THE ROLE OF FOREIGN DIRECT INVESTMENT ON TRADE AND TECHNOLOGY INNOVATION IN SOUTHEAST ASIA WITH PARTICULAR REFERENCE TO TIMOR-LESTE

By

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ABBREVIATIONS

ADB	Asian Development Bank
ADF test	Augmented Dickey Fuller test
AIC	Akaike Information Criteria
AFTA	ASEAN Free Trade Agreement
ASEAN	Association of Southeast Asian Nations
BPS	Central Statistical Agency (Badan Pusat Statistic)
BRICS	Brazil, Russia, India, China, and South Africa
EU	European Union
EP	Export Promotion
EXP	Export
FAO	Food and Agriculture Organisation
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
ICT	Information, Communication and Technology
ILO	International Labour Organisation
IMF	International Monetary Fund
IMP	Import
IS	Import Substitution
IPS test	Im, Pesaran and Smith test
Lao PDR	Lao People's Democratic Republic
MB	Million Barrel
MoF	Ministry of Finance
MTCI	Ministry of Tourism, Commerce and Industry
MYR	Malaysian Ringgit
NAFTA	North America Free Trade Agreement
NDP	National Development Plan

OF	Other Factors
OLI	Ownership, Location and Internationalisation
RDTL	Republica Democratica de Timor-Leste
R&D	Research and Development
SBREC	Social and Behavioural Research Ethics Committee
SEA	Southeast Asia
S$	Singapore Dollar
SDP	Strategic Development Plan
TB	Trade Balance
TNR	Total Natural Resource
TSE	Transport Service as percentage of Service Export
TSI	Transport Service as percentage of Service Import
UNCTAD	United Nations Conference on Trade and Development
USAID	United States Agency for International Development
USD	United States Dollar
USD m	United States Dollar in Million
USD b	United States Dollar in Billion
USPTO	United State Patent and Trademark Office
VAR	Vector Auto Regression
WDI	World Development Indicator
WITS	World Integrated Trade Solution
WTO	World Trade Organisation
WW II	World War II

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ABSTRACT

Southeast Asia has been receiving increasing amounts of Foreign Direct Investment (FDI) in recent decades. Its share of total FDI to Asia rose from only 8% in 1980 to 30% in 2016. Timor-Leste, the newest country in the Southeast Asian region has experienced a similar positive growth in its FDI, with a 19-fold increase between 2003 and 2016. This thesis examines the role of FDI on trade and technology innovation in Southeast Asia with particular reference to Timor-Leste. This research addresses four main objectives: (i) to identify the determinants of FDI; (ii) to examine the role of FDI in trade, (iii) to investigate the role of FDI in technology innovation and (iv) to recommend appropriate policies to enhance the volume of FDI to Timor-Leste.

This thesis is based mainly on an analysis of available secondary data for the period 1980-2016 for all Southeast Asian countries. However, in the case of Timor-Leste, the required data are available only for 14 years from 2003 to 2016. The data for Timor-Leste have been augmented by qualitative information gathered through semi structured interviews of 15 participants comprising government officials and company executives. The secondary data were analysed by using the Granger causality test in EViews software and the qualitative data were analysed by thematic analysis in NVivo software. The results of secondary data analysis show that trade through both exports and imports are one of the main determinants of FDI in Southeast Asian countries. In the case of Timor-Leste, unlike the other countries of the region, the majority of foreign companies are reported to have invested in Timor-Leste due to the country's tax reform and political stability. FDI has played an important role in trade and technology innovation in the majority of Southeast Asian countries. For Timor-Leste, FDI has been more influential in the country's imports compared to

its exports and it has had no significant influence on Timor-Leste's technology innovation. The results of interviews are consistent with the results of secondary data analysis for Timor-Leste.

This thesis presents some important lessons that Timor-Leste can learn from the experience of other Southeast Asian countries. These lessons include: improving the business environment, investing in the non-oil sector, adopting import substitution and boosting export promotion. This thesis further recommends that the Government of Timor-Leste should reinforce the existing initiatives to promote local products in addition to the development of human resources.

DECLARATION

I certify that this thesis does not incorporate without acknowledgment any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

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PAPER ARISING FROM THIS RESEARCH

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CHAPTER 1: INTRODUCTION

1.1 General Background

The role of Foreign Direct Investment (FDI) has been considered to be one of the most powerful instruments that can contribute to economic development. Some of the direct benefits from FDI include introduction of new technology, increased local capacity and improved economic growth (Colen et al., 2009). In addition, FDI also improves trade (Anwar and Nguyen, 2011) and promotes technology innovation (Gorodnichenko et al., 2015).

Considering these benefits, many countries compete to attract more investments from foreign companies. This has led to some dramatic increases in stock of incoming FDI to most countries including to developed and developing economies. For example, developed economies in Asia (Japan and Israel) received 46 times and Europe (26 countries) received 36 times higher FDI in 2016 compared with the early 1980s. The developed economies in America (United States, Canada and Bermuda) had a four times increase during the period 1997 to 2016. The developing economies[1], in Asia also experienced a growth of 30 times, America 49 times and Africa 20 times growth from 1980 to 2016 (UNCTAD, 2017).

The small number of FDIs in the 1980s was mainly caused by a fear that existed in many developing economies that FDI was a continuation of the colonial dictatorship and hence many countries acted cautiously towards foreign investors particularly

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[1] *The three developing economies: Asia covers four regions (Southeast Asia, East Asia, South Asia and West Asia), America includes the Caribbean, Central America and South America while Africa covers five regions such as eastern, middle, northern, southern and western parts of Africa.*

after their experience of wars (Brooks et al., 2004). However, this mindset has changed with the realisation of many benefits from FDI into different countries' economies (Te Velde, 2006).

Among the three developing economies, as shown in Figure 1.1, Asia became the highest recipient of FDI in most years. Even since 1980, Asia has received 72% of FDI from the total that came into these three developing economies. America and Africa each had only 14%. In most years, Asia had more than 60% of FDI. In 2016, Asia had 69% while America had only 22% and Africa just 9% (UNCTAD, 2017).

Figure 1.1: FDI into to Developing Economies, 1980-2016 (USD Million)
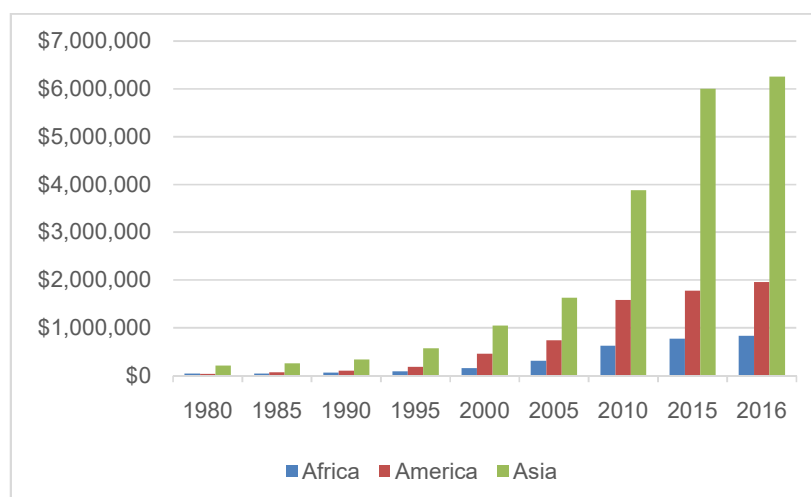
Source: UNCTAD (2017)

Asia, as the region that received most FDI into developing economies, was led by the countries in East Asia who were economically stronger enough to attract more FDI. As shown in Figure 1.2, East Asia had the most FDI in most of the years. In 1980, East Asia received 88% while Southeast Asia had 8% and both South Asia and West Asia had 2% each. Southeast Asia, as the second highest recipient, had more FDI particularly after 1990 compared with South Asia and West Asia. In 2016, Southeast Asia had 30% out of the total FDI into the Asia region while West Asia only had 11% and South Asia 7%. East Asia was way beyond this with 52% in the same year (UNCTAD, 2017).

Figure 1.2: FDI into Asia Regions, 1980-2016 (USD Million)
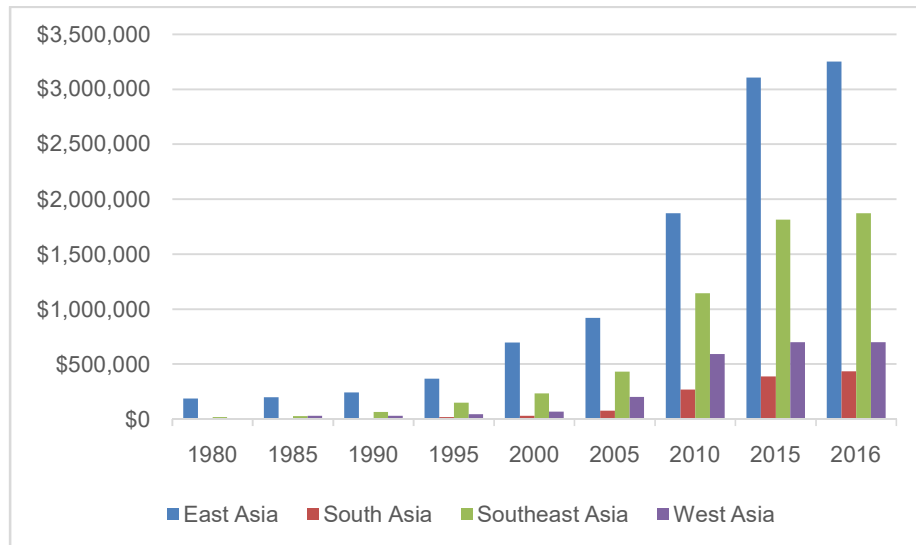
Source: UNCTAD (2017)

The increase of FDI into Southeast Asia was strongly supported by major reforms initiated in this region. This includes the reduction in tax rate, introducing Laws to simplify procedures and access to land for foreign investment activities. A number of bilateral agreements were arranged to have free trade agreements between countries (ASEAN, 2012). In addition, major transformation on technology and an improved business environment (Sjoholm, 2013) are another two important contributing factors.

Among the eleven countries in Southeast Asia, Singapore was the country that received the highest share of total stock of FDI. Over the period 1980 to 2016, Singapore received more than 50% of FDI into Southeast Asia (UNCTAD, 2017).As a country that is most advanced and as the regional hub (Diaconu, 2014), Singapore has the advantage of receiving more FDI than other countries. Countries such as Indonesia, Thailand and Malaysia were the next receiving FDI between 10% and 15%. Indonesia and Thailand each had 12% while Malaysia had 10% in the same period of time (UNCTAD, 2017).

Other countries mostly had less than 10%. Vietnam had 5% followed by the Philippines3% and Myanmar 1%. Brunei and Cambodia only received 0.5% in addition to Lao PDR with 0.2% of FDI into Southeast Asia over the period 1980 to 2016.Data on FDI into Timor-Leste was only available from 2003 until 2016. The total of FDI into this country remains very low compared with other countries. It was only 7% of the total of FDI into Lao PDR in the same period of time (UNCTAD, 2017). More detail on FDI into Southeast Asian countries is discussed further in Chapter 2 of this thesis.

1.2 Overview of Research

This thesis examines the role of FDI on trade and technology innovation in Southeast Asia with particular reference to Timor-Leste. By analysing secondary data for 37 years, covering 1980 to 2016, and this research aims to identify determinants of FDI in the eleven countries (Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Singapore, Philippines, Timor-Leste, Thailand and Vietnam) in Southeast Asia. The research also seeks to examine the role of FDI on trade and on technology innovation in addition to providing policy recommendations to Timor-Leste. Since secondary data for Timor-Leste is limited, available only from 2003 to 2016, fieldwork was conducted to interview 15 participants representing managers of some companies (both local and foreign) and a few government officials in Timor-Leste to complement the secondary data analysis.The secondary data were analysed using the Granger Causality test in EViews software and the interview results were analysed by thematic analysis in NVivo software.

1.2.1 Research Questions and Objectives

The main question that this research seeks to respond to is what is the role of FDI on trade and technology innovation in Southeast Asian countries? In order to find the answer to this question, this research has four main objectives:

1. To find out determinants of FDI with reference to in-country factors that contributed to Southeast Asia becoming the main destination of FDI.

2. To examine the role of FDI on trade with particular focus on Southeast Asian countries' progress of export and import.

3. To investigate the role of FDI on technology innovation by looking at the number of patent grants to countries in Southeast Asia.

4. To recommend appropriate policies for Timor-Leste based on Timor-Leste's current policies and also Southeast Asia's experience.

1.2.2 Contribution of Research

The results of the research presented in this thesis contributed to the current knowledge in four different ways. Firstly, it shows that both export and import are factors that attract FDI into Southeast Asian countries not only as a group but also as individual countries. There have been many studies on determinants of FDI (as will be discussed in Chapter 3 of this thesis), however, there are still limited studies on trade particularly in Southeast Asia. The existing literature that has been reviewed to this point includes Cuyvers et al. (2011) in Cambodia, Nasir (2016) and Ang (2008) in Malaysia in addition to another study by Demirhan and Masca (2008) conducted in 38 countries, which includes three Southeast Asian countries. The result of the analysis on Timor-Leste is believed to be the first ever study on the determinant of FDI in this newest nation.

Secondly, this thesis also found that FDI has played an important role in the trade of Southeast Asian countries. The analysis in this thesis differs from previous studies such as by De Mello Jr and Fukasaku (2000), Shu and Khan (2003), Aizenman and Noy (2006) as this thesis not only examined Southeast Asia as a group but also analysed each individual country. In addition, the result of the analysis on Timor-Leste is believed to be the first ever study on the impact of FDI on trade in this newest nation. There are limited numbers of assessment reports that have been

produced by different international organisations related to the situation of investment in Timor-Leste. A diagnostic study by the World Bank (2010)identified a number of government reforms in addition to challenges for investing in the country. Another assessment by the ADB (2015)outlined the need for the private sector to support Timor-Leste's economy and they provided recommendations to improve the non-oil sector.

Thirdly, most of the previous studies on the role of FDI in technology innovation, including those from Cheung (2010), Fu (2008), Xue (2008), Jingqiang (2010) and Chen (2007),that have been reviewed in this thesis are predominantly related to China. The only studies that involve Southeast Asian countries are from Erdal and Göçer (2015) and Loukil (2016). This thesis expanded the previous literature by examining the role of FDI on technology innovation in six Southeast Asian countries, including Timor-Leste, which lacks scientific research in this area of research in the past.

Finally, this thesis also provided a recommendation intended to support Timor-Leste's government in the strengthening of current policies (as reviewed in Chapter 8) in order to attract more FDI. As a country that has been highly dependent on revenue from oil and gas, it is expected that Timor-Leste can learn from some of the Southeast Asian countries' experience.

1.3 Thesis Structure

This thesis is divided into nine different chapters. Chapter 1 is the introduction, which provides a general background on the role of FDI in the world and also in Southeast Asia. In addition, it also presents an overview of this research, research questions, objectives and contribution of this research to the current knowledge.

Chapter 2 presents the background on Southeast Asian countries, including geographical location, demographic and economic conditions. It also discusses progress on FDI, both inward and outward for Southeast Asian countries, not only as a group but also as individual countries.

Chapter 3 reviews literature related to this thesis area of research. The chapter is divided according to the objectives of this research: determinants of FDI, FDI on trade, FDI on technology innovation and literature in the context of Timor-Leste. In addition, it also presents concepts and definitions of FDI, trade and technology innovation follow by discussion on paradigm theory of OLI (Ownership, Location and Internalisation) for FDI.

Chapter 4 describes the methodology for this thesis. There is a discussion on a quantitative method for analysis of Southeast Asian countries. A combination of quantitative and qualitative methods is used for Timor-Leste due to the limited secondary data that is available for Timor-Leste. It also demonstrates how to analyse the secondary data using EViews software and NVivo software for the interviews from Timor-Leste.

The next three chapters provide results of the analysis for this thesis. It begins with chapter 5 on research objective 1, determinants of FDI. Chapter 6considers research objective 2: FDI and trade while chapter 7 discusses research objective 3: FDI and technology Innovation.

Chapter 8 identifies lessons learned for Timor-Leste, responding to the research objective number 4. This includes a review of the current policies and lessons that Timor-Leste can learn from Southeast Asian countries' experiences.

The last chapter is the conclusion and summary. It provides a recapitulation of all chapters that are presented in the thesis. It presents major findings and areas for future research based on the limitations from this thesis. Finally, this thesis provides theoretical implications and policy implications.

This chapter, Chapter 1 has presented general background on foreign direct investment into different regions in the world as well as in Southeast Asia. It also identifies the objectives and the contributions of this research. The next chapter provides a general overview about Southeast Asia and the progress with FDI.

CHAPTER 2: GENERAL OVERVIEW ABOUT SOUTHEAST ASIA AND THE PROGRESS WITH FDI

2.1 Introduction

Foreign direct investment in Southeast Asian countries has increased significantly over the last few decades. Over the period 1980 to 2016, there was a growth of 107 times in stock of inward FDI, growing from only USD17m to USD1.8b. Besides attracting more FDI, Southeast Asia had invested overseas. As with the inward FDI, Southeast Asian countries outward FDI has increased from just USD9.5m in 1990 to USD1b in 2016 (UNCTAD, 2017). Inward FDI refers to all investments made by a foreign company in Southeast Asian countries. Outward FDI are investments by Southeast Asian countries' local firms in other countries (UNCTAD, 2007).

This chapter aims to provide a general overview about Southeast Asia and the progress on FDI. Therefore, this chapter is divided into two different sections. The first section presents the geographical location, demographic and economic conditions of countries in Southeast Asia. The second section discusses progress on FDI, with details on inward and outward FDI: it covers Southeast Asia not only as a group but also in more detail for each of the eleven countries individually.

2.2 General Overview of Southeast Asia

2.2.1. Geographical Location

As part of the Asian region, Southeast Asia is geographically located between four countries. China in the north, India in the west, Papua New Guinea in the east and

Australia in the south (Forbes, 2003). The region consists of eleven countries[2], some have shared land borders while others have sea boundaries. As shown in Figure 2.1, Lao PDR, Myanmar, Thailand, Cambodia, Vietnam and the western part of Malaysia are countries on the same mainland. Other countries such as Singapore, Brunei, the Philippines, Indonesia, the eastern part of Malaysia and Timor-Leste have maritime boundaries (United Nations, 2012).

Figure 2.1: Map of Southeast Asia

Source: United Nations (2012)

The land border between most Southeast Asian countries was established by colonial powers in the 19th and 20th centuries. For example, the French determined their area of occupation in parts of Indo- China. They colonised Lao PDR, Cambodia and Vietnam. The United States vied with Spain to control the Philippines while the Dutch and Portugese colonised Indonesia. These borders continued even after World War II in 1945, with the independence of countries such as Indonesia, Brunei, Malaysia and Singapore. There were however some border disputes, between Cambodia and Thailand for example, but they finally came up with an agreed solution(Forbes, 2003).

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[2]*Southeast Asia was initially only ten countries, Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam. It has increased to eleven countries with the inclusion of Timor-Leste after their independence in 2002.*

Being in the same geographical location, the majority of countries in this region formed ASEAN (Association of Southeast Asian Nations). This association was established with the aim of strengthening cooperation between countries in a number of important areas, include maintaining security, improving economy and establishing cooperation in trade activities. ASEAN was initiated in 1967 by five countries: Singapore, the Philippines, Indonesia, Thailand and Malaysia. The addition of another five countries, increased this association to ten countries at the present time(ASEAN, 2016).Timor-Leste is the only country in the region that is not part of this group, although all efforts are being taken to seek the possibility to join ASEAN in the near future.

2.2.2. Demographic Condition

Southeast Asia has experienced a massive growth of population in the last few years. As indicated in Table 2.1, the total population has increased from only 355m in 1980 to 636m in 2016, an increase of 79% over37 years. Among the eleven countries, Indonesia has the largest population, with around 41% of the total population of Southeast Asia in both 1980 and 2016. Vietnam, the Philippines and Thailand have the next highest population with around 10% to 15%. Other countries' populations were under 10% while Brunei and Timor-Leste have the lowest proportion of population with only 0.05% and 0.2% from the total Southeast Asian population in both 1980 and 2016 (The World Bank, 2017a).

In relation to total increase between 1980 and 2016, Table 2.1 demonstrates the massive increase in population in each of the eleven countries. The majority of countries have more than doubled their population between these 37 years. Even Brunei and Timor-Leste, who have the smallest number of population, had a percentage increase (1980-2016) in population of over 100%: Brunei with121% and Timor-Leste 140%. The only four countries with a percentage increase less than

80% are Indonesia with 77%, Vietnam 73%, Myanmar 59% and Thailand 45%, however, the numeric increases in all these countries are very high.

Table 2.1: Total Population (in Million)

Countries	1980	% of total in 1980*	2016	% of total in 2016	Total increase between 1980-2016**	% increase in 1980-2016***
Brunei	0.19	0.05	0.42	0.07	0.23	121
Cambodia	6.7	1.9	15.7	2.5	9	134
Indonesia	147.4	41.4	261.1	41	113.7	77
Lao PDR	3.2	0.9	6.7	1.1	3.5	109
Malaysia	13.8	3.9	31.1	4.9	17.3	125
Myanmar	33.3	9.4	52.8	8.3	19.5	59
Philippines	47.3	13.3	100.3	15.8	53	112
Singapore	2.4	0.7	5.6	0.9	3.2	133
Timor-Leste	0.5	0.1	1.2	0.2	0.7	140
Thailand	47.3	13.3	68.8	10.8	21.5	45
Vietnam	53.7	15.1	92.7	14.6	39	73
TOTAL	355.79	100	636.42	100	280.63	79

Source: The World Bank (2017a)
Notes:
*% of total in 1980 is measured as total population in each country divided by total population in Southeast Asia in the same year (1980) and times 100, and this applies also for 2016.
**Total increase between 1980-2016is measured as a subtraction of 1980 data from 2016.
***% increasefrom1980-2016is measured as total increase between 1980-2016 divided by total in 1980 and times 100.

The increase of population in most Southeast Asian countries was caused by a number of factors. The decline in death rate is one of the main factors. Cambodia, for example, formerly had a higher death rate but this has now changed. In 2015, Cambodia's crude death rate (per 1,000 people) was only 6 people while it was 43 people in 1980. Timor-Leste's death rate was 25, which dropped to only 5, Lao PDR from 16 to 6, Myanmar from 12 to 8 and Indonesia from 9 to 7 people in the same period of time (The World Bank, 2017a). The decrease in death rate indicates that

more people have better health and live longer, thus increasing the population.

Another important factor is the decline in birth rate. For example, the crude birth rate (per 1,000 people) in Indonesia declined from 33 in 1980 to 19 in 2015. Similarly, in the Philippines, a drop from 36 to 23, Thailand more than 26 to 10 while Vietnam went from 32 to 16 in the same period of time. Other countries such as Myanmar, Brunei and Lao PDR also had high birth rates in 1980 but these declined. Myanmar35 decreased to 18, while Brunei 31 to 16 and Lao PDR 42 to 24 from 1980 to 2015(The World Bank, 2017a). The decrease in birth rate signifies that women in Southeast Asia have fewer children but because there are more people having children, the population continues to rise.

Migration (including external and internal) is another important factor that contributes to the increase of population in Southeast Asia. There have been many people from other countries moving either temporarily or permanently into Southeast Asia for different purposes including for work and education. In addition there is the movement of the population within a country, particularly from rural to urban areas in most of the cities in Southeast Asian countries. For example, Indonesia's population in urban areas increased to 39% in 2002, from 31% in 1990. Malaysia had 50% and went up to 57%while Vietnam's urban population wentfrom20% to 24% in the period 1990 to 2002 (Hugo, 2003). This has led to the increase in population density which in Indonesia is 140 people per square kilometre of land area, Malaysia has 91 people and Vietnam has 292 people (The World Bank, 2017a).

2.2.3. Economic Condition

The economic condition of countries in Southeast Asia is diverse. Table 2.2 clearly demonstrate these differences. In terms of GDP (current prices), Indonesia has USD932b followed by Thailand with USD406band the Philippines with USD304b.Malaysia and Singapore are both at USD296b while Vietnam is

atUSD201b.the GDP of other countries is below USD67b. Among the eleven countries, Timor-Leste has the lowest GDP with only USD2.4b. This shows the huge diversity in economic conditions in particular with GDP (IMF, 2017).

Numerous different economic sectors contribute to Southeast Asian countries' GDP. For example, Brunei and Timor-Leste's GDP is based mostly on oil and gas. In 2010, 80% of Timor-Leste's GDP came from the sector with only 20% from the non-oil sector (MoF, 2012). For Brunei, GDP was 57% derived from oil and gas compared with 39% from services, 1% from agriculture and the remaining 3% from other sectors as in 2015/2016 (Department of Economic Planning and Development, 2017). In 2013 in Singapore, 66% of GDP came from the service industries (including accommodation, transportation and finance) while 22% was from goods industries (including manufacturing, construction and utilities), 6% from tax on products and 4% from ownership of dwellings(Department of Statistics Singapore, 2014). These are only some of the examples to show the different sectors which contribute to GDP in Southeast Asian countries.

In relation to trade balance, as shown in Table 2.2, Singapore is more advanced with their trade activities compared with other countries. Malaysia was the second country which also performs well followed by Thailand. Besides these three countries, Brunei, Indonesia and Vietnam were the only other countries that have a positive trade balance in 2016. The other five countries all experienced negative balances. Among these five countries, the negative trade balance ranges from the smallest, USD0.7b for Timor-Leste, to the highest, USD-29.9b, for the Philippines. The negative trade balances are due to different factors, which are discussed further in Chapter 6 on FDI and trade.

Table 2.2: Economic Indicators (FY 2016)

Indicators	GDP	Trade Balance*	Unemployment total	Inflation
Brunei	11.1	1.8	2	-0.7
Cambodia	19.3	-2.5	0.3	3
Indonesia	932.4	8.8	5.6	3.5
Lao PDR	13.7	-1.7	1.5	1.5
Malaysia	296.3	21	3.3	2.1
Myanmar	66.3	-5.6	0.8	10.8 (2015)
Philippines	304.6	-29.9	5.9	1.8
Singapore	296.9	46.8	1.8	-0.5
Thailand	406.9	20.6	0.6	0.2
Timor-Leste	2.4	-0.7	4	-1.2
Vietnam	201.3	2.5	2.2	0.9 (2015)

Source: Data for GDP (on current prices in Billion USD Dollar) from the International Monetary Fund, World Economic Outlook Database (2017).*Trade Balance is calculated by subtracting data on exports to imports and the data is from UNCTAD (2017). Unemployment is the total (% of total labour force, ILO estimate) and Inflation (consumer prices in annual percentage) from World Development Indicators, World Bank (2017).

Employment opportunities in Southeast Asian countries are also very different. The proportion of people with no formal job remains high in some countries compared with others. For example, the unemployment rate in the Philippines is high with 5.9% of the total labour force (Table 2.2). Indonesia also has a high proportion of people with no jobs, around 5.6%: Timor-Leste has 4%, Malaysia 3.3% while Vietnam 2.2% and Brunei with 3%. Thailand and Cambodia are the two countries with the lowest formal unemployment rate with only 0.6% and 0.3% for each country (The World Bank, 2017a).

The last part of economic conditions discussed here is Inflation: this is generally defined as an increase of price in the value of goods and services in the market and reflects increases in spending, which makes the cost of living expensive (Sayek, 2009). Myanmar has the highest rate of inflation with 10.8%, followed by Indonesia with 3.5%, Malaysia 2.1%, the Philippines 1.8% and Lao PDR 1.5% (Table 2.2). Brunei, Singapore and Timor-Leste are the only countries in Southeast Asia that have had a decrease in price (The World Bank, 2017a). The inflation rate in Southeast Asia varies from only -0.5% up to 10.8%.

Southeast Asian countries' economic conditions reveal the diversity of countries in this region in terms of their GDP, trade balance, employment opportunities and also price in the market. One of the main differences is that not all countries which have a high GDP have a positive balance of trade. For example, the Philippines, are in the top five countries with high GDP in Southeast Asia, however, they have negative trade balances. Another dissimilarity is that not all countries with small GDP have high unemployment rates. Cambodia, for example, has the lowest GDP but they have a low formal unemployment rate (although this may be due to data collection issues). These differences that exist between the eleven countries in Southeast Asia are considered in the discussion in later chapters of this thesis.

The following section presents details on progress with FDI in Southeast Asia, followed by more detailed discussion of FDI by each of the individual eleven countries.

2.3 Progress on FDI

Southeast Asia has had a positive experience with the progress of FDI. The inward and outward FDI has increased over the last few years. As Table 2.3 shows the stock of inward FDI increased from only USD17bin 1980 to USD193b in 1996. In a similar period of time, stock of outward FDI also improved from only USD9b to

USD59b.The total differences between years have increased from time to time. For example, there was only USD11b between 1980 and 1985, which then rose to USD33b between 1985 and 1990 for the stock of inward FDI. The total difference in stock of outwards FDI also improved from only USD0.7b between 1980 to 1985 to USD7.2 and continues to grow as shown in Table 2.3 (UNCTAD, 2017).

Table 2.3: Stock of FDI in Southeast Asia, 1980-2016 (USD billion)

Year	Inward	Total difference*	Outward	Total difference
1980	17	-	1.1	-
1985	28	11	1.8	0.7
1990	61	33	9	7.2
1996	193	131	59	50
1997	188	-5	66	7
1998	219	31	69	3
2000	257	38	84	15
2006	554	297	317	233
2007	737	183	423	106
2008	778	41	405	-18
2009	892	114	488	83
2010	1,144	251	602	114
2016	1,872	728	1,012	410

Source: UNCTAD, 2017
Note: Total difference is measured by subtracting current year from previous year

Nevertheless, the Asian Financial Crisis (AFC) of 1997 impacted negatively on Southeast Asian stock of inward and outward FDI (Sjoholm, 2013). Thailand was the origin country of the financial crisis in Asia. The fluctuation of Thailand's currency exchange impacted on market prices and made it difficult for Thailand to respond to their financial commitments including paying debt. This situation extended widely to other countries in Southeast Asia and also some countries in East Asia. As a result,

countries in Southeast Asia lost a number of private investments (Thangavelu et al., 2009). As Table 2.3 shows, stock of inward FDI into Southeast Asia dropped drastically. Southeast Asia experienced a huge reduction of USD-5b in the stock of inwards FDI between 1996 and 1997. In comparison, stock of outwards FDI continued to increase but by a small quantity; there was only an additional USD7b (UNCTAD, 2017). This shows the negative influence of the financial crisis was more on the stock of inward FDI than outward.

After receiving external financial support from different international organisations including the IMF, Southeast Asian countries managed to recover from the financial crisis. Thailand and Indonesia were the two countries in the region that were the most seriously affected. Thailand received USD17b while Indonesia had USD42b from the IMF. In addition, numerous different major reforms were initiated in each country. For example, both Thailand and Indonesia permanently terminated some of the banks in their country which were bankrupt. At the same time, they strengthened financial structures through amendment of regulations to facilitate business activities at the country level (Berg, 1999). As a result, one year after the crisis, the stock of inward FDI into Southeast Asia returned to normal with a subsequent improvement. This contributed to the stock of inward FDI into this region to USD219b and also to the stock of outward FDI to USD69b in 1998. Both Inward and outward FDI continued to grow until 2007 (UNCTAD, 2017).

Another unexpected crisis then occurred in the world economy. In 2007 and 2008, the Global Financial Crisis (GFC) occurred as a result of the lax and careless monetary policy of banks in the United State of America (USA). At the beginning of the 2000s, USA monetary policy allowed for more loans with lower interest rates, without certainty that borrowers would be able to repay their loans. The majority of these loans went to European countries compared with the USA, supporting establishment and operationalisation of firms and businesses. Since the proportion

of firm's and also other borrower's debt was higher than their shares or income, many of them had difficulty in fulfilling their financial commitments to banks. As a result, many banks both in Europe and also the USA experienced loss of their financial assets, some were bankrupted. These events caused massive financial crises not only in the USA and countries in Europe, but also to other countries who had established cooperation with them (Carmassi et al., 2009).

This financial crisis affected more of the stock of outward FDI compared with inwards. As shown in Table 2.3, the stock of inward FDI into Southeast Asia continued to increase even during the period 2007 to 2008. There was a slight decline in the total difference in 2008 compared with 2007, only USD41b in 2008 and USD183bin 2007, but the stock of outward FDI disappeared massively. Southeast Asia lost USD18b in their investment overseas in 2008 (UNCTAD, 2017).

In responding to the Global Financial Crisis, the United States provided financial assistance to support a number of financial institutions and banks from collapsing. In addition, the United States' government reduced tax and increased government spending (Mishkin, 2011; Aït-Sahalia et al., 2012). European countries also initiated some important regulatory reforms. One of the main regulations was called Bank Solvency, aiming to ensure that firms were financially capable of meeting their financial commitments for an extended period of time. Another regulatory reform was to establish a joint bank in Europe, a bank which implemented similar ways of how to operate business. This facilitated better coordination and also control of banking activities (Carbó-Valverde et al., 2015). Other countries, such as Australia and New Zealand, correspondingly began to initiate some modifications in their regulatory frameworks. They implemented regulations that strictly control the amount of loans and also the financial ability of borrowers (Brown et al., 2015).

Post this crisis, the stock of inward FDI into Southeast Asia and also stock of outward FDI overseas was greater than before. As shown in Table 2.3, stock of inward FDI increased from USD892b in 2009 to USD1,872b in 2016. Similarly the stock of outward FDI, went from USD82b to USD1,012b during the same period (UNCTAD, 2017). This demonstrates that the stock of outward FDI was influenced more by the Global Financial Crisis than the inward FDI. This is due to the majority of FDI in Southeast Asian countries being dominated by investors from this region as well as from other areas of Asia. Southeast Asia continued reinforcing strategies by shortening investment procedures as well as tax reductions which have given this region stable conditions in terms of investment ,during and after the Global Financial Crisis (ASEAN, 2012).

The next discussion concerns the stock of inward and outward FDI in the eleven countries individually during the period 1980 to 2016. As shown in Figure 2.2, Singapore was the country that received the highest share of total stock inward FDI. During these 37 years, Singapore received more than 50%. Three other countries, Indonesia, Thailand and Malaysia were in the second group with a stock of 12%, 12% and 10% respectively. Vietnam came next with 5% followed by the Philippines with 3% and Myanmar with 1%. Lao PDR had the lowest stock of inward FDI with only 0.2% during these 37 years. The data for Timor-Leste is excluded in Figure 2.2 since it is only available from 2003 until 2016. The total stock of inward FDI for Timor-Leste for this period was only USD2,223m. This is only 7% of the total of stock of inward FDI into Lao PDR in the same period of time, 2003 until 2016 (UNCTAD, 2017).

Figure 2.2: Inward FDI in Southeast Asian Countries (1980-2016)
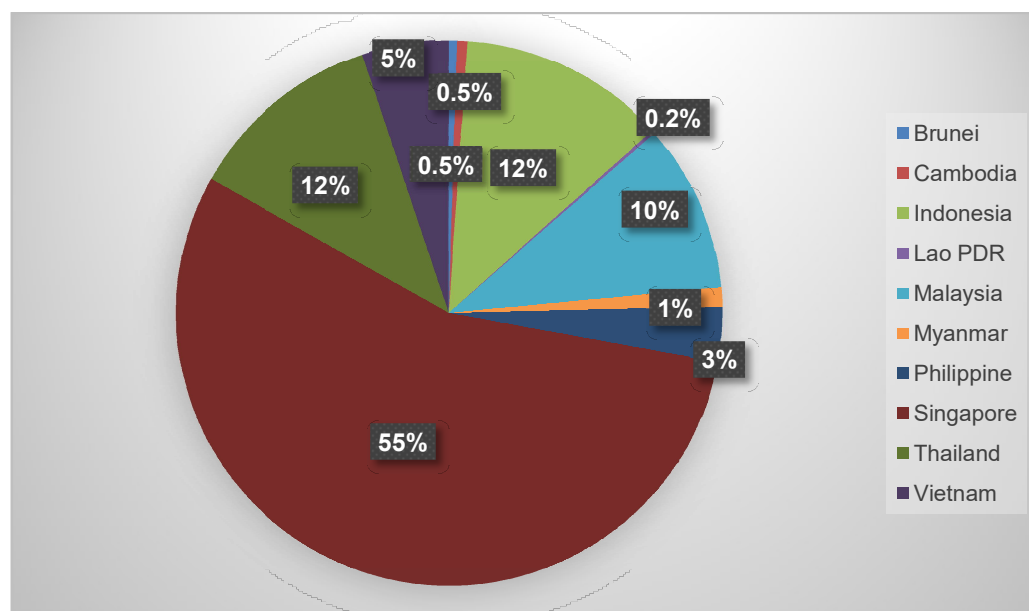
Source: UNCTAD, 2016

On the other hand, the proportion of stock of outwards FDI from countries in Southeast Asia is also very different. Similar to stock of inward FDI, Singapore continues to dominate, having more of their investment overseas. As displayed in Figure 2.3, Singapore's stock of outward FDI accounted for 75% of the total for the eight countries in Southeast Asia that have most of their data available from 1990 until 2016. Malaysia was the second country with 14% in the same period of time. Thailand was the next with 6% followed by Indonesia and the Philippines with3% and 2% respectively. Brunei, Cambodia and Lao remained low in their overseas investment with less than 1% for these 27 years. Data for Vietnam is only available from 2005 until 2014 while for Timor-Leste is only from 2010 until 2014. The total of Vietnam's stock of outward FDI was USD44,717m, which put Vietnam in the sixth position after Indonesia for the same period of time, 2005 until 2016. Timor-Leste only had USD612m, the lowest stock of outward FDI compared with other countries in this region. Myanmar had no data reported for their stock of outward FDI (UNCTAD, 2017).

Figure 2.3: Outward FDI from Southeast Asian Countries (1990-2016)
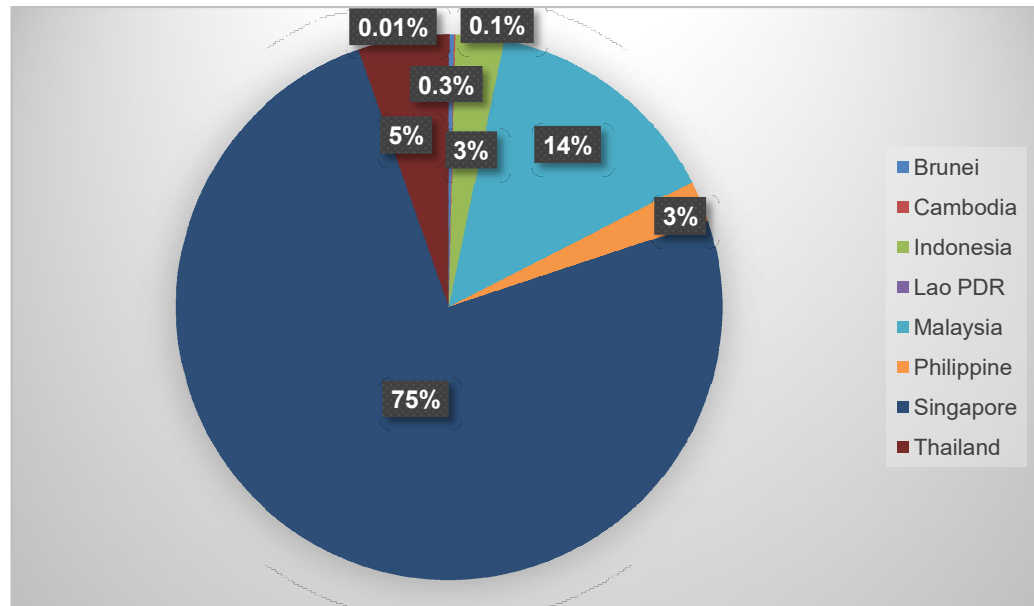
Source: UNCTAD, 2017

Based on these descriptions of stock of inward and outward FDI, it can be seen that Singapore is the country that is most advanced in terms of not only attracting more FDI but also as a foreign investor in other countries. Following Singapore, there are three countries in the second group: Malaysia, Thailand and Indonesia. Other countries such as the Philippines and Vietnam are in the middle group. The last five countries: Brunei, Cambodia, Lao PDR, Myanmar and also Timor-Leste remain low in stock of both inward and outward FDI.

The following section presents each of the eleven countries progress with FDI. This includes a brief history of each country and also reforms that have been initiated to attract more FDI and also to promote investment overseas. The discussion of these eleven countries progress on FDI is in alphabetical order, beginning with Brunei.

2.3.1. Brunei Darussalam

Brunei Darussalam was historically within the Kingdom of Majapahit from Java, Indonesia in the 14th century. As part of Majapahit, Brunei had started trade activities with neighbouring islands including Indonesia, Malaysia and the Philippines. Britain began to colonise Brunei in the 18th century. The discovery of oil and natural gas in the 1920s supported Brunei's autonomy in the late 1950s.Brunei Darussalam only became an independent country from Britain in 1984 and joined ASEAN three years later (Church, 1995).

As a country that is rich in oil and gas, Brunei's economy had been highly dependent on these resources, however, any changes happening in oil and gas production significantly influenced their economy, particularly in exports. For example, when there was a decline in oil production from USD219,000 barrels/day in 2006 to USD175,000 barrels/day in 2008, Brunei's export of oil also dropped from USD199,000 barrels/day to USD153,000 barrels/day in the same period (CSPS, 2010).

Realising this negative effect and considering that oil and gas are non-renewable resources, Brunei's government initiated a number of major reforms in order to attract more FDI into other sectors. This reform included introducing a tax free period for a certain number of years (Edward and Skully, 1996) and establishing a board i.e. the Brunei Economic Development Board (BEDB), to facilitate foreign investment activities. BEDB was to manage all of the government policies to support Brunei's economic development (Anaman, 2004).

As a result, the stock of inward FDI to Brunei has increased significantly to USD5.7b in 2016 compared with only USD18m in 1980, as shown in Figure 2.4.In the beginning, it was very low during the period 1980 to 1990 (UNCTAD, 2017). The country succeeded in attracting more FDI only after 1994 until it reached the peak in

2002. There was a huge reduction in the following year, a decline of USD3,800m in just in one year(UNCTAD, 2017). One of the main reasons for this was a reduction in the proportion of FDI in manufacturing and also in wholesale. There was a decline of FDI in manufacturing from 3% in 2002 to only 1.2% in 2003. Similarly, there was a decline of FDI in the wholesale industry from 0.8% to 0.3% in the same period (Bhaskaran, 2007).

Figure 2.4: Stock FDI in Brunei, 1980-2016 (USD million)
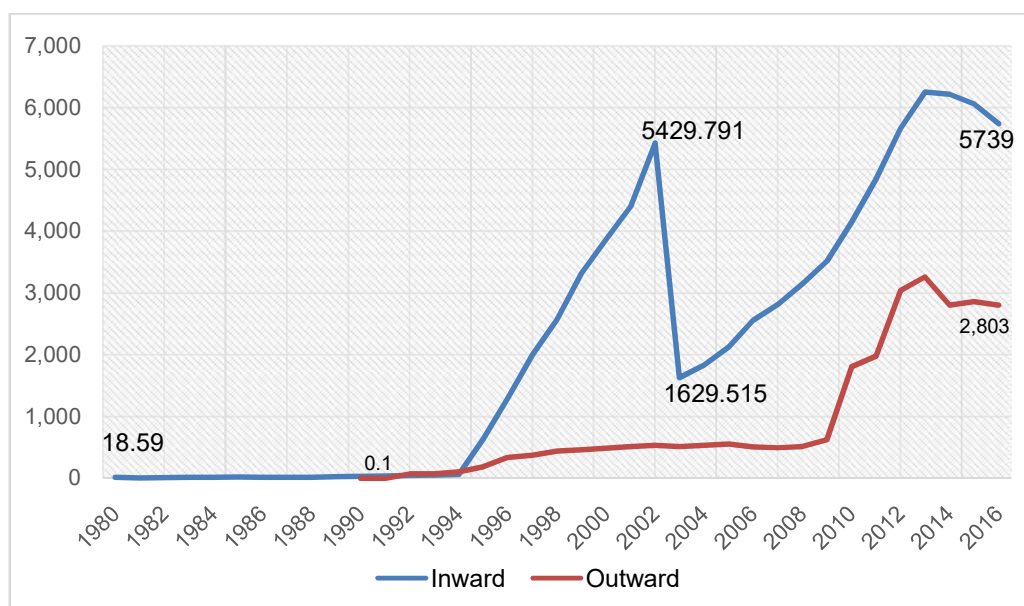
Brunei managed to recover and receive more FDI in both manufacturing and wholesale sectors. The manufacturing industry had 13% while wholesale had 6.3% compared with the previous year (Bhaskaran, 2007). These changes have contributed to the increase of stock of inward FDI into the country from 2004 until 2013. However, 2014 was another year of shrinkage in the incoming FDI meaning the country lost USD32m(UNCTAD, 2017). Even though Brunei has experienced unstable FDI, they receive more FDI at the present time than in previous years.

In addition, industry in Brunei as a percentage total of FDI as shown in Figure 2.5had also been dominated by oil and gas. However, there was a decline of FDI in

the oil and gas industry: a reduction from 97% in 2001 to 69% in 2005. Even though other industry, such as manufacturing, made slow progress, it increased around 20% within four years. Wholesale and construction are two other industries that receive a small amount of FDI. As a result, the majority of FDI into Brunei still continues to be concentrated more in the oil and gas industry. The country become more focused on this industry rather than on other industries (Bhaskaran, 2007).

Figure 2.5: Industry in Brunei, 2001-2005 (% of total FDI)
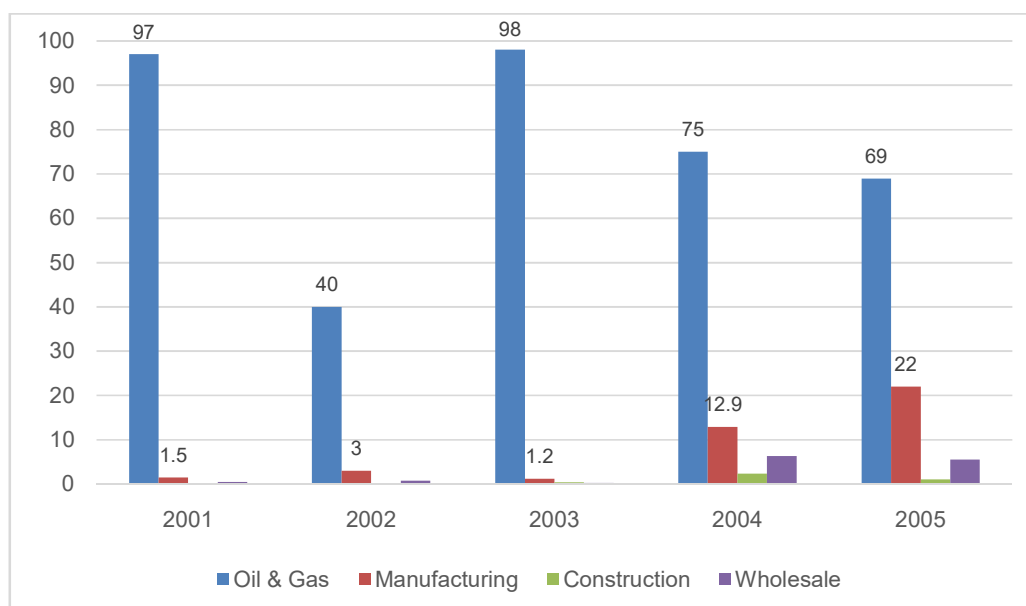
Source: Bhaskaran (2007)

A number of authors identified that complex bureaucratic procedures in the government (Bhaskaran, 2007; Edward and Skully, 1996) and the absence of qualified local people (Edward and Skully, 1996)were two of the important challenges that contribute to lack of foreign investment in the non-oil sector (Bhaskaran, 2007).

The proportion of FDI according to country of origin, as shown in Figure 2.6, indicated that 43% of FDI comes from Singapore, followed by 29% from New Zealand and 15% from the United States. The last four countries who have less than 10% of company's investment in Brunei are China (9%), Italy (4%), Korea (1%) and

Denmark (0.3%). This shows that companies from Singapore are the main foreign investors in Brunei.

Figure 2.6: FDI into Brunei by Country of Origin FY 2001-2012 (%)
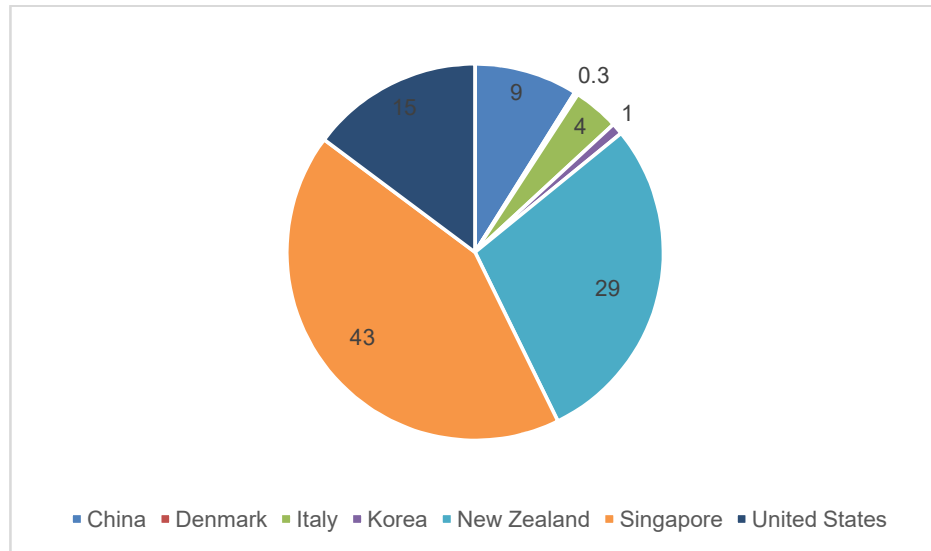
Source: UNCTAD (2017)

On the other hand, besides receiving investment from foreign companies, local firms from Brunei have also invested in other countries. As shown in Figure 2.4, Brunei's investment in overseas countries started in 1990. There was no data reported in the first decade, from 1980 to 1989. Beginning with small investments of only USD0.1m in 1990, their stock of outward FDI expanded after the 2000s.Unlike inward FDI, the investments overseas were more stable. There was a decline in some years but overall, it has improved significantly to USD2,803m in 2016 (UNCTAD, 2017).

2.3.2. Cambodia

Cambodia is a Kingdom, which was part of the Khmer empire from 600 years ago. In the 18th century, the French colonised Cambodia which only obtained independence in 1953. However, the Khmer Rouge, a communist party took control of Cambodia in the beginning of the 1970s and there was little economic activity in the first ten years of their rule. Cambodia was isolated from the world. Vietnam intervened in Cambodia in the 1970s and the conflict between the two countries was

only ended with the initiation of the Paris Peace Accord in 1991. The United Nations supported the establishment of government in the following year(Church, 1995).

The government had major control of the whole country's business activities, including in publication of news, immediately after independence (Church, 1995).After Cambodia officially joined ASEAN in 1999 and also the World Trade Organisation (WTO)in 2004, they initiated a number of different major reforms. These included liberalising the market and approval of more than 70 laws to facilitate foreign investments. They regulated the operations with clear roles between commercial and national banks. Subsequently Cambodia started to have bilateral agreements with other countries and welcomed foreign investment including foreign banks (Vutha, 2013).

Figure 2.6: Stock of FDI in Cambodia, 1980-2016 (USD million)
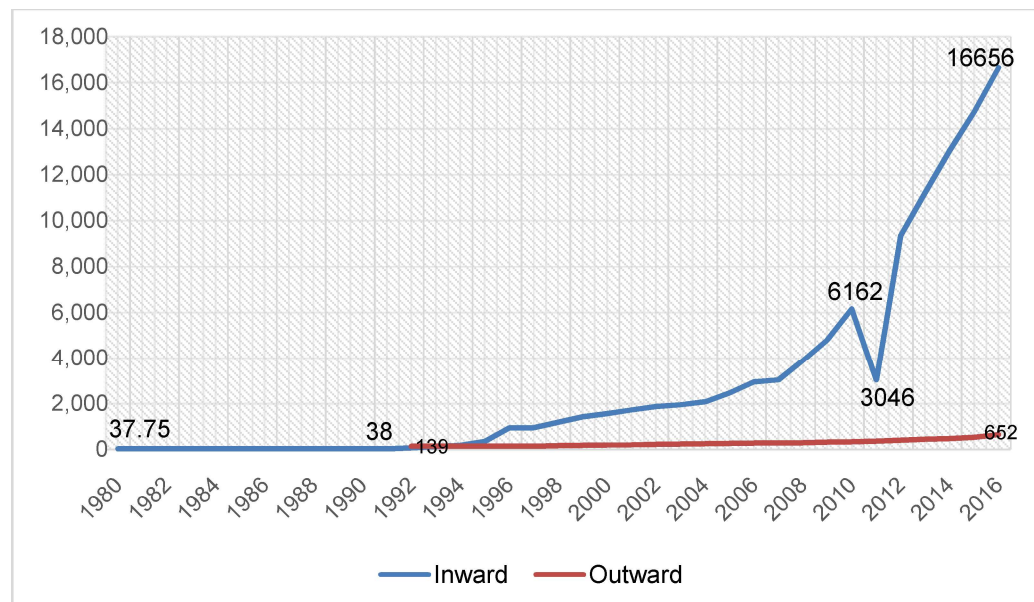
Source: UNCTAD, 2017

This has made the country one of the major destinations for foreign investment. As shown in Figure 2.7, beginning with only USD38m on stock of inward FDI in 1980, this has increased to USD16,656m in 2016. However, in the period 1980 to 1990, FDI remained constant (UNCTAD, 2017) since this was the period of time when

Cambodia was in conflict with Vietnam (Church, 1995). Only after 1992, FDI increased to USD6,162m in 2010. However, there was a huge drop to only USD3,046m in the following year (UNCTAD, 2017). The drop was mainly caused by mass unrest organised by labour groups who worked for garment factories. The protests continued in many different locations in the country for almost two years particularly in 2010 and 2011. The workers demanded their rights for an increase in payments. Since the garment industry was one of the major industries in Cambodia with the majority of investment by FDI, this unrest had a negative effect on investment activities (Heder, 2010). Cambodia recovered from the unrest after resolving the issues and stock of inward FDI increased all through to 2016 (UNCTAD, 2017).

FDI into Cambodia by industry had been in manufacturing and services as the two dominant sectors. Over the period 2001 to 2007, FDI was greater in the manufacturing sector, however, from the following year until 2012, it shifted to the services sector. The primary sector, which includes agriculture and fisheries in addition to other sectors (unspecified) have less FDI. Nevertheless, both manufacturing and services received more FDI in 2012 compared with 2001.

Figure 2.7: FDI into Cambodia by Industry (USD million)
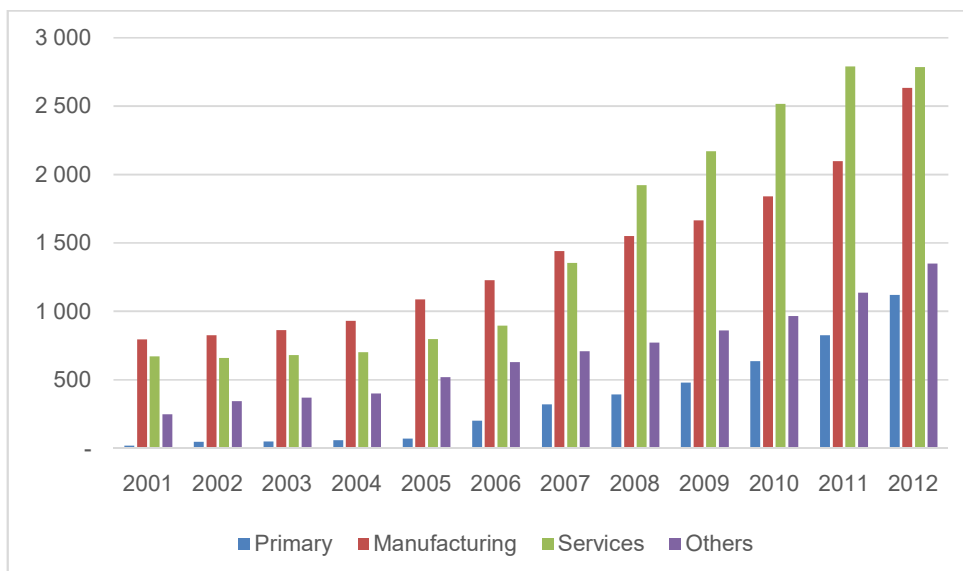
Looking at the country of origin, the majority of FDI into Cambodia is from Asian countries. As shown in Figure 2.9, over the period 2001 to 2012, 75% of FDI came from Asia and only 10% from Europe, 7% from others (CIS, Oceania, Latin America and the Caribbean as well as Africa). In addition, there was only 4% from North America countries and another 4% from other developed countries (Australia, New Zealand, Israel and Japan). Being part of ASEAN, Cambodia received most foreign investment from other ASEAN countries with around 48% from ASEAN countries, 26% from China, Taiwan and Hong Kong and only 17% from the EU, US and Canada (Cuyvers et al., 2011).

Figure 2.8: FDI into Cambodia by Country of Origin FY 2001-2012 (%)
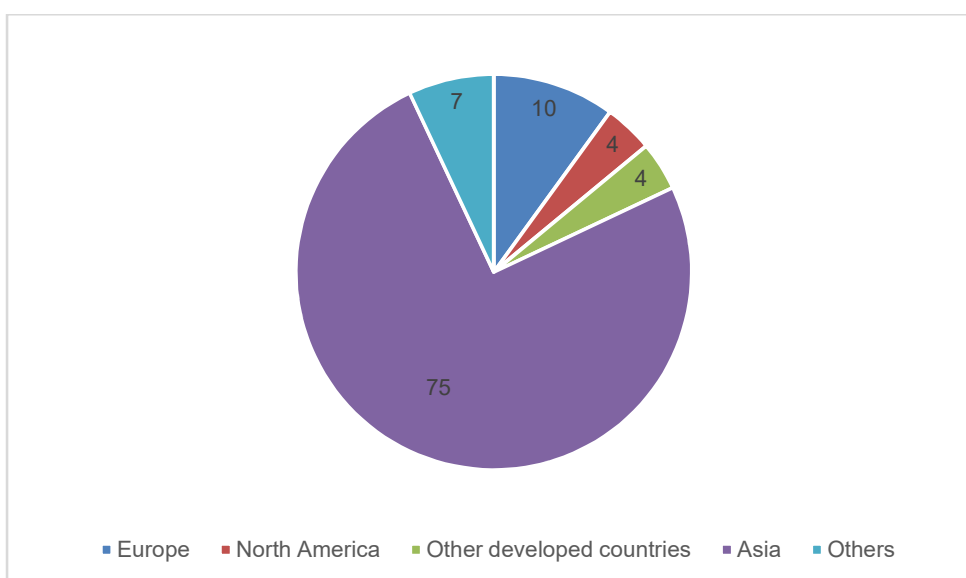
On the other hand, Cambodia's stocks of outward FDI also improved even though they remain only a small amount of investment compared to inward FDI. As shown in Figure 2.7, their investment overseas only started in the 1990s, there was no prior data reported. In 1992, Cambodian stock of investment overseas accounted for USD139m. This total remains unchanged for several years until 1997. It only increased after 1998 continuously until 2016 when it reached USD652m (UNCTAD, 2017).

2.3.3 Indonesia

Indonesia is an archipelago country consisting of more than 13,000 islands. As an island country, the eastern provinces were colonised by Portugal while the central provinces were occupied by the Netherlands in the 16th century. During the Netherland's occupation, they supported Indonesian agricultural production and helped the community in various types of agricultural activity through planting of agriculture products. However, since the economic reformation was felt to have less benefit to the community, there was a revolution against the Netherlands in the 1920s.Indonesia declared their independence in 1945 following the Japanese invasion in 1942 (Church, 1995).

Post-independence, the country was in an unstable political condition for more than 20 years. Different groups of elites maintained varying views on how to govern the country. After the new Indonesian President gained power in 1965, having very strong support from Indonesian military, he managed to control the country (Church, 1995). However, the country continued to face numerous different challenges including lack of qualified human resources, a weak economy, and more local firms in the domestic market(OECD, 1999). In addition, Indonesia had strong rules and procedures that limited the opportunities for foreign investment and production costs that continued to be high (Osada, 1994).

In responding to those challenges, the Indonesian government introduced a number of policy reforms. They opened their market and simplified customs procedure in the mid-1980s in order to attract more FDI. Indonesia reduced its tariff barrier, the cost rate for imports that was normally at $3.75 was cut down to only $1. The Indonesian government also established an agency to assist foreign companies not only in exportation but also importation of materials required for production (Osada, 1994).

As a result, as shown in Figure 2.10, Indonesia's stock of inward FDI increased doubling from only USD4,559m to the next ten years until 1997. However, Indonesia experienced a huge loss of FDI in 1998. As one of the countries in Southeast Asia that was hit hard by the Asian financial crisis (Sjoholm, 2013), Indonesia's stock of inward FDI dropped significantly with a loss of around USD200m and this continued to decline until the year 2002 (UNCTAD, 2017).

Figure 2.10: Stock of FDI in Indonesia, 1980-2016 (USD million)
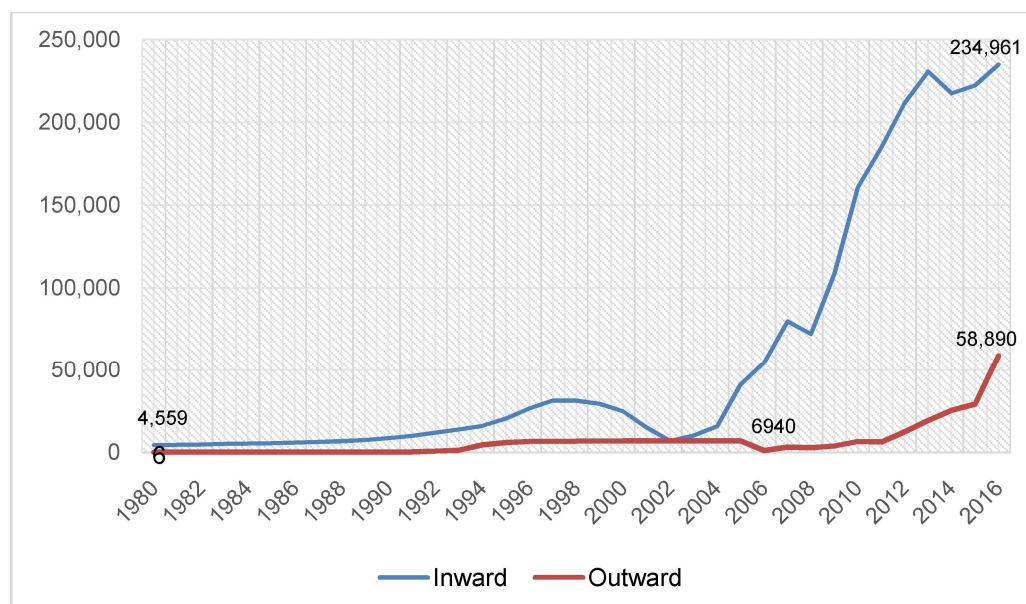
Source: UNCTAD, 2017

After receiving financial support from the IMF, Indonesia recovered from the crisis (Berg, 1999). After 2002, FDI increased and Indonesia returned to normal until 2006, but the Global Financial Crisis in 2007 and 2008 had a negative impact on FDI. There was a reduction in both of these years. Nevertheless, FDI into Indonesia has improved significantly to USD234,961m in 2016 compared with the investment in 1980 (UNCTAD, 2017).

FDI into Indonesia by industry is shown in Figure 2.11, manufacturing has been the sector that received most FDI. It is interesting to note that in 2008, for the first time Indonesia had more FDI in the primary sector (agriculture and mining). Nonetheless,

FDI is concentrated more in the manufacturing and services sectors in particular after 2008 until 2012.

Figure 2.9: FDI into Indonesia by Industry (USD million)
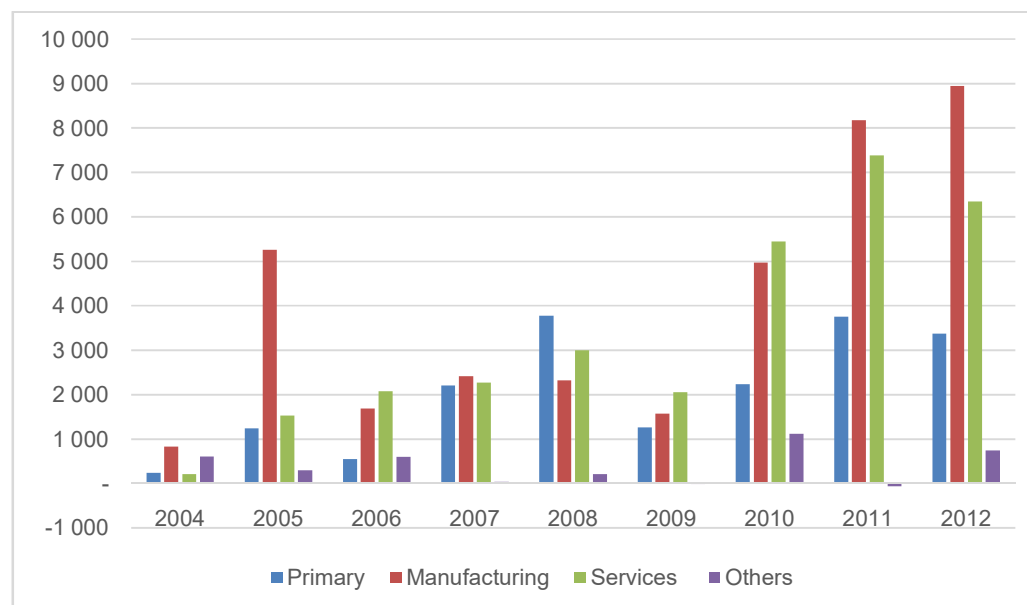
Source: UNCTAD, 2017

In relation to origin country of FDI as shown in Figure 2.12, 36% of FDI was from Asian countries, 21% from Europe, 16% from others (unspecified), 9% from Africa, 8% from North America and another 8% from other developed countries (Australia, New Zealand, Bermuda and Japan). FDI from Latin America and the Caribbean as well as Oceania is the least in Indonesia. There is clearly a domination of Asian countries in FDI into Indonesia.

Figure 2.10: FDI into Indonesia by Country of Origin FY 2009-2012 (%)
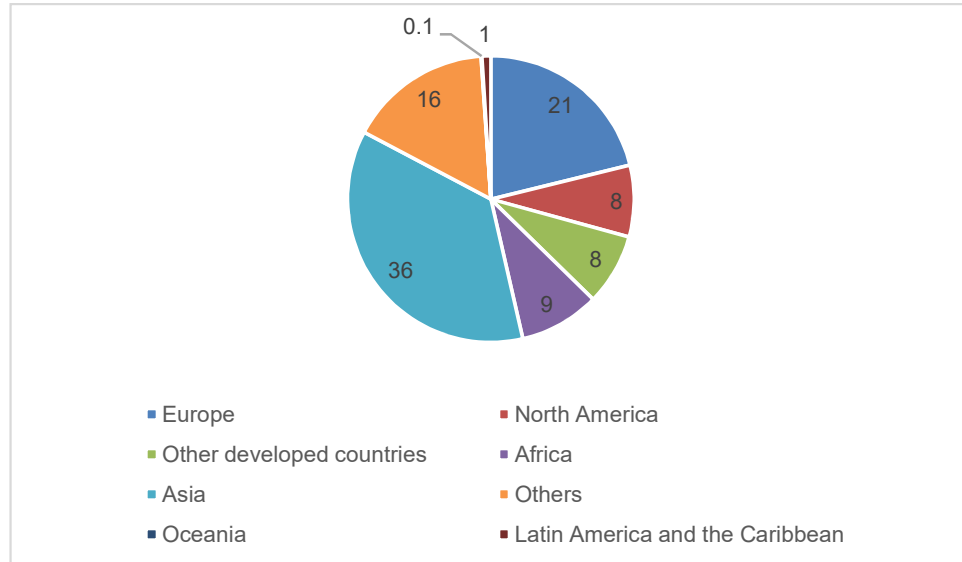
Source: UNCTAD, 2017

In comparison, even though the stock of outward FDIs from Indonesia remained unstable in the decade 1980 to 1990, it has generally improved considerably. Starting with only USD6m in 1980, this increased to USD6,940m in 2005. However, their stock of investment in overseas countries went down in 2008(UNCTAD, 2017). Similar to incoming FDI, this was a result of the Global Financial Crisis that affected most countries. Indonesia managed to recover from the crisis and their stock of FDI in overseas companies increased by 2016 to USD58,890m. This was a massive improvement compared with the 1980 figure(UNCTAD, 2017). This shows that Indonesian firms had performed successfully with their investment overseas (Lecraw, 1993).

2.3.4   Lao PDR

Lao PDR (People's Democratic Republic) is the only landlocked country in Southeast Asia. It is surrounded by five countries: Thailand, Vietnam, Cambodia, Myanmar and China. Historically, the French colonised Lao PDR from1891.Following World War II, the French declared self-governance for Lao PDR. Even after Lao PDR gained full sovereignty in 1953, the country continued to

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be in conflict not only internally but also with neighbouring countries such as Vietnam (Church, 1995).

Only after 1975, was the country able to initiate some major reforms to improve their economy: the reforms included approval of a law on privatisation, to privatise agricultural and manufacturing business activities. They also removed restrictions on exports and imports (Fane, 2006). The adoption of 'market socialism' made the country more open to foreign investment. This has been one of the major achievements compared with the previous regime with a more centralised economy (Church, 1995: 55).

As a result, FDI has taken over most of the business activities including agriculture and manufacturing. Cambodia experienced positive growth of around 7%, particularly before the Asian financial crisis in 1997 (Fane, 2006). Government intervention in business activities has declined. Government loans to business have been reduced from 91% in 2009 to 46% in 2010 as a total of loans to business activities (World Bank, 2011).

All of these encouraging developments contributed to making the country an attractive place for foreign investment. Figure 2.13 shows that even though at the beginning of the first decade, the stock of inward FDI into Lao PDR remained constant, overall, it increased dramatically from only USD2m in 1980to USD5,639m in 2016. 1985 was the only year that the country experienced a reduction. There was a loss of USD1.6m between 1984 and 1985 (UNCTAD, 2017).

Figure 2.11: Stock of FDI in Lao PDR, 1980-2016 (USD million)
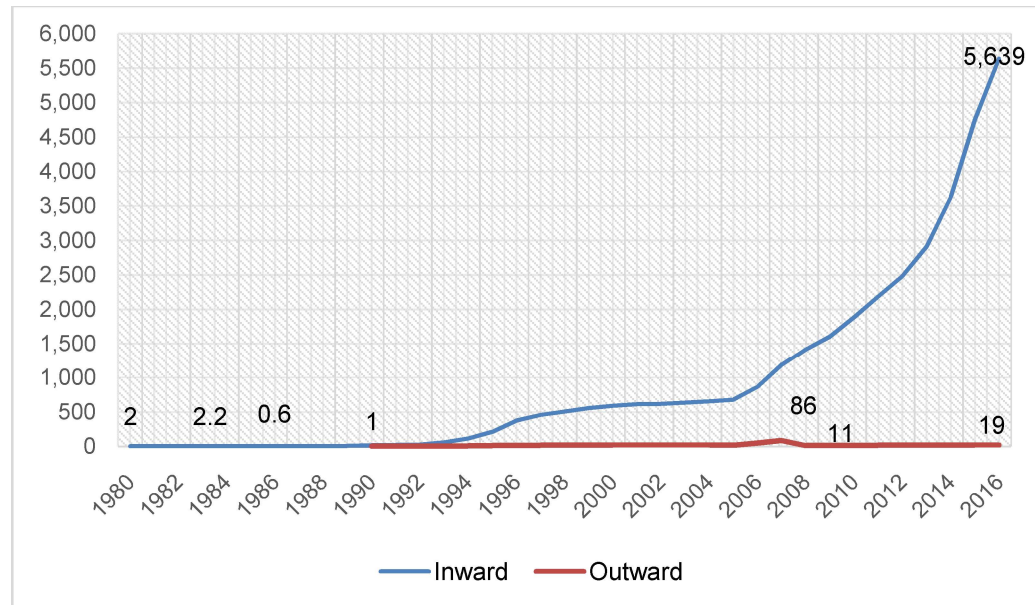
Source: UNCTAD, 2017

As a country that is blessed with huge water resource potential to produce electricity, this sector has become the most attractive to FDI. From 2007 until 2012, the majority of FDI into this country was concentrated more in the electricity sector followed by the mining sector (World Bank, 2011). Data from UNCTAD (2017) shows consistency, as in Figure 2.14 the majority of FDI was in the services sectors: more than 50% went to electricity, gas and water. Only in 2004, 2009 and 2011 did the primary sector receive more FDI led by a contribution from the mining, quarrying and petroleum sector. On the other hand, FDI into the manufacturing sector remained very small compared with the other two sectors.

Figure 2.12: FDI into Lao PDR by Industry (USD million)
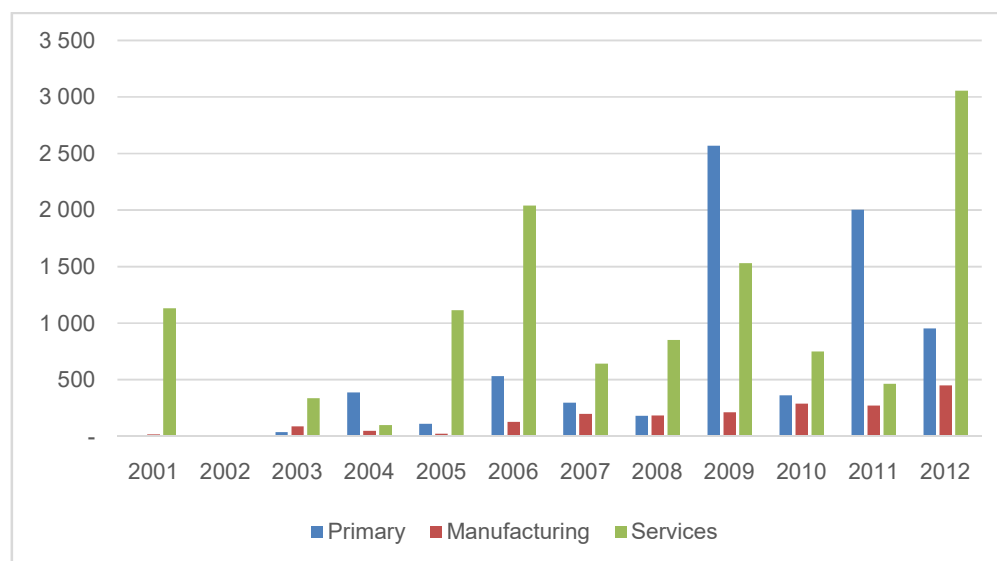
FDI into Lao PDR by country of origin, Figure 2.15, shows that 50% of FDI is from China, this is followed by 34% from the United States while only 11% comes from Singapore and 5% from Korea. Foreign companies from China have been the main investors in Lao PDR. In the period 2003 to 2005, the majority of FDI was from Singapore, however, FDI from China increased significantly between 2005 and 2012 (UNCTAD, 2017).

Figure 2.13: FDI into Lao PDR by Country of Origin FY 2003-2012 (%)
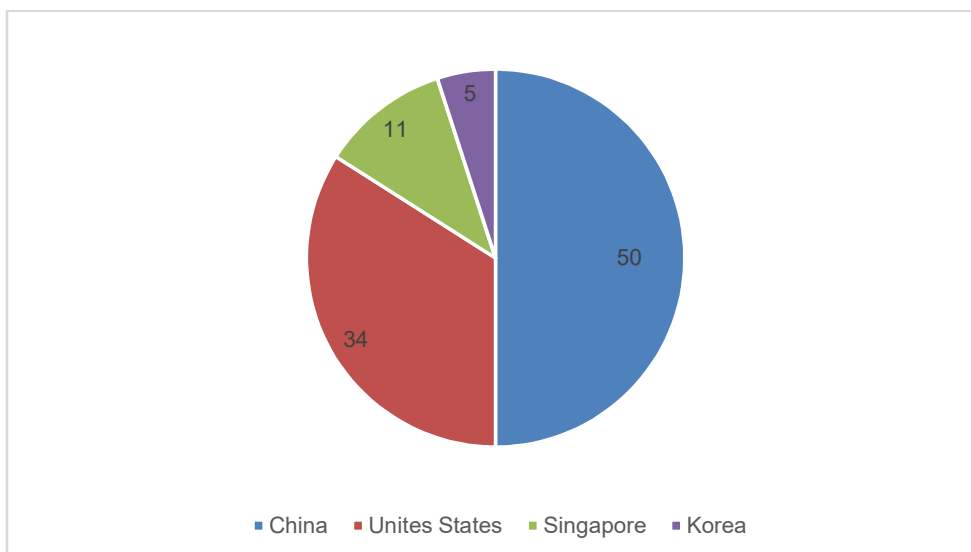
Data on the stock of outward FDIs from Lao PDR was only available from 1990. Even though it was not very high, beginning with only USD1min 1990, it increased to USD19m in 2016. However, during this period, Lao PDR had the highest stock of outward FDI in 2007 with USD86m. During the Global Financial Crisis of 2007 and 2008, the stock of outward FDI from Lao PDR declined dramatically to USD11m in 2008. Even after the crisis, their stock did not return to the 2007 value (UNCTAD, 2017).

2.3.5 Malaysia

Malaysia is geographically located on two different islands. West Malaysia has a land border with Thailand while east Malaysia borders Brunei and Kalimantan, one of Indonesia's provinces. Malaysia was under the Kingdom of Majapahit from Indonesia, who founded Melaka in the 14th century. Since Melaka was strategically located in east Malaysia, it had been the location used for trading purposes by the Kingdom of Majapahit with other neighbouring countries such as Thailand and also China. With the invasion of the British in the 18th century, the area came under their control. Malaysia only gained their independence from Britain in 1957 (Church, 1995).

After independence, Malaysia focused more on public investment. In the early 1980s they established several non-private enterprises to deliver business activities and also explore natural resources. Government domination remained high even though there was some involvement from foreign investors. Since all Malaysian business activities were under government control, it cost a huge amount. The economic shock in 1985 followed by an increase in market prices for some products, badly affected Malaysia's overall economy. The government experienced a huge debit in their budget particularly in the first five years of the 1980s. Government debt increased in addition to the appreciation of Malaysia's currency, the ringgit (Athukorala, 2010).

Realising these negative effects, the Malaysian government initiated some major changes. They introduced the Investment Incentive Act and created a Free trade area. Malaysia also privatised all of the business activities that were previously under government control. As a result, private investment grew more than public investment particularly after 1980 and before the Asian financial crisis in 1997 (Ang, 2009). During this period, Malaysia managed to recuperate from the economic shock in 1985 and achieved a growth of almost 10% (Athukorala, 2010).

The stock of inward FDI into Malaysia increased 25 times, from only USD5,169m in 1980 to USD121,621m in 2016. The only years that the country experienced a reduction were 1986, 2001, 2008 and 2014. The highest decline was in 2014 with USD2,261m followed by 2008 with USD2,161m (UNCTAD, 2017). The reduction in 2014 was caused by the decline of FDI in the manufacturing sector. According to statistical data from the Department of Statistics Malaysia (2017), the proportion of FDI in the manufacturing sector decreased from MYR (Malaysian Ringgit) 14.4b, equal to USD3.2b in 2013 to MYR4,7b, equal to USD1.2b in 2014. The Global Financial Crisis in 2007 and 2008 was one of the major factors that influenced the reduction of FDI in most Asian countries including in stock of inward FDI into Malaysia in 2008 (Diaconu, 2014).

Figure 2.14: Stock of FDI in Malaysia, 1980-2016 (USD million)
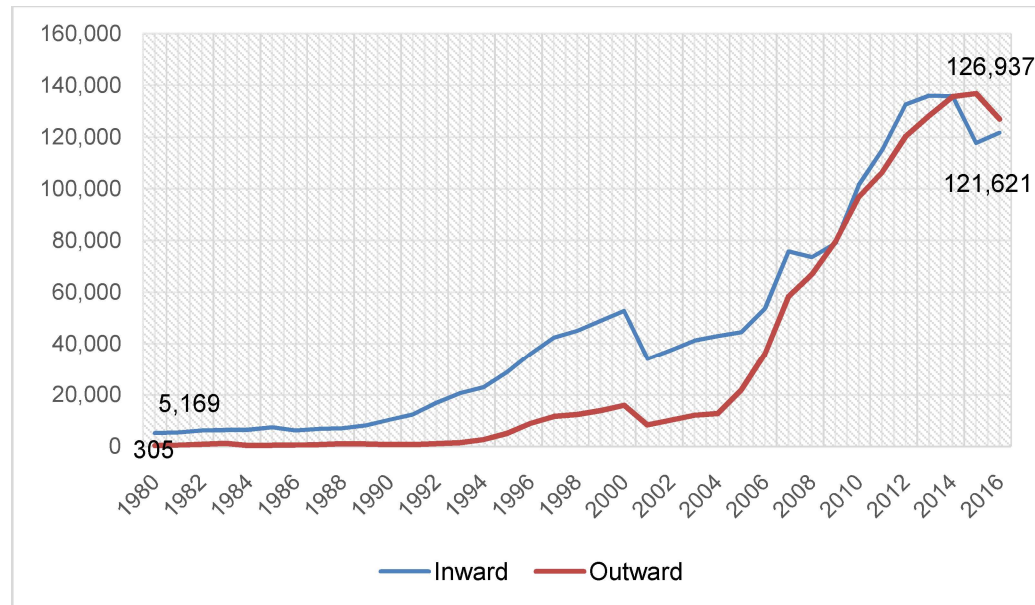
Source: UNCTAD, 2017

Overall, Malaysia has progressed well in attracting more FDI but Malaysia's dependency on FDI continues to be high. Their FDI as a percentage of GDP increased from only 0.2% in 1980 to 36% in 2005 (Dunning and Lundan, 2008).Receiving more FDI, not only supported the Malaysian government's investment but also domestic private sector business activities (Ang, 2009)

FDI into Malaysia was mostly in manufacturing followed by the services sector over the period 2008 to 2012 as shown in Figure 2.17. The primary sector received less FDI compared with the other sectors (UNCTAD, 2017). In the mid1980s, FDI was more in food manufacturing and chemical products but this has shifted toward more to electrical and electronic products in the later 1990s (Yean, 2004). However, the Department of Statistics Malaysia (2017) reported that the proportion of FDI in manufacturing has declined significantly in recent years. In both 2014 and 2016, the services sector received more than 45% of FDI and the manufacturing sector had only 13% in 2014 and 25% in 2016.

Figure 2.15: FDI into Malaysia by Industry (USD million)
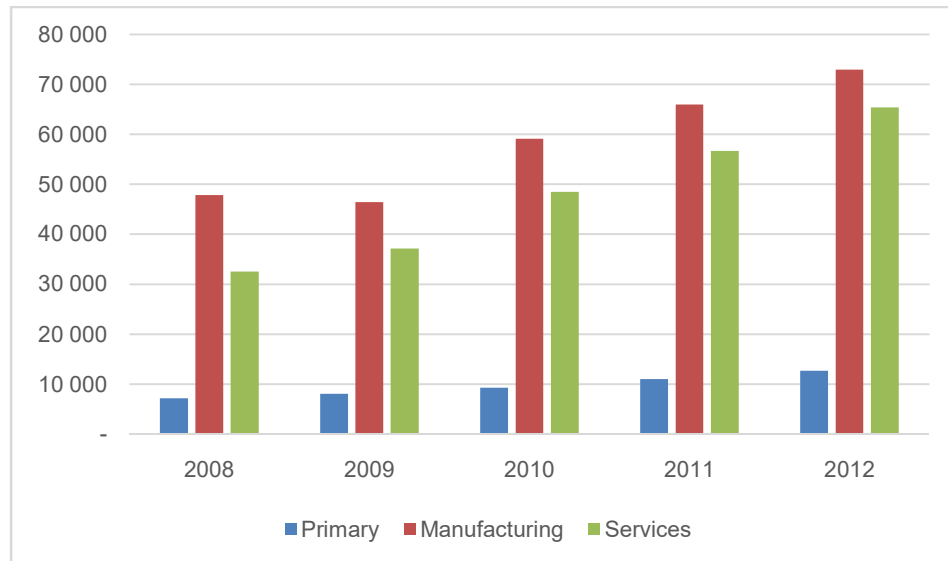
Source: UNCTAD, 2017

By country of origin, FDI into Malaysia had been from Asia and Europe with 28% and 27% as the top two regions as shown in Figure 2.18. Investment from other developed countries (this includes Australia, Bermuda and Japan) was 19%, North America 14%, Latin America and the Caribbean 11% while only 0.2% was from Oceania countries. Among countries in Europe, 34% of FDI comes from the Netherlands, 24% from the United Kingdom and 18% from Germany. With regard to investment from Asia, Singapore had 70% while China had only 15%, and other countries were mostly below 10%.

Figure 2.16: FDI into Malaysia by Country of Origin FY 2008-2012 (%)
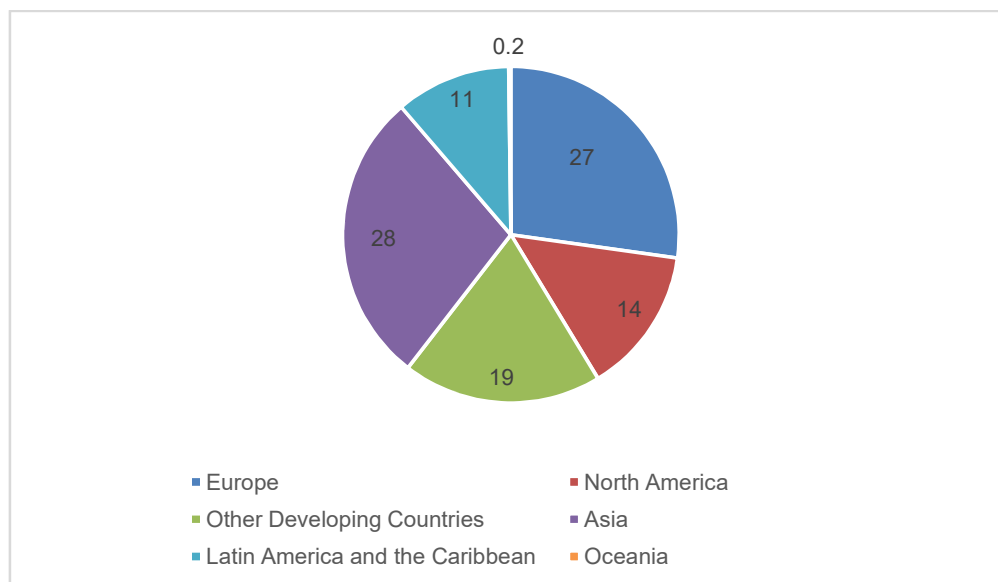
Source: UNCTAD, 2017

The stock of outward FDI from Malaysia is almost the same as their inward. It has increased from only USD305m in 1980 to USD126,937m in 2016. Compared with their inward stock, Malaysia has more stock of outward FDI in particular after 2014. Similar to their stock of inward FDI, Malaysia went through some declining phases in stock of outward FDI. In the years1984, 1989, 1990 and 2001, Malaysia experienced declines: in 1984, Malaysia had a loss of USD887m while in 1989, USD180m and in 1990, USD213m. The highest loss was in 2001 where the loss was USD7,523m in stock of outward FDI(UNCTAD, 2017).

2.3.6 Myanmar

Myanmar which is also known as Burma was invaded by the British in 1886. During the occupation period, the British changed Myanmar to be an agricultural products supplier to other countries in the region. In 1942 during WW II, Japan invaded Myanmar and eventually the country gained their independence in 1948 (Church, 1995).

However, before they enjoyed peace and development after independence, the military took control of the government. The country was then ruled by a military system, a very oppressive government which did not accept interference from any foreign country. The country encountered many difficulties including not having enough funds for community needs for almost 30 years. Even though there were strong pressures from international organisations, Myanmar continued to be governed under military power. Despite this Myanmar joined ASEAN in the late 1990s (Keling et al., 2010).

As part of ASEAN, Myanmar initiated numerous different reforms in order to modernise with other ASEAN member countries. Reforms included the approval of laws for FDI, allowing more foreign investment from other countries including from ASEAN. Another important reform was public financial management reform. Receiving support from the World Bank and in cooperation with Myanmar's Ministry of Finance, the government conducted an assessment of their public financial management system. This was to identify areas that required improvement. In addition, since Myanmar was known to be productive in agriculture, the government also provided financial support to non-public investment in the agriculture sector (World Bank, 2013a).

Following all of these reforms, the country's stock of inward FDI started to grow. As shown in Figure 2.19, even though it remained low and unstable during the first ten years, stock of inward FDI increased from only USD5m in 1980 to USD285m in 1990 (UNCTAD, 2017). Despite the fact that Myanmar's government and parliament are dominated by the military and their relationship with big countries like the US and China were under tension (Turnell, 2011),the stock of inward FDI into Myanmar continued to rise even after 2010 until reaching USD22,666m in 2016. This was a massive improvement of FDI compared with only USD5m in 1980 (UNCTAD, 2017).In relation to Myanmar's stock of outward FDI, since no data were reported for

the period 1980 until 2016, the country's investment overseas remains unknown.

Figure 2.17: Stock of FDI in Myanmar, 1980-2016 (USD million)
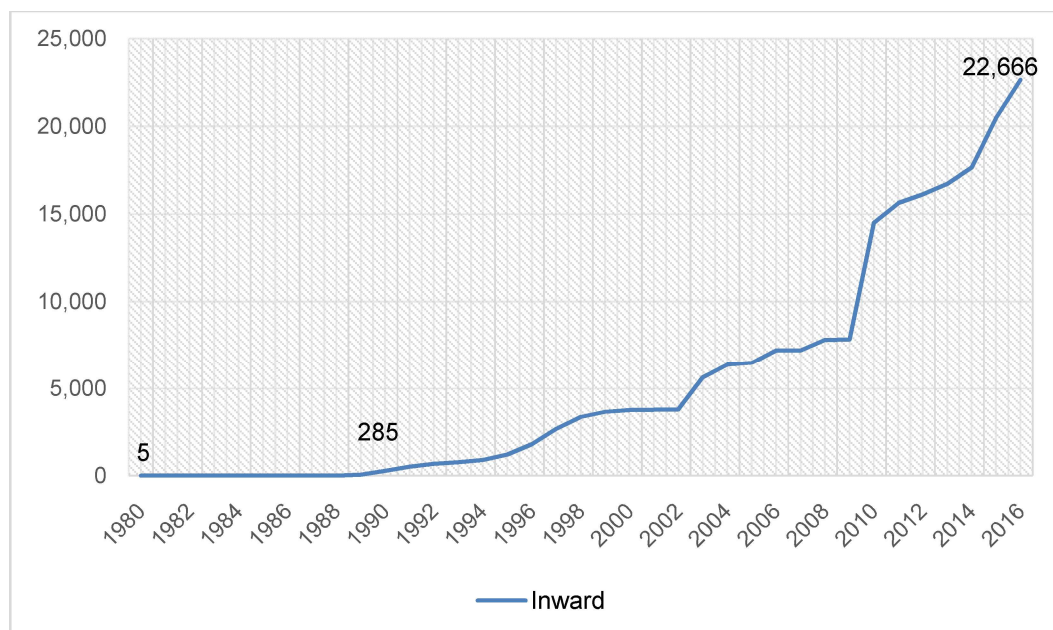
Source: UNCTAD, 2017

The majority of FDI invested in Myanmar was in primary industry in most of the years as shown in Figure 2.20. Services are the second industry that received some foreign investment. There continued to be very minimal investment in manufacturing. Myanmar had more foreign investment in both primary and services industries in 2010, however, it declined dramatically over the next two years. Within primary industry, 99% of investments were in mining and petroleum, only 1% in agriculture and forestry over the period of 2001 to 2012. Among the services industry, 98% of foreign investment went to electricity, gas and water while the other 2% was distributed in other industries such as hotels, transport and real estate (UNCTAD, 2017). A paper by Bissinger (2012) also acknowledged that oil and gas received most of the FDI into Myanmar. This was followed by the electricity industry while other industry such as manufacturing, tourism and also real estate had the least investment by FDI.

Figure 2.18: FDI into Myanmar by Industry (USD million)
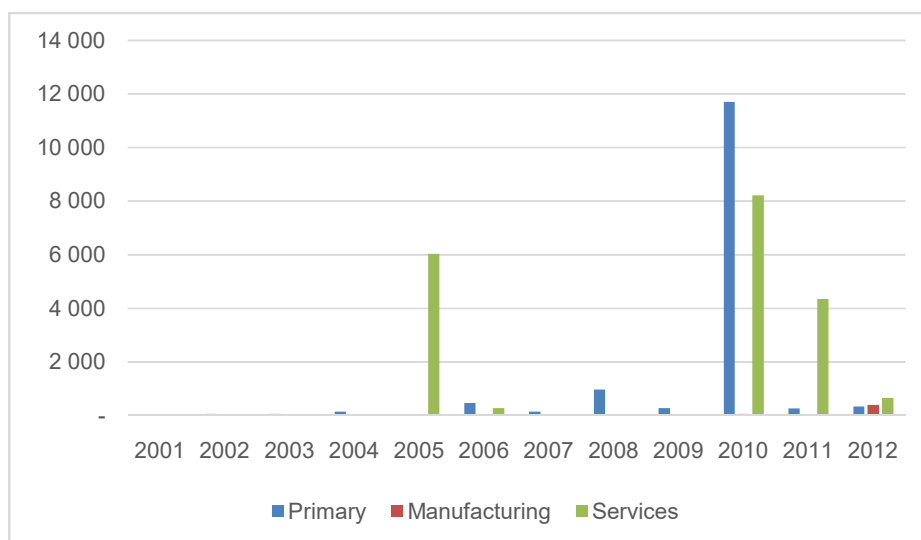
Source: UNCTAD, 2017

Singapore has been the major investor in Myanmar. Over the period 2001 to 2012, 48% of FDI was from Singapore while 24% from China and 19% from Thailand. The remaining 9% was from Korea, France and other countries (this includes India, Norway and the United States). After Myanmar joined ASEAN, Thailand became the first country sign a bilateral trade agreement with Myanmar. As a country that shares a border with Myanmar, Thailand continues to be one of the major foreign investors in the country (Keling et al., 2010).

Figure 2.19: FDI into Myanmar by Country of Origin FY 2001-2012 (%)
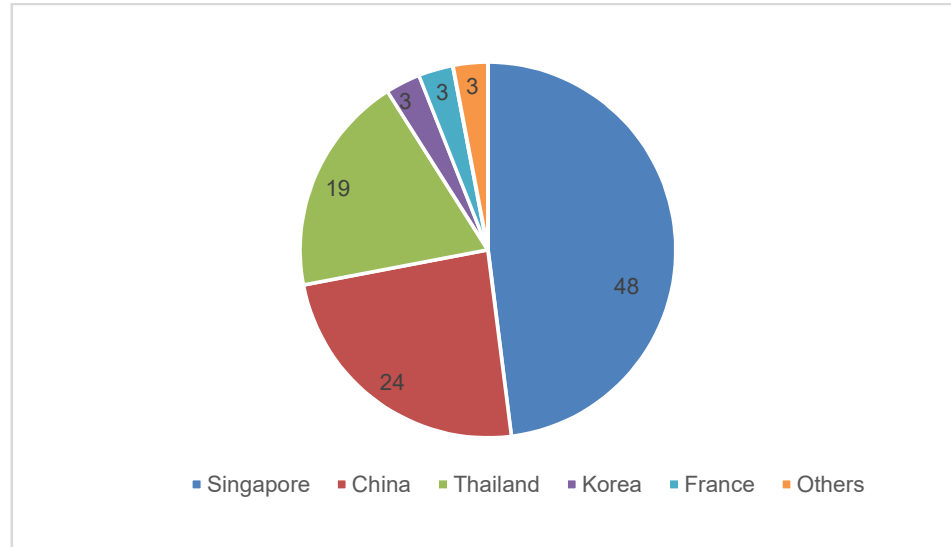
Source: UNCTAD, 2017

2.3.7 The Philippines

The Philippines is an archipelago that consists of more than 7,000 islands. The country was colonised by Spain in the middle of the 16th century. During the Spanish occupation, their influence on the Philippines economy was very small, rather they were there more to introduce Christianity. The United States of America took over the Philippines from Spain in the 19th century. Unlike Spain, the United States came with a mission to support the Philippines. In 1935, the first President of the Philippines was elected to prepare the Philippines to become an independent country Finally, in 1946, the Philippines was declared independent (Church, 1995).

Even though, the Philippines faced a number of different internal conflicts after their independence, the country introduced restrictions on imports, a new policy to promote and improve local industry. Working together with some foreign companies from the US and also China, the Philippines established manufacturing industries from the 1960s. The Philippines joined with four countries in Southeast Asia to establish ASEAN in 1967 (Church, 1995), however, the FDI that came into the Philippines was still very low. It was less than 1% of their GDP during the period from the 1950s until 1970. There were a number of factors that contributed to this.

These factors included their policy on restricting importations, the government's strong dominance in the domestic market, lack of physical infrastructure and the unstable political situation at that time(OECD, 1999).

Considering all of these challenges, the Philippines initiated a series of transformations at the country level. They abolished restrictions on imports in order to give opportunities to foreign investors to invest in the Philippines in the mid-1970s(OECD, 1999).Following this, the Philippines opened up their trade and reduced costs for trade in the 1980s (Aldaba, 1994), they also privatised some services including hotels, airlines and banking. By 1990, the Philippines had privatised more than 1,000 services (OECD, 1999).

As a result, FDI into the Philippines had improved to 2.5% of GDP by1994 compared with only 1% before the1970s (OECD, 1999). The stock of inward FDI intothe Philippines has increased over time. As shown in Figure 2.11, the Philippines stock of inward FDI increased 50 times by 2016 from only USD1,281m in 1980. The years 2001 and 2003 were the only two years when the Philippines experienced a reduction in their stock of inward FDI. In 2001, the Philippines had a loss of USD3,377m, this was higher than the loss experienced in 2003, which was only USD154m (UNCTAD, 2017).

Figure 2.20: Stock of FDI in the Philippines, 1980-2016 (USD million)
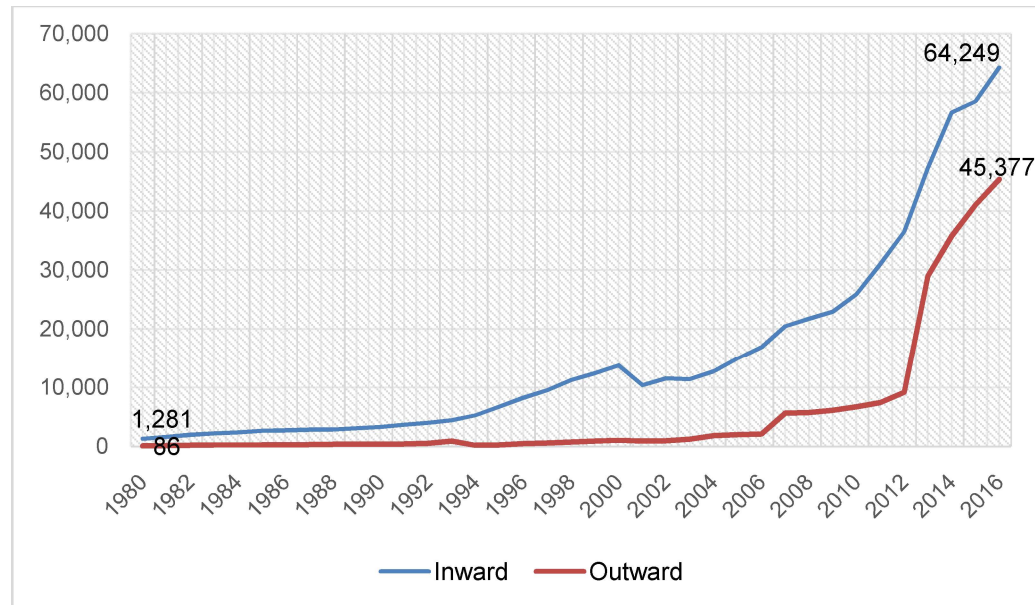
Source: UNCTAD, 2017

FDI into the Philippines has been generally in the manufacturing and services industry in most years. Primary industry received very low investment from overseas: manufacturing industry continued to receive more investment until recent years. In the first quarter of 2016, 37% of FDI went into manufacturing and this increased to 65% in the first quarter of 2017 (Philippine Statistics Authority, 2017). Over the period 2001 to 2009, electricity and real estate are the two industry services that had more foreign investment than others (UNCTAD, 2017).

Figure 2.21: FDI into the Philippine by Industry (USD million)
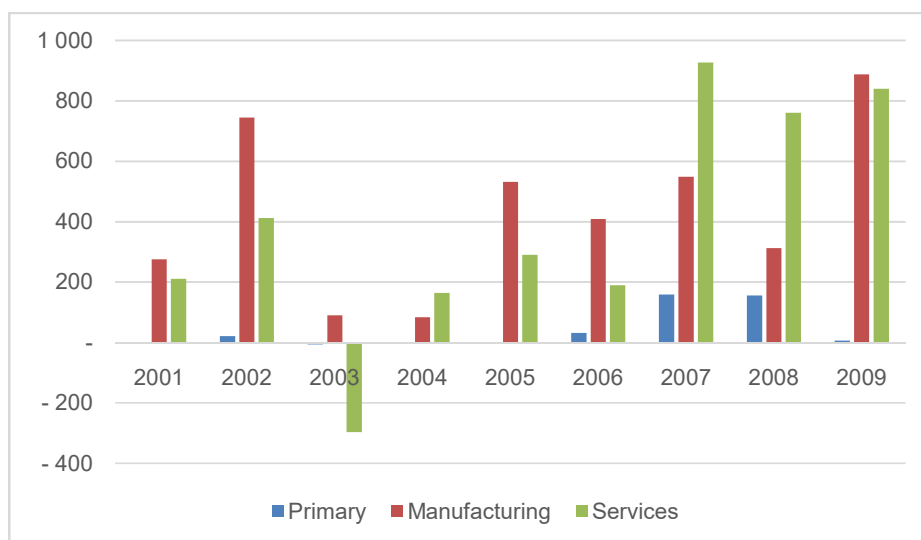
Source: UNCTAD, 2017

Among the FDI invested in the Philippines, most was from North American countries followed by other developed countries (including Australia and Japan), Asia and Europe. Among those from North America, 99% was from the United States while only 1% was from Canada (UNCTAD, 2017). As one of the foreign countries which colonised the Philippines, the United States has been the major source of FDI in the Philippines until the present time. Even in 1994, the United States had the most valuable investmentwithUSD689m compared to other investors from countries such as Hong Kong which had only USD298m while Taiwan had USD274m, Malaysia USD164m and Japan USD106m (Edward and Skully, 1996).

Figure 2.22: FDI into the Philippines by Country of Origin FY 2001-2012 (%)
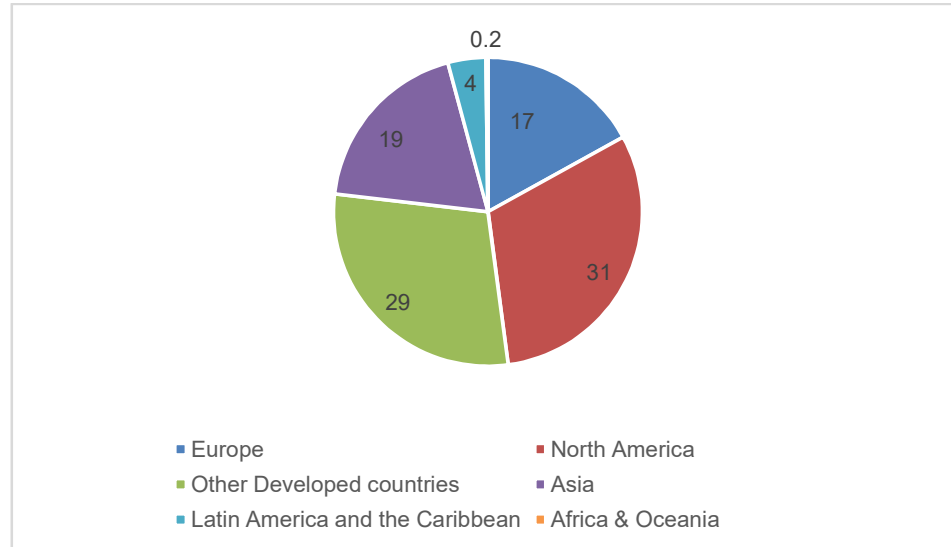
Source: UNCTAD, 2017

The Philippines has also been successful in investing overseas. Their stock of outward FDI increased overtime. Starting with only USD86m in 1980, this grew to USD45,377m in 2016. 1994 and 2001 were two years when the Philippines had a huge reduction on their stock of investment overseas. In 1994, they had negative USD709m while USD140m in 2001(UNCTAD, 2017).

2.3.8 Singapore

Singapore is geographically located at the eastern end of Malaysia and shares maritime boundaries with Riau, one of the Indonesian provinces. The British invaded Singapore in 1819. Due to the country's strategic location and as a free trade zone, the country was used as a transit place for trading activities between China, India and European countries during the British occupation. As a result, Singapore had many immigrants from China in addition to some from India. Similar with other countries in Southeast Asia, Japan invaded Singapore during WW II for three years from 1942 until 1945. The British took Singapore again after 1945. When Malaysia became independent, Singapore was part of the federation of Malaysia. Singapore only separated from Malaysia and became an independent country in 1965 (Church 1995).

Two years after independence, Singapore together with four other countries in Southeast Asia established ASEAN. Before the 1970s, Singapore had introduced a number of major reforms to facilitate FDI. The country initiated its Economic Development Board (EDB) who played an important role promoting Singapore to foreign investors. EDB serves as a one stop shop for foreign investors who want to invest in Singapore. Singapore reviewed their tax system by providing tax discounts for a certain period of time at the beginning of foreign investment activity in the country (Cahyadi et al., 2004). This change included no withholding tax during five to ten years of investing in the manufacturing and services sector (Edward and Skully, 1996).Besides these major reforms, Singapore government's active and strong support added to the success of EDB's work (Cahyadi et al., 2004).

As a result of these actions, Singapore had already achieved 6% GDP growth rate during the 1960s.The manufacturing sector had grown to 15% as a total of GDP before 1970. This positive growth contributed to Singapore's early investment in technology in the early 1980s and also in the 1990s. The country had allocated S$ (Singapore Dollar)2b (equivalent to USD1.4b)in the first five years of the 1990s followed by another S$4b (equivalent to USD2.8b) in the next five years. in By 2000 Singapore already had 74% of export goods in machinery and equipment (Cahyadi et al., 2004) which included 55% of ICT (information, communication and technology) goods that were exported in the same year. This shows that half of Singapore's total export was already ICT goods (UNCTAD, 2017).

Singapore's stock of inward FDI increased or remained stable in most years. Beginning with onlyUSD5,351m in 1980, this increased to USD1,096,320m in 2016 as shown in Figure 2.25. This was around a 200 times increasing over 37 years. 1997 was the only year that Singapore experienced a reduction in their stock of Inward FDI, a decline from USD89,494m in 1996 to USD74,768m in 1997, a reduction of USD14,725min just one year (UNCTAD, 2017). The Asian financial

crisis (1997) was one of the main causes of this reduction. Singapore's economic growth dropped to only 1% in 1997 compared to 8% prior to the financial crisis, in particular at the beginning of the 1990s (Cahyadi et al., 2004). Singapore's dependency on FDI continues to be high. Their FDI as a percentage of GDP has increased from 53% in 1980 to 159% in 2005 (Dunning and Lundan, 2008).

Figure 2.23: Stock of FDI in Singapore, 1980-2016 (USD million)
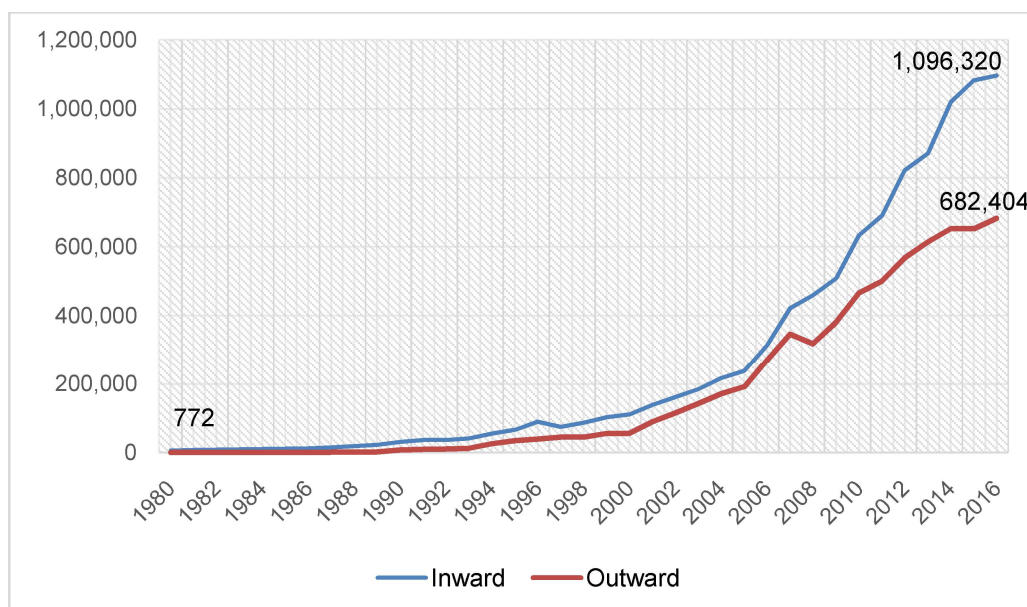
Source: UNCTAD, 2017

FDI into Singapore was obviously concentrated in the services industry and this has increased over time. From 2001 to 2012, 75% of FDI went into services, 24% in manufacturing industry while only 1% in other industry. The total value of investment in the services industry had a growth of almost seven times from USD72m in 2001 to USD495m in 2012. Manufacturing industry only had USD43m to USD105m in the same period (UNCTAD, 2017).

Figure 2.24: FDI into Singapore by Industry (USD million)
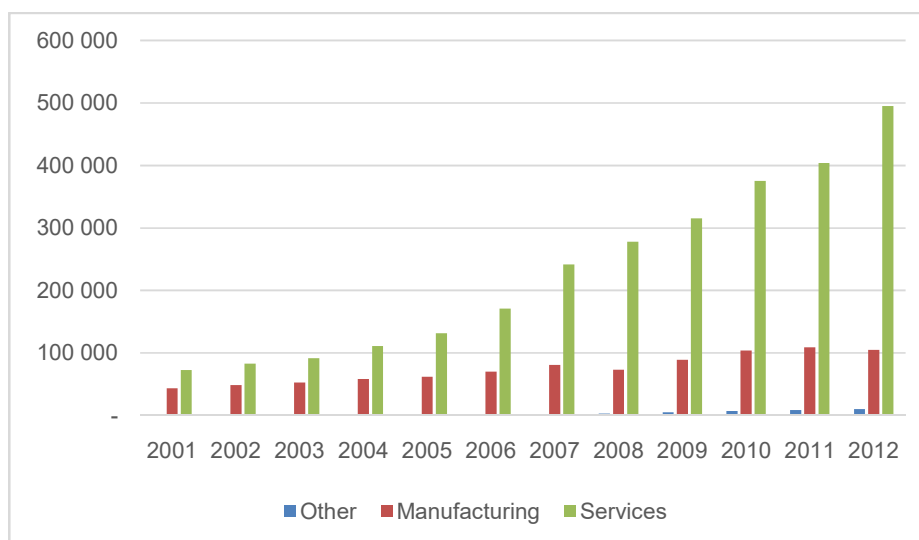
Over the period 2001 to 2012, 39% of foreign companies invested in Singapore were from Europe. The Netherlands and the United Kingdom were the two countries that had most companies, followed by 16% from Latin America and the Caribbean in addition to another 16% from other developed countries (including Australia and Japan). FDI from the Asian region only accounted for 13% and from North America also 13%. Very few foreign companies from Africa and Oceania invested in Singapore.

Figure 2.25: FDI into Singapore by Country of Origin FY 2001-2012 (%)
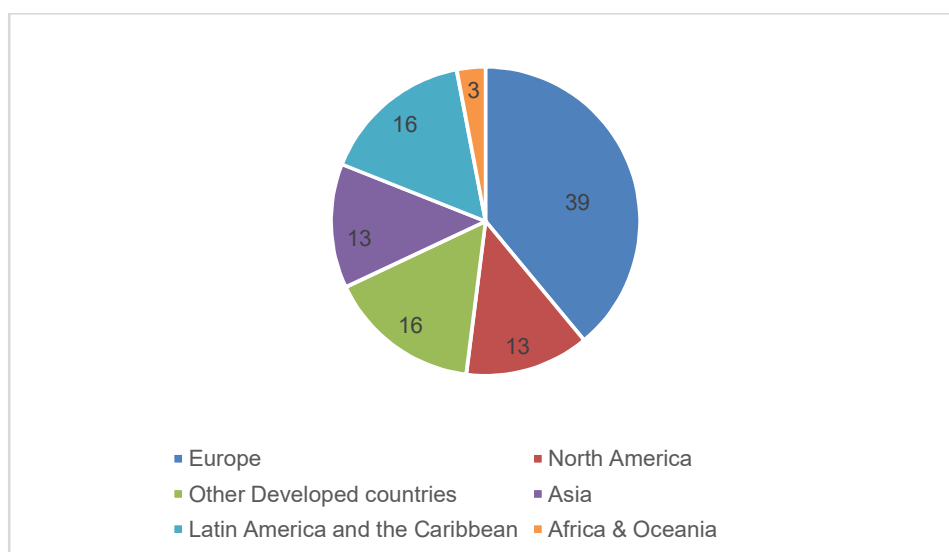
Singapore's stock of outward FDI was almost a similar flow with their inward data as indicated in Figure 2.15. It dramatically improved from only USD772m in 1980 to USD682,404m in 2016. This was more than 880 times over 37 years (UNCTAD, 2017). The majority of Singapore investment overseas was in the finance sector with around 55% in both 1992 and 2003. The second sector was manufacturing with around 21% in the same years. As a member of ASEAN, Singapore had 27% of their investment overseas in ASEAN countries followed by 24% in other Asian countries in 1992, however by 2003 this had changed to be more in Latin America, with almost 28% compared with only 22% in ASEAN countries (Ellingsen et al., 2006). Even though Singapore had made positive progress in their investment overseas, they also had a reduction both in 1985 and also in 2008. A decline of USD30m occurred between 1984 to 1985 and USD28,138m between 2007 and 2008 (UNCTAD, 2017).

The decline in 1985 was mainly caused by the reduction of contributing sectors to Singapore's economy. For example, the construction sector contributed 24% during 1981 to 1984, however, this decreased to only 14% in 1985. Other major sectors such as electronic production and transport equipment also had their production decline at the beginning of 1985. Another important factor was Singapore's exports to the United States decreased. This factor used to be above 50% before the recession. In 1985, Singapore's exports declined by around 3%. Overall, Singapore's GDP growth rate in 1985 declined to negative 1.7% from 8.25% in 1984 (Rigg, 1985). Singapore's reduction in their stock of outward FDI in 2008 was caused mainly by the Global Financial Crisis in 2007 and 2008, which impacted adversely on most ASEAN countries (ASEAN, 2012).

2.3.9 Thailand

Thailand is known as the Kingdom of Thailand. The country shares land borders with Myanmar and Lao PDR in the north, Cambodia in the east and Malaysia in the south. The western part of Thailand abuts the Andaman Sea. Unlike other countries in Southeast Asia, Thailand has never been colonised by any foreign countries. During WW II, Japan attempted to invade Thailand, however, because Thailand had a strong military force, the invasion did not occur. The Thai Kingdom has existed since the 13th century. The Kingdom system was replaced by military government in 1932. Thailand then introduced a democratic system, with a Prime Minister as the head of government, King as the head of state and also community representation in parliament (Church 1995).

Even though Thailand has been through a number of different internal conflicts and political crises, it is one of the countries in Southeast Asia that is in the category of earlier reformers. In the 1960s, Thailand implemented an import substitution policy which aimed to improve production at the country level in order to reduce importation of goods from overseas. The government created industrial zones to support their production activity. Once the country had more production, they progressed with the adoption of an export promotion policy in 1980. In addition, they removed financial barriers through providing financial credit to firms with fewer restrictions. Thailand also initiated a free trade agreement (FTA) with a number of different countries (Wattanakul, 2009), including with most ASEAN countries. Indonesia and Malaysia were two of the countries that Thailand had a strong relationship with in free trade agreements (Verico, 2012).

As a result, Thailand, which used to produce more in agriculture, turned to more industrial products. In 1961, Thailand's total production was around 40% from the agriculture sector with only 18% from industry, however, in 1993, there was only 12% from agriculture compared with 40% from industry. Similar changes occurred

as well in the composition of Thailand's exports. In the early 1980s, Thailand's exports were around 50% from agricultural production but manufacturing production became the leading sector in exports in 1993with around 80% from manufacturing and only 12% from agricultural production. Since then, Thailand has become one of the most industrialised countries in Southeast Asia (Jomo and Rock, 1998).

Figure 2.26: Stock of FDI in Thailand, 1980-2016 (USD million)
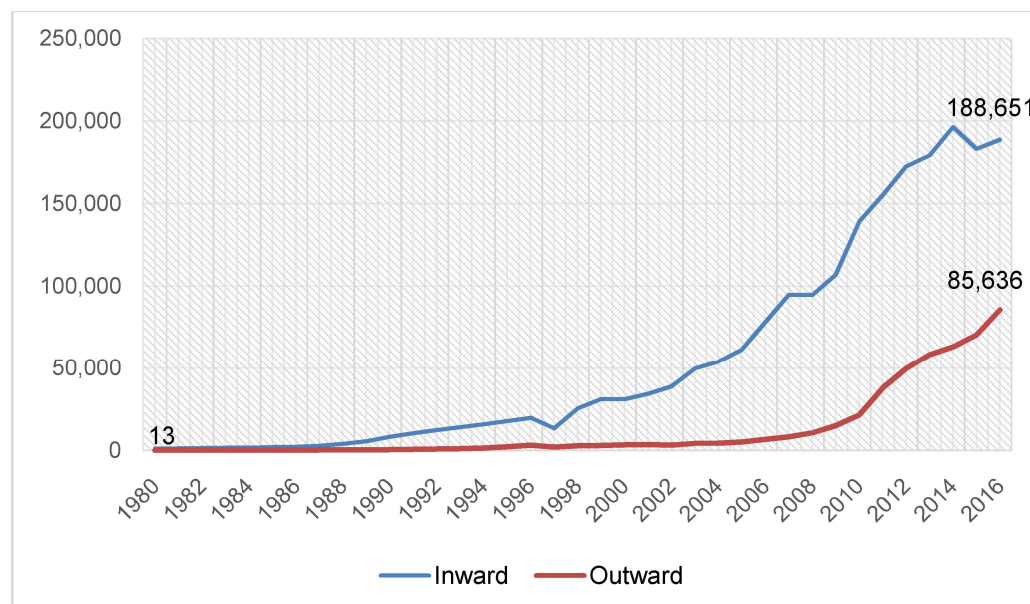
Source: UNCTAD, 2017

As one of the industrialised countries, Thailand has managed to attract more FDI into the country. As shown in Figure 2.28, Thailand's stock of inward FDI increased from only USD981m in 1980 to USD188,651m in 2016. It was around 190 times increase in incoming FDI over these 37 years. 1997, 2000 and 2008 were the years when Thailand had a decline in their stock of inward FDI. The largest loss was in 1997, around USD6,372m compared with only USD170m in 2002 and USD150m in 2008 (UNCTAD, 2017). Since the Asian financial crisis in 1997 originated from Thailand, the crisis affected them negatively. This is why there was such a massive reduction in stock of inward FDI particularly in 1997 (Thangavelu et al., 2009). The Global Financial Crisis in 2007 and 2008 also brought some negative impacts into Thailand's incoming FDI. This can be seen through the decline in the proportion of

private investments in Thailand predominantly in 2008. There were 1.9% of private investments in the first quarter of 2008, however, this dropped to negative 10.2% in the fourth quarter of 2008 (Sangsubhan and Basri, 2012).

The majority of FDI into Thailand was in the manufacturing industry. Based on the availability of data from 2001 to 2004, 66% of FDI in manufacturing was followed by 32% in services while only 2% was in primary industry (UNCTAD, 2017). The increase of FDI in the manufacturing industry has shifted the country to more industrialised products such as electrical and electronic equipment rather than agricultural products (Jomo and Rock, 1998).

Figure 2.27: FDI into Thailand by Industry (USD million)
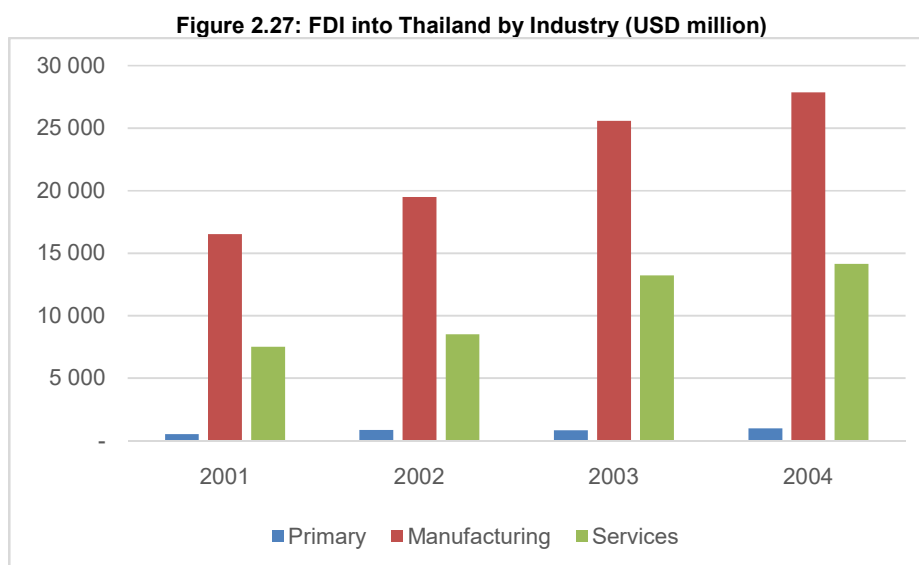
Source: UNCTAD, 2017

Thailand has become the investment destination for most foreign companies from other developed countries as shown in Figure 2.30. Among developed countries (Japan, Australia, Bermuda and New Zealand), the majority of FDI come from Japan. Asia was the second region with 26%, Europe 20% and North America 10% of the companies who invested in Thailand. Foreign companies from Latin America, African and Oceania countries remain very few in Thailand (UNCTAD, 2017).

Figure 2.28: FDI into Thailand by Country of Origin FY 2001-2012 (%)

Pie chart values: 20, 10, 35, 26, 6, 3

- Europe
- North America
- Other Developed countries
- Asia
- Latin America and the Caribbean
- Africa & Oceania
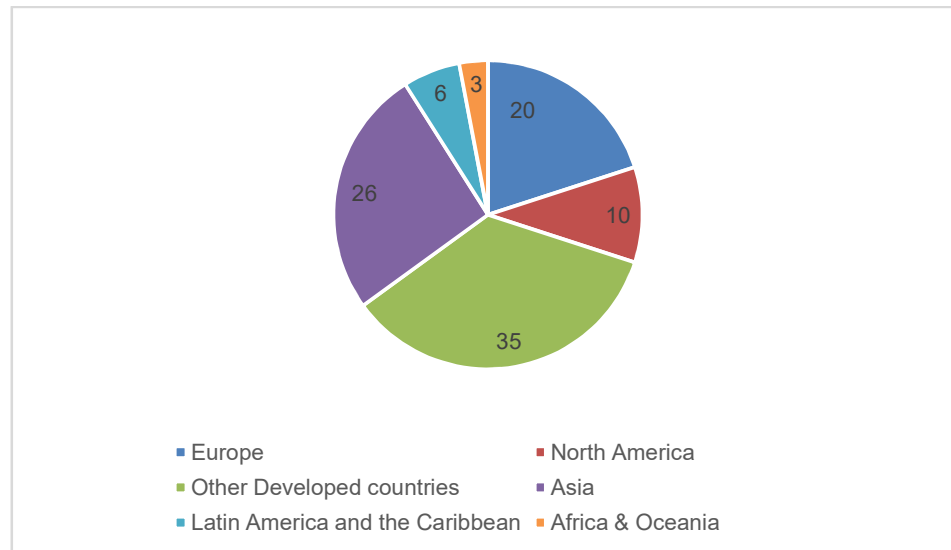
Source: UNCTAD, 2017

Thailand's stock of outward FDI also had generally positive progress. Despite this, there was a cut back in their overseas investment in 1984, 1997 and 2002, Thailand's latest values increased to USD65,768m in 2014 compared to only USD13m in 1980. Similar to the reduction in inward FDI, 1997 was also the year that Thailand had most of their cut backs in investment overseas, which was from USD1,108m in 1997 to only USD2m in 1984 and USD264m in 2002 (UNCTAD, 2017). The cut of investment overseas in 1997 was clearly affected by the Asian financial crisis (Thangavelu et al., 2009).

2.3.10 Timor-Leste

Timor-Leste was colonised by Portugal for around 450 years. When Portugal left in 1975, the country was completely uncertain about its overall future. There were different visions among Timorese political leaders. Fretilin party leaders insisted on independence and declared a unilateral proclamation of independence on 28 November 1975. Party leaders from APODETI were in favour of Timor-Leste's integration to Indonesia: subsequently, Indonesia invaded and occupied the country for 24 years from 7 December 1975 (Leach, 2017).

However, there were many irregularities during the Indonesian occupation. These included continued attacks from Indonesian military to destroy the liberation movement, which resulted in hundreds of casualties including ordinary people. At this time Timor-Leste's economy was dominated by a group of rich companies from Indonesia which left local people behind..This attracted attention from different countries in the world and led to the United Nations agreeing with the call for a referendum in Timor-Leste to decide on the country's destination. As a result, Timor-Leste gained independence and achieved its full sovereignty in 2002 (Leach, 2017).

Even after the independence, the country was in chaos, however, with the support from the United Nations Peace Keeping Force, the country's situation returned to normalcy in 2000 (Downie, 2004). Three years after Timor-Leste gained its independence, the United Nations handed over the administrative responsibility to Timor-Leste's officials. It was the beginning of the country's journey towards development with the establishment of the first constitutional government in 2002 (Chopra, 2002).

As the country progressed through its first five years of independence, it faced political crises in 2004 and 2006thus posing the first crucial test to the government officials to maintain law and order(Kingsbury, 2007). Through assistance from the United Nations mission in Timor-Leste (Margesson and Vaughn, 2009) and the intervention from the country's President's office, a dialogue was organised to resolve conflicts between youth groups in the country (Scambary, 2009). Two of the recent elections in the country, the Presidential election on March 20 and Parliamentary election on July 22, 2017 occurred peacefully and democratically. There were no major incidents reported as a result of the elections. The country's political situation is now much more stable (Government of Timor-Leste, 2017).As a result, in 2012, the United Nations terminated their mission in Timor-Leste since it was considered that Timor-Leste can stand on its own feet and rule the country

(Leach, 2013).

As a country that has gone through different conflicts, even up until 2007, Timor-Leste focused mainly on restoring peace and stability in the country. Only in 2008, was the government able to initiate a revision of the Tax Law. The revision included a cut in importation obligations, which was at 6% and was reduced to 2.5% (TradeInvest, 2008). In addition, companies profit tax also went down to only 10% compared with 30% in the past (World Bank Group, 2010): the government also abolished minimum income tax for companies (TradeInvest, 2008). This made Timor-Leste one of the top countries among 183 countries in tax reform in the years 2008 and 2009 (World Bank Group, 2010). As well as tax reform, Timor-Leste cut the number of procedures, number of days and also total cost that an investor had to go through to start up a business. Between 2006 and 2016, the number of procedures was cut to only four from ten, and the number of days was reduced to only nine from 92, and total cost (as a percentage of income per capita) was cut from USD125 to only USD0.3. The ranking for Timor-Leste's performance in ease of doing business was raised to 104 out of 189 countries in 2016 compared to the rank of 142 out 155 countries in 2006 (World Bank Group, 2006; World Bank Group, 2016).

As a result, the stock of inward FDI to Timor-Leste increased dramatically particularly after 2007 as can be seen in Figure 2.31. Unlike other Southeast Asian countries, data for Timor-Leste are only available from 2003 onwards. Timor-Leste's stock of inward FDI into the country increased from only USD18m in 2003 to USD346m in 2016, an increase of 19 times over 14 years. During this time, Timor-Leste had no reduction in their stock of inward FDI (UNCTAD, 2017).Even though the total stock of inward FDI into Timor-Leste was not as high as other countries in Southeast Asia, overall, this was a great achievement.

Figure 2.29: Stock of FDI in Timor-Leste, 2003-2016 (USD million)
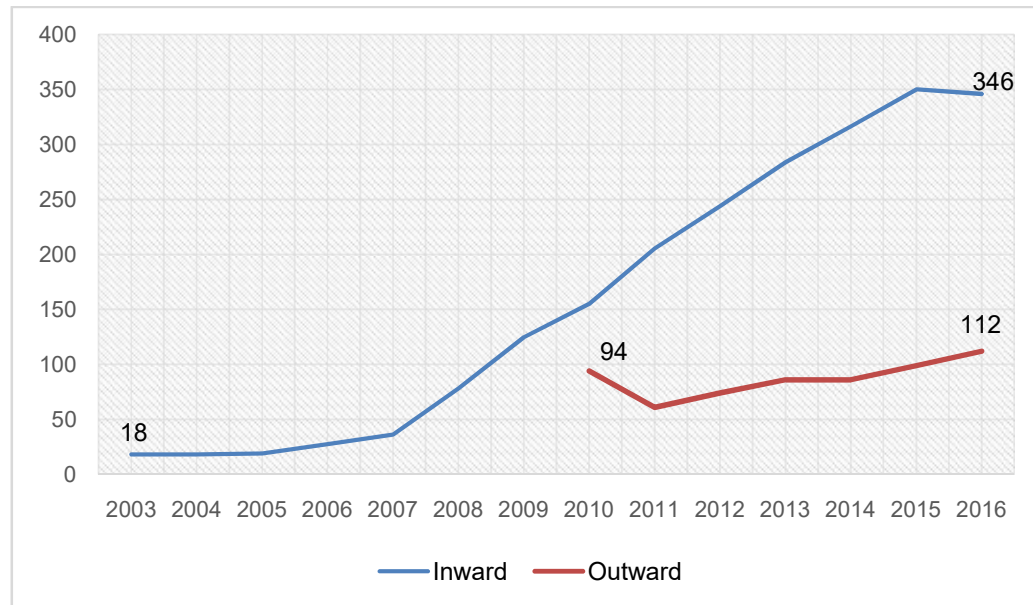
Since there is no data available from UNCTAD Stat on FDI into Timor-Leste by industry, this research utilised the administrative data from the TradeInvest Office (2017)in Timor-Leste. The data was only based on copies of investors certificatesthat are archived in the TradeInvest office. These investments are for national investors with a minimum investment value of USD50,000 while for foreign investors the value is USD1.5m and for joint ventures with 75% share from national investors the value is USD750,000. Over the period 2006 to 2016, most investments by foreign companies were in the tourism sector (28 investments). A total of 23 investments were in industry, 17 in commerce, ten in manufacturing, five in agriculture and another five in the services sector. The majority of investments that were issued with a certificate have been implemented. Over the period 2015 to 2017, about 70% of investment took place with good progress compared with only 20% which were having some problems and only 10% of investment that has not started. This shows that most of the investors that have received investor certificates from the Tradeinvest office pursue their investment.

Figure 2.30: FDI into Timor-Leste by Industry FY 2006-2016 (in number)
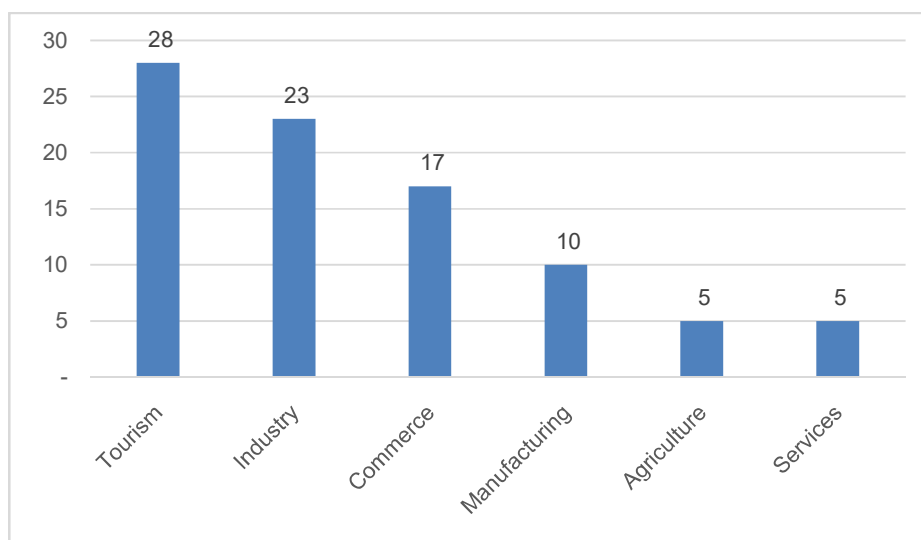
As shown in Figure 2.33, many of the foreign companies who invested in Timor-Leste were from India with 41% while 17% were from Portugal and another 17% from Korea. Two other countries, the United States and China each had 15% and 10% of the companies investing in Timor-Leste.

Figure 2.31: FDI into Timor-Leste by Country of Origin FY 2002-2012 (%)
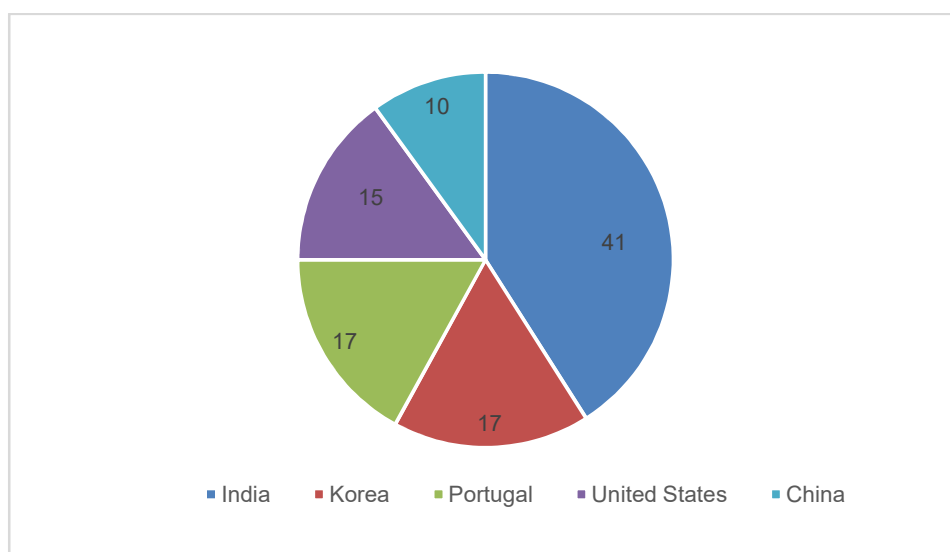
On the other hand, Timor-Leste's stock of outward FDI was only reported from 2010 until 2016. As shown in Figure 2.31, it increased from USD94m in 2010 to USD112m in 2016,this was a growth of USD18m over these six years (UNCTAD, 2017). Further investigation is recommended to find out details regarding Timor-Leste's investment in overseas countries.

2.3.11 Vietnam

Vietnam is officially known as the Socialist Republic of Vietnam. China dominated Vietnam for 800 years due to China's proximity to Vietnam geographically. In the 10th century, Vietnam became an independent State, however, the French then invaded Vietnam in the 18th century. Following WW II, there was civil unrest and influence from the communists in the north while the USA influenced the south. Subsequently, the country was divided into two different regions, Northern Vietnam and Southern Vietnam (Church, 1995).

Vietnam achieved full independence in 1945, however, the country continued to experience civil war between the north and south until the mid1970s. During that period of time, Vietnam experienced difficulty in their economy and an increase in prices in the local market. The government had no means to control it. Almost half population lived under the poverty line while there was not enough food for the population(Edward and Skully, 1996). In the mid-1980s, the government of Vietnam introduced the 'Doi Moi' agenda, which aimed to open up their economy, welcoming foreign investment to support the country's production and export. The government withdrew their control of business activity by giving more power and opportunity to the private sector (Xuan and Xing, 2008).

As a result, the stock of inward FDI into Vietnam started to increase at the beginning of 1990 compared with 1980. As shown in Figure 2.34, it was only USD9m in 1980 and increased to USD243m in 1990. This progressively scaled up to USD115,391m

in 2016. This was a massive improvement of around more than 10,000 times over these 37 years. 1985 was the only year that Vietnam experienced a reduction in their stock of inward FDI, with a loss of USD0.1m (UNCTAD, 2017). The positive development in the incoming FDI contributed to Vietnam's economic growth. Their GDP per capita improved dramatically by seven times in 2006 compared with 1990. The price of goods in the market at country level dropped below 10% in the mid-2000s compared with almost 800% in 1986 (Nguyen and Nguyen, 2007).

Figure 2.32: Stock of FDI in Vietnam, 1980-2016 (USD million)
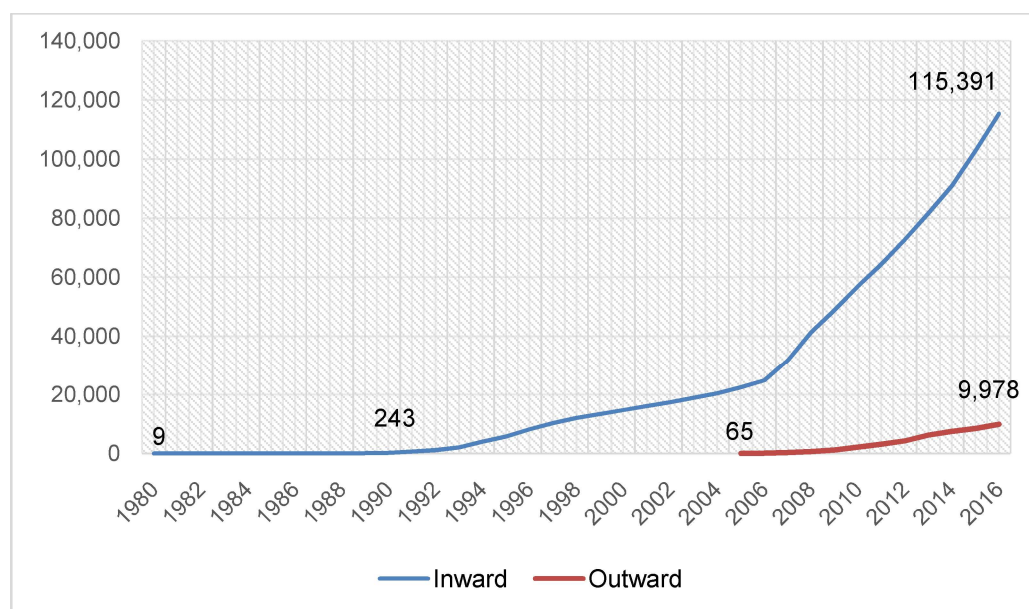
Source: UNCTAD, 2017

The majority of FDI into Vietnam has been in the manufacturing industry. As a proportion of the total, investment by foreign companies in manufacturing has increased from only 48% in 2011 to 72% in 2012. There was a decline in services industry investment from 47% to 27% and a slight improvement in primary industry from only 1.6% to 2% (UNCTAD, 2017). Even in the past, FDI has been more in the manufacturing industry. In 2002, the manufacturing industry received 46% of foreign investment compared with only 25% in services and 6.5% in the agriculture industry with the remaining proportion in different industry areas (Bui, 2004).

Figure 2.33: FDI into Vietnam by Industry (USD million)
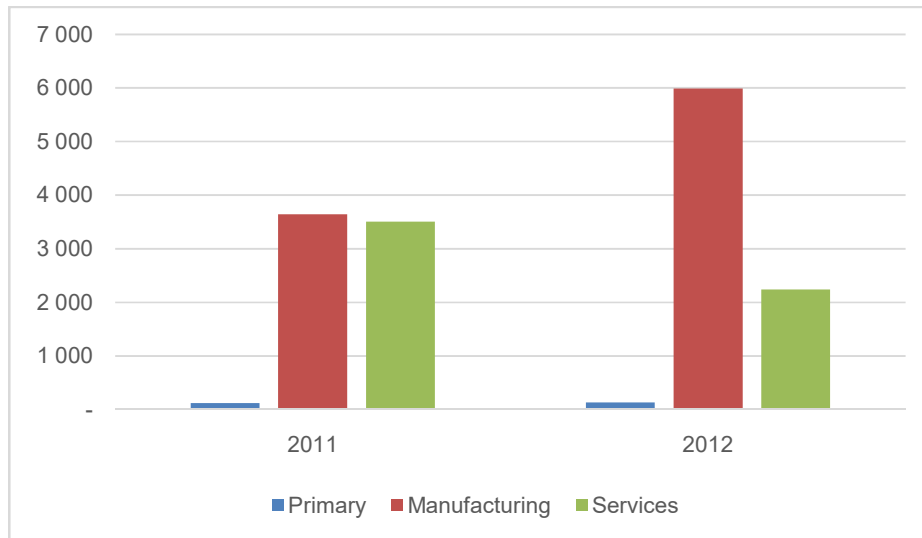
Source: UNCTAD, 2017

Over the period 2001 to 2012, it was clearly seen (Figure 2.36) that the majority of foreign companies investing in Vietnam were from Asian countries: 23% of foreign companies from Japan, followed by Korea 21% and Singapore 15%. Other countries (a total of 16) share the proportion of 13%. Countries such Thailand, Malaysia, United States, Netherland and France had less than 8%.

Figure 2.34: FDI into Vietnam by Country of Origin FY 2001-2012 (%)
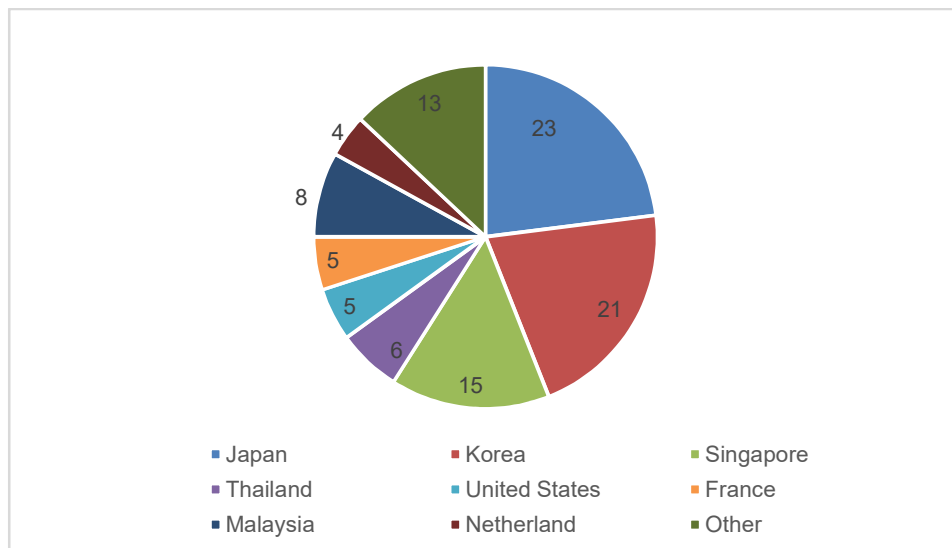
Source: UNCTAD, 2017

The stock of outward FDI from Vietnam remains low. As indicated in Figure 2.15, even though the data are only available from 2005 until 2014, it shows that Vietnam's stock of outward FDI increased from only USD65m in 2005 to USD9,978m in 2016, an improvement of around 150 times in these eleven years (UNCTAD, 2017).

2.4 Summary

In summary, the diversity of history and also development of each country in Southeast Asia has contributed to their different FDI experiences and progress. Among the eleven countries in this region, Singapore is clearly the most advanced in term of the stock of inward and outward of FDI. Malaysia, Thailand and Indonesia are the three countries in the second group after Singapore. Countries such as Brunei Darussalam, Cambodia, the Philippines and Vietnam are mostly in between with their dissimilar progress in FDI. The final three countries, Lao PDR, Myanmar and Timor-Leste have the lowest progress in FDI compared with the rest of the countries in the region.

Overall, the eleven countries in Southeast Asia have all experienced growth in FDI. Their stocks of both inward and outward FDI have generally increased in most years from 1980 to 2016. This shows that the majority of countries in Southeast Asia have been successful in not only attracting more FDI into their countries but also investing more in other countries.

The question as to whether the increase in stock of inward FDI influences Southeast Asian countries' trade and technology innovation is to be examined in Chapter 6 and Chapter 7 of this thesis. The next chapter present a review of relevant literature.

CHAPTER 3: REVIEW OF LITERATURE

3.1 Introduction

There has been much written on foreign direct investment (FDI). Some researchers investigated its impact on productivity (Saxena, 2011; Haskel et al., 2007; Piyaareekul, 2008; Engel and Procher, 2012) while others investigated the impact on domestic investment (Al-Sadig, 2013; Ndikumana and Verick, 2008; Apergis et al., 2006) and on economic growth (Kogid et al., 2011; Seetanah and Khadaroo, 2007; Ahmed et al., 2011).

This current research focuses on examining the impact of foreign direct investment on trade and also on technology innovation. In addition, it also identifies the determinants of FDI. The objective of this chapter is to present and review current and previous literature on this area of research.

This review of literature is presented in seven different parts. The chapter begins with definitions of FDI, trade and technology innovation followed by the theoretical context. The third section considers determinants of foreign direct investment. The following two sections are the review of the impact of FDI on trade as well as FDI on impact on technology innovation. The sixth section covers literature on the context of Timor-Leste. Finally, a conceptual framework is presented, summarising the review of literature in this chapter.

3.2 Definition of FDI, Trade and Technology Innovation

FDI stands for foreign direct investment: it is an investment made by a company in another country that is different from their home-based country. A company can be formed by an individual person or a group of people or a group of enterprises who have shared objectives to invest in a particular country (OECD, 2015). UNCTAD

(2007: 245)defined FDI as "an investment involving a long-term relationship and reflecting a lasting interest and control by a resident entity in one economy". So, this investment is more profit oriented. The majority of these investments are made by foreign companies or multinational enterprises (MNCs). Japanese firm NEC and Finnish firm NOKIA are two examples of multinational enterprises that have their business operations in a number of different countries (Dunning and Lundan, 2008). There are generally two types of investment, inward and outward. The basic difference between them are inwards refers to all incoming investments by a foreign company in a country while outwards are the outgoing investments made by a local company overseas or another country (UNCTAD, 2007).

Trade is generally represented by import (buying) and export (selling) of products and services. There are two main types of import; imports and re-imports. Imports are the purchasing of goods from overseas. Re-importing is similar to importing but the difference is that similar goods are purchased that are previously produced and exported by the country. In short, imports are the purchasing of foreign goods while re-imports are purchasing local goods. On the other side, export also has two types: export and re-export. Export refers to selling goods overseas by using local products while re-exporting is equal to export but it re-produces goods from overseas. In other words, export is about export of local goods while re-export is export of foreign made goods (United Nations, 2010).

Technology innovation is a process of modification of existing products and processes into their new form in a market (OECD, 2013a). This is to improve output of products with better quality and in more innovative ways by using new technology (Dubickis and Gaile-Sarkane, 2015). New products and processes need to be compatible with changes that occur in the era of globalisation. The ability to be more innovative in products and the process of new technology is very important to ensure that a firm can compete with others in the world market. Dependency on new

technology remains as a crucial component that can support productivity (Mumford, 2000).

3.3 Theoretical Context

The eclectic theory of OLI (Ownership, Location and Internalisation) was initiated by Dunning in the mid-1950s and remains as important paradigm that guarantees success of FDI activities at a country level. OLI is not only important in attracting more FDI into a country but also to ensure FDI delivers positive impacts into a country's productivity. Within the OLI paradigm, O and I (Ownership and Internalisation) are normally the two advantages that are required by foreign companies while Location (L) advantages are more what a host country can offer (Dunning, 2001).

Ownership advantage is the first part of this theory that emphasises the importance for foreign companies to have control of certain assets and resources. This advantage includes holding important positions in companies, owning brands and patents as well as technology. This advantage cannot be changed and continues to be claimed by foreign companies when investing in different host countries (Dunning and Lundan, 2008).

The second part of this theory is location (L) advantages which covers advantages that exist in a particular country. For example low costs for labour and production, improved basic infrastructure, strong institutions and supportive government policy. These location (L) advantages act not only as factors to attract FDI but also can support FDI investment activities, including to improve trade and promote technological innovation (Dunning and Lundan, 2008). These are some examples of location advantages, there are more to be discussed in detail in the following section 3.4 related to determinants of FDI.

Internalisation is the final part of this theory. This is an advantage that most foreign companies seek to ensure so they have full control of all of their investment activities. Considering that investing may possess several risks, having control can minimise unexpected possibilities. Therefore, the majority of foreign companies choose not to contract out their investment activity to other external firms in a host country (Dunning and Lundan, 2008).

Based on this eclectic paradigm of OLI theory, motivations for FDI are classified into four different groups: resources seeking, market seeking, efficiency seeking and strategic seeking. Resource seeking is a group of FDIs who seek to access resources, in particular natural resources. In addition, they also look for human resources with low-cost. The second group are market seeking, those who aim to expand their product into a new market. The third group are efficiency seeking, this group of FDIs seek to gain more benefits by using fewer resources. The final group is strategic seeking and this group seek resources both human and technological from other countries to support their investment activities, with the intention of equipping them to compete with others in the market (Dunning and Lundan, 2008).

Following OLI theory, the next section discusses particular locational advantages that serve as determinants of FDI, advantages that a country has to attract more FDI. There have been many studies on determinants of FDI. In general, the studies fall into four major groups: macroeconomic, institutional, political and socioeconomic (Vadlamannati et al., 2009). However, there are also other determinants, which are not part of these four groups. These are location (Dunning, 2001), basic infrastructure (Bellak et al., 2009) and administrative issues (Torriti and Ikpe, 2015; Morisset and Lumenga-Neso, 2002) as some other determinants. There are more to be discussed in the following section.

3.4 Determinants of FDI

3.4.1 Macroeconomic determinants

Macroeconomic activity covers most economic activity at the country level, which includes income, tax, currency exchange rate, inflation and even employment and the market situation. These macroeconomic factors help countries to understand their progress in economic development and also identifies obstacles and any reforms that are required to improve a country's situation (Dornbusch et al., 2013). Subject to the current review of literature and its relevancy to this research, not all of these macroeconomic factors will be discussed. This research in particular focuses on discussion of the following macroeconomic factors:

Market size

The first factor of macroeconomics to be discussed is market size. Market size is normally represented by GDP (Gross Domestic Product). A country that has a high GDP generally has access to a bigger market, both domestically and internationally. They are most likely to attract more FDI according to the majority of previous studies. One recent study by Boateng et al. (2015) showed that GDP was one of the important factors that influenced FDI into Norway. Another study by Lin (2010) also indicated that foreign investors from Taiwan invested in China because China has a bigger market. Ang (2008: 187) study came up with empirical evidence for Malaysia that any "1% increase in real GDP would lead to about 0.95% increase in inward FDI". There have been many other studies that also presented similar findings in other countries including in India (Mahalakshmi et al., 2015) and in Brazil (Felisoni de Angelo et al., 2010)in addition, in, five ASEAN countries (Xaypanya et al., 2015) as well as 25 developing countries (Shahmoradi and Baghbanyan, 2011) and in Vietnam (Nguyen and Nguyen, 2007).

In contrast, there are some other studies that presented countries that have higher GDP but do not always attract more FDI. For example, in a country like China, which

is well known as one of the fastest growing economies in the world, GDP had only a small influence on the incoming FDI (Tang et al., 2008). Other researchers argued that market size is not the determinant of FDI. A study by Kyereboah-Coleman and Agyire-Tettey (2008) found that other factors such as political stability and previous experience of FDI in Ghana had more influence on FDI inflows than the country's market size.

Cheap Labour

Cheap labour has become an important factor that most countries can offer, in particular for unskilled types of work. India is one of the countries in Asia that is famous for their cheap labour. A study by Bose (2012) revealed that besides having cheap labour, India is also one of the biggest markets in Asia with access to different types of resources that are required by foreign investment activities. China also has similar advantages to India. Both China and India have become two of the countries in Asia that are the main recipients of FDI which leads to them receiving even more FDI. According to Ali and Guo (2005), China is also one of the countries in the world that provides cheap labour for work in another country, not only in China. Most foreign investors seek to invest in countries that offer low wages for their local labour (Bevan and Estrin, 2004).

Conversely, a country with cheap labour does not necessarily always attract more FDI inflows. A number of different researchers argued that cheap labour was not the only influential factor. There are many other factors that are considered by foreign investors. For example, a production process involves many different cycles of production, cost of material and cost of transportation. In some cases, both costs are beyond the labour fee. Having access to cheap labour is therefore not enough. Labour costs have been seen by some foreign investors as only a small component of the whole production activity. Therefore, it is not necessarily the main determining factor in influencing investment decisions (Miller, 1993).

Inflation

Inflation is another variable from the macroeconomic group that also has an effect on decisions made by foreign investors on where to invest. Inflation is generally defined as an increase in price for goods and services in the market (Oner, 2010). A continued increase of price in the market can have a negative effect on foreign investment activities. A study by Xaypanya et al. (2015) showed that FDI into Cambodia, Lao and Vietnam has been low compared to other countries in ASEAN because of inflation. In addition, there was a similar result in a study presented by Al Nasser (2007) on investment by United States companies in Latin American countries.

Nevertheless, a study by Omankhanlen (2011) indicated that inflation did not influence FDI in Nigeria. Sayek (2009)found that some foreign investors can still manage inflation in any particular country. Since the majority of foreign companies have their investment in a number of different countries including in their home country, inflation can be avoided through transfer of some of their activities into another country. Trevino et al. (2002)identified that some foreign investors may however reduce their volume of selling products to other countries in such circumstances.

Tax

Another macroeconomic variable is tax. Tax has been generally defined as revenue to a country. It is an obligation that any type of business activities which operate at a country level, should submit to tax (Messere and Owens, 1987). Even though tax is one of the sources of income for a country, not all countries impose tax on foreign investors. Some countries have less tax than others: those who have lower taxes, used to attract more FDI. For example, FDI among OECD countries was higher because of their agreement to pay less tax for investing in countries that are in this

group. This is to facilitate business activities between countries within the OECD (Haufler and Mittermaier, 2011). Some countries even offer tax free periods, known as a tax holiday to their foreign investors. Latin America and the Caribbean are two regions that implement this initiative and they have managed to attract more FDI (Klemm and Van Parys, 2012). In contrast, having a reduction in tax may not necessarily encourage more FDI into some countries or regions. The African region is one of the regions in the world that even though they have already initiated tax reform, the region is still not seen as an important destination for FDI and continues to receive less FDI than any other region in the world (Klemm and Van Parys, 2012). In 2012, Africa only had USD644,147m while Asia had USD4,788,136m and South America USD1,299,592m in their stock of incoming FDI (UNCTAD, 2017).

The implementing of higher taxes may discourage investors from investing in a country. One of the examples is the implementation of repatriation tax in the USA. A higher tax is applied to all US investors in overseas countries who want to send their money back to the USA. This has caused an increasing number of US firms investing overseas to retain their income overseas to avoid paying more tax if investing in the US (Hanlon et al., 2015). The results of this study are also supported by Foley et al. (2007) who emphasised that the USA's higher repatriation tax has negatively impacted on the number of US firms overseas who want to invest in the US.

3.4.2. Institutional determinants

The next group of determinants for FDI is institutional. The quality of institutions has been measured by different sets of common variables, however, the most common one is control of corruption (Sánchez-Martín et al., 2014; Aziz and Mishra, 2015b; Mohamed and Sidiropoulos, 2010; Bénassy-Quéré et al., 2007; Kolstad and Villanger, 2008; Buchanan et al., 2012). Another common variable is rule of law (Sánchez-Martín et al., 2014; Kolstad and Villanger, 2008; Buchanan et al., 2012)

and also government stability (Sánchez-Martín et al., 2014; Aziz and Mishra, 2015b; Kolstad and Villanger, 2008). There are also other variables such as quality of bureaucracy (Sánchez-Martín et al., 2014; Kolstad and Villanger, 2008), investment profile (Sánchez-Martín et al., 2014; Mohamed and Sidiropoulos, 2010), voice and accountability and regulatory quality (Masron and Abdullah, 2010; Buchanan et al., 2012) that have been used in some studies.

Most of these studies revealed that countries with a strong performance in most of these variables, are most likely to attract more FDI. Eight of the ASEAN countries are discussed by Masron and Abdullah (2010) and also Buchanan (2012)who considered 164 different countries. Wilhelms and Witter (1998)described these variables as government fitness, governments who have strength in most of the governance variables including in controlling corruption and rule of law. This research discusses in detail these institutional factors

Control of Corruption

The first variable from the institutional group is control of corruption. Over many years corruption has become a normal practice and it is hard to control in some countries. This kind of practice could deter trust from international actors including from foreign investors. Many studies have shown that corruption is one of the important determinants that discourage FDI inflows into many countries. Those studies including in 16 Arab countries (Aziz and Mishra, 2015b), 164 countries (Buchanan et al., 2012), 57 countries (Kolstad and Villanger, 2008), in some Sub Saharan African countries including in Nigeria (Salisu, 2004) and in Latin America (Sánchez-Martín et al., 2014). Many foreign investors prefer not to invest in countries where the practice of corruption is a common thing (Habib and Zurawicki, 2002). Foreign investors who come from a home country where corruption is unacceptable and an uncommon practice, are unable to invest in a host country where there is a high risk of corruption. For example, Swedish foreign investments

are higher in countries where there is no corruption (Hakkala et al., 2008). As a result, countries who have more corrupt practices, such as 12 countries in Latin America (Godinez and Liu, 2015) and also some Middle East and North African locations(Mohamed and Sidiropoulos, 2010), received fewer FDI inflows. This shows how corruption is one of the very important determinants of FDI in most countries (Bénassy-Quéré et al., 2007; Al-Sadig, 2009).

Even though the practice of corruption discourages inflows of FDI, it also can be seen as a means to facilitate business activities. For example, paying more money in order not to receive a penalty, or receiving speedy services, is seen to be acceptable by some people (Bardhan, 1997). Corruption has been seen as normal practice to help each other in Nigeria: for example having relatives awarded with government contracts for infrastructure projects. This benefits both contractors and the government officials (Salisu, 2004). A study by Egger and Winner (2005) confirmed that FDI into 73 different countries was positively influenced by corruption practices in those countries. The practice of corruption was seen more as a "helping hand" (p.933) which can simplify all the existing procedures. Things can be easier and quicker than going through the normal procedures which might require more time and more procedures.

Rule of Law

The second institutional variable is rule of law, which refers to the legal framework that a country has to rule their people and which applies equally to all people (World Bank Group, 2017). A study by Staats and Biglaiser (2012) showed that the rule of law was one of the important factors that foreign investors from the United States considered before investing in Latin American countries. Sánchez-Martín et al. (2014)found that Latin American countries such as Bolivia and Ecuador who had weak performance on rule of law, had low FDI compared with other countries in this region. Chile and Nicaragua were two of the countries in this region which were top

performers in rule of law. The proportion of FDI to GDP into these e countries was on average 5% compared with Bolivia and Ecuador with only around 2%. Therefore, rule of law is an important determinant that influences most of the foreign investors (Hewko, 2002).

It was not however the case that there was more FDI only in countries with strong law enforcement. A study by Kunsch et al. (2014) showed that it really depended on the origin country of a foreign investor. Host countries with a weak rule of law still considered investing in other countries with similar conditions. Korea was one of the examples in their study. This was because not all foreign investors come from a country that is strong in rule of law. So, even countries with a weak performance on rule of law can attract some investment from foreign companies. A similar view was supported by Hewko (2002) who argued that rule of law is an important factor for FDI, however, since foreign investors come from different backgrounds, some may consider rule of law rigorously but others may not.

Voice and Accountability

Voice and accountability is another important determinant of FDI. It represents to what extent the public community is at liberty to express their views towards any government policy (World Bank Group, 2017). A study by Kurul and Yalta (2017) found that voice and accountability is one of the important factors that influenced FDI into 113 developing countries. Cols and Rodríguez-Pose (2017) identified that voice and accountability play a crucial role in making 22 countries in Sub-Saharan Africa a destination for FDI. Bardhan (2002) also came up with a similar outcome, that foreign companies considered the importance of public opinion in the government. Economou et al. (2017) argued that institutional factors including voice and accountability normally become an important determinant of FDI in most developing countries. This indicates that countries that have a strong voice and accountability, are most likely to attract more FDI since everyone, including foreign

investors in the country, have the same rights and are free to raise their concerns.

Despite this many foreign investors were not concerned with institutional factors including voice and accountability if potential countries have other attractive factors. For example, some African countries such as Nigeria and Algeria who are rich in oil and gas, attract more international oil companies because of the oil, not because of their strength in voice and accountability (Wernick et al., 2014). A study by Gani (2007) discovered that this factor did not become a determinant of FDI in the 17 countries studied. This shows that subject to countries' condition, institutional factors such as voice and accountability may not always be factors that influence foreign companies' decisions to invest in a country.

Regulatory Quality

Regulatory quality refers to how government rules and regulations can support the private sector's investment activities (World Bank Group, 2017). Many studies have supported the argument that countries with strong regulatory quality, received more FDI. Gani (2007)was one of the researchers who found the positive relationship between regulatory quality and FDI into some Latin American countries. Regulatory quality has also been an important factor that contributed to the increase of investment between countries in the ASEAN region (Masron and Nor, 2013; Rammal and Zurbruegg, 2006). Another study which also supported the outcome of strong regulatory quality leading to the increase of FDI was from Daude and Stein (2007).

Nevertheless, countries with weak performance on regulatory quality may not always receive less FDI. Some investors could consider the situation as an advantageous opportunity to facilitate their investment activity. Foreign firms from countries that have weak regulatory quality consider investment in other countries with a comparable situation (Chang, 2015). A working paper by Scott et al. (2017)

showed that many banking industry investors from the United States chose to invest in countries with weak regulatory quality. This is considered less of a threat to their banking services compared with investment in countries that are strong in regulatory quality. Therefore, this shows that countries with either strong or weak regulatory qualities still have investments from foreign companies.

Government Effectiveness

If a government is consistent in providing better services to the public community this is referred to as government effectiveness (World Bank Group, 2017). Government effectiveness has been one of the important determinant factors that attracts FDI into most countries including in 113 countries (Kurul and Yalta, 2017), 17 developing countries (Gani, 2007) and 22 countries in Sub-Saharan Africa (Cols and Rodríguez-Pose, 2017). In addition, the effectiveness of government in BRICS (Brazil, Russia, India, China, and South Africa) countries attracted more FDI (Jadhav and Katti, 2013).

Unlike most foreign companies, some companies from China who look to merge and acquire companies from other countries, tend to invest in countries with ineffective government. This facilitates their investment activities because the majority of these Chinese firms come from a similar background, having weak institutions (Yang and Deng, 2015).

3.4.3. Political determinants

Political characteristics are another group of determinants of FDI. Political variables refer to a country's situation in politics: whether or not a country is in a stable political situation. This can be explained through the number of conflicts that occur as a result of political differences, including post-election. This research discusses peace and stability and also government regimes as two of the important political variables that influence FDI.

Peace and Stability

Many studies have indicated that countries which have peace and stability can attract more foreign investors. The concept of peace and stability is identical with the absence of conflict, violence and political tension (World Bank Group, 2017). Malaysia is one of the countries which received more FDI because of their perceived political stability (Yean, 2004). Another study that involved about 32 countries by Bekaert et al. (2014) who used conflict as one of the political risk factors, showed that any "1% point reduction in the political risk is associated with a 12% increase in net inflows of FDI" (p.471). This means that there is a positive relationship between fewer conflicts with the increase of FDI. Other studies by Busse and Hefeker (2007) and Osabutey and Okoro (2015) also examined almost similar factors of political risk and how these influence FDI. They came to a related conclusion that political risk factors do influence FDI, therefore, countries with no conflict are most likely to receive more FDI compared with other countries.

In other words, conflict may deter the volume of FDI in many countries (Vadlamannati et al., 2009). Yemen is one of the countries in the Middle-East that has experienced an unstable political situation. They not only received less FDI into the country but their GDP reduced dramatically in particular in 2010 from 7.7% to -12.7 in 2011, a huge reduction just in one year (Musibah et al., 2015). Other countries like Sri Lanka, which had internal conflict in the 1980s, suffered huge losses including the loss of some FDI and also many foreign professionals who flew out of the country for their safety (Arunatilake et al., 2001). Tanzania also lacks stability in their political situation and they have received less FDI (Malefane, 2013). Some other countries like Iraq, which may no longer be in conflict, find it still takes time to return to normal and gain back confidence from others, particularly from foreign investors. Precaution remains high among foreign investors investing in a country in this situation (Moloo and Khachaturian, 2009): incidence of conflict always

becomes a major preoccupation for foreign investors. When a foreign oil company in Nigeria was physically attacked by a group of gangsters, the production of oil was stopped and subsequently foreign companies who operated the oil production decided to leave the country (Moloo and Khachaturian, 2009). Experiences from these countries demonstrates that political conflicts have a negative impact on the flow of FDI and also on economic development (Braithwaite et al., 2014).

In contrast, political conflict in some of the countries in Sub Saharan Africa did not really affect the flows of FDI into these countries. According to Salisu (2004) some countries such as Nigeria and Namibia continued to receive more FDI even though they were not politically stable. Natural resources have been the main factor that attracts more foreign investors into these two countries.

Some foreign investors may perceive post-conflict countries such as Afghanistan and Iraq as a great opportunity for investment activity, however not many foreign investors are willing to risk investing in a country just getting over conflict. Afghanistan received some foreign investment in the telecommunication industry while Iraq attracted investment in the steel industry. Nevertheless future continuation of investment in these countries is subject to the readiness of the foreign companies to respond to any unexpected situations that may happen and also the government's role in maintaining peace and stability in the country (Moloo and Khachaturian, 2009).

Government Regime

Different government regimes have various effects on the investments made by foreign companies. There has been a debate on whether a democratic or non-democratic government attracts more FDI. Some foreign investors have a preference to invest more in democratic regimes because of the strong rule and regulation, in addition to a proper system in place to protect the investor's assets (Li

and Resnick, 2003). Investors from the United States were one of the examples of a country which had more of their investment in democratic countries (Kucera and Principi, 2014).

Other foreign investors reasonably have their investments in non-democratic countries because democratic government regimes may bring other side effects to FDI. Rules and regulations initiated by a government may possibly provide limitations to foreign investment activities, therefore some foreign investors continue to have investment in non-democratic countries (Li and Resnick, 2003).

3.4.4. Socioeconomic determinants

Socioeconomic covers a huge range of social and economic factors. This research particularly focuses on health and education as the socioeconomic factors (Vadlamannati et al., 2009) that influence the incoming FDI into a country.

Health

Different studies have used several health indicators to test how those indicators influence FDI. There has been an argument that the health of the population has some correlation with FDI. Some studies had health indicators, such as life expectancy, in addition to communicable diseases such as HIV, malaria and TB as determinants of FDI. A study by Alsan et al. (2006), who used life expectancy health indicators in their study that involved 74 different countries, found that life expectancy has a positive impact on FDI. They argued that there is a strong relationship between long life expectancy and FDI. The result of their study showed that "raising life expectancy by one year increases gross FDI inflows by 9%" (p.613).

Alsan et al. (2006)also believed that FDI potentially may be affected by other types of health problems such as HIV or malaria. This assumption was supported by results of a study from Asiedu et al. (2015) who found that communicable diseases such as HIV really did affect the flow of FDI into countries in the Sub-Saharan

region. Ghosh and Renna (2015)study in 114 countries supports the view that health factors affect the flow of FDI. Besides HIV, two other types of communicable diseases such as malaria and tuberculosis have a negative impact on FDI. Azémar and Desbordes (2009) also found that increases in HIV cases in a country discourages FDI.

Education

Education plays an important role in any countries' development including in people's lives. Education has been considered to be an important factor that prepares and shapes people in responding to any new changes in society. This includes having people with ability and skills to work jointly with foreign investors (Wilhelms and Witter, 1998). Many studies have demonstrated that countries with more educated people, attract more FDI. This conclusion has been supported by a number of studies in different countries including in Sub-Saharan African countries (Cleeve et al., 2015), in Mauritius (Seetanah and Rojid, 2011), in OECD countries (Ramasamy and Yeung, 2010) and also in Malaysia (Choong and Lam, 2010). There are several reasons why foreign investors have preferences for investing in countries that have more educated people. One of the reasons is that educated people have the qualities to become professional workers. They have become the target for foreign investors who are investing in Mauritius (Seetanah and Rojid, 2011). Another reason is that educated people have more capacity to learn and adapt quickly to new technology and also adapt easily to foreign investors new ways of working. Business activities are more likely to gain benefits by having more educated people involved in their business (Sena and Higon, 2014).

3.4.5. Other determinants of FDI

There are many other determinants of FDI however this section discusses the following factors that are particularly relevant to this thesis: trade and administrative issues.

Trade

There have been a number of different studies which pointed out that trade has become an important determinant of FDI. A study by Cuyvers et al. (2011) showed that the trade relationship that Cambodia had with other countries contributed positively to FDI into their country. In addition, a study by Nasir (2016) indicated that trade has a positive relationship with FDI into Malaysia. Janicki and Wunnava (2004) found that importation of goods into Central and Eastern European countries influenced FDI into this region. They argued that "one percentage point in bilateral imports in relation to GDP leads to a surge in the volume of FDI inflows by $140.28 million". Trade openness has been one of the factors that influenced FDI in many countries including in 38 countries (Demirhan and Masca, 2008), Malaysia (Ang, 2008; Choong and Lam, 2010), 16 Arab countries (Aziz and Mishra, 2015a) and Mauritius (Seetanah and Rojid, 2011). The majority of these studies show that there are strong relationships between a country's trade and FDI.

Administrative Issues

The last determinants of FDI are administrative issues. There are two main administrative issues to be discussed, they are cost and time. Cost is an obligation that foreign investors must pay in order to start up their business in a country. One recent study that involved 32 developing countries showed that countries with lower administrative costs are most likely to attract more FDI (Torriti and Ikpe, 2015). Zambia is an example of an African country that attracted more FDI compared with Tanzania due to the fact that Zambia's administrative cost for admission was cheaper, only USD124 compared to Tanzania with USD3,040 (Morisset and Lumenga-Neso, 2002). Higher costs may have a negative influence on FDI (Djankov et al., 2002) and discourage new companies from investing in a country (Klapper et al., 2006).

In addition to administrative costs, the duration of time for starting up a business also influences a foreign investor's decision on where to invest. Some countries take a longer time than others: foreign investors normally invest in a country with a shorter time according to a number of different studies. One of the studies by Morisset and Lumenga-Neso (2002) indicated that Zambia has more FDI than Mozambique simply because it takes less time in Zambia to start up a business: 29 days compared to Mozambique's 106 days. Some other countries like Tanzania and Madagascar, take even longer than Mozambique. Those countries with longer times for starting up a business are most likely to have less FDI (Morisset and Lumenga-Neso, 2002). This makes a country less attractive as a destination for an investment, it also leads to lack of trust from foreigners. Longer times and procedures might involve lack of transparency which also results in dishonesty in the process (Emery et al., 2000).

3.5   FDI and Trade

This section on FDI and trade contains two different parts. The first part considers the impact of FDI on trade while the second focuses on other factors that have an influence on trade.

3.5.1. The impact of FDI on Trade

The relationship between FDI and trade has been debatable. Some researchers argue that FDI improves a country's trade while others came up with different results and considered that trade is not influenced by FDI. So, the impact of FDI is more in some countries than others. Most studies that involve a country as an individual sample, clearly either reveal positive or negative relationships between FDI and trade. However, studies that consider several countries as their sample, have diverging results. This part of the thesis discusses different views of researchers on the relationships between FDI and trade.

The majority of studies confirmed that FDI improved countries' trade. Anwar and Nguyen (2011) were two researchers who pointed out the positive relationship between FDI and trade. In their study, they found that FDI that came into Vietnam supported the country's trade, not only in exports but also in imports. This result is corroborated by Xuan and Xing (2008) who also did their study in Vietnam. They reaffirmed that FDI that came into Vietnam improved Vietnam's trade, in particular the exports. Vietnam's export has increased in line with the growth of FDI.

Liu et al. (2001) also found that there were positive relationships between FDI and trade. It was not only FDI that promoted trade but trade also can attract more FDI into a country such as China. Much of the FDI that is invested in China was simply following their goods and services that were imported by China. At the same time, some of the products produced in China are exported back to the country where the foreign investors come from. Both China's exports and imports have affected each other positively. In addition, Wei (2004) study in China also showed that since their manufacturing sector attracted more FDI at the end of the 1970s, China's trade has improved dramatically. The number of FDIs in the country has increased over time and China has become one of the major recipients of FDI compared with other countries in the region.

Min (2003)is another researcher who also supported the finding that FDI promotes trade. Min's (2003) study in Malaysia showed that FDI encourages trade, particularly exports. Malaysia trade activities have improved with the increased number of FDIs in the country which has become an industrialised country compared with in the past when they focused more on revenue from their natural resources.

In addition, two other studies by Ruane and Sutherland (2005) in Ireland and Aitken and Harrison (1997) in Mexico, showed that the presence of FDI has the potential to support and improve a country's export performance. There are other researchers

who found that FDI improved trade including Magalhães and Africano (2007) study in Portugal, Zhang (2005) and Prasanna (2010) in India.

Even though FDI has the potential to improve a country's exports, there were also cases where FDI contributed more to imports than exports. For example, Tran and Dinh (2014) found that in the 15 developing countries they studied, FDI contributed to the negative balance of trade. Stocker (2000) investigated the role of FDI on growth, including on exports in approximately 100 sample countries and found that the influence of FDI on exports had been very small. Another study by Franco (2013) also found that exports from 16 OECD countries did not depend on FDI. Franco (2013) results corresponded with Aizenman and Noy (2006) study that the impact of FDI on trade was less in developed countries.

In addition, studies that involved many countries from different regions with heterogeneous characteristics, revealed that the strong relationships between FDI and trade are more in some countries than others. For example, a study that involved 205 countries consisting of a mix between developed and developing countries, demonstrated that the positive relationship between FDI and trade was more visible in developing than in developed countries (Aizenman and Noy, 2006). Another study covered 26 countries from three different regions: Central European Free Trade Area (CEFTA)[3], Latin America Integration Association (LAIA)[4] and ASEAN. The results showed that the impact of FDI on trade was more in CEFTA and LAIA compared with the ASEAN countries (Shu and Khan, 2003). A study by De Mello Jr and Fukasaku (2000) of 16 countries, also indicated that the impact of FDI on trade is more in five Southeast Asian countries than in the eleven Latin

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[3]CEFTA consists of Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia
[4]LAIA consists of Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, Uruguay and Venezuela what is this?????

American countries. Therefore, the impact of FDI on a country's trade varies from one country to another.

After reviewing all of the above studies, a general conclusion that can be drawn is that not all countries benefit in their trade by having more FDI in their countries. There are a number of different factors that contribute to the different results. The following section presents and discusses several factors that influence the impact of FDI on a country's trade.

3.5.2. Other Factors that have an influence on Trade

Besides FDI, there are also a number of other factors that have an influence on trade. There are many other factors but this research focuses in particular on the factors that are relevant to this research.

Infrastructure Facilities

The availability of improved infrastructure facilities that can support foreign business trade activities at country level is crucial. Many foreign investors want to ensure that a country that becomes their target for investment should have improved infrastructure. There are a number of different facilities, however, the focus here is on transport including roads and ports in addition to communication, in particular with the internet, that can serve as infrastructure facilities that facilitate trade activities.

Better road access is an important way to expedite trade activities. The United States built expressways between cities, to link cities for delivering products. Cities with access to better roads tend to produce and export more (Duranton et al., 2014). Having better road conditions that can facilitate transporting of goods from different locations is what most foreign investors seek. This is not only time saving but could also contribute to cost savings (Blyde and Molina, 2015). Ports are other infrastructure facilities that also perform similar roles. Both can transport trade goods

and products by air and sea in a timely and efficient manner (Blyde and Molina, 2015). A number of other studies have also shown that improvement of infrastructure facilities is one of the factors that supports a country's trade as in Vietnam (Ang, 2008) and also Ireland (Barry and Bradley, 1997).

In relation to transport, according to Bougheas et al. (1999), only big and rich countries are financially capable of building and developing their own infrastructure. In their study of 15 countries in Europe, they emphasise that poor countries trade performance is less comparable with big and rich countries because of lack of financial capability to have improved transport facilities. This result was supported by Nordås and Piermartini (2004) who justified that countries that have no improved infrastructure, such as no proper roads and also small ports, suffer from a lack of trade activities. Consequently, many products cannot be delivered on time. Another study by Martincus and Blyde (2013) showed that Chile's exports did not improve as a result of their poor transport facilities due to the less favourable condition of their infrastructure especially after the natural disaster in 2010. What happened in Chile might be different because of natural disaster but this shows that countries that cannot afford to develop their transport facilities in the short term, lose opportunities for trade development.

Communication is an important part of connecting the world and trade. Therefore, an investment made in communications is very important. Fink et al. (2005) noted that the financial investment that countries make in communications can certainly support their trade activities. The exchange of information for various products between different countries in the world can be done easily without travelling. The current development of technology means that the internet is vital to communication. Freund and Weinhold (2004)study of 56 countries revealed that the number of people using the internet was positively related to progress in trade. The researchers came up with an early finding from empirical evidence claiming that

export from these countries improved by 0.2% when they had 10% more internet users. Choi (2010) was another researcher who came up with a similar finding to Freund and Weinhold (2004).

There are number of important interesting examples, such as many people promoting their products through the internet, meaning people from different parts of the world are able to see and buy the products online, which can be much easier and faster (Freund and Weinhold, 2004). Interestingly, the same authors also came up with similar conclusions for their study on the United States services sector. They concluded that United States' exports were increasing up to close to 2% when there was a 10% increase of people using the internet (Freund and Weinhold, 2002). Another study which also supported the view that the internet can improve trade was conducted by Yadav (2014) in Asian and Sub-Saharan African countries. Therefore, accessing the internet was not only connecting business partners overseas but also improving export performance. In addition, it is a platform that is rich in information including the timely provision of prices in market and trade.

Transport Cost

Transport cost has been one of the most important factors determining how FDI can benefit trade activities. It has been identified as being all of the financial expenses that are made for delivering of products and goods and is related to transportation costs for transferring goods from one location to another (Anderson and Van Wincoop, 2004).Many studies have shown that transport cost has become an important factor in trade agreements between countries. Countries with low transport costs which are involved in an existing free trade agreement (FTA), facilitates them to be involved and to be more attractive for trade agreements with other countries (Chen and Joshi, 2010). The transport cost as previously discussed, includes all costs that are applicable for shipping of products and goods. Transport costs truly control the flow of trade activities. Berthelon and Freund

(2008)commented that if the transport cost is high, not many trade activities are found. This is supported by a recent study that involved countries like the US and Canada, which showed that the volume of trade was lower when cost of trade, particularly for shipping of goods, is pricey (Hornok and Koren, 2015).

On the other hand, transport costs do not become a concern for most big firms in big countries. A study by Baier and Bergstrand (2001) in a number of different OECD countries showed that transport costs did not become the main factor that influenced trade between these countries. It was an insignificant factor that contributed to their trade activities in particular with final products. Matsuura and Hayakawa (2012)reported that the Japanese firms who invested in other countries including in Asia, Europe and North America, were not always influenced by fewer trade costs with the host countries. They emphasised that there was no evidence from the existence of Japanese firms that expanded their business activity to multiple locations due to lower trade costs. These studies show that lower trade cost cannot always attract more investments.

Tariff for Trade

Tariff is a tax payment that needs to be made in relation to trade activities in particular with imports and exports(Anderson and Van Wincoop, 2004). Many countries that take part in a trade agreement have an accord to facilitate each other in their trade activities for both imports and exports through having an agreement on lower tariffs. When the US introduced a 4% discount in tax on any imported goods into the US, the proportion of multinational corporations in overseas exports to the US increased by 10% (Blanchard and Matschke, 2014). In a similar case with China, after China's government issued an initiative of paying less tax for imported goods, many firms imported massive variations of goods for their production. Having more access to goods for production, firms were able to produce and export more goods of better quality (Fan et al., 2015). This shows that countries that offer lower costs

for trade become the main target for investment because by having lower costs in trade, firms can benefit more from their trade activities (Chan and Manova, 2015). In other words, countries that have higher trade tariffs are normally exposed to fewer trade activities. Berthelon and Freund (2008)raised this in the conclusion of their study that higher tariffs are associated with fewer trade activities.

In contrast, having lower tariffs does not always mean it can accommodate and improve countries or firms trade performance. In the 16 countries in the OECD, performance in trade activities was not influenced by lower tariffs which the countries agreed between them (Baier and Bergstrand, 2001). Tariff is only fourth out of all other factors that have effects on their trade. This shows that lower tariffs do not always have much impact on trade activities.

Natural Resources

Natural resources have become important part of trade in some countries. There have been a number of different natural resources including oil and gas which contribute to exports. The proportion of gas exports in the world has increased five times between 2002 and 2012. Even developing countries have had a one and a half increase in gas exports over this period(UNCTAD, 2014). Other regions, such as Africa and Middle East, had the majority (70%) of their exports come from natural resources(WTO, 2010).Many countries, including the United Kingdom and Northern Ireland's trade and economy have been contributed to by natural resources (UNCTAD, 2014). A study by Abbas and Sajad (2015) supported the conclusion that natural resources contributed to a growth of exports in 34 countries.

In contrast, even if countries are blessed with natural resources, it may not bring benefit to their trade if there is a lack of infrastructure facilities and weak institutional support (WTO, 2010). There are some areas who have developed their trade with

less input from natural resources. For example, Asia, North America and Europe had only 20% of their export from natural resources (WTO, 2010).This shows that natural resources do not always contribute significantly to trade in all countries including in some of the developing countries (UNCTAD, 2014).

Economic Growth

The hypothesis of GDP (economic growth) led trade was supported by a number of previous publications. Araujo and Soares (2011), who cited the view from Krugman (1989), argued that countries with a higher growth tended to produce more and export more. Another study by Ahmad and Harnhirun (1996) found the economic progress of five ASEAN countries (Indonesia, Singapore, Malaysia, the Philippines and Thailand) had contributed to more exports. Tekin (2012) in three least developing countries, Hye et al. (2013a) in most South Asian countries and Henriques and Sadorsky (1996) in Canada, all came up with a similar conclusion. Henriques and Sadorsky (1996) continued to argue that even a small developing economy competes to improve their economy through increased production and trade. Therefore, there is a causality relationship from countries economic growth (GDP) to trade.

On the other hand, there has also been the other side of the argument that trade contributed to GDP. A study by Ee (2016) showed that Sub-Saharan African countries export led to their growth in GDP. There is unidirectional causality from export to growth in Brazil (Araujo and Soares, 2011) and also in Costa Rica while from export and import to growth in six Asian countries (Hye et al., 2013b). This shows that the relationship from GDP to trade and vice and versa varies in the context of different countries.

Regional Integration

Countries' participation in regional integration such as NAFTA, ASEAN, the

European Union (EU) and also the WTO can strengthen relationships with other countries in trade. As part of trade agreements, countries agree to have lower tariffs and non-tariff barriers to facilitate trade activities between them (Dunning and Lundan, 2008).Finland was one of the examples where after joining the EU, their trade performance has increased. In 2000, Finland had only 15% of foreign firms in the industrialised sector exporting and this increased to 17% in 2001/2004. France and Sweden were two other countries that had similar experiences. France had their export activities rise from 37% to 40% and Sweden from 37% to 45% in similar years as Finland (Dunning and Lundan, 2008). Similarly in ASEAN countries, the free trade agreement has facilitated trade between countries in this region (Plummer and Cheong, 2009). Indonesia was one such example where their exports were only USD21b in 1980 and this increased to USD65b in 2000 (UNCTAD, 2017) after Indonesia joined ASEAN in 1994. This shows that participation in regional integration can influence trade.

Not all countries which are part of regional integration such as the EU and ASEAN, have similar experiences. Lao PDR is one of the examples who continue to experience a trade deficit even after their inclusion in ASEAN in 1997. A statistical report by UNCTAD (2017) showed that the Lao PDR trade balance has been mostly negative in most years. In 2002, it was only USD-27m, which widened to USD-548 in 2013. The Philippines is another country that was also exposed to similar experiences with a huge trade deficit. The data from UNCTAD (2017) presents a negative balance for Philippine trade. Even though the Philippines was one of the original five members of ASEAN, the country's involvement in ASEAN regional integration has not been of benefit to the country's trade.

3.6   FDI and Technology Innovation

The question on whether FDI promotes technology innovation at the country level also has been argued widely. A number of studies by different researchers came up

with diverse results on the impact of FDI on technology innovation. This section expands on the impact of FDI on technology innovation. Similar to the previous section 3.5 on FDI and trade, this section is divided into two different parts. It begins with a discussion on current studies on the impact of FDI on technology innovation, it then discuss other factors that have an influence on technology innovation.

3.6.1. The Impact of FDI on Technology Innovation

As with FDI and trade, there have been arguments for and against the impact of FDI on technology innovation. In general, FDI has been one of the main channels for transferring new knowledge and technology. Most researchers support the view that FDI promotes technology innovation. Many studies have shown that FDI is one of the important channels for technology innovation in a number of different countries. The study by Gorodnichenko et al. (2015) revealed that FDI played an important role in local firm's innovation. Using more than 9,000 firms from 18 countries, they found that that local firms' ability to innovate improved through inflows of FDI that came into these 18 countries. Another study by Cheung (2010) in China also confirmed that foreign firms' intervention in R&D activities was the leading influence on China's domestic firms' innovation, particularly those firms in the high technology industry. The presence of foreign firms in China has encouraged more trade activities including both exports and imports which promote innovation into China. Ireland is another case where business activity in high technology improved dramatically after the intervention of foreign investment. Consequently, the proportion of population in Ireland that work in high technology industries has increased over time. In 2000, Ireland's merchandise trade to GDP was the highest compared with all other European countries (Ruane, 2004).

Erdal and Göçer (2015) revealed that innovation was contributed to by the presence

of FDI. Their study was in ten developing countries, which included three Southeast Asian countries[5]. In addition, another study by Sivalogathasan and Wu (2014) acknowledged that FDI promoted innovation in South Asia.

Other researchers who had different regions or countries in their study had mixed results. For example, Fu (2008) study showed that China in general has benefited from FDI in their technology innovation. However, the positive effect was more in the cities in China which have more capable human resources compared with other cities in rural areas with fewer human resources. Xue (2008)is another researcher who also recognised that some regions in China experienced more impact on their technology innovation than other regions. The researcher identified that middle and western regions of China did not benefit from FDI despite the fact that the eastern region gained masses of profits. The results from these two researchers are supported by another author, Jingqiang (2010) who also revealed that three regions (eastern, central and northeast) of China had dissimilar experiences with their technology innovation. Another study by Shiraz et al. (2010)considered 17 countries from two different regions: Asia Pacific and the Middle East. Their results showed that countries in Asia Pacific benefit more with the introduction of technology than those in the Middle East.

On the other hand, there are also some other researchers who argue that FDI does not promote technology innovation. For example, they argue that China is one country where their technology innovation did not depend on FDI. As a country which is strong in local human resources and also R&D, they have managed to come up with several technology innovations without support from FDI (Chen, 2007). Another researcher, Seghir (2012), came up with an almost similar

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[5]Malaysia, Singapore and Thailand.

conclusion. Seghir found that the number of FDIs present in Tunisia did not really influence the innovation of 17 different local firms' business activities

3.6.2. Other Factors that have an Influence on Technology Innovation

Besides FDI, there are also a number of other factors that have an influence on technology innovation. There are many other factors but this research focuses in particular on the factors that are relevant to this research.

Exports

Fassio (2017)has cited a number of previous studies who found that exports allow firms to have access to markets where new technology that can facilitate them to produce and innovate more is available. However, the impact of export on innovation depends on availability of technology and also demand from the market. Dunning and Lundan (2008) discussed the concept that exporting high technology commodities such as aircraft, spacecraft, pharmaceutical activities, and computing and communication equipment equal to more innovation. This is because these products have a high intensity of R&D compare to other products. As well as high technology, exporting ICT is another important commodity that facilitates innovation. A study by Hall et al. (2012) in Italy confirmed that investment in ICT can facilitate innovation in firms.

On the other hand, there has been support toward innovation that led firms to export more. Some of the previous studies presented that innovation contributes to the increase of exports in developing and emerging countries (Saadi, 2014) and also in other developed countries such as Germany (Lachenmaier and Wößmann, 2006). These studies confirm that exports are the result of innovation activities.

Imports

Many previous studies supported the argument that importation of goods enables countries to be more innovative. Bloom et al. (2016)showed that 12 different

European countries importation of goods from China had supported them in their innovation, to improve their technology and productivity. Jingqiang (2010) and Qu et al. (2013b) in addition to Chen et al. (2017) were other researchers who came up with a similar conclusion. Qu et al. (2013a)showed that China as a country with high exports has also benefited in technology innovation by importation of goods from other Asian countries.

On the other hand, other studies pointed out a different conclusion. Importation of goods do not always support a country's innovation. For example a study Iacovone et al. (2011) found that Mexico's importation from China did not contribute to their innovation.

Economic Growth

The hypothesis of a GDP led innovation is debatable. Several studies suggest that GDP contributes to innovation in some European countries such as in Denmark (Çetin, 2013). Another study by Maradana et al. (2017)showed similar results in European countries.

On the contrary, a study by Çetin (2013)indicated that GDP had no influence on innovation in some European countries including in the Netherlands and Italy. In fact, it was more innovation that contributed to GDP as in Austria. This was also the case of three countries in Central and Eastern Europe according to Pece et al. (2015) and in both developed and developing countries as studied by Ulku (2004). Innovation has contributed to economic growth in most countries including in the OECD (Rosenberg, 2004). However, developed countries have the advantage of increasing their innovation since they have more investment in R&D than developing countries (Ulku, 2004). Innovation has been seen as a major instrument that causes increases in economic growth. The introduction of new technology to upgrade products has led to more productivity in economy activities (OECD, 2007).

In Country Technology

Many of the well-developed host countries tend to have more investment in their own technology. For example, countries like the United Kingdom, Singapore, Australia and China have strong domestic investment in science and technology, and they have the ability to apply for patents. Having an adequate technology capability, these countries received more of their share of copyrights. For example, the UK had 1,643 in 1995 but this increased to 1,973 in 2003. Singapore went from 26 to 84, Australia from 227 to 422, China from 20 to 184 during the same period of time,1995 to 2003 (Dunning and Lundan, 2008). These countries have been classified as some of the top countries in the development of technology. A recent report by the World Economic Forum (2015), noted that Singapore is one of the top five countries in the world with a strong technological network. The UK is in the 8th position while China is in the 62nd position. In addition, technology also has been recognised as an important factor for spillover in other small countries such as Kenya. Gachino (2011)showed that local firms in Kenya who continue to improve their own technology, manage to adapt and absorb more new technology from foreign firms than other local firms. Therefore, having necessary technology in local firms at the country level is important to ensure the positive impact of FDI on a country's technology innovation.

On the other hand, innovation does not always happen because of the existence of technology within a country. Innovation itself involves a number of different areas such as knowledge. So, innovation does not depend only on technology (Elg, 2014). Other studies came up with different results. For example, Hao and Yu (2011) in their study involving 120 companies in China, found that the new technology that each of the companies introduced directly influenced improvement in the company's ability to use new technology in innovation. The innovation only happened after

company staff has better capabilities in managing new technology. Therefore, in country technology does not directly impact on innovation, it requires capability and availability of human resources within each country in order for the innovation to occur.

Training Programs

Training is another way of transferring new knowledge on technology innovation from foreign firms to local firms. It serves as a means to improve local capacity and as a value added activity in countries which have no skilled human resources. Most foreign firms have training packages as part of their work plan. To enhance the capacity of local staff who work with foreign firms, it is also expected that in the long term future, local staff will have the capacity to establish their own firms (Griffiths and Sapsford, 2004). Training programs have been considered as one of the most important determinants of technology innovation in Malaysian companies. The study found that training programs that provided for local employees had a strong relationship with a firm's innovation. Malaysian firms were able to innovate more by having more trained employees (Ngisau, 2016).

Different companies organise various training programs for their local staff. Some of these training programs can take place at country level or overseas. Some foreign firms in Indonesia send their local staff overseas for short term and long term training related to their industry. This is with the expectation that those who go for training can learn important skills and can become trainers, transferring knowledge to others on their return. Once local staff has enough knowledge and skills, they are able to take over business activities and to replace some of the foreign workers. Furthermore, the local firms in Indonesia can be more innovative and expand their business in the future (Wie, 2005).

However, training programs that are provided need to be relevant to work. More general training might not contribute to a firm's productivity. A Taiwanese firm which invests overseas was one example: they only provided foreign language training. There was no training on improving the staff's technical skills. At the end of the day, staff learnt a foreign language but it did not have a direct impact on the overall performance of the firm (Chi et al., 2008).

Investment in R&D

Research and Development, which is generally known as R&D, includes activities to increase the quality of current products as well as to discover new products. Investment in R&D is an important part of promoting innovation. Having an investment in R&D is an indication of availability of funding for research but such investment should not only depend on foreign investors but also come from host countries. The investment in R&D can easily facilitate any new innovation introduced by foreign investors(Dunning and Lundan, 2008).

A number of studies have indicated that firms or countries which have strong investment in R&D, tend to have strong links with the ability to innovate. According to a study by Ibrahim et al. (2008), Malaysia is a country where the local companies' investment in R&D was identified as an important determinant for innovation. Manufacturing companies in Malaysia with more of their personnel and financial investment in R&D have increased the firm's ability to innovate more compared with other firms with no investment in R&D.

Two other Asian countries, Singapore and China, are also examples of host countries which have been investing more in R&D. Singapore's expenditure in R&D as a percentage of GDP increased to 2.36% in 2005 from only 1.38% in 1995. China's expenditure was only 0.57% in 1995 and this has risen to 1.34% in 2005 (Dunning and Lundan, 2008). Development of new technologies has been led by

many firms in China and the country has also established more than 1,000 research centres. China's heavy investment in domestic R&D has contributed to their success in technological innovation (Anwar and Sun, 2015). A survey of more than 100 manufacturing firms in Greece also indicated R&D was one of the important competences that firms should have in order to innovate (Souitaris, 2002).

OECD countries have also increased their expenditure in R&D growing from only 1.95%in 1981 to 2.25% in 2005 (Dunning and Lundan, 2008). Countries in Europe such as Italy have strong investment in R&D. A report produced by Hall et al. (2012) confirmed that R&D is one of the important determinants of innovation in more than 9,000 Italian firms. All of these studies show that R&D is an important component that guarantees and supports a firm's ability to be innovative.

Availability of Human Resource

Investment in R&D also depends on the availability of human capital. Research and Development can only be undertaken when host countries have qualified human resources; a team of local people who are able to learn and adapt to the new technology introduced by foreign investors (Chung and Lee, 2015). Through learning from foreign investors, countries have more competent people and are able to strengthen their R&D teams at country level (Sena and Higon, 2014). Countries like China, with solid R&D in most of their firms, tend to adapt more easily to new technology and benefit in productivity (Hu et al., 2005). Having a strong R&D team, not only facilitates the transfer of technology to domestic firms (Zhao et al., 2014), it also contributes to innovation in technology production (Jingqiang, 2010) and gaining exclusive rights/patents from foreign investors (Nikzad, 2012).

Fu (2008) identified that human resources are one of the main factors that contribute to differences in China's innovation in some regions. Li et al. (2006) were other researchers that support the concept that availability of skilled human resources in

China ensures that technology innovation can happen. China has provided an abundance of their graduates in science and engineering to foreign investment activity both in China and also in overseas countries. They have an adequate skilled workforce who are ready to work with foreign investors (Dunning and Lundan, 2008). Tu and Tan (2012)conducted their study of ten ASEAN countries and also agreed human resources are an important factor for countries to benefit from new technology. Therefore, the impact of FDI on technological innovation is subject to the availability of people who can easily absorb the new technology (Xiao-di and Xiao-zhong, 2007).

On the other hand, when countries have no capacity to absorb new technology, they cannot initiate innovation. This was one of the challenges that one city in China faced back in the 1990s. The city had a lack of technological capacity, it was hard for them to adapt and learn the new technology introduced by foreign investors (Young and Lan, 1997). Similarly even though Tunisia received more inflows of FDI, benefit from FDI to the country did not happen because of lack of local human resources to absorb new technology (Assad and Hedia, 2014). Likewise in Saudi Arabia, there was considerable FDI in oil and gas, however, due to the lack of local capacity, all work was dominated by foreigners. The transfer of technology did not happen because there was little local involvement in the oil and gas industry (Sillah, 2015). Greece and Iran also faced the same issues and performed poorly in technology innovation (Souitaris, 1999).Therefore, it is important to have strong human capital with people who have technological capability in order to learn and know how to use new technology (Wie, 2005).

3.7   Literature in the Context of Timor-Leste

Even though there have been many studies on this area of research, no academic study has been conducted that has involved Timor-Leste. A limited number of assessment reports have been produced by different international organisations

related to the situation of investment in Timor-Leste.

The first assessment report is a diagnostic study by the World Bank (2010) which cited a number of government reforms including laws and establishment of the TradeInvest unit to facilitate investment activity in the country. In addition, the study also identified that the limited capacity of the TradeInvest unit and lack of data on FDI are two of the main challenges. The report recommended several agricultural products such as vanilla and cocoa that have the potential to be exported in the future. It is considered that expanding exports may contribute to employment creation in the country and can support the country to decrease the trade deficit.

Another assessment by the ADB (2015) identified that there is limited FDI in Timor-Leste. The conclusion was only based on administrative data from the TradeInvest office which may not be accurate. The data was only based on a copy of certificates that are archived in the TradeInvest office. This excluded those investment activities that did not go through the office and lost certificates. This assessment discussed a tax holiday as outlined in the Private Investment Law and concluded that the tax benefit does not influence investment by foreign companies.

There was also another assessment by Nathan Associates Inc (2005)which considered the importance of investment by both local and foreign companies to help the government in creation of employment. The assessment noted the existence of reforms by the government, however due to current challenges, Timor-Leste cannot attract more investment as happens in neighbouring countries. The assessment proposed several recommendations which included the need to improve the business environment and telecommunication infrastructure in order for Timor-Leste to attract more FDI into the country.

Another report by the U.S. Department of State (2015) also only discussed the existence of reforms by the Timor-Leste government to create conditions for foreign investment. The report also noted that the challenges included a lack of skilled human resources and transparency issues for investing in the country. Other than that, it only presents the existence of practices such as dispute settlement and protection of property rights related to investment activity that are available in Timor-Leste

3.8   Conceptual Framework

Figure 3.1 presents a conceptual framework, which is derived from the Eclectic Paradigm by Dunning (2001) and adapted according to the review of literature in this research. The eclectic paradigm of OLI has been well-known as the leading framework for FDI since the mid-1970s and it remains current and valid OLI, which stands for ownership (O), Location (L) and Internationalisation (I), serves not only as pull factors for FDI into a country but also can facilitate FDI's productivity in a country. Detail on OLI has been discussed in section 3.3 of this chapter.

Figure 3.1 shows that FDI activities occur in a country because of a country's locational advantages. These advantages include strength in macroeconomic areas, institutional, political, socioeconomic and other factors which include trade and administrative procedures. Based on the review of literature in this chapter, FDI has the potential to improve trade and promote technological innovation. In addition to FDI, there are also other factors that influence trade which include infrastructure facilities, transport costs, natural resources and economic growth. Other factors that have an influence on technology innovation include exports, imports and economic growth.

Figure 3.1: Conceptual Framework
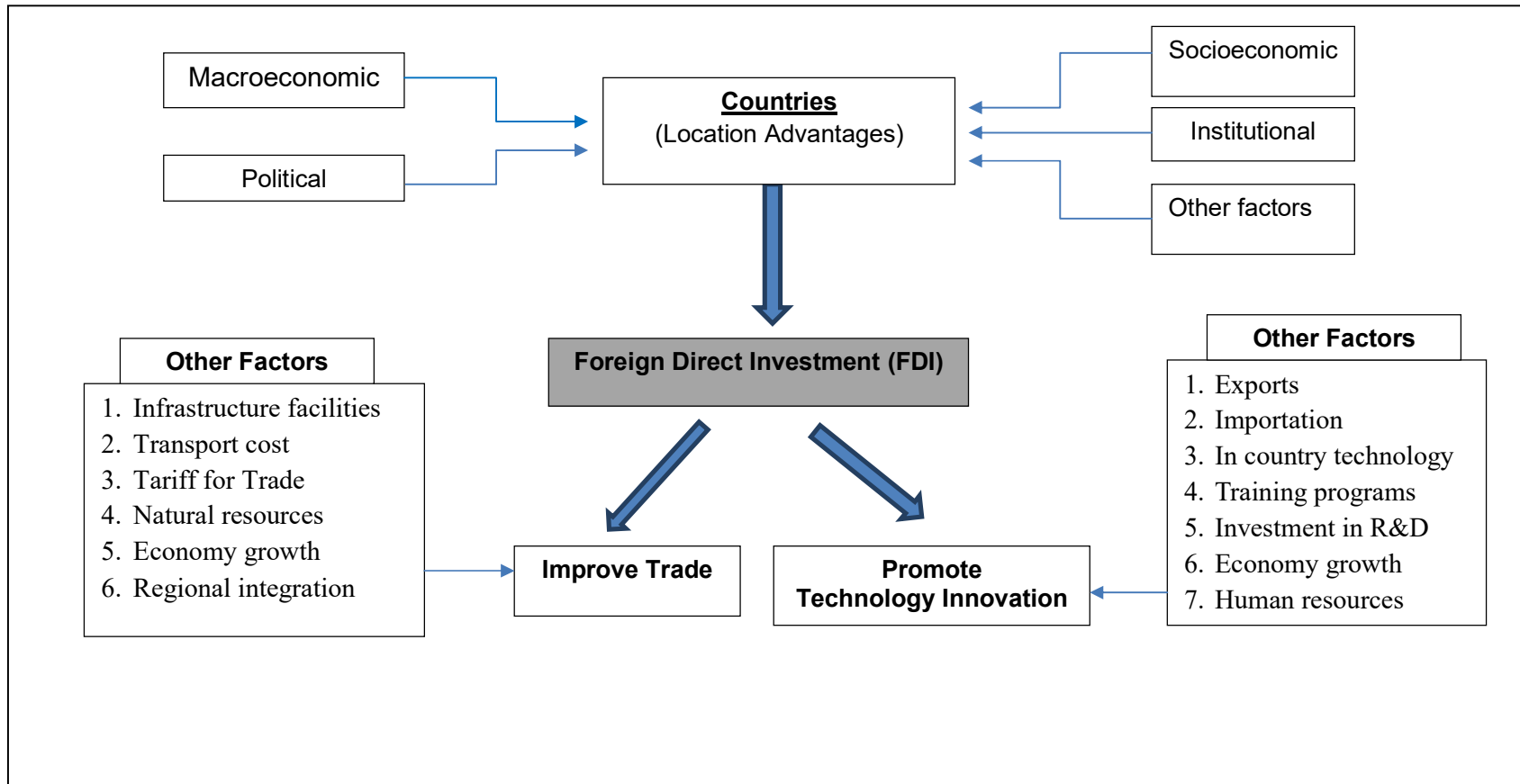
Source: Prepared by the researcher according to the literature review in this chapter

3.9 Summary

This chapter has reviewed literature on determinants of FDI, the impact of FDI on trade and also on technological innovation. It also covered literature in the context of Timor-Leste. There are studies on the determinants of FDI, ranging from different factors related to macroeconomic, institutional, political and socioeconomic elements. In addition, there are also other determinants of FDI which include trade and administrative issues as important factors.

The role of FDI on trade and also on technology innovation has been debatable. The positive impacts of FDI are greater in some countries than in others. These impacts are contributed to by number of different factors. Some of the contributing factors to FDI on trade include the availability of infrastructure facilities, trade costs and location of a country. In relation to FDI and technology innovation, some of the factors that influenced their relationship consist of in country technology, investment in R&D and market structure.

A list of studies that have been reviewed in this chapter with particular focus on determinants of FDI and the impact of FDI on trade and technology innovation is presented in Appendix 1 of this thesis. The next chapter presents the methodology adopted for this research.

CHAPTER 4: METHODOLOGY

4.1　Introduction

This chapter presents methods that have been used for collecting and analysing the data and information related to the role of FDI on trade and technology innovation in Southeast Asian countries. Saunders et al. (2012) have likened the process of unfolding different layers of a research project to the different layers of an onion, which they call 'research onion'. The different layers of a research project comprise the methods for data collection, time horizons of the research, methods of data analysis and strategies which form important parts of the research methodology. Methods of data collection consist of methods of collecting secondary data, and methods of collecting primary data by conducting observations, interviews and questionnaires. Time horizons guide the research to be either longitudinal (i.e. observation for a particular variable over time) or cross sectional (an observation at one single point of time for number of different variables). Strategies include conducting research by experiments, surveys, case studies or grounded theory (Saunders et al., 2012).

Since this study involves 11 countries[6] of Southeast Asia (SEA), and most of the research questions can be answered by analysing secondary data, the collection of data is mostly focused on collecting data from relevant secondary sources. However, due to the non-availability of a sufficient amount of secondary data for Timor-Leste covering periods of equal length to other SEA countries, interviews were conducted with 15 participants to collect the relevant information for Timor-

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[6] The eleven countries are Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, Timor-Leste and Vietnam.

Leste. This is quantitative research for Southeast Asian countries in general, while a mixed method, i.e., a combination of quantitative and qualitative research has been used for Timor-Leste. Further, for the majority of secondary data which are available for 37 years from 1980 to 2016, a longitudinal time horizon is used, but for comparing several variables at any point in time, a cross sectional time horizon is used.

This chapter is divided into three sections. The first section discusses the collection of both secondary data and information obtained through interviews. The second section describes the methods of analysis of secondary data. The third section describes the method of analysing data obtained through interviews.

4.2   Data Collection

4.2.1. Secondary Data

Several previous studies on FDI and trade involving groups of countries have used secondary data. Examples include the studies of 26 countries by Shu and Khan (2003)and 81 countries by Aizenman and Noy (2006).Their data came from the World Bank. Another study involving 16 countries by Franco (2013) obtained some of its data from the database of the United Nations Conference on Trade and Development (UNCTAD). The present research collected most of its secondary data from the following two main sources: an UNCTAD database known as UNCTAD Stat and the World Development Indicators (WDI) of the World Bank. In addition, a few other secondary data sources have been used, which are discussed further in the following chapters. Collecting data from same sources for all the countries under study assures consistency of data. Data from the statistical offices of each of the eleven countries have been taken to complement the discussion of results for individual countries. These data are available free and they are easy to access through the respective official websites.

The various secondary data that are selected for different research objectives are discussed in more detail in Chapters 5, 6 and 7 respectively.

4.2.2. Interview

Interviews were conducted for two weeks in Timor-Leste from the end of January to early February 2017. Prior to conducting the interviews, ethics approval was obtained from the Social and Behavioural Research Ethics Committee (SBREC) of Flinders University. The SBREC granted approval for this project under Project No. 7461on 17 November 2016.

There were 15 participants selected by purposive sampling according to the relevance of their roles and responsibilities to the research objectives. According to Saunders et al. (2012) purposive sampling is a non-probability sampling method that is suitable for small samples required for studies like the present one. Even though this sampling method does not ensure the representativeness of the sample for the entire population, it can provide vital information needed by the researcher.

All of the participants are in managerial positions. Five of them are from government departments, five foreign companies and five local companies. All the participants were approached by the researcher by sending a letter of introduction and consent form from Flinders University to their office and a follow up telephone call. Due to confidentiality issues, names of the participants and the institutions they represent are not disclosed in this thesis.

This research adopted semi-structured interviews since they provide more flexibility in data gathering. Such interviews with open-ended questions give the participants more freedom in their responses compared with structured interviews which use closed questions with answers provided therein (Cameron and Price, 2009).

There were six to seven questions for each participant which related to the objectives of this research. Questions for the government officials were to explore their departmental areas of responsibility. This includes reforms that they had implemented, challenges and also their view on FDI's contribution to Timor-Leste's trade and technology innovation.

The questions asked for participants of foreign companies were to explore more on their area of investment in the country, which included their reasons for investing and their plans for future investment. Their success stories and challenges are captured in their responses. They were also asked about their contribution to Timor-Leste's trade, in particular concerning export and import as well as technology innovation, as part of their area of investment.

For local companies, the questions were designed to search another point of view about their experience in investing in Timor-Leste. Information was collected about their network, whether they had working relationships with any foreign company and about their views on FDI contribution to Timor-Leste's trade and technology innovation. The details about these questions are given in Appendix 2.

The questions were prepared according to the guidelines provided by Kvale and Brinkmann (2009) to ensure that they were not too complex. The aim of these questions was to address the objectives of the research. The language used was simple, easy to understand and fit for the different participants to this research.

The questions were written in two languages—English for participants from foreign companies, and Tetum, the local language of Timor-Leste for participants from government departments and local companies. All the interviews were conducted by the researcher. No interpreter was used for any of the interviews because the researcher is from Timor-Leste, and knows both Tetum and English well. Of the 15

total participants originally selected for these interviews, one government official and one foreign company representative declined to participate but they were substituted by another participant from a different government department and another foreign company so that the total number of participants remained 15 as planned initially.

The interviews were recorded on audio tape recorders with the permission of the participants, as required by the ethics committee of Flinders University. The face to face interviews and their recordings *ad verbatim* ensured that all the information provided by the participants could be captured in their totality. An audio tape recorder is the most appropriate instrument for recording the interviews because it is easy to use compared with other ways of recording such as video recording (Kvale and Brinkmann, 2009).The recorded interviews, including those in Tetum were transcribed into English by the researcher.

4.2.3. Difficulties encountered in Data Collection

Two main difficulties were encountered throughout the whole period of data collection. The first was lack of secondary data for a particular variable available for all countries. At the early stage of data collection, it was very challenging to collect data for all individual countries. This research had to change variables a number of times due to unavailability of data. Only after several trials, some variables were found to have data available for all countries. Nonetheless, availability of secondary data in some chapters varies. For example, data for Chapter 6 on trade are from 1980 to 2016 while for Chapter 7 on technology innovation data are only from 1999 to 2012.

The second difficulty was lack of active responses from the majority of participants who were asked for an interview. Even though a letter of introduction, consent form and information sheet were sent to participants in advance, only two out 15 participants responded immediately to the request for interview. So, a follow up visit

and also telephone call to the participant's office was made on arrival in Timor-Leste. After two days of follow up, 15 participants confirmed that they would participate in an interview.

4.3 Analysis of Secondary data

The analysis of secondary data is to test the determinants of FDI, the role of FDI on trade and also on technology innovation. This research adopted the Granger Causality test to examine the causality relationship between two variables, for example FDI and trade, as well as FDI and technology innovation. There are also other factors that may have an influence on trade and technology which are tested in this research. Details on these other factors are discussed in Chapters 5, 6 and 7 of this thesis. Prior to the Granger Causality test, a number of basic statistical analyses, such as a descriptive statistics, the unit root test and unrestricted VAR are used to support the test. More on the analysis of secondary data is discussed as follows:

4.3.1 Descriptive statistics

Descriptive statistics provide a summary of data through calculating the maximum, mean and minimum value. Such information helps to make a comparison of data between variables. It is an important start to understand the data prior to analysing it (Saunders et al., 2012).

4.3.2 Unit Root Test

The unit root test is to test whether a data series is stationary. This test is important to ensure that all data series are stationary prior to instigating a Granger Causality test. Conducting a test with a non-stationary series may end up with a biased result. Non-stationary series are series of data that have values which are far away from their mean and are inconsistent. A stationary series is a series of data that have values which often cross its mean and are consistent over time (Brooks, 2014).

In order to understand non-stationary series, Brooks (2014) identified two types of non-stationary series. The first is a random walk with drift and the second is random walk with drift and deterministic trend. The following is a simple regression model:

$$Y_t = Y_{t-1} + \varepsilon_t \ ..... \ (1)$$

Where Y_t is a variable, Y_{t-1} is the previous value of Y, ε_t is the error term or residual and t is the time period. This description is also applied to other equations in this thesis. The first type of non-stationary series of a random walk with drift is as in the following equation:

$$Y_t = \alpha + Y_{t-1} + \varepsilon_t \ ..... \ (2)$$

The symbol α is the drift, which occasionally is known also as the constant or intercept. The value of a variable (Y_t) depends on drift in this equation. The second type of non-stationary series is a random walk with drift and deterministic trend as in the following equation:

$$Y_t = \alpha + \beta_t + Y_{t-1} + \varepsilon_t \ ..... \ (3)$$

The value of a variable (Y_t) depends on drift and the deterministic trend of β_t. Most non-stationary series data used in economic and finance research are more equation (2) than equation (3) (Brooks, 2014).

The unit root tests used for Southeast Asian countries as a group and as an individual are different, therefore, this research applied Im, Pesaran and Smith (IPS) unit root test for groups while the Augmented Dickey Fuller (ADF) unit root test was used for each individual country. Detailed descriptions for these two tests are as follows:

Im, Pesaran and Smith (IPS) Unit root test

The Im et al. (2003) test is presented in the following equation:

$$\Delta Y_{it} = \alpha_i + \rho_i Y_{it-1} + \sum_{j=1}^{m} \pi_{ij} \Delta Y_{it-j} + \varepsilon_{it} \ldots. (4)$$

Where m is the maximum number of lag, ρ and π are the coefficient for a variable and i is a country. Other symbols have similar explanations as in equation (1). The selections of lags for the IPS test are automatically determined by EViews software through AIC (Akaike Information Criteria).

There are many other unit root tests for groups of countries which include the LLC (Levin, Lin and Chu) test and Breitung test that are available in EViews Software, however, the IPS test is more advanced. Im et al. (2003) recognised that their test used the t-statistic from the Augmented Dickey Fuller (ADF) and also the number of lags which makes their test more reasonable than other tests. Levin et al. (2002)even suggested using more Im, Pesaran and Smith (IPS) Unit root test, which allows for more for heterogeneousness among its individual samples. IPS is a powerful test for a panel unit root test compared with LLC (Maddala and Wu, 1999). This test can also be used for a study that involves a small sample (Cuyvers et al., 2011).

The IPS test has been the most popular and was used by a number of different studies in the past including by Ahmed (2010), Cuyvers et al. (2008); Shahmoradi and Baghbanyan (2011), Delpachitra and Van Dai (2012), and Cuyvers et al. (2011) in addition to Aziz and Mishra (2015b).

Augmented Dickey Fuller (ADF) test

The ADF test applies similar equations to the IPS test as in equation (4). The ADF test can be run in three different ways:

(a) Include only intercept:

$$\Delta Y_{it} = \alpha_i + \rho_i Y_{it-1} + \sum_{j=1}^{m} \pi_{ij} \Delta Y_{it-j} + \varepsilon_{it} \ ….. \ (5)$$

(b) Include intercept and trend in the equation:

$$\Delta Y_{it} = \alpha_i + \beta_t + \rho_i Y_{it-1} + \sum_{j=1}^{m} \pi_{ij} \Delta Y_{it-j} + \varepsilon_{it} \ ….. \ (6)$$

(c) None (exclude intercept and trend) in the equation:

$$\Delta Y_{it} = \rho_i Y_{it-1} + \sum_{j=1}^{m} \pi_{ij} \Delta Y_{it-j} + \varepsilon_{it} \ ….. \ (7)$$

Similar to the IPS test, the selection of lags for the ADF test are also automatically determined by EViews software through AIC (Akaike Information Criteria). There are also several other unit root tests for individual countries such as PP (Philips-Peron) test and Ng-Perron test however, the ADF test is found to be more suitable and easy to use as a unit root test in this research. The PP test is almost similar to ADF however it has more complexity in the interpretation of results. The Ng-Perron test was also more complex to understand and unlike the ADF test, it does not produce a p value (Brooks, 2014).

The Augmented Dickey Fuller (ADF) test has been used by many researchers in the past. Bekhet and Al-Smadi (2015), Liu et al. (2001) and De Mello Jr and Fukasaku (2000) in addition to Smyth and Inder (2004) were some of the researchers that have applied this test.

Both of the IPS and ADF test the null hypothesis of data series has unit root or not stationary. This null hypothesis can only be rejected if the p values are significant at either 1% or 5%. Another way to reject the null hypothesis is by comparing the ADF t-stat value and critical value, the critical value (cv) must be smaller than the ADF t-stat value (cv < t). The test is first conducted in level, then continues with the first difference and second difference[7] until rejection of the null hypothesis. Different to ADF, the IPS test can only be performed in equations (5) and (6) (Brooks, 2014).

4.3.3 Granger Causality test

This research applied the Granger Causality test to analyse the secondary data for Southeast Asian countries. This test is to examine the causality relationship from one variable to another (Brooks, 2008). Considering the following regression equation as adapted from Min (2003):

$$Y_t = \alpha \sum_{i=1}^{m} X1_{t-1} \dots + \beta \sum_{i=1}^{m} Xn_{t-1} + \varepsilon_t \ \dots\dots (8)$$

where Y is dependent variables and X is independent variables. The symbol of α and β are coefficients for each variable. Other symbols have similar explanation as previously mentioned in this chapter.

The selection of lag for equation (8) was done through unrestricted VAR (Vector Auto Regression). By comparing the AIC (Akaike Information Criterion) value from each of the different lags, the lag that has the lowest AIC value is chosen as it presents the best model. Equation (8) is to test the null hypothesis of X does not cause Y. If variable X causes Y, it means that there is unidirectional causality from X to Y. In other words, there is a correlation between X and Y. If both X and Y causes

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[7]*Level is based on number of observations (n) for each data. First difference is n-1 while second difference is n-2 (Brook, 2014).*

each other, it is bidirectional causality. However, if there is no causality relationship between two variables, this indicates that they are independent (C, Brooks, 2008).

This test had been used by many researchers in the past: Ahmed and Wahid (2011)study involved African countries, Aizenman and Noy (2006) in 205 countries, De Mello Jr and Fukasaku (2000) in Latin America and Southeast Asian countries. In addition, this test had also been applied in a number of studies involving individual countries with fewer observations. For example, Liu et al. (2001) study about China covers only 14 years and Min (2003) in Malaysia for seven years.

This research utilised econometric software, namely EViews. It is a user friendly and powerful software used to perform all tests for secondary data including descriptive statistics, unit root and the Granger Causality test (McKenzie and Takaoka, 2012).

4.4 Analysis of Results from Interviews

There are number of ways to analyse results from interviews. Bryman (2008)identified that narrative analysis and thematic analysis are two important ways. Narrative analysis is more for stories that cover people's lives while thematic analysis is based on participant's response to the research questions. Looking at these differences, the results from interviews in this research are analysed more as thematic analysis. The following steps are recommended by Saunders et al. (2012) and are applied in this research:

1. Listen back to the audio record from interviews and transcribe information into written transcript.
2. Skim and scan through the written transcript. Repeat reading the whole transcript in order to ensure all information is captured in the transcript.
3. Code all the notes according to each group that is relevant.
4. Categorise all codes according to the research objectives.
5. Write up the interpreted results and discuss these with support of pertinent

previous studies and also theories.

This research used NVivo software to organise and analyse the results of the interviews from Timor-Leste. It is powerful software that can code and categorise all different responses according to the needs of the analysis (Bryman, 2008).

4.5   Summary

This chapter presented the selection of research methods for this research. The use of secondary data was found to be the most suitable method of data collection that fitted the Southeast Asian countries in this research. Interviews were only conducted to collect relevant information for Timor-Leste due to the limitation of available data.

Secondary data were analysed using the Granger Causality Test in EViews software. Prior to the test, two important statistical summaries were applied: descriptive statistics and unit root test were conducted. The interview results from Timor-Leste were analysed thematically using NVivo software.

After discussing the research methods, the next chapter presents the result of analysis on determinants of FDI, the first objective of this research.

CHAPTER 5: DETERMINANTS OF FDI

5.1. Introduction

Chapter 3 of this thesis discussed literature and findings from other studies related to the determinants of FDI in different regions and countries including in Southeast Asia. In general, determinants of FDI are found within four different groups: macroeconomic, institutional, political and socioeconomic. Most of the literature argues that countries who are strong in macroeconomic and institutional areas, and politically stable as well as having an improved socioeconomic status, are most likely to attract more FDI.

Even though there have been many studies on this area, there is still limited information on how trade, particularly exports and imports, influence the incoming investment by foreign companies in Southeast Asian countries. Unlike other previous studies involving Southeast Asian countries including those by De Mello Jr and Fukasaku (2000), Shu and Khan (2003), Aizenman and Noy (2006), this thesis not only examined Southeast Asia as a group but also by individual country. In addition, the result of analysis on Timor-Leste is believed to be the first ever study on the determinants of FDI in this newest nation. Besides trade, this chapter also examines administrative procedures and governance indicators. Administrative procedure was identified by Vadlamannati et al. (2009) as one of the important determinants of FDI and has not been covered in previous studies.

This chapter is divided into five main sections. The first presents variables and data sources for this chapter followed by the empirical model for the analysis and the third section is a summary of statistics. The final two sections elaborate more on the results of the analysis determinants of FDI in Southeast Asia and in Timor-Leste.

5.2. Variables and Data Sources

There are about 15 different variables that are selected for this chapter. These variables consist of FDI (as a dependent variable) and six administrative procedures, six governance indicators in addition to two trade components (exports and imports) as independent variables. An indicator related to the health variable was introduced in the analysis, however, this variable was found to have no impact on FDI. An indicator related to education has no data for all of Southeast Asian countries from the same source of data. Therefore, this research did not include either health or education variables for further analysis. Similarly due to lack of adequate data for some other variables, such as currency exchange rate, volume of cheap labour and complications related to getting a quantitative measurement of the Government regimes, these variables were not included in this thesis. The following part discusses in detail the variables used in this analysis.

Foreign Direct Investment (FDI)

FDI refers to all incoming investment made by a foreign company in Southeast Asian countries. It is quantified as stock of inward FDI in USD (United States Dollars) at current prices in billions. FDI has been measured either as stock or flow, this research chose to use stock because it is more stable. Flow is easy to change due to development in a country compared to stock (Rogmans and Ebbers, 2013; Sillah, 2015). Moreover, stock is the total value of investments that is recorded at the end of a particular year while flow is more the ongoing value. The data are from the UNCTAD STAT database (UNCTAD, 2017) and available from 1980 to 2016 for most of the countries. Data for Timor-Leste is only from 2003 onwards and is measured in millions instead of billions due to the fact that the country has only a small value. This also applies for trade both in exports and imports.

Administrative Procedures

The six administrative procedures are divided into two different groups. The first

group on starting up a business, consists of three variables: procedures, time and cost that a foreign investor needs to go through simply to start their business in a country. Procedure is the total number of procedures, while time is the number of days and cost is the percentage of income per capita. The second group is paying taxes also with three variables: payment, time and total tax rate. Payment is the total number of payments made in a year while time is the number of hours per year and total tax rate is the percentage of profit paying taxes while investing in a country. Data for these administrative procedures are from World Bank Group report on doing business. The data are available from 2004 until the present time for most countries while Myanmar is the only exception, with data only available from 2014. Therefore, Myanmar is excluded in the test for administrative procedures as a determinant of FDI.

Governance Indicators

The six governance indicators are control of corruption, government effectiveness, political stability, rule of law, regulatory quality in addition to voice and accountability. These indicators are based on public view and estimated with value of -2.5 (weak) to 2.5 (strong). Control of corruption is about how the state controls the corruption practices of their officials. Government effectiveness refers to how the government provides consistently better services to the public according with their plans. Political stability concerns a country's political situation and the absence of violence. Rule of law relates to how strong law enforcement is. Regulatory quality represents how non-public business activities are supported by the government's rules and regulations. Voice and accountability is to what extent the public community has liberty to express their views. The data are available from 1996 to 2016 from the World Bank Governance Indicators for all Southeast Asian countries (World Bank Group, 2017).

<u>Trade</u>

Trade is represented by exports and imports. Exports and imports are defined as total exports and imports in goods and services. Both are measured as United State Dollars (USD) in billions. The data are from the UNCTAD STAT database (2017) and available from 1980 until 2016. Similar to FDI, data for Timor-Leste are only from 2003.

5.3. Empirical Model

Due to availability of data for different variables, this part of the research tests the determinants of FDI in Southeast Asian countries in three different regression models. The first model is to examine whether the six administrative procedures act as determinants of FDI as in the following equation model:

$$FDI_t = \alpha \sum_{i=1}^{m} SB_{t-1} + \beta \sum_{i=1}^{m} PT_{t-1} + \varepsilon_t ..... (9)$$

where FDI is the dependent variable while SB and PT are the independent variables.SB stands for starting up a business and this covers three variables: procedures, time and cost. PT is paying taxes, which also has three variables: number of payments, number of hours and total tax rate. Data for this equation model is only for 13 years (1996 to 2016).

The second model has governance indicators as the independent variables as in the following equation (10):

$$FDI_t = \alpha \sum_{i=1}^{m} CC_{t-1} + \beta \sum_{i=1}^{m} GE_{t-1} + \gamma \sum_{i=1}^{m} PS_{t-1} + \delta \sum_{i=1}^{m} RL_{t-1} + \rho \sum_{i=1}^{m} RQ_{t-1} +$$
$$\sigma \sum_{i=1}^{m} VA_{t-1} + \varepsilon_t \ ..... (10)$$

where CC is control of corruption, GE is government effectiveness, PS is political stability, RL is rule of law, RQ is regulatory quality. Data for this equation model is

only for 21 years (2004 to 2016).

The third equation model has trade with export (EXP) and import (IMP) as the two independent variables using data for 37 years (1980 to 2016) as in the following equation:

$$FDI_t = \alpha \sum_{i=1}^{m} EXP_{t-1} + \beta \sum_{i=1}^{m} IMP_{t-1} + \varepsilon_t \ \ ..... \ (11)$$

5.4. Summary Statistics

Descriptive statistics as in Table 5.1 shows that FDI in equation (11) and trade (exports and imports) have the most observations with 370, representing ten countries (excluding Timor-Leste) data for 37 years (1980-2016). Other variables have fewer observations, including for FDI in equation (9) and (10) while governance indicators have around 195 to 198, and administrative procedures average between 124 and 107. This indicates that availability of data for each variable is different. This is why this part of the research used three different regression models to analyse the determinants of FDI in Southeast Asian countries.

FDI into Southeast Asian countries has been in a range from less than USD1b to the maximum of USD1,096b. The mean value, which is far below the half line of maximum value, indicates that the majority of countries received FDI at an average of USD111b and even less than this amount as in equations (9) and (10).

In regard to administrative procedures and governance indicators, the mean values demonstrate that the majority of countries in Southeast Asia have fewer administrative procedures and have weak performance in governance indicators. In relation to trade, having more exports than imports in their mean value is an indication that the majority of Southeast Asia has a positive balance in trade.

Table 5.1: Descriptive Statistics for Determinant of FDI in Southeast Asia

Groups	Variables	Obs[8]	Max	Min	Mean
FDI	FDI (9)	130	1,096	0,018	111
	FDI (10)	223	1,096	0,018	73
	FDI (11)	370	1,096	0.00055	47
Starting up a business	Proc	124	18	3	9
	Time	124	198	2.5	59
	Cost	124	553	0.3	38
Paying Taxes	Pay	108	62	5	28
	Time	107	1,050	30	299
	Tax	108	59	0.2	30
Governance Indicators	CC	195	2.3	-1.6	-0.3
	GE	195	2.4	-1.6	-0.02
	PS	196	1.5	-2	-0.2
	RL	198	1.8	-1.7	-0.3
	RQ	195	2.2	-2.3	-0.14
	VA	198	0.46	-2.2	-0.6
Trade	EXP	370	410	0.010	49
	IMP	370	379	0.092	46

Source: Result of descriptive statistic from EViews Software
Note: There are three different FDI, the first one is for equation model (9) follow by (10) and (11) accordingly. Most of variables are in short version. Proc is for total number of procedures, Time is number of days, Cost is the percentage of income per capita in starting up a business. Pay is for total number of payment, Time is number of hours and Tax is total tax rate in paying taxes. For governance indicators: CC is control of corruption, GE is government effectiveness, PS is political stability, RL is rule of law, RQ is regulatory quality and VA is voice and accountability. EXP and IMP are exports and imports while FDI in the same form. This notes applies to other tables in this chapter.

The next summary of statistics uses the unit root test. Adopting the IPS test, the following Table 5.2 presents the variable FDI in equation (11) as the only one that is stationary or has no unit root at second difference. The majority of other variables are stationary at first difference. The remaining other three variables, such as tax at paying taxes in addition to political stability and voice accountability at governance indicators are stationary at level. These are the series to be used in the next test.

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[8]Obs is the numberof observations, representing the availability of data for the sample countries over the time frame in this research.

Table 5.2: IPS Unit Root Test for Determinant of FDI in Southeast Asia

Groups	Variables	Level		First Difference		Second Difference	
		(1)	(2)	(1)	(2)	(1)	(2)
FDI	FDI (9)	1.00	0.98	0.00*	0.03*		
	FDI (10)	1.00	1.00	0.04**	0.00*		
	FDI (11)	1.00	1.00	0.34	0.19	0.00*	0.00*
Starting up a business	Proc	0.97	0.78	0.00*	0.04**		
	Time	0.42	0.38	0.00*	0.00*		
	Cost	0.02**	0.20	0.00*	0.00*		
Paying Taxes	Pay	0.04**	0.69	0.00*	0.02*		
	Time	0.03**	0.07	0.00*	0.00*		
	Tax	0.00*	0.00*				
Governance Indicators	CC	0.45	0.16	0.00*	0.00*		
	GE	0.39	0.09	0.00*	0.00*		
	PS	0.00*	0.00*				
	RL	0.41	0.03**	0.00*	0.00*		
	RQ	0.71	0.01*	0.00*	0.00*		
	VA	0.00*	0.00*				
Trade	EXP	0.99	0.56	0.00*	0.00*		
	IMP	1.00	0.94	0.00*	0.00*		

Source: Result of IPS unit root test from EViews Software
Note: All values in this table are p value, *means significant at 1% and ** at 5%
(1) The equation that includes individual intercept,
(2) The equation that includes individual intercept and trend;

5.5. Trade as Determinant of FDI in Southeast Asia

Prior to the Granger Causality test, unrestricted VAR is performed to choose the number of lags for the test. As shown in Table 5.3, lag 5 is the number of lags selected for equation (9) while lag 8 is for equation (10) and lag 26 for equation (11).

Table 5.3: Lags Selection for equation (9), (10) and (11)

Number of Lags	Equation		
	(9)	(10)	(11)
1	62.2	13.3	65.5
2	62.3	12.5	65.1
3	62.0	12.6	64.7
4	61.3	12.2	64.5
5	58.4*	11.8	64.4
6	N/A	10.0	64.1
8		0.9*	63.1
10		N/A	61.6
15			59.5
20			55.4
25			49.4
26			47.6*
27			N/A

Source: Result of unrestricted VAR from EViews Software

By using the appropriate lag for the Granger Causality test, the result as in Table 5.4 shows that none of the six administrative procedures caused the increase of FDI into Southeast Asian countries as a group. As identified in Table 5.1, Southeast Asian countries have fewer administrative procedures which some of previous studies (Torriti and Ikpe, 2015; Morisset and Lumenga-Neso, 2002) indicate that can attract more FDI and in fact, this happens in Southeast Asia. Therefore, the result of this test may need further investigation in the future.

Similar to administrative procedures, the six governance indicators also do not cause the increase of FDI. The descriptive statistics at Table 5.1 showed that the majority of Southeast Asia countries performances on governance indicators were considered as weak. However, FDI into Southeast Asian countries has increased more than 100 times in 2016 compared with 1980 as discussed in Chapter 2 of this thesis. This supports the result of the test that there is no correlation between governance indicators with FDI in Southeast Asian countries.

Table 5.4: Granger Causality test for Determinant of FDI in Southeast Asia

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc ↛ FDI	0.61	Proc ↛ FDI
2.		Time ↛ FDI	0.93	Time ↛ FDI
3.		Cost ↛ FDI	0.78	Cost ↛ FDI
4.	Paying Taxes	Pay ↛ FDI	0.87	Pay ↛ FDI
5.		Time ↛ FDI	0.98	Time ↛ FDI
6.		Tax ↛ FDI	0.99	Tax ↛ FDI
7.	Governance Indicators	CC ↛ FDI	0.81	CC ↛ FDI
8.		GE ↛ FDI	0.86	Ge ↛ FDI
9.		PS ↛ FDI	0.23	PS ↛ FDI
10.		RL ↛ FDI	0.99	RL ↛ FDI
11.		RQ ↛ FDI	0.90	RQ ↛ FDI
12.		VA ↛ FDI	0.54	VA ↛ FDI
13.	Trade	EXP ↛ FDI	0.00*	EXP ⟶ FDI
14.		IMP ↛ FDI	0.00*	IMP ⟶ FDI

Exports and imports are the only two variables that have causality relationships with FDI. Both have a p value significant at 0.00 (1%). This indicates that there is unidirectional causality from exports and imports to FDI showing that a country's progress on exports and imports does attract FDI to invest in Southeast Asian countries. Over the period of 1980 to 2016, Southeast Asian countries exports and imports had increased 16 times and FDI had risen 100 times (UNCTAD, 2017). This result of the research is consistent with most previous studies including in 38 countries (Demirhan and Masca, 2008) and in 16 Arab countries (Aziz and Mishra, 2015a).

Due to the diversity among the countries in Southeast Asia, this research also examined these 14 factors in each individual country. Since data for the individual countries has fewer observations, unrestricted VAR cannot be performed. The Granger Causality test was only conducted at the maximum lag, which was mostly between lag 1 to 3 according to availability of data for each country. By using similar variables as in section 5.2 of this chapter, the result of the Granger Causality test for regression equation model (9) showed a similar outcome that none of the six administrative procedures have correlation with the incoming of FDI into the individual country. The only exception is for Timor-Leste which has a tax rate causing FDI, to be discussed further in section 5.6.This means that administrative procedures do not become one of the main factors that influence FDI coming into most Southeast Asian countries. Details on the results of the Granger Causality result for each individual country can be seen in Appendix 3.

Table 5.5 presents the results of the test for regression equation model (10). It shows that only some of the governance indicators caused the increase of FDI into Cambodia and Lao PDR, none occurred in other individual countries as the result for

Southeast Asia as a group shows, which was previously discussed.

Table 5.5: Individual Country Result for Equation (10)

No.	Null Hypothesis	(1)	(2)	Outcome
1.	Ge ⟶̸ FDI		0.02**	Ge ⟶ FDI
2.	Ps ⟶̸ FDI	0.01*		Ps ⟶ FDI

Source: Result of Granger Causality test from EViews Software
Notes: (1) is Cambodia; (2) is Lao
*means significant at 1% and **significant at 5%
All values on this table are the p value

The results of the test show that political stability in Cambodia has a correlation with FDI. Public perception toward political stability in Cambodia has improved from only -1.1 in 1996 to 0.17 in 2016 (World Bank Group, 2017).During the same year, FDI into Cambodia increased from only USD0.9b to USD16b (UNCTAD, 2017). The low value of FDI in the past, particularly before the 1990s, was mainly caused by political conflict in the country (Cuyvers et al., 2011). This confirms the result of this test.

The second country that has governance indicators particularly government effectiveness (as in Table 5.5) as a determinant of FDI is Lao PDR. Lao PDR initiated major reforms in the mid-1980s. The reforms include the Government's program–National Growth and Poverty Eradication Strategy (NGPES) to improve the lives of the people in rural areas. The government opened up their economy and released some of the government control on business activities to have more private sectors to support this program (Fane, 2006). As a result, FDI into Lao PDR has also increased significantly, 15 times since 1996 to 2016 (UNCTAD, 2017) and the proportion of people in poverty has been reduced to 30% from 45% (Fane, 2006). This supports the result of the test that there is a correlation between government effectiveness and FDI into Lao PDR.

The next table (Table 5.6) presents the results of the test for equation (11). As shown there is unidirectional causality from trade (exports and imports) to FDI in the

majority of Southeast Asian countries. This result is consistent with the outcome of the test for Southeast Asian countries as a group. As countries that are part of ASEAN, the ASEAN free trade agreement (AFTA) has been a strong mechanism to support countries' trade and attract more investment not only between them but also with other neighbouring countries (ASEAN, 2012).

Table 5.6: Individual Country Result for Regression Model (11)

No	Countries	Null Hypothesis	
		Exp ↛ FDI	Imp ↛ FDI
1.	Brunei	-	0.00*
2.	Cambodia	0.00*	0.00*
3.	Indonesia	-	0.04**
4.	Lao PDR	0.00*	0.00*
5.	Myanmar	0.00*	0.00*
6.	Philippines	0.00*	0.01*
7.	Singapore	0.02*	0.00*
	Outcome	Exp ⟶ FDI	Imp ⟶ FDI

Source: Result of Granger Causality test from EViews Software
*Notes: *means significant at 1%, ** significant at 5%*

Brunei is one example. The majority of goods imported into Brunei were from ASEAN countries including from Singapore (Prime Minister's Office, 2017). Their main foreign investment is from Singapore. Over the period 2001 to 2012, 45% of investment in Brunei was from Singapore (UNCTAD, 2017). This supports the result of the test that there is correlation between Brunei's imports and FDI. On the other hand, Brunei's exports do not cause the increase of FDI. As a country that is rich in oil and gas, Brunei's exportation of oil had been to Japan, Australia and India as the top three destination countries (Prime Minister's Office, 2017). However, these three countries were not in the top five for FDI in Brunei (UNCTAD, 2017), showing that Brunei's exports do not have a correlation with foreign investors that come to invest in Brunei.

The second country is Cambodia which has both exports and imports as factors that cause the increase of FDI. Data from WITS (2017) showed that Cambodia has imported and exported most of its commodities from and to most other Asian

countries such as Hong Kong and Singapore between 2000 and 2016. FDI into Cambodia has been also mostly (75%) from Asian countries (UNCTAD, 2017). Being a part of ASEAN, FDI from ASEAN countries was almost 50% followed by 26% from China, 17% from developed countries including the United States and United Kingdom while the remaining comes from other countries in the Asian region (Cuyvers et al., 2011).This result corresponds with the study by Cuyvers et al. (2011) who found that there was a strong relationship between Cambodia's trade and FDI which confirms the result of this test.

In relation to Indonesia, the test result showed that there is unidirectional causality from imports to FDI. According to BPS (2017),China, Singapore and Japan are the top three countries that Indonesia imported more goods from compared with other countries. Indonesia imported 22% of goods from China, 11% from Singapore and 10% from Japan out of their total imports in the first nine months of 2017. Based on data from BPS (2016), 64% of foreign investment was also from Asia over the period 2000 until 2013. Other investors were from Europe and America which only accounted for 18% and 19% during the same period. Japan, Singapore and South Korea have been the three main source countries in Asia that have more investment in Indonesia. This shows that there is a strong link between Indonesia imports with FDI into their country: most of the foreign investment is from Asian countries.

 The results of the test in Table 5.6 showed that exports and imports in Lao PDR caused the increase of FDI. Data from WITS (2017) showed that China and Thailand were the top two destination countries for Lao PDR exports and also imports in both 2015 and 2016. The majority of foreign investors into Lao PDR also are from China and Thailand. Over the period 2001 to 2012, about 50% of FDI came from China with 34% from Thailand and 11% from Singapore (UNCTAD, 2017).The result of unidirectional causality from exports and imports to FDI from Table 5.6 is supported by this strong correlation between Lao PDR exports and imports and FDI

into the country.

The next country is Myanmar, where the result indicated that exports and imports caused the increase of FDI into Myanmar. Myanmar exported most of their products to China, Thailand and Singapore. In 2016, the percentage of all exported goods to China was 40% followed by Thailand with 19% as the top two destination countries. The imports from China equalled 34%, Singapore 14% and Thailand 12%. Other countries had a share with each below 10% (WITS, 2017). The three major foreign investors in Myanmar are from Singapore, China and Thailand. FDI into this country was 48% from Singapore, 24% from China and 19% from Thailand during the period 2001 to 2012. The remaining 9% was from other countries such as Korea (3%), France (3%), Italy (2%) and 1% shared among the United States, Cyprus and Norway (UNCTAD, 2017). This shows the correlation between Myanmar trade and FDI.

The test also showed that there is unidirectional causality from exports and imports to FDI in the Philippines. Data from WITS (2017) showed that the proportion of total importation of goods into the Philippines was more than 65% from the United States between 1996 to 2016. Japan is the second country, followed by China. The Philippines also had these two countries as the top three destinations for their exports. In relation to country origin of FDI into the Philippines, UNCTAD (2017) reported that 27% was from the United States, 17% from Asia and 15% from Europe. This shows that there is strong correlation between the Philippines exports and imports with the foreign investor's countries.

Singapore is the last country where exports and imports caused the increase of FDI. This country's export has been mostly to Asian countries. Malaysia is the top destination in addition to four other countries (Thailand, Hong Kong, the Philippines and Brunei). Their imports, on the other hand, mostly come from the United States,

China, Malaysia, Japan and Germany over the period 2000 to 2016 (WITS, 2017). FDI into Singapore is 39% from European countries followed by 16% from other developed countries (including Japan, Australia and Bermuda) and another 16% from Latin America and the Caribbean over the period 2001 to 2012. FDI from North America (Canada and the United States) accounted for 13% and Asia was also the same proportion 13% (UNCTAD, 2017). This shows that there is strong correlation between Singapore's trade, both export and import with FDI into their country.

On other hand, the results of tests for each individual country as shown in Table 5.6 also indicated that there is no causality relationship from trade to FDI in Thailand, Malaysia and Vietnam. Their results from the Granger Causality test are presented in Appendix 3 of this thesis.

5.6. Tax and Stability as Determinants of FDI in Timor-Leste

The secondary data analysis for Timor-Leste uses similar variables and tests as in this chapter. The only difference is additional qualitative information from the interviews to complement the discussion.

<u>Summary Statistics</u>

Table 5.7 reports that governance indicators (RL and VA) have the highest number of observations with 18. Other variables have fewer observations, most of the governance indicators have 15 and 16, trade and FDI 14 while administrative procedures 11.

Table 5.7: Descriptive Statistic for Determinants of FDI in Timor-Leste

Groups	Variables	Obs	Max	Min	Mean
FDI	FDI (9)	11	346	28	197
	FDI (10)	14	346	18	158
	FDI (11)	14	346	18	158
Starting up a business	Proc	11	10	4	8.4
	Time	11	103	9	74
	Cost	11	125	0.3	23
Paying Taxes	Pay	11	18	6	13
	Time	11	640	276	408
	Tax	11	59	0.2	18
Governance Indicators	CC	15	-0.2	-0.8	-0.5
	GE	15	-0.6	-1.2	-1
	PS	16	0.4	-1.1	-0.4
	RL	18	0.2	-1.5	-1
	RQ	15	-0.8	-1.6	-1.1
	VA	18	0.2	-1.7	-0.1
Trade	EXP	14	30	7	13
	IMP	14	858	97	413

Source: Result of descriptive statistic from EViews Software

FDI into Timor-Leste has been from USD18m to 346m into Timor-Leste while the country has received an average of FDI of USD158m to USD197m over the period 2003 to 2016. In relation to administrative procedures, it took about four to ten procedures, 9 to 103 days and 0.3% to 125% in cost as a percentage of income per capita simply to start up a business in Timor-Leste. It also took about six to 18 payments over approximately276 to 640 hours and payment of 0.2% to 59% of profit in taxes. Their mean value suggests Timor-Leste still has more procedures and number of days for starting up a business in addition to more payments and time in paying tax. On the other hand, there has been some positive progress in the reducing the cost for starting up a business and reductions in paying taxes.

Timor-Leste's progress on governance indicators has been in negative value, an indication that the country has weak performance in most of the governance indicators. Only RL (rule of law), PS (political stability) and VA (voice and accountability) have positive scoring in the maximum value. In relation to trade, the maximum, minimum and even mean values for imports in Timor-Leste are higher

than exports indicating clearly that the country is in negative balance of trade.

After exploring the descriptive statistics, the next test applied is the unit root test. Table 5.8 shows that the majority of variables are only stationary or have no unit root at second difference. Other variables that have no unit root at first difference include time for starting up a business, regulatory quality and voice accountability in governance indicators, as well exports

Table 5.8: ADF Unit root test for Determinants of FDI in Timor-Leste

	Variables	Level			First Difference			Second Difference		
		(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
FDI	FDI	0.32	0.25	0.31	0.42	0.96	0.30	0.06	0.06	0.00*
Starting up a business	Proc	0.99	0.99	0.17	0.94	0.01*	0.81	0.00*	0.15	0.00*
	Time	0.83	0.85	0.23	0.06	0.98	0.00*			
	Cost	0.00*	0.21	0.00*	0.28	0.43	0.03**	0.00*	0.00*	0.00*
Paying Taxes	Pay	0.53	0.76	0.55	0.11	0.27	0.01*	0.01*	0.07	0.00*
	Time	0.60	0.73	0.12	0.07	0.19	0.01*	0.01*	0.06	0.00*
	Tax	0.46	0.64	0.12	0.68	0.00*	0.18	0.00*	0.00*	0.00*
Governance Indicators	CC	0.28	0.93	0.71	0.78	0.21	0.01*	0.02**	0.10	0.00*
	GE	0.00*	0.97	0.85	0.74	0.00*	0.09	0.00*	0.00*	0.19
	PS	0.35	0.00*	0.28	0.04**	0.13	0.00*	0.00*	0.00*	0.00*
	RL	0.29	0.71	0.70	0.11	0.20	0.04**	0.02**	0.02***	0.00*
	RQ	0.84	0.03***	0.47	0.02**	0.04**	0.00*			
	VA	0.21	0.04***	0.85	0.00*	0.28	0.01*			
Trade	EXP	0.22	0.06	0.74	0.00*	0.00*	0.00*			
	IMP	0.65	0.13	0.87	0.07	0.32	0.07	0.05**	0.09	0.00*

Source: Result of ADF unit root test from EViews Software
Notes: (1) and (2) are equal to Table 5.2
(3) The equation that excludes individual intercept and trend

Discussion of Results

Since secondary data for Timor-Leste is only available for 18 years, unrestricted VAR cannot be run to choose the appropriate lag for the Granger Causality test. The test can only be done at the maximum of lag 2. The result of the test, as reported in Table 5.9, showed that the majority of p values are not significant. There are only two null hypotheses out of 14 that can be rejected. There is only unidirectional causality from total tax rate (Tax) in paying taxes and political stability (PS) to FDI in Timor-Leste.

Table 5.9: Granger Causality Test for Determinants of FDI in Timor-Leste

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc ↛ FDI	0.34	Proc ↛ FDI
2.		Time ↛ FDI	0.68	Time ↛ FDI
3.		Cost ↛ FDI	0.19	Cost ↛ FDI
4.	Paying Taxes	Pay ↛ FDI	0.21	Pay ↛ FDI
5.		Time ↛ FDI	0.18	Time ↛ FDI
6.		Tax ↛ FDI	0.01*	Tax → FDI
7.	Governance Indicators	CoC ↛ FDI	0.33	CoC ↛ FDI
8.		GE ↛ FDI	0.61	Ge ↛ FDI
9.		PS ↛ FDI	0.04**	PS → FDI
10.		RoL ↛ FDI	0.21	RoL ↛ FDI
11.		RQ ↛ FDI	0.09	RQ ↛ FDI
12.		VA ↛ FDI	0.39	VA ↛ FDI
13.	Trade	Exp ↛ FDI	0.33	Exp ↛ FDI
14.		Imp ↛ FDI	0.94	Imp ↛ FDI

Source: Result of Granger Causality test from EViews Software

The correlation between Timor-Leste's total tax rates (tax) in paying taxes with FDI is in line with the government reforms on Tax Law. In 2008, the government of Timor-Leste initiated tax reform, lowering the assessable tax. There was a reduction from 20% to 10% in withholding tax for foreign workers. In addition, the instalment tax was cut by half from 1% to 0.5% and the elimination of minimum income tax was instigated (TradeInvest, 2008). A report by the World Bank Group (2010) cited that Timor-Leste's new Tax Law in 2008 introduced the profit tax rate of 10%, a reduction from 30% as previously stipulated. This has made Timor-Leste the top reformer in terms of paying taxes. As a result, FDI into Timor-Leste has increased from USD155m in 2010 to USD346m in 2016 (UNCTAD, 2017). This result corresponds with most of the previous studies (Haufler and Mittermaier, 2011; Klemm and Van Parys, 2012) that support tax as a determinant of FDI.

This test result is consistent with the outcomes from interviews. The majority of participants, 10 out of 15 identified that tax reform is one of the main important factors that attracts investment by foreign companies into Timor-Leste as shown in Table 5.10.

Table 5.10: Result of Interview from Timor-Leste

Determinants of FDI	(1)	(2)	(3)	Total
Tax Reform	4	3	3	10
Stability	4	3	3	10
Natural resources	3	3	3	9

Source: Result of analysis from NVivoSoftware

Notes: (1) Foreign Companies, (2) Government Official and (3) Local Companies

Among the five foreign companies interviewed, four talked about tax reform in Timor-Leste. Following are some of the quotes from interviews with foreign companies:

Tax benefit is there, other benefit is there too such as there is free tax for any capital investment (Participant from Foreign Company 1).

The participant from this company recognised the existence of tax benefits in the country and was also aware of other benefits to foreign investors while investing in Timor-Leste. Another participant from another foreign company stated that:

Why I am still here is because the tax system is absolutely cheap, it is a paradise for foreign investors. This place is absolutely perfect. If I have more money, I will invest more (Participant from Foreign Company 2).

Another two foreign companies shared similar views on the reasons why they decided to invest in Timor-Leste. Following are quotes from interviews with them:

Lower tax is another important factor that means we continue to exist in this country even though our project has been postponed for two years already due to illegal occupants on our land (Participant from Foreign Company 4).

The second reason why we want to invest in Timor-Leste is because Timor-Leste has low tax that really facilitates our investment activities in this country (Participant from Foreign Company 5).

This shows that the government's decision to lower tax back in 2008 was one of the important milestones that successfully attracted more FDI into the country. In particular during the period from 2010to 2016, FDI into Timor-Leste has doubled (UNCTAD, 2017).

The second variable that caused the increase of FDI into Timor-Leste is political stability as shown in Table 5.9. Even though there is current ongoing political tension between parties in the National Parliament, there was no recent violence reported. Timor-Leste's current situation is far different from what happened ten years ago. In the past, the country experienced a number of internal conflicts especially prior to 2010. However, the election in 2012, with no violence, proved to the world community that Timor-Leste can maintain peace and stability. As a result, the United Nations Mission in Timor-Leste terminated their mandate in 2012 (Ingram et al., 2015).Since that time, the country has been living in relative peace and stability. In the World Bank survey on perception toward occurrence of political violence, Timor-Leste received positive feedback. In 2006, it scored at -1.1 but this has declined to only -0.07 in 2016 (World Bank Group, 2017). This indicates that the majority of the public community considered that political stability in Timor-Leste is improving compared with past years. A number of previous studies (Bekaert et al., 2014; Busse and Hefeker, 2007) supported the view that political stability is an important factor that attracts FDI into a country.

During the interview, one of the foreign company respondents explained that they plan to build a five star hotel because they know that Timor-Leste has stability (Participant from Foreign Company 4) Other foreign companies commended the strong government role in maintaining peace and stability in the country for the last few years (Participant from Foreign Company 2). Another foreign company explained in a similar way by stating that:

Timor-Leste has been more politically stable than before and this gives us an assurance to invest more in the country, a country that has so much potential, which has not been explored (Participant from Foreign Company 1).

The country was considered to be politically stable by most of the foreign investors that were interviewed (as in Table 5.10).

Other factors, such as natural resources, that were not part of the Granger Causality test of secondary data as in Table 5.10 but this came up as one of the factors that attract foreign companies for investing in Timor-Leste during the interview. Out of the 15 participants, there were nine participants who mentioned natural resources. Three foreign companies stated clearly that their presence in the country was due to the availability of natural resources products. A participant from one of the foreign companies considered Timor-Leste as one of the countries that have a number of different abundant resources. The following is a statement from the foreign company:

Timor-Leste has so much potential for agricultural products that have not been developed. For example when we checked salt, nobody produces this and there is potential because the climate is very different, six months dry, which is a long time to produce salt (Participant from Foreign Company 1).

Among other null hypothesis in Table 5.9 that cannot be rejected, this part of the research focuses on a discussion about procedures in starting up a business. The majority of foreign companies raised the issue of longer bureaucracy in dealing with relevant government departments. One of the foreign companies stated:

The challenging part is navigating bureaucracy, there are so many Ministries that you need to deal with and so many people that you do not know who you are supposed to talk to (Participant from Foreign Company 4).

This was supported by a statement from another government official who recognised the existing lack of cooperation even between different government departments. This contributed to the delay in responding to any request, not only from other government departments but also from foreign investors. This is why administrative procedures do not become a factor that attracts FDI into Timor-Leste.

5.7. Summary

The result of the analysis in this chapter has shown that trade, both exports and imports are determinant of FDI into Southeast Asian countries. There is unidirectional causality from exports and imports to FDI in most Southeast Asian countries. The majority of countries have a strong correlation between both export and import with FDI, while Brunei and Indonesia only have imports as the determinant factor. With the other three countries (Malaysia, Thailand and Vietnam) trade is not a factor that attracts FDI into these countries.

The other factors, such as administrative procedures and governance indicators, do not become the major factors causing the increase of FDI into Southeast Asian countries. The test only showed that political stability in Cambodia and government effectiveness in Lao PDR are the factors that have causality relationship with foreign investment into these two countries.

As a country that continues to experience a huge trade deficit, FDI into Timor Leste is not because of the country's trade. As a matter of fact, the majority of foreign investors invest in Timor-Leste because of the government's introduction of lower tax and the current political stability.

After exploring factors that cause the increase of FDI, the next chapter discusses and examines the role of FDI on trade in Southeast Asian countries.

CHAPTER 6: THE ROLE OF FDI IN TRADE

6.1. Introduction

The relationship between FDI and trade has been debated in many previous studies, most of which have shown that FDI has the potential to improve a country's trade, particularly via export (Liu et al., 2001; Magalhães and Africano, 2007; Ruane and Sutherland, 2005). However, there are also some other studies that have found differently, namely that some countries which have progressed in trade had no or very little influence from FDI (Franco, 2013; Stocker, 2000; Aizenman and Noy, 2006).

Even though there have been many studies in other parts of the world about the impact of FDI on trade, studies involving Southeast Asian(SEA) countries are limited in number. As stated in Chapter 3 of this thesis, the limited number of studies that have involved Southeast Asian countries are those by De Mello Jr and Fukasaku (2000); Tran and Dinh (2014), Shu and Khan (2003) and Aizenman and Noy (2006). Most of these studies have analysed Southeast Asian (SEA) countries as a group. Shu and Khan (2003)recommended that due to different characteristics between countries, individual analysis of each country can provide more detailed information about a country on its own rather than as a member of a group.

Therefore, this research analyses the impact of FDI on trade in the countries of Southeast Asia, not only as a group but also at individual country level with particular reference to Timor-Leste, the newest country in Asia which has not been studied before in this area of research. However being a new country, born just 15 years ago, there are no data available to provide a comparative analysis with other SEA countries and hence a separate analysis has been provided for Timor-Leste as

a case study.

As in Chapter 5, the present chapter is divided into five main sections. The first section deals with variables and data sources, followed by an empirical model, which provides a regression equation model for the Granger Causality Test in the second section. The third section deals with summary statistics for the selected variables. The fourth section provides the results of analysis for Southeast Asian countries as a group and as individuals while the fifth section is on Timor-Leste.

6.2. Variables and Data Sources

In this analysis, exports and imports represent performance of trade and are considered as the dependent variables while FDI is the main independent variable. This part of the research focuses on examining unidirectional causality from FDI on trade since the influence of trade on FDI has been covered in Chapter 5 on determinants of FDI.

Since the causality from FDI to trade is subject to a number of different factors (as already discussed in Chapter 3, section 3.5.2) this research examines other factors that may have an influence on trade. These other factors are: GDP representing economic growth, transport services representing transport costs and natural resources. A detailed description of these variables is briefly provided below:

Trade: Export and import are defined as total exports and imports in goods and services. Both are measured in United State Dollars (USD) and expressed in billions. The data have been obtained from the UNCTAD STAT database (2017).Data for the majority of Southeast Asian countries are available from 1980 until 2016 while data for Timor-Leste are available only from 2003.

Foreign Direct Investment (FDI): This is defined as the inward FDI stock, a share value of all finances and assets that are owned by a foreign investor in a host country. It is measured in USD at current prices and expressed in billions. Similar to the data on trade, the data for FDI are available from 1980 until 2016 from the UNCTAD STAT database (2017).

Gross Domestic Product (GDP): GDP is measured in USD at current prices in billions. The data were obtained from the International Monetary Fund (IMF)'s World Economic Outlook Database (2017) and available from 1980 to 2016 for most of the countries examined in this thesis. The exceptions are Brunei Darussalam for which the data are available from 1985, Cambodia with data from 1986, Myanmar with data available from 1998 and Timor-Leste with data available from 2003.

Transport Services: This consists of two variables, transport services as (i) a percentage of service exports and (ii) a percentage of service imports. These transport services include both roads and ports. The data were obtained from the World Bank's World Development Indicators (2017) and are available for most of the countries included in this study. However, the data for Brunei are available only from 2001, Cambodia from 1992, Lao PDR from 1984 and Timor-Leste from 2006. There is no data for Vietnam on these two variables.

Total Natural Resource Rent: This is the total revenue that comes from all natural resources that exists in a country. It is measured as a percentage of the GDP. These natural resources include petroleum (gas and oil), mineral and forest/forest products. The data on this are also obtained from the World Bank's World Development Indicators (2017) and available for most of the countries studied in this thesis. However, the data for Cambodia are available from 1993, for Lao PDR from 1984, for Myanmar from 2000 and for Vietnam from 1985. Data for Timor-Leste are available only for five years (2000 to 2004 and 2015) therefore it is excluded for the

analysis on Timor-Leste.

6.3   Empirical Model

This research applies two different empirical models of equations to examine the impact of FDI and other factors on trade in Southeast Asian countries. Considering the regression model from Min (2003), this research applied the following first regression model for the Granger Causality test:

$$\mathbf{EXP_t} \; = \; \boldsymbol{\alpha} \sum_{i=1}^{m} \boldsymbol{FDI}_{t-1} + \; \boldsymbol{\beta} \sum_{i=1}^{m} \boldsymbol{OF}_{t-1} + \boldsymbol{\varepsilon_t} \ldots.. \; (12)$$

where EXP (Export) is a function of FDI and OF (other factors). Export (EXP) is the dependent variable while FDI and OF (other factors) are the independent variables. OF includes imports, GDP, total natural resources and transport services as a percentage of service exports. This equation (12) model is to examine the impact of FDI and other factors on exports.

The second regression equation model is to examine the impact of FDI and other factors on imports. The second model uses variables similar to those of the first model. The only difference is imports are the dependent variable while other factors are composed of exports, GDP, total natural resources and transport services as a percentage of services imports. The second model is as follows:

$$IMP_t \; = \boldsymbol{\alpha} \sum_{i=1}^{m} \boldsymbol{FDI}_{t-1} + \; \boldsymbol{\beta} \sum_{i=1}^{m} \boldsymbol{OF}_{t-1} + \boldsymbol{\varepsilon_t} \; \ldots.. \; (13)$$

As previously discussed in the Methodology chapter (Chapter 4), these two equation models (12 and 13) are to test the null hypothesis that FDI and other factors (OF) do not cause exports and imports in Southeast Asian countries and in Timor-Leste.

The selection of number of lags (m) for all of the two equations above were estimated in unrestricted VAR as previously discussed in Chapter 4 (Brooks, 2008). The results are shown in Table 6.1, lag 16 has the lowest value for equations (12) and (13). Therefore, these are the number of lags that are used for those equation models in the Granger Causality test as described in section 6.5.

Table 6.1: Lags Selection for Equation (12) and (13)

Number of Lags	Equation	
	(12)	(13)
2	82.2	82.3
6	82.4	82.3
10	80.4	81.7
14	79.3	81.6
16	74.1*	76.0*
>16	NA	NA

Source: Result of Unrestricted VAR from EViews Software
Note: All values in this table are AIC value.
*indicate the lowest value
NA = Not Applicable, the test cannot be performed since insufficient number of observation after lag 16 for equation (12) and (13)

6.4   Summary Statistics

Table 6.2 presents descriptive statistics for all variables as previously described. The variables of export and import and FDI have the highest observation number with a total of 370. The maximum observations, 370, represent 10 countries' data for 37 years (1980 to 2016). Due to the lack of availability of data for some of the countries, the observation number for other variables is smaller. For example, GDP has 340 observations and total natural resource rent has 318. The other two variables for transport services have 283 for transport services in exports and 284 for transport services in imports.

As a group, the Southeast Asian countries export maximum value above their imports. Exports have USD410b compared with imports with only USD379b. Both export and import mean values are around USD49b and USD46b, which shows that the average countries trade performances are below half of the maximum value.

This is supported by their minimum value which is less than USD1b.

Table 6.2: Descriptive Statistics for FDI and Trade

Variables*	Obs	Max	Min	Mean
EXP	370	410	0.01	49
IMP	370	379	0.092	46
FDI	370	1,096	0.0005	47
GDP	340	932	0.14	103
TSE	283	77	0.07	19
TSI	284	78	2.2	39
TNR	318	54	0.0003	8

Source: Result of Descriptive Statistic from EViews Software
Note: most of variables are in short version. EXP is export, IMP is import, TSE is transport services as percentage of service export, TSI is transport services as percentage of service import and TNR is total natural resource. FDI and GDP remain in their form. This notes applies to other tables in this chapter.

In terms of FDI, Southeast Asian countries have an extensive diversity in attracting foreign investment, ranging from a minimum of USD0.0005b (equivalent to USD0.5m) to the maximum of USD1,096b over the period 1980 to 2016. Their mean value suggests that on average Southeast Asian countries received USD47b in their FDI.

Similarly in GDP, there is a considerable distance between countries' GDP: the maximum value is USD932b while the minimum value is USD0.14b. The mean value indicates that on average countries' GDPs are USD103b lower.

In relation to transport service variables, transport services in exports and imports have almost equal maximum value with 77% and 78%. However, there was a difference in the minimum value, 0.07% for transport services in exports and 2.2% for transport services in imports. Nevertheless the mean values show that the average Southeast Asian countries have a higher proportion in transport services in imports (2.2%) than in exports (0.07%).

The total natural resources have the maximum value of 54% compared with the minimum value of only 0.0003%. As a percentage of GDP, this indicates that some

countries have almost half of their GDP coming from natural resources. The mean value shows that the average for Southeast Asian countries have natural resources contribution to their GDP at only 8%.

Table 6.3 shows that all of the variables are stationary or have no unit root at first difference. FDI is the only variable that is stationary at second difference while total natural resource rent (TNR) at level. These are the forms that are applied in the Granger Causality test in the next section.

Table 6.3: IPS Unit Root Test for FDI on Trade in Southeast Asia

Variables	Level		First Difference		Second Difference	
	(1)	(2)	(1)	(2)	(1)	(2)
EXP	0.99	0.56	0.00*	0.00*		
IMP	1.00	0.75	0.00*	0.00*		
FDI	1.00	1.00	0.37	0.21	0.00*	0.00*
GDP	1.00	1.00	0.00*	0.00*		
TSE	0.02**	0.21	0.00*	0.00*		
TSI	0.63	0.05**	0.00*	0.00*		
TNR	0.00*	0.00*				

Source: Result of IPS unit root test from EViews Software
Note: All values in this table are p value, p is probability value based on IPS W-stat. *means significant at 1% and ** at 5%
(1) The equation that includes individual intercept,
(2) The equation that includes individual intercept and trend;

6.5. FDI brings positive impact on Trade in Southeast Asia

The result of the Granger Causality test as in Table 6.4 shows that there is unidirectional causality from FDI to exports and imports in Southeast Asian countries as a group. This means that FDI into Southeast Asian countries has contributed to countries performance in export and import. This result is consistent with many of the previous studies which were supportive of FDI's influence on trade. Some of the main studies include those from Aizenman and Noy (2006) who found that FDI has a strong influence on trade in 60 developing countries as well as Shu and Khan (2003) in 11 countries of Latin America and in seven countries of Central European. In addition, a paper by Sahoo (2006) also found that export in five South Asian

countries in particular was influenced by FDI.

Table 6.4: Granger Causality for FDI and Other Factors on Trade

No	Null Hypothesis	P value	Outcome
1.	FDI ⇸ EXP	0.00*	FDI ⟶ EXP
2.	FDI ⇸ IMP	0.00*	FDI ⟶ IMP
3.	IMP ⇸ EXP	0.00*	IMP ⟶ EXP
4.	GDP ⇸ EXP	0.01*	GDP ⟶ EXP
5.	TSE ⇸ EXP	0.99	TSE ⇸ EXP
6.	TNR ⇸ EXP	0.99	TNR ⇸ EXP
7.	EXP ⇸ IMP	0.00*	EXP ⟶ IMP
8.	GDP ⇸ IMP	0.02*	GDP ⟶ IMP
9.	TSI ⇸ IMP	0.99	TSI ⇸ IMP
10.	TNR ⇸ IMP	0.99	TNR ⇸ IMP

Source: Result of Granger Causality test from EViews Software
Note: *means significant at 1% and ** significant at 5%.

FDI into Southeast Asian countries has increased over the last few years and is similar to their trade. As shown in Figure 6.1, FDI into Southeast Asia has improved close to 100 times by 2015 compared to what it was in 1980. At the same time, their export and import grew by a factor of 16 times each in the same period of time. This has contributed to the positive trade balance in most of the years. Only prior to 1995, Southeast Asia experienced trade in deficit, however, it had a positive trade balance after this in line with the increase of FDI (UNCTAD, 2017). This supported the result of the Granger Causality test that FDI caused the increase of both exports and imports which contributed to the positive balance of trade in the Southeast Asian countries.

Figure 6.1: FDI and Trade in Ten Countries
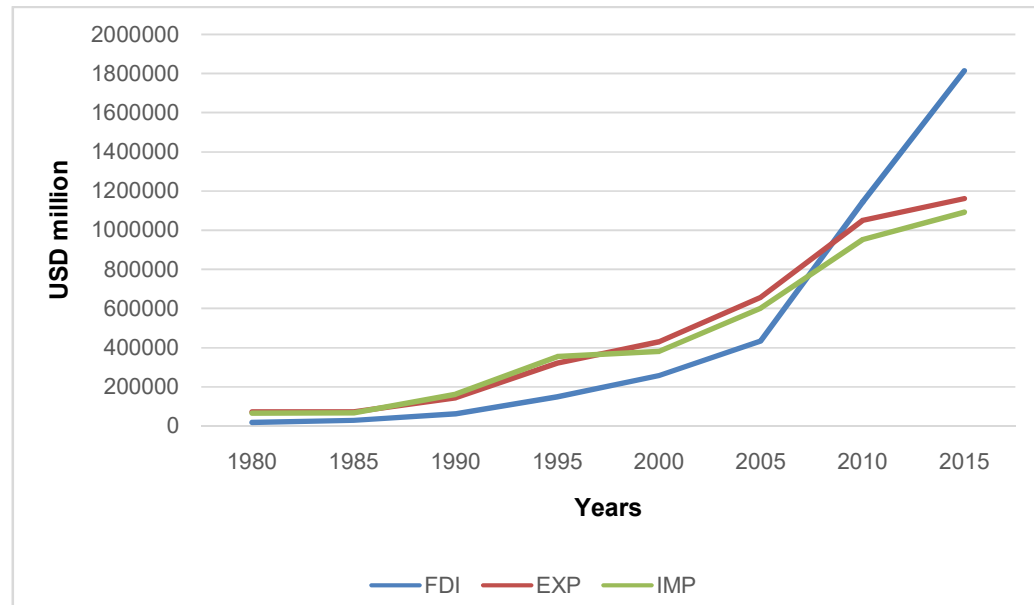
Source: Data from UNCTAD (2017), the graph is prepared by the researcher
Note: The ten countries in this figure are Brunei, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Singapore, the Philippines, Timor-Leste, Thailand and Vietnam.
The axis title and ten countries applies to the following Figure 6.2, 6.3 and 6.4.

Besides FDI, there are also other factors that have contributed to the improvement in trade. The results of tests (Table 6.4) show that there is bidirectional causality relationship between export and import. This means that imports have influenced exports and vice versa. The importation of goods into Southeast Asian countries was clearly to support the production of materials and goods for export. However, there has not been enough evidence or information so far collected to support the result of the test for exports led imports in Southeast Asia. This is an area of research that possibly needs to be explored further in the future for Southeast Asian countries. A number of previous studies have supported the strong contribution from exports to imports. For example, a study by Choong and Lam (2010) found that there was bidirectional causality between exports and imports. In addition, Babatunde (2014) identified Nigerian export of oil as having a strong correlation with their import of oil. Two other studies by Baek (2016) in five industrialised countries and Yuksel and Zengin (2016) in developing countries, both found that exports have led to the increase of imports.

Figure 6.1 demonstrated that Southeast Asian countries exports and imports are progressing in the same trend through most of the years shown. Even though they experienced a deficit in the 1990 to 1995 period, exports lead imports afterwards. The increase in exports also caused an increase in imports. This supported the result from the Granger Causality test that reflects that there is a strong causality relationship between exports and imports in Southeast Asian countries.

GDP is another variable that causes the increase of exports and imports as shown in Table 6.4. There is unidirectional causality from GDP to exports and imports. The hypothesis of GDP-led trade was supported by Araujo and Soares (2011) who cited the view from Krugman (1989) toward countries with a higher economic growth tending to produce more and export more compared to countries who have low economic growth. This is where the contribution of a country's economic growth to export is shown. A study by Ahmad and Harnhirun (1996)found the economic progress of most Asian countries has contributed to more exports and imports. This result of growth-led trade was consistent with other studies including Araujo and Soares (2011) study in Brazil, Tekin (2012) in three least developing countries and Hye et al. (2013a) in most South Asian countries.

On the other hand, there are also other factors that do not cause Southeast Asian countries' trade. As shown in Table 6.4, those factors are transport services in exports, transport services in imports and total natural resource rent. These three variables do not cause the increase of exports and imports in Southeast Asia as a group. Their p values are not significant therefore their null hypothesis cannot be rejected.

Considering the diverse characteristics between countries in Southeast Asia, this research also examines the causality relationship from FDI and other factors to trade in each of the individual countries. By applying a similar test as for groups in

this chapter, the result of the Granger Causality test showed that FDI only caused trade in eight countries while not in the other two countries. Therefore, the next section focuses on discussion first of the eight countries.

6.5.1 FDI improved Trade in Eight countries

The Granger Causality test (Table 6.5) shows that FDI has contributed to exports and imports in all of the eight countries. This means that there is unidirectional causality from FDI to trade, both exports and imports in these countries.

Table 6.5: Granger Causality Test for FDI on Trade in Eight Countries

No	Null Hypothesis	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1.	FDI ⇸ EXP	0.00*	0.00*	0.01*	0.00*	0.00*	0.01*	0.00*	0.00*
2.	FDI ⇸ IMP	0.00*	0.00*	0.00*	0.04**	0.00*	0.00*	0.00*	0.00*

Source: Result of Granger Causality test from EViews Software
Note: All values in this table are the p value. * means significant at 1% and ** at 5%
(1) Cambodia, (2) Indonesia, (3) Lao, (4) Malaysia, (5) Myanmar, (6) Singapore (7) Thailand and (8) Vietnam.

Figures 6.2 and 6.3 demonstrate clearly that these eight countries exports and imports increase in line with the growth of FDI. However, only Indonesia, Malaysia, Thailand and Singapore have positive trade balances (more exports than imports) in recent years as shown in Figure 6.2. The other four countries, Cambodia, Lao PDR, Myanmar and Vietnam continue to experience a huge deficit in their trade (more imports than exports) as in Figure 6.3.

The following discussion commences with the four countries in Figure 6.2 who experienced positive trade balances with the increase of FDI into their countries.

Figure 6.2: FDI and Trade in Indonesia, Malaysia, Thailand and Singapore

Source: Data from UNCTAD (2017), the graph is prepared by the researcher
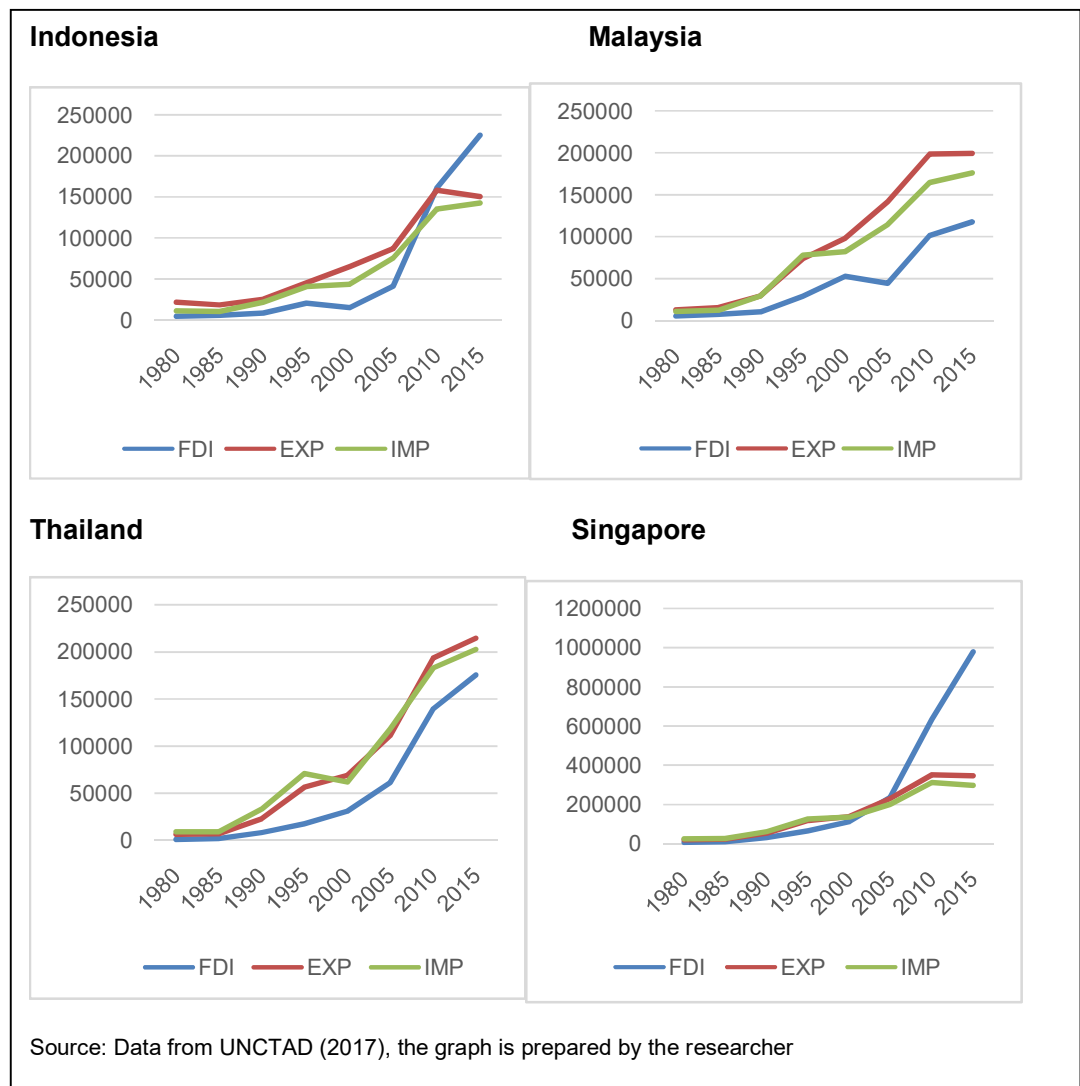
Beginning with Indonesia, Table 6.5 shows that there is unidirectional causality from FDI to exports and imports in Indonesia. FDI has influenced the progress of exports and imports in Indonesia. This result of research for Indonesia is consistent with a study by Sjöholm (2016) who examined the contribution of FDI in Indonesia. Sjöholm (2016)found that FDI brings progressive influence into Indonesia's economy in general. Many local firms who work with FDI, gained benefits in their business activity including in their exports and imports therefore Indonesia experienced positive change in their trade balance. As shown in Figure 6.2,

Indonesia's exports went above their imports for all of the years; both were almost in the same trend. The stock of inward FDI has increased to Indonesia (UNCTAD, 2017).

FDI into Malaysia has also influenced the country's trade in both exports and imports. Since most FDI into this country was in the manufacturing industry, 48% (UNCTAD, 2017), their trade was dominated by this industry. Malaysia's composition of exports in the first three months of 2016 and 2017 was around 35% of electrical and electronic products. Their imports on the other hand in similar products, reached 29% in the same period of time (Malaysia External Trade Development Corporation, 2017). The growth of FDI into Malaysia's manufacturing sector has been in line with Malaysia's exports and imports. In 1990, FDI's contribution to Malaysia's exports was only 50%, this has increased to 65% in just five years. At the same time, their input into imports also increased to 72% from only 60%(Yean, 2004). This shows that there is a contribution from FDI to exports and imports in Malaysia. This result is supported by a previous study by Min (2003) who found that FDI has a significant influence on Malaysia's exports.

Thailand's exports and imports were also influenced by FDI. Similar to Malaysia, FDI into Thailand is also mainly in manufacturing in particular in the electrical and electronic equipment industry. In both 2003 and 2004, it was around 62% of FDI in this area. As a result, in 2015, Thailand had electrical and electronic equipment at the top position in their export and import basket (UNCTAD, 2017). The role of FDI has been considered important because it improved the country's trade particularly in exports. The total investment activities for export by foreign companies has risen to 65% from only 30% in the past (Tangkitvanich et al., 2004). This shows that FDI has played an important role in Thailand's trade. In relation to Thailand's trade balance, as shown in Figure 6.2, even though Thailand experienced a trade deficit prior to 2000, the country managed to recover and had a positive balance in trade

after 2010. The stock of inward FDI into the country has increased intensely over the years (UNCTAD, 2017).

Singapore as the economically fastest growing country in Southeast Asia attracts more FDI than any other SEA country. The result of tests as in Table 6.5 shows that FDI has caused the increase of trade in Singapore. According to the Department of Statistics Singapore (2014), the majority of FDI in Singapore was 48%in financial and insurance services followed by 17% in the manufacturing sector in 2012. Their trade was contributed to by machinery and equipment. In both in 2012 and 2013, Singapore exported around 42% and imported around 46% machinery and equipment. As shown in Figure 6.4, FDI into Singapore has increased from 2005 to 2015, their exports and imports improved in a similar trend until 2015. This shows that the increase of FDI has made a strong contribution to Singapore's export and import activity. This is in line with the results of the Granger Causality test shown in Table 6.5.

Conversely, as shown in Figure 6.3, even though FDI increased in the other four countries (Cambodia, Lao PDR, Myanmar and Vietnam), they experienced a trade deficit in most years. The results of the test as shown in Table 6.5 mean that there is unidirectional causality from FDI to trade in these four countries. This means that FDI has contributed to the progress in both exports and imports in these locations.

Figure 6.3: FDI and Trade in Cambodia, Lao PDR, Myanmar and Vietnam

Source: Data from UNCTAD (2017), the graph is prepared by the researcher
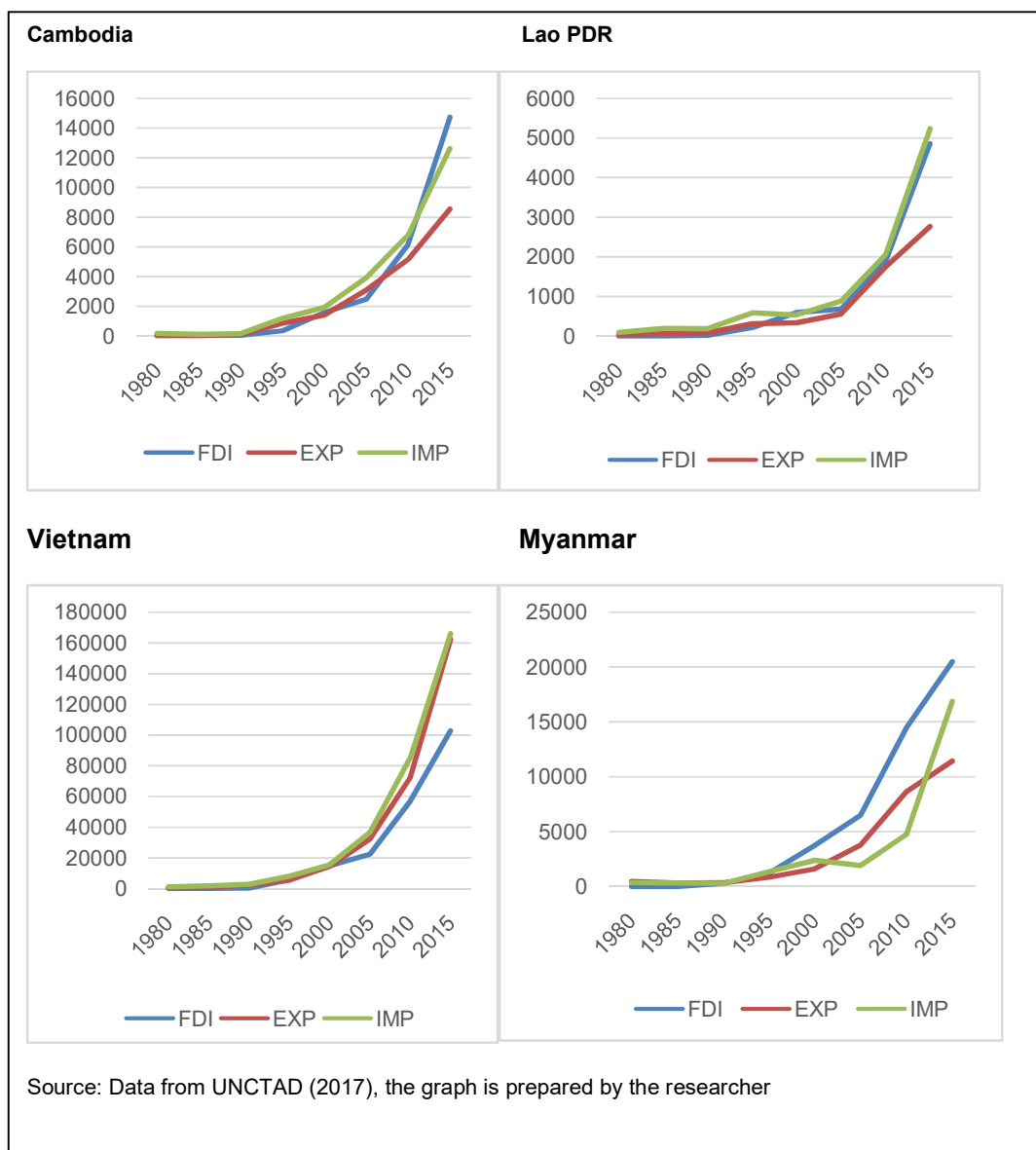
Commencing with Lao PDR, who had a trade deficit from 1980 until 2015 even with the increase of FDI, the gap in the trade deficit increased after 2010 compared with in the past. The total value of Lao PDR imports is almost in the same trend as FDI while their exports were lower. Having more imports than exports (Figure 6.3) contributed to the negative balance of trade. As a country that has the potential of water resources for electricity, this sector has received the most FDI. Over the

period 2007 to 2012, the majority of FDI was concentrated in the electricity sector. The other sector that had high FDI was the mining sector (World Bank, 2011). A report by Phommahaxay and Vanhnalat (2015) indicated that the concentration of FDI in the mining sector caused the weakening of Lao PDR trade in particular in exports. Data from UNCTAD (2017) shows that the increase of FDI into Lao PDR has also supported the country to export copper and electric current as their main exports while importing petroleum oil and motor vehicles in 2012.

Myanmar had a trade surplus only during 2002 to 2010 but this turned into a huge deficit in most other years (Figure 6.3). Myanmar had the majority of its FDI invested in the oil and gas industry as well as in electricity and mining (Bissinger, 2012). This has led Myanmar to export energy to a number of countries in the Asian region including to China and export gas to Thailand (Turnell, 2011). The total gas that Myanmar exported almost doubled between 2010/2011 to 2013/2014 (World Bank, 2013b). Their imports have been dominated by petroleum oil. In 2015, Myanmar's total importation of petroleum oil was the highest with 21% (The World Bank, 2017a). This supported the result from the Granger Causality test that the presence of FDI in Myanmar has contributed to the country's exports and imports.

Cambodia is another country that has FDI influenced their trade in particular exports and imports. As shown in Figure 6.3, the increase of their exports and imports was in line with FDI. Similar to most previous countries, the influence of FDI in Cambodia's trade also can be seen through FDI's area of investment and the country's trade basket. FDI into Cambodia was mainly in the textiles industry with an orientation for export (Cuyvers et al., 2011), Cambodia's trade was also dominated by textile products. In 2011, Cambodia's export of textile products accounted for 55% while importation of material for textiles was39% (OECD, 2013c). Cambodia's trade remained low from the 1980s until the 1990s (Figure 6.3) due to civil wars in the country during that period of time. This was followed by natural disasters which

destroyed all of their agricultural products such as rubber and wood which were part of their export commodity in the mid-1990s (Loem, 2015). As a result, Cambodia depends more on textile production for their exports and import.

Vietnam is another country where FDI caused the increase of their exports and imports. FDI and Vietnam's trade increased in most of the years since 1980 (Figure 6.3). There was 73% of FDI in the manufacturing sector in 2012 compared to more on the services sector in the past. Since the majority of FDI is concentrated in the manufacturing sector, it influenced their exports and imports. Vietnam used to export and import more petroleum oil in the past but this has changed into exporting and importing more telecommunication equipment in 2015. Their exportation of petroleum oil has declined to be only 3% out of total exports in 2015 compared to 15% in 1995 while exportation of telecommunications has increased from only 1% to 16% in the same year. Similar trends show in imports, a decline from 15% in 2008 to 4% in 2015 in the importation of oil out of total importation whereas importation of telecommunication equipment increased from 3% to 8% in the same period (UNCTAD, 2017). This result is supported by previous studies by Anwar and Nguyen (2011) and Xuan and Xing (2008) who found that FDI improved Vietnam's exports. Bui (2004) also highlighted that Vietnam's progress in exports had been contributed to by FDI in the country. In addition, another researcher, Bhatt (2013: 169),presented empirical evidence that "1% increase in FDI will lead to 0.25% increase in exports". Having the majority of FDI in the manufacturing sector, has led to the country's export dominance in electronics products (Bui, 2004), in relation to FDI's contribution to Vietnam's import,

6.5.2   FDI does not influence Trade in Two Countries

On the other hand, not all individual countries in Southeast Asia have a similar experience with FDI on their trade. As shown in Table 6.6, based on the Granger Causality test there is no unidirectional causality from FDI to exports and imports in

Brunei and the Philippines.

Table 6.6: Granger Causality Test for FDI on Trade in Two Countries

No	Null Hypothesis	(1)	(2)	Outcome
1.	FDI ⇸ EXP	0.77	0.35	FDI ⇸ EXP
2.	FDI ⇸ IMP	0.79	0.32	FDI ⇸ IMP

Note: All values in this table are the p value.
*means significant at 1% and ** at 5%; (1) Brunei, (2) The Philippines

Brunei is highly dependent on oil and gas, and their exports and imports have not been influenced by FDI. Figure 6.4 clearly demonstrated that Brunei had performed well in their trade particularly with exports even with less presence of FDI in the country prior to 1995. Brunei's exportation of oil and gas in 1995 was already close to 90% out of the whole total exports. The country can export oil and gas without FDI. The reduction of FDI after the year 2000 did not affect trade in Brunei. In fact, Brunei's exports increased dramatically and reached their peak in 2010 and also there was no major effect on their imports after 2000 (UNCTAD, 2017). Even though around 70% of FDI that came into Brunei was in the oil and gas industry in 2005 (Bhaskaran, 2007), the country's total exports remain at 90% from oil and gas (UNCTAD, 2017). FDI's contribution to Brunei's economic development overall was insignificant (Islam, 2011). Brunei's export of oil and gas was the main driver for trade and economic development (Bhaskaran, 2007; Anaman, 2004; Edward and Skully, 1996).

Figure 6.4: FDI and Trade in Two Countries

Source: Data from UNCTAD (2017), the graph is prepared by the researcher
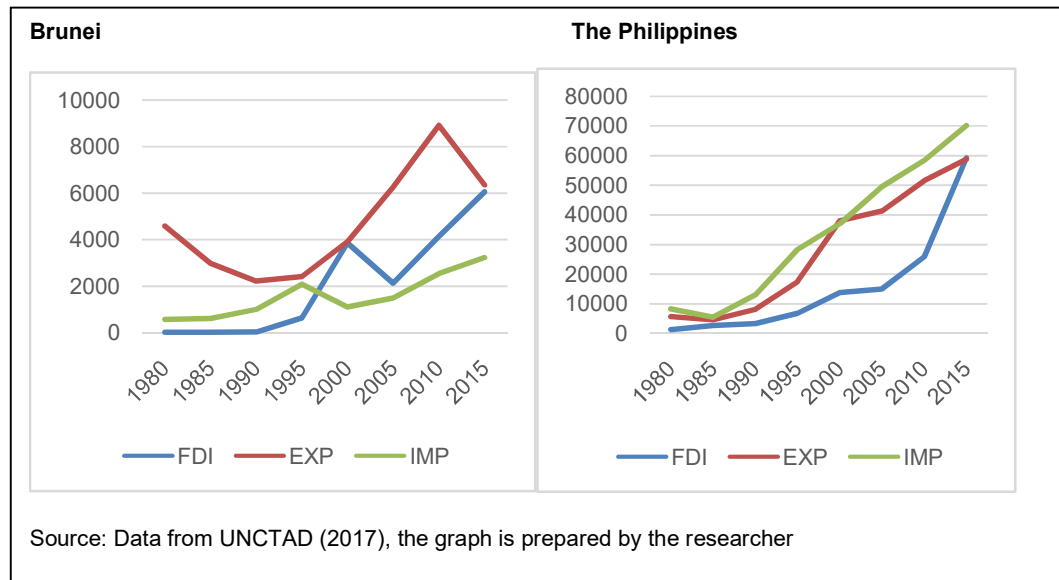
The Philippines is the second country where FDI has not influenced their trade progress. As shown in Figure 6.4, the Philippines has been in trade deficit, having more imports than exports in most of the years. The government's introduction of free tax on importations has made the Philippines one of the high import dependent countries (Aldaba and Aldaba, 2010). FDI into the Philippines remained low compared with other countries in Southeast Asia. The Philippines only received 3% of FDI from the total that came into this Southeast Asian country over the period 1980 to 2015. Other countries such Vietnam had 5%, Indonesia 10% and Thailand 11% (UNCTAD, 2017). This result is consistent with a discussion paper by Aldaba and Aldaba (2010) who reported that FDI did not have a positive relationship with trade in the Philippines.

6.5.3 Other Factors that have an influence on Trade

As well as FDI, there are also other factors that have influenced trade in Southeast Asian countries. However, each of the individual countries has different factors as shown in Table 6.7. The table only shows other factors that have a causality relationship with trade in SEA countries while details on other factors (which have no influence) are presented in Appendix 4 of this thesis.

Table 6.7: Granger Causality for Other Factors on Trade in SEA Countries

Null Hypothesis	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IMP ↛ EXP	-	0.00*	0.01*	0.02**	0.03**	0.00*	-	0.00*
GDP ↛ EXP	0.01*	-	-	-	0.00*	-	-	-
TSE ↛ EXP	-	-	-	-	-	-	-	-
TNR ↛ EXP	-	-	-	-	-	0.00*	0.01*	-
EXP ↛ IMP	-	0.00*	0.00*	0.01*	0.02**	-	-	0.00*
GDP ↛ IMP	-	-	0.01*	-	0.00*	-	-	-
TSI ↛ IMP	0.03**	-	-	-	-	-	-	-
TNR ↛ IMP	-	-	-	-	-	0.00*	0.01*	-

Note: All values in this table are the p value. * means significant at 1% and ** at 5%
(1) Brunei, (2) Cambodia, (3) Indonesia, (4) Myanmar, (5) Singapore, (6) The Philippine, (7) Thailand and (8) Vietnam

Beginning with Brunei, according to the results in Table 6.7, there is only unidirectional causality from their GDP to exports and from transport services (as a percentage of imports)to their imports. There is not enough information to show the contribution from Brunei's GDP to exports even though some previous studies (Araujo and Soares, 2011; Ahmad and Harnhirun, 1996) supported the result of GDP led export. This is an area of research to be further explored for Brunei in the future. In fact, Brunei's GDP has been influenced by its export of oil and gas since this sector has become the major area contributing to Brunei's GDP. In 2009, Brunei's oil and gas contribution to GDP was 60% (Islam, 2011). The second factor is transport services in imports which have a contribution to the increase in their imports. Brunei has increased their investment in transport services (as a percentage of service imports) from only 23% in 2001 to 31% in 2009 (UNCTAD, 2017). Over the period 2003 to 2010, Brunei had machinery and transport equipment as the topmost importation commodities (IMF, 2012). This shows that the investment that the Brunei government made in transport services has led to the high importation of transport equipment.

Unlike Brunei, there was only bidirectional causality between exports and imports in Cambodia. The composition of Cambodian trade, both exports and imports has

been dominated by the same commodities (OECD, 2013c). From 1995 to 2015, the highest proportion of commodities in Cambodia's exports and imports were textile fabrics which accounted for 28% of exports and 13% of imports. This research result is supported by Tang and Ravin (2013)who found that Cambodia's progress in exports was contributed to by their imports.

Similar to Cambodia, other countries such as Indonesia also have bidirectional causality between their exports and imports. Indonesia's trade was dominated by oil and gas products from 1995 to 2015. The total share of oil and gas in Indonesia's exports was 16% and 18% in their imports (UNCTAD, 2017). This supported the result of the test that there is strong causality between exports and imports in Indonesia. In addition, the test result (Table 6.7) also shows that Indonesia's GDP has a causality relationship to their imports, which will need to be further investigated in the future.

There was also bidirectional causality between exports and imports in Myanmar. Their trade was dominated by products from natural resources. Over the period 1995 to 2015, Myanmar's exportation was around 32% natural gas compared with importation of 17% of petroleum as the topmost commodities in exports and imports(UNCTAD, 2017). A report by the World Bank (2013b) also identified that gas production was the main contributing factor to Myanmar's exports.

Singapore is another country with an identical test result to Cambodia and Myanmar. Singapore's exports and imports have been dominated by similar products. Over the period 1995 to 2015, Singapore imported 18% while exporting22% of cathode valves and tubes out of their total import and export products (UNCTAD, 2017). This shows that there is a correlation between exports and imports in Singapore. In addition, another factor that also influenced Singapore's trade was GDP. Araujo and Soares (2011) supported the view of GDP

led export, this is applicable to Singapore. As a country that has the most advanced economy in Southeast Asia, Singapore's economy reinforced the ability of the country to export and import more.

In the Philippines, the test shows that there is unidirectional causality from imports to exports. The Philippines has cathode valves and tubes as the topmost commodities in imports and exports. Over the period 1999 to 2015, the Philippines imported 21% of cathode valves and tubes out of their total imports compared with exporting 32% of the same commodities. This shows a correlation between the Philippines importation and exportation (UNCTAD, 2017). The test also indicated unidirectional causality from total natural resources to export and import. In other words, there is a correlation between natural resources with the country's exports and imports. Over the period 1999 to 2015, the Philippines had wood in the top ten of their exports while petroleum oil was the second highest in their imports (UNCTAD 2017).

Thailand had total natural resources contributing to their exports and imports. Thailand had petroleum oil and natural rubber in the top four importation commodities over the period 1995 to 2015. Likewise, the country also has petroleum oil as the topmost exportation commodity (UNCTAD, 2017). This supports the results of the test that natural resources have contributed to the country's exports and imports.

Vietnam is the last country where the test shows the bidirectional causality between exports and imports. Vietnam has telecommunication equipment, textiles fabrics and petroleum oil in their top five export and import commodities over the period 1995 to 2015 (UNCTAD, 2017). This shows a correlation between the country's exports and imports commodities.

Among the ten countries, only Malaysia and Lao PDR have none of the 'any other factors' (as reported in Appendix 4 of this thesis) influencing their trade, both in exports and imports.

6.6. FDI Contributes more toward Timor-Leste's Imports

To examine the impact of FDI on trade in Timor-Leste separately, similar variables were selected and analysis conducted to those discussed above for Southeast Asian countries. The only difference is that most data for Timor-Leste is only available from 2003 until 2016. The data for the variables TSE and TSI are available from 2006 onwards. The definition of most of the variables is similar to those already stated in section 6.2.

Table 6.8 presents descriptive statistics of the variables. As shown in Table 6.8, FDI, exports, imports and GDP have 14 observations, representing Timor-Leste's data for 14 years (2003 to 2016). Other variables have fewer observations such as transport services in exports and imports have 11. Looking at the values for exports and imports, it is clear that Timor-Leste has a huge trade deficit, with considerably more imports than exports. The maximum values of imports are nearly 30 times higher than exports. Similarly in the minimum value, imports are 14 times more than the country's exports.

Table 6.8: Descriptive Statistics for FDI on Trade in Timor-Leste

Variables	Obs	Max	Mean	Min
EXP	14	USD30m	USD13m	USD7m
IMP	14	USD858m	USD413m	USD97m
FDI	14	USD350m	USD158m	USD18m
GDP	14	USD6.8b	USD3.5b	USD0.5b
TSE	11	2%	1%	0.3%
TSI	11	18%	8%	3%

Source: Result of descriptive statistic from EViews Software

In terms of FDI, the stock of inward FDI to Timor-Leste has been between USD18m to USD33m from 2003 to 2016. Timor-Leste's GDP is USD6.8b compared with the minimum value of USD0.5b. Among the two transport services variables, it shows

that Timor-Leste's government has more transport services in imports than in exports with 18% in imports compared with 2% in exports.

The unit root test (Table 6.9) shows that three variables (Imports, FDI and GDP) are stationary at second difference. The other three variables (Export, transport services in exports and imports) are at first difference. These are the series to be used in the next Granger Causality test.

Table 6.9: ADF Unit Root Test for FDI on Trade in Timor-Leste

Variables	Level			First Difference			Second Difference		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
EXP	0.22	0.06	0.74	0.00*	0.00*	0.00*			
IMP	0.65	0.13	0.87	0.07	0.32	0.07	0.05**	0.09	0.00*
FDI	0.30	0.68	0.28	0.44	0.96	0.31	0.07	0.07	0.00*
GDP	0.37	0.97	0.56	0.18	0.17	0.02**	0.00*	0.03**	0.00*
TSE	0.86	0.49	0.89	0.01*	0.07	0.00*			
TSI	0.59	0.13	0.57	0.07	0.25	0.02**			

Source: Result of ADF unit root test from EViews Software
Note: All values in this table are p value, p is probability value based on IPS
W-stat. *means significant at 1% and ** at 5%
(1) The equation that includes individual intercept,
(2) The equation that includes individual intercept and trend;
(3) The equation that excludes individual intercept and trend

The same two equation models used in section 6.3 were applied to the data for Timor-Leste. The results are shown in Table 6.10 presenting the Granger Causality test results for the impact of FDI on trade in Timor-Leste. There are only two null hypotheses (FDI does not cause Imports and GDP does not cause Exports) that can be rejected since their p values are significant at 0.03 and 0.05. This means that there is unidirectional causality from FDI to imports and from GDP to exports in Timor-Leste.

Table 6.10: Granger Causality Test for FDI on Trade in Timor-Leste

No	Null Hypothesis	P value	Outcome
1.	FDI ⇸ EXP	0.88	FDI ⇸ EXP
2.	FDI ⇸ IMP	0.03**	FDI ⟶ IMP
3.	IMP ⇸ EXP	0.08	IMP ⇸ EXP
4.	GDP ⇸ EXP	0.05**	GDP ⟶ EXP
5.	TSE ⇸ EXP	0.87	TSE ⇸ EXP
6.	EXP ⇸ IMP	0.49	EXP ⇸ IMP
7.	GDP ⇸ IMP	0.39	GDP ⇸ IMP
8.	TSI ⇸ IMP	0.61	TSI ⇸ IMP

Source: Result of Granger Causality test from EViews Software
Note: *means significant at 1%, ** at 5%

The unidirectional causality from FDI to imports corresponds with the outcomes from the interviews with the 15 participants in Timor-Leste. The majority of participants, 12 out of 15,acknowledged that foreign companies' investment activities contribute to the increase of Timor-Leste's imports as shown in Figure 6.4

Table 6.11: Results of Interviews from Timor-Leste

The role of FDI on trade	(1)	(2)	(3)	Total
Imports	4	4	4	12
Exports	2	2	2	6

Source: Result of analysis from NVivoSoftware
Notes: (1) Foreign Companies, (2) Government Official and (3) Local Companies

Four out of five foreign companies admitted that due to lack of resources atthe country level, they have to import. Some of the responses are quoted as follows:

In order to match our requirement, we imported some raw material from Indonesia (Participant from Foreign Company 1).

We imported nearly everything, mostly from China (Participant from Foreign Company 2).

We imported rice and sugar from overseas, we put themin small kiosks/shops that belonged to population in the district particularly in rural areas for them to sell (Participant from Foreign Company 3).

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The fourth foreign company shared the difficulty in these words: "it is still hard to get good packaging in this country. Timor-Leste still does not produce it, we have to import all of these things from Indonesia and also from China".

Some of the local participants also recognised foreign companies' contribution to the increase of Timor-Leste's imports. One of the local companies who worked with foreign companies presented a similar statement as the participant from foreign company 1 as previously discussed. They also have to buy some of their products from other countries to complement gaps that exist in their production line (Participant from Local Company 2)

Another local company informed the researcher that all of the machines used to support their production are imported from India. This included bringing a technician from India, who the company employed to assemble and set machines (Participant from Local Company 4).

These interview results provided a clear response that FDI has also made some contribution to Timor-Leste's imports. The increase of FDI into Timor-Leste are almost in the same trend with the increases in the country's imports as shown in Figure 6.6Nevertheless even though Timor-Leste received more FDI than in the past, the country's trade balance remained negative. The gap between imports and exports has increased in recent years compared with previous years. Timor-Leste's imports have increased in most of the years compared with the country's imports.

Figure 6.5: FDI and Trade in Timor-Leste
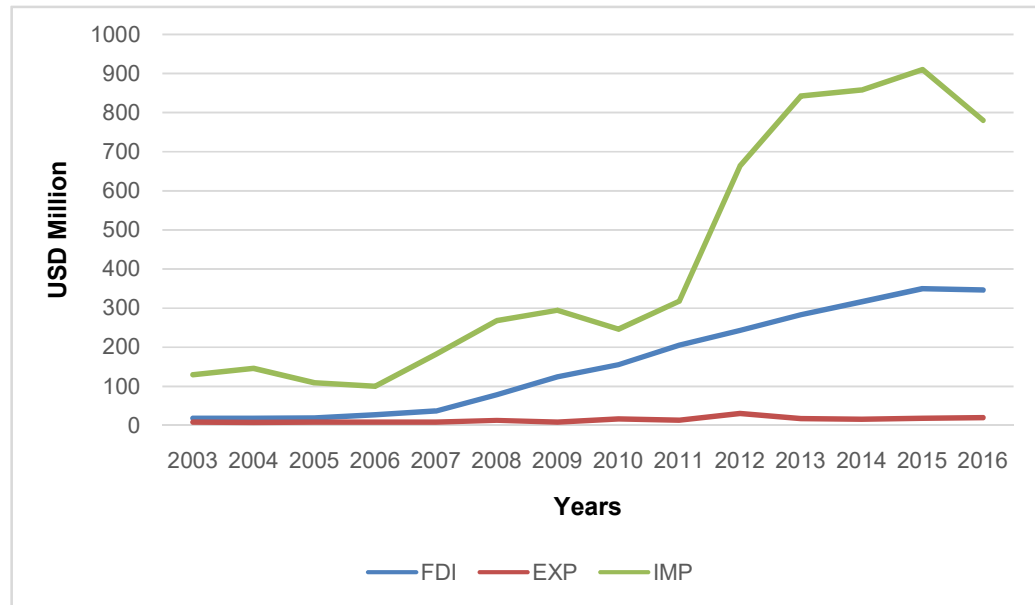
Source: Data from UNCTAD (2017), the graph is prepared by the researcher

The increases in the country's imports have been also contributed to by the requirements at the country level. As the newest country in Asia, Timor-Leste has very little production in the country, therefore, the dependency on importation of goods and materials from overseas remains very high. Figure 6.6 shows Timor-Leste imported vehicles, mineral, cereals, beverages and meat as the top five commodities in 2016 (MoF, 2016).
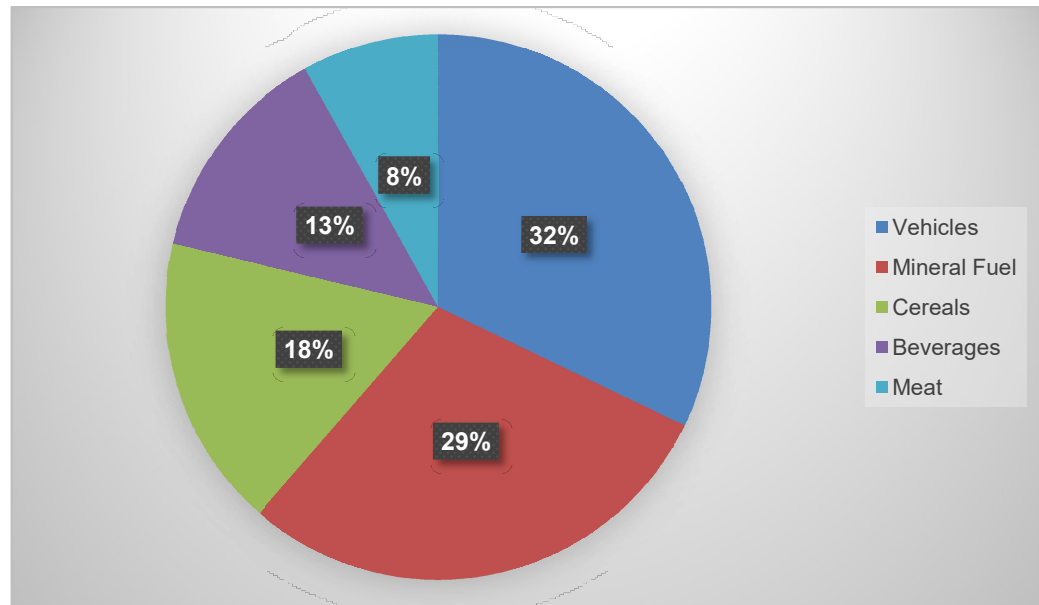
Source: Data from MoF (2016), the pie chart is prepared by the researcher

As well as FDI, another factor that has contributed to Timor-Leste's trade is GDP. The result of the test shows that there is unidirectional causality from GDP to exports. As a country that is rich with oil and gas, the country's economy (GDP) has come from export of oil and gas. This sector has led the country's exports since its independence. Timor-Leste's GDP and exports have been almost 80% from the oil sector (Ministry of Finance, 2012; UNCTAD, 2017a). The country had the highest GDP and exports in the year 2012 (IMF, 2017; UNCTAD, 2017). This shows that there is a correlation between Timor-Leste's GDP and exports. However, even though there have been previous studies (Araujo and Soares, 2011; Ahmad and Harnhirun, 1996)which supported the view of GDP led exports, this is an area of research to be further explored on how GDP caused the increase of exports in Timor-Leste.

Among other factors that do not have causality relationships with Timor-Leste's trade, this thesis focuses more on FDI in exports. There has been a lack of data to show in which sector foreign investors invest most in Timor-Leste. The only available data that this research has access to is the administrative data from the

TradeInvest office. Archived data at TradeInvest (2017) in Dili showed that most FDI in Timor-Leste was invested in the tourism sector. Over the period 2006 until 2016, there were 28 investments in this sector. The other two sectors that attracted the most FDI were industry, which had 23 investments and commerce with 17. This administrative data may not reflect the reality of the situation in the country because it is only based on a copy of the certificate in the TradeInvest office, however, this provided areas of investment by foreign companies. This data also has been used by the World Bank (2010) in their diagnostic study. However, a report by Nathan Associates Inc (2005)identified that the majority of FDI into Timor-Leste were in the oil and gas industry. Timor-Leste exports were dominated by oil and gas, which accounted for 78% (oil was 55% and gas 23%) of the total exports compared with the remaining 22% of Timor-Leste's exports, which are mostly from coffee (21%) while the other 1% is distributed between exports of aluminium and different agricultural products such as candlenut, teakwood and sandalwood (MoF, 2016). While the interview result showed FDI made some contribution to the country even though it was not as high as its imports, the result of the Granger Causality test may need further investigation in the future to check the role of FDI on Timor-Leste's exports.

To find more factors that influenced Timor-Leste's trade, this research also included other data such as inflation and production of oil. Inflation is measured as the consumer prices index (annual percentage) from the World Bank (2017), production of oil is based on a figure estimated by Lao Hamutuk (2017) as JPDA (Joint Petroleum Development Area) production in million barrels (mb). Therefore, both inflation and production of oil are included in the equation model of (12) and (13) only for Timor-Leste.

The result of Granger Causality test as in Table 6.12 shows that there is unidirectional causality from inflation to both exports and imports. There is also unidirectional causality from production of oil to Timor-Leste's exports.

Table 6.12:Granger Test for Other Factors on Trade in Timor-Leste

No	Null Hypothesis	P value	Outcome
1.	INF ⇸ EXP	0.04**	INF ⟶ EXP
2.	PROD ⇸ EXP	0.05**	PROD ⟶ EXP
3.	INF ⇸ IMP	0.02**	INF ⟶ IMP
4.	PROD ⇸ IMP	0.64	PROD ⇸ IMP

Source: Result of Granger Causality test from EViews Software
Note: *means significant at 1%, ** at 5%

Timor-Leste's trade, particularly in oil has been heavily influenced by prices of oil in the global market. When oil prices fell in 2008 and 2014 (Macrotrends, 2017), this also caused a decline in Timor-Leste's exports and imports of oil. The export of oil dropped by 78% while import of oil by 17% from 2007 to 2008. There was a loss of 15% in exports and 9% in imports from 2013 to 2014 (UNCTAD, 2017). Therefore, inflation is one of the important factors that caused the decline of Timor-Leste's trade with both exports and imports.

As a country that is rich with oil resources, Timor-Leste's exports were dominated by oil. In 2015, Timor-Leste's export of oil accounted for 55% out of the total exports(UNCTAD, 2017). This clearly shows the strong causality relationship from production of oil in Timor-Leste to the country's exports.

6.7   Summary

The results of research on the role of FDI on trade in Southeast Asian countries highlighted important findings. There is no doubt that FDI has played an important role in the improvement of trade, both exports and imports of Southeast Asian countries as a group and also in most individual countries.

Among the ten countries in Southeast Asia, trade in Brunei and the Philippines is not influenced by the presence of FDI in their country. For Brunei as an oil and gas rich country, this has been the dominant sector that leads their trade. Brunei's exportation of oil and gas in 1995 was already close to 90% out of the whole total exports. Exportation of oil and gas continues to happen with less FDI (UNCTAD, 2017). The Philippines had FDI dispersed into two sectors: manufacturing and services, which made FDI's influence on the country's trade weak. The Philippines government's introduction of free tax on importations has made the country highly import dependent (Aldaba and Aldaba, 2010).

Unlike most Southeast Asian countries, the causality relationships from FDI in Timor-Leste are more toward into imports than exports. Besides FDI, other factors that influenced Timor-Leste's trade include the country's GDP, inflation and also production of oil.

After examining the impact of FDI on trade in Southeast Asia countries, the next chapter studies the impact of FDI on technology innovation.

CHAPTER 7: THE ROLE OF FDI IN TECHNOLOGY INNOVATION

7.1   Introduction

Technology innovation is primarily defined as modification of current products and processes into more innovative forms by using new technology (OECD, 2013a). This is an important step to improve productivity. Many firms, both foreign and locally owned companies compete to improve their products in order to adapt to major changes and development in the world market. Therefore, dependency on new technology remains high and being equipped with proper technology is crucial (Mumford, 2000). FDI has been identified as one of the main channels for transferring of new knowledge and technology for improving and further strengthening the capacity of existing technology in a country (Dubickis and Gaile-Sarkane, 2015).

As previously discussed in Chapter 3 of this thesis, several authors have pointed out the important role of FDI in promoting technology innovation in different countries. Some authors argued that it has a strong positive influence (Gorodnichenko et al., 2015; Cheung, 2010; Erdal and Göçer, 2015; Sivalogathasan and Wu, 2014) while others came up with the different conclusion that FDI did not have an influence on technology innovation (Chen, 2007; Seghir, 2012).

Even though there have been many studies on the impact of FDI on technology innovation, the majority are related to China (Cheung, 2010; Fu, 2008; Jingqiang, 2010; Xue, 2008; Chen, 2007) and are still very limited for Southeast Asian countries. Only two of the studies reviewed consider Southeast Asia: Erdal and Göçer (2015) who studied three Southeast Asian countries while Loukil (2016)looked at four countries. This research extends existing literature by reviewing

the role of FDI on technology innovation in five Southeast Asian countries, not only as a group but also within each individual country. These five countries are Indonesia, Malaysia, the Philippines, Singapore and Thailand. In addition, this research collected some primary data from Timor-Leste in order to examine the role of FDI in technology innovation in this nation. Other Southeast Asian countries are excluded because data for the variable (patent grants) that is selected to represent technology innovation is only available for five SEA countries.

This chapter is also divided into five main sections. The first section presents variables and data sources for secondary data used in this chapter followed by the empirical model for the analysis in the second section. The third section presents a summary of statistics and the fourth section covers a discussion on the results for the five Southeast Asian countries. The last section focuses on Timor-Leste.

7.2   Variables and Data Sources

Six variables are selected for analysis in this chapter. FDI and technology innovation are treated as the two main variables. Besides FDI, this research also examines other factors such as economic growth, exports and imports of ICT (information, communication and technology) goods in addition to exports of high technology that may have an influence on Southeast Asian countries technology innovation. Indicators are related to human capital (education indicators), R&D and in country technology variables which have the potential to contribute to technology innovation (as discussed in Chapter 3, section 3.6.2), however due to lack of adequate data that was available for all countries, these variables were not included in the analysis. A detailed description for each of these variables is presented below:

Foreign Direct Investment (FDI) uses the same definition and description as already discussed in Chapter 5.

Technology Innovation is represented by a variable called 'patent grants'. A patent grant is a right that a firm (local or foreign) gains to invent, produce and sell a particular product in a certain period of years (USPTO, 2017). A number of previous studies (Erdal and Göçer, 2015; Loukil, 2016) have used this variable to explain a country's innovation. Data for patent grants are measured as the total number of patents granted by the USPTO (United State Patent and Trademark Office) with a reference to the inventor's country of residence and based on priority date. The data on patent grants is from OECD Stat (2013)and only available from 1999 to 2012 for five SEA countries. There are no data available for Timor-Leste.

Economic Growth: is denoted by GDP (Gross Domestic Product), a variable that explains a country's economy. It is measured in USD at current prices in billions and the primary source of data on GDP used in thesis is the IMF World Economic Outlook Database (2017).

ICT goods Export and Import represents countries' trade on ICT goods. It covers network systems for telephones and computers. These two variables are measured as percentages of exports and imports to the respective country. The data are from the World Bank (2017) and available only for the period 2000 to 2015.

High Technology Exports are products such as pharmaceuticals, aircraft and aerospace in addition to computers and electrical machinery that involve high technology and more financial expenses (World Bank, 2017). Similar to ICT goods data for this variable is also from the same source and it is measured as a percentage of total manufactured export goods.

Since patent grants is one of the main variables that has limited data, from 1999 to 2012 only, a total of 14 years are selected for the analysis provided in this chapter. Data for other variables are adjusted accordingly. These secondary data are only for five Southeast Asian countries, excluding Timor-Leste. However the situation in Timor-Leste has been discussed in this chapter by using qualitative information collected through interviews conducted as a part of this PhD work.

7.3 Empirical Model

Following the same empirical model as discussed in the Methodology chapter (Chapter 4), the analysis of secondary data in this chapter applied the subsequent equation model to examine the role of FDI on technology innovation:

$$PG_t = \alpha \sum_{i=1}^{m} FDI_{t-1} + \beta \sum_{i=1}^{m} OF_{t-1} + \varepsilon_t \ \ldots\ldots (14)$$

where PG is the patent grants as the dependent variable. FDI and OF are the independent variables. The variable OF (other factors) includes GDP, ICT goods exports and imports as well as exports of high technology goods. This equation is to test whether there is unidirectional causality from FDI and other factors on patent grants.

In order to choose the appropriate lags (m) for the equation (14), an unrestricted VAR (Vector Auto Regression) was performed and the result is shown in the following Table 7.1. Lag 4 is selected for the test since it has the lowest value of AIC, which is considered to be the best model. The test cannot be run after lag 4 due to an insufficient number of observations.

Table 7.1: Lags Selection for equation (15)

Number of Lags	1	2	3	4
AIC Value	60	58.6	56.3	50.9*

Source: Result of unrestricted VAR from EViews Software
Note: * indicates the lowest AIC value

7.4   Summary Statistics

Beginning with Southeast Asian countries as a group, Table 7.2 shows that the maximum number of observations is 70. This represents data for five countries for 14 years from 1999 to 2012. The variables patent grants, GDP and export of high technology goods all have data for 14 years while other variables have fewer numbers of observations since they have no data for some years.

Table 7.2: Descriptive Statistic for FDI on Technology Innovation

No	Variables	Obs*	Max	Min	Mean
1.	PG	70	703	5	168
2.	FDI	69	USD820b	USD7b	USD120b
3.	GDP	70	USD919b	USD76b	USD227b
4.	ICTE	62	55%	4%	30%
5.	ICTI	65	51%	0%	25%
6.	HTE	70	75%	7%	42%

Source: Result of descriptive statistic from EViews Software
*Obs = observation, represent number of data that available for each variable.
ICTE stand for ICT export, ICTI is ICT import and HTE is high technology export.

Over the period 1999 to 2012, Southeast Asian countries have received patent grants in a range from only five to 703. FDI into the five countries was from only USD7b to USD820b. Countries' total GDP (at current prices) varies from USD76bto USD919b. In regard to trade in ICT, there has been more exportation of ICT goods than importation. Out of the total manufactured exports and imports, the highest proportion of exports of ICT goods was 55% compared to 51% imports. In relation to exports of high technology goods, they are between 7% and 75%. On average these five countries received 168 patents and USD120b of FDI in addition to their GDP of USD227b. Countries' trade in ICT goods are around 30% in exports and 25% in imports. Their exports of high technology goods averaged 42%.

The next summary of statistics is the unit root test. Table 7.3 shows that all variables are stationary or have no unit root at first difference. FDI and ICT imports are the only two variables that are stationary at second difference. This is the series to be

used in the next test.

Table 7.3: IPS Unit Root Test for FDI on Technology Innovation

Variables	Level		First Difference		Second Difference	
	(1)	(2)	(1)	(2)	(1)	(2)
PG	0.07	0.69	0.00*	0.00*		
FDI	1.00	0.98	0.34	0.00*	0.00*	0.00*
GDP	1.00	0.73	0.02**	0.00*		
ICTE	0.89	0.22	0.00*	0.00*		
ICTI	0.97	0.25	0.00*	0.10	0.00*	0.05**
HTE	0.99	0.00*	0.00*	0.00*		

Source: Result of IPS unit root test from EViews Software
Note: All values in this table are p value, * means significant at 1% and
** at 5%
(1) The equation that includes individual intercept,
(2) The equation that includes individual intercept and trend;

7.5   FDI promoted Technology Innovation in Southeast Asia

By applying lag 4 as selected in Table 7.1, the results of the Granger Causality test
for equation (14) as in Table 7.4 show that there is only unidirectional causality from
FDI to patent grants but not from other factors such as GDP, export and import of
ICT in addition to export of high technology. This means that FDI is the only factor
that has a correlation with technology innovation in Southeast Asia.

Table 7.4: Granger Causality Test for FDI on Technology Innovation

No	Null Hypothesis	P value	Outcome
1	FDI ⇸ PG	0.00*	FDI ⟶ PG
2	GDP ⇸ PG	0.77	GDP ⇸ PG
3	ICTE ⇸ PG	0.65	ICTE ⇸ PG
4	ICTI ⇸ PG	0.68	ICTI ⇸ PG
5	HTE ⇸ PG	0.28	HTE ⇸ PG

Source: Result of descriptive statistic from EViews Software
Note: ⇸ = does not granger cause;   ⟶ = unidirectional causality
    *significant at 1%

FDI into Southeast Asian countries have increased six times during the period 1999
to 2012 (UNCTAD, 2017). At the same time, OECD Stat (2013) reported that
Southeast Asia received almost double the number of patent grants from USPTO
(United States Patent and Trademark Office). A report by OECD (2013b) confirmed
that the majority of patents were granted to foreign owned companies compared

with locals who invested in Southeast Asian countries. This shows that foreign owned companies have played an important role in the technology innovation of Southeast Asian countries. This specific finding in this chapter is consistent with most previous studies (Gorodnichenko et al., 2015; Erdal and Göçer, 2015; Cheung, 2010)who revealed that FDI has a positive influence on technology innovation.

On the other hand, Table 7.4 shows that all of the p values for other factors such as GDP, exports and imports of ICT and exports of high technology goods are not significant. This means that these other factors do not contribute to the increased number of patent grants in Southeast Asian countries.

Beginning with GDP, there is no correlation between the countries' progress on GDP and the number of patent grants in Southeast Asia. Even though all of the five countries have made positive progress in GDP (current prices) and even in their GDP per capita (IMF, 2017), GDP does not become one of the main factors that has influenced the number of patent grants. This result of the research is consistent with a previous study by Çetin (2013) who found that GDP had no influence in innovation.

Trade in ICT goods is another factor that has no correlation with the increase in the number of patent grants in Southeast Asia. Both exports and imports of ICT goods declined with almost the same trend. Over the period 1999 to 2012, export of ICT goods dropped to 21% from 35% and imports to 18% from 29% (The World Bank, 2017b). However, having a reduction in trade of ICT goods did not have any negative effect on the number of patent grants. In fact, the total number increased from only 566 in 1999 to 779 in 2012 (OECD Stat, 2013). This shows that the decline in trade of ICT goods had no impact on technology innovation in Southeast Asia.

The last factor that did not cause any change in patent grants is the export of high technology goods. Similar to trade in ICT goods, there was also a decline in export of high technology goods to 33% in 2012 from 48% in 1999 (World Bank, 2017). Southeast Asia continued to receive more patent grants in 2012 compared to 1999 which provides a justification that declining exports of high technology goods has no causality relationship with technology innovation in Southeast Asia. This is consistent with the results of the test as reported in Table 7.4.

After reviewing the role of FDI on technology innovation in Southeast Asia as a group, the next part is to perform comparable tests for each individual country. By using similar variables and data sources as already discussed in section 7.2, the following table (Table 7.5) presents the result of the Granger Causality test for five individual countries. Since data for individual countries have fewer observations, unrestricted VAR cannot be performed to choose lag, the test was only run based on the relationship between two variables to their maximum lag of 3.

Table 7.5: Granger Causality Test[9] for Individual Country

No	Countries	Lag 1	Lag 2	Lag 3
1	Indonesia	0.23	0.84	N/A
2	Malaysia	0.16	0.03**	0.03**
3	Philippines	0.07	0.20	0.21
4	Singapore	0.04**	0.27	0.72
5	Thailand	0.39	0.61	0.71

Source: Result of Granger Causality test from EViews Software
Note: All values are the p value, **means statistical significant at 5%.
N/A is not applicable since the test cannot be done.

Table 7.5 shows that only Singapore and Malaysia have significant p values in two different lags. In order to choose the appropriate lag for these two countries, a

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[9]*Test for null hypothesis of FDI does not cause patent grants.*

separate unrestricted VAR was done. It was unnecessary for the other three countries since their p values are not significant in all three lags. Table 7.6 shows that lag 1 is the appropriate lag for Singapore and lag 3 is for Malaysia. This confirms that there is unidirectional causality from FDI to technology innovation in these two countries as shown in Table 7.5. In other words, FDI was a cause in the increase of patent grants in Singapore and Malaysia.

Table 7.6: Lag Selection for Singapore and Malaysia

No	Countries	Lag 1	Lag 2	Lag 3
1	Singapore	34.5*	35.1	35.8
2	Malaysia	30.6	30.6	29*

Source: Result of unrestricted VAR from EViews Software
Note: all value are from AIC, *the lowest value indicate better model

Beginning with Singapore, as the country that received the most FDI and patent grants, FDI has a correlation with their technology innovation. Over the period 1999 to 2012, 71% of patent grants (OECD Stat, 2013) and 60% of FDI (UNCTAD, 2017) went to Singapore (Table 7.7). A report by the OECD (2013b) showed that foreign owned companies continue to dominate in receiving patent grants in Singapore. From 1976 to 2010, foreign owned companies held 52% of patents compared to locally owned companies with 48%. This shows that FDI has made a major contribution to Singapore's technology innovation.

Table 7.7: FDI and Patent Grants (1999-2012)

No	Countries	FDI (%)*	PG (%)*
1.	Indonesia	12	1
2.	Malaysia	11	19
3.	The Philippines	3	4
4.	Singapore	60	71
5.	Thailand	14	5
	TOTAL	100	100

Source: Data for FDI from UNCTAD (2017)
Data for PG from OECD Stat, (2013)
The table is prepared by the researcher
Note: *% of total FDI and Patent Grants into these five countries

Malaysia is another country where FDI caused the increase of patent grants. Malaysia received the second highest number of patent grants with 19% out of the total of the five countries as shown in Table 7.7 (OECD STAT, 2013). A report by the OECD (2013b) revealed that the majority of patent grants for Malaysia went to foreign owned companies. Over the period 1988 to mid-2012, foreign companies had 95% of patents while local companies only had 5%. In addition, the involvement of FDI in innovation activities such as R&D has increased significantly. In 2000, the proportion of private sector involvement in R&D was almost 60% compared to public sector participation at only 25%, with the remainder from tertiary institutions. This was different to what happened in the past in which the public sector was dominant in R&D (Yean, 2004).This corresponds with test results in Table 7.5 showing that there is a unidirectional causality from FDI to patent grants in Malaysia.

This results for Singapore and Malaysia are consistent with some other previous studies by Cheung (2010), Fu (2008), and Jingqiang (2010) who found that FDI had an important role in a country's innovation.

Even though Singapore and Malaysia received the highest number of patent grants compared with other countries there are similar declines for all countries from 2011 to 2012 (Figure 7.1). Singapore had a decline of 100, Malaysia 24, the Philippines 19, Thailand 8 and Indonesia 2. This decline may be caused by the stopping of issuing patent grants by USPTO related to optical products at the end of 2011 (USPTO, 2017).

Figure 7.1: Patent Grants to Southeast Asian Countries
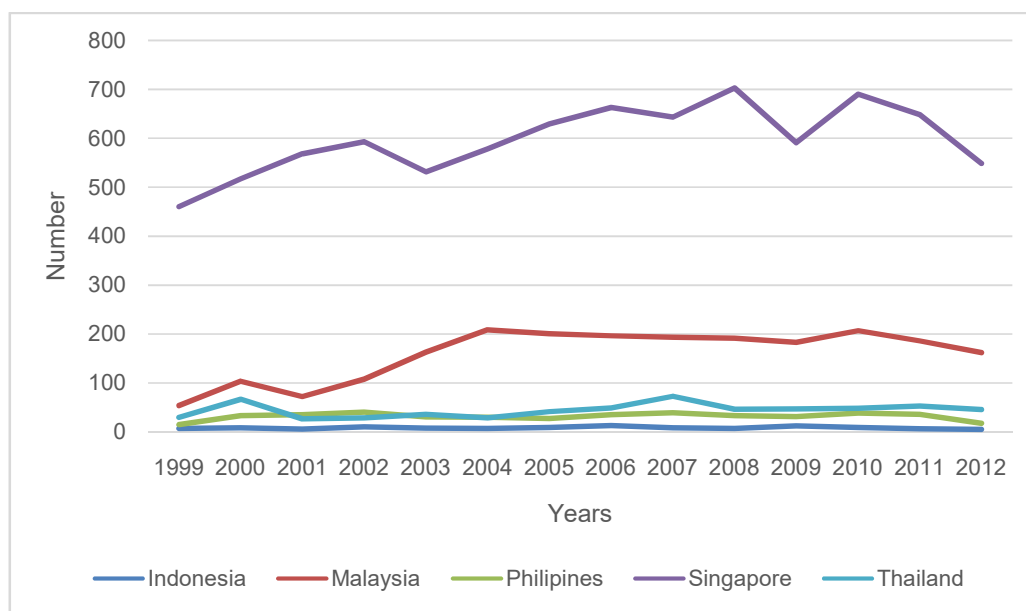
Source: Data from OECD Stat (2013), the graph is prepared by the researcher

On the other hand, there is no correlation between FDI and patent grants in the other three countries (Indonesia, Thailand and the Philippines) as reported in Table 7.5. Unlike Singapore and Malaysia, these countries received fewer patent grants over the period 1999 to 2012 (Figure 7.1). As shown in Table 7.7, it was mostly under 5% as a share of the total of the five countries over the same time period: Thailand had 5%, the Philippines 4% and Indonesia only 1% as a share of the total.

Thailand had a decline in R&D investment. It used to be 0.25% of GDP in 2001 compared to 0.21% in 2007. The contribution from the private sector in R&D also remained small, only half that of Malaysia, who has 80%(OECD, 2013b). It was also less compared to local firms in Thailand. The majority of innovation in the country was by local firms. Local firms in Thailand had three times higher innovation than others in the country (Tangkitvanich et al., 2004). There was a decline in patent grants to foreign owned companies which equalled 83% in 1990 and 67% in 2001 (OECD, 2013b). Therefore, even though Thailand had an increase in FDI, the influence on Thailand's technology innovation remains insignificant. This is consistent with the test results that FDI does not cause an increase of patent grants

in Thailand.

The Philippines is another country where FDI has no correlation with their patent grants. The government in the Philippines has played a more important role in R&D than the private sector. Over the period 1989 to 1992, the government's investment in R&D was double what was spent by the private sector (Patalinghug, 2003). As a result, even though there was an increase of three times FDI into the Philippines from 1999 to 2012 (UNCTAD, 2017), patent grants in the country fluctuated. Beginning with 15 in 1999, they had 41 as the highest number in 2002 while only received 18 in 2012 (OECD STAT, 2013). This shows that the presence of FDI in the Philippines has a lower contribution to the country's technology innovation.

Indonesia received the least number of patents, only 1% of overall patents received by all five countries together (Table 7.7). Despite the fact Indonesia attracted the third highest amount of FDI, a report by the OECD (2013b) confirmed that FDI's contribution to innovation in Indonesia remained limited. Almost similar with the Philippines, the non-public sector participation in R&D remained small, with public research institutions dominating. Patent grants to Indonesia declined from seven in 1999 to only five in 2012 (OECD STAT, 2013). Indonesia as a country is experiencing some institutional irregularity such as high corruption, which may act as some factors that constrain their innovation (OECD, 2013b). This explains why the result in the analysis finds that FDI does not have any impact on Indonesia's technology innovation.

Other factors such as GDP, export and import of ICT goods and also high technology do not cause any changes in any of these five countries' patent grants. Details of the results of the Granger Causality test on the impact of other factors on the number of patent grants for each individual country are reported in Appendix 5.

In relation to GDP, all of the five countries in Southeast Asia have positive progress on their GDP. Even Indonesia which received the fewest patent grants, 1% out of total share to the five countries, has increased GDP from USD169b in 1999 to USD919b in 2012. Indonesian GDP per capita also improved from only USD829b to USD3,744b in the same period. The other four countries also have comparable growth in their GDP. However, the result from the Granger Causality test showed that GDP does not influence the total number of patent grants that each individual country received on an annual basis.

In relation to trade in ICT goods, all of the individual countries have experienced a decline in both exports and imports over the period 2000 to 2012. Even though Singapore and Malaysia received the highest number of patent grants, they also had a reduction in their trade of ICT goods. Singapore has a loss of 27% in export and 17% in import, while Malaysia lost 25% and 18% in same period. In addition, Thailand and Indonesia also had a decline in their export of ICT goods(World Bank, 2017). This shows that the decline in trade of ICT goods did not influence the number of patent grants to the individual countries.

The exports of high technology goods in all five countries are decreasing equally. Singapore, Malaysia and the Philippines used to export high technology goods, in fact this sector accounted for around half of their manufactured exports, however, they all had a reduction of around 20% (World Bank, 2017). This did not influence the number of patents, most of these countries received more patents than before. For example the Philippines received 39 grants in 2010 compared with only 15 in 1999 (OECD STAT, 2013) supporting the test result that exports of technology export do not cause any changes in the number of patent grants.

7.6   The Introduction of New Technology in Timor-Leste

Even though there is no secondary data for Timor-Leste patent grants, this research collected some information through interviews. The result, as reported in Table 7.8, shows that the role of FDI on the country's technology innovation remains very minimal.

Table 7.8: Result of Interviews in Timor-Leste

No	Responds	(1)	(2)	(3)	Total
1.	Innovation in products	1	1	0	2
2.	Introduce new technology	4	3	3	10
3.	Train local staff	4	3	2	9

Source: Result of analysis of interview from NVivo Software
Notes: (1) Foreign Companies, (2) Government Official and
(3) Local Companies

Only two out of 15 participants recognised that foreign companies introduced new ways to process agricultural products into herbal tea. One of the foreign company respondent commented:

I think Timorese are very familiar with these products (avocados and lemons) but they do not know that these products have value for sale as tea. We have just introduced these products to be produced as tea. We also sell these products in the local market. Most of these products for herbal tea, only grow in East Timor (Participant from Foreign Company 3).

This company has supported a number of community groups to process and export some of these agriculture products to Japan. Some of the communities who are involved in this project started to realise the market value of the agricultural products. A government official who was interviewed also mentioned the work from the relevant foreign company and stated that this type of new knowledge is really required to support the community's economy.

Instead of promoting innovation in Timor-Leste, FDI was seen more as a means to introduce new technology into the country. Ten out of 15 participants (Table 7.8) agreed that most foreign companies introduced new technology. The participants acknowledged that the presence of foreign companies in the country is identical to bringing in new technology. Since Timor-Leste lacks adequate technology in the country, foreign companies have to bring in technology to support their investment activities. Some of the comments from the local participants in Timor-Leste explained their points of view:

All of the current foreign companies have always implemented best practices and introduced modern technology. They bring many advanced technologies since we do not have them (Participant from Government Department 1).

Every investment that comes into Timor-Leste, always brings and introduces something new including technology into the country (Participant from Government Department 5).

Work with a foreign company introduced new technology and also modification in our products. Previously, we did not have sorting machines, we had to do sorting manually. Now, we can sort coffee into different quality easily (Participant from Local Company 2).

In addition, the majority of foreign companies (four out of five) recognised the need to bring new technology from overseas or their home country due to the lack at the country level. One of the foreign companies stated that all of the machines that they have now in the companies, were bought from China. This was to facilitate their work, for example to reduce the moisture of the salt (Participant from Foreign Company 2).

These interview results definitely indicated that there some new technologies have been introduced into Timor-Leste by foreign companies. One of the examples is a machine for separating coffee by its quality. One of the local companies explained that after receiving the machine from one of the foreign companies, their work became more efficient overall. This result of the research is consistent with previous studies (Sinani and Meyer, 2004) that FDI is a means for introduction of new technology into a country.

The absence of innovation in Timor-Leste was mainly caused by lack of local capacity in particular to operate new machines. Most foreign companies raised this issue. There were many local employees available for unskilled labour work but a limited number of skilled workers who work for the companies. The number of workers with proper knowledge and skills to work with new machines remains inadequate. One of the foreign company interview participants stated:

> *The main challenge is how to keep operating and maintaining new machines. We have new machines that have been in production for two years, now, they need maintenance. Since we do not have resources here, we have to contact technicians in India (Participant from Foreign Company 3).*

This was one of the main challenges faced by many firms in a number of different countries. Some local companies in China experienced similar issues because they had no capacity in technology applications (Young and Lan, 1997). A study by Osabutey et al. (2014) also noted that a shortage of human capital is one of the factors that contributes to the lack of technology transfer from foreign to local companies. Sillah (2015) considered human capital is an important factor to support the transfer of technology from FDI into local companies. In responding to the issue of lack of human capital in Timor-Leste, most foreign companies initiated on the job

training programs to improve their local capacity. This was reflected in the interviews as nine out of 15 participants talked about training programs as shown in Table 7.8. One of the participants from a government department talked about the importance of training:

The important thing is how to ensure the transfer of skill and technology from these foreign companies into our local people including to our local company. This can be done through training, employment and also company to company. Otherwise, we only wait and receive the revenues. All expenses costs go overseas (Participant from Government Department 1).

Training of local staff has been one of the investor's obligations as defined in Chapter V of the existing Private Investment Law in Timor-Leste. The Law states that foreign investors have the responsibility of "promoting their vocational training for the performance of skilled technical or management positions" (RDTL, 2011c).

7.7 Summary

This chapter presented the role of FDI on technology innovation in five countries of Southeast Asia. The result of the Granger Causality test showed that there is a relationship between FDI and technology innovation in these countries as a group. The majority of patent grants to Southeast Asia are because of the work of foreign companies.

The results of analysis of individual Southeast Asian countries indicated that only in Singapore and Malaysia, FDI caused the increase of their patent grants. In the Philippines, Indonesia and Thailand innovation remained weak because there was a decline in foreign companies' contribution to technology innovation. Nevertheless as the patent grants received by Singapore and Malaysia are so high compared to the rest of the countries, the Granger Causality test for the entire group shows a strong

relationship with FDI as mentioned in the paragraph above. The results of qualitative data analysis for Timor-Leste showed that the role of FDI was more on introduction of new technology than promotion of technology innovation. Lack of local skills and knowledge were identified as the major factors that contribute to limitations of FDI influence in technology innovation in Timor-Leste.

Following the discussion on the role of FDI both on trade as in Chapter 6 and on technology innovation as in this chapter, the next Chapter (Chapter 8) reviews some of Timor-Leste's current policies related to FDI and provides recommendations for future improvement. It also presents some important lessons that Timor-Leste can learn from other Southeast Asian countries in promoting FDI to further strengthen its trade.

CHAPTER 8: LESSONS LEARNED FOR TIMOR-LESTE

8.1. Introduction

Chapter 2 of this thesis presented the progress of Southeast Asian countries on FDI in a historical perspective, especially in the context of overall development transitions since the formation of ASEAN. These countries have gone through several major reforms to improve their business environment in order to attract and receive more FDI. As a result, there was an increase of FDI into most of the Southeast Asian countries.

The analysis presented in Chapters 6 and 7 has shown that FDI contributed to the increase of trade and technology innovation if the host country had a favourable environment to support the investment activities of FDI.

This chapter provides a discussion about what Timor-Leste can learn from the experience of Southeast Asia countries, as found in this thesis. The chapter is divided into two main sections. The first section presents a review of four main current policies to promote private sector investment in Timor-Leste while the second section highlights the main lessons that Timor-Leste can learn from the experience of Southeast Asian countries.

8.2 Review of Timor-Leste's Current Policies

Since its independence, Timor-Leste has transformed gradually from a conflict phased society into a more stable and dynamic country. At present, Timor-Leste has initiated a number of different policies to support the country's development. There are many economic policies in place, however, the following section reviews and discusses four main policies that are relevant to FDI. Those four policies are namely (1) Private Investment Law, (2) Land Law, (3) Specialised Investment Agency, and

(4) Infrastructure Fund.

8.2.1 Private Investment Law

The Private Investment Law No.14/2011 is a Parliamentary Law to facilitate private sector (both foreign and local) investment activities in the country. The Law regulated investment activities as well as benefits in tax and customs for investors (RDTL, 2011c). The Law was revised by the government of Timor-Leste in 2015 in order to comply with other legislation in Southeast Asian countries. The government organised numerous consultations with relevant government departments and also with non-government organisations, international organisations and the private sector. The whole process took nearly two years, the government's Council of Ministers agreed with the draft Law on July 2016 and the National Parliament approved it recently on April 2017 and it was promulgated by the President of the Republic in August 2017 (RDTL, 2017c).

According to a participant from a government department who was interviewed during the fieldwork carried out for this PhD research, the new Private Investment Law will exclude benefits and tax as in article 21 and 22 of Law No.14/2011 and incorporate this into a new Tax Law (Participant from Government Department 5), however, the new Private Investment Law No.15/2017 continues to have the provisions of benefits and tax (RDTL, 2017e).

The articles 29 and 30 of the new Law relate to tax benefits and customs incentives and outline several tax and customs benefits to private investors. These include up to 100% of income tax and customs duty exemption for private investor's projects that are in the government priority areas. These benefits are applied for certain periods of time (between five, eight or ten years) depending on location of investment activity (RDTL, 2017e).

In relation to the issue of tax benefits and customs incentives periods, the majority (seven out of ten) of local participants, representing local companies and government departments raised their concerns. The main concern was that foreign companies may discontinue their investment activity after the tax free period. This is in line with a recent statement by Lao Hamutuk (2017) about the future of private investments after the free tax period. Considering that private investment is more profit oriented, the possibility of their leaving the country cannot be ruled out.

However, none of the foreign companies that were interviewed had the same thinking as local participants. All of their investments are for the long term and they will not leave the country after the end of the tax and customs benefit period. Even so, concern from local participants will need to be taken into account by relevant government institutions. Considering that not all of the private sector (local and foreign) in Timor-Leste are purely as investors, there are some who continue to depend highly on government funding and projects, imposing obligations on the private sector to continue their investment, particularly after the end of the tax period is very crucial.

8.2.2 Land Law

Timor-Leste's Land Law provides a legal framework to resolve status of land ownership in the country. The Law was promulgated on June 2017 by the President of the Republic after it was rejected by the President in 2012 since the government was seen to have more power over land title and the absence of agreement within civil society organisation (Lao Hamutuk, 2012). Implementation of this Law has been the government's priority for the last few years. The government of Timor-Leste considered this Law as very important not only for domestic activities but also for foreign investment purposes. It is expected that this Law should simplify current land related disputed issues in the country (RDTL, 2017a).

The land issues were raised by the participants several times during the fieldwork interviews. Almost all of the participants (14 out 15) talked about land issues. When asked about the main challenges for investment, one of the participants from a government department stated:

First of all, the important issues that were raised by many people including international agencies and foreign investors is about land. The investment will be at which land and whose land? They are very unsure and this is really one of the main challenges that we are currently facing (Participant from Government Department 3).

Another local company shared a story about a land issue that involves one of their family members. He stated:

My brother-in-law was from Indonesia. During the Indonesian period, he owned the land but since we separated from Indonesia, he and his family had to move to Indonesia. We wanted to use that abandoned land but another person all of a sudden appeared to claim that they owned the land leading to a dispute (Participant from Local Company 5).

In addition, a foreign company participant expressed their discontent that they cannot start their investment activity since part of their land was occupied illegally by some members of the local community. These local community members requested compensation before moving out, which was an additional burden to the company. However the company was expecting this issue to be resolved in the near future as it was informed to the relevant government department (Participant from Foreign Companies 4).

These are only some of the statements from interview participants, which show that as a country that went through three different administration systems (Portugal, Indonesia and Timor-Leste), land ownership becomes a complex issue in Timor-Leste. This is an important issue that requires special attention from the government in order to guarantee trust from investors in particular with foreign investors.

Since the Land Law is in place now, it is important for the government to put into force the enactment of the Law. It is not easy to resolve all of the current land ownership issues immediately. However, implementing some concrete actions and instigating some sincere efforts to resolve land issues by the government can lead to gaining trust from the public and particularly from foreign investors. Even though the Private Investment Law No. 14/2011 guarantees the use of land by foreign investors, having unclear status of some land hinders investments. Therefore, land issues should be a top most priority to be resolved soon to boost up FDI.

8.2.3   Establishment of a Specialised Investment Agency

The Private Investment Law No.14/2011 article 30 provides provision to establish a public enterprise called a Specialised Investment Agency. This agency is currently popularly known as TradeInvest Timor-Leste and serves as the first entry point for all investors, both foreign and local. They assist all investors, not only at the beginning for the registration but also continuing until the implementation of investment activities. Investors are issued with an Investor's Certificate once they have fulfilled all of the requirements for investment in the country. This certificate contains all the details about their investment activities including the start date, total cost, location and importation of material and goods as required. An investor who holds this certificate will have access to tax and customs benefits as outlined in Private Investment Law article 21 and 22.

The majority of foreign companies that were interviewed during the fieldwork praised the work of staff at the Specialised Investment Agency. Four out of five foreign companies interviewed had confirmed that the Agency facilitated their investment activities adequately. The staff worked professionally and responsibly to any queries immediately. A representative of one of the foreign companies stated:

Since we came, we have TradeInvest to facilitate us as investors, to make it easy to start up a business. This shows the government understands what needs to be done. After so many years, we have been here, TradeInvest has played a good role. Investors are receiving more support compared with previous years (Participant from Foreign Company 4).

However one of the foreign companies did not have a similar accolade when dealing with relevant government departments. They complained about delays in responses from relevant government departments for their paper work. At the beginning of their investment activity, the relevant government department requested that they have an environmental impact assessment. The company hired a consultant from overseas to do the assessment. Once it was completed, they submitted the report to the relevant government department. It was only after three years that they received the approval. This long delay has caused interruptions in their investment activities (Source: Participant from Foreign Company 4).

Another foreign company also expressed their unhappiness with the work of government staff and expressed frustration in the following words:

Dealing with government departments is mostly challenging, instead of support, they try to make your life difficult (Participant from Foreign Company 2).

This shows that having a highly dedicated agency like TradeInvest with qualified human resources is not enough to facilitate investment activities in the country due to lack of a supporting environment or work culture in the government departments to adequately facilitate investment activities. Being the first contact entry point, TradeInvest can only facilitate investment but when it comes to the implementation phase, the role of relevant government departments becomes vital.

The government departments should minimise bureaucratic procedures in order to facilitate foreign investment activities. Various bottlenecks in promoting FDI as discussed so far, and the bureaucracy of following very lengthy government procedures make the entire investment process extremely difficult. As of 2014, Timor-Leste still had eight different procedures that a company needed to go through simply to start up their business. The country also has 19 procedures dealing with construction permits. This compares with other Southeast Asian countries such as Lao PDR with only six procedures, even Malaysia and Singapore have just three procedures related to starting up businesses. Indonesia had 13 procedures while Vietnam had 11 in dealing with construction permits in 2014. So, reducing Timor-Leste's procedures required for investment and construction will speed up the process and contribute to trust from the private sector for investing in the country.

8.2.4 Infrastructure Fund

The government of Timor-Leste approved a Decree Law No.8/2011 to introduce a special fund called the infrastructure fund. This fund was established to develop the country's basic infrastructure. Since developing basic infrastructure has been promoted as the government's main priority for the next few years, the government considered the importance of having a separate fund. Under this fund, improvement and construction of roads and supply of electricity are two of the important projects, in addition to improvements in telecommunications, water and government offices.

Unlike in the past, immediately after independence, where each line ministry was responsible for their own infrastructure projects, introduction of this new Law has provided a platform to centralise all of them and infrastructure projects are expected to be well coordinated directly under the Prime Minister. This Law allows any unspent budget from the current year to be carried over to the next year (RDTL, 2011a).

In the period 2011 to 2015, the government of Timor-Leste allocated a total of USD2.7b under this fund to develop 22 different priorities through approximately 113 projects. During this five year period, 61% from this allocated fund was already executed for several different projects (RDTL, 2016). The infrastructure fund took almost half of the whole State Budget. In 2011, it was 46% and 48% in 2012 (RDTL, 2017d).

During the interviews in Timor-Leste, some participants raised the issue of electricity projects. They realised that the government has spent a lot of funds on electricity projects however they (the companies) continue to face some difficulties. There were a number of power blackouts in the capital city of Dili. Examples from one of the local company's responses is cited here:

Our work in this factory is totally dependent on electricity to operate all of these machines. Sometimes, if there is no power, we cannot do our work. We have to stop and wait for the electricity. This costs us a lot particularly if we have to prepare products for export (Participant from Local Company 4).

A joint review by the Ministry of Finance and World Bank (2015) identified that power blackouts are caused by two important factors. The first factor is illegal connections of electricity to some households. The government's scheme to install prepaid meters has not reached many households in the country. As a result, some

households continue to enjoy free electricity. In most cases the government has no control on the use of electricity by the households. The second factor is related to the lack of budget for maintenance of generators. Therefore, installing prepaid meters to all remaining households is very important, in addition to conducting a regular check of households to ensure the proper use of power by the community. There is a need for an adequate amount of budget for maintenance of power generators.

In addition to electricity, roads are another part of the infrastructure project that was questioned by some participants during the fieldwork interviews. One of the participants from a government department shared the experience of foreign investors:

Many foreign companies want to transport their big containers from one city to another, however this cannot be done over land in some parts of our country due to the extremely poor condition of the road (Participant from Government Department 4).

A number of both foreign and local companies also questioned the quality of road projects. They acknowledged that many roads have been repaired but there are still some roads that were almost non-existent even after several months of project completion.

Both electricity and road projects had received vast amounts of budget allocation. Nearly 60% was spent on the development of electricity projects followed by roads with 16% out of the total infrastructure fund over the period 2008 to 2013 (Ministry of Finance and World Bank, 2015). Considering this, it is important that the relevant government department should diligently monitor road construction or maintenance projects to ensure the implementation according to the agreed plan.

8.3. Experiences from Southeast Asia

The experience from Southeast Asian countries on FDI provides a bigger picture on the role of FDI on their trade and technology innovation. The following section discusses a number of important lessons that Timor-Leste can learn from the experiences of Southeast Asian countries to strengthen the current state of FDI and thus contribute to overall economic development. Those lessons are (1) Improving the business environment, (2) Investing in non-oil sectors, (3) Adopting Import Substitution and (4) Promoting exports.

8.3.1 Improving the Business Environment

Most Southeast Asian countries used to have economic policies which were more highly protected from foreign interference than they are now. Cambodia is one of the examples, where everything including investment and media were controlled by the government(Church, 1995). Malaysia is another country where economic policies were very conservative. Even though they had some foreign companies, the government owned enterprises executed the majority of investment in the country (Athukorala, 2010). Myanmar as a country was controlled by military rule, they did not allow any interference from overseas including foreign investment (Keling et al., 2010).

However these countries started to receive more FDI after they improved their business environment. Cambodia, after coming out from internal conflict (1970s to 1990s), and reaching an agreement through the Paris Peace Accord in 1991, liberalised their market and introduced more than 70 Laws to facilitate foreign investment (Vutha, 2013). Malaysia introduced an Act to provide benefits for foreign investment and also created an exclusive zone for free trade. Most investment activities under the government were given to the private sector (Ang, 2009). Myanmar approved laws for FDI, allowing more foreign investment from other countries including from Southeast Asian countries (ASEAN). Another important

reform was public financial management reform (World Bank, 2013a).

Besides Southeast Asian countries, other countries in the region such as India also implemented a similar strategy. India only liberalised their economy after experiencing a crisis in the beginning of the 1990s. Accompanied by some major reforms to facilitate foreign firms' active participation, India not only managed to attract more FDI but also recovered from the financial crisis during that period of time. However there has been a criticism that the country's investment has shifted towards more industrial production compared to non-industrial sectors in the past (Balasubramanyan and Mahambare, 2004). Similar experiences were observed in the case of China (Wang, X 2004, Chow 2004) and in Mexico (Griffiths & Sapsford 2004).

As discussed earlier in this thesis (Chapter 2) over the years, FDI into all Southeast Asian countries has increased dramatically. Cambodia had a growth of almost 400 times FDI into their countries, Malaysia had 23 times and even Myanmar had 4,000 times increase in FDI over the period 1980 until 2015 (UNCTAD, 2017). At the beginning of 2000 China had received close to USD450b of FDI (Wei, 2004). Mexico had a 13 times increase while India experienced around 400 times over the period 1980 to 2014 (UNCTAD, 2017). Cambodia and Malaysia are two countries in Southeast Asia that FDI has influenced in their trade, both exports and imports as previously discussed in chapter 6 of this thesis.

The Timor-Leste government should consider improving the country's business environment in order to attract more FDI. This includes to improve future private Investment Laws to guarantee the continuation of investment by foreign companies in particular after the end of tax benefits and to resolve immediately land status and disputes according to the current Land Law. In addition, they need to simplify administrative procedures and reduce the time taken to complete them and to

allocate some budget for maintenance of power generators. The current monitoring system needs to be improved in order to ensure the implementation of road projects according to the agreed plan as already discussed in Section 8.2.

FDI into Timor-Leste has increased significantly from only USD18m in 2003 to USD246m in 2016, a 19-fold growth in 14 years (UNCTAD, 2017), however, more FDI is needed to further explore the country's full potential in the socioeconomic sphere. There have been a number of major foreign companies which have invested in Timor-Leste. Heineken is one of the examples, a Dutch well-known beer making company commenced their investment in the country in2015. They committed to invest USD40m (RDTL, 2015). The construction of Tibar port is one example of a recent government initiative for public private partnership in 2016. It is one of the biggest projects in the country and has a duration of 30 years concession period for the French based foreign companies to invest in this project (Ministry of Finance, 2017). Investments by foreign companies are one of the important engines for Timor-Leste's economic growth. Foreign companies have the potential to introduce new technology and promote production in the country. They (foreign companies) create more jobs for local Timorese and this can help to improve the economy of local people. Therefore, Timor-Leste will be able to attract more FDI in the future and the country can improve its business environment.

8.3.2 Investing in the Non-Oil Sector

Among Southeast Asian countries, Brunei and Myanmar have similar experiences with Timor-Leste, they also rely heavily on oil and gas for their economic development. Therefore, the next part presents the experience of Brunei and Myanmar in terms of their successes and challenges in relying on only one commodity for their economic development.

When the government of Brunei came up with their National Development Plan (NDP) in the 1960s, the economic diversification plan was part of NDP. However, since 1960 until 1990, there not much was done in terms of diversification of their economy. Oil and gas continued to drive their economy while there were fewer investments in the non-oil sector (Bhaskaran, 2007). Their long bureaucratic administrative procedures for business registration (Bhaskaran, 2007; Edward and Skully, 1996) and lack of competent human resources (Edward and Skully, 1996) were identified as major factors that contributed to the lack of foreign investment in the non-oil sector. During the Asian financial crisis in 1997 and the drop in oil prices, Brunei's export of oil declined dramatically. The number of foreign investments in the oil and gas sector as a total of all foreign investments dropped to 69% in 2005 from 97% in 2001. Many local people lost their jobs because of the closing down of foreign companies dealing with oil and gas. The government started to realise the importance of developing and strengthening the non-oil sector. A number of non-oil sectors including tourism and logistic services were identified as potential sectors to be developed as alternative sources that could contribute to national income (Bhaskaran, 2007). For example, to improve tourism in Brunei, the government established two information centres for tourists and developed Kampung Ayer Cultural and Tourism Gallery. This has resulted in the number of tourists in Brunei increasing from 78,436 in 2014 to 93,544 in 2016. This was an increase of around 15,000 tourist in two years (Prime Minister's Office, 2017). The tourism sector doubled the contribution to GDP from 1% in 2010 to 2% in 2015 (Ministry of Primary Resources and Tourism, 2016).

Myanmar is another country in Southeast Asia that is highly dependent on oil and gas. At the beginning of the 1950s, the government of Myanmar came up with an eight year plan to diversify their economy, particularly to have more development in infrastructure and also in agriculture. The internal conflict in the country was identified as the major obstacle for development of the non-oil sector (Findlay et al.,

2015). Their economy in particular was traditionally dominated by oil and gas resources. In 2011, the total of foreign investment that was approved included 40% investment for the power industry with 38% investment for oil and gas (Bissinger, 2012). Considering that oil is a non-renewable resource, in 2012, the government of Myanmar came up with a National Development Plan, a plan to diversify their economy, improving industries with high economic potential such as the garment industry, in addition to tourism and the agriculture sector in the country (Findlay et al., 2015). As far as tourism is concerned the Myanmar government has identified some potential destination such as Kakku Pagodas, Bagan and ecotourism to attract more visitors In addition, the government facilitates the development of supporting services such as transportation and hotels in Myanmar. The number of tourists into Myanmar has increased dramatically from only 465,614 in 2012 to 3.3m in 2015 (Ministry of Hotels & Tourism, 2017).

The contribution of the agriculture sector into their economy remains low in Myanmar. In fact, one of the recent studies by Gelb et al. (2017) has indicated that there was a reduction of around 10% growth in the agricultural sector from1997 to 2014. Findlay et al. (2015) identified the lack of good quality of infrastructure, such as land transport and electricity, as well as the lack of qualified human resources as some of the weaknesses that have had negative impacts on the economy of Myanmar. The over emphasis on the oil and gas sector has in fact made the non-oil sector almost redundant and at the same time ongoing irregularities in administrative procedures have resulted in many foreign investors leaving the country (Bissinger 2012).

Experiences from Brunei and Myanmar indicate that transforming a country's economy from oil dependency into more non-oil activities is a not an easy process and Timor-Leste can learn a lot from these challenges.

Timor-Leste's Strategic Development Plan (SDP) 2011-2030 has identified three important key areas for development. They are social capital, infrastructure development and economic development. Social capital relates to people's wellbeing through provision of, and access to, education and health services. The infrastructure development refers to building infrastructure facilities such as roads, bridges, electricity, ports and seaports. The economic development means economic diversification of five important sectors such as rural development; agriculture; petroleum, tourism and private sector investment (RDTL, 2010c). This thesis is mainly focussed on economic development by considering two important non-oil sectors: agriculture and tourism.

Timor-Leste's agriculture sector is one of the dominant sectors in the country. Since the country's independence, the government has made significant investment in the agriculture sector. This includes developing an infrastructure facility, purchasing machinery and establishing the Agriculture department at district level in order to facilitate the agriculture activities in rural areas (RDTL, 2010c).

There are also several international organisations which have provided support in the development of the agricultural sector in the country. For example, FAO has provided capacity building to a number of individual farmer's groups as well as to staff from both government and non-government organisations. Manuel was one of the individual farmers who established his own workshop to build silos protecting agricultural products after received training (FAO, 2011). USAID is another example of an organisation who supports local farmers group's productivity and connects them to local markets (USAID, 2017).

Given that the majority of households (12 out of 13 districts) in Timor-Leste were involved in crop production and the agriculture sector provides 60% of the employment in Timor-Leste (Ministry of Finance 2016), the agriculture sector's

contribution to Timor-Leste's economic growth (GDP) has increased from 5.5% in 2005 to 11.3% in 2016 (GDS, 2016). This growth shows that as one of the non-oil sectors that can be improved agriculture has the potential to increase further in the future.

However, there are still some challenges that need to be tackled in the future in order to increase agriculture's contribution to the country's economic growth. Almost 80% of household still rely on subsistence agriculture (Fontes, 2004), leaving only 20% who produce for the market. Another two important factors in market agriculture development were land issues and lack of a supportive business environment particularly infrastructure facilities (World Bank, 2010).

Therefore, the government should consider improving the country's business environment as discussed in section of 8.3.1 of this chapter. Doing this will enable the country to attract more foreign investment for the development of its agriculture sector. In addition, improving the country's basic infrastructure facilities, such as roads and electricity to accelerate agriculture development in the future should continue to be one of the government's priorities (RDTL 2010c).

The second non-oil sector that has strong potential for development in Timor-Leste is Tourism. Timor-Leste has several natural attractions that can be developed as tourist destinations. Timor-Leste's Strategic Development Plan (SDP) has identified Cristo Rei Statue in Dili, Nino Konis Santana National Park in eastern region, Atauro Island in the northern part of the country and the hot spring Marobo in the western region as some of potential places for tourism (RDTL 2010c).

The government, through the Ministry of Tourism Arts and Culture (2016), has launched a new website to promote all of these tourist places in Timor-Leste. In addition, the government recently approved a National Tourism Policy, which

provides directions to develop tourism in the future (RDTL 2017b).. These are some of the efforts that the government aims to adopt to increase the number of tourist visits into the country by 2030 (RDTL 2010c).

International tourism, based on numbers of arrivals in Timor-Leste, has increased from only 14,000 in 2006 to 62,000 in 2015 (Index Mundi, 2018).The quarterly statistical indicator from Timor-Leste's statistical office also showed a similar trend in the growth of arrivals of overseas residents in Timor-Leste's international airport from only 14,091 at the beginning of 2014 to 21,307 in the first quarter of 2017 (GDS, 2018)

However, a report prepared by Jebson (2014) in collaboration with a government Institute of Business Support (IADE/ Instituto de Apoio Ao Desenvolvimentu Empresarial) and the International Labour Organisation (ILO) identified that the majority of foreign nationals visit Timor-Leste mainly for work purposes and to meet family members .There are still very few who come as tourists for recreation or for holidays.

The government should consider improving some of the challenges that continue to exist in order to attract more tourists into the country. For example, two of the main challenges are the poor road conditions and lack of international connection to the outside world through airlines which have contributed to the increase in cost of travel (RDTL 2010c). Another important challenge as identified by ADB (2015) is the lack of quality accommodation facilities for tourists.

These two non-oil sectors (agriculture and tourism) are very important for Timor-Leste's economy in the future once the revenue from oil and gas runs out. Continuous effort to invest in these two sectors is therefore extremely important.

8.3.3 Import Substitution (IS) strategy

Import substitution is a strategy to promote local production while reducing importation. There are several Southeast Asian countries that adopted import substitution strategies at the beginning of their economic development. Thailand and Malaysia are two of the example countries that promoted import substitution as a tool for rapid economic development. Thailand implemented an IS strategy in the beginning of the 1960s. They intended to reduce importation of several goods that could be produced in the country. This was to support their local production and economic activity (Wattanakul 2009). The government introduced some reforms to support the implementation of IS strategy, including reducing tariff rates for raw material in order to support local firms production activities (Tangkitvanich, Nikomborirak & Krairiksh 2004). With the creation of industrial zones[10] in the 1960s and initiation of a free trade agreement (FTA) in 2001 with a number of different countries, the Thai government has made improvements in local production (Wattanakul 2009). Local companies in Thailand started to produce more food items and also materials for construction. Since the implementation of IS strategies production through manufacturing industry in Thailand increased remarkably (Tangkitvanich, Nikomborirak & Krairiksh 2004).

Malaysia is another country that adopted Import Substitution as their main priority after their independence in the late 1950s. With the investment support from foreign companies who were present in the country at that time, the country managed to establish and strengthen their domestic market (Driffield, Clarke & Mohd Noor A 2004; Yean 2004). In the 1970s, Malaysia also initiated some regulatory reforms to

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[10]*An Industrial zone is an area that is selected specifically for the development of industry.*

control their imports. For example, under these new reforms materials and goods that were not available and produced at the country level are allowed to be imported (Yusoff, Hasan & Jalil 2000).

In addition to these Southeast Asian countries, Mexico is an example of a country which adopted this strategy at the beginning of their economic development journey. By regulating importation through increasing the cost for imports, the country managed to improve their productivity domestically (Griffiths & Sapsford 2004).

Experience from these countries shows that import substitution (IS) is one of the successful strategies used to promote local production and reduce imports. Timor-Leste has been highly dependent on imports, IS can therefore be a good strategy to replace some of the imported commodities that can be produced in the country. Rice and salt are two agricultural products that have the potential for IS which have been part of the country's imports for the last few years.

Timor-Leste's rice production had increased in the past. In 1997, the rice production was 40,286mt (metric ton) and this increased to 54,302mt in 2001. However, the total production in 2001 was only 37% of the total demand for rice in the country. As a result, the government had to import more rice from overseas and still continues to do so. As reported in 2001-2002, the majority (60%) of the rice, was imported from Vietnam: Indonesia and Thailand were two other countries that Timor-Leste imported rice from, 35% from Indonesia and 5% from Thailand (Anderson, 2007) .

Nevertheless the government policy for importing rice has not demotivated the initiative of local communities to grow more rice (Young, 2013) . Between 2005 and2009, rice production in fact doubled. It was 70,000mt in 2009 (FAO 2011), almost half the total that Timor-Leste needed, which was 137,000mt in 2013 (Young, P 2013). There was a decline in rice production in 2010, but this was due to

unanticipated climate conditions (FAO 2011). A media release from the government of Timor-Leste cited an FAO report on the prediction of increasing rice production in 2014. It was estimated to increase 24% over previous years. The government considered this as a major achievement and noted the FAO's report which indicated the possibility of a reduction in importation of rice in 2014 (RDTL 2014). Data from the Ministry of Agriculture and Fisheries showed that the production of rice was 85,334mt in 2013 and increased to 88,823mt in 2014, a growth of 4% in 2014. The prediction by the FAO was to some extent higher than the actual production of rice in 2014 (Ministry of Agriculture and Fisheries 2018). Even though imported rice was cheaper than to grow rice locally, the differences could be minimised if Timor-Leste has an improved irrigation system and 'intensive use production inputs and improved market support' (Young, 2013: 33) .

Timor-Leste's Strategic Development Plan outlined the country's goal of being self-sufficient in rice production by 2020. In order for the country to achieve this, in addition to improving the irrigation system as noted in the previous paragraph, the country should develop a national strategy that promotes agricultural zones for rice cultivation and subsidise local farmers with fertilizers and pesticides. In addition, training local farmers to use improved ways of cultivation, including seed bed nurseries and planned spacing are other strategies that the government should adopt in order to increase the production of rice in the future (RDTL 2010c),

In relation to salt, during the fieldwork for this research, it was found that there was a foreign company, in addition to some local companies, that have started investing in salt production. The foreign company explained that they had introduced new technology to produce salt and started to sell it in the local market as well exporting to one of their business counterparts overseas. The representative of the foreign country stated:

We launched the product (salt) in 2015. We are mostly selling it in the local market. The idea is to stop imports of salt into Timor because we can produce sufficient salt locally. We have better quality salt, better than any other type of imported salt. Last Saturday, we exported 25 tons of salt to Singapore to one of our buyers. This will continue every month (Participant from Foreign Company 1).

The participant above also explained that the country needs around 2,000 tons of salt every year, which can be produced with better quality by their company at the country level. This shows that Timor-Leste can stop importing salt as the local production is adequate enough to satisfy the local demand and the company can also export some of the country's salt to other countries.

There was also another local company namely Belak Salt who has produced salt in Manatuto district, one of the districts in the eastern part of the country. The government of Timor-Leste through the Ministry of Tourism, Commerce and Industry (MTCI), who had been providing a subsidy to the company, participated in the inaugural production of Belak Salt at the beginning of 2011. The government official who was in attendance, emphasised that it was the beginning of an important step to reduce the importation of salt in the future if the company can produce more (RDTL 2011b).

Against this background information on salt production, Timor-Leste has the potential to produce more salt in the future. Therefore, the government should consider regulating importation of products that are locally available with higher import tariffs and at the same time, continue providing support to local companies in the production of salt. Once salt production at the country level is enough to cover the country's entire needs, the importation of salt should be limited. Only with this

action will the local production of salt have value in the local market (*Participant from Foreign Company 1*).

8.3.4 Implement Export Promotion (EP) Strategy

Unlike IS, export promotion is a strategy which aims to promote more local production for export. EP has been considered as an important strategy that attracts more FDI for investing in a country. The EP strategy provides more opportunity not only to local companies but also to foreign companies to produce more and export to other countries (Balasubramanyam, Salisu&Sapsford 1996).

Both Thailand and Malaysia, once they had more production at country level, progressed with the adoption of an export promotion policy. Malaysia adopted an EP strategy in the 1970s (Yusoff, Hasan & Jalil 2000). Malaysia began with the EP strategy by establishing an institution called Malaysia Investment Development Authority (MIDA) in the mid-1960s. One of the main roles of this institution is to facilitate local companies in Malaysia's cooperation with other companies overseas. In addition, MIDA promotes Malaysia as an investment destination to foreign investors.. To support the work of MIDA, the government established MATRADE (Malaysia External Trade Development Corporation) at the beginning of the1990s which was to facilitate Malaysian exporters to enter into the world market. Their assistance to Malaysian exporters included training and sharing information about exporting. One of the first Malaysian local companies exported bananas to Japan through the assistance from MATRADE (Chemonics International 2009). As a result, Malaysia's exports increased by 15 times between the period 1980 to 2014 (UNCTAD 2017).

Thailand adopted EP in 1980 with the aim to compete with others in the global market. The government encouraged local firms to produce more for exporting. The government of Thailand initiated numerous Free Trade Agreements with different

countries to facilitate their export activities (Wattanakul 2009). Promotion of EP led to FDI becoming more active in the country's investment (Tangkitvanich, Nikomborirak & Krairiksh 2004). FDI has facilitated more in improving trading opportunities after the country adopted export promotion (Kohpaiboon 2003). By the year 2014 Thailand's exports increased 34 times compared to the 1980 figure, and promotion of exports played a vital role in this increase (UNCTAD 2017).

Both import substitution and export promotion are two strategies that cannot be separated as they complement each other. Many countries worldwide including many in Southeast Asia, have been successful in exporting because they have local production which has been increased through their IS strategy. Even the biggest economies such as the United States of America, China and India have strong exports and economies today due to their initial development with IS strategies (Zhou 2008).

Timor-Leste has a number of products that have the potential for export. Coffee is one of the commodities. Timor-Leste's volume of export of coffee has increased from only 16,557,000kgin 2011 to 26,570,000kg in 2016, an increase of 60%in just five years. Despite this there was a decline in the export of coffee particularly in 2013 and 2014, (Figure 8.1) however, there is the potential that coffee production can be increased further to capture a bigger international market in the future.
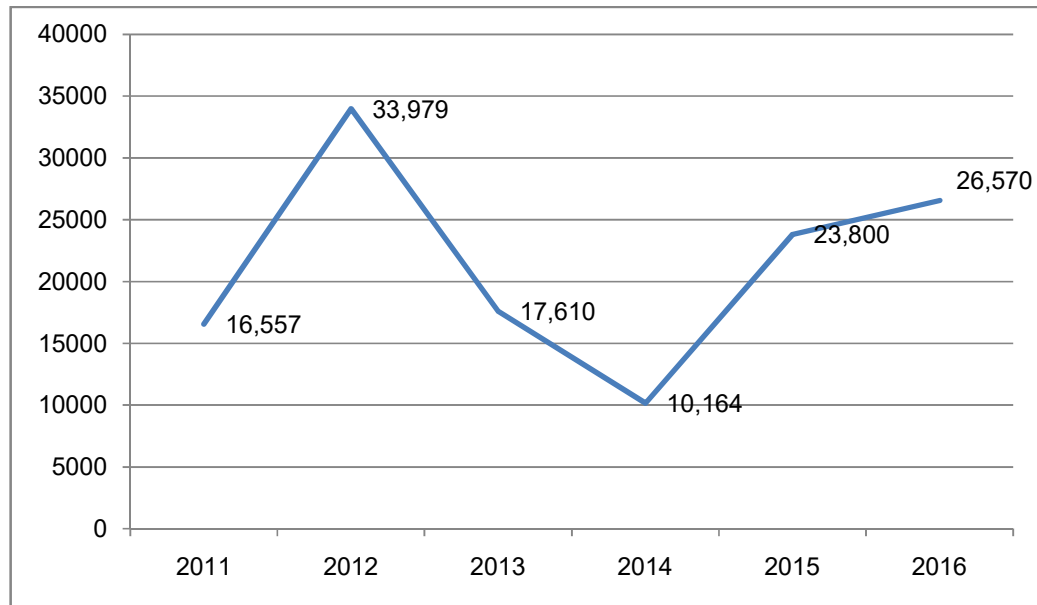
Source: MoF (2016)

A diagnostic study by the World Bank (2010) found that there is huge potential to increase the export of coffee. The government of Timor-Leste aims to double the production of coffee in 2020 as outlined in the Strategic Development Plan (SDP) document (RDTL 2010c). This should be supported with the provision of advanced technology and also continuation of coffee rehabilitation programs. The rehabilitation program was to improve coffee production by local farmers. The program was implemented by the government and rehabilitated different coffee plantations each year (Source: Participant from government department 3). The existing coffee yields need to be improved in order to produce more coffee in the future since coffee has also been one of the agricultural products that provide income to most of the local farmers (Inder et al. 2013).

In addition to coffee, Timor-Leste also has other potential commodities for export such as vanilla. The government of Timor-Leste, through the Ministry of Agriculture and Fisheries, has introduced vanilla as another industrial plant that can be produced in the short term, with good value in the market for export (Source: Participant from Government Department 3). A study by Correia et al. (2009) found

that Timor-Leste has the potential to increase the production of vanilla. They identified two districts (Ermera and Manufahi) with the type of soils and climate suitable for vanilla plantations. Between 2002 and 2014, the production of vanilla increased from only 0.75 ton to 1.50 ton, doubling in just two years. The export of vanilla also improved from 750kg in 2002 to 1,500kg in 2004. An estimation made by Correia et al. (2009) showed that there is a possibility of tripling profits from vanilla production. The majority of respondents (around 84%) in their study expressed the intention to expand their vanilla production in these two districts: vanilla has the potential for more production and export in the future. However, this can only happen if the government ensures a better irrigation system and training to farmers groups. In addition, attracting another private investor is important for support in particular with the supply chain, since it is dominated by a single cooperative (CCT), who take control of pricing.

A diagnostic study by the World Bank (2010)also reported that Timor-Leste has exported vanilla in the past even though it remains in small volume over the period of 2004 to 2008.

8.4. Summary

Based on the experiences of Southeast Asian countries, this research has recommended Timor-Leste consider improving the country's business environment, investing in non-oil sectors, adopting Import Substitution and promoting more agricultural commodities for export in order to attract more FDI and improve trade in the future.

However the overall success of attracting FDI will depend quite heavily on quality and adequate investment in improving infrastructure in the country. It also calls for reducing the complications related to administrative procedures. Although there is only a bit over a decade to go to achieve the SDP target, it is not impossible.

CHAPTER 9: CONCLUSION

9.1   Recapitulation

This thesis examined the role of FDI on trade and technology innovation in Southeast Asia with particular reference to Timor-Leste. Over the last few decades, Southeast Asia has received more FDI than before. Its share of FDI in the total FDI to Asia as a whole has increased from only 8% in 1980 to 30% in 2016. Timor-Leste, the newest country in the Southeast Asian region, has experienced a similar positive growth in its FDI, with a 19-fold increase between 2003 and 2016 (UNCTAD, 2017). This thesis has attempted to understand the factors that contributed to the increase of FDI into Southeast Asia, including Timor-Leste. It also examined the role of FDI on trade and technology innovation in this region. Four major lessons learned from the experience of Southeast Asian countries are suggested for Timor-Leste. In addition, recommendations based on a review of four main current policies related to FDI in Timor-Leste are provided.

This research differs from the majority of previous studies in that it analyses Southeast Asian countries not only as a group but also by individual country. The results of this research contribute to the current knowledge by showing that trade is also a determinant of FDI. In addition, the results of this research show that the increases of FDI in Southeast Asian countries have improved trade and promoted technology innovation in the majority of countries of this region.

This study is based on analyses of secondary data obtained from international databases such as the United Nations Conference on Trade and Development (UNCTAD) and the World Bank that have data for all Southeast Asian countries. Due to limited availability of secondary data for Timor-Leste, semi-structured

interviews were conducted in Timor-Leste to collect relevant information. The secondary data were analysed by the Granger Causality test in EViews software and the qualitative data were analysed by thematic analysis in NVivo software.

The present chapter provides a summary of the findings of this thesis and recommendations based on the analysis. It is divided into four sections. The first section presents the major findings of the study, this is followed by the research limitations and areas for future research in the second section. The third section is theoretical implications while the fourth and final section identifies policy implications of the study with particular reference to Timor-Leste.

9.2 Major Findings

The main objectives of this research were to identify the determinants of FDI, to examine the role of FDI in trade and technology innovation and to recommend appropriate policies for Timor-Leste.

In relation to the first objective (as discussed in Chapter 5), this research has identified that trade is a determinant of FDI into Southeast Asian countries. Both exports and imports have a strong correlation with FDI into the subregion, both as a group and also in most of the countries taken individually. There is a unidirectional causality from both exports and imports to FDI in Cambodia, Myanmar, Lao PDR, the Philippines and Singapore while Brunei and Indonesia have only unidirectional causality from imports to FDI. In the other countries: Thailand, Malaysia, Vietnam and Timor-Leste trade does not appear as a factor in attracting FDI. Besides trade, this research also examined whether administrative procedures and governance indicators are determinants of FDI. The results show that neither of these are a main factor attracting FDI into most Southeast Asian countries. The only individual countries where administration and governance appear as determinants of FDI are Cambodia (government effectiveness, a governance indicator), Lao PDR (political

stability, a governance indicator), and Timor-Leste (tax, an administrative procedure; and political stability, a governance indicator).

The second objective of examining the role of FDI on trade (Chapter 6) shows that FDI caused an increase in trade (exports and imports). However, there are other factors besides FDI that contributed to trade. For example, there is bidirectional causality between exports and imports, and unidirectional causality from GDP to exports and imports in Southeast Asian countries as a group. At individual country level, FDI improved trade in eight countries (Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Singapore, Thailand and Vietnam), but not in the other two countries (Brunei and the Philippines). FDI into Timor-Leste has contributed more toward the country's imports than exports.

The third objective, to determine the role of FDI in technology innovation (Chapter 7), showed that FDI contributed to technology innovation in Southeast Asian countries as a group. In five individual countries, Singapore and Malaysia received more benefits from FDI for technology innovation. FDI into three countries (Indonesia, the Philippines and Thailand) has made less contribution to their technology innovation. The role of FDI in Timor-Leste's technology innovation remained minimal. Other factors such as GDP, ICT exports and ICT imports, in addition to high technology exports, do not have any correlation with technology innovation in Southeast Asian countries.

The final objective of the thesis was to recommend appropriate policies for Timor-Leste (Chapter 8) with regard to FDI. Based on Southeast Asian countries' experiences, this research suggested four important policies for Timor-Leste's government to consider to attract more FDI and to improve the country's trade: (1) improve the business environment; (2) invest in the non-oil sector, (3) adopt import substitution and (4) promote export, In addition, four of Timor-Leste's main current

policies (Private Investment Law, Land Law, Specialised Investment Agency and Infrastructure Fund [particularly for road and electricity projects])were reviewed in this thesis. Based on the review, it is recommended that the following are instituted:

- Future Private Investment Law to consider a provision to guarantee the continuation of investment by foreign companies in particular after the end of the tax benefit period.

- Land status and disputes need to be resolved immediately according to the current Land Law.

- Government departments should consider simplifying administrative procedures and reducing the time taken to complete them.

- The government needs to allocate some budget for maintenance of power generators and improve the current monitoring system in order to ensure the implementation of road projects according to agreed plan.

9.3. Research Limitations and Areas for Future Research

This research has mainly relied on the analysis of secondary data to identify determinants of FDI in addition to the role of FDI on trade and technology innovation in Southeast Asian countries. However the scope of the research was limited due to lack of publicly available data for individual countries. Only secondary data which are available in the public domain and hence accessible were used. Future research may have better representation if access to more adequate secondary data was available, for example for FDI by industry, trade (exports and imports) by industry and destination country, and patent grants by technology products, all of which are relevant to this area of research.

The analysis of secondary data was mainly based on the Granger Causality test since this research aimed to investigate the causal relationships between two variables. The discussion of results in this thesis has been focused on the

correlation between two variables, future research may expand the discussion further by involving additional variables and additional tests.

The eleven countries in Southeast Asia were analysed as a group as well as individually. The analysis and discussion for each individual country could not include as much detail as this researcher would have liked and this was mainly due to the lack of data and information that are necessary for an in-depth study.

The qualitative information from the interviews for Timor-Leste depended on the information from only 15 participants the majority of whom are from non-oil industries due to lack of response from oil companies to the request for an interview. Since Timor-Leste's trade is more dependent on oil, involving oil companies in future research may provide even better insights into the role of FDI on trade in Timor-Leste particularly that related to exports. The qualitative research in the future in this area of research can be made even stronger by interviewing more participants from a wider range of backgrounds.

9.4   Theoretical Implications

This research is based on secondary data analysis for determinants of FDI, and the impact of FDI on trade and technology innovation in Southeast Asian countries. As discussed earlier, the findings of this research show that trade is one of the main factors attracting FDI into most Southeast Asian countries. It reiterates the existing knowledge about trade and FDI as shown in the conceptual framework as discussed in Chapter 3 of this thesis. The result of this research is consistent with many studies including that of Janicki and Wunnava (2004) covering nine Central and East European countries; Demirhan and Masca (2008) covering 38 developing countries including three SEA countries (the Philippines, Thailand and Vietnam), Ang (2008) and Choong and Lam (2010)covering Malaysia, Aziz and Mishra (2015a) covering 16 Arab countries, and Seetanah and Rojid (2011) covering Mauritius.

In addition to trade, other factors such as governance indicators were tested for their effects on FDI. However, only some of the indicators showed out as determinants of FDI in three of the countries. The test results showed governance indicators on government effectiveness as a determinant of FDI in Cambodia while political stability was important in Lao PDR and in Timor-Leste. As previously discussed (section 5.4 in Chapter 5) on average, Southeast Asian countries have weak performance on governance indicators. This supports the result of why governance indicators do not show as determinants of FDI in most Southeast Asian countries and is consistent with most previous studies that governance indicators based only on strong governance performance (Buchanan, Le & Rishi 2012; Masron & Abdullah 2010) act as determinants of FDI.

In addition to governance indicators, the results of this research also show that administrative procedures do not appear as the main determinants of FDI in most Southeast Asian countries. According to the results of the Granger Causality test, Timor-Leste is the only country where low tax in Timor-Leste has become a factor that attracts FDI. Further, the discussion in section 5.4, Chapter 5 explains that on average countries in Southeast Asia have fewer administrative procedures which should be an important determinant of FDI, as shown by several studies (Morisset & Lumenga-Neso 2002; Torriti & Ikpe 2015). Therefore, there is need to investigate further the result of the Granger Causality test from this research in the future.

The results of the analysis on the role of FDI on trade showed that FDI has contributed to the "improvement" and "increase" of trade (both in terms of exports and imports) in Southeast Asian countries as a group as well as in most of the individual countries. These results align with many previous findings of how FDI brings benefits to the trade of a country or a region, as shown, for example, by the studies conducted by Anwar and Nguyen (2011) in Vietnam and Min (2003) in

Malaysia. The empirical evidence from Anwar and Nguyen (2011) that "1 percent in FDI increases exports by about 0.16 percent" (p. 45) reinforced the FDI's contribution into a country's trade, particularly exports. This is consistent with the result of the Granger Causality test that there is unidirectional causality from FDI to trade in Southeast Asian countries.

On the other hand, in contradiction with the result for most of the countries in Southeast Asia, there are only two countries, namely Brunei Darussalam and the Philippines, where the result shows that there is no causal relationship from FDI to trade. Brunei is highly dependent on oil and gas, and their exports and imports have not been influenced by FDI. Brunei's export of oil and gas was already 90% of their total exports, even with less presence of FDI in the country before 1995. When there was a reduction of FDI after 2000, Brunei's trade continued to increase (UNCTAD 2017). Even after receiving more FDI, with 70% of FDI in the oil and gas industry in 2005 (Bhaskaran 2007), Brunei's total exports remained at 90% from oil and gas (UNCTAD 2017). This is in line with one study that found that FDI's contribution to Brunei's economic development overall was insignificant (Islam 2011).

In the case of the Philippines, FDI into the country has been unpredictable and remained low compared with other countries in Southeast Asia. It was only around 3% of the total FDI that came into Southeast Asia over the period 1980 to 2015(UNCTAD 2017). In addition, the Philippines has been in trade deficit, having more imports than exports in most years. The government's introduction of free tax on imports has made the Philippines one of the high import dependent countries (Aldaba & Aldaba 2010). This has contributed to the lack of any causal relationship between FDI and trade in the Philippines. This result is consistent with a discussion paper by Aldaba and Aldaba (2010) who reported that FDI did not have a positive relationship with trade in the Philippines.

Unlike most Southeast Asian countries, the impact of FDI on Timor-Leste's trade is more towards imports than exports even though most previous literature presented the important role of FDI on trade. Almost similar to the Philippines, Timor-Leste has been highly dependent on imports, meaning FDI's contribution to exports cannot resolve the country's trade deficit. Consequently, the impact of FDI on trade is found to be more on imports than exports as shown in the Granger Causality test in this research.

The results of this research further show that due to diversity in the economic development of different countries, the impacts of FDI on trade vary from one country to another, which corresponds with most previous studies. For example, the positive relationship between FDI and trade was more visible in developing countries than in developed countries (Aizenman & Noy 2006). Even among developing countries, there are also differences in the impact of FDI on trade; for instance, it was greater in Southeast Asian countries than in Latin American countries (De Mello Jr & Fukasaku 2000).

Similar to the role of FDI on trade, the result of the Granger Causality test has shown that FDI has played an important role on technology innovation of Southeast Asian countries. Singapore and Malaysia have been the two dominant countries in the region that experienced the benefits of FDI on their technology innovation. The increase in the number of patent grants in Singapore and Malaysia was contributed to by the work of foreign companies in these two countries. This result is consistent with a study by Erdal and Göçer (2015) which revealed that innovation was contributed to by FDI in ten developing countries, which included Southeast Asian countries (Malaysia and Singapore). Other studies which supported the positive contribution from FDI to technology innovation include Gorodnichenko, Svejnar and Terrell (2015) in 18 emerging countries from the EU (European Union), SEE (South-East Europe) and CIS (Commonwealth of Independent States), Cheung (2010) in

China, and Sivalogathasan and Wu (2014) in South Asian countries.

In contrast with most of the literature that supported the view on FDI's contribution to countries' technology innovation, the result of tests in this research show that there is no correlation between FDI and technology innovation in Indonesia, Thailand and the Philippines. The innovations in these three countries are led by public sector and local firms rather than FDI. For example, local firms in Thailand had three times higher innovation than others including FDI (Tangkitvanich, Nikomborirak & Krairiksh 2004). The Philippines' government investment in R&D was double that of the private sector (Patalinghug 2003). FDI's contribution to innovation in Indonesia remained limited since public research institutions dominate R&D (OECD 2013b). This is why the impact of FDI in these countries' technology innovation remains insignificant in accordance with findings from previous studies by Chen (2007) in China and Seghir (2012) in Tunisia.

The impact of FDI on technology innovation in Timor-Leste is more related to the introduction of new technology than technology innovation. Even though the majority of literature discussed in Chapter 3 of this thesis outlined FDI's contribution to technology innovation, because of the lack of qualified human resources in Timor-Leste, there is a lack of contribution of FDI to technology innovation.

9.5 Policy Implications with reference to Timor-Leste

This research has revealed that FDI has so far had more influence on imports than exports in Timor-Leste, which has led to a huge trade deficit. Moreover, FDI has very minimal influence on technology innovation in Timor-Leste. Based on these findings, two specific policy implications are suggested: (1) promoting local products and (2) ensuring the transfer of knowledge from FDI to locals that will enhance their skills. Detailed discussion on these two policy implications follows.

<u>Promoting local products</u>

During the period 2007 to 2012 the previous government of Timor-Leste introduced a program to promote local production, which was well known as "Community Grow, Government Buy" (in local language "*PovuKuda, Governu Sosa*"). It was a good initiative and well accepted by the majority of community members especially those involved in agriculture. The program aims to encourage the community to produce more and connect them to local markets. A number of local companies were selected by the government to purchase and collect agricultural products directly from local farmers in different districts. The local products include rice with husk, corn, different kinds of beans (soybeans and black beans), and peanuts. In 2010, the government, through the Ministry of Tourism, Commerce and Industry, bought some of the local products from the companies (RDTL 2010a).

A report by local NGO, Lao hamutuk (2011), based on consultation with local farmers at the district level, found that local farmers were very pleased with the program and considered it as an encouragement for them to produce more. However, since the program only covered part of the country, many local products remain in the local farmers store rooms. Some of the local farmers who have no access to transport, were exploited by companies who did not give them the right price.

When the new government (during the period 2012-2017) came into power, there was no continuation of this program. There were many complaints not only from companies but also from local farmers. The issue was raised by many local communities with The Honourable President of the Republic during his public dialogue with communities. Local farmers suffered huge losses since the company no longer bought their agricultural products (Presidencia da Republica 2016).

Considering that this program has motivated local farmers to produce more agricultural products, the new government should consider promoting the production of local products in the future. Instead of the government buying the agricultural products from the companies, the government should act more as facilitator to facilitate the business activities of existing companies, both local and foreign. This facilitation should include supporting registration of companies and their access to benefits as stated in the Private Investment Law. The government also should regulate the price of agricultural products in order not to disadvantage local farmers. In addition, more foreign companies who are interested in purchasing and processing agricultural products should be invited into Timor-Leste. Only with this action, accompanied by improved roads and electricity projects (as discussed in Chapter 8), Timor-Leste can produce more agricultural products. The importation of some agricultural products can then be minimised (import substitution as discussed in section 8.3.3) and potentially lead to export (export promotion as discussed in section 8.3.4) in the long term. This could be one of the ways to reduce Timor-Leste's trade deficit in the future and promote investment in agriculture as one of the important non-oil sectors (as discussed in section 8.3.2).

Ensuring Transfer of Knowledge from FDI to Local People

Lack of skills among local people has been identified as one of the major challenges for most foreign companies that were interviewed in this research (see Section 7.6 of Chapter 7) that led to the absence of FDI's contribution to technology innovation in Timor-Leste.

The government of Timor-Leste has invested in enhancing the capacity of local young people. Through the Secretariat of State for Professional Training and Employment, the government has allocated around US$223,000 to 19 training centres across the whole country. It aims to promote the establishment of training centres at district level and provide opportunities for young people in any district to

participate in training without having to travel to the capital city (RDTL 2010b). In cooperation with the then Australian Agency for International Development (AusAID), the government of Timor-Leste also implemented the Youth Employment Promotion Programme for four years, from 2008 to 2012. This program prepared youths to work on the government's road construction projects across the country and was found to be quite productive in improving skills and increasing income (ILO 2010).

Apart from the government's own interventions, it is also important that private companies (both local and foreign) take adequate measures through investments in human capital to enhance the knowledge and skills of the locals. Even though Timor-Leste's Private Investment Law has addressed the investor's obligation to train their staff (RDTL 2011c), there should be clear policies, ways or means to ensure the transfer of knowledge from foreign investors to locals. These can be achieved through better understanding and stronger collaborations between different stakeholders and government institutions should play a vital role in creating an environment to make such collaboration possible and more productive.

9.6   Concluding Remark

The result of this research has shown that FDI has improved trade and promoted technology innovation in Southeast Asian countries. This is consistent with the role of FDI in most countries in the world. The benefits that countries in this region experience at present are the result of a long journey that they have gone through where FDI played a vital role especially in recent years. A journey that has been accompanied with various reforms to attract more FDI into the country.

Experiences from Southeast Asia can provide a very good roadmap for economic as well as overall development in Timor-Leste. A progressive Timor-Leste requires a stronger economy and FDI has the potential to help the nation-building process for a

prosperous future. As a country that continues to rely on revenues from oil and gas, FDI can be seen as an important instrument to transform the country and reduce the country's dependence on such revenues. This research suggests a number of policy recommendations to improve the country's business environment in order to attract more FDI into the country. In 2011, the Timor-Leste Strategic Development Plan (SDP) outlined a determined plan to become a middle income country by 2030 and with adequate measures and policies in place Timor-Leste has every potential to make the nation-building process successful and achieve the target. This thesis has shown Timor-Leste has the potential to progress towards achieving the status of a developed nation. Increased foreign direct investment is crucial to help the country achieve its potential.

APPENDIX

Appendix 1: Summary of Literature

Determinants of FDI

Authors	Samples	Determinants of FDI
Boateng, Hua, Nisar& Wu (2015)	Norway	GDP, exchange rate and trade openness
Lin (2010)	China	Market size
Ang (2008)	Malaysia	Financial development and infrastructure
Cuyvers, Soeng, Plasmans&Bulcke (2011)	Cambodia	Exchange rate
Lee (2015)	Korea	Exchange rate
Haufler&Mittermaier (2011)	Some of EU & non-EU countries	Tax
Hanlon, Lester & Verdi (2015)	United States	Tax
Musibah, Shahzad&Fadzil (2015)	Yemen	Political Stability jointly with exchange rate and inflation rate
Bekaert, Harvey, Lundblad& Siegel (2014)	United States	Political risk
Braithwaite, Kucik&Maves (2014)	140 countries	Political conflict
Arunatilake, Jayasuriya& (2001)	Sri Lanka	Conflict
Moloo& Khachaturian (2009)	Iraq	Conflict
Buchanan, Le & Rishi (2012)	164 countries	Institutional Quality
Masroon& Abdullah (2010)	6 of ASEAN countries	Institutional Quality
Aziz & Mishra (2015)	16 of Arab countries	Improved institution and labour force
Habib &Zurawicki (2002)	89 countries	Corruption
Godinez (2015)	12 of Latin America countries	Corruption
Staats&Biglaiser (2012)	17 of Latin America countries	Rule of Law
Cleeve, Debrah&Yiheyis (2015)	36 of African countries	Human Capital
Torriti&Ikpe (2015)	32 countries	Administrative cost
Morisset &Neso (2002)	32 developing countries	Administrative cost and time
Klapper, Laeven&Rajan (2006)	European Firms	Administrative cost
Kreinin and Plummer (2008)	EU, NAFTA, MERCOSUR and ASEAN.	Regional Integration
Levy-Yeyati et al. (2003)	60 countries	Regional Integration
L. Cuyvers et al. (2011)	Cambodia	Trade

Nasir (2016)	Malaysia	Trade
Janicki and Wunnava (2004)	Central and East European countries	Import
Demirhan&Masca (2008)	38 Countries	Trade Openness
J. Ang (2008); Choong& Lam (2010)	Malaysia	Trade Openness
Aziz & Mishra (2015)	16 Arab Countries	Trade Openness
Seetanah&Rojid (2011)	Mauritius	Trade Openness

FDI on Trade

Authors	Samples	Findings
Anwar and Nguyen (2011); Xuan amd Xing (2008)	Vietnam	FDI promote trade
Liu, Wang & Wei (2001); Wei (2004)	China	
Min (2003)	Malaysia	
Magalhaes and Africano (2007)	Portugal	
Zhang (2005); Prasanna (2010)	India	
F. Ruane& Sutherland (2005)	Ireland	FDI support Export
Aitken & Harrison (1997)	Mexico	
Stocker (2000)	100 countries	FDI does not promote trade
Tran & Dinh (2014)	15 developing countries	FDI contribute to the negative balance of trade
Franco (2013)	16 OECD countries	Export did not depend on FDI
Aizenman&Noy (2006)	Developed and Developing countries	The influence of FDI is more in Developing Countries
Shu & Khan (2003)	CEFTA, LAIA and ASEAN	The influence of FDI is more in CEFTA and LAIA
De Mello Jr &Fukasaku (2000)	10 Latin America & 6 Southeast Asia countries	The influence of FDI is more in 6 of Southeast Asia countries

FDI on Technology Innovation

Authors	Samples	Findings
Gorodnichenko et al (2015)	9,000 firms from 18 countries	FDI promote technology innovation
Sivalogathasan& Wu (2014)	South Asia countries	
Cheung (2010)	China	
Erdal&Göçer (2015)	Ten developing countries (include three Southeast Asia countries	
Seghir (2012)	Tunisia	FDI did not influence in the innovation
Xu & Wang (2000)	Industrialised countries	
Chen (2007)	China	
Fu (2008); Xue (2008); Jinggiang (2010)	China	Cities of China who have more capable human resources benefit more on innovation

Appendix 2: Interview Questions

Questions for Government Officials

1. What is your department areas of responsibilities?
2. What are the major reforms that your department have conducted?
3. What are the major challenges that government faced with the foreign investment in Timor-Leste?
4. How do you see the role of FDI on trade?
5. How do you see the role of FDI on technology innovation?
6. What should be done in the future in order to improve Timor-Leste's business environment in order to attract more FDI?

Questions for Foreign Companies

1. What is your company area of investment in Timor-Leste?
2. Why do you want to invest in Timor-Leste?
3. Do you work with any local company?
4. How is your role on trade?
5. How is your role on technology innovation?
6. How is your experience of investing in Timor-Leste?
7. What should be done in order to facilitate better in your investment activity?

Questions for Local Companies

1. What is your company area of investment in Timor-Leste?
2. Why you have an interest to work on in the particular area/sector?
3. Do you work with any foreign company?
4. How do you see the role of FDI on trade?
5. How do you see the role of FDI on technology innovation?
6. What can be done to improve your current situation in the future?

Appendix 3: Result of Test for Individual country in Chapter 5

Granger Causality Test

Brunei Darussalam

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc ↛ FDI	0.51	Proc ↛ FDI
2.		Time ↛ FDI	0.29	Time ↛ FDI
3.		Cost ↛ FDI	0.52	Cost ↛ FDI
4.	Paying Taxes	Pay ↛ FDI	0.51	Pay ↛ FDI
5.		Time ↛ FDI	0.62	Time ↛ FDI
6.		Tax ↛ FDI	0.54	Tax ↛ FDI
7.	Governance Indicators	CoC ↛ FDI	0.84	CoC ↛ FDI
8.		Ge ↛ FDI	0.32	Ge ↛ FDI
9.		Ps ↛ FDI	0.82	Ps ↛ FDI
10.		RoL ↛ FDI	0.14	RoL ↛ FDI
11.		Rq ↛ FDI	0.30	Rq ↛ FDI
12.		Va ↛ FDI	0.67	Va ↛ FDI
13.	Trade	Exp ↛ FDI	0.68	Exp ↛ FDI
14.		Imp ↛ FDI	0.00*	Imp → FDI

Note: The test for equation (9) is at lag 1, for equation (10) is at lag 3 and for equation (11) is at lag 7

Cambodia

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc ↛ FDI	0.40	Proc ↛ FDI
2.		Time ↛ FDI	0.85	Time ↛ FDI
3.		Cost ↛ FDI	0.57	Cost ↛ FDI
4.	Paying Taxes	Pay ↛ FDI	0.09	Pay ↛ FDI
5.		Time ↛ FDI	0.08	Time ↛ FDI
6.		Tax ↛ FDI	0.92	Tax ↛ FDI
7.	Governance Indicators	CoC ↛ FDI	0.50	CoC ↛ FDI
8.		Ge ↛ FDI	0.19	Ge ↛ FDI
9.		Ps ↛ FDI	0.01*	Ps → FDI
10.		RoL ↛ FDI	0.92	RoL ↛ FDI
11.		Rq ↛ FDI	0.97	Rq ↛ FDI
12.		Va ↛ FDI	0.83	Va ↛ FDI
13.	Trade	Exp ↛ FDI	0.00*	Exp → FDI
14.		Imp ↛ FDI	0.00*	Imp → FDI

Note: The test for equation (9) is at lag 2 for equation (10) is at lag 3 and for equation (11) is at lag 7

Indonesia

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc ↛ FDI	0.69	Proc ↛ FDI
2.		Time ↛ FDI	0.27	Time ↛ FDI
3.		Cost ↛ FDI	0.34	Cost ↛ FDI
4.	Paying Taxes	Pay ↛ FDI	0.84	Pay ↛ FDI
5.		Time ↛ FDI	0.10	Time ↛ FDI
6.		Tax ↛ FDI	0.60	Tax ↛ FDI
7.	Governance Indicators	CoC ↛ FDI	0.78	CoC ↛ FDI
8.		Ge ↛ FDI	0.39	Ge ↛ FDI
9.		Ps ↛ FDI	0.83	Ps ↛ FDI
10.		RoL ↛ FDI	0.44	RoL ↛ FDI
11.		Rq ↛ FDI	0.44	Rq ↛ FDI
12.		Va ↛ FDI	0.91	Va ↛ FDI
13.	Trade	Exp ↛ FDI	0.27	Exp ↛ FDI
14.		Imp ↛ FDI	0.04**	Imp → FDI

Note: The test for equation (9) is at lag 1, for equation (10) is at lag 4 and for equation (11) is at lag 7

Lao PDR

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc ↛ FDI	0.53	Proc ↛ FDI
2.		Time ↛ FDI	0.58	Time ↛ FDI
3.		Cost ↛ FDI	0.96	Cost ↛ FDI
4.	Paying Taxes	Pay ↛ FDI	0.53	Pay ↛ FDI
5.		Time ↛ FDI	0.65	Time ↛ FDI
6.		Tax ↛ FDI	0.21	Tax ↛ FDI
7.	Governance Indicators	CoC ↛ FDI	0.14	CoC ↛ FDI
8.		Ge ↛ FDI	0.02**	Ge → FDI
9.		Ps ↛ FDI	0.46	Ps ↛ FDI
10.		RoL ↛ FDI	0.28	RoL ↛ FDI
11.		Rq ↛ FDI	0.44	Rq ↛ FDI
12.		Va ↛ FDI	0.74	Va ↛ FDI
13.	Trade	Exp ↛ FDI	0.00*	Exp → FDI
14.		Imp ↛ FDI	0.00*	Imp → FDI

Note: The test for equation (9) is at lag 2, for equation (10) is at lag 3 and for equation (11) is at lag 7

Malaysia

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc $\nrightarrow$ FDI	0.93	Proc $\nrightarrow$ FDI
2.		Time $\nrightarrow$ FDI	0.83	Time $\nrightarrow$ FDI
3.		Cost $\nrightarrow$ FDI	0.43	Cost $\nrightarrow$ FDI
4.	Paying Taxes	Pay $\nrightarrow$ FDI	0.12	Pay $\nrightarrow$ FDI
5.		Time $\nrightarrow$ FDI	0.56	Time $\nrightarrow$ FDI
6.		Tax $\nrightarrow$ FDI	0.57	Tax $\nrightarrow$ FDI
7.	Governance Indicators	CoC $\nrightarrow$ FDI	0.59	CoC $\nrightarrow$ FDI
8.		Ge $\nrightarrow$ FDI	0.88	Ge $\nrightarrow$ FDI
9.		Ps $\nrightarrow$ FDI	0.37	Ps $\nrightarrow$ FDI
10.		RoL $\nrightarrow$ FDI	0.81	RoL $\nrightarrow$ FDI
11.		Rq $\nrightarrow$ FDI	0.50	Rq $\nrightarrow$ FDI
12.		Va $\nrightarrow$ FDI	0.75	Va $\nrightarrow$ FDI
13.	Trade	Exp $\nrightarrow$ FDI	0.25	Exp $\nrightarrow$ FDI
14.		Imp $\nrightarrow$ FDI	0.25	Imp $\nrightarrow$ FDI

Note: The test for equation (9) is at lag 2, for equation (10) is at lag 3 and for equation (11) is at lag 7

Myanmar

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc $\nrightarrow$ FDI	-	Proc $\nrightarrow$ FDI
2.		Time $\nrightarrow$ FDI	-	Time $\nrightarrow$ FDI
3.		Cost $\nrightarrow$ FDI	-	Cost $\nrightarrow$ FDI
4.	Paying Taxes	Pay $\nrightarrow$ FDI	-	Pay $\nrightarrow$ FDI
5.		Time $\nrightarrow$ FDI	-	Time $\nrightarrow$ FDI
6.		Tax $\nrightarrow$ FDI	-	Tax $\nrightarrow$ FDI
7.	Governance Indicators	CoC $\nrightarrow$ FDI	0.92	CoC $\nrightarrow$ FDI
8.		Ge $\nrightarrow$ FDI	0.79	Ge $\nrightarrow$ FDI
9.		Ps $\nrightarrow$ FDI	0.56	Ps $\nrightarrow$ FDI
10.		RoL $\nrightarrow$ FDI	0.77	RoL $\nrightarrow$ FDI
11.		Rq $\nrightarrow$ FDI	0.98	Rq $\nrightarrow$ FDI
12.		Va $\nrightarrow$ FDI	0.71	Va $\nrightarrow$ FDI
13.	Trade	Exp $\nrightarrow$ FDI	0.00*	Exp $\longrightarrow$ FDI
14.		Imp $\nrightarrow$ FDI	0.00*	Imp $\longrightarrow$ FDI

Note: Myanmar is excluded from equation (9) for starting up a business and paying taxes since their data only available from 2014. The test for equation (10) is at lag 3 and for equation (11) is at lag 7

Philippines

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc⇸FDI	0.81	Proc⇸FDI
2.		Time⇸FDI	0.33	Time⇸FDI
3.		Cost ⇸ FDI	0.08	Cost ⇸ FDI
4.	Paying Taxes	Pay ⇸ FDI	0.43	Pay ⇸ FDI
5.		Time ⇸ FDI	0.16	Time ⇸ FDI
6.		Tax ⇸ FDI	0.50	Tax ⇸ FDI
7.	Governance Indicators	CoC⇸FDI	0.76	CoC⇸FDI
8.		Ge ⇸FDI	0.74	Ge ⇸FDI
9.		Ps ⇸FDI	0.58	Ps ⇸FDI
10.		RoL⇸FDI	0.87	RoL⇸FDI
11.		Rq ⇸FDI	0.20	Rq ⇸FDI
12.		Va ⇸FDI	0.64	Va ⇸FDI
13.	Trade	Exp⇸FDI	0.00*	Exp⟶FDI
14.		Imp ⇸ FDI	0.01*	Imp ⟶ FDI

Note: The test for equation (9) is at lag 2, equation (10) is at lag 3 and for equation (11) is at lag 7.

Singapore

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc⇸FDI	0.48	Proc⇸FDI
2.		Time⇸FDI	0.77	Time⇸FDI
3.		Cost ⇸ FDI	0.38	Cost ⇸ FDI
4.	Paying Taxes	Pay ⇸ FDI	0.57	Pay ⇸ FDI
5.		Time ⇸ FDI	0.86	Time ⇸ FDI
6.		Tax ⇸ FDI	0.52	Tax ⇸ FDI
7.	Governance Indicators	CoC⇸FDI	0.43	CoC⇸FDI
8.		Ge ⇸FDI	0.65	Ge ⇸FDI
9.		Ps ⇸FDI	0.73	Ps ⇸FDI
10.		RoL⇸FDI	0.42	RoL⇸FDI
11.		Rq ⇸FDI	0.31	Rq ⇸FDI
12.		Va ⇸FDI	0.77	Va ⇸FDI
13.	Trade	Exp⇸FDI	0.02**	Exp⟶FDI
14.		Imp ⇸ FDI	0.00*	Imp ⟶ FDI

Note: The test for equation (9) is at lag 2, equation (10) is at lag 3 and for equation (11) is at lag 8.

Thailand

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc ↛ FDI	0.46	Proc ↛ FDI
2.		Time ↛ FDI	0.25	Time ↛ FDI
3.		Cost ↛ FDI	0.86	Cost ↛ FDI
4.	Paying Taxes	Pay ↛ FDI	0.15	Pay ↛ FDI
5.		Time ↛ FDI	0.51	Time ↛ FDI
6.		Tax ↛ FDI	0.48	Tax ↛ FDI
7.	Governance Indicators	CoC ↛ FDI	0.53	CoC ↛ FDI
8.		Ge ↛ FDI	0.18	Ge ↛ FDI
9.		Ps ↛ FDI	0.24	Ps ↛ FDI
10.		RoL ↛ FDI	0.14	RoL ↛ FDI
11.		Rq ↛ FDI	0.33	Rq ↛ FDI
12.		Va ↛ FDI	0.46	Va ↛ FDI
13.	Trade	Exp ↛ FDI	0.11	Exp ↛ FDI
14.		Imp ↛ FDI	0.37	Imp ↛ FDI

Note: The test for equation (9) is at lag 2, equation (10) is at lag 3 and for equation (11) is at lag 8.

Vietnam

No	Groups	Null Hypothesis	P value	Outcome
1.	Starting up a business	Proc ↛ FDI	0.81	Proc ↛ FDI
2.		Time ↛ FDI	0.46	Time ↛ FDI
3.		Cost ↛ FDI	0.10	Cost ↛ FDI
4.	Paying Taxes	Pay ↛ FDI	-	Pay ↛ FDI
5.		Time ↛ FDI	0.75	Time ↛ FDI
6.		Tax ↛ FDI	0.16	Tax ↛ FDI
7.	Governance Indicators	CoC ↛ FDI	0.50	CoC ↛ FDI
8.		Ge ↛ FDI	0.52	Ge ↛ FDI
9.		Ps ↛ FDI	0.54	Ps ↛ FDI
10.		RoL ↛ FDI	0.59	RoL ↛ FDI
11.		Rq ↛ FDI	0.80	Rq ↛ FDI
12.		Va ↛ FDI	0.16	Va ↛ FDI
13.	Trade	Exp ↛ FDI	0.10	Exp ↛ FDI
14.		Imp ↛ FDI	0.46	Imp ↛ FDI

Note: Data for time in pay for paying taxes are singular matrix (their data for all years have similar value), it cannot be performed in EViews software. The test for equation (9) is at lag 2, equation (10) is at lag 3 and for equation (11) is at lag 7.

Appendix 4: Result of Test for Individual country in Chapter 6

Granger Causality Test

Brunei Darussalam

No	Null Hypothesis	P value	Outcome
1.	FDI ↛ EXP	0.77	FDI ↛ EXP
2.	FDI ↛ IMP	0.79	FDI ↛ IMP
3.	IMP ↛ EXP	0.29	IMP ↛ EXP
4.	GDP ↛ EXP	0.01*	GDP → EXP
5.	TSE ↛ EXP	0.33	TSE ↛ EXP
6.	TNR ↛ EXP	0.99	TNR ↛ EXP
7.	EXP ↛ IMP	0.44	EXP ↛ IMP
8.	GDP ↛ IMP	0.46	GDP ↛ IMP
9.	TSI ↛ IMP	0.03**	TSI → IMP
10.	TNR ↛ IMP	0.94	TNR ↛ IMP

Note:The test for equation (12) and (13) are at lag 2.

Cambodia

No	Null Hypothesis	P value	Outcome
1.	FDI ↛ EXP	0.00*	FDI → EXP
2.	FDI ↛ IMP	0.00*	FDI → IMP
3.	IMP ↛ EXP	0.00*	IMP → EXP
4.	GDP ↛ EXP	0.18	GDP ↛ EXP
5.	TSE ↛ EXP	0.83	TSE ↛ EXP
6.	TNR ↛ EXP	0.91	TNR ↛ EXP
7.	EXP ↛ IMP	0.00*	EXP → IMP
8.	GDP ↛ IMP	0.34	GDP ↛ IMP
9.	TSI ↛ IMP	0.94	TSI ↛ IMP
10.	TNR ↛ IMP	0.89	TNR ↛ IMP

Note:The test for equation (12) and (13) are at lag 2

Indonesia

No	Null Hypothesis	P value	Outcome
1.	FDI ⇸ EXP	0.00*	FDI ⟶ EXP
2.	FDI ⇸ IMP	0.00*	FDI ⟶ IMP
3.	IMP ⇸ EXP	0.01*	IMP ⟶ EXP
4.	GDP ⇸ EXP	0.24	GDP ⇸ EXP
5.	TSE ⇸ EXP	0.45	TSE ⇸ EXP
6.	TNR ⇸ EXP	0.68	TNR ⇸ EXP
7.	EXP ⇸ IMP	0.00*	EXP ⟶ IMP
8.	GDP ⇸ IMP	0.01*	GDP ⟶ IMP
9.	TSI ⇸ IMP	0.25	TSI ⇸ IMP
10.	TNR ⇸ IMP	0.86	TNR ⇸ IMP

Note: The test for equation (12) and (13) at lag 3.

Lao PDR

No	Null Hypothesis	P value	Outcome
1.	FDI ⇸ EXP	0.01*	FDI ⟶ EXP
2.	FDI ⇸ IMP	0.00*	FDI ⟶ IMP
3.	IMP ⇸ EXP	0.07	IMP ⇸ EXP
4.	GDP ⇸ EXP	0.48	GDP ⇸ EXP
5.	TSE ⇸ EXP	0.99	TSE ⇸ EXP
6.	TNR ⇸ EXP	0.52	TNR ⇸ EXP
7.	EXP ⇸ IMP	0.21	EXP ⇸ IMP
8.	GDP ⇸ IMP	0.70	GDP ⇸ IMP
9.	TSI ⇸ IMP	0.96	TSI ⇸ IMP
10.	TNR ⇸ IMP	0.41	TNR ⇸ IMP

Note: The test for equation (12) and (13) are at lag 3.

Malaysia

No	Null Hypothesis	P value	Outcome
1.	FDI ⇸ EXP	0.00*	FDI ⟶ EXP
2.	FDI ⇸ IMP	0.04**	FDI ⟶ IMP
3.	IMP ⇸ EXP	0.12	IMP ⇸ EXP
4.	GDP ⇸ EXP	0.19	GDP ⇸ EXP
5.	TSE ⇸ EXP	0.39	TSE ⇸ EXP
6.	TNR ⇸ EXP	0.98	TNR ⇸ EXP
7.	EXP ⇸ IMP	0.18	EXP ⇸ IMP
8.	GDP ⇸ IMP	0.13	GDP ⇸ IMP
9.	TSI ⇸ IMP	0.40	TSI ⇸ IMP
10.	TNR ⇸ IMP	0.95	TNR ⇸ IMP

Note: The test for equation (12) and (13) at lag 4.

Myanmar

No	Null Hypothesis	P value	Outcome
1.	FDI ↛ EXP	0.00*	FDI ⟶ EXP
2.	FDI ↛ IMP	0.00*	FDI ⟶ IMP
3.	IMP ↛ EXP	0.02**	IMP ⟶ EXP
4.	GDP ↛ EXP	0.49	GDP ↛ EXP
5.	TSE ↛ EXP	0.20	TSE ↛ EXP
6.	TNR ↛ EXP	0.96	TNR ↛ EXP
7.	EXP ↛ IMP	0.01*	EXP ⟶ IMP
8.	GDP ↛ IMP	0.44	GDP ↛ IMP
9.	TSI ↛ IMP	0.17	TSI ↛ IMP
10.	TNR ↛ IMP	0.34	TNR ↛ IMP

Note:The test for equation (12) and (13) are at lag 4.

Singapore

No	Null Hypothesis	P value	Outcome
1.	FDI ↛ EXP	0.01*	FDI ⟶ EXP
2.	FDI ↛ IMP	0.00*	FDI ⟶ IMP
3.	IMP ↛ EXP	0.03**	IMP ⟶ EXP
4.	GDP ↛ EXP	0.00*	GDP ⟶ EXP
5.	TSE ↛ EXP	0.82	TSE ↛ EXP
6.	TNR ↛ EXP	0.54	TNR ↛ EXP
7.	EXP ↛ IMP	0.02**	EXP ⟶ IMP
8.	GDP ↛ IMP	0.00*	GDP ⟶ IMP
9.	TSI ↛ IMP	0.73	TSI ↛ IMP
10.	TNR ↛ IMP	0.68	TNR ↛ IMP

Note: The test for equation (12) and (13) are at lag 3

Philippines

No	Null Hypothesis	P value	Outcome
1.	FDI ↛ EXP	0.35	FDI ↛ EXP
2.	FDI ↛ IMP	0.32	FDI ↛ IMP
3.	IMP ↛ EXP	0.00*	IMP ⟶ EXP
4.	GDP ↛ EXP	0.14	GDP ↛ EXP
5.	TSE ↛ EXP	0.16	TSE ↛ EXP
6.	TNR ↛ EXP	0.00*	TNR ↛ EXP
7.	EXP ↛ IMP	0.68	EXP ↛ IMP
8.	GDP ↛ IMP	0.18	GDP ↛ IMP
9.	TSI ↛ IMP	0.77	TSI ↛ IMP
10.	TNR ↛ IMP	0.00*	TNR ⟶ IMP

Note: The test for equation (12)and (13) are at lag 3.

Thailand

No	Null Hypothesis	P value	Outcome
1.	FDI ⇸ EXP	0.00*	FDI ⟶ EXP
2.	FDI ⇸ IMP	0.00*	FDI ⟶ IMP
3.	IMP ⇸ EXP	0.07	IMP ⇸ EXP
4.	GDP ⇸ EXP	0.26	GDP ⇸ EXP
5.	TSE ⇸ EXP	0.51	TSE ⇸ EXP
6.	TNR ⇸ EXP	0.01*	TNR ⟶ EXP
7.	EXP ⇸ IMP	0.07	EXP ⇸ IMP
8.	GDP ⇸ IMP	0.08	GDP ⇸ IMP
9.	TSI ⇸ IMP	0.41	TSI ⇸ IMP
10.	TNR ⇸ IMP	0.01*	TNR ⟶ IMP

Note: The test for equation (12) and (13) are at lag 4.

Vietnam

No	Null Hypothesis	P value	Outcome
1.	FDI ⇸ EXP	0.00*	FDI ⟶ EXP
2.	FDI ⇸ IMP	0.00*	FDI ⟶ IMP
3.	IMP ⇸ EXP	0.00*	IMP ⟶ EXP
4.	GDP ⇸ EXP	0.79	GDP ⇸ EXP
5.	TSE ⇸ EXP	N/A	NA
6.	TNR ⇸ EXP	0.76	TNR ⇸ EXP
7.	EXP ⇸ IMP	0.00*	EXP ⟶ IMP
8.	GDP ⇸ IMP	0.84	GDP ⇸ IMP
9.	TSI ⇸ IMP	N/A	NA
10.	TNR ⇸ IMP	0.67	TNR ⇸ IMP

Note:The test for equation (12) and (13) are at lag 4. N/A is not applicable since there is no data for TSE and TSI.

Appendix 5: Result of test for Individual countryin Chapter 7

Granger Causality Test

Indonesia

No	Null Hypothesis	P value	Outcome
1	FDI ⇸ PG	0.84	FDI ⇸ PG
2	GDP ⇸ PG	0.16	GDP ⇸ PG
3	ICTE ⇸ PG	0.73	ICTE ⇸ PG
4	ICTI ⇸ PG	0.59	ICTI ⇸ PG
5	HTE ⇸ PG	0.26	HTE ⇸ PG

Note:The test for equation (15) is at lag 2.

Malaysia

No	Null Hypothesis	P value	Outcome
1	FDI ⇸ PG	0.03**	FDI ⟶ PG
2	GDP ⇸ PG	0.16	GDP ⇸ PG
3	ICTE ⇸ PG	0.57	ICTE ⇸ PG
4	ICTI ⇸ PG	0.37	ICTI ⇸ PG
5	HTE ⇸ PG	0.17	HTE ⇸ PG

Note:The test for equation (15) is at lag 3.

Philippines

No	Null Hypothesis	P value	Outcome
1	FDI ⇸ PG	0.21	FDI ⇸ PG
2	GDP ⇸ PG	0.55	GDP ⇸ PG
3	ICTE ⇸ PG	0.51	ICTE ⇸ PG
4	ICTI ⇸ PG	0.62	ICTI ⇸ PG
5	HTE ⇸ PG	0.39	HTE ⇸ PG

Note:The test for equation (15) is at lag 3.

Singapore

No	Null Hypothesis	P value	Outcome
1	FDI ⇸ PG	0.04**	FDI ⟶ PG
2	GDP ⇸ PG	0.63	GDP ⇸ PG
3	ICTE ⇸ PG	0.88	ICTE ⇸ PG
4	ICTI ⇸ PG	0.07	ICTI ⇸ PG
5	HTE ⇸ PG	0.64	HTE ⇸ PG

Note:The test for equation (15) is at lag 1.

Thailand

No	Null Hypothesis	P value	Outcome
1	FDI ⇸ PG	0.71	FDI ⟶ PG
2	GDP ⇸ PG	0.93	GDP ⇸ PG
3	ICTE ⇸ PG	0.10	ICTE ⇸ PG
4	ICTI ⇸ PG	0.53	ICTI ⇸ PG
5	HTE ⇸ PG	0.53	HTE ⇸ PG

Note:The test for equation (15) is at lag 3.

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