

**THE IMPACT OF EXCHANGE RATE VOLATILITY ON  
INTERNATIONAL TRADE EVIDENCE FROM ASEAN MEMBER  
STATES**

By

**NYUNT, Lwin Khaing**

**THESIS**

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

For the Degree of

**MASTER OF PUBLIC POLICY**

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Committee in charge:

Professor Lee, Jinsoo, Supervisor



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Approval as of December, 2019

## **Abstract**

### **THE IMPACT OF EXCHANGE RATE VOLATILITY ON INTERNATIONAL TRADE EVIDENCE FROM ASEAN MEMBER STATES**

**By**

**Lwin Khaing Nyunt**

This study analyses the association between the exchange rate instability and external trade (exports & imports) of AMSs whether negative effect or positive effect or not. We use Generalized Moment Method for statistical test and GARCH models for the measurement of EXV. This study examined to investigate how exchange rate instability on exports and imports of rich and poor countries in Asia. This study applies the annual panel data for the time frame of 2008 to 2017. The result of this study confirms the inverse linkage between the exchange rate instability and the changes in the exports volume and the imports volume, and even in this case, the magnitude is generally small. The estimation shows that the increased in REER will induce exports and imports and TOT increase on exporting and decrease on exporting. The increasing of GDP and inflation will cause a higher volume of exports and imports. The FDI is a positive significant effect on exports as well. The study summarizes that monetary policy can take the actions to diminish the exchange rate uncertainty and fiscal policy as well.

**Keywords:** Exchange rate volatility, Exports, Imports, ASEAN Member States, Panel data set

## **ACKNOWLEDGEMENTS**

At first, I would like to express my gratitude to my thesis supervisor, Professor Lee, Jinsoo for his indefatigable support and constructive advice. I would also like to thank Professor Kim, Hyeon Wook, and all of the Professors of the KDI School of Public Policy and Management. I would appreciate for their precious time and useful information. I would like to send a huge thanks to the Financial Supervisory Services (FSS), Korea Foundation Bank (KFB) and KDI School for providing me to study in Korea. Furthermore, this study would not have been finally finished without the priceless encouragement of many people, whom it is a pleasure for me to acknowledge at this time. Finally, I sincerely thank and appreciate towards all my professors, all of the staff from the KDI School, resource persons, and my friends who support me to complete my study of the MPP program in Korea.

# Table of Contents

|                                                                      |    |
|----------------------------------------------------------------------|----|
| CHAPTER ONE: INTRODUCTION .....                                      | 1  |
| 1.1 Introduction .....                                               | 1  |
| 1.2 Background of the study .....                                    | 2  |
| 1.3 Purpose of the Study .....                                       | 12 |
| 1.4 Research Questions .....                                         | 13 |
| 1.5 Organization of the Paper .....                                  | 13 |
| CHAPTER TWO: LITERATURE REVIEWS .....                                | 13 |
| 2.1 The Effect of Exchange Rate instability on External Trade .....  | 13 |
| CHAPTER THREE: METHODOLOGY .....                                     | 16 |
| 3.1 Chapter Overview .....                                           | 16 |
| 3.2 Specification and Estimation of the Model .....                  | 16 |
| 3.3 Measurement of Main Variables and Expected Signs .....           | 18 |
| 3.4 Data and Data Sources .....                                      | 19 |
| CHAPTER FOUR: EMPIRICAL RESULTS .....                                | 19 |
| 4.1 Chapter Overview .....                                           | 19 |
| 4.2 The impact of exchange rate volatility and exports in AMSs ..... | 20 |
| 4.3 The impact of exchange rate volatility and imports in AMSs ..... | 24 |
| CHAPTER FIVE: CONCLUSION .....                                       | 27 |
| 5.1 Findings .....                                                   | 27 |
| 5.2 Summary of the Study .....                                       | 28 |
| 5.3 Policy Recommendations .....                                     | 29 |
| 5.4 Suggested Areas for Further Study .....                          | 29 |
| References .....                                                     | 30 |

## **List of Tables**

|                                                                                                                        |    |
|------------------------------------------------------------------------------------------------------------------------|----|
| Table 1 Exchange Rate and Exchange rate volatility Comparison.....                                                     | 6  |
| Table 2 Main Partners – Exports Destination Country (average of 2008-2017) .....                                       | 11 |
| Table 3 Main Partners – Imports Destination Country (average of 2008-2017) .....                                       | 12 |
| Table 4 the difference GMM experiment for exchange rate instability on exports in 13 ASEAN+3 countries, 2008-2017..... | 20 |
| Table 5 the difference GMM experiment for EXV on imports in 13 ASEAN+3 countries, 2008-2017.....                       | 24 |
| Table 6 ASEAN member states in the Sample Data.....                                                                    | 30 |

## List of Figures

|                                                                                                                            |    |
|----------------------------------------------------------------------------------------------------------------------------|----|
| Figure 1 Exchange rate volatility in China, Japan and Korea (2008 -2017).....                                              | 4  |
| Figure 2 The volatility of Exchange rate in Thailand, Indonesia, Malaysia, Philippines and<br>Singapore (2008 -2017) ..... | 5  |
| Figure 3 Exchange rate volatility in Brunei, Cambodia, Lao, Myanmar and Vietnam (2008 -2017)<br>.....                      | 5  |
| Figure 4 Intra ASEAN exports and imports, 2008 and 2017 (US\$ million) .....                                               | 8  |
| Figure 5 Extra ASEAN Exports and Import, 2008 and 2017 (US\$ Billion) .....                                                | 9  |
| Figure 6 Trade Balance of ASEAN+3 countries, 2000-2011 (Billion USD) .....                                                 | 10 |



## LIST OF ABBREVIATIONS

|            |                                                    |
|------------|----------------------------------------------------|
| ASEAN      | Association of South East Asian Nations            |
| UNCTADSTAT | United Nations Conference on Trade and development |
| CEIC       | China Economic Information Center                  |
| AEC        | ASEAN Economic Community                           |
| LDC        | Least Developed Countries                          |
| AMSS       | ASEAN Member States                                |
| WB         | World Bank                                         |
| WITS       | World Integrated Trade Solution                    |
| USD        | United States Dollar                               |
| OLS        | Ordinary Least Square                              |
| UN         | United Nations                                     |
| GMM        | General Moment Method                              |
| $H_0$      | Null Hypothesis                                    |
| $H_1$      | Alternative Hypothesis                             |
| EXP        | Export                                             |
| IMP        | Import                                             |
| EXV        | Exchange rate volatility                           |
| REER       | Real effective exchange rate                       |
| TOT        | Terms of Trade                                     |
| GDP        | Gross Domestic Product                             |
| FDI        | Foreign Direct Investment                          |

## CHAPTER ONE: INTRODUCTION

### 1.1 Introduction

In every country with open economies, International trade plays an essential role in a country's economic progress and promotes bilateral trade relationships between each other. Through international trade, the exchange rate of the country becomes a critical measurement of the international trade competitiveness which has a strong influence on the economy of the country. Trade deals including more than one country require currency to be converted to another currency. Exchange rate policies are the core economic indicators because the success of the policy directly impacts the foreign trade performances, concerning a diminishing in the shortfall of trade deficits.

Foreign exchange rates have fluctuated particularly after the disruption of the Breton Woods system (1973) which adopted the fixed exchange rates regime Deltas, H., & Zilberfarb, B. Z. (1993). Since then, countries have switched their exchange rate system, from fixed to floating system. The floating system causes the exchange rate more fluctuate and increased its uncertainty because of less government intervention. The exchange rate volatility is the initial of economic hazards and it has a certain implication on countries' external trade. It also induces the foreign trade exposure and barrier, affects the increasing and decreasing the figure of countries' external trade.

The fixed exchange rate system and the floating exchange rate system have different natures. In a fixed exchange rate system, intervention by the government is necessary to control the exchange rate and the good condition of foreign reserves is also needed to take good government intervention. The floating exchange rate system swings freely that is

unrestricted by government control. The appreciation or depreciation of the exchange rate is the characteristics of exchange rate instability. The movement of exchange rate implies to risk regarding the level of the changes in a currency's value. The higher volatility indicates that the level of currency can likely be enlarged over a wider movement of its values. Thereafter, the currency price can alter suddenly during a very short in either way. The lower volatility is unlikely the higher one that the current price does not volatile extremely, but changes is steadily fluctuated for a long time.

The exchange rate fluctuation has become the influential determinant which has impacted on politic and economic activities. The issues from the operating of the exchange rate system are the important measures of the macroeconomics management in endeavoring for economic development inconsistent with signs of progress in the international competitiveness. There has been widespread controversy over the exchange rate changes' impact on external trade. This matter is especially prominent for countries which have changed from a fixed to a floating exchange rate system owing to a higher level of variance related to flexible exchange rates. Therefore, exchange rates have affected not only on external trade but on the whole economy is becoming an important field of research. The purpose of this study has been to improve an empirical study that will emphasize the linkage between exchange rate instability and external trade.

## 1.2 Background of the study

### *1.2.1 The situation of exchange rate volatility in AMSs*

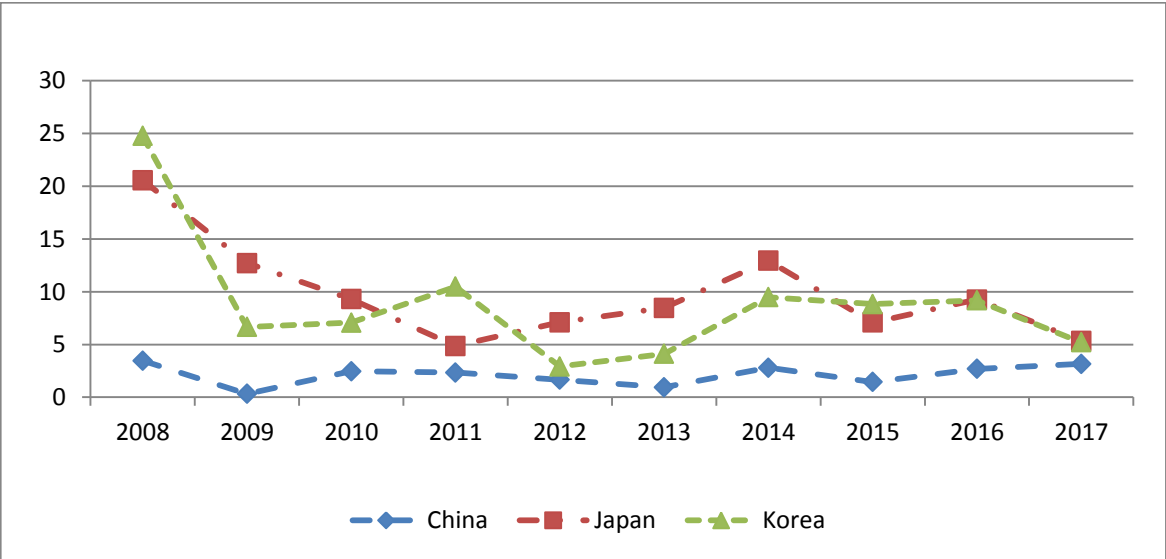
During the past two decades, we can see apparently the momentum of the globalization process. One of the consequences of globalization is trade integration. It stimulates economic collaboration between among countries, regionally, bilaterally or multilaterally cooperation.

ASEAN (Association of South East Asia Nation) was found as a new integration process after the AFTA trading agreement is not adequate enough to confront the globalization. It makes the market and produces better welfare. ASEAN member states (AMSs) launched the ASEAN Economic Community (AEC) in 2015 for better and broader economic integration activities. The area of AEC is more extensive than the area of AFTA agreement and it becomes a very remarkable progress milestone in Asia. Trade integration is a crucial target among the AEC blueprint goals. Besides the advantage of competitive and comparative, there are various factors that influence on external trade, such as GDP, exchange rate, inflation and term of trade. Trade flows, however, may be a boost or distorted by government interventions and by exchange rate fluctuations as well.

Since the financial crisis in 1997, ASEAN member states have changed from fixed to floating exchange rate system to settle the financial turmoil. The monetary authorities of Japan determined to float the yen freely against \$US in 1973. Indonesia allowed its currency to float in 1997. The Philippine government practiced the peso to floating with \$US in 1970. The government of South Korean started to let the won to floating freely with another in 1990. Since 1997, Thailand has decided to adopt the bath to managed-float, which is coherent with inflation targeting. Vietnam is not ready to allow yet to float for the dong freely in consistent with the market mechanisms, specifying that Vietnam's financial market is not completely developed yet to diminish the risks of foreign currencies trading. Under the free-floating, they should have sufficient reserves to control the foreign exchange markets stability. Cambodia might have accepted the floating currency riel in 1993. China pegged the yuan in 1995 and maintained that peg until 2005, and then it moves towards liberalizing of its currency policy by implementation a narrow trading band. In 1993, Malaysia's ringgit replaced Malaysia's dollar, the free float period until 1998, the pegged era and the de-pegged era to the dollar currently. Myanmar began the kyat

to managed float in 2012, to diminish the multiple exchange rate regimes that were the greatest barriers to economic growth. Singapore allowed to float the Singapore dollar freely, and The MAS monitors the S\$NEER-based currency strength. Brunei operates a currency board system that effectively pegs its exchange rates.

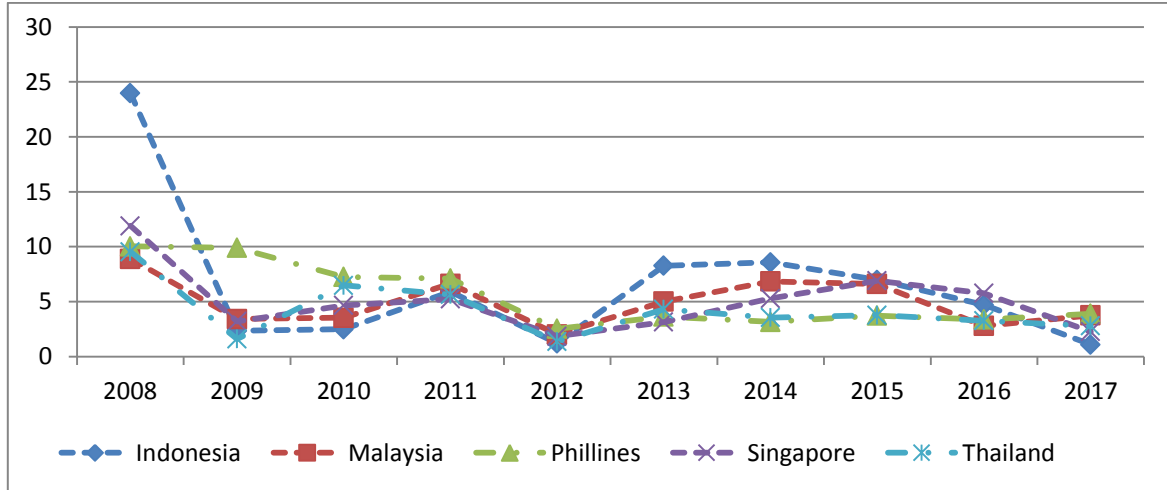
Figure 1 Exchange rate volatility in China, Japan and Korea (2008 -2017)



Source: World Bank

Figure 1 indicates the variability of exchange rate in Japan, Korea and China, figure 2 shows the volatility of ASEAN 5 (Thailand, Indonesia, Malaysia, Philippines and Singapore), and figure 3 indicates the rest of ASEAN (Brunei, Cambodia, Lao, Myanmar and Vietnam). When we compare exchange rate condition between 13 AMSs, US\$ 1 in national currency, the currencies of Japan, Korea, Malaysia, Indonesia, Myanmar and Cambodia are the highest level and most fluctuated among other countries. Figure1 show that the exchange rate volatility of Japan and Korea are higher level than China.

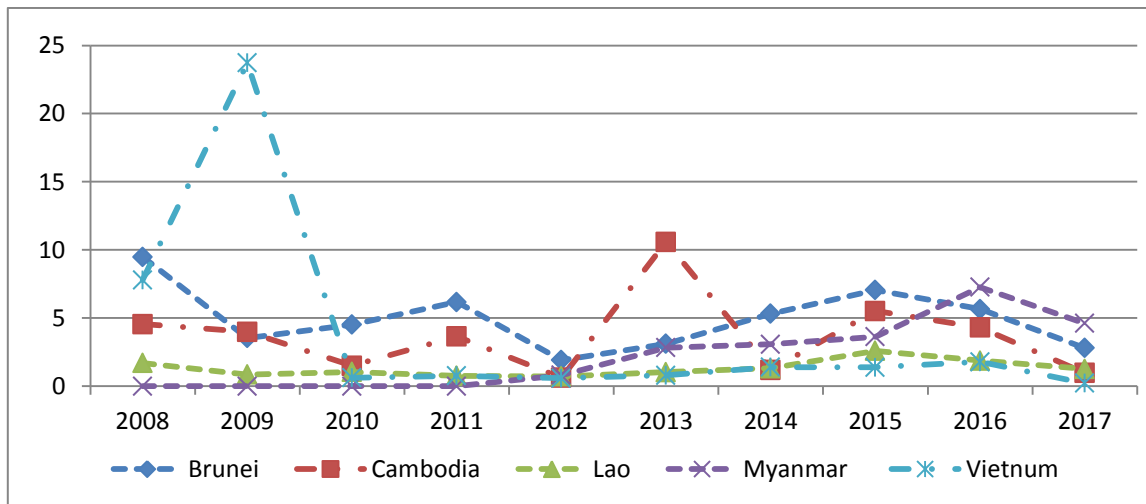
Figure 2 The volatility of Exchange rate in Thailand, Indonesia, Malaysia, Philippines and Singapore (2008 -2017)



Source: World Bank

Figure 2 shows that Malaysia currency is also a higher level and more volatile than other countries, the Indonesia exchange rate tends to be more volatile.

Figure 3 Exchange rate volatility in Brunei, Cambodia, Lao, Myanmar and Vietnam (2008 -2017)



Source: World Bank

Figure 3 shows that Cambodia, Brunei and Myanmar are high levels and more volatile than Lao PDR and Vietnam. Since Myanmar has changed its exchange rate regime in 2012, the

indicator of the average risk of Myanmar currency has ever reached the higher volatility. During 2008-2017, Malaysia and Cambodia had the highest volatility than other countries. It indicates that the risk of the exchange rate of Malaysia and Cambodia increased. The highest Indonesia volatility index is 23.97% in 2008. This volatility significantly decreased after 2008 but in the last of 2011, Malaysia faced the high exchange rate volatility again. Indonesia experienced the highest exchange rate in 2013, Myanmar experienced the highest exchange rate in 2016 and Cambodia also experienced the highest exchange rate in 2013. The Cambodia exchange rate relatively became the most volatile in other countries. It indicated that Cambodia had the highest risk of other AMSs.

Table 1 Exchange Rate and Exchange rate volatility Comparison

| Country     | Currency | Exchange Rate |         |          |                    | Exchange Rate Volatility |         |      |                    |
|-------------|----------|---------------|---------|----------|--------------------|--------------------------|---------|------|--------------------|
|             |          | Maximum       | Minimum | Mean     | Standard Deviation | Maximum                  | Minimum | Mean | Standard Deviation |
| Brunei      | BRN      | 1.55          | 1.20    | 1.34     | 0.08               | 9.49                     | 1.91    | 4.96 | 2.28               |
| Cambodia    | CHN      | 4266.00       | 3835.00 | 4060.09  | 63.67              | 10.60                    | 0.63    | 3.70 | 2.98               |
| China       | IDN      | 7.30          | 6.04    | 6.54     | 0.29               | 3.46                     | 0.33    | 2.13 | 1.01               |
| Indonesia   | JPN      | 15235.00      | 8460.00 | 11259.69 | 2000.69            | 23.97                    | 1.08    | 6.55 | 6.73               |
| Japan       | KHM      | 9375.00       | 7612.00 | 8217.97  | 268.98             | 20.57                    | 4.86    | 9.76 | 4.66               |
| Korea       | KOR      | 125.62        | 75.82   | 100.03   | 13.49              | 24.77                    | 2.92    | 8.87 | 6.10               |
| Lao         | LAO      | 1570.65       | 935.55  | 1130.68  | 84.05              | 2.60                     | 0.72    | 1.32 | 0.59               |
| Malaysia    | MYS      | 4.50          | 2.94    | 3.55     | 0.46               | 8.89                     | 2.02    | 4.95 | 2.20               |
| Myanmar     | MMR      | 1627.00       | 6.41    | 708.43   | 581.90             | 7.27                     | 0.00    | 2.22 | 2.49               |
| Philippines | PHL      | 54.32         | 40.23   | 45.96    | 3.39               | 10.03                    | 2.53    | 5.46 | 2.86               |
| Singapore   | SGP      | 1.56          | 1.20    | 1.34     | 0.08               | 11.90                    | 1.84    | 5.02 | 2.91               |
| Thailand    | THA      | 36.66         | 28.62   | 32.69    | 1.80               | 9.53                     | 1.36    | 4.23 | 2.45               |
| Vietnam     | VNM      | 36.66         | 28.62   | 32.69    | 1.80               | 23.73                    | 0.23    | 3.91 | 7.30               |

Source: World Bank

The exchange rate policies in some East Asian nations, particularly China, Japan, and South Korea have been sources of tension with the United States in the past and remain in the present. Some countries have intentionally kept undervaluing their currencies for a long period to keep their exports price competitive in global markets. Some countries have been manipulating

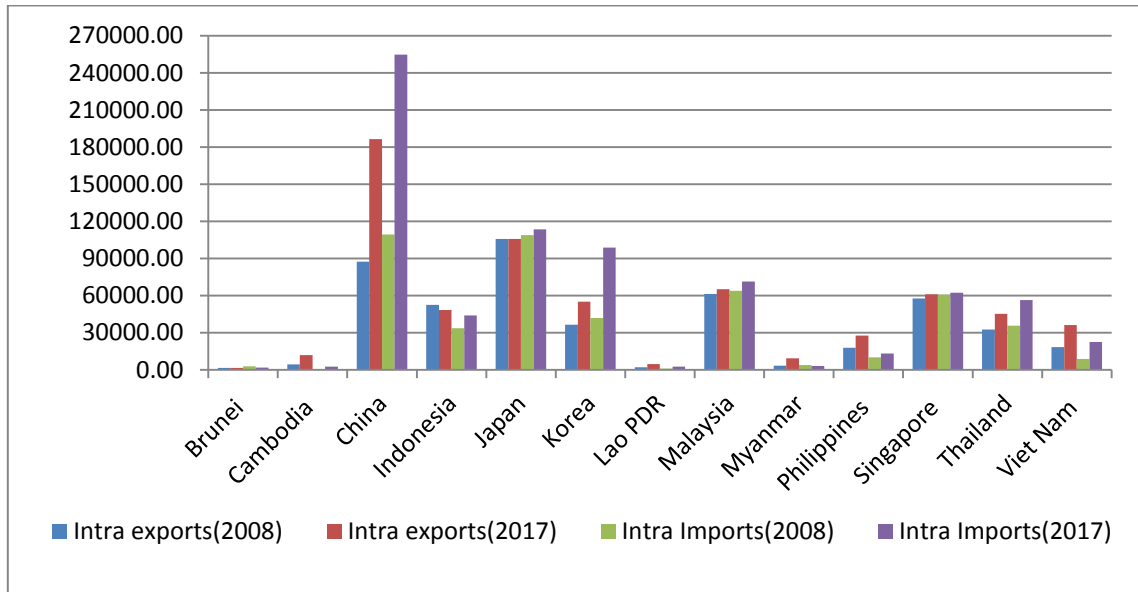
their currencies for profits in trading. These are lead to increase in exchange rate instability. In general, the exchange rate stability has various effects on the economy. As global trading prices are closely affected to variability in exchange rates, exchange rates can impact trading volumes and trade revenues. Changes in exchange rates also affect economic policy, such as countries that accept an inflation targeting monetary policy, central banks often need to rethink the future inflation target caused by exchange rate instability. Thus, the effects of exchange rates on external trade and the economy everywhere have become an important field of research.

### *1.2.2 The external trade situation of AMSs*

From 2008 to 2017, the value of Intra-trade among AMSs has been on an increasing trend, as indicated in Figures 4. During this period, the fastest growth in exports was observed in China, Korea, Thailand and Vietnam. China, Korea and Vietnam exhibited the fastest growth in imports. The data also indicates that Brunei and Lao PDR have the lowest trade within AMSs. Trends also reveal that Cambodia, Vietnam, Lao PDR, Myanmar, Philippines and Indonesia are consistent net exporters in the region. On the other hand, Japan, China, Korea, Thailand and Malaysia are net importers in the region. At the regional level, intra-ASEAN exports increased by about 36.77 % and imports increased by about 55.30 % from 2008 to 2017.



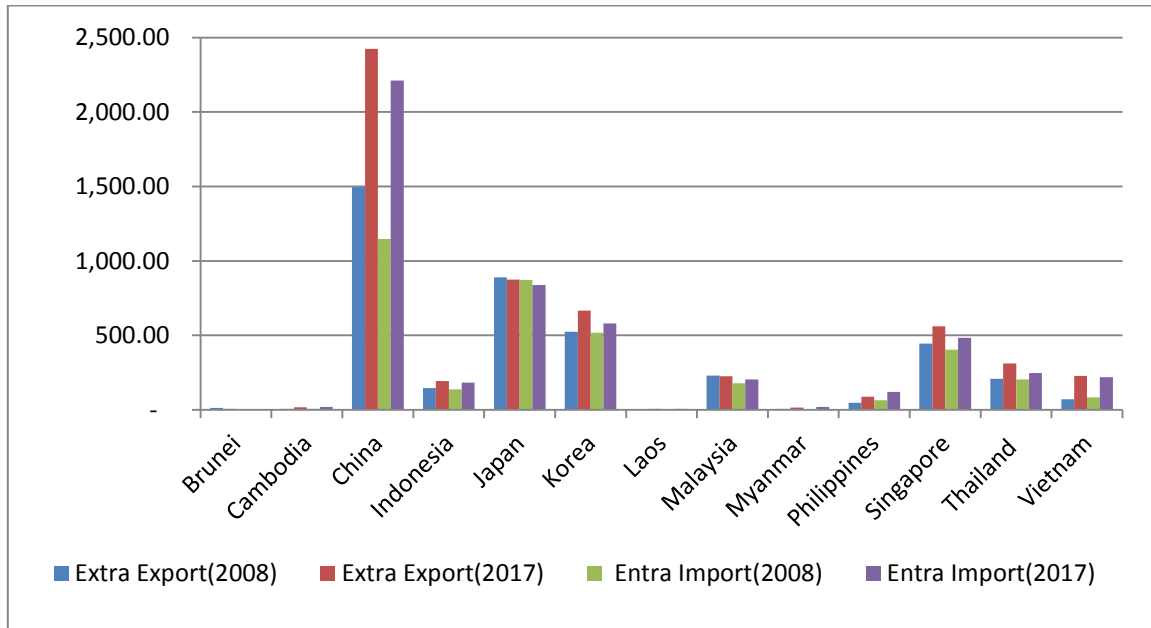
Figure 4 Intra ASEAN exports and imports, 2008 and 2017 (US\$ million)



Source: ASEAN Secretariat

During 2008 to 2017 figure 5 shows the Extra-trade value among AMSs has been on an increasing trend. China, Indonesia, Korea, Singapore, Thailand and Vietnam experienced rapid growth in trade during 2008-2017. The rapid growth corresponds with high export. On the other side, Japan experienced decreasing trade growth during 2008-2017. The data also indicates that Brunei and Lao PDR have the lowest trade. Trends also reveal that China, Indonesia, Korea, Singapore and Thailand are consistent net exporters in external trade. On the other hand, Lao PDR, Myanmar and the Philippines are net importers in external trade. At the regional level, intra-ASEAN exports increased by about 37.50 % and imports increased by about 41.61 % from 2008 to 2017.

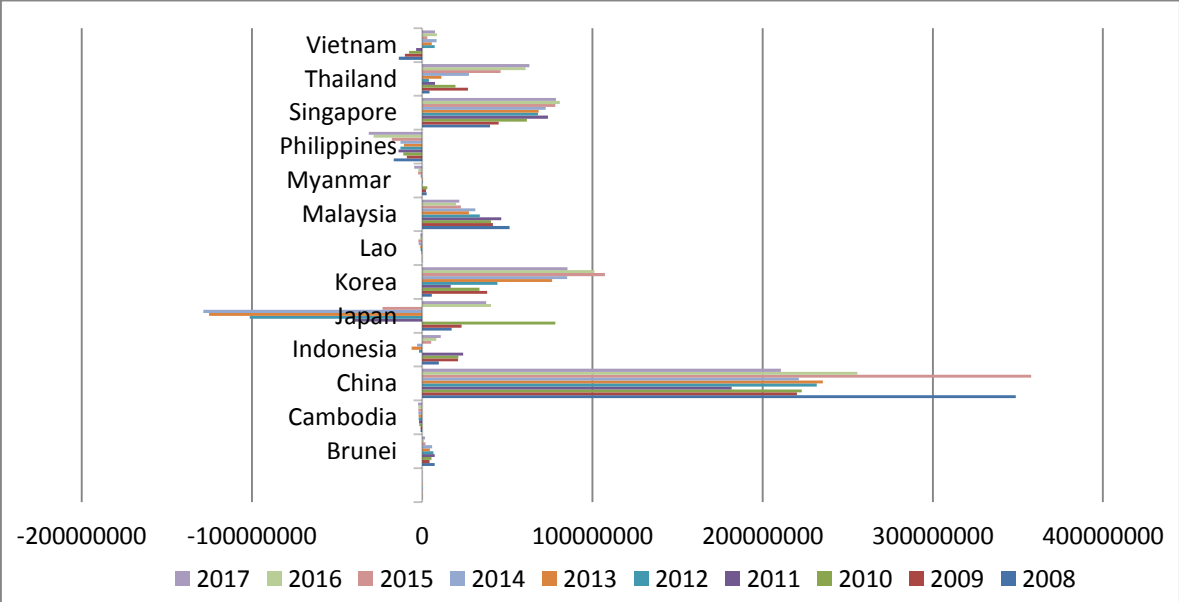
Figure 5 Extra ASEAN Exports and Import, 2008 and 2017 (US\$ Billion)



Source: World Bank

Among the AMSs, Cambodia, Lao, Myanmar and Philippines always have a negative trade balance. This condition indicates that their import is bigger than its export. Brunei, China, Korea, Malaysia, Singapore and Thailand are the country that has a positive trade balance since 2008. The growth of Singapore trade balance tends to increase year by year. China with the highest value of trade balance is USD 210,728,437.17 in 2017 in AMSs. Brunei with the lowest value of trade balance is USD 1,705,234.27 in 2017 in AMSs. Since 2014, Myanmar trade balance decreased significantly to 311.82%.

Figure 6 Trade Balance of ASEAN+3 countries, 2000-2011 (Billion USD)



Source: World Bank

The main trade partner of each AMSs is the country that has the biggest percentage of the trade. Based on data from 2008 to 2017 the main trade partner of each AMSs is followed;

Table 2 Main Partners – Exports Destination Country (average of 2008-2017)

| Home Country      | Country Destination | Percentage of total export<br>(Average % from 2008-2017) |
|-------------------|---------------------|----------------------------------------------------------|
| Brunei Darussalam | Japan               | 39.61                                                    |
| China             | United State        | 17.76                                                    |
| Indonesia         | Japan               | 14.66                                                    |
| Japan             | United State        | 18.07                                                    |
| Cambodia          | United State        | 30.30                                                    |
| Korea, Rep.       | china               | 24.86                                                    |
| Lao PDR           | Thailand            | 39.59                                                    |
| Myanmar           | China               | 27.68                                                    |
| Malaysia          | Singapore           | 13.92                                                    |
| Philippines       | Japan               | 18.60                                                    |
| Singapore         | China               | 11.60                                                    |
| Thailand          | China               | 11.13                                                    |
| Vietnam           | United State        | 19.31                                                    |

**Source:** World Bank

Japan is the main country destination of export from Brunei Darussalam, Indonesia and Philippines that covers 39.61% and 14.66 % and 18.60 % of total export. China is also the main export destination for Korea, Myanmar, Singapore and Thailand that has a proportion of total export respectively 24.86 %; 27.68 %; 11.60 % and 11.13 % of the total export. Cambodia, China, Japan and Vietnam are exported to the USA 18.07 % and 19.31 % respectively. Lao PDR is exported to Thailand 39.59 % and Malaysia is exported to Singapore 13.92 % respectively.

Table 3 Main Partners – Imports Destination Country (average of 2008-2017)

| Home Country      | Country Destination | Percentage of total Import<br>(Average % from 2008-2017) |
|-------------------|---------------------|----------------------------------------------------------|
| Brunei Darussalam | Singapore           | 19.49                                                    |
| China             | Korea               | 9.95                                                     |
| Indonesia         | China               | 16.99                                                    |
| Japan             | China               | 22.58                                                    |
| Cambodia          | China               | 30.47                                                    |
| Korea, Rep.       | China               | 17.91                                                    |
| Lao PDR           | Thailand            | 62.29                                                    |
| Myanmar           | China               | 31.44                                                    |
| Malaysia          | China               | 15.99                                                    |
| Philippines       | China               | 12.73                                                    |
| Singapore         | China               | 11.83                                                    |
| Thailand          | Japan               | 17.77                                                    |
| Vietnam           | China               | 25.79                                                    |

Source: World Bank

China is the main country destination of imports for Japan, Indonesia, Cambodia, Korea, Malaysia, Myanmar, Vietnam, Singapore and Philippines that covers 16.99%, 22.58%, 30.47%, 17.91 %, 31.44%, 15.99%, 12.73%, 11.83% and 25.79 % of total imports. Japan is also the main export destination for Thailand that has a proportion of 17.77 of the total imports. Brunei Darussalam imported from Singapore 19.49 % of total imports.

### 1.3 Purpose of the Study

In ASEAN region, trade from the overall region has increased considerably over the past two decades, partly as a result of growing economics openness and signing of trade agreements but mostly because of higher oil production and exports. The effects of exchange rate instability on external trade have also evolved to be one of the most controversial topics of international trading and it is important to know how exports and imports in this region are affected by the fluctuation of exchange rates. Therefore, that would be very interesting to see whether the exchange rate variability can adequately explain the ASEAN region's trade performance. The intention of this research would be to analyze the issue and the projections of the exchange rate

variability' implication on exporting and importing, contribute to the empirical discussions on the linkage between the exchange rate instability and AMS's trade activities.

#### 1.4 Research Questions

The key research questions regarding the impact of exchange rate instability on AMSs' external trade are as follows:

- 1: Are there positive or negative or no effects on exports of the exchange rate instability of AMSs.
- 2: Are there positive or negative or no effects on imports of the exchange rate instability of AMSs.

#### 1.5 Organization of the Paper

This study is composed in section 1, we introduce the background of the linkage and the statement of problems between the exchange rate instability and external trade; in section 2, we mention the study of some important past observations in order to give the theoretical and empirical evidence as a multidimensional support to the topic; in section 3, we explore our empirical model specifications and discuss econometric methodology issues. In the meantime, data sources and variable explanations are described in section 4. The empirical results are addressed in Section 5.

## **CHAPTER TWO: LITERATURE REVIEWS**

### 2.1 The Effect of Exchange Rate instability on External Trade

The exchange rate instability has significantly effects with external trade directly through the economic instability and uncertainty, and indirectly through the production system,

investment and national policy. The exchange rate volatility is the risk of exchange rates and has some implications for external trade. The previous literatures are attempted to analyze the exchange rate instability and external trade, theoretically and empirically, and observed positively and negatively relations. These findings have the ambiguous consequences of the exchange rate instability on external trading.

The literature provides different definitions for the impact of fluctuations on exchange rates changes on foreign trading. It is stated that exchange rate instability should have an opposite effect on external trade Ethier, W. (1973). He also indicated that the effect of the different outcomes relies on the traders' risk. If traders are hazard-free, a higher exchange rate changes are anticipated to reduce the exports as they change their trade market from international markets to local markets. If traders are sufficiently risk-taking, a higher in domestic currency changes will encourage traders to expand the exports volume. (Cushman, & David, O., 1983) applied the moving average to measure the real exchange rate changes, and he noticed that exchange rate changes have an adverse effect on exporting. He also analyzed the current, spot and forward rates with a different measurement of volatility in his study and concluded that the percentage changes in uncertainty have become risky in international trading.

Despite the use of new empirical techniques in the 1990s, analytical literature continues to lead the confusion of the approximate relationships. (Asseery & Peel, 1991) employed GARCH model, and found that a higher exchange rate movement could lead to a higher external trade. Consequently, the overall conclusion on exchange rate instability's effects is tiny and not always negative. (Chowdhury, 1993) used an error correction model to test the influence of exchange rate changes on foreign trade for G-7 nations. In his study, he also used a monthly average to measure changes of the real exchange rate, there was an adverse significantly effect. Among these

improvements, the monthly average remained as a custom estimation of the exchange rate uncertainty.

Arize et al. (2000) studied the association between the exchange rate changes and the exports of thirteen developing countries. The estimation of the exchange rate instability has negatively effect on export levels of these nations. Poon., et al (2005) analyzed the exports from five Countries in Asia. Among these countries, Thailand has a positive long-term impact on exports and Singapore also has a short-term positive impact.

Similarly, Haile et al, (2013) found that the nominal exchange rates changes are less likely negative effects on trade than the real exchange rates changes due to real value diverges from the nominal value at most for long-term. They also used the gravity, error correction, and co-integration approaches, the results were more likely negative effects in the linkage between the exchange rate changes and foreign trade. (Karimi, M., & Karamelikli, K., 2015) observed that real exchange rate instability in each of the MENA nations has a significantly negative impact on exports. (Bahmani-Oskooee, M., & Gelan, A., 2015) focused on 12 African economies to find the real exchange rate changes on the trade flows. They found that exports from only five countries have long-term effects and imports from only one country have a long-term effect.

The study results from earlier research have explained the situation between exchange rate changes and international trade not only rich countries but poor countries. The overall results are that the exchange rate instability had a negatively, positively and no effect on exporting and importing of AMSs as well as the methodology used to estimate the short-term and long-term impact. Currently, most scholars have selected to research both in rich and poor countries. This paper emphasis not only exchanges rate instability's effect on international trading but also, the



higher variability of the exchange rate and external trade that defines the developing countries produce a better estimation of exchange rate instability's effect on exporting and importing.

## CHAPTER THREE: METHODOLOGY

### 3.1 Chapter Overview

This chapter explains the study's model specification and estimation, the measurement of the variables and the expected signs of the parameter of each variable. Thereafter, the chapter describes the data and its source. The last part of the chapter highlights the diagnostic tests conducted. This paper focused the exchange rate instability's effect on exporting and importing of AMSs over the annual period from 2008 to 2017. The panel dataset of 130 observations is used. Our data set consists of 13 AMSs (see table A1 in the appendix)

### 3.2 Specification and Estimation of the Model

The estimation model is,

$$X_{it} = \beta_1 K_{it} + \beta_2 X_{it} + \beta_3 I_{i,t-1} + \varepsilon_{it} \text{-----} (1)$$

$$M_{it} = \alpha_1 K_{it} + \alpha_2 X_{it} + \alpha_3 I_{i,t-1} + \varepsilon_{it} \text{-----} (2)$$

In equation (1 and 2),  $i = 1, 2, 3, \dots, 13$  denotes for an individual of the 13 AMS countries in our sample and  $t = 2008, \dots, 2017$  refers to the time frame.  $X_{it}$  is total exports value of AMSs and  $M_{it}$  is total imports value of AMSs.  $K_{it}$  is a combination of the three major components of international trade measurement – exchange rate volatility (EXV), real effective exchange rate (REER) and terms of trade (TOT) which are measured in percent.

The control variables involved in  $X_{it}$  are lagged employment (EMP), GDP growth, foreign direct investment (FDI), and inflation (INF). The third term,  $I_{i,t-1}$ , represents for the persistence in the dependent variables and its coefficient,  $\beta_3$  and  $\alpha_3$  are limited to zero in the static specification.

Several issues may cause from constructing equations. First, the characteristics of the country, such as geographical location and populations, may harmonize with the explanatory variables. Second, the variables of exchange rate volatility are supposed as endogenous. Because these regressors could be linked with the error term, causes and effect could perform in either way – from exchange rate instability impact on exporting and importing. Third, in the dynamic specification, autocorrelation results from the existence of a lagged dependent variable. Our panel dataset consists of a small number of time frame (T=10) dimension and a larger number of the country (N=13) dimension. To deal with these problems, we have applied the Arellano – Bond (1991) difference GMM estimator. The endogenous regressors, exchange rate volatility, real effective exchange rate and terms of trade are used as instrumented with their lagged levels.

The exogenous instruments are used money supply, interest rate and government expenditure. The first-stage statistics indicate that the instruments are weak in the estimation of instrumental variables in fixed effects. In the OLS regression the fixed effect estimators' IV are probably to be biased with weak instruments Staiger. D, & Stock. J. H, (1997) and Baum. C & Schaffer. M, & Stillman. S, (2003). The Arellano – Bond estimator is created to fix the problems of small-time (T=10) dimension and a large number (N=13) dimension panels and also removes the country-specific effect that has not been observed Roodman. D, (2006).

### 3.3 Measurement of Main Variables and Expected Signs

#### 3.3.1 Exchange rate volatility (EXV)

Exchange rate volatility (EXV) is a gauge aimed at capturing the instability confronted by the exporters and the importers as a consequence of unpredictable exchange rate instability. In the literature, various measures of exchange rate instability have been proposed. This study tends to follow the recent literature and utilizes the measurement of exchange rate instability derived mainly from the GARCH model, moving average standard deviation (MASD), like in (Koray. F & Lastrapes. W, 1989) and (Chowdhury. A, 1993). The exchange rate volatility (EXV) is gauged by using the following formula:

$$V_t = \left[ \frac{1}{m} \sum_{i=1}^m (e_{t+i-1} - e_{t+i-2})^2 \right]^{1/2}$$

Where m is the time frame number, t is time and e is the index of the exchange rate.

#### 3.3.2 Real effective exchange rate (REER)

Indeed, REER is a relative price that measures a domestic currency's value in terms of an other currency. It refers to a domestic currency's purchasing power as regards the goods and Services related to a trading partner's currency can be purchased over a specified time Olayungbo, D., et al, (2011).

$$REER_n = \sum_{i=1}^n \left[ E_i \left( \frac{WPI_i}{WPI_j} \right) \right]$$

Where REER<sub>n</sub> is the trade-weighted real effective exchange rate,  $E_i$  is the bilateral nominal exchange rate, and WPI<sub>i</sub> is wholesale price index for importing country  $i$ , and WPI<sub>j</sub> is the wholesale price index for importing country  $j$ .

### 3.3.3 Terms of Trade (TOT)

TOT refers to the relative to exports price and imports price. TOT is measured by

$$TOT_{it} = \frac{PPI}{CPI}$$

Where  $TOT_{it}$  is Terms of trade, CPI is the domestic consumer price index and PPI is the trading partner's producer price index Deltas, H., & Zilberfarb, B. Z. (1993).

## 3.4 Data and Data Sources

The data are derived mainly from the World Bank database, IMF, ASEAN Secretariat, China Economic Information Center (CEIC) and United Nations Conference on Trade and development (UNCTADSTAT). The data set comprises thirteen AMSs, covering the 2008-2017 periods. All data are annual in our analysis.

## CHAPTER FOUR: EMPIRICAL RESULTS

### 4.1 Chapter Overview

The full sample of 13 AMSs is reported in Table 2 and 3. The Arellano-Bond experiment in all eight regressions does not reject the null hypothesis of autocorrelation. Tables 2 and 3 also show the Sargan test's p-values, which do not reject the null hypothesis. There is the causality of dependent variable exports and imports from the independent variables of exchange rate

instability. The Wald test result which do not reject the null hypothesis can be presented in table 1 and 2.

#### 4.2 The impact of exchange rate volatility and exports in AMSs

Table 4 the difference GMM experiment for exchange rate instability on exports in 13 ASEAN+3 countries, 2008-2017

| Independents Variables            | Static Specification |                  |                 | Dynamic Specification |                   |                   |                   |                  |
|-----------------------------------|----------------------|------------------|-----------------|-----------------------|-------------------|-------------------|-------------------|------------------|
|                                   | (1)                  | (2)              | (3)             | (4)                   | (5)               | (6)               | (7)               | (8)              |
| EXV                               | -0.03<br>(0.05)      | -0.12<br>(0.06)  | -0.01<br>(0.06) | -0.06*<br>(0.02)      | -0.07**<br>(0.02) | -0.07**<br>(0.02) | -0.51<br>(0.03)   |                  |
| REER                              | 0.41*<br>(0.18)      | 0.56*<br>(0.21)  | 0.63*<br>(0.21) | 0.20<br>(0.12)        | 0.25*<br>(0.09)   | 0.26**<br>(0.08)  |                   | 0.36*<br>(0.12)  |
| TOT                               | 0.08**<br>(0.02)     | 0.01<br>(0.05)   | 0.01<br>(0.06)  | 0.05*<br>(0.03)       | 0.01*<br>(0.03)   | 0.01*<br>(0.04)   |                   |                  |
| Lagged exports                    |                      |                  |                 | 0.51**<br>(0.13)      | 0.64***<br>(0.10) | 0.66***<br>(0.09) | 0.75***<br>(0.15) | 0.56**<br>(0.17) |
| World GDP growth                  |                      | 0.45<br>(0.36)   | 0.34<br>(0.37)  |                       | 0.64**<br>(0.10)  | 1.17**<br>(0.34)  | 1.17***<br>(0.34) | 0.98*<br>(0.49)  |
| FDI                               |                      | 0.06<br>(0.03)   | 0.06<br>(0.04)  |                       | 0.04*<br>(0.02)   | 0.05*<br>(0.02)   | 0.06<br>(0.03)    | 0.04*<br>(0.02)  |
| Inflation                         |                      | 0.26**<br>(0.15) | 0.77*<br>(0.31) |                       | 0.50<br>(0.30)    | 0.45<br>(0.30)    | 0.13<br>(0.23)    | 0.49<br>(0.31)   |
| Lagged employment                 |                      |                  | 1.35<br>(0.90)  |                       |                   | 2.01*<br>(0.30)   | 0.63<br>(0.65)    | 1.87<br>(0.60)   |
| No. of observations               | 130                  | 130              | 130             | 130                   | 130               | 130               | 130               | 130              |
| No. of country                    | 13                   | 13               | 13              | 13                    | 13                | 13                | 13                | 13               |
| No. of instruments                | 10                   | 12               | 9               | 11                    | 12                | 10                | 9                 | 11               |
| Arellano-Bond AR(1) test: p-value | 0.54                 | 0.87             | 0.73            | 0.20                  | 0.18              | 0.06              | 0.16              | 0.12             |
| Arellano-Bond AR(2) test: p-value | 0.97                 | 0.52             | 0.55            | 0.83                  | 0.55              | 0.34              | 0.37              | 0.48             |
| Sargan statistics: p-value        | 0.64                 | 0.83             | 0.61            | 0.65                  | 0.83              | 0.86              | 0.94              | 0.56             |
| Wald test p-values                |                      |                  |                 |                       |                   |                   |                   |                  |
| Exchange rate volatility          | 0.44                 | 0.71             | 0.62            | 0.65                  | 0.34              | 0.57              | 0.42              | 0.78             |

Note: Standard errors in parentheses; \*\*\* Significant at 1% level, \*\* significant at 5 % level, \* significant at 10% level  
Difference GMM panel estimator

The static specification, in columns 1, the estimates from the regression with only main variables reports that EXV is no significant, REER and TOT is positively significant. The REER's coefficient is significant at 10 % level, meaning that a percent unit increase in REER increases exports by 0.41 percent. The TOT's coefficient is significant at 5 % level, meaning that a percent unit increase in TOT increases exports by 0.08 percent.

The estimate from the regression with main variables and control variables in columns 2, implies that EXV is no significant, REER and inflation are positive significant. The REER coefficient's is significant at 10 % level, meaning that a percent unit increase in REER increases

exports by 0.56 percent. The inflation coefficient's is significant at 5 % level, meaning that a percent unit increase in inflation increases exports by 0.26 percent.

In column 3, the estimates from the regression with main variables and control variables including lagged employment variable, reports that the coefficients are in general very small. EXV is insignificant, REER and inflation are significant. The REER's coefficient is significant at 10 % level, meaning that a percent unit increase in REER increases exports by 0.63 percent. The inflation's coefficient is significant at 10 % level, meaning that a percent unit increase in inflation increases exports by 0.77 percent. The perseverance of lagged employment in the dependent variable is 1.35.

The dynamic specification, in column 4, the estimates from the regression with main variables including lagged exports variable, reports that EXV is negatively signified, TOT is positively significant. The EXV's coefficient is significant at 10 % level, meaning that one percent increased in the EXV increases exports by 0.06 %. The TOT 's coefficient is significant at 10 % level, meaning that a percent unit increase in TOT increases exports by 0.05 percent. The perseverance of lagged employment is 0.51.

In column 5, the estimates from the regression with main variables including lagged exports and control variables, reports that the results generally show better than those in column 1, 2, 3, 4. EXV is adversely affected on exports. REER, TOT, world GDP growth and FDI have positive significant. EXV's coefficient is significant at 5 % level, meaning that one percent increased in EXV decreases exports by 0.07 %. The REER's coefficient is significant at 5 % level, meaning that a percent unit increase in REER increases exports by 0.25 percent. The TOT's coefficient is significant at 10 % level, meaning that a percent unit increase in TOT increases exports by 0.01 percent. The coefficient of lagged exports is 0.64. The world GDP growth's coefficient is significant at 10 % level, meaning that a percent unit increase in world

GDP growth increases exports by 0.64 percent. The FDI's coefficient is significant at 5 % level, meaning that a percent unit increase in FDI increases exports by 0.04 percent.

In column 6, the estimates from the regression with main variables including lagged exports and control variables including lagged employment that try to fix both endogeneity and country-specific non-observed effects. The variables' lagged values are used as instruments. The system estimates are pretty accurate overall. Consequently, the focus of the discussion is in column 6. Nevertheless, EXV is negatively signified, REER, TOT, world GDP growth and FDI are positively signified. The EXV's coefficient is signified at a level of 5 percent, which means one percent increased in EXV reduces exports by 0.07 percent. The REER's coefficient is significant at a level of 5 percent, meaning a percentage unit increase in REER increases exports by 0.26 percent. This means that an increased in REER stimulates exports that make commodities price cheaper internationally. The TOT's coefficient is significant at 10 % level, meaning that a percent unit increase in REER increases exports by 0.01 percent. The coefficient of lagged exports is 0.66. The lower existence in the estimation may be due to small " T " time frame or large " N " in AMSs where multiple structural reforms and economic instability were involved. The world GDP growth's coefficient is significant at 5 % level, meaning that a percent unit increase in world GDP growth increases exports by 1.17 percent. The FDI's coefficient is significant at 10 % level, meaning that a percent unit increase in FDI increases exports by 0.05 percent. The coefficient of lagged employment is 2.01.

In column 7, the estimates from the regression which regress only EXV in main variables with lagged exports and control variables with lagged employment, reports that EXV has no influence on exporting. The world GDP growth has a positive effect on exports. The World GDP growth's coefficient is significant at 1 % level, meaning that one percent increased in World GDP growth increases exports by 1.17 percent. The coefficient of lagged exports is 0.75. The coefficient of lagged employment is 0.63.

In column 8, the estimates from the regression which regress only REER in main variables with lagged exports and control variables with lagged employment, reports that REER, world GDP growth and FDI has a positive effect. The REER's coefficient is significant at 10 % level, meaning that a percent unit increase in REER increases exports by 0.36 percent. The coefficient of lagged exports is 0.56. The World GDP growth's coefficient is significant at 10 % level, meaning that a percent unit increase in World GDP growth increases exports by 0.98 percent. The FDI's coefficient is significant at 10 % level, meaning that a percent unit increase in FDI increases exports by 0.04 percent.



### 4.3 The impact of exchange rate volatility and imports in AMSs

Table 5 the difference GMM experiment for EXV on imports in 13 ASEAN+3 countries, 2008- 2017

| Independents Variables            | Static Specification |                  |                   | Dynamic Specification |                   |                   |                   |                   |
|-----------------------------------|----------------------|------------------|-------------------|-----------------------|-------------------|-------------------|-------------------|-------------------|
|                                   | (1)                  | (2)              | (3)               | (4)                   | (5)               | (6)               | (7)               | (8)               |
| EXV                               | -0.01<br>(0.06)      | -0.01<br>(0.07)  | -0.01<br>(0.07)   | -0.07*<br>(0.02)      | -0.09**<br>(0.03) | -0.09**<br>(0.03) | -0.05*<br>(0.02)  |                   |
| REER                              | 0.77**<br>(0.18)     | 0.81**<br>(0.18) | 0.84***<br>(0.17) | 0.41*<br>(0.15)       | 0.40**<br>(0.10)  | 0.41**<br>(0.10)  |                   | 0.35**<br>(0.10)  |
| TOT                               | -0.09*<br>(0.04)     | -0.13*<br>(0.04) | -0.15*<br>(0.05)  | -0.04*<br>(0.04)      | -0.06*<br>(0.03)  | -0.05*<br>(0.03)  |                   |                   |
| Lagged imports                    |                      |                  |                   | 0.46**<br>(0.15)      | 0.61***<br>(0.09) | 0.62***<br>(0.10) | 0.71***<br>(0.09) | 0.62***<br>(0.08) |
| Country GDP growth                |                      | 0.10<br>(0.12)   | 0.25<br>(0.10)    |                       | 0.59**<br>(0.19)  | 0.56**<br>(0.18)  | 0.66*<br>(0.27)   | 0.50**<br>(0.15)  |
| FDI                               |                      | 0.05<br>(0.03)   | 0.05<br>(0.04)    |                       | 0.01<br>(0.02)    | 0.02<br>(0.02)    | 0.04<br>(0.03)    | 0.03<br>(0.02)    |
| Inflation                         |                      | 0.41*<br>(0.17)  | 0.77**<br>(0.23)  |                       | 0.80*<br>(0.30)   | 0.77*<br>(0.31)   | 0.57*<br>(0.32)   | 0.77*<br>(0.31)   |
| Lagged employment                 |                      |                  | 0.25<br>(1.13)    |                       |                   | 1.32*<br>(0.78)   | 1.55*<br>(0.85)   | 1.76*<br>(0.81)   |
| No. of Observations               | 130                  | 130              | 130               | 130                   | 130               | 130               | 130               | 130               |
| No. of Country                    | 13                   | 13               | 13                | 13                    | 13                | 13                | 13                | 13                |
| No. of instruments                | 10                   | 11               | 12                | 11                    | 9                 | 13                | 10                | 9                 |
| Arellano-Bond AR(1) test: p-value | 0.76                 | 0.76             | 0.58              | 0.54                  | 0.46              | 0.69              | 0.56              | 0.76              |
| Arellano-Bond AR(2) test: p-value | 0.78                 | 0.56             | 0.68              | 0.86                  | 0.67              | 0.45              | 0.63              | 0.84              |
| Sargan statistics: p-value        | 0.69                 | 0.79             | 0.68              | 0.68                  | 0.78              | 0.85              | 0.89              | 0.87              |
| Wald test ( p-values)             |                      |                  |                   |                       |                   |                   |                   |                   |
| Exchange rate volatility          | 0.87                 | 0.83             | 0.68              | 0.56                  | 0.64              | 0.86              | 0.89              | 0.86              |

Note: Standard errors in parentheses; \*\*\* Significant at 1% level, \*\* significant at 5 % level, \* significant at 10% level  
Difference GMM panel estimator

The static specification, in columns 1, the estimates from the regression with only main variables reports that EXV is not signified, REER and TOT are positively signified. The REER's coefficient is significant at 5 % level, meaning that a percent unit increase in REER increases imports by 0.77 percent. The TOT's coefficient is significant at 10 % level, meaning that a percent unit increase in TOT decreases imports by 0.09 percent.

The estimate from the regression with main variables and control variables in columns 2 implies that EXV is not signified, REER, TOT and inflation are positive significant. The REER's coefficient is significant at 5 % level, meaning that a percent unit increase in REER increases

imports by 0.81 percent. The TOT's coefficient is significant at 10 % level, meaning that a percent unit increase in TOT decreases imports by 0.41 percent. The inflation's coefficient is significant at 10 % level, meaning that a percent unit increase in inflation increases imports by 0.13 percent.

In column 3, the estimates from the regression with main variables and control variables including lagged employment variable reports that EXV has insignificant, REER, TOT and inflation are significant. The REER's coefficient is significant at 1 % level, meaning that 1 % unit increase in REER increases imports by 0.84 percent. The TOT's coefficient is significant at 10 % level, meaning that a percent unit increase in TOT decreases imports by 0.15 percent. The inflation's coefficient is significant at 5 % level, meaning that a percent unit increase in inflation increases imports by 0.77 percent. The coefficient of lagged employment is 0.25.

The dynamic specification, in column 4, the estimates from the regression with main variables including lagged imports variable, reports that EXV is negatively signified, REER and TOT are positively signified. The EXV's coefficient is significant at 10 % level, meaning that one percent increased in the EXV decreases imports by 0.07%. The REER's coefficient is significant at 10 % level, meaning that 1 % unit increase in REER decreases imports by 0.41 percent. The TOT's coefficient is significant at 10 % level, meaning that a percent unit increase in TOT increases imports by 0.05 percent. The coefficient of lagged employment is 0.04. The coefficient of lagged employment is 0.46.

In column 5, the estimates from the regression with main variables including lagged exports and control variables, reports that the results come out better than the column 1, 2, 3, 4. EXV is negatively signified. REER, TOT, world GDP growth and FDI have positive significant. EXV's coefficient is signified at 5 % level, meaning that 1 % unit increased in EXV decreases

imports by 0.09%. The REER's coefficient is significant at 5 % level, meaning that a percent unit increase in REER increases imports by 0.40 percent. The TOT's coefficient is significant at 10 % level, meaning that a percent unit increase in TOT decreases imports by 0.06 percent. The coefficient of lagged imports is 0.61. The countries GDP growth's coefficient is significant at 5 % level, meaning that a percent unit increase in the country's GDP growth increases imports by 0.59 percent.

In column 6, the estimates from the regression with main variables including lagged imports and control variables including lagged employment, This effort to fix both endogeneity and country-specific effects that have not been observed. The regressions assume all of the explanatory variables are endogenous and all of them are instrumented in consequences. The variables' lagged values are used as instruments. The system estimates are pretty accurate overall. The signs on the import determinants of the coefficients seem reasonable. Consequently, the focus of the consideration becomes in column 6. The negative relation is found between the EXV and imports. REER, TOT, and countries GDP growth is positively signified. EXV's coefficient is signified at 5 % level, meaning that one percent increased in EXV decreases imports by 0.09 %. The REER's coefficient is significant at 5 % level, meaning that a percent unit increase in REER increases imports by 0.41 percent. The TOT's coefficient is significant at 10 % level, meaning that a percent unit increase in TOT decreases imports by 0.05 percent. The coefficient of lagged imports is 0.62. The countries GDP growth's coefficient is significant at 5 % level, meaning that a percent unit increase in countries' GDP growth increases imports by 0.56 percent. The coefficient of lagged employment is 0.32.

In column 7, the estimates from the regression which regress only exchange rate volatility in main variables with lagged imports and control variables with lagged employment, reports that

EXV is negatively signified on imports. World GDP growth and inflation are positively signified. EXV's coefficient is signified at 1 % level, meaning that one percent increased in EXV decreases imports by 0.05 %. The coefficient of lagged imports is 0.71. The countries GDP growth's coefficient is signified at 1 % level, meaning that one percent increased in countries' GDP growth increases imports by 0.66 percent. The inflation's coefficient is signified at 1 % level, meaning that one percent increased in inflation increases imports by 0.57 %. The coefficient of lagged employment is 1.55.

In column 8, the estimates from the regression which regress only REER in main variables with lagged imports and control variables with lagged employment, reports that REER, countries' GDP growth and FDI has a positive effect. The REER's coefficient is significant at 5 % level, meaning that a percent unit increase in REER increases imports by 0.35 percent. The coefficient of lagged imports is 0.62. The countries' GDP growth's coefficient is significant at 5 % level, meaning that a percent unit increase in countries' GDP growth increases imports by 0.50 percent. The inflation's coefficient is significant at 10 % level, meaning that a percent unit increase in inflation increases imports by 0.77 percent. The dependent variable is the coefficient of lagged imports is 1.76.

## **CHAPTER FIVE: CONCLUSION**

### **5.1 Findings**

In this study, empirical evidence has shown that exports and imports are affected by several factors. Exports were assumed to be affected by the volatility of exchange rates, REER, TOT, world GDP and FDI while imports were affected by exchange rates variability, REER,

TOT, country's GDP and inflation. The analysis results confirm the inverse linkage between the exchange rate instability and changes in importing and exporting. The volatility of exchange rate has an inverse effect on exporting and importing, indicating that hazard-averse exporters and importers will lower their behavior, shift the sources of demand and supply, or change the prices to reduce their exposure. A key political message from this research is that trade policies aimed at balancing in exports and imports are to produce ambiguous results if policymakers neglect both the stability and the level of the exchange rate. The adverse effect of the exchange rates instability on exports and imports requires the policies that address the exchange rates instability. A further implication is that in times of high exchange rate volatility in many countries, trade encouragement programs that have emphasized on the exports expansion actions and imports reduction plans may influence to local exporters and importers. As well, a global free trade policies planned the positive effect will be criticized by a variable exchange rate can induce in BOP crisis as well. The findings also indicate the policies that affect the degree of economic operation need to be very effective if policymakers choose to target exports.

## 5.2 Summary of the Study

This research analyzes the effects of the exchange rate instability and on external trade used by Generalized Moment Method, to know the association between exchange rate instability and AMSs trade performance. The advantage of the model using in this study indicates such a reliable finding in order to that economic theory and hypothesis results are linked between each other. But some countries having fluctuating official exchange rate does affect on external trade as consequences it may depend on the situation of trade performance and liberalization. The estimation results mentioned that the increase of the exchange rate instability will reduce the exports and imports volume, the increasing of REER, GDP will induce the exports and imports.

A higher FDI will increase exports. The TOT increased will decrease imports and the inflation will encourage imports. As shown the results Panel Model to capture a conditional variance of variables then, continue to analyze fluctuation effects between the observation countries trade and variance of its currencies.

### 5.3 Policy Recommendations

Results from the empirical analysis suggest that trade could be enhanced if macroeconomic policies are accepted which aimed at monitoring a stable competitive exchange rate. Policymakers should formulate coherent policies that will tend to a special exchange rate system in which will be accomplished and preserved to boost overall trade and economic growth in the country. A flexible range within the exchange rate can vary and a fixed rate should be avoided to allow participants in the foreign exchange market to engage in profitable transactions. Therefore, as part of its promotion and diversification strategy, the government should undertake itself to maintain the stable and competitiveness of the exchange rate, applying suitable policy management systems and adopting necessary reforms that make a contribution to international trade competitiveness. Needs for monitoring the exchange rate instability is an important factor to support the progress towards the ASEAN Community is developing to be better and more converged one.

### 5.4 Suggested Areas for Further Study

The researcher suggests the study on the effect of current public sector reforms in promoting a stable exchange rate and how devolution affects trade and whether there is any linkage between these variables and exchange rate. There are other factors that affect trade such as money supply, interest rate, unemployment, government spending/ borrowing among others

which the study did not analysis. Therefore, there is a need for in-depth analysis of these factors to see how they affect exports and imports.

Table 6 ASEAN member states in the Sample Data

|                      |                |                 |
|----------------------|----------------|-----------------|
| 1. Brunei Darussalam | 6. Korea, Rep. | 10. Philippines |
| 2. China             | 7. Lao PDR     | 11. Singapore   |
| 3. Indonesia         | 8. Myanmar     | 12. Thailand    |
| 4. Japan             | 9. Malaysia    | 13. Vietnam     |
| 5. Cambodia          |                |                 |

## References

- Arize, A. C., Osang, T., & Slottje, D. J. (2000). Exchange-rate volatility and foreign trade: evidence from thirteen LDC's. *Journal of Business & Economic Statistics*, 18(1), 10-17.
- Arize, A. C., Osang, T., & Slottje, D. J. (2000). Exchange rate volatility and foreign trade: evidence from thirteen LDCs. *Journal of Business and Economics Statistics* 18, 10-17.
- Asseery, A., & Peel, D. A. (1991). The effects of exchange rate volatility on exports: Some new estimates. *Economics letters*, 37(2), 173-177.
- Arize, A. C., Osangand, T., & Slottje, D. J. (2008). Exchange rate volatility in Latin America and its impact on foreign trade. *International Review of Economics and Finance* 17(1), 33-44.
- Baum, C. F., Schaffer, M. E., & Stillman, S. (2003). Instrumental variables and GMM: Estimation and testing. *The Stata Journal*, 3(1), 1-31.
- Bahmani-Oskooee, M., & Gelan, A. (2018). Exchange-rate volatility and international trade performance: Evidence from 12 African countries. *Economic Analysis and Policy*, 58, 14-21.
- Cushman, D. O. (1983). The effects of real exchange rate risk on international trade. *Journal of international Economics*, 15(1-2), 45-63.

- Chowdhury, A. (1993). Does exchange rate variability depress trade flows? Evidence from error correction models. *Review of Economics and Statistics*. Choudhry, T. (2008). Exchange rate volatility and United Kingdom Trade: evidence from Canada, Japan and New Zealand. *Empirical Economics*, 35(3), 607-619.
- Dellas, H., & Zilberfarb, B. Z. (1993). Real exchange rate volatility and international trade: a reexamination of the theory. *Southern Economic Journal*, 641-647.
- Ethier, W. (1973). International trade and the forward exchange market. *The American Economic Review*, 63(3), 494-503.
- Haile, M. G., & Pugh, G. (2013). Does exchange rate volatility discourage international trade? A meta-regression analysis. *The Journal of International Trade & Economic Development*, 22(3), 321-350. Khan, A. J., Azim, P., & Syed, S. H. (2014). The Impact of Exchange Rate Volatility on Trade. Kroner, K. F. & Lastrapes, W. D. (1993). The impact of exchange rate volatility on international trade: Reduced form estimates using the GARCH-in-mean model. *Journal of International Money and Finance*, 12, 298-318.
- Karimi, M. S., & Karamelikli, H. (2015). The Effect of Exchange Rate Volatility on International Trade in Selected MENA Countries. *Journal of Business & Economic Studies*, 21. Karimi, M. S., & Karamelikli, K., (2015). The Effect of Exchange rate Volatility on International Trade in Selected MENA Countries, *The Journal of Business and Economic Studies*.
- Kwesi Ofori, I., Obeng, C. K., & Armah, M. K. (2018). Exchange rate volatility and tax revenue: Evidence from Ghana. *Cogent Economics & Finance*, 6(1), 1537822.
- Koray, F., & Lastrapes, W. D. (1989). Real exchange rate volatility and US bilateral trade: a VAR approach. *The Review of Economics and Statistics*, 708-712.
- Mileva, E. (2008). The impact of capital flows on domestic investment in transition economies.
- Olayungbo, D., Yinusa, O., & Akinlo, A. (2011). Effects of exchange rate volatility on trade in some selected Sub-Saharan African countries. *Modern Economy*, 2(04), 538.



- Poon, W. C., Choong, C. K., & Habibullah, M. S. (2005). Exchange rate volatility and exports for selected East Asian countries: evidence from error correction model. *ASEAN Economic Bulletin*, 22(2), 144-159.
- Roodman, D. (2006). How to do xtabond2: an introduction to 'difference' and 'system'. In *GMM in STATA*, Center for Global Development Working Paper No. 103.
- Staiger, D., Stock, J. H., & Watson, M. W. (1997). The NAIRU, unemployment and monetary policy. *Journal of economic perspectives*, 11(1), 33-49.
- Soleymani, A., & Chua, S. Y. (2014). Effect of exchange rate volatility on industry trade flows between Malaysia and China. *The Journal of International Trade & Economic Development*, 23(5), 626-655.