LINKAGES BETWEEN FDI IN CHINA AND ASEAN ECONOMIES: SUBSTITUTE OR COMPLEMENT?

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DECLARATION

We hereby declare that:

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

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

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

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Abstract

A heated debate on whether emergence of China in recent decades is crowding out foreign direct investment from its neighboring countries. This paper assesses whether this is the case for ASEAN economies using panel least square to examine the linkages between inward FDI in China with FDI inflows to six ASEAN countries (Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam) during 1986-2008. We have obtained three results which suggest: (1) China does not seem to have crowded out FDI inflows or is actually stimulating complementary investments into ASEAN as a whole and on individual basis; (2) FDI in China may "crowd out" FDI from Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam given that these countries did not achieve a minimum level of absorptive capacity and (3) the fall of FDI inflows to these six ASEAN economies is not because of China but due to the Asian Financial Crisis 1997. Lastly, the paper makes some policy recommendations.

CHAPTER 1: INTRODUCTION

1.0   Overview

Foreign direct investment (FDI) is a package of capital, technology and managerial skills and it is accounted as an important source of both direct capital input and technology spillovers (Li and Liu, 2005). FDI become so important because it not only brings in foreign capital and creates jobs, but also transfer advanced technologies, know-how and managerial skills which may be improved through spillover effects (Wang, Wei & Liu, 2007).

When China launched open-door policy in 1979, its real gross domestic product (GDP) has been growing rapidly on average by 9.7% per year over the period between 1979 and 2005. Per capita income also grew strongly from US$ 205 million in 1980 to US$ 1100 million in 2005 (Ng, 2007). Now, China is at second rank among the top 20 host economies receiving global FDI inflows in 2009 and 2010 (UNCTAD, 2011). Some economists consider the economic rise of China as an 'economic miracle' because Ng (2007) claimed it took four centuries for Europe to achieve the current level that China has achieved.

However, with the outbreak of Asian Financial Crisis 1997, Southeast Asia began to feel the pinch that FDI was being diverted away from the region and invested in China. Wang, Wei & Liu (2007) also explained while FDI inflow to ASEAN country were gradually decreasing for the period of 1990-2000 but in China, realized FDI inflow had rise from US$ 4 billion to US$ 41 billion during the decade. Against this contradict outcome, a heated debate has emerged as to whether China's expansion may "suck in" FDI earmarked for some nearby economies.

1.1   Research Background

According to UNCTAD (2001, 2011), Asia region is the top FDI recipient in the world and within the region, Southeast Asia countries accounted most of the FDI inflows. Hence, in this section, a brief discussion on the impact of FDI inflow on each six ASEAN economies is provided to assist in developing an understanding of the trend, effects, role and the need of FDI inflow for each country from 1986 to 2008.

1.1.1 The impact of FDI on Indonesia

Figure 1.1: Net FDI inflow to Indonesia from 1986-2008
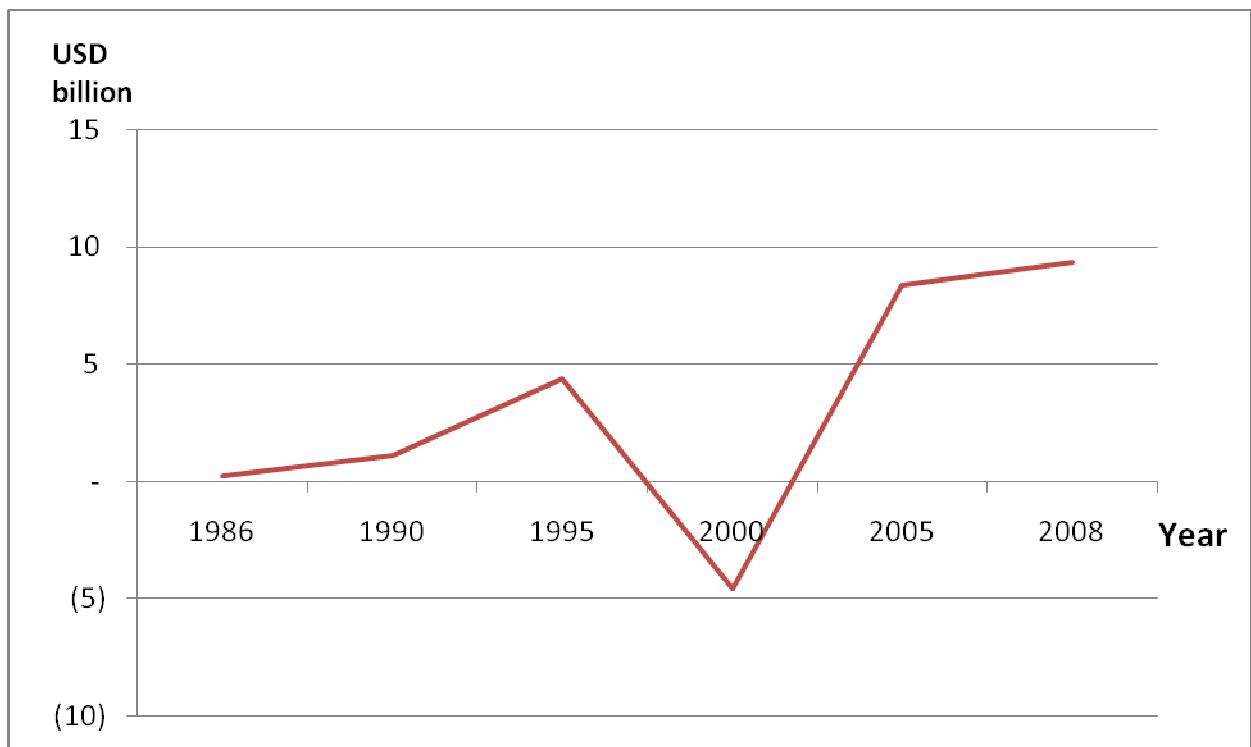
Source: World Development Indicators, The World Bank

Indonesia is the largest economy among the ASEAN region. In 1980s, government of Indonesia adopted a liberalization of the financial sector by implementing

investment policies to encourage the multinational corporation to invest in Indonesia (Khaliq and Noy, 2007). However, oil market collapse in 1986 caused a growing pressure in economic policy to be irresistible (Gray, 2002).

In the 1997, Indonesia experienced the hardest hit by the Asian financial crisis (Gray, 2002). Based on figure 1.1, it shows the crisis severely reduced Indonesia's FDI inflows. On top of that, the FDI outflows has increased during the crisis, due to the amount of repayment by FDI project of long term loans to their principal overseas or to a foreign bank (Thee, 2006) hence, it reduces the total FDI flow and this has significantly slow down the Indonesian economic growth. However in 2000, foreign investment in Indonesia started to recover until it become stable in the year of 2005.

In the study of Lipsey and Sjoholm (2001), it is found that foreign owned manufacturing plant pay higher wages to skilled labor than domestically owned plants in Indonesia. FDI has also play an important role in spurring the economic growth of Indonesia however the opportunity was not well use by Indonesia to improve the absorption capacity in technology despite large inflow of FDI into the manufacturing sector (Thee 2001).

On the other hand, DBS Group Research (2011) reported the recent development of Indonesia's macroeconomic stability has improved and the sovereign credit rating outlook has turned positive. This should boost investor confidence and reduce investment risk faced by foreign firm. Thus, it will encourage more FDI to come into Indonesia. Besides that, DBS Group Research (2011) mentioned the external (push) factors are positive in Indonesia. For instance, Indonesia is attractive to foreign firms in terms of growth and size of domestic consumer market. On top of that, its number of people is the world's fourth largest with growing working-age population. With China facing labor deficiency and higher wages, Indonesia will have cost advantage in supplying abundant and affordable labor for foreign investors. Moreover, its government's reform agenda focuses on improving infrastructures and encouraging the private sector to participate in

infrastructure construction is one of the efforts by the Indonesia government to attract higher FDI inflow.

1.1.2 The impact of FDI on Malaysia

Figure 1.2: Net FDI inflow to Malaysia from 1986-2008
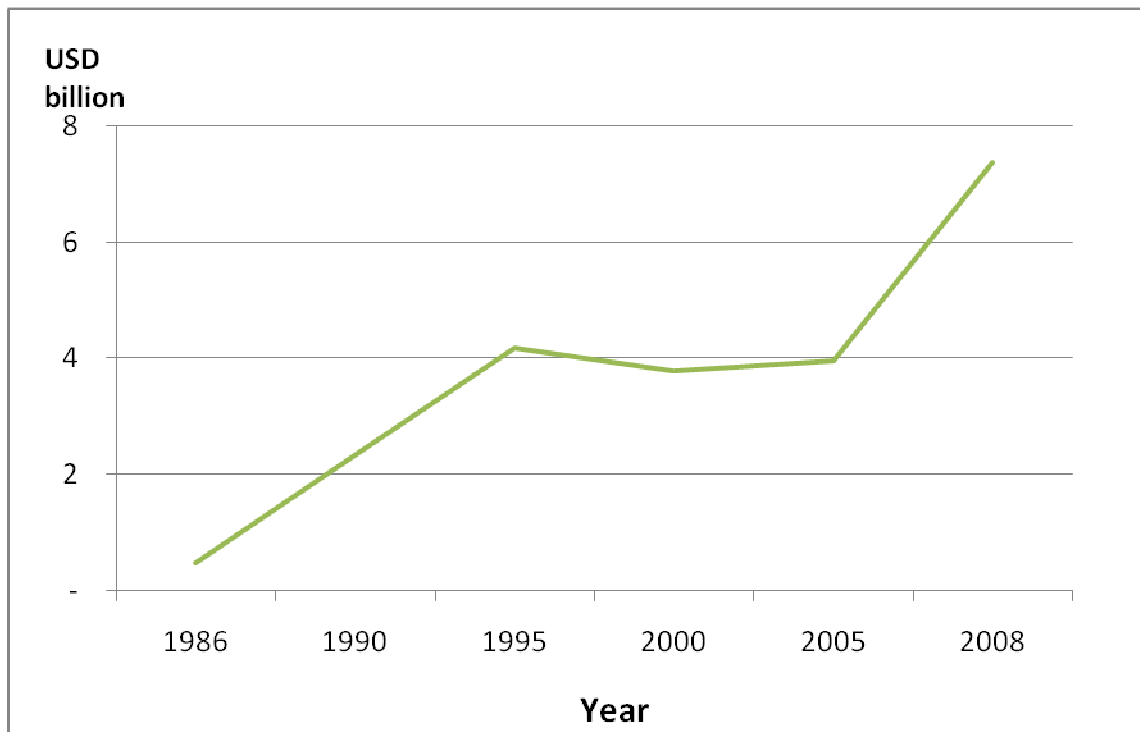
Source: World Development Indicators, The World Bank

Malaysia received significant inflow of FDI partly due to three factors. Those were (1) undervalued currency; (2) low cost of labor; (3) low inflation rate (Oti-Prempeh, 2003). However, the main attraction of FDI inflow in Malaysia begins since its implementation of Promotions of Investment Act No. 327 (PU (A) 267, 2003). In the figure 1.2, the net inflow FDI increase rapidly in year 1986 onward. During the Asian financial crisis at the 1996-97, Malaysia suffered a great hit which caused FDI inflow to shrink dramatically.

After the crisis, the Malaysian government continues to put efforts in stabilizing the economy by pegging its ringgit at RM3.80 to the US dollar and imposes capital

control measures in year 1998. In addition, more measures were introduced to further encourage FDI participation in the economy such as allowing 100 percent foreign ownership of manufacturing; increasing the limit of foreign ownership in telecommunication projects, stock broking, and insurance companies; and loosen property policy to allow foreign investment in land property. (Asian Development Bank, n.d). As a result, net inflow of FDI in Malaysia began to stabilize in 2000 and shown improvement in 2005 (refer to figure 1.2).

To study the impact of FDI in Malaysia, Lean (2008) analyzed the relationship between FDI and the economic growth of manufacturing sector in Malaysia from 1980 to 2005 and empirical findings showed that there is no long run relationship between FDI and GDP in the manufacturing sector. Besides that, it is also stated that no evidence of increase in FDI to GDP growth both in short term and long term for the manufacturing sector. The independent relationship between FDI and GDP in Malaysia is also further explained in the study of Duasa (2007), which found that FDI does not cause economic growth in Malaysia but the FDI does contribute to maintain the stability of growth as growth contributes to sustain stability of FDI.

In contrast, Mithani, Ahmad and Saifudin (2008) reported GDP in Malaysia as well as other macroeconomics variable such as exports and employment are found to be positively influenced by the growth of FDI in Malaysia in the post 1997 financial crisis period. It is suggested that continual price stability, macroeconomic balances, good governance and economic liberalization are crucially important for Malaysia to sustain flow of FDI. On the other hand, Pinn et.al (2011) conducted a study to examine the relationships between FDI and employment in Malaysia. Using data span from 1970 to 2007 and ARDL approach, it is found that there is no co-integration relationship between employment and FDI in the long run but a causal relation exist between employment and FDI, running from FDI to employment. This has concluded FDI is found to be significant factor contributing to employment growth in Malaysia but not the other way round.

1.1.3 The impact of FDI on Philippines

Figure 1.3: Net FDI inflow to Philippines from 1986-2008
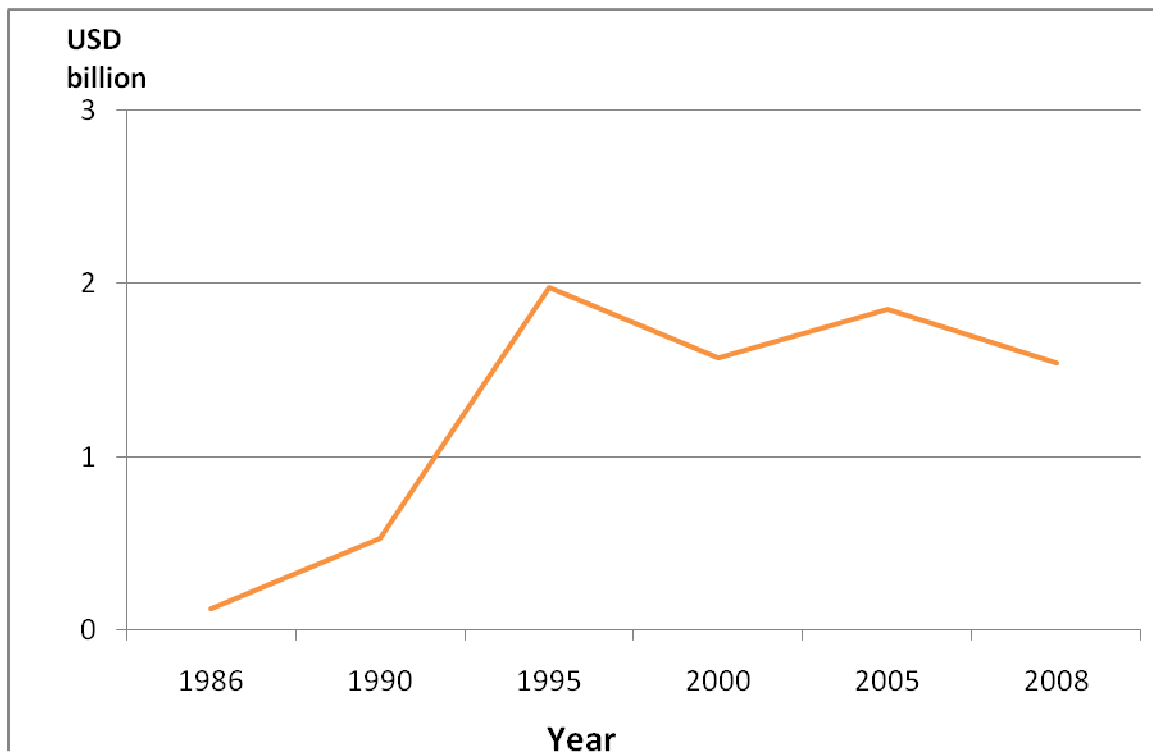
Source: World Development Indicators, The World Bank

Figure 1.3 above shows the pattern of net inflow FDI of Philippines from 1986 to 2008. Over the period from 1986 to 1996, FDI inflow averaged at US$ 0.83 billion per year. Following the Asian Financial Crisis 1997, there was a massive outflow of FDI in the Philippines economy from US$ 2 billion in 1996 to US$ 1.3 billion in 1997 because most of the multinational companies withdraw from investing into Philippines' economy (Asian Development Bank, 2003). However, net FDI surged in 2006 due to greater confidence stemming from strong economic fundamentals, an improved fiscal position,

declining inflation and comfortable external payments position (Emerging Market Monitor, 2007)

FDI have positive and significant impact on economic growth in the Philippines. According to Ismail and Yussof (2003), FDI is an important vehicle for achieving economic growth in Philippines through the privatize policy implemented by its own government.

1.1.4 The impact of FDI on Singapore

Figure 1.4: Net FDI inflow to Singapore from 1986-2008
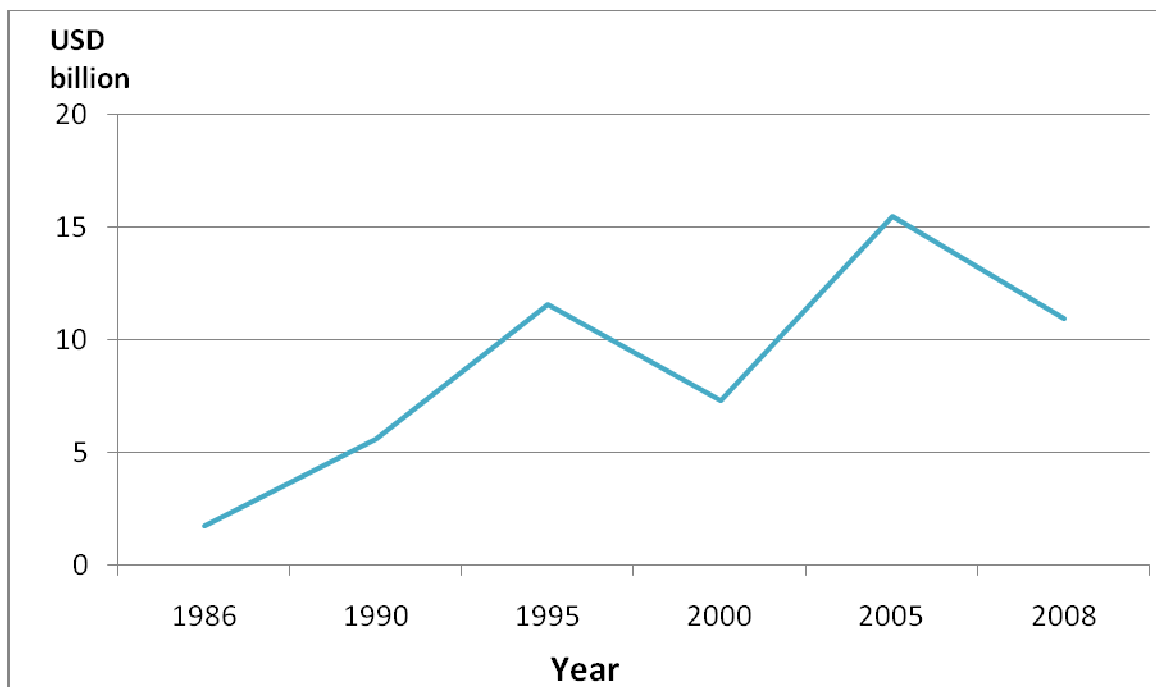
Source: World Development Indicators, The World Bank

Since Singapore achieved independence in 1965, it has adopted an open door policy to encourage both local and foreign investment. Despite of being a small country, Singapore now is one of the most prosperous economies with strong international

linkages (Feridun and Sissoko, 2006). During the Asian Financial Crisis in 1997, Singapore seem to have weathered the crisis better than most countries in the region but its FDI inflow was reduced from US$ 14 billion in 1997 to US$ 7 billion in 1998 (refer to figure 1.2). Subsequently, the net FDI inflow in Singapore has improved in 2005 which amounted up to US$ 15 billion. These great inflows are the result of an accommodating business environment, foreigner friendly investment rules, stable political environment, quality infrastructure and skilled labor force in the country (Asia Monitor, 2007).

On one hand, the large scale of entry by foreign firms and the business opportunity brought in with them have helped Singapore to develop income levels comparable with many Western nations. On the other hand, Lim, Adair and McGreal (2002) pointed out that the inflow of foreign investment has contributed significantly to the rate of development with the help from real estate sector in the country to enhance Singapore's status as well as to attract multinational companies to establish regional headquarters.

Besides that, Feridun and Sissoko (2006) examined the relationship between economic growth and FDI in Singapore using Granger causality and vector auto regression and results show that there is unidirectional causality running from FDI to GDP, however there is no evidence to support the existence of bi-directional between FDI and GDP in Singapore.

In another research, Dondeti and Mohanty (2007) tested the interrelations between FDI and GDP, exports and imports of Singapore using panel data analysis and it is found that FDI promotes growth and the results further provide an estimate that one dollar of FDI adds about 3.27 dollars to GDP of Singapore.

1.1.5 The impact of FDI on Thailand

Figure 1.5: Net FDI inflow to Thailand from 1986-2008
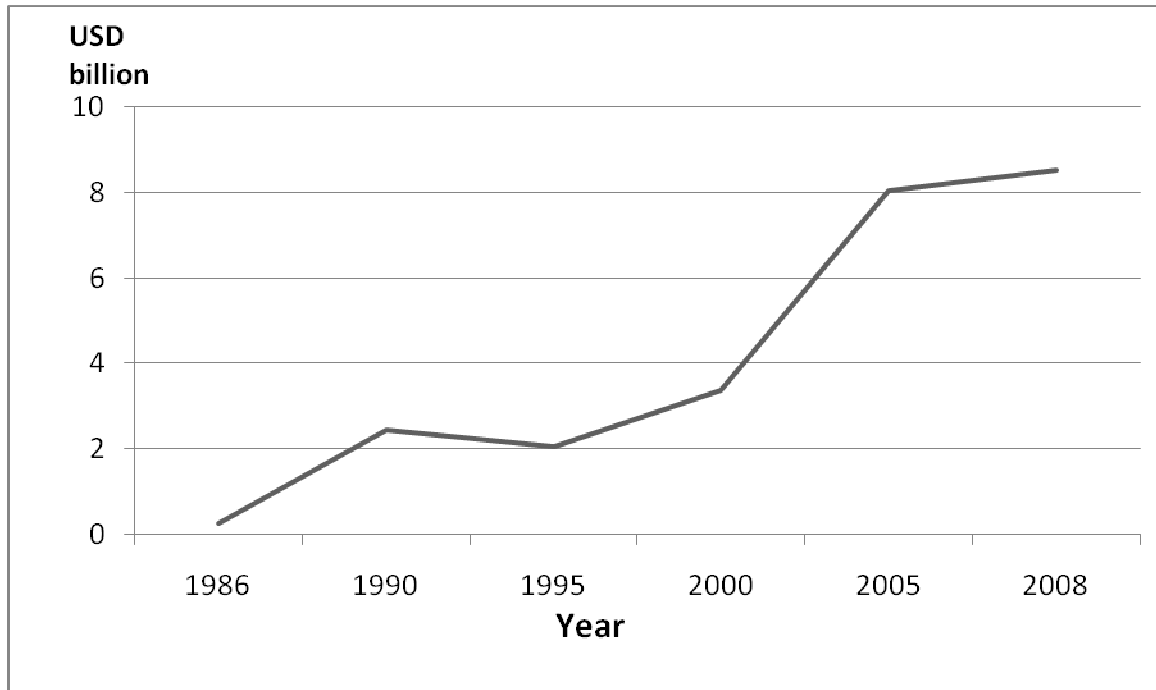
Source: World Development Indicators, The World Bank

During the 1990s, inbound FDI became a significant factor in Thailand especially in the industrial sector. Prior to the economic crisis in the East region, the level of FDI inflows increased from US$ 0.3 billion to US$ 2.1 billion in 1986-1995 (refer to figure 1.5). During the crisis period, the level of FDI inflows fell slightly from US$ 2.2 billion in 1997 to US$ 1.9 billion in 1999. The level increased again in 2000, reaching US$ 3.5 billion.

The crisis triggered significant changes in policy toward FDI in Thailand such that to liberalize FDI even further than before. Hussey (1993) stated that United States and International Bank for Reconstruction and Development (IBRD) have helped Thailand to build infrastructure and expand agriculture sector from Chao Phraya to eastern and northern region which enhance the growth rates of Thailand economy.

Besides, the FDI began to flow into Thailand when Thailand promotes industrial exportation by 1980s. As result, the employment opportunity was boost up through the promotion.

In another study, Tanna and Topaiboul (2005) tested the relationship between FDI and economic growth using Granger causality test. The result showed that FDI has a significantly positive effect on economic growth but the export-led growth is stronger than FDI-led growth. Apart from that, Ang (2009) investigated the impact of FDI on the economy of Thailand by controlling for the level of financial development. Using annual time series data from 1970 to 2004 and unrestricted ECM estimator of Index for estimation, the result suggested that while financial development and output expansion are positively related, FDI exerts a negative influence on output in the long run. Besides that, FDI in Thailand has an indirect effect in stimulating economic development through financial sector development.

1.1.6 The impact of FDI on Vietnam

Figure 1.6: Net FDI inflow to Vietnam from 1986-2008
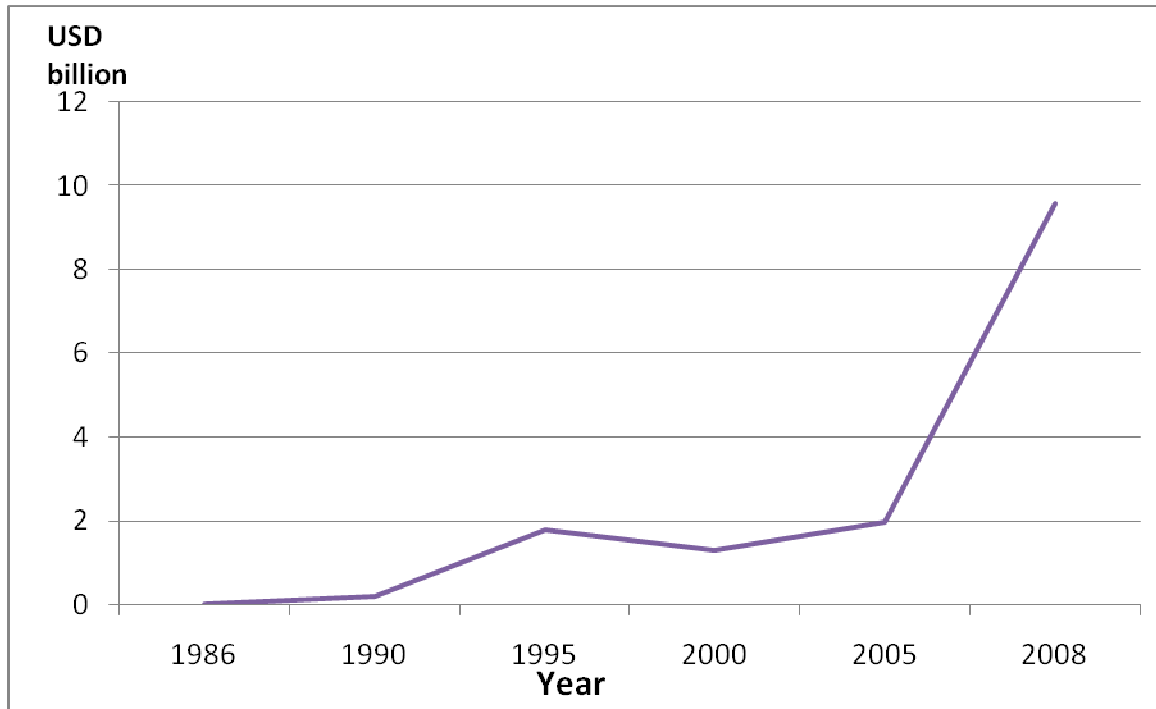
Source: World Development Indicators, The World Bank

Vietnam is a country that received significant inflows of FDI since its adoption of *doi moi* (renovation) in 1986 and implementation of Foreign Investment Law in 1987 (Jenkins, 2006). In figure 1.6 above, FDI inflows to Vietnam has reached US$ 1.78 billion in 1995 and nearly US$ 10 billion in 2008. However, the flow of FDI to Vietnam was significantly affected by the Asian Financial Crisis 1997, which caused FDI activities remained subdued until 2001, when Vietnamese government imposed policies such as opening of stock market and the resumption of IMF lending, the enforcement has contributed to a slow increase in FDI during 2001-2003 (Anwar and Nguyen, 2010).

Anwar and Nguyen (2010) also further explained the initial contribution of FDI to employment growth in Vietnam was small but there was a large increase in industrial

output and in recent years, FDI inflows have played major role in stimulating export growth as well as providing investment capital in Vietnam.

Looking primarily at the effects of FDI inflow on the level of employment in Vietnam, Jenkins (2006) has identified that direct employment generated has been rather limited due to high labor productivity and low ratio of value added to output. On top of that, indirect effects of the FDI inflows have been minimal because foreign investors have created minimal local linkages since they import most of their inputs.

In another study, Vu,Gangnes and Noy (2008) use sectoral FDI inflow data to evaluate the sector specific impact of FDI on growth and found that FDI has a statistically significant positive effect on economic growth in Vietnam which operates directly through its interaction with labor, however the effects varied across economic sectors.

1.2 Problem Statement

When China decided to open up its economy in 1979, its rapid emergence as an important player in the global economy has been a remarkable issue with consequences for the rest of the world. An important aspect is FDI because China has been attracting a growing share of FDI flows since 1990s. A number of country express great fears of this trend, while others greet it with much admiration. Those who are fearful have openly voiced their concerns that the emergence of China has diverted FDI away from their economies (Wang, Wei & Liu, 2007).

The main reason behind their qualm is because FDI has been recognized as an important source for economic development for some countries. The flow of FDI is believed to be able to fill the gap between desired investments and domestically mobilized saving (Todaro and Smith, 2003).Hence, the cheap labor costs in China may inevitably wipe out their industries and reduce their market share in the international market (Ng, 2007).

While the fears of a Chinese threat to FDI inflows are understandable, it is not clear that they are justified. The supply of FDI to the region is not strictly limited. For instance, existing quantitative studies focusing explicitly on whether the rise of China posing threat or opportunity towards FDI in its neighbors tend to show that China does not rival and may complement its Asian neighbor as a whole.

Chantasasawat et al. (2005) find the level of inward FDI in China has positive relationship with the levels of inward FDI in eight Asian economies[1] while Eichengreen and Tong (2006) find complementarities between inflows of FDI into China and those into other Asian economies but substitutability for those into Organization for Economic Co-operation and Development (OECD) countries. Apart from that, Zhou and Lall (2005) reported complementarities between inward FDI in China and those seven economies[2] for the period 1992-2001. Thus, whether or not countries compete for FDI depends on the nature of investment.

However, there may still be FDI substitution by China, but it should be considered in an analytical framework that takes the other determinants of FDI location into account. Therefore this paper is concerned on the impact of inward FDI in China towards other major recipients which consist of six ASEAN members namely Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.

Moreover, extensive empirical works have been carried out to investigate the impact of emergence of China as the largest recipient of FDI on export, trade, economic growth of countries in South-east Asia region (Das, 2007; Eichengreen and Tong, 2006; Ng, 2007; Ravenhill, 2006) but there are limited studies to examine whether China being top FDI recipient is taking foreign direct investments away from ASEAN countries. Thus, this research aimed to focus on six ASEAN countries whereby five out of six countries are the most promising FDI destinations mentioned by transnational corporation in 2011 to 2013 (UNCTAD, 2011)

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[1] The eight Asian economies are Hong Kong (China), Indonesia, the Republic of Korea, Malaysia, the Philippines, Singapore, Taiwan Province of China and Thailand
[2] The seven Asian economies are Indonesia, the Republic of Korea, Malaysia, the Philippines, Singapore, Taiwan Province of China and Thailand.

1.3 Research Objective

1.3.1 General Objective

The general objective of this research is to study on the rise of inward FDI to China crowds in or out FDI in the six selected ASEAN countries from year 1986-2008. Past empirical evidence has shown the result is mixed; hence we intended to investigate whether the diversion hypothesis holds on these countries.

1.3.2 Specific Objective

Specifically, our research aimed to analyze the competitiveness for inward FDI between China and the six ASEAN economies, namely Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. We would also like to examine the type of relationship exist whether substitute and complementary between China, the largest recipient of FDI and each sample country.

1.4 Significance of study

Since China launched economic reforms which lead to rapid expansion of trade, it has exerts significant influence on ASEAN's development and external economic relations due to the reason of largest pool of low cost labor force and cost competitiveness of China. It also tends to capture the market shares of ASEAN from U.S, EU and Japan thus, reducing FDI inflows to certain sectors of their domestic market even though ASEAN could actually gain from China's assembly plant for global markets and its consequent demand for components when looking into the perspective of export of finished goods (Ravenhill, 2006)

Hence, we attempted to examine whether or not China's success in attracting FDI is at the expense of its neighboring countries. In this study, we are focusing on group of ASEAN countries such as Malaysia, Singapore, Thailand, Philippines, Vietnam and Indonesia. Our contribution of the research is to supplement the existing literature and develop understanding on impact of China's FDI surge on FDI flow of ASEAN countries.

This paper also seeks to contribute in filing the gap of the literature by presenting empirical evidence on impact of inward China FDI on ASEAN economies and uncover factors influencing by studying its economic and political determinants. Panel data analysis is used to investigate how inward FDI in China affect these ASEAN countries. It is then to build the strength of existing studies while addressing various problem ASEAN countries suffered from emergence of China as large recipient.

1.5 Outline of Research

This paper is organized in five chapters. First, it highlights an overview of our topic, problem statement, research background and objectives of study. In chapter 2, a brief literature review is provided based on previous empirical study. Meanwhile, chapter 3 describes the theoretical framework, econometric models, data and variables and selected research methodology for this research. Subsequently, chapter 4 reports on the result and interpretation from the estimation performed on our model. Finally, chapter 5 outlines a summary of the main findings in this study. Policy implications, limitations and recommendation for future studies are provided in this section.

1.6 Conclusion

Chapter 1 attempts to provide an overview of study, the direction and scope of study. It helps to provide a basic understanding on the purpose of this research paper.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

FDI has been recognized as an important source for economic development because it helps to create employment and improve human capital development as well as assisting the host country to break out the vicious cycle of underdevelopment (Hayami, 2001).

Table 2.1 Inward FDI Performance Index

Country	Inward FDI Performance Index (141 economies)		
	1988-1990	1998-2000	2005-2007
Indonesia	0.8	-0.5	0.70
Malaysia	4.4	1.3	1.37
Philippines	1.7	0.7	0.77
Singapore	13.6	4.7	5.39
Thailand	2.6	1.4	1.52
Vietnam	1.0	1.4	2.15

Source: UNCTAD

Table 2.1 shows the value of inward FDI performance index of six ASEAN economies for the period of 1988-1990, 1998-2000 and 2005-2007. It is the ratio of a country's share in global FDI inflows to its share in global GDP. A value greater than one indicates that the country receives more FDI than its relative economic size and a value below one means it receives less whereas a negative value shows that foreign investors disinvest in that period. To explain these differences in the FDI performance index among the countries listed above, it is essential to understand how foreign investors

choose their investment locations considering the possible existence of FDI competition among each nation with China.

For instance, we can look into the four main motives of FDI which are market seeking FDI, resource-seeking FDI, asset-seeking FDI and finally efficiency-seeking FDI. Botric and Skuflic (2006) explained the aim of market seeking FDI is to penetrate the local market of host countries and is usually connected with the market size and per capita income, market growth, access to regional and global markets, consumer preferences and structure of domestic market. In this regard, Zhou and Lall (2005) argued that China's attractive investment opportunity does not make threats to its neighbors if their markets are also eye-catching. Similar to market-seeking FDI, resource-seeking FDI does not induce any substitution in neighbors like Indonesia because China is not a resource rich country by normal standard hence does not receive much FDI in resource-based activities (Zhou and Lall, 2005).

In the case of asset-seeking FDI, searching for resources has not been an important determinant in the East Asian region. Zhou and Lall (2005) explained that asset-seeking FDI does not result in country-specific competition. On the other hand, the efficiency-seeking FDI is motivated by creating resource of competitiveness is where direct competition is most likely to happen because countries in Southeast Asia offer diversified operating surroundings for efficiency seekers such as different wages level and labor skills, technology, infrastructure and support institutions. But FDI complementarity may also arise in other circumstances. For instance, it may lead to greater demand for imported raw materials and so lead to more FDI inflow to primary producers.

Other than these four FDI motives, we also have to consider locational factors of an economy for inward FDI. In the study of Wang, Wei and Liu (2007), they have indicated that GDP per capita, openness, human capital, exchange rate and country risk have significant influence in attracting FDI inflows. Hence, the following sub-section is

an extension of literature review on the relationship between these potentially important determinants with FDI.

2.1 Determinants of FDI

2.1.1 The relationship between GDP per capita and FDI

In the past literature, a number of variables were found to be significant determinants in affecting FDI inflow such as Gross domestic product (GDP), growth in real GDP, GDP per capita. These indicators are generally used to capture the market size and market growth. The size of the host market signifies the host country's economic conditions and the potential demand for their output as well. Thus, it is an important factor in FDI decision-makings.

Root and Ahmed (1979) pointed out that an increase in GDP per capita will lead to an increase in FDI inflow into host countries. In other words, when there is an increase in income, it signals greater purchasing power where people tend to have a greater demand for goods and services. In the end, it reflects on the growing market size of host country which will attract market seeking FDI. On the other side, Anwar and Nguyen (2010) demonstrated there is a positive relationship and significant effect between market sizes with FDI in Vietnam. In addition, they also claimed that a modern country with well built infrastructure and higher GDP per capita has the tendency to attract more FDI inflow.

In the same vein, China's rapid economic growth since 1980 has created a large domestic markets and business opportunities for foreign firms to invest in China. Swain and Zhang (1997) used GDP and real GDP growth in analyzing data of FDI in China in the period of 1978-1992 concluded that market size is the fourth most important factor for the pledged FDI in China. Their empirical results indicated that the real GDP rate was significantly related to inward FDI in China. The findings by Zhang (2000) and Wei and

Liu (2001) have confirmed the positive relationship between market size and inward FDI in the case where both investors from U.S and Hong Kong are attracted by China's large market size. Hence, this reflects the market seeking motive of U.S firms and Hong Kong firms to shift from mainly export-oriented investments towards the Chinese market. As Zhang (2002) said, the larger the market size of a province, the more FDI is likely to be received.

GDP per capita is acting as an economic index in measuring living standards because when the standard of living tends to improve will lead to an increase of GDP per capita (Alfred & Eckes, 2011). FDI inflows have been proven by most of the studies that it led to higher GDP per capita and improved economic growth rate and also productivity growth (De Mello, 1997 and Saggi, 2000). But some of the early studies have generally reported there is no direct evidence of such relationship. For instance, Hien (1992) reported an insignificant effect of FDI inflows on medium term economic growth of per capita income for a sample of 41 developing countries. On top of that, Pan (2003) affirmed that in China, inward FDI and growth GDP in per capita has a significant but negative relationship for the period 1984 to 1996.

Therefore, whether GDP per capita attracts or deters FDI is an ambiguous question. In our study, we are using GDP per capita as a measure for market potential or attractiveness since Root and Ahmed (1979) have pointed out that total GDP appeared to be a poor indicator of market opportunities, especially for developing countries, as it reflects the size of the population rather than aggregate income. Moreover, Ito and Rose (2009) explained that GDP is more of a proxy to the gravity hypothesis whereas GDP per capita is related to wealth of people. Otherwise stated, it means a country with higher GDP does not necessarily have higher receipt of foreign investment if the people in that country are poor (i.e., GDP per capita is low). Besides that, Chakarabati (2001) has demonstrated GDP per capita is a more robust variable than total GDP for attracting inward FDI.

2.1.2 The relationship between Openness and FDI

A host country's openness to trade has been found as one of the major key determinants of influencing FDI inflows. The nature of FDI could have different effects on the level of openness and whether it act as complements or substitutes.

For instance, in the case of efficiency-seeking FDI, a multinational firm seeks to obtain the benefit of economic of scale and optimizes lower labor cost by diverting towards a more open economy than its home country. Hence, when multinational enterprises (MNC) engaged in outsourcing their business operations, the host economy that provided large amount of labor and potential suppliers will have attracted large volumes of foreign capital. MNCs will bring in technology know-how, knowledge spillovers and capital to improve the quality of the inputs before selling to the foreign firms. Therefore, it does not only attract other foreign firms to invest in host area, but also increase the competitiveness of local firms (Chakrabarti, 2001).

Trade openness is the sum of exports and imports of goods and services measured as percentages of gross domestic product. It is generally expected to be a positive impact of openness on FDI. For instance, Marchant, Cronell and Koo (2002) attempted to investigate whether FDI inflow in U.S is having a complementary or substitute relationship with its export of processed foods to East Asian countries for the period 1989-1998. Using simultaneous equation system for FDI and exports, their empirical analysis indicated a complementary relationship between FDI and exports. Likewise, in the study of Nurudeen, Wafure and Auta (2011), they found that trade of openness in Nigeria had a significant positive effect on FDI inflows. They also suggested that Nigeria should apply trade liberalization policies which will attract more FDI.

On the contrary, a substitutive relationship occurred between FDI and trade openness for the developed countries. As UNCTAD (1997) reports, this is due to the reason of high level of protection, trade restrictions and established tariff to protect local industries. This has prevented the incentive of MNCs to invest in these countries because

a market which is accompanied by trade protection has directly implied a higher transaction costs for foreign import and export. This is against foreign investor's intention to locate in the host countries, hence the adverse effect on FDI inflow volume.

However, in the study of Pradhan (2010), an investigation on the role of trade openness on FDI inflows in India was conducted for the period of 1980-2007 and it is found that there is a significantly positive effect between FDI and trade openness. Pradhan (2010) also further explained that its impact is much stronger in the post-globalization era (1991-2007) as compared to pre-globalization era (1980-1990). Similarly, Chang (2007) who investigated the impact of degree of openness have on FDI inflow and found not only a positive relationship between FDI and openness but also mentioned that FDI, degree of openness, GDP and unemployment rate have a long-run equilibrium relationship in Taiwan.

Meanwhile, Sharma and Bandara (2010) conducted a research on the determinants of Australian FDI using hypotheses drawn from investment demand model has suggested that the countries with large domestic market with an open trade regime and have similar language and culture as Australia had attracted MNCs to invest in Australia.

In conclusion, the ease at which foreign affiliates in the host economy can import and export goods is an important determinant of FDI inflows and this is captured by trade openness in our research paper.

2.1.3 The relationship between Labor Productivity and FDI

Firm specific intangible assets such as technological know-how, marketing and management skills, favorable relationships with suppliers and customer and reputation have played a dominant role in conventional theory of FDI. Within the context of traditional FDI determinant, macroeconomic variables, business conditions and other

socio-political and environmental factors are still the dominant factors. However, among non-traditional FDI determinants, human capital such as labor skill, labor cost and labor productivity has clearly gained importance as a variable in examining FDI flows (Nunnenkamp, 2002)

According to Cheng and Kwan (2000), FDI has created an opportunity to improve the working condition by training and educating local workers in managing production unit's standardization in order to enhance labor productivity. Hence, the presence of FDI has benefited the host country as the skilled labor can be transferred to other sectors and helped to develop the domestic market. However, the adverse effect will be that better-trained labor force is associated with high average wages and this has negatively affected on FDI inflows to their countries.

Besides that, Friedman, Gerlowski and Silberman (1992) stated that labor productivity in United States significantly and positively related to Japanese FDI inflow. The relationship is also found to be true for Chinese electronics industries as the study of Liu et al. (2000) shows that there is a positive relationship between labor productivity and FDI in term of labor quality, domestic firm size and the degree of foreign presence. Furthermore, there is a similar example from UNCTAD (2000) states that Ireland's success in attracting FDI in the electronics industry due to its ability to create a skilled human resource base. Under these platforms, Ireland will attract world's leading electronics firms to that country. Also, Rodrik (1996) claimed that low labor standards might be a resistance, rather than an attraction for foreign investors. In other words, low labor standards have negative impact on attracting FDI inflows.

In contrast, Ismail and Yussof (2003) argue that the number of professional and technical workers has a significantly negative impact on the FDI inflows in Malaysia and Thailand. These contradictory results mostly due to the types of production activities carried out by the foreign investors and the labor market indicator. For instance, local firms have greater ability to operate without reliance on foreign investors due to increasing number of professional and technical workers.

Furthermore, Forteza and Martin (2001) argue that labor quality have positive and negative impact to FDI inflow. First, it could decrease FDI inflows through the cost channel by increasing the variable cost. Second, it will increase FDI inflows through the productivity channel by decreasing the marginal cost of production faced by foreign investor.

Undeniably, labor productivity is one of the competitive advantages that a developing economy can offer to get FDI from other countries through affordable rates, various language skills and strong education from technical education and vocational training. For instance, Singapore's experience indicates that countries without vast natural resources can still attract large inflow of FDI by offering high quality human capital to investors and most importantly, countries that can offer skilled workers at low cost will always attract FDI (Khan, 2007).

Moreover, Axarloglou (2004) conducted a research to study on the impact of industry and state-specific economic well-being using annual data of several U.S states over the period of 1982-2000. As a result, U.S FDI inflow was greatly influenced by both industry and state-specific labor productivity and the spending on education from each state. Axarloglou (2004) also further explained that labor costs are not a good proxy because under certain circumstances, high wages are the outcome of high labor productivity. Thus the quality of the host country's labor force alongside with the effort to improve the labor productivity is pivotal in attracting FDI inflows.

2.1.4 The relationship between Exchange rate and FDI

Broadly speaking, FDI is a transfer of capital and hence can be interpreted in terms of comparison of expected returns on alternative decisions of investments (Ellahi, 2011). Accordingly, volatility of exchange rate is a sort of risk that affects FDI in various ways depending on the destination of the goods produced. If the investor aims at serving the local market, FDI and trade are substitutes and an appreciation of the local currency

increases FDI inflow due to higher purchasing power of local consumers. Conversely, depreciation in the real exchange rate of the recipient country increases FDI as well through the reduced cost of capital. However, if FDI inflow aims at producing for re-export, then it complements trade and an appreciation of the local currency decreases FDI inflows due to higher cost incurred in the host country (Cushman, 1985).

Osinubi and Llyod (2009) analyzed the volatility of exchange rate and FDI link for Nigeria using secondary time series data set ranging over the period of 1970-2004 and as a result, a positive and significant relationship was found between FDI and exchange rate. Additionally, the paper also suggests that in order to achieve increase in real FDI, Central Bank of Nigeria need to attain stable exchange rate system.

On the other hand, Ogunleye (2009) analyzed the relationship between volatility of exchange rate and FDI for the sub Saharan Africa region and the result stated that the share of FDI inflow is low across the region because of the risk of exchange rate volatility. The sources of exchange rate volatility were identified as inflation and nominal foreign reserves shocks of this region.

Similarly, Ellahi (2011) attempted to investigate the impact of exchange rate volatility on FDI for the Pakistan economy. Utilizing a secondary time series data set from 1980-2010 and autoregressive distributed lag, Ellahi (2011) successfully show that exchange rate volatility has negative impact on FDI inflow in short run while the impact is proven positive in the long run. Additionally, the adjustment and liberalization program has favorable outcomes in the short run for Pakistan.

Other major findings from Kohlhagen (1977) and Cushman (1985) also conclude that an appreciation of recipient country's currency leads to a reduction in FDI inflow and inversely, depreciation will stimulates the inflows of FDI. For instance, a devaluation in the currency of a country receiving FDI leads to a lower local production costs in terms of foreign currency, therefore attract more foreign investor.

On top of that, Benassy-Quere *et al.* (2001) discussed on the trade-off between depreciation of exchange rate and its volatility as their effects on FDI, he argued that the negative impact on FDI of excessive volatility could erode the attractiveness resulting from currency depreciation.

In another research paper states that exchange rate play a significant role in shaping competition among FDI recipient countries like Indonesia, Malaysia, Thailand and Philippines. A relative real appreciation in the currency of a recipient country will reduce its FDI inflows and divert investment to its rival country. Besides that, these four countries lost their competiveness to China mostly due to the differences in exchange policy (Xing and Wan, 2006).

2.1.5 The relationship between Country Risk and FDI

There are several literatures which describes the positive and negative effect on country risk. Busse and Hefeker (2007) investigated the role of political risk and institutions in host countries as determinants of foreign direct investment. They used several test and found that the rate of change of several political indicators (government stability and law and order) are highly related for investment decision of foreign direct investors.

Furthermore, Meldrun (2000) explained that political risk is a risk that affected by the changes in political institutions such as the changes in government control, social fabric, or other non-economic factor. He added that country risk attempts to increase the risk of a decreasing in expected return of foreign direct investment which means that the uncertainty of this risk would have negative impact on FDI inflows.

Moreover, Hayakawa, Kimura and Lee (2011) found that the aggregate politic risk index have a negative and highly significant coefficient with FDI which they also suggest that high political risk of host countries will discourage FDI inflows. Generally, among

12 political risk components, government stability, socioeconomic condition, investment profile, internal conflict, corruption, external conflict, religious tensions, democratic accountability and ethic tensions have close association with FDI flows. Specifically, socioeconomic conditions, investment profile and external conflict are the most influential components of political risk in determining the attractiveness of a country for FDI.

Mateev and Stonyanov (2007) concluded that incoherent and unstable legal system, crime and corruption, bureaucracy and poor infrastructure discourage foreign investors and decrease the competitiveness of the Bulgarian economy. In contrast, the political stability which reduced political risk will increase the growth and development of country which will attract larger amount of inflow FDI.

Vijayakumar, Rasheed and Tondkar (2009) analyzed the impact of country risk on foreign investment to the several markets such as overall FDI, foreign investment in equity securities and in debt instruments. They found that the higher the scores on Euromoney's country risk rating, the lower risk for the country which will attract more FDI. Ramcharran (2000) used Euromoney's country risk rating which same as Vijayakumar, Rasheed and Tondkar (2009) to examine the relationship between FDI and country risk. He found that only a few countries are having significant relationship to this matter.

Another relevant literature examined political instability which caused by own country or between international conflicts had reduced FDI inflows into the economies of Central Europe and Balkans (Southeastern Europe). Brada, Kutan and Yigit (2006) prove that less inflow of FDI into Balkan's economy was due to regional political instabilities which caused unwillingness of foreign investors to invest in Balkan

Contrary, Jiménez (2011) pointed out that FDI for certain country are positively affected by political risk. The reason was some of the MNC's investors are willing to take greater levels of political risk to exchange for other advantage. For certain countries

which their FDI flows are lower which caused by higher risk level could improve MNC's investors political capabilities to exploit their comparative advantage in these countries.

2.2 Conclusion

This chapter provides some background information and reviews on previous studies. In the next chapter, we will clearly define the research methodology and estimation technique for indication of result for this study.

CHAPTER 3: METHODOLOGY

3.0 Introduction

The overview of this chapter is to examine whether the rise of China crowds in or out FDI in Asean countries by using panel co-integration and panel least square between 1986 and 2008. This chapter explained on the outline of major methodology used for the study.

3.1 Data and Sample

There are six ASEAN countries, namely, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam selected for this empirical study. One of the reasons these countries being selected is few researches has been carried out to investigate the impact of inward FDI in China towards these ASEAN members. Other ASEAN countries are excluded from this study because of lack of data and the fact that they are relatively unimportant as recipients of FDI.

The data set consists of six ASEAN countries as cross-sectional observations and 22 time-series observations, from year 1986 to 2008. Hence this provides 132 panel observations. The study only cover the mentioned time period as there is limited data availability. All the data employed in this empirical study are collected from i) World Development Indicator, World Bank, ii) **Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania**, iii) International Country Risk Guide (ICRG) provided by the Political Risk Services (PRS) Group and iv) United Nations Conference on Trade and Development. The variables used are annual aggregate inflow of FDI, GDP per capita, openness to trade, labor productivity, exchange rate and country risk.

3.2 Variables

3.2.1 Dependent variable

In Zhou and Lall (2005), FDI per capita is used as dependent variable to study the diversion effect of China because they argue that absolute FDI would give a distorted picture as it would be dominated by the size of economy, a particular problem when comparing relatively small countries. However, Wang, Wei and Liu (2007) opposed by stating that FDI per capita too may give a distorted picture. This is due to the measure is significantly influenced by the size of population. Thus Wang, Wei and Liu (2007) performed few robustness checks on both measures in their research paper to see whether the same conclusion is reached and the results are essentially the same. Hence, we selected annual inflow of FDI in current US dollar as our dependent variable for this paper.

3.2.2 Independent Variables

Aggregate FDI in China is measured directly, as one of the main variables of interest in this paper to capture the true effects of FDI in China. Also, we use a number of variables to capture the main determinants of inward FDI.

Market size which is one of the most important determinants of FDI is usually measure by GDP per capita. Substantial literatures have proven a significant and positive relationship between GDP per capita and FDI flows. Rising income levels are a signal of an increase in the market size and purchasing power. The foreign investors that target the local market are assumed to be more attracted to the country with high growth because it would indicate a larger potential demand for the foreign products (Chantasasawat et al., 2005). Chakrabarti (2001) also found a strong positive relationship between GDP per capita of a host country FDI inflow. Following the existing literature, this study uses GDP per capita as a measure of country market size.

The level of human capital is demonstrated to be an important determinant of FDI inflow. Chantasasawat et al. (2005) suggest that labor skills can be more significant factor to appeal for labor-intensive foreign investment. On the other hand, Michie (2002) explained that the key to drive multinational companies invest into host countries is the human capital enhancement. He denied that FDI are bringing positive impact on human capital in host countries, for instance, through training courses to subsidiaries' local workers which can be beneficial to improve employees' skills but instead human capital enhancement came from the effort from government seeking for FDI. In this paper, we utilize labor productivity or also known as GDP per employee as a proxy for the level of human capital to study its effect on sucking in FDI.

In much empirical study, the degree of openness can affect amount of FDI flowing into a country. A decrease in the level of openness tends to increase horizontal FDI in host countries, but vertical FDI that is viewed as a non-market seeking investment may prefer to locate in more open economies. In the case of efficiency seeking FDI, a positive relationship is expected where as for market-seeking FDI; a negative relationship is found between openness. This is because foreign firms often import machinery and intermediate inputs into host country for assembling which will then be exported out. Thus, the ease at which foreign affiliates in the host economy can import and export good is an important determinant of FDI inflows (Wang, Wei and Liu, 2007). Chakrabarti (2001) used export volume as a measure of openness of an economy and it shows a positive relationship between export and FDI inflow.

Exchange rate fluctuations can complicate the investment decisions of international firms because high degree of uncertainty of exchange rate movement affects the firm's decision on its production plant (Chowdhury and Wheeler, 2010). If changes in exchange rate affects only price volatility, these changes would have very minor effect when it comes to satisfying real purchasing power parity. However, Cashin and McDermott (2006) claimed that purchasing power parity does not hold for all time periods. Hence, exchange rate volatility can either positively or negatively affect the competitiveness of firms in different countries. On one hand, firms are faced with the risk

of inherent in volatile exchange rates. On the other hand, firms have the opportunity to move production to take advantage of decreasing costs elsewhere (Goldberg and Kolstad, 1995 as cited in Chowdhury and Wheeler, 2010). According to Wang, Wei and Liu (2007), an appreciation of currency increases FDI inflows by increasing the purchasing power of local consumers while depreciation of the currency of recipient country tends to improve the competitiveness of the host economy, thus increasing its attractiveness to efficiency or resource-seeking FDI. Thus exchange rate is an important factor to determine FDI inflows.

Apart from that, uncertain political environment and their related risk increases uncertainty and can hinder FDI inflows (Wang, Wei and Liu, 2007). Supported by Busse and Hefeker (2007), they found that government stability, internal and external conflict, corruption, ethnic tensions, law and order, and democratic and accountability of government are robust predictor of FDI inflows. Hence, for this paper, we have included country risk as one of the important variable to assess the inward FDI towards Asean countries. We are using one of the components from political risk, government stability obtained from ICRG for detailed analysis.

3.3 Econometric Model

In this section, we propose the following model for estimation:

$$FDI_{it} = \beta_0 + \beta_1 OP_{it} + \beta_2 ER_{it} + \beta_3 GDPP_{it} - \beta_4 LRISK_{it} + \beta_5 LP_{it} + \beta_6 FDIC + \mu_{it}$$

where subscripts t and i are indices for the year and host economy respectively. FDI denotes the annual FDI inflows; GDPP denotes the economy i's GDP per capita; OPEN is the openness to trade; FDIC measures the inflow of FDI in China; ER is economy i's currency against United States' currency (US dollar) ; LRISK is logarithm of country risk ratings and LP is human capital represented by the proxy of labor productivity of employees. The variable measurement and data sources are listed in the appendix.

3.4 Theoretical Framework

In our study, we are using balanced panel data. The methodology that is used in this study consists of few panel unit root test such as LLC test (Levin, Lin and Chu, 2002) and IPS test (Im, Pesaran and Shin,. 2003). In addition, we also employed panel cointegration test such as Pedroni cointegration test (Pedroni, 1999, 2004) on our empirical model and also the panel least square method on regressing our model.

3.4.1 Panel unit root test

First, we have to implement panel unit root test to examine the variables in the series are stationary or not ($H_1: Stationary$) before carry out the panel cointegration test. More recent, panel unit root test has favorably been used by most of the researchers. Panel based unit root test are more powerful than the individual time series unit root test because by inclusion of heterogeneous cross section data to improve the time series information and lead to statistical with a normal distribution in the limit (Baltagi, 2001). Panel unit root tests are a multiple-series of unit root tests that employed in panel data structure which is generated as a multiple series with the existence of cross-sections rather than in a single series.

A few tests for panel unit root tests have been proposed which are Fisher – type tests using ADF and PP tests (Maddala & Wu, 1999; Hadri, 2000; Breitung, 2000;Choi, 2001; Levin *et al*., 2002; Im *et al*., 2003). There are two methods to estimate the regression. The first type is use to estimate the regression with lagged difference terms which are Fisher – ADF test, Levin, Lin and Chu test, Im, Pesaran and Shin test and Breitung test. The second type is use to estimate regression involved in the kernel weighting which are the Levin, Lin and Chu test, Hadri test and Fisher – PP test. In this test, null hypothesis of a panel unit root cannot be rejected simply implies a stationary series are said to have strong influence on its properties and behavior.

In addition, it is important to avoid there is long term equilibrium relationship exists among the non-stationary variables in the level form. Therefore it is necessary to apply panel cointegration test in the model when running the variable in first differences, such as stationary I (1) series with the condition of the model consists of unit root and is a non stationary model. LLC test and IPS test proposed by Levin et al. (2002) and Im *et al.* (2003) in panel unit root test has been used in the study.

3.4.2 LLC Test

Levin Lin and Chu test is based on ADF regression:

$$\Delta Y_{i,t} = \alpha_i + \delta_i t + \theta_t + P_i Y_{i,t-1} + \varepsilon_{it}$$

Where:
i=1,2,…N
t=1,2,…T

From the series, unit specific time trends and two way fixed effects (α and θ) are incorporated. The unit-specific fixed effects are an important source of heterogeneity due to lagged dependent variable is restricted to be homogeneous in all units in the panel. Among the individuals,ε_{it} is tends to be independently distributed across individuals.

Based on the earlier research done by Quah (1994), Levin, Lin and Chu (2002) proposed pooled t-statistics test to evaluate the hypothesis of stationary in individual time series. One of the assumptions of LLC test are in the autoregressive (AR) coefficients dynamics consists homogeneity for all panel series which allow individual effects or linear time trend and time effects. Besides, error term includes homogeneous of first order autoregressive parameters where the series are integrated at first order then it is cointegrated.

Assume u_{it} is independently distributed across individuals and follow a stationary ARMA process for each individual:

$$u_{it} = \sum_{j=1}^{\infty} \theta_{ij} u_{it-j} + \epsilon_{it}$$

And the finite-moment conditions are assumed to assure the weak convergence in Philips (1987) and Phillips-Perron's (Phillips and Perron, 1988) unit root tests.

3.4.3 IPS Test

For this study we have chosen the Im, Pesaran and Shin (IPS)which is based on the well-known Dickey-Fuller procedure to allow for heterogeneity in these dynamics. The presence of heterogeneity in the variables is because economic condition is volatile and the country's degree of development. This has shown that IPS is a better explanatory test than others. Hence, the IPS test indicates that the series are integrated of order one, i.e., I(1) at the 1% significance level and it is a failure to reject the null of non-stationary.If integration of first order is implied in the data series, according to the IPS test results, first differenced series has become stationary.

Im, Pesaran and Shin (2003) denoted a unit root test in panels that is simple to calculate and allows for residual serial correlation and dynamic heterogeneityacross groups. It combines information from the time series dimension and cross section dimension. IPS framework applied likelihood procedure that based on average (augmented) Dickey Fuller t-bar test across groups. It allows heterogeneity in the short run dynamics, in the error structure and in the form of fixed effects and linear trend coefficients

.

IPS begins by specifying a separate ADF regression for each cross-section with individual effects and no time trend (county):

$$\Delta y_{it} = \alpha_i + \rho_i y_{i,t\ 1} + \sum_{j=1}^{P_i} \beta_{ij} \Delta y_{i,t\ j} + \varepsilon_{it}$$

Where:

$(i = 1, 2, . . .,N ; t = 1, 2. . .,T)$ is panel group series i over period t,

pi is the number of lags in the ADF regression

$\varepsilon_{i,t}$ is assumed to be independently and normally distributed random variables for all i's

and t's with zero means and finite heterogeneous variances σ_i^2.

Both β_i and the lag order ρ in **Error! Reference source not found.**) are allowed to vary across sections (countries).

IPS uses the average of the t-statistics from the individual ADF regressions in the panel; it assumes all series are non-stationary under the null hypothesis. The standardized t-bar statistic converges to the standard normal distribution as N and $T \to \infty$. When N and T are sufficiently large, error term is serially correlated with different serial correlation patterns across groups.

3.5 Panel cointegration tests

3.5.1 Pedroni (Engle – Granger based) Cointegration Tests

After established the stationary properties of each variable, a panel cointegration test (Pedroni 1999, 2004) was conducted. The checking of non-stationary properties for all panel variables leads us to study the existence of a long run relation between these variables while allowing dynamic and long run cointegrating vectors to be heterogeneous across each variable.

There are two sets of statistic that employed in Pedroni test are four panel cointegration statistics and three group mean cointegration statistic. It is used to test the null of no cointegration for the case of heterogeneous panels and derived their asymptotic distributions. Three group panel statistic are based on pooling the variables along between-dimension whereas the other four panel cointegration statistic based on pooling

the variables along the within dimension of panel. For all these seven tests, the null hypothesis is no cointegration.

A)   Within – dimension (panel test)

1. Panel-*v* statistic

$$T^2 N^{3/2} Z_{\hat{v}_{N,T}} \equiv T^2 N^{3/2} \left(\sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{e}_{i,t-1}^{2} \right)^{-1}$$

2. Panel Phillips-Perron (PP) type *p*- statistics

$$T\sqrt{N} Z_{\hat{\rho}_{N,T}} \equiv T\sqrt{N} \left(\sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{e}_{i,t-1}^{2} \right)^{-1} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \left(\hat{e}_{i,t-1} \Delta \hat{e}_{i,t} - \hat{\lambda}_i \right)$$

3. Panel Phillips-Perron (PP) *t*- statistics (Non-parametric)

$$Z_{t_{N,T}} \equiv \left(\tilde{\sigma}_{N,T}^{2} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{e}_{i,t-1}^{2} \right)^{-\frac{1}{2}} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \left(\hat{e}_{i,t-1} \Delta \hat{e}_{i,t} - \hat{\lambda}_i \right)$$

4. Panel augmented Dickey Fuller (ADF) t-statistics (parametric)

$$Z_{t_{N,T}}^{*} \equiv \left(\tilde{S}_{N,T}^{*2} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \hat{e}_{i,t-1}^{*2} \right)^{-1/2} \sum_{i=1}^{N} \sum_{t=1}^{T} \hat{L}_{11i}^{-2} \left(\hat{e}_{i,t-1}^{*} \Delta \hat{e}_{i,t}^{*} \right)$$

B) Between dimension (group tests)

5. Group Phillips-Perron (PP) type *p*-statistics (parametric)

$$T N^{-\frac{1}{2}} \tilde{Z}_{\hat{\rho}_{N,T}-1} \equiv T N^{-\frac{1}{2}} \sum_{i=1}^{N} \left(\sum_{t=1}^{T} \hat{e}_{i,t-1}^{2} \right)^{-1} \sum_{t=1}^{T} \left(\hat{e}_{i,t-1} \Delta \hat{e}_{i,t} - \hat{\lambda}_i \right)$$

6. Group Phillips-Perron (PP) type *t*-statistics (non-parametric)

$$N^{-1/2} \tilde{Z}_{t_{N,T}-1} \equiv N^{-1/2} \sum_{i=1}^{N} \left(\hat{\sigma}_i^{2} \sum_{t=1}^{T} \hat{e}_{i,t-1}^{2} \right)^{-1/2} \sum_{t=1}^{T} \left(\hat{e}_{i,t-1} \Delta - \hat{\lambda}_i \right)$$

7. Group augmented Dickey – Fuller (ADF) *t*- statistics (parametric)

$$N^{-\frac{1}{2}} \tilde{Z}_{tN,T}^* \equiv N^{-\frac{1}{2}} \sum_{i=1}^{N} \left(\sum_{t=1}^{T} \hat{S}_i^{*2} \, \hat{e}_{i,t-1}^2 \right)^{-\frac{1}{2}} \sum_{t=1}^{T} (\hat{e}_{i,t-1} \Delta \hat{e}_{i,t})$$

. Consequently, Pedroni (1999, 2004) allows for varying intercepts and varying slopes. Assuming a panel of N industries each with m regressors (X_m) and T observations, these seven panel co-integration are based on the equation as follows:

$$FDI_{it} = \beta_0 + \beta_1 OP_{it} + \beta_2 ER_{it} + \beta_3 GDPP_{it} - \beta_4 LRISK_{it} + \beta_5 LP_{it} + \beta_6 FDIC + \mu_{it}$$

μ_{it} is the estimated residual. Therefore, the test suggests that reject null hypothesis of no co-integration confirming that there is/are long run relationship(s) exists between FDI, OP, ER, GDP, RISK, LP and FDIC.

3.6 Panel Least Square

The least square method is commonly being applied to estimate the fitness of the parameters function to a set of data and to characterize the statistical properties of estimates. It minimizes the sum of the squares of the residuals.

Using panel data can provide a better and accurate inference of model parameters because cross sectional data views panel as T=1 but in the panel data in comprises higher degree of freedom and lesser multicollinearity. The result will be more variability and more efficient because panel data involved two dimension – cross-sectional dimension and time series dimension. Panel data could generate a better studied on the effects and a greater capacity in examining more complicated behaviour hypothesis which could not observe in pure time series data or pure cross sectional data.

On the other hand, it minimizes omitted variables that correlated with explanatory variables in a model specification. In the panel data, it controls the effects of

missing or unobserved variables that included both of the intertemporal dynamics and the individuality information. It is better suited to study the dynamics changes. Panel data allow us to control for unobserved heterogeneity in these units that related to individuals, firms, states and countries (Gujarati and Porter, 2009).

3.7 Conclusion

This chapter explains our empirical model, data set and methodology. This chapter serves as a foundation to conduct the empirical investigation in the following chapter. Chapter 4, reports our empirical results.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

This chapter focuses on the interpretation of results of "China-effect" to the inflow FDI across six ASEAN countries from period 1986-2008. As mentioned in the previous chapter, we are implementing panel unit root test model such as Levin *et al*. (LLC) (2002) and Im *et al*. (IPS) (2003) test for the empirical analysis for this research paper. Other than that, Pedroni co-integration test and panel least square method are also employed to test our model.

LLC and IPS unit root test is used for the purpose of testing the stationary of the series (H_o: series is non-stationary). Apart from that, Pedroni co-integration test is used to investigate the long run relationship between FDI in six ASEAN countries and GDP per capita, openness, exchange rate, country risk, human capital (here onwards known as labor productivity) and FDI in China. Lastly, panel least square is employed to examine the competitiveness for inward FDI between China and six ASEAN countries.

Before presenting the empirical results, we would like to highlight an important point regarding the estimation of the model and the use of variables. In order to test the possible effects of FDI diversion or FDI creation due to China's FDI inflows, we estimate a model in which a variable capturing the effects of China's FDI inflow is introduced to act as an explanatory variable along with determinant factors of FDI of the host economy. First, we assume that FDI in China has the same effect on FDI in all other ASEAN economies. Then we relax this assumption of common coefficient to see whether the effect of China varies across individual economies.

4.1 Panel Unit Root Test results

As part of the data analysis, the order of integration of variables is examined first in order to avoid possible spurious regression. Hence, we applied LLC and IPS test to detect the presence of unit root (H_o: series is non-stationary). Table 4.1 presents the panel data unit root test results whereby LLC and IPS test have significantly validate the level values of all series are non-stationary. Hence, to achieve stationary, we proceed to first difference form and the results of both LLC and IPS panel unit root suggest that the null hypothesis of a unit root can be rejected at 1% significance level. Thus, this concludes that there is a stationary series in the first difference.

Table 4.1 Levin, Lin and Chu (LLC) & Im, Pesaran and Shin (IPS) unit root test

	Test Statistics	
	LLC	IPS
A. In level		
Model specification: Individual intercept and individual linear trend		
FDI	1.84727 (0.9676)	-0.69085 (0.2448)
GDPP	0.68634 (0.7538)	1.71665 (0.9570)
OP	-0.19339 (0.4233)	1.09442 (0.8631)
ER	-0.67730 (0.2491)	0.50253 (0.6924)
LRISK	0.17985 (0.5714)	0.78476 (0.7837)
LP	0.77173 (0.7799)	0.79504 (0.7867)
FDIC	5.43710 (1.0000)	5.21063 (1.0000)
B. In first difference		
Model specification: Individual intercept		
D(FDI)	-7.73879*** (0.0000)	-8.71210*** (0.0000)
D(GDPP)	-3.91113*** (0.0000)	-4.07082*** (0.0000)
D(OP)	-9.60118*** (0.0000)	-8.20234*** (0.0000)
D(ER)	-6.48731*** (0.0000)	-6.01587*** (0.0000)
D(LRISK)	-9.97575*** (0.0000)	-8.90367*** (0.0000)
D(LP)	-4.57975*** (0.0000)	-5.79479*** (0.0000)
D(FDIC)	-8.68721*** (0.0000)	-7.67010*** (0.0000)

Note: ***, **,* indicate significance level at 1%, 5% and 10% respectively. Figure in parentheses are the probability of rejection. These two tests follow the asymptotic normal distribution.

4.2 Pedroni co-integration test results

From the result suggested in panel unit root test, all potential explanatory variables are non-stationary. More specifically, FDI, GDPP, OP, ER, LRISK, LP and FDIC are I (1) (integrated of order one), therefore it is appropriate to proceed on testing whether there is an existence of long run relationship among the seven variables. Panel co-integration test by Pedroni (2004) are employed to run this test. Our statistics are shown in two different ways whereby one is in no deterministic trend and another is deterministic intercept and trend.

Basically, Pedroni (2004) have two categories of co-integration test. They are panel test based on within dimension approach and between dimension approach. For the within-dimension approach, it basically consists of four statistics namely Panel V, Panel P, Panel PP and Panel ADF. On the other hand, the between dimension approach are made up of Group P, Group PP and Group ADF-statistics. From the seven statistics mentioned, we only focus on Panel PP, Panel ADF, Group PP and Group ADF statistics for our study.

Generally, all the statistics in Pedroni co-integration test are based on the null hypothesis that the variables are not co-integrated whereas for the alternative hypothesis is the otherwise. Based on the result in Table 4.2, panel data co-integration test suggest that all I (1) variables are co-integrated given all statistics are significant at 1% except for Group PP statistics in no deterministic trend is significant at 5 %. In other words, all seven variables (FDI, GDPP, OP, ER, LP, LRISK and FDIC) have long run relationship among each other in the multi-country panel.

Table 4.2 Pedroni Residual Co-integration Test

Test Statistic	
A. Model specification: No deterministic trend	
Panel co-integration statistics (within dimension)	
Panel PP-statistic	-2.738049*** (0.0031)
Panel ADF- statistic	-3.459683*** (0.0003)
Group mean panel co-integration statistic (between dimension)	
Group PP-statistic	-2.268591** (0.0116)
Group ADF- statistic	-4.474411*** (0.0000)
B. Model specification: Deterministic intercept and trend	
Panel co-integration statistics (within dimension)	
Panel PP-statistic	-5.609953*** (0.0000)
Panel ADF- statistic	-5.799080*** (0.0000)
Group mean panel co-integration statistic (between dimension)	
Group PP-statistic	-2.825274*** (0.0024)
Group ADF- statistic	-4.666281*** (0.0000)

Note: The number of lag truncations used in the calculation of the seven Pedroni statistics is 1.
***, **,* indicate significance level at 1%, 5% and 10% respectively. Figure in parentheses are the probability of rejection.

4.3 Panel Least Square

Table 4.3 presents the estimation result regressed using the panel least square method. Specification (I) employ the whole set of panel data and consist of all potential determinants of FDI except for FDI in China as an explanatory variable. Results from specification (I) confirms that our choice of determinants of FDI is appropriate since GDP per capita and country risk are significant at 5% while openness, exchange rate, country risk and labor productivity are significant at 1%. The result also suggests that locational factors account for a large part of inter-economy variation in FDI.

Table 4.3 Panel regressions, 1986-2008

Dependent variable: Annual FDI inflows

	(I)	(II) [a]	(III) b
GDPP	0.3201** (2.5673)	0.5042*** (4.1724)	1.7250*** (3.4102)
OP	68.1907***(7.4604)	60.2672*** (7.0263)	35.1321*** (5.7367)
ER	0.3421*** (4.5449)	0.1991*** (2.6473)	0.0927* (1.8637)
LRISK	-1.317.2**(-2.2909)	-892.6* (-1.6623)	-1342.3*** (-3.7748)
LP	0.7148*** (6.6865)	0.4902*** (4.5166)	0.3301*** (4.5985)
FDIC	-	0.0393*** (4.9340)	-0.0207*** (-2.7743)
FDIC PANEL	-	-	0.000006*** (12.4325)
R²	0.653	0.707	0.882
F-statistics	49.709***	52.808***	115.175***

Note: ***, **,* indicate significance level at 1%, 5% and 10% respectively. Figure in parentheses are t-statistics.
[a] FDIC = FDI inflows in China
b FDIC PANEL = interaction term between FDI inflows to six ASEAN economies and FDI in China

Specification (II) estimates inflows of FDI to six ASEAN economies, including FDI in China as an explanatory variable along with all potential determinants of FDI. The result from specification (II) shows that when FDI in China is considered, it has a positive effect on FDI in other ASEAN economies. That is, FDI in China has "crowded in" FDI to these six ASEAN countries. For comparison purpose, in specification (III), the interaction term between FDI inflows to six ASEAN economies and FDI in China indicator (FDIC*FDI_i, now known as FDIC PANEL) is included and the result shows that FDIC has changed from positive sign to negative sign whereas FDIC PANEL is positive and statistically significant at 1% with estimated coefficient of 0.000006.

Thus, this implies FDI in China may "crowd out" FDI from Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam if these countries did not achieve a minimum level of absorptive capacity. The absorptive capacities are referred to low cost of labor, large size of labor force, narrow technological gap between host and home economies, physical infrastructure and stable of financial system.

However, Kalotay (2000) argues that FDI absorption can only be successful if the recipient country and domestic firms have risen to adequate level of capacities. Hence if these countries have met a substantial absorptive capacity, FDI in China appears to complement with them. We conclude that there is a U-shaped relationship between FDI in China and FDI to six ASEAN economies interacted with absorptive capacity. The basic message from table 4.3 is that China does not appear to compete with ASEAN economies as a whole for inward FDI.

Table 4.4 presents the results of the estimation when the coefficient representing China effect is allowed to vary across economies. These results will shed some interesting light on how FDI in China affects the ASEAN countries in individual basis. Specifications (IV) to (IX) have proven that there is significant crowding in of FDI in Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. The largest coefficient is Singapore, the important producer of capital goods and electronic components used in China manufacturing. What are the relative competitive positions of these ASEAN countries which make inflows of FDI to China complementary to inflows to each economy?

Table 4.4 Panel regressions, 1986-2008

Dependent variable: Annual FDI inflows

	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)
GDPP	0.477*** (4.0467)	0.481*** (4.1695)	0.490*** (4.2795)	0.491*** (4.3506)	0.501*** (4.3186)	0.427*** (3.5726)
OP	61.922*** (7.3350)	60.802*** (7.3187)	60.790*** (7.3867)	60.448*** (7.4310)	61.637*** (7.4577)	63.963*** (7.4010)
ER	0.209*** (2.8611)	0.202*** (2.8145)	0.205*** (2.8970)	0.207*** (2.9745)	0.196*** (2.7275)	0.243*** (3.2806)
LRISK	-1372.7** (-2.6110)	-1313.7** (-2.5447)	-1078.3** (2.1006)	-978.13* (-1.9227)	-1116.4** (-2.1628)	-1481.7** (-2.7362)
LP	0.515*** (4.9056)	0.502** (4.8725)	0.501*** (4.9301)	0.499*** (4.9916)	0.499*** (4.8520)	0.574*** (5.4340)
FDIC*IND[a]	0.00003** (5.1934)					
FDIC*MAL		0.0003*** (5.7219)				
FDIC*PHI			0.0002*** (5.9676)			
FDIC*SGP				0.0005*** (6.2901)		
FDIC*THA					0.0001*** (5.7908)	
FDIC*VNM						0.00002** (4.3096)
R²	0.712	0.723	0.727	0.734	0.724	0.696
F-statistics	54.07***	56.84***	58.22***	60.12***	57.22***	50.03***

Note: ***, **,* indicate significance level at 1%, 5% and 10% respectively. Figure in parentheses are t-statistics
[a] Interaction term between FDI inflow in China and FDI inflow in Indonesia (FDIC*IND)

As discussed in the study of Eichengreen and Tong (2006) which investigate the impact of China on the exports and FDI receipts globally and in Asia in particular, FDI flows toward Asian countries seem to be stimulated rather than depressed by FDI flows

into China because these countries are producers of inputs for Chinese manufacturing. They are part of the same global supply chains and regional production networks, hence the evidence suggest that ASEAN countries should not fear on China. Besides that, Chen (2009) mentioned that Asian economies have become an increasingly important supplier of China's growing demand for raw materials, for example, Indonesia and Malaysia is major supplier for animal, vegetable fats and oil. Therefore, China's fast economic growth associated with high demand for raw materials could generate great opportunities for multinational enterprise to conduct resource-based activities in ASEAN economies.

In addition, there are two indirect pieces of evidence to support the view that inflows of FDI in the Philippines are complementary to those in China. First Lall and Manuel Albalajedo (2004) attempted on analyzing the degree of threat posed by China to Asian economies using trade data over the 1990s and found that the Philippines' export has only decreased by 5.8% in categories which China has increasing world market share. On the other hand, Abola and Manzano (2004) also suggest that Philippines and China are more complementary than competitive in the world market. For example, Psi Technologies continued its expansion in Philippines because many Filipino workers speak at least basic English and only some 85% of Psi Technologies output ends up in China for final assembly of mobile phones, computers and other appliances. Hence, the emergence of China is far from destroying the local electronics industry (Economist, 15 February 2003, as cited in Wang, Wei and Liu, 2007).

Last but not least, we would like to conclude that our result is consistent with a number of existing quantitative studies focusing explicitly on whether the rise of China crowds in or out FDI in its neighbors which tend to show that China does not rival and may complement its Asian neighbor as a whole (Chantasasawat et al. (2005); Eichengreen and Tong (2006); Zhou and Lall (2005)).

Besides presenting on our findings on the complementary relationship between China FDI inflows and FDI inflows of ASEAN countries, we would also like to explain on the reason of decreased FDI inflows to these six economies during the decade of

1990-2000. The post -1997 drastic falls in FDI to ASEAN-6 (Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam) can be largely attributed to the Asian Financial Crisis which has severely dampened investors' confidence in the region.

Table 4.5, 4.6 and 4.7 shows the FDI inflow to ASEAN-6 from United States of American (USA), Japan and European Union (EU) from 1995-2000 respectively.

Table 4.5 FDI inflows into selected ASEAN countries from USA, 1995-2000,

(US$ million)

Host Country	1995	1996	1997	1998	1999	2000
Indonesia	549.6	889.9	-646.3	-280.7	190.0	-1178.7
Malaysia	793.8	649.8	619.3	111.0	787.2	500.9
Philippines	77.4	433.2	119.9	573.7	578.9	600.3
Singapore	345.3	2023.5	2668.3	1550.8	1758.4	1499.6
Thailand	260.1	429.5	780.7	641.2	617.6	54.9
Vietnam	47.0	133.0	82.0	14.5	42.3	69.7
Total	**2073.2**	**4558.9**	**3623.9**	**2610.5**	**3974.4**	**1546.7**

Source: ASEAN Secretariat: ASEAN FDI Database (Balance of Payments Basis)
Note: Negative sign means disinvestment.

Table 4.6 FDI inflows into selected ASEAN countries from Japan, 1995-2000

(US$ million)

Host Country	1995	1996	1997	1998	1999	2000
Indonesia	1750.9	1828.6	1597.2	-153.8	-1134.8	-1717.4
Malaysia	450.1	390.8	490.5	308	241.6	41.7
Philippines	683.1	527.3	404.6	353.7	133.0	49.2
Singapore	680.8	1503.2	2505.6	1633.2	1146.5	459.2
Thailand	556.5	523.6	1348.0	1484.7	488.4	869.9
Vietnam	134.3	158.6	433.9	383.8	400.5	139.2
Total	**4255.2**	**4932.1**	**6779.8**	**4009.6**	**1275.2**	**-158**

Source: ASEAN Secretariat: ASEAN FDI Database (Balance of Payments Basis)
Note: Negative sign means disinvestment.

Table 4.7 FDI inflows into selected ASEAN countries from European Union (EU),

1995-2000 (US$ million)

Host Country	1995	1996	1997	1998	1999	2000
Indonesia	636.2	2164.8	2582.3	597.2	-1073.0	-1094.5
Malaysia	435.7	1031.9	211.5	605.9	556.0	378.3
Philippines	216.6	255.4	165.0	141.9	262.2	580.8
Singapore	3435.8	1929.9	1376.0	2393.6	4891.5	1449.9
Thailand	179.7	168.1	360.1	912.3	1368.5	509.6
Vietnam	300.7	124.7	88.2	124.6	167.5	186.2
Total	**5204.7**	**5674.8**	**4783.1**	**4775.5**	**6172.7**	**2010.3**

Source: ASEAN Secretariat: ASEAN FDI Database (Balance of Payments Basis)
Note: Negative sign means disinvestment.

From table 4.5, 4.6 and 4.7, we noticed that total FDI to ASEAN-6 from three main sources of countries has plunged in 1998. For instance, FDI from USA to ASEAN-6 shrank from US$ 3623.9 million in 1997 to just US$2610.5 million in 1998 while FDI

from Japan decreased from US$ 6779.8 million to US$ 4009.6 in the same period. FDI from EU has dropped slightly making a difference of -US$ 7.6 million between 1997 and 1998. By 2000, there is even sharper decline of FDI from USA, Japan and EU. The drop signaled many foreign investors lowered their investment in ASEAN-6. However, this decline does not imply that these foreign investors have left ASEAN-6 for China. On the contrary, Japan FDI to China reflected an up-down trend from 1995-2000 while USA FDI to China is not registering a consistent growth in the same period (refer to Figure 4.1).

Figure 4.1 FDI Flows to China by Japan and USA from 1995-2000
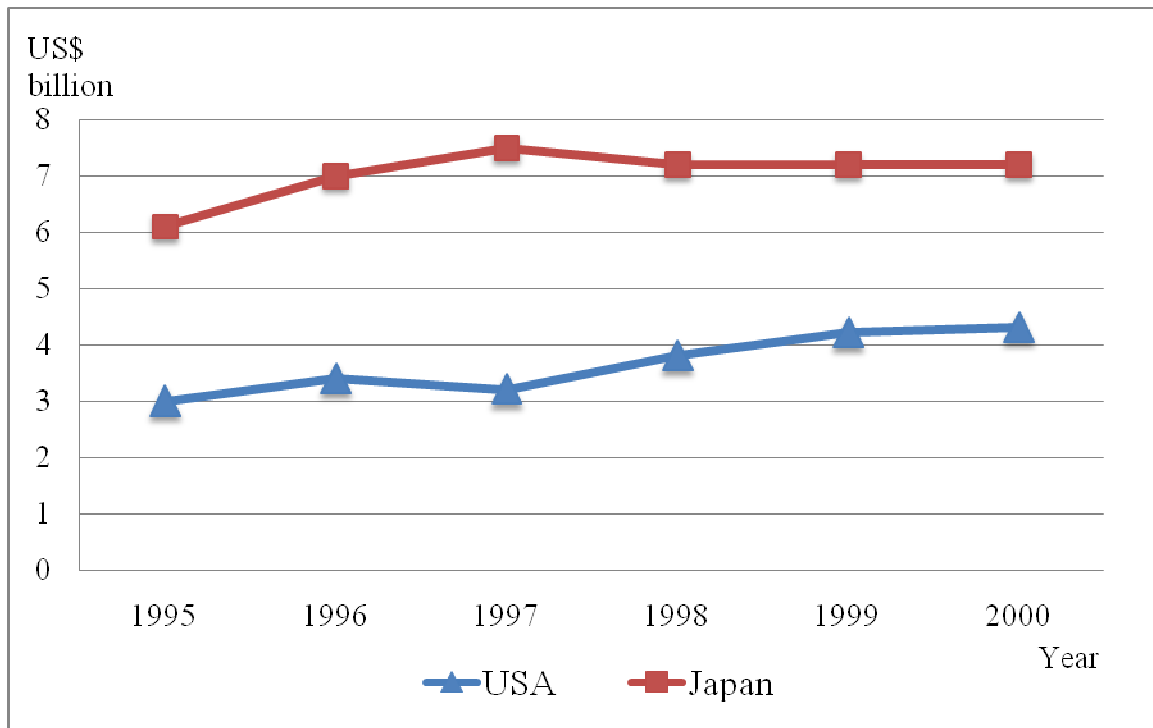
Source: National Bureau of Statistics of China, China Statistical Yearbook, 2003

Arguably, if investors did not have an alternative investment location such as China, the reduction in FDI to these six ASEAN economies might not have been so drastic. The competition from China for FDI are noticeable when the Chinese

government has made great effort to shape up its investment climate, improving infrastructure and upgrading workers' skills but because the FDI reduction in the six countries has been a sudden change, hence it does not appear to be very closely related to China's increasing attractiveness as FDI destination, which has been more of gradual process. Even in the near future, China's competitiveness are getting greater, but if ASEAN countries are not improving politically, economically and socially, there can be no guarantee that investments will flow back to ASEAN as before.

CHAPTER 5: CONCLUSION AND IMPLICATIONS

5.0 Introduction

This section focused on evaluation of some major findings and policy implications to boost the FDI inflow into ASEAN economies. In addition, we would also like to highlight some of the limitations occurred in this research paper. Nevertheless, we have provided some recommendations for future research.

5.1 Summary and Conclusion

The current research builds on existing studies to analyze how FDI in China has affected those ASEAN countries namely Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam. In our study, we carried out panel unit root tests and panel co-integration test to avoid a possible spurious regression problem when time series data are used. To address this issue, we applied LLC and IPS test as well as Pedroni co-integration test. As a result, it is found that there is a stationary series in the first indifference meanwhile, the outcome obtained from Pedroni co-integration test has shown that all variables in our model are cointegrated and having long run relationship between each other in the multi country panel setting.

Apart from this, we have also tested the type of relationship exist between FDI China and FDI of these six ASEAN economies as a whole and on individual basis. Beforehand, using panel least square method, we have proven that our selection of independent variables (GDP per capita, openness, exchange rate, country risk, labor productivity) are all important determinants of FDI as the result shown that the estimated coefficients are positively significant at either 1% or 5% significance level. Subsequently, we have included FDI in China as a regressor into our model to determine whether China has been diverting away FDI but our analysis suggests that China does not seem to have

crowded out FDI inflows in these countries. On the contrary, China is either not competing for FDI or is actually stimulating complementary investments into ASEAN countries. We also found similar result when examining the China effect on the six countries on an individual basis. China appears to have significant FDI creation effect on Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.

We have extended the model by adding an interaction term of between FDI inflows to six ASEAN economies and FDI in China (FDIC*FDI_i). With the presence of this interaction term, we conclude that FDI in China may "crowd out" FDI from Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam given that these countries did not achieve a minimum level of absorptive capacity. However, once these countries have met a substantial absorptive capacity, FDI in China appears to complement with them. Therefore, a U-shaped relationship exists between FDI in China and FDI to six ASEAN economies.

Nevertheless, our analysis suggests that the fall of FDI inflows to these six ASEAN economies is not because of China but due to the Asian Financial Crisis which happened in 1997 to 1998 and the inflows remained subdued because the increased in uncertainty has created an unfavorable investment climate. In other words, the keenness to increase their capacity of investing abroad was restricted by the financial crisis. One of the examples on the aftermath of Asian Financial Crisis 1997 was the crash local stock market and currency market. According to Bacha (2004), a speculative attack on the Thai baht in July 1997 has affected its neighboring countries within the Asia region. Within a short period between July and October 1997, the currency of Thai Baht, Malaysia Ringgit, Philippine Peso and Indonesia Rupiah depreciate against United States dollar and it has eventually led to domestic banking crisis and not forgetting both economic and political crises. Considering the impacts, the downturn has discouraged new foreign investment. All in all, the growth in FDI flows to China has not been at the expense of ASEAN.

Despite the fact that FDI reduced due to Asian Financial Crisis factor, it does not imply that there is no competition between China and ASEAN countries for FDI in all

activities or complementarity will continue to grow. The substitution effect may grow over time as Chinese industrial capabilities (skills, technology levels, supplier base) improve and its large market size allows it to reap scale and scope economies out of its neighbors. Following the argument, Wang, Wei and Liu (2007) mentioned China's main advantage lie in labor-intensive and low-tech products but they have been rapidly growing into medium and high-tech industries. Thus, China may have become an alternative location for FDI especially for Indonesia and Malaysia in the labor intensive industries.

5.2 Policy Implications

Since China became the largest recipient of FDI in Asia, unquestionably ASEAN would have to contend with mounting competition from China for foreign investment. Most investors go to China either to tap the potentially enormous market or to take advantage of huge labor cost saving. However, other FDI recipient, especially for ASEAN countries need not to be overwhelmed by the sheer amount of FDI that China is hosting because firstly, as stated by Wu, Puah and Poa (2002) in article of Economic Survey of Singapore, FDI flows to China are not as large as official figures show because a significant percentage of it consists of round tripping of funds that originate from mainland Chinese commercial entities.

Moreover, we would like to highlight that FDI is not a zero-sum game, hence investments to ASEAN and China can grow concurrently. Rather than considering China as a threat, ASEAN could ride on China as an engine of growth. The main policy concern is about building capabilities to make ASEAN more attractive as a FDI destination. Thus there is a need to reinforce trade linkages both within ASEAN and among its trading partners. Apparently, ASEAN and China have signed a landmark deal to form ASEAN-China Free Trade Area (ACFTA) which has lead to reduction and elimination of tariffs by 2010 for China and Indonesia, Malaysia, Philippines, Singapore and Thailand. By

2015, similar action will take place in Vietnam. These would not only boost ASEAN's and China GDP but also cause an increase in export activities between ASEAN and China (Wu, Puah and Poa, 2002). Such policy in forming FTAs between ASEAN and other countries should be practiced as it helps to offset the competitive pressure from China as well as creating investment opportunities for third parties to invest in ASEAN.

In addition, we signify that labor productivity is one factor which as an important variable to attract FDI inflow. To move towards strengthening the existing FDI base into ASEAN is to add more value and to stress the qualitative rather than quantitative aspects of human capital. Yussof and Ismail (2002) mentioned that educational and training facilities are the keys toward producing a well-educated and skilled work force tailored to meet the current and future needs of the economy. Side by side, research and development (R&D) activities are crucial of enhancing creativity and innovative capabilities among the workforce which may lead to increase in long term productivity, hence it should be given attention in order to increase competitiveness of ASEAN economies.

Apart from that, country risk and FDI inflow has negative and significant relationship. According to Mengistu and Adhikary (2011), good governance efforts are important to speed up FDI inflow to the host economy. In tune with this, a relatively well developed infrastructure, stable and predictable macroeconomic policies, higher GDP growth rates over the years and favorable trade policy are playing important role to accelerate FDI inflows. Hence, policy makers should by now, are aware and give attention in enhancing good governance environments through improving law and order, upgrading the quality of public and civil services, building effective impartial and transparent legal system and controlling institutional corruptions as these factors can facilitate in luring inward FDI.

As a summary for this section, there are two important policy implications can be derived from the current study. Firstly, is locational factors are important determinants of

FDI inflows, thus ASEAN countries and China need to pay constant effort to these factors to increase their attractiveness as FDI destinations.

Secondly, the development of China can create opportunities for ASEAN countries as a whole. As Ianchovichina and Walmsley (2005) argued, open door policy in China for foreign investments has facilitated transnational corporations' rationalization of their assembly process within East Asia and China's neighbors may receive FDI flows if their economies are complementary with those in China. Similarly, China's rapid economic growth may stimulate complementary investment such that China's swift industrialization progress developed a huge appetite for minerals and raw materials. As a consequence of feeding this appetite, it spurred inflows of FDI into ASEAN countries with resource endowments (Ravenhill, 2006).

However, looking onto China effect on FDI in six ASEAN countries on individual basis, our findings are contrary to the claim by Wang, Wei and Liu (2007) which found that there is significant FDI diversion effect on Indonesia, Malaysia and Thailand. We would say these relationships evolve as individual economies develop. In this dynamic process, a substituting relationship between two countries may change to be complementary status the next day.

5.3 Limitations and recommendations

After conducting the empirical work, there are some limitations to be proposed. The study only managed to include six out of ten ASEAN countries. Brunei, Cambodia Myanmar and Lao PDR are excluded due to unavailability of data. Hence, the findings in the study may not be generalized to represent for ASEAN region as a whole. Besides that, we are using the annual data from the year 1986 to 2008 for the six selected economies which only sum up to 22 observations. In other words, our sample size is considered small whereas larger sample size is always preferred as it will increase the accuracy of statistical analysis. Apart from that, Pedroni (2004) mentioned tests for the null of no co-

integration in heterogeneous panels have been restricted to simple bivariate examples, due to the lack of critical values obtainable for more complex multivariate regressions.

Hence, we would like to suggest for future researcher to use other advanced model to obtain better results. Finally, since our result has shown that FDI in China appears to complement with FDI for these six ASEAN economies, then we suggest that more research should be conducted for other regions and the rest of the world to examine the impact of China as the largest recipient of FDI towards other countries.

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Appendix

Variable	Measurement and data sources
FDI	Foreign direct investments are the net inflows of investment (new investment inflows less disinvestment) in the host economy from foreign investors. Data are in current U.S. dollars. Source: World Development indicator, World Bank
GDPP	GDP per capita is gross domestic product divided by midyear population. It measure market potential. Data are in current U.S. dollars Source: World Development indicator, World Bank
OP	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product. Source: World Development indicator, World Bank
ER	Exchange Rate of the host economy against US$ Source: Penn World Table
RISK	Country risk. It is defined as 12- annual country risk ratings. The rating awards the highest value (12) to the lowest risk and the lowest value (0) to the highest risk and offers a mean of evaluating the political and institutional framework of the countries A low rating, create an unfavorable business climate which erode confidence in the local investment. Source: International Country Risk Guide
LP	Labor productivity or GDP per person employed is gross domestic product (GDP) divided by total employment in the economy. Source: World Development indicator, World Bank