THE DETERMINANTS OF FINANCIAL INTEGRATION

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THE DETERMINANTS OF FINANCIAL INTEGRATION

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ABSTRACT

Financial integration is a condition of which the financial markets are closely linked together. The financial integration imposed in the financial systems is conducted through various channels which includes financial liberalization, financial openness, capital account liberalization and external debt. The financial liberalisation theory that is developed by McKinnon (1973) argues for the importance of financial liberalisation for the country's development. By enhancing the breadth and depth of financial markets, reducing information and transaction costs, financial integration would bring positive impacts to the economy as a whole. The objective of this study is to examine the impact of determinants (trade openness, gross domestic product, exchange rate, tax revenue and financial crisis) on financial integration in seven major economies in ASEAN countries. This study employs the unbalanced data for seven selected ASEAN countries which are Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam between the periods of 2000 to 2016. The dependent variables for this study is financial integration which is represented by external debt The study focuses on five independent variables which are trade openness, economic growth, exchange rate, tax revenue and financial crisis. The study discovers the positive relationship between economic growth and financial integration for seven ASEAN countries. In addition, the study also finds the positive link between tax revenue and financial integration. In contrary, the trade openness is found to have a negative relationship with the financial integration. Moreover, financial crisis also has a negative and significant relationship with financial integration. This study finds that the financial integration reduces during the post crisis period. Other than that, official exchange rate shows the positive but insignificant relationship with financial integration. For the policy makers, the findings could assist in the future policy making efforts.

Keywords: Financial integration, External Debt, ASEAN, Trade Openness, Economic Growth, Exchange rate, Tax Revenue, Financial Crisis.

ABSTRAK

Integrasi kewangan adalah keadaan di mana pasaran kewangan berkait rapat. Integrasi kewangan yang dikenakan dalam sistem kewangan dijalankan melalui pelbagai saluran yang merangkumi liberalisasi kewangan, keterbukaan kewangan, liberalisasi akaun modal dan hutang luar negeri. Teori liberalisasi kewangan yang dikembangkan oleh McKinnon (1973) berpendapat pentingnya liberalisasi kewangan untuk pembangunan negara. Dengan meningkatkan keluasan dan kedalaman pasaran kewangan, mengurangkan kos maklumat dan urus niaga, integrasi kewangan akan membawa kesan positif kepada ekonomi secara keseluruhan. Objektif kajian ini adalah untuk mengkaji kesan penentu (keterbukaan perdagangan, keluaran dalam negeri kasar, kadar pertukaran, hasil cukai dan krisis kewangan) terhadap integrasi kewangan dalam tujuh ekonomi utama di negara-negara ASEAN. Kajian ini menggunakan data yang tidak seimbang bagi tujuh negara ASEAN yang terpilih iaitu Kemboja, Indonesia, Laos, Malaysia, Filipina, Thailand dan Vietnam antara tempoh 2000 hingga 2016. Pembolehubah bergantung kepada kajian ini adalah integrasi kewangan yang diwakili oleh hutang luar negeri kajian hanya memberi tumpuan kepada lima pembolehubah bebas yang keterbukaan perdagangan, pertumbuhan ekonomi, kadar pertukaran, hasil cukai dan krisis kewangan. Kajian ini menemui hubungan positif antara pertumbuhan ekonomi dan integrasi kewangan untuk tujuh negara ASEAN. Di samping itu, kajian itu juga mendapati hubungan positif antara hasil cukai dan integrasi kewangan. Sebaliknya, keterbukaan perdagangan didapati mempunyai hubungan negatif dengan integrasi kewangan. Di samping itu, krisis kewangan mempunyai hubungan yang negatif dan signifikan dengan integrasi kewangan. Kajian ini mendapati bahawa integrasi kewangan menurun semasa tempoh pasca krisis. Selain daripada itu, kadar pertukaran rasmi menunjukkan hubungan positif tetapi tidak penting dengan integrasi kewangan Bagi pembuat dasar, penemuan ini boleh membantu dalam usaha membuat polisi masa depan.

Kata kunci: Integrasi Kewangan, Hutang Luar Negeri, ASEAN, Keterbukaan Perdagangan, Pertumbuhan Ekonomi, Kadar Pertukaran, Hasil Cukai, Krisis Kewangan.

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LIST OF ABBREVIATIONS

Abbreviation		Meaning
ASEAN	=	Association of Southeast Asian National
AEC	=	ASEAN Economic Community
CPIS	=	Coordinated Portfolio Investment Survey
ECM	=	Error Correction Model
ED	=	External Debt
ER	=	Exchange Rate
EU	=	Eropean Union
FI	=	Financial Integration
GDP	=	Gross Domestic Product
GMM	=	Generalised Method of Moments
MENA	=	Middle East and North America
OLS	=	Ordinary Least Square
SAARC	=	South Asian Association for Regional Cooperation
SSA	=	Sub Saharan Africa
USD	=	United State Dollar

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

During the last decades, the process of financial integration has transformed the financial system around the world. According to Baele, Ferrando, Hördahl, Krylovaand and Monnet (2004), financial integration is a condition of which the financial markets are closely linked together. An integrated market would allow a country to invest and borrow money from other countries. The financial integration imposed in the financial systems is conducted through various channels which includes financial liberalization, financial openness, capital account liberalization and external debt (Garali & Othmani, 2015; Siddique, Selvanathan & Selvanathan, 2015).

The financial liberalization theory that is developed by McKinnon (1973) argues for the importance of financial liberalization for the country's development. By enhancing the breadth and depth of financial markets, reducing information and transaction costs, financial integration would bring positive impacts to the economy as a whole (Bank Negara Malaysia, 2013).

There are few benefits of financial integration. Baele *et al.* (2004) states that financial integration brings benefit such as risk diversification and risk sharing that provides advantages for the international investment activities. In addition, according to Levine (2001), financial liberalization strengthens the domestic financial sector but

allowing for profitable investment, growth opportunities and efficient allocation of capital to the productive projects.

Kose, Prasad and Terrones (2006) argue that the domestic firms could benefit from the efficiency gains due to the competition from the foreign rivals which lead to better corporate governance. Financial integration provides access to a broader capital base that is an important engine for the economic growth. In addition, the reduction in the cost of capital leads to higher investments activities internationally.

Apart from the benefits, there are some risks from the financial integration activities. According to Quadrini (2017), risk of financial contagion is higher when the financial systems are integrated. Based on the studies conducted by Ranciere, Tornell and Westermann (2006) and Karminsky and Schmukler (2003), financial integration increases the probability of financial crisis to be transferred to other countries.

In addition, Singh (2015) states that interest rates differential across countries allows for international borrowing that seeking for the lowest cost of financing. However, as evident in the Asian financial crisis in 1997, the instability of exchange rate has led to more risk for the borrowers when their currencies are weakening. Thus, they have to pay more due to the adjustment in the exchange rate during the financial crisis.

In summary, although financial integration brings risks to the countries, however, the role played by financial integration is still considered to be an important element for the country. Thus, this study investigates the determinants (trade openness, gross domestic product, exchange rate, tax revenue and financial crisis) of financial integration among seven ASEAN countries (Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam) from 2000 to 2016.

1.2 OVERVIEW OF FINANCIAL INTEGRATION IN ASEAN COUNTRIES

Financial integration has been practiced by the Association of Southeast Asian National (ASEAN) countries since 1970s which aims at improving the performance of the domestic financial system. Currently, there are ten countries under ASEAN which are Vietnam, Thailand, Singapore, Philippines, Myanmar, Malaysia, Lao P.D.R., Indonesia, Cambodia and Brunei Darussalam whereby five largest economies in this region are Malaysia, Indonesia, Singapore, Thailand and Philippines (Almekinders, Mormouras, Zhou & Fukuda, 2015). In improving the performance of the domestic financial system, Singapore was the first in relaxing and removing the regulations on interest rates and eliminates the exchange controls and begins the financial system liberalisation in mid-1970s. In the late 1970s, Malaysia follows the step done by Singapore with significant financial reforms such as interest rate liberalisation and trade openness (Janor & Ali, 2007).

In the recent years, the momentum in financial integration among ASEAN countries has been increased significantly (Gharleghi, Shafigi & Fah, 2015). In January 2007 at the 12th Summit of ASEAN, the associate countries have confirmed to establish the ASEAN Economic Community (AEC) in 2015. The establishment of AEC Blueprint has set more guidelines in the economic and financial collaborations between the ASEAN countries from 2016 to 2025.

In conclusion, the financial integration efforts have been significantly noted among the ASEAN countries in the recent years. Due to the initiatives, the ASEAN countries will be positioned in the global landscape with the objective to enhance the prosperity and development of the region.

1.3 ISSUES AND PROBLEM STATEMENT

In theory, financial integration is conducted to improve the wellbeing of a country. Financial integration has brings few benefits to the domestic financial system such as risk diversification, risk sharing and efficient allocation of capital (Baele *et al.*, 2004). In addition, Schmukler (2004) states that financial integration improves the financial system development through increasing the liquidity, stability and also regulation imposed on the financial market. However, previous studies have found determinants that reduce the level of financial integration (Imimole, Imoughele & Okhuese, 2014; Kelbore, 2015; Nasir & Du, 2017; Waheed, 2005).

There are several issues and problems related to financial integration. Although, trade openness brings positive impact to the financial integration (Bolukbas, 2016; Garali & Othmani, 2015; Kizilgol & Ipek, 2014), however, trade openness also has found to significantly reduce the level of financial integration (Al-Fawwaz, 2016). Thus, there is a need for the policy maker to carefully structure the trade openness activities in order to preserve the higher level of financial integration.

Most of the studies find that economic growth increases financial integration (Garali & Othmani, 2015; Nelasco, 2012; Shirani Fakhr & Tayebi, 2009). In contrast, a negative relationship between economic growth and financial integration is also concluded by the previous literature (Imimole, Imoughele & Okhuese, 2014). The study explains that an increase in domestic production has reduced the dependency on external funding and therefore decreases the financial integration.

As for the exchange rate, a reduction in the exchange rate indicates the strengthening of the local currency. Previous studies agree that strengthening of local currency increases the level of financial integration (Fida, Khan & Sohail, 2012; Zafar & Butt, 2008). However, a study by Imimole, Imoughele and Okhuese (2014) has found that depreciation in local currency enhances the level of financial integration. Although the policy maker aims at strengthening the local currency but there are evidences that this condition has bring a negative impact to the level of financial integration. Thus, this present study would examine whether the strengthening of local currency improves the financial integration activities in the seven selected ASEAN countries.

According to Devereux, Griffith, and Klemm (2002) and also Devereux, Lockwood and Redoano (2008), in order to attract the investors, government are competing over the tax rate. The reduction in tax revenue indicates lower tax rate imposed by the government which can attract the investors into the domestic financial system, hence, the degree of financial integration among the countries is also increased (Garali & Othmani, 2015). Since tax rate is one of the important issues to be considered in order to encourage more international investors, thus, this study will investigate the impact of tax revenue on financial integration.

Finally, the last issue is on the financial crisis. In theory, financial crisis reduces financial integration (Inklaar, de Guevera & Maudos, 2012; Lee, Yi & Park, 2013). Financial crisis weakens the value of local currency, investors' confidence and finally reduces the financial integration activities around the world.

In conclusion, based on the above discussion, there are issues on the determinants of financial integration of which they negatively impacted the level of financial liberalization effort in the country. Since it is every country's major initiatives to be part of the international financial system, thus, this present study will examine the impact of determinants (trade openness, gross domestic product, exchange rate, tax revenue and financial crisis) on financial integration in seven selected ASEAN countries (Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam) from 2000 to 2016. Therefore, the findings of this study would assist the policy maker in determining which factors have the most significant impact on the financial integration.

1.4 RESEARCH QUESTIONS

Based on the previous discussion, the following research questions are developed:

1. Does trade openness influence financial integration in Asean countries?
2. What is the impact of economic growth on financial integration in Asean countries?
3. Does exchange rate affect the financial integration in Asean countries?
4. Does tax revenue affect the financial integration in Asean countries?
5. What is the effect of financial crisis on financial integration in Asean countries?

1.5 RESEARCH OBJECTIVES

The objectives of the study are:

1. To determine the impact of trade openness on financial integration in Asean countries.
2. To investigate the effect of growth economic on financial integration in Asean countries.
3. To examine the impact of exchange rate on financial integration in Asean countries.
4. To analyse the effect of tax revenue on financial integration in Asean countries.
5. To investigate the impact of financial crisis on financial integration in Asean countries.

1.6 SIGNIFICANCE OF THE STUDY

The findings of this would assist the policy maker in formulating and assessing the current regulation on the financial integration in seven ASEAN countries (Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam). This study also provides an important information on whether the independent variables (trade openness, economic growth, exchange rate, tax revenue and financial crisis) influence the financial integration. Thus, it is important for the regulator to consider these variables in formulating policies on financial integration in ASEAN countries.

1.7 SCOPE OF THE STUDY

This study only employed seven selected ASEAN countries (Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam). The 17 years panel data are retrieved from 2000 to 2016 which resulted in 96 observations. In addition, the dependent variable which is financial integration is measured by the external debt. The study only focuses on five independent variables which are trade openness, economic growth, exchange rate, tax revenue and financial crisis.

1.8 STRUCTURE OF THE STUDY

The study is arranged into five chapters. Chapter One provides the background of the study, issues and problem statement, research questions, research objectives, significant of the study, scope of the study and the structure of the study. Chapter Two discusses the theory of the study and the current literature on the determinants of financial integration. Chapter Three elaborates the research methodology. Next, Chapter Four highlights the findings and followed by the discussion of the results. Lastly, Chapter Five concludes the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter reviews the empirical findings of the past literature that examine the determinants of financial integration. This chapter is divided into three sections. Section 2.2 discusses the theory on financial integration. Section 2.3 is the discussion on the studies that examine the determinants of financial integration where the discussion is classified into four classes of income countries which are (1) high income, (2) upper middle income, (3) lower middle income and (4) low income. As for the classes of income, the seven selected countries can be classified into upper middle income countries (Malaysia and Thailand) and lower middle income countries (Cambodia, Indonesia, Lao PDR, Philippines and Vietnam). Finally, Section 2.4 concludes the discussion in this chapter.

2.2 RELATED THEORY

Theory of liberalisation by McKinnon (1973) argues the importance of diversified exports, proper exchange rate and tax policies on the financial liberalisation. They state that diversified in export, proper exchange rate and tax policies would positively influence the productive economy through the financial integration process. The reduction in the government control over these policies is needed for the economy to grow. By enhancing the breadth and depth of financial markets, reducing information

and transaction costs to improve trade and also reinforcement of economic integration would increase and encourage greater financial integration (Bank Negara Malaysia, 2013).

2.3 DETERMINANTS OF FINANCIAL INTEGRATION

Section 2.2 discusses the empirical evidences regarding the impact of each determinant (trade openness, economic growth, exchange rate, tax revenue and financial crises) of financial integration according to the countries' classes of income as suggested by the World Bank Database which are (1) high income countries, (2) upper middle income countries, (3) lower middle income countries and (4) low income countries. Prior studies have identified several determinants of financial integration. Among the determinants are trade openness (Al-Fawwaz, 2016; Awan, Anjum & Rahim, 2015; Bolukbas, 2016), economic growth (Al-Fawwaz, 2016; Bittencourt, 2015; Imimole, Imoughele & Okhuese, 2014), exchange rate (Abdullahi, Bakar & Hassan, 2015; Al-Fawwaz, 2016; Fida, Khan & Sohail, 2012), tax revenue (Anaraki, 2016; Garali & Othmani, 2015; Waheed, 2005) and financial crisis (Garali & Othmani, 2015; Inklaar, de Guevera & Maudos, 2012). Consistent with the objectives of this study, the following discussion will made on the literature that examines the relationship between trade openness, economic growth, exchange rate, tax revenue and financial crisis on financial integration.

2.3.1 The Impact of Trade Openness on Financial Integration

As for the upper middle income country, two studies conclude that trade openness increases the financial integration in Turkey. Kizilgol and Ipek (2014) analyse the relationship between these variables using quarterly data from 1990 to 2012. The results show a positive and significant impact of trade openness on financial integration (measured by external debt). Due to that, in order to enhance financial integration in Turkey economy, external borrowing is needed to support the financial liberalization process.

Similarly, Bolukbas (2016) also find the positive relationship between trade openness and financial integration in Turkey from 1998 to 2011. Using the external debt as the measurement of financial integration, this study strengthens the findings from the earlier study by Kizilgol and Ipek (2014). Thus, both studies agree that trade openness is an important factor to enhance the level of financial integration in Turkey.

The next discussion is conducted using lower middle income countries as the sample of their studies. On the positive side, two studies in Pakistan (Awan, Anjum & Rahim, 2015; Zakaria, 2012) conclude that trade openness increases the financial integration. As for Zakaria (2012), the external debt is used to proxy the financial integration and this study is conducted between 1972 and 2010 using Generalized Method of Moments (GMM) estimation. Hence, the dependency of Pakistan on the external finance improves the country integration with other economies in the world.

In the same vein, Awan, Anjum and Rahim (2015) conduct a study on the determinants of financial integration in Pakistan using annual time series data from 1976 to 2010. This study analyses the long run equilibrium relationship using co-integration technique while to analyse the short run dynamics, Error Correction Model (ECM) is used. The study discovers that trade openness is significantly and positively affected the financial integration in Pakistan as the increase in trade openness by 1% leads to an increase by 0.2347% for financial integration.

On the negative link, Al-Fawwaz (2016) studies the key determinants that affected the financial integration in Jordan using the unit root test for the period of 1990 to 2014. The finding indicates that the trade openness has a negative and significant effect on the financial integration at 1% level. Trade openness negatively affects the financial integration due to the earnings from exports exceed import bills after trade liberalization.

The next discussion is on the studies that include high income, upper middle income and lower middle income countries. On the positive side, a study conducted by Vo and Daly (2007) to identify the determinants of international financial integration using annual frequency dataset for the period of 1980 to 2003 which covers on 79 countries. Among the countries for the high income group are Canada, Bahrain, Bahamas, Austria and Australia; upper middle income are Argentina, Botswana, Brazil and Malaysia and lower middle income are Bolivia and Cabo Verde. They discover that trade openness has a positive and significant relationship with the

financial integration at 5% level. The study argues that this relationship is established due to several reasons which are export insurance, transportation cost and trade credit that influence the international financial transaction positively.

Garali and Othmani (2015) have conducted a study on the determinants of international financial integration using regression analysis for the period of 2006 to 2012 in eight Middle East and North Africa (MENA) region which includes Saudi Arabia, Morocco, Israel, Tunisia, Turkey, United Arab Emirates, Jordan and Egypt; and the United States. They discover that the trade openness ratio has a positive impact on financial integration at 1% significant level.

In contrast, Chiminya and Nicolaidou (2015) have performed a study from 1975 to 2012 on Sub Saharan Africa (SSA) that cover a group of 36 countries (among the countries are Mauritania, Lesotho, Kenya, Cote d'Ivore, Cameroon, Gambia, Ethiopia, Guinea, Burkina Faso and Benin). Using the external debt as a proxy for the financial integration, the result shows a significant and negative causal relationship between trade openness and financial integration.

2.3.2 The Impact of Economic Growth on Financial Integration

For this section, the literatures on the relationship between economic growth and financial integration are highlighted. As for the upper middle income countries, few studies conclude that an increase in economic growth reduces a country's financial integration. In Malaysia, Pyeman, Noor, Mohamad and Yahya (2016) assess the determinants of financial integration during the period of 1972 to 2012. The study

uses the external debt to measure the financial integration level. The result shows that economic growth reduces the level of financial integration at the 5% significant level. This finding indicates that financial integration decreases by 0.0599 when the GDP increases by 1 unit.

Similarly, in the lower middle income countries group, a study by Imimole, Imoughele and Okhuese (2014) in Nigeria, shows a negative link between GDP and financial integration between 1986 and 2010. The level of external debt reduces by 2.786 % when GDP increases by 1 %.

In addition, Al-Fawwaz (2016) examines the key determinants of financial integration in Jordan for the period of 1990 to 2014. The study uses autoregressive distributed lag (ARDL) model and finds a significant and negative relationship between GDP and financial integration in the short run. This indicates that 78% decreases in financial integration is influenced by the increases of 1% in GDP per capita.

Similarly, Bittencourt (2015) analyses the factors affecting the financial integration in South America and discovers a negative relationship between economic growth and external debt (as the measurement for financial integration) in South America countries. This study covers the period from 1970 to 2007 and performs in the countries of Ecuador, Argentina, Brazil, Bolivia, Chile, Peru, Uruguay, Paraguay and Guyana. The study agrees that economic development reduces the needs for external financing.

Likewise, Zaman, Iqtidar, Khan and Ahmad (2013) examine the impact of economic growth on financial integration where external debt is used as a proxy for financial integration for a period from 1988 to 2008. This study has employed five selected South Asian Association for Regional Cooperation (SAARC) countries which including Bangladesh, Nepal, India, Sri Lanka and Pakistan. They find that financial integration reduces between 0.64% and 0.79% when economic growth increases by 1% in the long run while financial integration reduces by 0.47% when the economic growth increases by 1% in the short run.

On the positive side, a study conducted by Shirani Fakhr and Tayebi (2009) in 11 selected East Asia Pacific countries from 1990 to 2005. The result shows that there is a positive relationship between GDP and financial integration at the 5% significance level. This indicates that the economic development is a pre-requisite for financial integration advancement.

Morever, similar result is obtained from a study conducted in Middle East and North Africa (MENA) region in the period of 2006 to 2012 by Garali and Othmani (2015). The study takes into a consideration of MENA region that comprises of Jordan, Egypt, Tunisia, Turkey, United Arab Emirates, Saudi Arabia, Israel and Morocco. Using regression model, the result shows a positive link between GDP and financial integration at 1% significant level.

Furthermore, a study conducted in South Asia that includes Maldives, Bhutan, India, Pakistan, Sri Lanka, Bangladesh and Nepal (Nelasco, 2012). Covering the period of 2000 to 2009, the results indicate a positive and significant relationship

between GDP and financial integration in Bhutan and Nepal. In contrast, this study finds that economic growth reduces financial integration in Maldives, India and Pakistan.

2.3.3 The Impact of Exchange Rate on Financial Integration

This part focuses on the discussion of past literatures that have investigated the relationship between exchange rate and financial integration. On the positive relationship, Imimole, Imoughele and Okhuese (2014) examine the determinants of financial integration in Nigeria between 1986 and 2010. The study discovers a significant and positive relationship between exchange rate and financial integration. They argue that in order to make an improvement of naira purchasing power and to restrain the shift of inflation, the efforts must be made to assure the stability of exchange rate.

On the negative relationship, an empirical study conducted by Zafar and Butt (2008) in Pakistan discover a negative association between exchange rate and financial integration between 1972 and 2007. They argue that the level of external debt reduces as the local currency strengthening. In the same vein, Fida, Khan and Sohail (2012) also agree with the negative link between exchange rate and financial integration in Pakistan. Although both studies are using different time periods (Fida, Khan & Sohail, 2012-1983 – 2008; Zafar & Butt, 2008-1972 – 2007) and different set of variables, the negative relationship between exchange rate and financial integration is substantiated.

In contrast to Imimole, Imoughele and Okhuese (2014), Abdullahi, Bakar and Hassan (2015) discover a negative and significant relationship between exchange rate and financial integration in Nigeria between 1980 and 2013. For this study, the strengthening of naira has found to influence the financial integration.

In addition, Garali and Othmani (2015) also find a negative impact of exchange rate on financial integration in MENA region that comprises of Jordan, Egypt, Tunisia, Turkey, United Arab Emirates, Saudi Arabia, Israel and Morocco. It implies that when the local currency is appreciating, the financial integration activities increase.

On the other hand, Al-Fawwaz (2016) examines the determinants of financial integration in Jordan for the period of 1990 to 2014. The result shows that there is no relationship between exchange rate and financial integration in this country. This indicates that the exchange rate does not have any link with the level of financial integration activities.

Morever, Shirani Fakhr and Tayebi (2009) have conducted a study on 11 selected East Asia-Pacific countries for the period of 1990 to 2005. This study shows that the exchange rate is not the factor that determines the financial integration.

In addition, mixed results are obtained by Osuji and Olowolayemo (1998) that have conducted a study in Sub-Saharan African (SAA) countries. They discover a negative relationship between exchange rate and financial integration for Kenya, Cameroon, Cote d'Ivore and Ghana. In contrast, for Nigeria, Zaire (Republic of

Congo) and Zambia, the relationship between these variables are found to be insignificant.

In the same vein, Nelasco (2012) finds a positive and significant impact of exchange rate on financial integration on Maldives, Bhutan, India, Pakistan and Sri Lanka. On the other hand, a negative relationship between these two variables is found for Bangladesh and Nepal.

2.3.4 The Impact of Tax Revenue on Financial Integration

For the discussion of the past studies that investigated the relationship between tax revenue and financial integration, mixed findings are concluded. As for the high income countries, a study conducted by Anaraki (2016) has found mixed results between these two variables in European Union (EU) between 1980 and 2013. This result indicates that the corporate income tax rate has a negative relationship with the financial integration at 5% level for Italy and Spain. It shows that the increase in tax rate reduces the level of financial integration in those specific countries. On the other hand, the tax rate is not the determinants for financial integration in Greece and Portugal.

Waheed (2005) examines the relationship between financial integration and tax in Pakistan between 1980 and 2002. This study discovers that a decrease in taxes enhances the level of financial integration. The study states that in order to reduce the current external debt, the sound debt management and government policy reforms are very important.

The next discussion is on the studies that include high income, upper middle income and lower middle income countries. On the positive side, a study conducted by Vo and Daly (2007) to identify the determinants of international financial integration using annual frequency dataset for the period of 1980 to 2003 which covers on 79 countries. Among the countries for the high income group are Canada, Bahrain, Bahamas, Austria and Australia; upper middle income are Argentina, Botswana, Brazil and Malaysia and lower middle income are Bolivia and Cabo Verde. They discover that tax policy has a positive and significant relationship with the international financial integration at 10% level.

As for an insignificant impact, Garali and Othmani (2015) have conducted a study on Middle East and North Africa (MENA) region (Jordan, Egypt, Tunisia, Turkey, United Arab Emirates, Saudi Arabia, Israel and Morocco) and found that tax does not have any significant influence with financial integration.

2.3.5 The Impact of Financial Crisis on Financial Integration

This section discusses the present studies on the relationship between financial crisis and financial integration. As for the high income countries, the study by Inklaar, de Guevera and Maudos (2012) discovers a negative relationship between financial crisis and financial integration 15 European Union countries (United Kingdom, Sweden, Spain, Portugal, Netherlands, Luxemborg, Italy, Ireland, Greece, Germany, France, Finland, Denmark, Belgium and Austria) between 1970 and 2010. The government debt crisis, currency or bank crisis are used as a proxy for financial crisis.

In addition, Lee, Yi and Park (2013) conducted a study in eight economies from 2007 to 2011. Among the countries are Korea, Japan, Hong Kong, Singapore, Thailand, Malaysia, Indonesia and Philippines. Using International Monetary Fund's (IMF's) Coordinated Portfolio Investment Survey (CPIS), they find a negative and significant relationship between post-financial crisis and financial integration. This study uses the bilateral holdings of financial assets among East Asian countries as the proxy to measure the degree of financial integration. It indicates that after the crisis in 2008, the intra-Asian financial integration reduces due to the weaker growth and heightened instability of advance countries outside the region.

On the other hand, a study (Garali & Othmani, 2015) conducted in the Middle East and North Africa (MENA) region concludes an insignificant finding on the relationship between financial crisis and financial integration. They employed the external debt as a measurement for financial integration. The study agrees that the financial crisis does not have any impact on the financial integration in MENA region.

2.4 CONCLUSION

In conclusion, this chapter has conducted a literature review on the impact of each determinant (trade openness, economic growth, exchange rate, tax revenue and financial crises) of financial integration. The discussions on the literature in high income countries, upper middle income countries, lower middle income countries and low income countries conclude mix effects of each determinant (trade openness, economic growth, exchange rate, tax revenue and financial crises) on financial integration.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter presents the methodology used in the study. The method of ordinary least square (OLS) is employed to test relationship between independent variables (trade openness, economic growth, exchange rate, tax revenue and financial crisis 2008) and financial integration. Other than that, this study also uses statistical methods for the descriptive statistics and diagnostic tests. This chapter is organized as follows. Section 3.2 provides the data description. Section 3.3 defines the variables included in the regression model. Section 3.4 presents the research framework employed in this study. Section 3.5 discusses the methods of estimation. Finally, Section 3.6 concludes this chapter.

3.2 DATA DESCRIPTION

This study employs the unbalanced panel data for seven selected ASEAN countries, which are Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam. The selection of these countries is based on the data availability. According to the filtered ranking economies in International Monetary Fund (2017), these seven countries are among top 10 major economies in ASEAN based on GDP nominal (millions of USD) and thus, being selected in the dataset. Myanmar is excluded from this study due to the data constraint in the selected variables. Brunei and Singapore are excluded from the study because these countries do not have the external debt.

The data on external debt for both countries are not available in World Bank Database. The 17 years panel data are retrieved from 2000 to 2016 which resulted in 96 observations. The data for trade openness, economic growth, exchange rate, tax revenue and financial integration are extracted from World Bank Database while financial crisis 2008 is a dummy variable.

3.3 DEFINITION OF VARIABLES

This section presents the discussion on the selection and description of the dependent variable (financial integration) and independent variables (trade openness, economic growth, exchange rate, tax revenue and financial crisis 2008) as suggested by the previous studies.

3.3.1 Dependent Variable (Financial Integration)

The dependent variable is the financial integration. For this study, this variable is represented by the total external debt in US dollar. According to Chiminya and Nicolaidou (2015), Garali and Othmani (2015), Kizigol and Ipek (2014) and Zakaria, (2012), external debt is used as a proxy to measure the degree of financial integration where the increase in external debt indicates an increase in financial integration.

Siddique, Selvanathan and Selvanathan (2015) explain that external debt is considered an important source of financing to the country. Thus, external debt is needed especially when governments suffer from foreign currencies and the shortages of domestic savings.

3.3.2 Independent Variables

This section discusses the independent variables (trade openness, gross domestic product, exchange rate, tax revenue and financial crisis 2008) selected in this study.

3.3.2.1 Trade Openness

The variable of trade openness is measured by the total import and export of goods and services divided by share of gross domestic product (Garali & Othmani, 2015). The variable is found to have a positive impact on financial integration (Awan, Anjum & Rahim, 2015; Bolukbas, 2016; Garali & Othmani, 2015; Kizigol & Ipek, 2014; Vo & Daly, 2007; Zakaria, 2012). According to Kizigol and Ipek (2014), trade openness influences the financial integration positively because higher trade openness attracts the international investors' attention which leads to more foreign funds in the country. Hence, this study expected a positive relationship between trade openness and financial integration.

3.3.2.2 Economic Growth

The economic growth variable enters into the regression model to measure the impact of economic development on the financial integration. This variable is measured by the GDP per capita (Garali & Othmani, 2015; Stiglingh, 2015). According to Stiglingh (2015), this variable which is in current U.S dollars is defined as total output of the country divided by the total population. According to previous studies, the GDP is found to have a positive impact on financial integration (Garali & Othmani,

2015; Shirani Fakhr & Tayebi, 2009). Stiglingh (2015) argues that when comparing with different countries, per capita GDP is preferred as it shows the relative performance of the countries. An increase in per capita GDP signals a growth in economy. Hence, the relationship between economic growth and financial integration is expected to be positive.

3.3.2.3 Exchange Rate

Exchange rate is represented by the official exchange rate of local currency unit per US dollar (USD). It indicates that lower exchange rate would increase the financial integration through enhanced revenues gained from exports (Abdullahi, Bakar & Hassan, 2015; Fida, Khan & Sohail, 2012; Garali & Othmani, 2015; Zafar & Butt, 2008). Since lower exchange rate indicates local currency's appreciation, thus this study expected a negative relationship between exchange rate and financial integration.

3.3.2.4 Tax Revenue

The next independent variable enters into the regression model is the tax revenue. This variable is measured by the tax revenue as the percentage of GDP. According to Devereux, Griffith, and Klemm (2002) and also Devereux, Lockwood, and Redoano, (2008), in order to attract the investors, government are competing over the tax rate. The reduction in tax revenue indicates lower tax rate by the government which can attract the investors, hence, the degree of financial integration among the countries is also increased. The negative relationship between tax revenue and financial

integration are also found by the previous studies (Anaraki, 2016; Waheed, 2005). Hence, the expected relationship between tax revenue and financial integration is negative.

3.3.2.5 Financial Crisis 2008

The financial crisis 2008 is measured using the dummy variable (the value of 1 for crisis period 2007 to 2008 and 0 for no crisis period, 2000 to 2006; 2009 to 2016) (Dimelis, Giotopoulos, & Louri, 2013; Kasteren, 2012; Kilic, Chelikani & Coe, 2014; Papadakis, 2015). According to Garali and Othmani (2015), financial instability is experienced by the majority of emerging and developed markets. As suggested by previous studies, during the financial crisis 2007/2008, the economic growth and inflation have negatively impacted. Borrowing abroad became more expensive and investors had become more risk-conscious (Gutner, 2010). Thus, this leads to the reduction in the external borrowing of the countries which also indicates a reduction in financial integration. Hence, this study is expected to have a negative relationship between of financial crisis and financial integration.

Therefore, based on the previous discussions, Table 3.1 summarizes the variables, definitions of variables and sources for data collection.

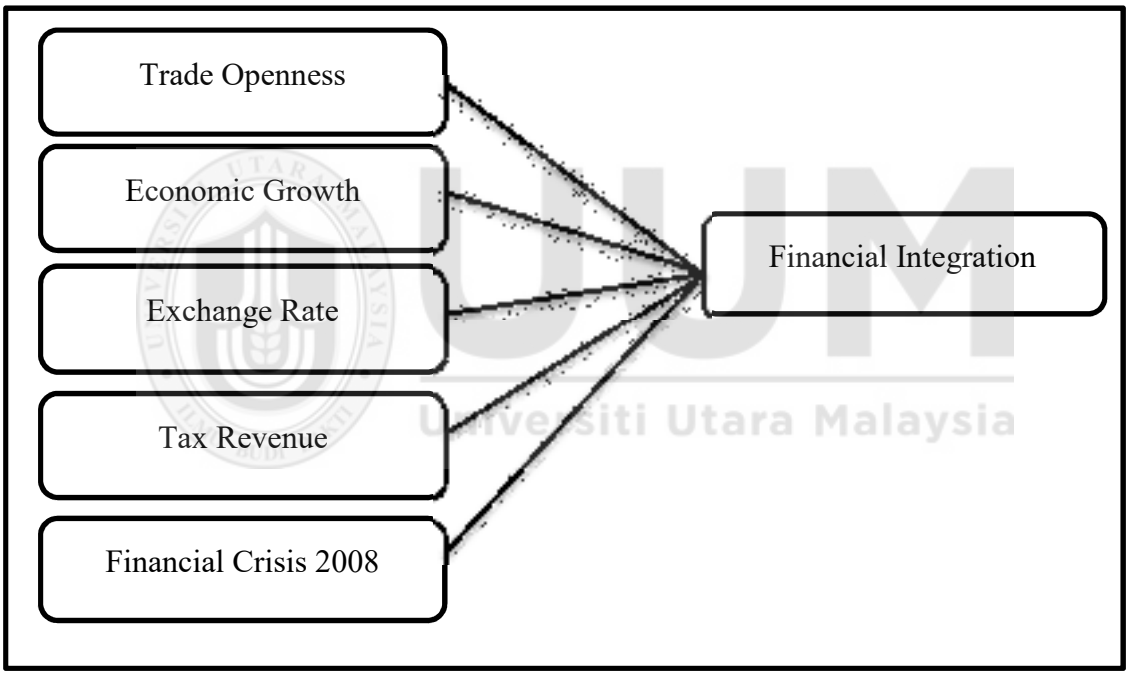
Table 3.1 Variables, Definition and Data Sources

NO	VARIABLES	DEFINITION	SOURCES	EXPECTED RESULT
1	Financial Integration	Total external debt stock which means non-residents owed the debt and can be pay in term of goods, services or currency (US $ dollars) (In Log transformation)	World Bank	
2	Trade Openness	Trade referring to the imports and exports of goods and services that determined by share of gross domestic product. (% of GDP)	World Bank	Positive
3	Gross Domestic Product per capita (GDP per capita)	GDP per capita is calculated by GDP divided by midyear population. (US $ dollars) (In Log transformation)	World Bank	Positive
4	Exchange Rate	Official exchange rate (In Log transformation)	World Bank	Negative
5	Tax Revenue	For public purposes, tax revenue is a compulsory transfers to the central government (% of GDP)	World Bank	Negative
6	Financial Crisis 2008	Dummy variable (the value of 1 for crisis period 2007 to 2008 and 0 for no crisis period, 2000 to 2006; 2009 to 2016)	World Bank	Negative

3.4 RESEARCH FRAMEWORK

The research framework is presented in Figure 3.1. This framework shows the relationship between the dependent variable (financial integration) and the independent variables (trade openness, GDP, exchange rate, tax revenue and financial crisis 2008).

Figure 3.1 Research Framework



Based on the discussion above, the relationships between trade openness, economic growth and financial integration is expected to be positive. On the other hand, exchange rate, tax revenue and financial crisis are expected to influence the financial integration negatively.

3.5 ECONOMETRICAL METHODOLOGY

This section describes the method for data analysis. The methods employed are (i) descriptive analysis, (ii) correlation analysis, (iii) panel data OLS and (iv) diagnostic test.

3.5.1 Descriptive Statistic

According to Rohatgi and Saleh (2015), the descriptive statistics is used to describe the data employed in the study. Among the measurements are minimum value, maximum value, mean and standard deviation. The information provided by the descriptive statistics summarizes the characteristics of a given set of data used in the regression model. In addition, Williams (2003) states that the data is summarized in the ways that is useful and meaningful in order to define the descriptive statistics.

3.5.2 Correlation Analysis

Correlation analysis is conducted to observe the linear relationship among the variables (Gosling, 1995). The range of coefficient is between -1 to +1, while zero represents no association between the two variables. The direction for both variables is determined by the positive or negative direction.

3.5.3 Diagnostic Test

The diagnostic tests are conducted to check the presence of problems that could lead to misspecification of the regression model. The diagnostic tests employed in study are multicollinearity test, heteroscedasticity test and auto-correlation test.

3.5.3.1 Multicollinearity Test

Multicollinearity is a phenomenon that occurs in a regression model when two or more independent variables tend to move together in the same pattern (Leekoi, 2008). This test is conducted to check the existence of high correlation between the independent variables which may lead to reduction in predictive power of regression model. Multicollinearity problem does not exist if the VIF is less than 10 (Greene , 2003).

3.5.3.2 Heteroscedasticity Test

Heteroscedasticity is a condition of which the variance of the errors terms is not constant (Greene, 2003; Leekoi, 2008). Heteroscedasticity arises in both time-series data and also cross-section data. In this study, the existence of heteroscedasticity problem is detected by using the Modified Wald Test (Greene, 2003). Hence, the regression model is free from heteroscedasticity problem when the p-value is more than 0.05 (Holgersson, Månsson & Shukur, 2016).

3.5.3.3 Auto-Correlation Test

An auto-correlation is the association between the values of the variable across time periods. An auto-correlation problem can also exist when the model excludes important explanatory variables into the function (Leekoi, 2008). In order to detect the auto-correlation problem in the OLS model, this study conducted the Wooldridge test. Therefore, if the p-value is more than 0.05 levels, the regression model is free from auto-correlation problem.

3.5.4 Panel Data Ordinary Least Squares (OLS)

Regression analysis selected is the Ordinary Least Squares (OLS) model that is used to estimate the relationship between dependent variable (financial integration) and independent variables (trade openness, economic growth, exchange rate, tax revenue and financial crisis 2008).

In this study, the panel OLS is regressed using Stata Version 8. The regression model is presented as follows:

$$FI_{it} = \alpha + \beta_1 Trade_{it} + \beta_2 GDP_{it} + \beta_3 ER_{it} + \beta_4 \text{Tax Revenue}_{it} + \beta_5 FinCr2008_{it} + \varepsilon$$

Where:

FI	Financial integration is measured using the external debt over the period of the study for country i
Trade	Trade is measured using the trade openness over the period of the study for country i
lnGDP	Economic growth is measured by GDP per capita over the period of the study for country i
lnER	Exchange rate over the period of the study for country i
TaxRev	Tax revenue over the period of the study for country i
FinCr 2008	Financial crisis 2008: Dummy variable (the value of 1 for crisis period 2007 to 2008 and 0 for no crisis period, 2000 to 2006; 2009 to 2016) over the period of the study for country i
ε	Error term

3.6 CONCLUSION

This chapter discusses the variables selection and description, research framework and methods for data analysis. In addition, this chapter also explains the sources of the data collection for seven ASEAN countries (Cambodia, Indonesia, Laos, Malaysia, Philippine, Thailand and Vietnam) from 2000 to 2016. Lastly, the elaboration on the panel OLS is conducted by explaining the selection of each variable used in the model based on suggestions from previous studies.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter presents the findings of the study. Section 4.2 provides the discussion on the descriptive statistics. The correlation analysis is presented in Section 4.3 while the analyses on diagnostic tests are provided in Section 4.4. After that, the results for pooled OLS are discussed in Section 4.5. Finally, Section 4.6 concludes this chapter.

4.2 DESCRIPTIVE ANALYSIS

This section presents the descriptive statistics for all variables employed in this study. Table 4.1 presents the summary of descriptive statistics which include the values of minimum, maximum, mean and standard deviation. Table 4.1 shows the descriptive statistics for all variables including dependent and independent variable (excluded dummy variable of financial crisis 2008) for all countries over 2000 to 2016. The dependent variable used is financial integration which is measured by external debt. There are five independent variables used in this study which are trade openness, economic growth, exchange rate, tax revenue and financial crisis.

Table 4.1 Summary of Descriptive Statistic of All Variables for All Countries over 2000-2016

	Observation	Minimum	Maximum	Mean	Standard deviation
Financial Integration (ED) (USD billion)	96	1950	3090	7020	6950
Trade Openness (% of GDP)	96	37.386	220.407	111.838	43.326
GDP (USD billion)	96	300.685	11183.960	2671.046	2601.961
Exchange Rate (USD billion)	96	3.060	21935	5836.704	6404.209
Tax Revenue (% of GDP)	96	7.537	22.400	14.110	3.299

*ED = Total External debt stocks

Based on the Table 4.1, the descriptive statistics show that the mean for financial integration is USD7,020 billion and the standard deviation is 6950. It shows that there is a very high deviation between countries within specified period. The highest financial integration value is USD3,090 billion while the minimum value is USD1,950 billion. For trade openness variable, the mean value is 111.838% with a minimum value of 37.386% and maximum 220.407%. Over the 17 years' period, this variable has the average of 111.838% and standard deviation is 43.326. Overall, the third variable which is economic growth for the sample countries shows the highest value of USD11183.960 billion and the lowest value of USD300.685 billion. In addition, exchange rate has the mean of USD5836.704 billion and the maximum value is USD21,935 billion. There is the highest deviation of exchange rate with value of USD6404.209 billion. Finally, the mean and standard deviation for tax revenue are 14.11% and 3.299% respectively.

Table 4.2 Summary of Descriptive Statistic Based on Countries Over 2000-2016

	Country						
Variable	Cambodia	Indonesia	Laos	Malaysia	Philippines	Thailand	Vietnam
Financial integration (ED) (USD billion)	396	186	571	109	633	881	355
Trade Openness (%)	124.751	53.863	76.376	174.695	81.482	128.395	143.304
GDP (USD billion)	708.248	2247.781	1045.758	7525.975	1858.017	4123.726	1187.814
Exchange Rate (USD billion)	4033.634	9992.673	8953.774	3.565	47.769	36.202	17789.310
Tax Revenue (%)	10.121	11.536	13.339	15.065	12.813	15.096	20.013
Financial Crisis 2008	0.118	0.118	0.118	0.118	0.118	0.118	0.118

*ED = Total External debt stocks

A descriptive statistics based on countries are presented in Table 4.2. The table above shows the mean value of each variable for every country used in this study.

The table 4.2 shows that the lowest value of financial integration is USD109 billion which is from Malaysia. The highest value of financial integration is USD881 billion which is from Thailand. In term of trade openness, Malaysia leads the ranking (174.695%) while Indonesia has the lowest level of openness in trade (53.863%). The trade openness in Malaysia shows the highest percentage because most of the foreign direct investment is mainly channeled in the manufacturing sector (Yusoff, 2005).

In addition, Malaysia also has the highest economic growth with USD7,525.975 billion while Cambodia has the lowest growth in economy (USD708.248 billion) (International Monetary Fund, 2017). The strongest exchange rate is Malaysia (US Dollar 1 = Malaysia Ringgit 3.565) and the weakest exchange rate is Vietnam (US Dollar 1 = Vietnamese Dong 17789.310). For the tax revenue, it shows a minimum value of 10.121% which is also for Cambodia and maximum value of 20.013% for Vietnam.

4.3 CORRELATION ANALYSIS

Table 4.3 provides the result for the Pearson correlation matrix. The variables used are financial integration, trade openness, growth rate, exchange rate, tax revenue and financial crisis. According to Rohatgi and Saleh (2015), Pearson correlation is employed to measure the linear relationship between two variables. Before the linear regression is conducted, a correlation matrix is developed in order to establish the association between the dependent and independent variables.

Table 4.3 Pearson Correlation Matrix

	Financial integration (ED)	Trade Openness	GDP	Exchange Rate	Tax Revenue	Financial Crisis 2008
Financial integration (ED)	1					
Trade Openness	-0.1000	1				
GDP	0.7303	0.2734	1			
Exchange Rate	-0.4559	-0.4496	-0.7140	1		
Tax Revenue	0.2128	0.4241	0.1713	-0.0052	1	
Financial Crisis 2008	-0.0592	-0.0729	0.0046	0.0555	-0.0013	1

*ED = Total External debt stocks

Based on the results, it shows that GDP, tax revenue and financial crisis are positively correlated with financial integration. The strongest positive relationship is found between financial integration and economic growth (0.7303) followed by tax revenue (0.2128). In contrast, the table shows that other independent variables such as exchange rate (-0.4559), trade openness (-0.1000) and financial crisis (-0.0592) are negatively correlated with financial integration where exchange rate has a strongest negative relationship with financial integration.

4.3.1 Multicollinearity Test

Multicollinearity is a phenomenon that occurs in a regression model when two or more independent variables tend to move together in the same pattern (Leekoi, 2008). This test is conducted to check the existence of high correlation between the independent variables which may lead to reduction in predictive power of regression model. Multicollinearity problem does not exist if the VIF is less than 10 (Greene, 2003).

Table 4.4 Results for Multicollinearity Test

Variables	VIF
Trade Openness	1.70
GDP	2.28
Exchange rate	2.78
Tax Revenue	1.43
Financial Crisis 2008	1.01
Mean VIF	1.84

From Table 4.4, results reveal that there is no multicollinearity problem because all variables have the values of VIF below 5.

4.4 DIAGNOSTIC TEST

In order to ensure the robustness of the standard errors, few diagnostic tests are conducted. Those tests are autocorrelation test and heteroscedasticity test.

4.4.1 Heteroscedasticity Test

Heteroscedasticity is a condition of which the variance of the errors terms is not constant (Greene, 2003; Leekoi, 2008). Heteroscedasticity arises in both time-series data and also cross-section data. In this study, the existence of heteroscedasticity problem is detected by using the Modified Wald Test (Greene, 2003). Hence, the regression model is free from heteroscedasticity problem when the p-value is more than 0.05 (Holgersson, Månsson & Shukur, 2016). Based on Modified Wald Test, the results are indicating in Table 4.5.

Table 4.5 Results for Modified Wald Test

Chi2(7)	Prob>chi2
188.91	0.000

The results show that p-value is less than 0.05. Thus, the heteroscedasticity problem exists in this model.

4.4.2 Auto-Correlation Test

An auto-correlation is the association between the values of the variable across time periods. An auto-correlation problem can also exist when the model excludes important explanatory variables into the function (Leekoi, 2008). In order to detect the auto-correlation problem in the OLS model, this study conducted the Wooldridge test. Therefore, if the p-value is more than 0.05 levels, the regression model is free from auto-correlation problem. Based on Wooldridge Test, the results are indicating in Table 4.6.

Table for 4.6 Results for Wooldridge Test

F(1,6)	Prob>F
78.566	0.0001

The result presented in Table 4.6 shows that p-value is less than 0.05 which indicate auto-correlation problem presents in this model.

In conclusion, the analysis on Modified Wald Test and Wooldridge Test show the existence of heteroscedasticity and auto-correlation problem. Hence, a panel-corrected model is conducted to correct these problems.

4.5 REGRESSION ANALYSIS

The results for the pooled OLS and corrected –panel OLS are presented in Table 4.7.

Table 4.7 Results for Pooled OLS and Corrected-Panel OLS

Variables	Pooled OLS	Corrected-Panel OLS
Trade Openness	-0.0160784 (-6.89)*	-0.0160784 (-3.62)**
GDP	1.013148 (7.85)*	1.013148 (3.52)**
Exchange rate	-0.0818157 (-2.07)**	-00818157 (-0.80)
Tax Revenue	0.1276697 (4.59)*	0.1276697 (2.95)**
Financial Crisis	-0.3351503 (-1.54)	-0.3351503 (-3.96)*
Constant	17.32877 (14.98)*	17.32877 (8.54)*
R-squared	0.7070	0.7070
Adjusted R-squared	0.6907	NA
F-statistics	43.44	30.04
Prob (F-statistic)	0.0000	0.0004
N	96	96

Note: *significant at 1% level, ** significant at 5% level. NA denotes that the value is not provided by the Stata. The dependent variable is financial integration which measured using total external debt stock.

For the purposes of discussion, only the findings on the corrected-panel OLS will be discussed. This is due to the fact that heteroscedasticity and auto-correlation problems have been corrected using this model. Thus, the results provided by this model are

more robust. Table 4.7 shows that the adjusted R-squared is 0.6907 which implies that 69.07% of the dependent variable (financial integration) is influenced by the independent variables (trade openness, economic growth, exchange rate, tax revenue and financial crisis).

In addition, all independent variables except for exchange rate have significant relationships with financial integration. The results indicate that trade openness and financial crisis 2008 have a negative relationship with financial integration while economic growth and tax revenue are positively associated with financial integration.

4.5.1 Trade Openness

The regression result in Table 4.4 shows that trade openness has a negative and significant relationship with financial integration. Since, higher external debt indicates higher financial integration, thus, the finding indicates that an increase in trade openness reduces the degree of financial integration for seven ASEAN countries during the period of study. The finding is consistent with the previous studies (Al-Fawwaz, 2016; Chiminya & Nicolaidou, 2015). Trade openness negatively affects the financial integration due to the earnings from exports exceed import bills after trade liberalization (Al-Fawwaz, 2016).

4.5.2 Economic Growth (GDP)

The result indicates a positive and significant relationship between economic growth and external debt. Thus, the economic growth is found to influence financial integration positively. This result is in line with the previous studies that find a positive relationship between economic growth and financial integration (Nelasco, 2012; Shirani Fakhr & Tayebi, 2009). The result indicates that international capital flows is facilitated by the level of country's national development.

4.5.3 Exchange Rates

Official exchange rate shows the negative but insignificant relationship with financial integration. This finding is in line with Nwokoye, Zubairu and Ayuba (2015). Hence, the result from this study is unable to find any relationship between these two variables. Moreover, in the context of this study, official exchange rate is not one of the factors that determine the financial integration.

4.5.4 Tax Revenue

The results in Table 4.4 indicate a positive and significant effect of tax revenue on external debt. Since, higher external debt indicates higher financial integration, thus, the finding indicates that tax revenue imposed by government enhances the financial integration among the ASEAN countries. The finding is consistent with the previous study (Vo & Daly, 2007). Higher tax revenue would allow the government to spend more on the development of facilities related for the financial markets and institutions.

Thus, the development in financial system would encourage investment and financing activities from international and domestic investors. According to Chude and Chude (2013), Gemmell and Kneller (2001) and Olorunfemi (2008), government expenditure is an important element for the economic and financial growth.

4.5.5 Financial Crisis 2008

The result shows that the financial crisis has a negative and significant relationship with external debt. This indicates financial crisis has a negative impact towards the financial integration. The result is in line with the previous studies that find a negative relationship between financial crisis and financial integration (Inklaar, de Guevera & Maudos, 2012; Lee, Yi & Park, 2013). As suggested by previous studies, during the financial crisis 2007 and 2008, the economic growth and inflation have negatively impacted. Borrowing abroad became more expensive and investors had become more risk-conscious (Gutner, 2010). Thus, this will reduce the external borrowing of the countries which also indicates a reduction in financial integration.

4.6 CONCLUSION

In summary, this study reveals that economic growth increases the financial integration for seven ASEAN countries (Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam). Morever, tax revenue also has a positive influence on financial integration over 2000 to 2016. In addition, trade openness and financial crisis influence the financial integration negatively. Finally, exchange rate is not the factor influencing the financial integration.

CHAPTER FIVE

CONCLUSION AND SUMMARY

5.1 INTRODUCTION

During the last decades, the process of financial integration has transformed the financial system around the world. According to Baele *et al.* (2004), financial integration is a condition of which the financial markets are closely linked together. The financial integration imposed in the financial systems is conducted through various channels which includes financial liberalization, financial openness, capital account liberalization and external debt (Garali & Othmani, 2015; Siddique, Selvanathan & Selvanathan, 2015).

The financial liberalisation theory that is developed by McKinnon (1973) argues for the importance of financial liberalisation for the country's development. By enhancing the breadth and depth of financial markets, reducing information and transaction costs, financial integration would bring positive impacts to the economy as a whole (Bank Negara Malaysia, 2013).

This study has tested five research objectives that are (1) to determine the impact of trade openness on financial integration (2) to investigate the effect of growth economic on financial integration (3) to examine the impact of exchange rate on financial integration (4) to analyse the effect of tax revenue on financial integration (5) to investigate the impact of financial crisis on financial integration.

In order to answer the research objectives, this study employs the unbalanced panel data from 2000 to 2016 for seven ASEAN countries (Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam). Moreover, the detail discussion on the descriptive analysis is also presented based on all countries and descriptive analysis based on each of the country. In addition, the relationships between financial integration and its determinants are tested using the ordinary least square (OLS).

This chapter is organized as follows. Section 5.2 provides the summary of findings. Next, the policy implications are presented in Section 5.3 while contributions of the study are explained in section 5.4. Section 5.5 highlights the limitations of the study and the directions for future research. Finally, Section 5.6 concludes this chapter.

5.2 SUMMARY OF THE FINDINGS

The first objective of this study is to examine the relationship between trade openness and financial integration in Asean countries. The finding shows that trade openness have a negative and significant relationship with financial integration (Al-Fawwaz, 2016; Chiminya & Nicolaidou, 2015). Trade openness negatively affects the financial integration due to the earnings from exports exceed import bills after trade liberalization (Al-Fawwaz, 2016).

The second objective of this study is to investigate whether economic growth affects the financial integration in Asean countries. The result finds that the economic growth influences financial integration positively. Nelasco (2012) and Shirani Fakhr

and Tayebi (2009) state that international capital flows is facilitated by the level of country's national development.

The third objective is to assess the relationship between exchange rate and financial integration. Official exchange rate shows the negative but insignificant relationship with financial integration. This finding is in line with Nwokoye, Zubairu and Ayuba (2015) where they agree that official exchange rate is not the factor influencing the financial integration.

The fourth objective is to study the impact of tax revenue towards financial integration. The result shows a positive and significant effect of tax revenue on financial integration. The finding is consistent with the previous study by Vo and Daly (2007) where tax revenue imposed by government enhances the financial integration among the ASEAN countries.

The last objective of this study is to analyse the relationship between financial crisis and financial integration. The result shows that the financial crisis has a negative and significant relationship with financial integration. This study finds that the financial integration reduces during the post crisis period. According to Inklaar, de Guevera and Maudos (2012) and Lee, Park and Yi (2013), the longer time is needed by the affected countries to recover after facing the financial crisis and the financial integration among countries become weaker.

In summary, trade openness, economic growth, tax revenue and financial crisis are the determinants of financial integration while exchange rate is not the factor that affecting the financial integration.

5.3 POLICY IMPLICATIONS

This study provides few policy implications that would help the policy maker. From the findings of the study, it can be concluded that economic growth proves to stimulate the financial integration among ASEAN countries. Hence, policy makers should encourage more strategies to domestic production to promote the financial integration of countries.

This finding also finds that government tax policy influences the financial integration positively. Therefore, the local countries should develop the financial integration strategies that will take advantages on the increase in tax rate period. In contrary, the trade openness and global financial crisis have a negative impact on financial integration. Thus, the country should take precautionary measures during the liberalization of trade. The country that affected by the global financial crisis also needs a longer time to recover after the hit from the crisis.

5.4 CONTRIBUTIONS OF THE STUDY

There are few contributions came out by this study. Firstly, the findings would add to the existing literature in this area especially for the research in ASEAN countries in this area of study. Secondly, for the policy makers, the findings could assist in the future policy making efforts related to financial integration especially on the policies of external debt. Since borrowing money from other countries are an important sources of financing to a country, thus, the factors that influence the external debt should be considered by the policy maker.

5.5 LIMITATIONS AND DIRECTIONS FOR THE FUTURE RESEARCH

The present study also highlights several limitations. Firstly, the data set is only focuses on the seven ASEAN countries which are Cambodia, Indonesia, Laos, Malaysia, Philippines, Thailand and Vietnam from the year 2000 to 2016. Thus, the future research could focus on wider range of countries that cover both developed and developing countries. Secondly, this study only employs one accounting measure (total external debt stock) to measure the financial integration; hence, future study in this area could use other accounting measures such as foreign asset and foreign liabilities-to-GDP to extend the analysis of the financial integration.

5.6 CONCLUSION

Finally, this present study provides empirical evidences on the determinants of financial integration. Although with a few limitations, this study has succeeded in providing evidences on the factor of financial integration. Besides that, this study concludes economic growth (GDP) promotes the financial integration. The economic growth would increase the external finance and increase the degree of financial integration. Other than that, government tax policy is also found to have positive influence on financial integration while the trade openness reduces the financial integration. Lastly, this study finds that the financial integration reduces during the post crisis period.

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APPENDIX A

```
. (9 vars, 119 obs pasted into editor)

. tsset code year
       panel variable:  code, 1 to 7
        time variable:  year, 2000 to 2016

. regress lnextdebt x1trade x2lngdp x3lner x4taxrev x5fincrisis2008

      Source |       SS       df       MS                   Number of obs =      96
-------------+------------------------------                   F(  5,    90) =   43.44
       Model |  121.608839     5  24.3217677                   Prob > F      =  0.0000
    Residual |  50.3950012    90  .559944457                   R-squared     =  0.7070
-------------+------------------------------                   Adj R-squared =  0.6907
       Total |   172.00384    95  1.81056673                   Root MSE      =  .74829

------------------------------------------------------------------------------
   lnextdebt |      Coef.      Std. Err.      t     P>|t|      [95% Conf.    Interval]
-------------+----------------------------------------------------------------
     x1trade |  -.0160784      .002333      -6.89    0.000      -.0207133     -.0114435
     x2lngdp |   1.013148     .1289958       7.85    0.000       .7568751       1.26942
     x3lner |  -.0818157     .0396082      -2.07    0.042      -.1605043     -.0031271
    x4taxrev |   .1276697     .0277933       4.59    0.000       .0724535       .182886
x5fincr~2008 |  -.3351503     .2174315      -1.54    0.127      -.7671159      .0968153
       _cons |   17.32877      1.15688      14.98    0.000       15.03043      19.62712
------------------------------------------------------------------------------

. vif

    Variable |       VIF       1/VIF
-------------+----------------------
      x3lner |      2.78    0.359614
     x2lngdp |      2.28    0.438297
     x1trade |      1.70    0.588361
    x4taxrev |      1.43    0.700686
x5fincr~2008 |      1.01    0.990443
-------------+----------------------
    Mean VIF |      1.84

. ssc install xttest3
checking xttest3 consistency and verifying not already installed...
all files already exist and are up-to-date.


. ssc install xtserial
ssc install: "xtserial" not found at SSC, type -findit xtserial-
(To find all packages at SSC that start with x, type -ssc describe x-)
r(601);

. findit xtserial

. xttest3

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model

H0: sigma(i)^2 = sigma^2 for all i

chi2 (7)  =      188.91
Prob>chi2 =      0.0000

. xtserial  lnextdebt x1trade x2lngdp x3lner x4taxrev x5fincrisis2008

Wooldridge test for autocorrelation in panel data
H0: no first order autocorrelation
```

```
    F(  1,       6) =     78.566
           Prob > F =      0.0001

. regress lnextdebt x1trade x2lngdp x3lner x4taxrev x5fincrisis2008, robust
cluster (code)

Regression with robust standard errors                Number of obs =      96
                                                      F(  5,     6) =   30.04
                                                      Prob > F      =  0.0004
                                                      R-squared     =  0.7070
Number of clusters (code) = 7                         Root MSE      =  .74829

------------------------------------------------------------------------------
             |               Robust
   lnextdebt |      Coef.   Std. Err.      t          P>|t|     [95% Conf.    Interval]
-------------+----------------------------------------------------------------
     x1trade |  -.0160784   .0044434    -3.62         0.011    -.0269509      -.0052059
     x2lngdp |   1.013148   .2879033     3.52         0.013     .3086737       1.717622
      x3lner |  -.0818157   .1022713    -0.80         0.454    -.3320645       .1684331
    x4taxrev |   .1276697   .0433486     2.95         0.026     .0215996       .2337399
x5fincr~2008 |  -.3351503   .0845792    -3.96         0.007    -.5421081      -.1281924
       _cons |   17.32877    2.02932     8.54         0.000     12.36321       22.29434
------------------------------------------------------------------------------

. correlate lnextdebt x1trade x2lngdp x3lner x4taxrev x5fincrisis2008 (obs=96)

             | lnextd~t     x1trade     x2lngdp      x3lner      x4taxrev     x5f~2008
-------------+------------------------------------------------------------------------
   lnextdebt |   1.0000
     x1trade |  -0.1000     1.0000
     x2lngdp |   0.7303     0.2734     1.0000
      x3lner |  -0.4559    -0.4496    -0.7140     1.0000
    x4taxrev |   0.2128     0.4241     0.1713    -0.0052     1.0000
x5fincr~2008 |  -0.0592    -0.0729     0.0046     0.0555    -0.0013     1.0000

. xtsum extdebt x1trade x2gdp x3exchangerate x4taxrev

Variable         |      Mean   Std. Dev.       Min        Max   |    Observations
-----------------+--------------------------------------------+----------------
extdebt  overall |  7.02e+10   6.95e+10    1.95e+09   3.09e+11   |        N =     112
         between |             6.46e+10    3.96e+09   1.86e+11   |        n =       7
         within  |             3.48e+10    3.19e+09   1.93e+11   |        T =      16
                 |                                             |
x1trade  overall |   111.838   43.32676     37.3868   220.4073   |        N =     119
         between |             42.66544    53.86337   174.6951   |        n =       7
         within  |             17.42682    65.22611   157.5503   |        T =      17
                 |                                             |
x2gdp    overall |  2671.046   2601.961    300.6851   11183.96   |        N =     119
         between |             2422.633    708.2483   7525.975   |        n =       7
         within  |             1302.639   -939.8147   6329.032   |        T =      17
                 |                                             |
x3exch~e overall |  5836.704   6404.209    3.060003      21935   |        N =     119
         between |             6761.252    3.564744   17789.31   |        n =       7
         within  |             1223.903    2215.144   9982.394   |        T =      17
                 |                                             |
x4taxrev overall |  14.11027   3.299958    7.537844   22.40083   |        N =      96
         between |             3.200322    10.12056   20.01258   |        n =       7
         within  |             1.386501    9.397125   18.55078   |        T = 13.7143
```

```
. tabstat  extdebt x1trade x2gdp x3exchangerate x4taxrev x5fincrisis2008, statistics
( mean max min sd ) by (country) columns (variables)

Summary statistics: mean, max, min, sd by categories of: country (Country)
```

country	extdebt	x1trade	x2gdp	x3exch~e	x4taxrev	x5f~2008
Cambodia	3.96e+09	124.7505	708.2483	4033.634	10.12056	.1176471
	9.32e+09	144.6145	1269.907	4184.917	14.56106	1
	1.95e+09	105.1385	300.6851	3840.75	7.537844	0
	2.36e+09	10.92175	318.6939	84.94216	2.219719	.3321056
Indonesia	1.86e+11	53.86337	2247.781	9992.673	11.53628	.1176471
	3.09e+11	71.43687	3687.954	13389.41	13.31062	1
	1.28e+11	37.3868	747.9818	8421.775	10.53749	0
	6.23e+10	9.310196	1159.588	1516.528	.8065331	.3321056
Laos	5.71e+09	76.37627	1045.758	8953.774	13.33931	.1176471
	1.16e+10	86.32086	2353.153	10655.17	14.20915	1
	2.51e+09	66.27874	319.8271	7860.138	12.10294	0
	2.98e+09	6.894009	706.8845	1066.706	.6718983	.3321056
Malaysia	1.09e+11	174.6951	7525.975	3.564744	15.06508	.1176471
	1.97e+11	220.4073	11183.96	4.148308	17.79489	1
	4.19e+10	128.0832	3915.115	3.060003	13.3322	0
	5.90e+10	30.43649	2660.263	.3278299	1.168334	.3321056
Philippines	6.33e+10	81.48235	1858.017	47.76889	12.81255	.1176471
	7.77e+10	104.7299	2951.072	56.03992	13.71187	1
	5.60e+10	60.24529	957.2808	42.22879	11.81599	0
	6.68e+09	17.58468	754.239	4.54734	.6648541	.3321056
Thailand	8.81e+10	128.3945	4123.726	36.20239	15.09564	.1176471
	1.37e+11	140.437	6171.262	44.4319	17.29467	1
	5.84e+10	114.9697	1893.145	30.49173	12.97672	0
	3.14e+10	8.240787	1587.687	4.570741	1.225027	.3321056
Vietnam	3.55e+10	143.3041	1187.814	17789.31	20.01258	.1176471
	7.78e+10	184.6863	2185.69	21935	22.40083	1
	1.26e+10	103.2444	433.3337	14167.75	15.29943	0
	2.34e+10	26.12929	633.9349	2757.232	2.123894	.3321056
Total	7.02e+10	111.838	2671.046	5836.704	14.11027	.1176471
	3.09e+11	220.4073	11183.96	21935	22.40083	1
	1.95e+09	37.3868	300.6851	3.060003	7.537844	0
	6.95e+10	43.32676	2601.961	6404.209	3.299958	.3235521

```
.
```