-Lerner condition holds only for certain countries or time periods. According to Rose and Yellen (1989), Rose (1991), there are evidence to prove that there is no significant relationship between the BOT and the ER. Based on the bilateral trade between the U.S and the other G7 countries, a study conducted by Shirvani and Wilbratte (1997) has found evidence that the BOT has no effect to the ER in the very short run but it is significantly affected by it within two years.

2.1.2 Exchange Rates (ER)

ER defined as the total percentage which used to exchange for different currency. ER is useful for trading currency process among two countries. According to Liew, Lim and Hussain (2003) stated that ER is the major consideration or major tool for determine the country's BOT and future growth. Anyhow, this issue has been argued that some of the researchers feel that ER is not important tool for determine the country's BOT.

Due to this argument, many researchers might tried to find out the powerful evidences to support their own objective which the BOT have relationship or not with the ER. Somehow some of the researchers using the same method to detect the possibility of the relationship but still will get different answer.

Certain researchers might use the theoretical method to prove or support their own objective. According to Yusoff (2007) which studied on Malaysia case and stated that BOT and ER have long run relationship. Besides, Bahmani-Oskooee (2001) also stated that the depreciation in currency can improve the BOT in the long run. As mentioned previously, currency is rely on the performance of the ER which smaller changes will affect the total traded amount from local currency to another. Another researcher, Sugema (2005) stated that the depreciation of ER will affect the supply side chock. As the result, the depreciation of ER will improve the BOT on the particular country. Most of the three researchers used co-integration to support or prove their theory which the ER will affect the BOT in direct or indirectly way.

In contrast, there are some researchers which argued that BOT and ER are totally no relationship at all. According to Duasa (2007) which only studied on Malaysia case stated that BOT and ER are no long run relationship. This statement had been supported by Bahmani-Oskooee and Wang (2007) which studied on the United States and Australia. The researcher fails to find the evidence to prove that BOT and ER are no relationship at all. They only stated that there are no short run or long run relationship between BOT and ER.

Another study which using another methods where to test how the sensitivity is commodity trade slows between U.S. and India to currency depreciation by Bahmani-Oskooee and Mitra (2010). They discovered that India's BOT are failed to improve when ER of Rupee depreciated. This study also mentioned that there is short run relationship between ER and BOT between India and US, but there is no long run relationship. However, the variation of this result might due to the different industries data capture from the not well developed industries in India.

As an observation for this review, different results have been shown. There are several reasons behind these discrepancies. The first reason may depend on circumstances or situation for each country. This is because different national condition will affect the result. The second reason may due to data collection, some studies used quarterly data and some studies used annually data. Aggregation or individual data used also will determine the changes of effect.

2.1.3 Gross Domestic Product (GDP)

According to Marshall (2009), over the past half century, the advances in technology and inflow of cheap foreign labours and other factors had led to the significant growth of GDP in United States (U.S). Apart from this, the terms of trade of U.S had changes rapidly in the past half century as a result of increased openness of the world's economies. The openness of the world's economies has grown rapidly due to lower tariffs and lower trading costs brought by advances in communication and transportation. The combined power of growth in GDP of U.S and increased openness of world economies lead to higher surplus in BOT of U.S. Over the past decades, the researchers over the globe have done numerous studies to find out the relationship between GDP and BOT. From 1996 to 2007, U.S enjoy surplus in BOT as a result of cumulative growth rate in income amounted to 1.8 percent over 12 years by Marshall (2009). At the same time, U.S also enjoying higher price of net export due to the lower import prices from developing countries such as China. According to Gorman (2003), the decreases in import prices lead to higher net export in the past 12 years as U.S export at the same price while import raw material at lower price. As a result, the nation's GDP increase when net exports are positive. The higher net export leads to higher surplus in BOT.

In the past decade, the have been trade deficit exists between U.S and China due to some factors such as higher demand in U.S, higher domestic production in China and lower price of goods exported by China. Both of the countries have been working on correcting the trade imbalance between them. However, the trade deficit of U.S with China rose from $226.9 billion in 2009 to $273.1 billion in 2010. The trade deficit of U.S to China in 2010 is the highest in the history. Some economist believed that trade friction is the key factor contributed to the trade imbalances between the two largest economies in the world. Besides, there are a lot of lawmakers in U.S believe that the currency of China is undervalued significantly and leading to price advantage to China's companies in international trade. As a result, China loosened the Chinese Yuan and the value of Yuan rose by Macroeconomic Revision Note: The China Effect (2011).

In addition, according to Kohli (2003), a decrease in import price will cause an increase in the GDP deflator. However, a fall in import price will equal to a positive outcome. Since the GDP deflator is negatively influence the import price level that increase BOT and shows the real GDP automatically underestimate the growth in real income. There is a negative impact between changes in domestic income and BOT by Stucka (2004).

Imports are inputs to the production process combined with domestic factor which are labour and capital to produce more output that can be use in the country or export to others countries. At the same time is import technology into Switzerland by Kohli (2003). Production process needs technology to transform from input into output.

Domestic firms in India who used cheaper imported inputs in their production process led to lower marginal cost of production. According to Goldberg, Khandelwal, Pavcnik and Topalova (2010), the improvement of domestic production technology in substitute imported inputs and intermediates with local produced inputs and intermediates is significant in reducing import cost and in turn higher domestic income. The import of technology increase, the production and domestic income in the country will increase at the same time. The economic growth will improve so that the net export will directly affect the GDP. This will increase the international trade of the country. An improvement in BOT may enable a country to exploit its comparative advantages, Same as US, advance technology will have an improvement in the BOT is allowing country to develop its comparative advantages especially by Kohli (2003).

2.1.4 Foreign Direct Investment (FDI)

FDI can be classified into two types which are horizontal FDI and vertical FDI. Horizontal FDI occurs when multinational firm produce same good or services in different countries, where the production is served in local market. According to Buckley & Casson (1981), stated that with the objective of horizontal expansion, the horizontal FDI taken as a substitute for exporting and intend to set production close to consumers in order to reduce trade cost, transportation cast and trade barriers. A horizontal FDI will lead to reduce trade flow because the market is served through local production but not export.

On the other hand, vertical FDI occurs when the multinational enterprise can geographically split up their production by stages due to the difference of relative cost. Carr, Markusen, & Maskus (2001) stated that multinational enterprise can take advantage in this type of investment. This is because they can geographically separate their production process. When the production is separated, the input of production will be import from different countries and the price of input also will be different. This will become profitable especially in the country with the lower production cost such as low labour cost. According to Helpman (1984), shows that the fragmentation of a production will help in cost saving for multinational enterprise when it separates the high-skilled labour and unskilled labour intensive production activities. This is consistent with Braconier, Norback and Urba (2005) and Markusen (1995).

Aizenman and Noy (2005) and Culem (1988) found that there is a bidirectional relationship between FDI and BOT. Graham and Krugman (1989) argue that FDI has negative impact on the host country's BOT. This is because export of the host country is less and import is significantly more than the foreign country. However the relationship between import and trade also depends on types of import. If the producer uses local raw material to produce goods, it will not affect on import. However, if the production relies on foreign country's resources such as raw material or labor then it will affect import of the country positively.

The raw material is very important in a production. The demand of raw material from country which is lack of resources will encourage the growth of FDI. This will increase export of host country. The host country also can enhance its BOT by taking the benefit low-cost production by Phongpaichit (1990). According to Giles and Williams (2000) stated that this type of investment will emphasize in the production of raw material. By taking advantage of low cost, the investor will produce in host country. After production, export the material to other high demand country to produce finished goods. This type of investment is tending to increase market competitive position.

Besides, the host country also can enjoy technology transfer from foreign country through the FDI. The main objective of FDI is to improve growth of country. So, it contributes a major part in economic growth by increasing capital. The FDI will enhance country's growth by generating employment in host country and sharing knowledge in host country by Mordechai, Rubin and Maki (2008). This is consistent with Marshall (2009) shows that not only the host country can enjoy the benefit of sharing knowledge but also among the industry.

Moreover, Beugelsdijk, Smeets and Zwinkels (2008) suggested that the quality of host country labour can be improved through advanced technology. The FDI will bring in advance technology and management expertise to strengthen up the knowledge and skill of host country labour. This is similar to the Hermes and Lensink (2003), Lensink and Morrissey (2001), and Gorg and Strobl (2001) argues that bring in technology or knowledge will assist in increase productivity and trade of a country. The host country producer may train their worker efficiently with the technical assistance provided by foreign investor. Based on Gorman (2003) emphasize that the multinational enterprise has played an important role in transferring knowledge to the less develop country. The researcher shows that the economic growth of country has a close relationship with the competitive strength. A developing country with the advance technology will attract foreign investment. However, low income country is hard to attract FDI. The investment behavior of investor will affect the trade of country.

2.2 Conclusion

From the review on previous study, most of the studies have difference opinion on the relationship between the Balance of Trade (BOT) and selected independent variables on this paper. Therefore, this paper will try to study the relationship between the Balance of Trade (BOT) and selected independent variables in ASEAN-5. To avoid the spurioer problem, this paper will employ the research framework from Yusoff (2007).

CHAPTER 3: METHODOLOGY

3.0 Introduction

This chapter is to introduce the methodology theory of the tests which used to discuss the relationship between dependent variable which is BOT and independent variables such as Foreign Direct Investment (FDI), Real Growth Domestic Product (RGDP), Inflation (CPI) and Real Effective Exchange Rate (REER). This paper is used time series analysis to study the relationship between the dependent variable and independent variables which had included in this paper. Furthermore, there are few types of tests are included in this chapter which is Unit Root Test which included Augmented Dickey- Fuller (ADF) test, Phillips-Perron (PP) Test, Johansen and Juselius Co-integration test, Granger Causality, Variance Decomposition Tests and Diagnostic Checking. The tests listed above are to examine the relationship between BOT and independent variables which are FDI, REER, GDP and CPI. To find the accuracy of the relationship between all the variables, the first step taken is to test the model for unit root by using ADF and PP test to determine is the stationary of the sample data itself. Johansen and Juselius will employ to long run relationship between independent variables among each other. Next, this paper will examine the short run causality by using Granger Causality dependent variable and independent variables among the ASEAN-5 countries. Next, this paper proceeds to Variance Decomposition test to provide the information about how much is the effect on each variable to the dependent variable. Lastly, Diagnostic Checking had been conducted to examine ant possibility of the autocorrelation problem in the model.

3.1 Data Analysis

The objective of this paper is to define the role and important of chosen variables such as CPI, RGDP, REER and FDI and BOT of ASEAN-5 countries namely Malaysia, Singapore, Thailand, Philippines and Indonesia. All the data sources obtain from the World Bank from year 1984 to year 2010. The time range of this paper account is on annually.

3.1.1 Model Specification

In this study, the relationships between BOT and independent variables which are REER, FDI, RGDP and CPI. The model below is obtained from Yusoff (2007).

$$BOT = \beta_0 + \beta_1 REER + \beta_2 FDI + \beta_3 GDP + \beta_4 CPI + \varepsilon$$

Where BOT = Log of Balance of Trade
REER = Log of Real Effective Exchange Rate
FDI = Log of Foreign Direct Investment
RGDP = Log of Real Gross Domestic Product
CPI = Log of Consumer Price Index

Most of the countries test the short relationships between BOT and independent variables which are REER, FDI, RGDP and CPI in ASEAN-5 countries, Granger Causality will be applied to test short run, while the long run relationships will be employed by using Johansen and Juselius Co-integration Test. Before carry out these estimations, it has been recommended that all variables must be stationary to avoid spurious regression before conduct the estimations.

3.2 The Stationary Test

There are two types of tests to determine the stationary of the times series data which is Augmented Dickey Fuller (ADF) and Phillips-Perron (PP). These two methods are commonly use by the researchers to test the stationary of the time series data. ADF test is the new version of the Dickey-Fuller (DF) test for the set of time series models which the data size is larger and more complicated compare to Dickey-Fuller test.

Hypothesis:

H_0: variable is non stationary (unit root).

H_1: variable is stationary.

The Dickey-Fuller tests have three types of test equation which is the time series is flat and slowly turn become zero, the time series is flat and slowly turn to non-zero value and lastly is the time series has a trend which either up or down and slowly turn to a trend line. The ADF test is most similar to the DF test but the differences between these two methods are the ADF tests only have 2 types of equation which is flat and slowly turn to non-zero value and have a trend and slowly turn to a trend line which always draws in time series data.

Besides, Phillips-Perron (PP) test were founded by Phillips and Perron. PP test is an alternative method to test a unit root by controlling the serial correlation of the time series data. The purpose of PP method is to determine the non-ADF test and modifies the ratio of α coefficient so that serial correlation does not affect the asymptotic distribution of the test statistic.

3.2.1 Augmented Dickey-Fuller (ADF) Test

An Augmented Dickey-Fuller (ADF) test is used to determine whether there is a stationary in the time series data. ADF test is a test which specially used to test for a unit root in a time series sample. ADF was the new version for the Dickey-Fuller test which can be used to a larger and more complicated set of time series models. Normally statistic number for the ADF test is in term of negative number. In other words, it means that the smaller the number is of ADF, the higher the probability of rejection of the hypothesis that there is a unit root at some level of confidence.

There is the few type of the test equation for the ADF test:

a) When the time series is flat and potentially slow-turning around zero.

   The number of augmenting lags is determined by the minimum Schwarz's Information Criterion (SIC) of minimum Akaike's Information Criterion (AIC). This test equation does not have time trend or intercept. This is called as Dickey-Fuller t-statistic.

$$H_0: Has\ unit\ root$$
$$H_1: No\ unit\ root$$

b) When the time series is flat and potentially slow-turning around non-zero value.

   This type of test equation has an intercept but no time trend. The number of augmenting lags is determined by minimum Schwarz's Information Criterion (SIC) and minimum Akaike's Information Criterion (AIC).This used the t-statistic to test the stationary of the time series data.

$$H_0: Has\ unit\ root$$
$$H_1: No\ unit\ root$$

c) When the time series has a trend (either up or down) and is potentially slow-turning around a trend line you would draw through the data.

This test equation has an intercept and time trend. The number of augmenting lags is determined by the minimum Schwarz's Information Criterion (SIC) and minimum Akaike's Information Criterion (AIC).

$$H_0: Has\ unit\ root$$

$$H_1: No\ unit\ root$$

According to Gujarati (2003), the unit root hypothesis for the Dickey-Fuller will be rejected when the t-statistic is greater than the critical value. In other words, in ADF test, the unit root exists in the time series data when the null hypothesis is not rejected.

3.2.2 Philips -Perron (PP) Test

Philips and Perron(1988) had introduced an alternative method to test a unit root to control the serial correlation. The PP test is used to correct any serial correlation and heteroscedasticity in the errors by modifying the Dickey-Fuller test statistic.

The purpose of PP test method is to determine the non-ADF test and modifies the ratio of α coefficient so that serial correlation does not affect the asymptotic distribution of the test statistic. The PP test is based on the statistic:

$$t_{\propto} = t_{\propto} \left(\frac{\gamma o}{f0}\right)^{1/2} - \frac{T\,(f0-\gamma 0)(se\,(\widehat{\propto}))}{2\,f_0^{1/2}s}$$

Where $\widehat{\propto}$ is the estimate, and $t_{\propto}$the t-ratio of α, se$(\widehat{\propto})$ is coefficient standard error, and s is the standard error of the test regression. In addition, $y_0$is a consistent estimate of the error variance? The remaining term, f_0 is an estimator of the residual spectrum at frequency zero.

3.3 Co-integrating Test

3.3.1 Johansen and Juselius Test

Co-integration test by Johansen and Juselius (1990) is to detect whether any possibility of short runs or long run relationship between independent variables. The proper way to test for the relationship between independent variable and dependent variables are certainly to test for a co-integrating equation. By using the Johansen and Juselius method, this method can determine whether is there any subset in a set of series has co-integration. Co-integration deals with relationships among the group of variables where each has a unit root. It relies on a strict assumption of the unit root nature in the variables involved. Therefore, it is important to examine the stationary nature of the variables before carry on to this test.

$$\Delta Y_t = \Pi Y_{t-1} + \Gamma_1 \Delta Y_{t-1} + \Gamma_2 \Delta Y_{t-2} + \ldots + \Gamma_{k-1} \Delta Y_{t-(k-1)} + u_t$$

Where, Y_1= Balance of Trade

Y_2 = Foreign Direct Investment

Y_3 = Real Effective Exchange Rate

Y_4 = Real Gross Domestic Product

Y_5 = Inflation

The test for cointegration between the *y*'s is calculated by looking at the rank of the Π matrix via its eigenvalues. The rank of a matrix is equal to the number of its characteristic roots (eigenvalues) that are different from zero.

There are 4 classes of possibilities to consider:

(i) Rank (π) = 0;

(ii) Rank (π) = k; (full rank)

(iii) Rank (π) = 1;

(iv) Rank (π) = r; 1 <r < k

Hypothesis:

H_0: Long-run relationship does not exist between variables.

H_1: Long-run relationship exists between variables.

In summarizes, if first hypothesis is rejected, means there is cointegrating relationship in the regression. If reject first and second hypotheses, means there are two cointegrating relationships. If three hypotheses are rejected means there are many cointegrating relationships as variables. In other words, if all hypotheses are not rejected means the regression is incorrect, it imply that there is no direct causal relationship between the variables, wrong selection of independent variables occurred.

3.4 Granger Causality

Granger Causality founded by Granger (1969) is use to examine the short run causality among ASEAN-5 countries variable. Most of the time, Granger Causality test is functional in determining the ability of one time series in forecasting another. Besides, it also can measure whether is there any factors will affect the influence between dependent and independent variables. If signals X_t cause a signal Y_t, past values of X_t should helps to predict Y_t with information.

Hypothesis:

H_0: There is no Granger cause relationship between BOT and independent variables in short run.

H_1: There is Granger cause relationship between BOT and independent variables in short run.

F test had been used in this method to determine the past information of one variable (X) improves the predictability of another variable (Y); however the number of lags (a) and (b) introduced is crucial as insufficient lags will imply auto correlated errors, while excessive lags will reduce the predictability power.

$$\begin{pmatrix} \Delta CA_t \\ \Delta FDI_t \\ \Delta LgCPI_t \\ \Delta REER_t \\ \Delta RGDP_t \end{pmatrix} = \begin{pmatrix} \alpha_{11} & \alpha_{12} & \alpha_{13} & \alpha_{14} & \alpha_{15} \\ \alpha_{21} & \alpha_{22} & \alpha_{23} & \alpha_{24} & \alpha_{25} \\ \alpha_{31} & \alpha_{32} & \alpha_{33} & \alpha_{34} & \alpha_{35} \\ \alpha_{41} & \alpha_{42} & \alpha_{43} & \alpha_{44} & \alpha_{45} \\ \alpha_{51} & \alpha_{52} & \alpha_{53} & \alpha_{54} & \alpha_{55} \end{pmatrix} \begin{pmatrix} \Delta CA_{t-1} \\ \Delta FDI_{t-1} \\ \Delta LgCPI_{t-1} \\ \Delta REER_{t-1} \\ \Delta RGDP_{t-1} \end{pmatrix} + \begin{pmatrix} c_1 \\ c_2 \\ c_3 \\ c_4 \\ c_5 \end{pmatrix} + \begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \\ \varepsilon_3 \\ \varepsilon_4 \\ \varepsilon_5 \end{pmatrix}$$

3.5 Variance Decomposition

To examine the respond of dependent variables to their "own" shock and other variables, Variance Decomposition (VDc) will be employed. The advantage of VDc can show the movement of dependents variables to their own shock and shock from other variables. The VDc derived from Vector Autocorrelation Regression (VAR) model, which present the result on dynamic VAR form. The VDc models are show as below:

For the VAR (p) of form

This can be changed to a VAR (1) structure by writing it in companion form:

$Y_t = \nu + AY_{t-1} + \upsilon_t$ where

$$A = \begin{pmatrix} A_1 & A_2 & \cdots & A_{p-1} & A_p \\ I & 0 & \cdots & 0 & 0 \\ 0 & I_k & & 0 & 0 \\ \vdots & & \ddots & \vdots & \vdots \\ 0 & 0 & \cdots & I_k & 0 \end{pmatrix}, \quad Y_t = \begin{pmatrix} BOT \\ \vdots \\ CPI \end{pmatrix}, \quad V = \begin{pmatrix} \nu \\ 0 \\ \vdots \\ 0 \end{pmatrix} \text{ and } \quad U_t = \begin{pmatrix} \upsilon \\ 0 \\ \vdots \\ 0 \end{pmatrix}$$

$Y_t = \nu + A_{1\ yt-1} + \cdots + A_{p\ yt-p} + \upsilon_t$

Where Y_t, ν and υ are k dimensional column vectors, A is kp by kp dimensional matrix and Y, V and U are kp dimensional column vectors.
From the model (Equation X), the shock to the i-th variable will direct transmitted to the dependent variable as well as all other variables.

Where, BOT= Balance of Trade
FDI = Foreign Direct Investment
REER = Real Effective Exchange Rate
RGDP = Real Gross Domestic Product
CPI = Inflation

Therefore, to forecast the impact of shock to the Equation X, the s-step forecast method will employed in forecasting error of a given variable is explained by innovations to each dependent variable for s=1,2,…..
To examine the VDc, ordering the variables are very important. It may affect result of VDc test even same data set are used. Therefore, this paper will used Cholesky Orthogonalised which recommended by Lutkepohl (1991).

3.6 Diagnostic Checking

Diagnostic Checking are significant tools for the time series modeling to verify the adequacy of the representation model, so that can avoid potential economic problem. Most of the Diagnostic Checking is applied to study the dependence structure of a time series model. Diagnostic Checking is test on raw data series in order to solve the problem on how the data might be modeled by the information given. After estimate the model, Diagnostic Checking is used to model residual and identify whether there is an improvement on the estimated model or not. Base on our study, Diagnostic Checking for normal distribution is checked with Jarque-Bera Normality Test, at the same time serial correlation will be checked by using Lagrange Multiplier Test.

3.6.1 Jarque-Bera Normality Tests

Jarque-Bera is a test statistic for testing the series is normally distributed or not. Normal distribution variables is important because if there is a large number of independent and identically distributed random variable, followed by the distribution of their sum tends to be normal distribution as the number of variable increase indefinitely, by Central Limit Theorem. The test statistic is to determine the difference of skewness and kurtosis of the series with those from the normal distribution is computed as:

$$Jarque - Bera = \frac{N}{\sigma}\left(S^2 + \frac{(K-3)^2}{4}\right)$$

Where S is the skewness, and K is the kurtosis.

Hypothesis:

H_0: Error term is normally distributed
H_1: Error term is not normally distributed

Under the null hypothesis of a normal distribution, the Jarque-Bera statistic is distributed as x^2 with two degrees of freedom. A small probability value leads to the rejection of the null hypothesis of a normal distribution. The probability shown is the probability that a Jarque-Bera statistic exceeds the observed value under the null hypothesis. In other words, the histogram should be bell-shaped and the Jarque-Bera statistic should not be significant if the residuals are normally distributed.

3.6.2 Lagrange Multiplier Test

To test the serial correlation, this test is an alternative to the Q-statistics. This test known as Lagrange Multiplier Tests because is belongs to the class of asymptotic tests, means is in large sample. Lagrange Multiplier tests are applied to identify whether there are lagged dependent variables or not and test for higher order ARMA error, which is different with Durbin-Watson statistic for AR (1) error.

Where *p* is a pre-specified integer, there is no serial correlation up to lag order *p* for the null hypothesis of Lagrange Multiplier test and the hypothesis stated as

H_0: no autocorrelation problem

H_1: have autocorrelation problem

3.7 Conclusion

This chapter provides the outline of the paper's research design, data collection method, sampling design, research instrument, constructs measurement, data processing and also data analysis which include research methodology employed throughout the study. Thus, this provide an understanding to the reader on the overall research is constructed begins from the type of research involves in this research such as descriptive, correlation and also explanatory. The description on statistical methods has been explained including unit root, Johansen and Juselius Co-integration and Granger Causality Test. The empirical result for the test will be further explained in the next chapter.

CHAPTER 4: RESULT AND INTERPRETATION

4.0 Introduction

This chapter will determine the results of the tests which had been stated by the previous chapter. This chapter mainly focuses to examine the evidences which all the independent variables namely REER, FDI, CPI, and RGDP will affect the dependent variable which is BOT no matter in long run relationship and short run among the ASEAN-5 countries namely Thailand, Indonesia, Philippines, Singapore and Malaysia. In the first section, the times series data will be tested by ADF and PP Test and the optimal lag length selection for Unit Root Test is based on Schwarz's Information Criterion (SIC) for all the variables among the ASEAN-5 countries. Next, the Johansen and Juselius (JJ) Co-integration Test had been conducted to indentify the long run relationship between FDI, GDP, CPI, REER and BOT. Besides, this chapter also covered the Granger Causality to examine the short run causality among the variables. Next, the result of Variance Decomposition Test is shows that how many the variables might affect the variables each other in term of percentage (%). Lastly, the Diagnostic Checking Test conducted to examine the potential economic problem.

4.1 Unit Root Test Result

The stationary of time series data will be tested by using Augmented Dickey Fuller (ADF) and Philip-Perron (PP) Test. The optimal lag length selection for Unit Root Test model is based on the Schwarz's Information Criterion (SIC) for all variables.

In the Unit Root Test, it includes two specific models which are without trend and trend model. The reason is to capture the trend effect on time series data. Besides, to enhance the results of Unit Root Test, the ADF and PP Test will employ and results are show in Table 4.1.1 until Table 4.1.4.

Based on the result Table 4.1.1 and Table 4.1.3 all the variables are insignificant in level form even in 10% significance level. Therefore, this was concluded that all variable are non-stationary at level form.

The next step, this test will proceed to first difference from Table 4.1.2 and Table 4.1.4 all variable are significant at 1% , 5% and 10% significance level, therefore the result show that all variable are dynamics stationary at first difference level.

Table 4.1.1: Result of Unit Root Test (ADF-Level)

LEVEL	Intercept					Trend and Intercept				
COUNTRIES	**INDONESIA**	**MALAYSIA**	**PHILIPPINES**	**SINGAPORE**	**THAILAND**	**INDONESIA**	**MALAYSIA**	**PHILIPPINES**	**SINGAPORE**	**THAILAND**
CPI	3.9299(0)	1.1378(0)	2.5786(0)	0.6314(0)	0.9674(0)	-0.5913(0)	-1.5847(0)	-1.2258(0)	-1.7743(1)	-2.3080(0)
BOT	-1.9414(0)	-1.6144(0)	-1.9829(0)	-2.0979(0)	-2.2342(0)	-3.2089(0)	-2.3295(0)	-2.1909(2)	-2.1558(2)	-2.7212 (0)
FDI	-0.8789(5)	-2.3979(0)	-1.6929(1)	1.1367(5)	-1.0714(0)	-1.4262(5)	-2.6594(1)	-2.7769(1)	-2.9172(2)	-3.2139(2)
REER	-2.2934(0)	-2.1368(0)	-2.0113(0)	-2.1743(0)	-1.7086(0)	-1.8271(0)	-1.6420(0)	-3.0475(3)	-2.0459(0)	-2.9191(4)
RGDP	-1.9809(0)	-0.1448(0)	-1.8814(3)	-1.0115(0)	-1.2547(1)	-1.7616(0)	-2.2168(0)	-2.1578(0)	-1.8788(1)	-2.5088(3)

Note: *, **, *** indicates the rejection of the null hypothesis at 10%, 5%, 1% significance levels. Number in parentheses is the number of lags. Lag lengths for the ADF unit root are based on Schwarz information criterion. The bandwidth for the PP unit root is based on the Newey-West estimator using the Default (Barlett kernel). The unit root tests include a constant and a linear time trend. The null hypothesis under ADF and PP tests are the presence of a unit root.

Table 4.1.2: Result of Unit Root Test (ADF-first difference)

First difference	Intercept					Trend and Intercept				
COUNTRIES	INDONESIA	MALAYSIA	PHILIPPINES	SINGAPORE	THAILAND	INDONESIA	MALAYSIA	PHILIPPINES	SINGAPORE	THAILAND
CPI	-2.9868(0)**	-4.0820(0)***	-4.6695(0)***	-4.1428(0)***	-5.1573(0)***	-4.6453(0)***	-4.3794(0)***	-5.4818(0)***	-4.2151(0)**	-5.3511(0)***
BOT	-5.7014(0)***	-5.0526(0)***	-5.2107(1)***	-5.8218(1)***	-5.5799(0)***	-5.5781(0)***	-4.9805(0)***	-5.1048(1)***	-6.0415(1)***	-5.4793(0)***
FDI	-3.6312(1)**	-5.8079(1)***	-8.7678(0)***	-5.1204(4)***	-5.2652(0)***	-3.7964(1)**	-5.7013(1)***	-8.6053(0)***	-5.4816(4)***	-8.2612(7)***
REER	-6.0499(0)***	-5.3863(0)***	-4.4881(0)***	-5.0356(0)***	-3.7384(0)***	-6.53101(0)***	-5.0013(1)***	-4.6349(0)***	-5.0403(0)***	-3.8728(0)**
RGDP	-5.0555(0)***	-4.7784(0)***	-2.8631(0)*	-3.2545(0)**	-3.4664(0)**	-5.1394(0)***	-4.7199(0)***	-3.6807(0)**	-3.3305(1)**	-3.3929(0)*

Note: *, **, *** indicates the rejection of the null hypothesis at 10%, 5%, 1% significance levels. Number in parentheses is the number of lags. Lag lengths for the ADF unit root are based on Schwarz information criterion. The bandwidth for the PP unit root is based on the Newey-West estimator using the Default (Barlett kernel). The unit root tests include a constant and a linear time trend. The null hypothesis under ADF and PP tests are the presence of a unit root.

Table 4.1.3: Result of Unit Root Test (PP-Level)

LEVEL	INTERCEPT					TREND AND INTERCEPT				
COUNTRIES	**INDONESIA**	**MALAYSIA**	**PHILIPPINES**	**SINGAPORE**	**THAILAND**	**INDONESIA**	**MALAYSIA**	**PHILIPPINES**	**SINGAPORE**	**THAILAND**
CPI	3.9298(0)	0.9290(2)	8.4879 (13)	0.4697(2)	0.9262 (2)	-0.5327(4)	-1.7588 (2)	-0.9023(5)	-1.6909(2)	-2.2997 (1)
BOT	-1.8942(2)	-1.6398(2)	-1.8891(1)	-2.1332(12)	-2.2839(2)	-3.2089(0)	-2.4861(2)	-3.0154(2)	-3.2048(3)	-2.8207(2)
FDI	-0.9969(3)	-2.2824(3)	-2.5614(2)	-1.0835(2)	-0.5390(5)	-1.7914(3)	-3.2034(3)	-3.2035(3)	-3.2130(3)	-3.2054(3)
REER	-2.2857(2)	-2.1190(2)	-2.2677(3)	-2.2400(4)	-1.8393(3)	-1.6910(3)	-1.6420(0)	-1.9629(4)	-2.0995(4)	-1.4179(3)
RGDP	-1.9975(1)	-0.0348(3)	-2.5601(3)	-0.9455(2)	-1.0599(3)	-1.8465(2)	-2.2168(0)	-2.1571(5)	-1.5814(3)	-1.7268(3)

Note: *, **, *** indicates the rejection of the null hypothesis at 10%, 5%, 1% significance levels. Number in parentheses is the number of lags. Lag lengths for the ADF unit root are based on Schwarz information criterion. The bandwidth for the PP unit root is based on the Newey-West estimator using the Default (Barlett kernel). The unit root tests include a constant and a linear time trend. The null hypothesis under ADF and PP tests are the presence of a unit root.

Table 4.1.4: Result of Unit Root Test (PP-First Difference)

First difference			Intercept			Trend and Intercept				
COUNTRIES	**INDONESIA**	**MALAYSIA**	**PHILIPPINES**	**SINGAPORE**	**THAILAND**	**INDONESIA**	**MALAYSIA**	**PHILIPPINES**	**SINGAPORE**	**THAILAND**
CPI	-2.8667(2)*	-4.2047 (3)***	-4.6626(2)***	-4.1352(1)***	-5.1883(2)***	-4.7083(6)***	-4.4004(2)***	-6.6935(7)***	-4.2093(1)**	-5.3612(2)***
BOT	-7.0960(8)***	-5.0575(4)***	-6.9873(2)***	-8.7963(17)***	-6.5559(8)***	-7.9519(10)***	-4.9787(4)***	-6.8148(2)***	-16.6899(27)***	-6.4075(8)***
FDI	-5.5473(2)***	-7.2074(1)***	-22.140(27)***	-8.2731(27)***	-7.3819(17)***	-5.6088(2)***	-7.1762(2)***	-22.917(27)***	-11.9947(7)***	-8.5961(21)***
REER	-6.0861(2)***	-5.3809(1)***	-4.5514(3)***	-5.3825(10)***	-3.7673(1)***	-6.5311(0)***	-6.6731(8)***	-4.7031(3)***	-5.6941(11)***	-3.9008(1)**
RGDP	-5.0555(0)***	-4.7339(4)***	-2.8659(2)*	-3.2545(0)**	-3.5047(1)*	-5.1394(0)***	-4.6692(4)***	-3.7027(3)**	-3.2289(2)*	-3.4333(1)*

Note: *, **, *** indicates the rejection of the null hypothesis at 10%, 5%, 1% significance levels. Number in parentheses is the number of lags. Lag lengths for the ADF unit root are based on Schwarz information criterion. The bandwidth for the PP unit root is based on the Newey-West estimator using the Default (Barlett kernel). The unit root tests include a constant and a linear time trend. The null hypothesis under ADF and PP tests are the presence of a unit root.

4.2 Co-integration Test Result

The purpose used co-integration test is to investigate the long run relationship between the dependent variable, BOT and independent variables which is RGDP, CPI, REER and FDI among the ASEAN-5 countries.

4.2.1 Co-integration Test of Thailand

From the Table 4.2.1, the results of trace test shows that there are three co-integrating vectors and same goes to maximum eigenvalue in the model. From the trace test, it shows that the null hypothesis of $r \leq 4$ is not being rejected at 5% significance level. In other words, there are almost 4 independent variables have long run relationships among variables.

The same results presented by the maximum eigenvalue test which the null hypothesis of $r \leq 4$ is not being rejected at 5% significance level.

However, based on Dickey and Fuller (1981), cointegrating vector can be explained as a symbol constraint that an economic system imposes on the behavior of variables in the long run. According to the researcher, the more cointegrating vectors there are, the more stable is the system. Based on both tests, it can be concluded that there is 2 cointegrating vector.

Table 4.2.1 : Co-integration Test of Thailand

Variable: BOT, FDI, CPI, REER, RGDP (k=2)
Sample Periods: 1984 : 2010

Order of Cointegrating: Null Hypothesis	Trace	95% CV	λ	95% CV
r = 0	146.0914*	69.8188	62.1009*	33.8768
r ≤ 1	83.9904*	47.8561	42.3076*	27.5843
r ≤ 2	41.6828*	29.7970	23.9236*	21.1316
r ≤ 3	17.7592*	15.4947	14.4022*	14.2646
r ≤ 4	3.357	3.8414	3.357	3.8414

Note: The asterisks indicate the rejection of null hypothesis at 5%*. k denotes the number of lags.
CV represents Critical Value, λ represents Max Eigenvalue.
Significance means there is cointegrating vector in long run.

4.2.2 Co-integration Test of Indonesia

Based on the Table 4.2.2, the trace test shows that the null hypothesis r = 0 can be rejected at 5% significance level and for the null hypothesis of r ≤ 1, the critical value also be rejected at 5% significance level. But when goes to null hypothesis of r ≤ 2, the critical value is not being rejected at 5% significance level. Based on the observations, there are almost 2 independent variables have long run relationship between the dependent variable, BOT.

On the other hand, maximum eigenvalue test shows that when null hypothesis r = 0, the critical value will be rejected at 5% significance level. When the null hypothesis is r ≤ 1, the critical value are not bring rejected at 5% significance level. In other word, the maximum eigenvalue test investigate that there is almost 1 independent variable have long run relationship among the variables. As a conclusion, the result from Table 4.4.2 shows 2 cointegrating vector.

Table 4.2.2. : Co-integration Test of Indonesia

Variable: BOT, FDI, CPI, REER, RGDP (k=2)

Sample Periods: 1984 : 2010

Oder of Cointegrating: Null Hypothesis	Trace	95% CV	λ	95% CV
r = 0	111.2133*	69.8188	61.2570*	33.8768
r ≤ 1	49.9562*	47.8561	26.5444	27.5843
r ≤ 2	23.4118	29.797	15.3313	21.1316
r ≤ 3	8.0805	15.4947	6.8374	14.2646
r ≤ 4	1.243	3.8414	1.243	3.8414

Note: The asterisks indicate the rejection of null hypothesis at 5%*. k denotes the number of lags.

CV represents Critical Value, λrepresents Max Eigenvalue

Significance means there is cointegrating vector in long run.

4.2.3 Co-integration Test of Philippines

From the Table 4.2.3, the trace test shows that the critical value of null hypothesis r = 0 can be easily rejected at 5% significance level. It same goes to null hypothesis $r \leq 1$ and $r \leq 2$ can be easily rejected at 5% significance level. But, it has different result when the null hypothesis $r \leq 3$ which is the critical value is not being rejected at 5% significance level. This result shows that there are almost 3 independent variables have long run relationship between the dependent variable, BOT.

Another test, maximum eigenvalue test also shows the same result which presented by the trace test. The maximum eigenvalue test also shows that the critical value of null hypothesis at $r \leq 3$ is not being rejected at 5% significance level. Therefore, this can be concluded that there is 3 cointegrating vector.

Table 4.2.3 : Co-integration Test of Philippines

Variable: BOT, FDI, CPI, REER, RGDP (k=2)
Sample Periods: 1984 : 2010

Order of Cointegrating:

Null Hypothesis	Trace	95% CV	λ	95% CV
r = 0	151.2412*	69.8188	72.8272*	33.8768
$r \leq 1$	78.4140*	47.8561	39.4957*	27.5843
$r \leq 2$	38.9182*	29.7970	32.0346*	21.1316
$r \leq 3$	6.8835	15.4947	5.728	14.2646
$r \leq 4$	1.1554	3.8414	1.1554	3.8414

Note: The asterisks indicate the rejection of null hypothesis at 5%*. k denotes the number of lags.
CV represents Critical Value, λ represents Max Eigenvalue
Significance means there is cointegrating vector in long run.

4.2.4 Co-integration Test of Singapore

From the table 4.2.4, the trace test and maximum eigenvalue test given the same result. When the null hypothesis at r = 0, the critical value of r = 0 had been rejected and significant at 5%. But there are some difference between r = 0 and r ≤ 1, the critical value of null hypothesis at r ≤ 1 is not rejected and it is not significant at 5%. Therefore, it can be concluded that there is 1 cointegrating vector.

Table 4.2.4: Co-integration Test of Singapore

Variable: BOT, FDI, CPI, REER, RGDP (k=2)
Sample Periods: 1984 : 2010

Order of Cointegrating: Null Hypothesis	Trace	95% CV	λ	95% CV
r = 0	83.5067*	69.8188	39.6456*	33.8768
r ≤ 1	43.8611	47.8561	24.7494	27.5843
r ≤ 2	19.1117	29.797	13.1561	21.1316
r ≤ 3	5.9556	15.4947	5.8269	14.2646
r ≤ 4	0.1287	3.8414	0.1287	3.8414

Note: The asterisks indicate the rejection of null hypothesis at 5%*. k denotes the number of lags.
CV represents Critical Value, λ represents Max Eigenvalue
Significance means there is cointegrating vector in long run.

4.2.5 Co-integration Test of Malaysia

From the table 4.2.5, when the null hypothesis at r = 0, the critical value of r = 0 had been rejected and significant 5%. There have the same results of the null hypothesis when $r \leq 1$ and $r \leq 2$ which is the critical value had been rejected and significant at 5%. Meanwhile, when the null hypothesis is at $r \leq 3$, the critical value of $r \leq 3$ do not rejected. It means that the cointegration of null hypothesis of $r \leq 3$ is not significant at 5%.

The maximum eigenvalue test also carried the same result as presented by trace test when the null hypothesis r = 0, $r \leq 1$ and $r \leq 2$ had been rejected and significant at 5%. On the other hand, the null hypothesis at $r \leq 3$ is not rejected and it also not significant at 5%. Through the observation, it can be concluded that there is 3 cointegrating vector.

Table 4.2.5 : Co-integration Test of Malaysia

Variable: BOT, FDI, CPI, REER, RGDP (k=2)
Sample Periods: 1984 : 2010

Order of Cointegrating:

Null Hypothesis	Trace	95% CV	λ	95% CV
r = 0	126.1660*	69.8188	48.5886*	33.8768
$r \leq 1$	77.5773*	47.8561	43.9886*	27.5843
$r \leq 2$	33.5887*	29.7970	24.1624*	21.1316
$r \leq 3$	9.4263	15.4947	9.3851	14.2646
$r \leq 4$	0.0411	3.8414	0.0411	3.8414

Note: The asterisks indicate the rejection of null hypothesis at 5%*. k denotes the number of lags.
CV represents Critical Value, λ represents Max Eigenvalue
Significance means there is cointegrating vector in long run.

4.3 Granger Causality Test Result

The purpose conducting Granger Causality is to examine the short causality among the dependent variable and independent variables among ASEAN-5 countries. This method also works as a tool to determine the ability of one time series in forecasting another.

4.3.1 Short run Granger Causality Test of Thailand

Dependent Variables	Independent Variables				
	△ BOT	△ FDI	△ CPI	△ REER	△ RGDP
△ BOT	–	2.3449	1.0081	1.3422	2.948
△ FDI	13.55***	–	5.6984*	8.9367**	7.6607**
△ CPI	1.002	2.2851	–	4.2907	1.6918
△ REER	4.0596	1.1083	0.7173	–	0.7478
△ RGDP	3.8773	3.3260	1.7603	1.7690	–

Notes: The asterisks indicate the following levels of significance: *10%, **5%, ***1%. Significance rejects null hypothesis means there is independent variable will granger cause dependent variable.

The Table 4.3.1 shows that short run Granger Causality Test for Thailand. Based on Granger Causality Test, there are four variables which have short run causality to FDI. However, the results cannot found the independent variables which are REER, FDI, CPI, and RGDP will granger cause BOT even at 10% significance level.

From the results, REER and will have granger cause FDI at 5% significance level. Meanwhile the CPI granger cause to FDI at 10% significance level. Lastly, the BOT have granger cause to FDI at 1% significance level in short run.

4.3.2 Short Run Granger Causality of Indonesia

Dependent Variables	Independent Variables				
	△BOT	△FDI	△CPI	△REER	△RGDP
△BOT	-	4.211297	2.121219	5.846638*	0.953085
△FDI	4.902828*	-	2.351107	2.931237	0.296579
△CPI	1.273408	2.459603	-	2.003810	1.282785
△REER	3.117296	4.119748	3.132533	-	0.139708
△RGDP	2.524709	3.921681	2.782017	1.713121	-

Note: The asterisks indicate the following level of significance: 10%*, 5%**, 1%***. Significance rejects null hypothesis means there is independent variable will granger cause dependent variable.

The Table 4.3.2 shows that short run Granger Causality Test for Indonesia. By comparing one by one, the independent variable which is REER will have granger cause to BOT at 10% significance level in short run. Others independent variables like FDI, CPI and RGDP do not have short run causality to dependent variable, BOT. On the other hand, it same goes to the dependent variable, BOT have short run relationship to independent variables, FDI and it is the only one have relationship to FDI which at 10% significance level. Others independent variables such as REER, CPI and RGDP are not significant to the FDI. In other words, these independent variables are no short run causality to FDI.

Besides, the Granger Causality Test also shows that the independent variables such as FDI and BOT do not have short run causality to dependent variables which is CPI, REER and RGDP. It means that those independent variables are not significant to dependent variable even at 10% significance level.

4.3.3 Short Run Granger Causality of Philippines

Dependent Variables	Independent Variables				
	△ BOT	△ FDI	△ CPI	△REER	△ RGDP
△ BOT	–	0.26414	1.83747	3.2982	3.41566
△ FDI	1.45509	–	0.50711	0.40872	0.68799
△ CPI	1.97109	4.53961	–	7.689845**	3.31548
△ REER	1.20466	1.68766	4.33442	–	0.3617
△ RGDP	0.01922	2.69277	9.179613**	9.591869***	–

Note: The asterisks indicate the following level of significance: 10%*, 5%**, 1%***. Significance rejects null hypothesis means there is independent variable will granger cause dependent variable.

Based on Table 4.3.3 above in the case of Philippines, there is no short run causality between FDI, CPI, REER, and RGDP with BOT. On the other hand, other independent variables like REER were found to have short run causality with the dependent variable like CPI at 5% significant level and 1% significance level to RGDP. On the same time, the change of CPI is statistically significant to RGDP at 5% significance level.

4.3.4 Short Run Granger Causality Test of Singapore

Dependent Variables	Independent Variables				
	△ BOT	△ FDI	△ CPI	△ REER	△ RGDP
△ BOT	–	1.5572	3.2399	0.7302	7.7905**
△ FDI	0.2224	–	1.3716	0.1862	2.1108
△ CPI	12.2396**	13.6235**	–	1.1571	14.5341***
△REER	6.0264**	4.2043	4.9158*	–	3.9671
△RGDP	0.6680	6.3619**	4.1438	4.8213*	–

Note: The asterisks indicate the following levels of significance: *10%, **5%, ***1%. Significance rejects null hypothesis means there is independent variable will granger cause dependent variable.

From the Table 4.3.4, it shows that there is no short run causality between independent variables. The table shows that there is short run causality between BOT and RGDP at a significance level of 5%. The dependent variable of FDI shows that there is no short run causality with BOT, CPI, REER and RGDP. The dependent variable of CPI shows that there is short run causality with BOT and FDI at 5% significance level. The granger cause between CPI and RGDP is significant thus there is short run causality at 1% significance level. For the REER, it shows that there is no causality with the FDI and RGDP. While, there is short run causality between REER with the BOT at 5% significance level and REER with CPI at 10% significance level. The table shows that there is insignificant in the short run for the RGDP with BOT and CPI due to their probability value is greater than 0.1. But, it shows that there is significant in the short run between RGDP with FDI at 5% significance level. It also shows that there is short run causality between the RGDP with REER at 10% significance level.

4.3.5 Short Run Granger Causality Test of Malaysia

Dependent Variables	Independent Variables				
	△BOT	△FDI	△CPI	△REER	△RGDP
△ BOT	–	0.1017	1.1627	0.1727	1.92535
△ FDI	1.8163	–	21.8297***	3.6131	8.7010**
△ CPI	4.5529	3.1055	–	7.9488**	9.8125**
△ REER	0.2376	4.0055	9.5508**	–	0.1474
△ RGDP	1.6512	1.5582	2.0611	0.4627	–

Note: The asterisks indicate the following levels of significance: *10%, **5%, ***1%. Significance rejects null hypothesis means there is independent variable will granger cause dependent variable.

From the Table 4.3.5, short run causality between independent variables is insignificant, so there is no short run causality between the variables.

Besides, short run causality between FDI and BOT, FDI and REER are insignificant, FDI and CPI is significant at 1%, FDI and RGDP is significant at 5%. On the other hand, short run causality between CPI and BOT, CPI and FDI are insignificant, CPI and REER, CPI and RGDP are significant at 5%. In addition, short run causality between REER and BOT, REER and FDI, REER and RGDP are insignificant, REER and CPI is significant at 5%. Lastly, RGDP and BOT, FDI, CPI, REER, and RGDP are insignificant.

4.4 Variance Decomposition Test Result

4.4.1 Variance Decomposition of Balance of Trade in Thailand

Period	SE	BOT	FDI	CPI	REER	RGDP
1	4.368735	100.0000	0.000000	0.000000	0.000000	0.000000
2	6.141389	80.59979	0.235161	6.264281	10.21652	2.684248
3	7.536629	65.49224	2.921492	7.114451	21.73340	2.738409
4	8.753373	58.60600	12.11106	10.04646	17.17555	2.060930
5	9.847514	51.72333	18.22164	14.72095	13.68319	1.650874

Note: SE represents standard error

From the Table 4.4.1, most of the independent variables will affect the dependent variables within the 5 years. From the result, the FDI had giving the biggest impact to BOT which is from 0.24% and have rise to 18.22%. In other word, FDI is the biggest impact to the dependent variable among the independent variables.

Others variables also had play a role among the 5 years which is those variables such as REER, GDP and FDI had influenced the BOT in Thailand. Based on the results, the REER had influenced the BOT had increased from 10.21% at the first period to 21.73% in second period in term of percentage. Meanwhile, there are some depreciate on REER within the second period to third period which is from 21.73% decrease to 17.17% while decrease to 13.68% for the next period. This figure shows that the effect from the REER to BOT is keep on reduce. It means that the REER not really will affect the BOT due to a huge number increase on FDI.

The next variables which give an impact on BOT, CPI also have rise a bit from 6.26% at first period of time to 14.72% at fifth period of time. From the figure, this paper shows that CPI had gave some impact to the dependent variable, BOT but with a small effect on it compare to FDI which is the largest impact on BOT. Lastly, the RGDP also had gave small influence to the BOT the independent variables. From the

observations, there are some appreciates from first period to second period with 2.68% to 2.74%. There is having a sign of depreciation from 2.06% to 1.65% for the third and fourth period of time.

4.4.2 Variance Decomposition of Balance of Trade in Indonesia

Period	SE	BOT	FDI	CPI	REER	RGDP
1	1.712058	100.0000	0.000000	0.000000	0.000000	0.000000
2	2.734469	77.20305	0.091642	0.370385	22.24072	0.094208
3	3.518373	63.18330	0.353503	1.523369	34.78557	0.154253
4	4.093521	59.69117	4.479436	1.652510	33.89960	0.277282
5	4.623881	57.84432	5.141159	1.439525	35.24333	0.331669

Note: SE represents standard error

From the Table 4.4.2, the percentage of RGDP had keep increase from the first period to fifth period of time which is from 0.09% to 0.33%.The RGDP of Indonesia had gave some impact on BOT of the country. Others variables such as FDI also gave some impact to BOT of Indonesia which is a slight of increase from 0.09% to 5.14% and it is a good sign for Indonesia because FDI encourages a huge amount of inflow of others currency to Indonesia which can increase the current income of Indonesia. Meanwhile, other variables such as REER also giving a number of impact to the BOT which carry 22.24% at the first period of time and increase to 34.78% for second period. There are a slightly decrease from second period to third period of time which equal to 33.89% while there have a bit increasing to fourth period which is 35.24%. Lastly, the CPI also gave some impact to BOT which is from 0.37% increase to 1.43% from the first period to the fifth period.

4.4.3 Variance Decomposition of Balance of Trade in Philippines

Period	SE	BOT	FDI	CPI	REER	RGDP
1	2.663480	100.0000	0.000000	0.000000	0.000000	0.000000
2	2.994412	89.94312	2.208442	0.125957	4.569161	3.153323
3	3.085685	88.88802	3.355831	0.118620	4.378802	3.258732
4	3.274942	85.35536	7.174980	0.129158	4.384229	2.956277
5	3.495013	85.35842	6.565212	0.160867	4.999995	2.915507

Note: SE represents standard error

Through the observation from Table 4.4.3, FDI had gave the biggest impact on BOT among the independent variables. The percentage of FDI keep increase from the first period to fourth period from 2.21% to 7.18% and it had some depreciate from fourth period to fifth period which is from 7.18% to 6.57%. These numbers shows that are a good sign for the Philippines because rises of FDI may help the export rate of the Philippines more than the import rate of the country and it would a trade surplus on the country.

Others variables such as REER also gave some impact to BOT of Philippines which is a slight of increase from 4.57% to 4.99% at fifth period. Meanwhile, CPI also has slightly increased from 0.13% to 0.13%. However, the RGDP of Philippines had a sign of decreasing among all the variables which is from 3.15% for first period to 2.92% for fifth period.

4.4.4 Variance Decomposition of Balance of Trade in Singapore

Period	SE	BOT	FDI	CPI	REER	RGDP
1	4.543589	100.0000	0.000000	0.000000	0.000000	0.000000
2	5.352247	82.69009	12.60650	0.390061	0.831203	3.482147
3	6.404154	61.89364	34.14382	0.357011	0.799154	2.806373
4	7.443791	63.74808	32.59289	0.918969	0.614180	2.125877
5	8.585905	55.31669	41.33655	0.811514	0.471705	2.062538

Note: SE represents standard error

From Table 4.4.4, FDI still is the main variables which affect BOT the most which is from 12.6% for first period increase to 41.33% and almost half of the BOT is affected by FDI in sixth period. However, REER and RGDP had been slightly decreased from 0.83% to 0.47% for REER and 3.48% to 2.06% for RGDP among the first period to fifth period. The CPI had increased from 0.39% to 0.92% among the first period to third period. Anyhow, there are some slightly decrease from 0.92% to 0.81% among the fourth period to fifth period.

From the observation from the results shows that FDI is the largest and is the main income for the Singapore because as learnt from the theory, FDI will affect a country's BOT whether BOT of the country may become trade surplus or trade deficit. Trade surplus defined as the total export of a country more than the total amount of import of a country. Meanwhile, trade deficit defined as the total amount of export in a country lesser than total amount of import. If the country is in trade surplus, it means that the country having more export compare to the amount of import. It may help the cash flow of the country increase. When the government has extra money in hand, the government will invest into an industry or offer loans to the investors which lack of money. If the government chooses to invest in certain industry, it may help to reduce the unemployment rate in the country and vice versa.

4.4.5 Variance Decomposition of Balance of Trade in Malaysia

Period	SE	BOT	FDI	CPI	REER	RGDP
1	5.641168	100.0000	0.000000	0.000000	0.000000	0.000000
2	8.530531	92.85840	0.209372	0.084774	0.999212	5.848243
3	10.81506	87.99781	0.533916	0.509669	3.714565	7.244039
4	12.57297	87.05708	0.655094	1.396170	5.434039	5.457616
5	13.77449	85.90714	0.717810	1.246962	6.134051	5.994041

Note: SE represents standard error

Based on the Table 4.4.5, the REER of Malaysia had given the biggest impact to the BOT of the country itself. The percentage of BOT had been affected by REER is from 0.99% increase to 6.13%. Besides, the FDI also had given some impact on BOT which from 0.21% to 0.72% among the first period to fifth period. CPI and RGDP had given the same sign to the BOT in Malaysia which is slightly increased from first period to third period for CPI and from first period to second period for RGDP. CPI had increased from 0.08% to 1.39% and decreased to 1.25%. Same goes to RGDP which from 5.85% increased to 7.24% and a number of decreased to 5.99% at fifth period.

From the observation, the result shows that FDI is increasing but the amount of other investment in Malaysia is decreasing until the year 2010, leading to the result of total effect of investment decreased. At the same time, the importance of BOT getting higher along with the decreasing in importance of other determinant factors. As a result, the BOT became the only variables which affect the economics of Malaysia in year 2010. In other word, BOT imposes 100 percent effect on economic of Malaysia in year 2010.

4.5 Result from Diagnostic Checking

4.5.1 Diagnostic Checking

	Indonesia	Malaysia	Philippines	Singapore	Thailand
JB	73.8396	11.6588	72.62	74.70716	69.30390
LM	22.06 (2)	11.7097(2)	28.020(2)	27.95914(2)	29.70344 (2)

Note: The asterisks indicate the following level of significance: 10%*, 5%**, 1%***
JB represents Jarque Bera Test and LM represents Lagrange Multiplier Test

Base on the results in Table 4.5.1, shows that the model is fulfill normality assumption and free from autocorrelation problem.

4.6 Conclusion

In this chapter, the results show that all the variables are stationary at Integration of 1 from ADF and PP test. Besides, by using the JJ cointegration test, the result shows that there is cointegrating vector in long run relationship for ASEAN-5 countries but not all variables have short run granger causality with BOT such as Malaysia and Singapore. Furthermore, the Variance Decomposition Test shows that FDI has greatest impact to most of the ASEAN-5 countries except Malaysia which is given the greatest impact by REER. Lastly, the Diagnostic Checking shows that the model free from normality and autocorrelation problem.

CHAPTER 5: DISCUSSION AND CONCLUSION

5.0 Conclusion

There are many studies had done that does the independent variables such as FDI, CPI, GDP and REER will affect or influenced the dependent variable, BOT. From this paper, the paper also conducted that how the independent variables affect the BOT by using Johansen and Juselius Test which to determine is there any long run relationship between independent variables and dependent variable among ASEAN-5 countries. Besides, this paper also used Granger Causality Test to examine short run causality among independent variables and dependent variable which will affect the dependent variable in a short period of time among the ASEAN-5 namely Malaysia, Thailand, Singapore, Philippines and Indonesia. From the results, those independent variables have long run relationship to dependent variables. Meanwhile, all the independent variables also have short run causality to the dependent variables among the ASEAN-5 countries. From the result of Variance Decomposition, the FDI had contributed the higher percentage in Thailand, Philippines and Singapore. Meanwhile, RGDP had given affect on Indonesia and REER affected BOT in Malaysia.

5.1 Discussions of Major Findings

According to ASEAN-5 countries' cointegration testing result, there is at least 1 independent variable has long run relationship with dependent variable BOT. The result similar to the study of Yusoff (2007) who found that there exist a long-run relationship between Malaysia's BOT with the REER by using Co-integration technique. However the study of Malaysia's BOT by Duasa (2007) mentioned that there is no long run relationship between REER and BOT.

Based on Granger Causality Test result which found that among the ASEAN-5 countries, the independent variable REER was found to have short run causality with dependent variable BOT in Indonesia which is consistent to the study of Bahmani-Oskooee and Mitra (2010) which mentioned that there is short run relationship between REER and BOT between India and U.S., but there is no long run causality.

However, REER in Singapore, Malaysia, Philippines and Thailand were found to have no short run causality with BOT. The result similar to the study of Bahmani-Oskooee and Wang (2007) stated at failure to find significant causality of REER depreciation of Australian dollar with BOT between Australia and trading partners. Especially United State and Australia, there is no short run and long run causality between REER and BOT among them.

5.2 Policy Implication

This study had been drawn that the independent variables of the paper which is FDI, RGDP, REER and CPI have a short run and long run causality between the dependent variables, BOT among ASEAN-5 countries. Besides, this paper also studies on how the independent variables might affect the BOT at the same time. On the other hand, this paper also examined that does the variables will affect the dependent variable at directly or indirectly way on it.

Based on the result, a depreciation of REER might improve the BOT in the long run and it might also have recessionary on the short run. In other word, an appreciation or depreciation of REER might affect the BOT. From the study, depreciation of exchange REER might improve the BOT of the country. Thus, when the REER of a country depreciates, the policy maker might have to implement the country's REER policy to make sure that their REER of the countries might not be worst in the short period of time.

Besides, the result of this paper shows that the REER will affect BOT. The important of REER for multi-national companies is to hedge potential risk that they might face in future such as future profit and to pay employees in different countries. The fluctuation of REER will affect cost and profit of company. When the home currency is appreciated, companies bring back their foreign profit into home country the profit will reduce (after convert to home currency). On the other hand, companies will bring more profit when the home currency is depreciated. The REER risk can be reduced through hedging. Companies can certain REER via signal from BOT.

5.3 Limitation and Recommendation for Further Study

This paper is to investigate the relationship between REER and BOT among ASEAN-5 countries. One of the limitations for this paper is due to some of the countries is not frequently updating their country's data. Therefore, this paper cannot take the latest data which is year 2011 to examine the relationship between the independent variables and dependent variable which is BOT. Besides REER, FDI, RGDP, and CPI also will affect BOT, there also found that existence of other sources of factor can affect BOT was not being done, such as human behaviour. Different human behaviour will influence FDI, RGDP, and CPI become not accurate in measurement their relationship to BOT. With these limitations will give incorrect information to other cooperation, cause hedger to make a wrong decision and affect policymaker in managing uncertainty. Future researcher suggested including human behaviour to measure the relationship with BOT, such as, different spending behaviour, attitude, social norms and living culture. Different spending behaviour like loyalty to local product more than import products from foreign countries will influence in BOT.

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