FACTORS AFFECTING INWARD FOREIGN DIRECT INVESTMENT: CASE OF ASEAN COUNTRIES

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ABSTRAK

The goal of this study is to identify the determinants of foreign direct investment in members of ASEAN countries (will be known as ASEAN-9 and ASEAN-7 from 1990 to 2017 by using Pooled Least Square as the model.

The results show that market size, trade openness, infrastructure, research & development, and inflation have positive effects on inward FDI which can be considered as determinants of FDI. On the other hand, human capital and real interest rates show a negative sign.

This study also discussed the FDI trend after the global finance crisis in 2008. The results indicate that the annual trend for FDI after 2008 is positive, which means there is no big impact from the global financial crisis of 2008 on FDI inflows.

Based on the results, GDP, infrastructures, and trade openness become the important factors to attract foreign investors. Therefore, government can improve through policies, such as easing trade procedures, or improving the quantity and quality of the infrastructure.

The difference finding is found on the negative result of human capital effect on inward FDI. Thus, the quality of human resources still needs improvement because it can improve the low-tech into high-tech destination countries for FDI.

Studi ini bertujuan untuk untuk mengidentifikasi faktor-faktor penarik investasi asing langsung dari negara anggota ASEAN (disingkat ASEAN-9 dan ASEAN-7) dengan periode antara 1990 dan 2017 dengan menggunakan Pooled Least Square sebagai model.

Hasil penelitian menunjukkan bahwa ukuran pasar, keterbukaan perdagangan, infrastruktur, penelitian & pengembangan, serta menjadi faktor penarik positif atas investasi asing langsung. Namun, sumber daya manusia dan suku bunga riil menunjukkan efek tanda negative atas investasi langsung.

Hal lain yang dibahas dalam studi ini ialah terkait dengan tren FDI setelah krisis keuangan global pada tahun 2008 yang menunjukkan trend positif untuk periode setelah tahun 2008. Hal ini menandakan bahwa krisis keuangan global tahun 2008 tidak mempengaruhi aliran masuk FDI.

Berdasarkan hasil, PDB, infrastruktur, dan keterbukaan perdagangan menjadi faktor penting untuk menarik investor asing. Oleh karena itu, pemerintah dapat meningkatkan melalui kebijakan, seperti pelonggaran prosedur perdagangan, atau meningkatkan kuantitas dan kualitas infrastruktur. Sedangkan efek modal manusia pada FDI ialah negatif. Kualitas sumber daya manusia masih perlu ditingkatkan karena dapat mendukung negara dengan teknologi rendah menjadi negara tujuan FDI berteknologi tinggi.

1. INTRODUCTION

1.1. Background

The government has a crucial role in increasing its citizens' wealth. Therefore, the government provides the legal and social framework for the country, facilitate the needs of public goods and services, distributes income, and stabilizes the economy.

Governments try to expand investment in the economy to support the development of the country in order to reach economic stabilization. There are several types of investments, but the most well-known is a foreign direct investment (FDI). Global FDI has flowed increasingly dramatically at around 13% since the international capital markets were integrated in 1990.

FDI has an important role in supporting a country's development, especially for developing and emerging market countries. If FDI is allocated to productive assets and is well-managed, countries can get many benefits, such as the provision of capital, generation of employment, enhanced market access and competition, and contributions to technology transfer and good governance (Mottaleb and Kalirajan, 2010). For example, China has been successful in attracting inward FDI. Over the last 10 years, China has received 20% of the world's investment. Currently, the total inward FDI into China has been 2.5% of GDP over the last five years. Furthermore, the direct impact of increased inward FDI into China make China holds the third largest economy in the world, behind the United States of America and Japan. Moreover, FDI is an interesting type of investment because it is quite stable in terms of economic fluctuations, as has been proved during the last two financial crises: the Mexican crisis between 1994-1995 and the global financial crisis between 1997 until 1998 (Loungani & Razin, 2001). During both crises, FDI as an investment was stable. Therefore, FDI can be categorized as an excellent income source because it is a long-term investment and quite stable in terms of economic fluctuations.

Currently, according to UNCTAD (2017), FDI amounts to $1,032 billion in developed countries, $646 billion in developing countries, and $68 billion in transition economies. Around 68.5% or $443 billion has flowed into developing Asia countries and made this region the second largest FDI recipient of world investment in 2016.

All the benefits of FDI make many countries, including the Association of Southeast Asian Nations (ASEAN) countries, try to encourage more inflow of FDI as it creates a good business environment. Therefore, most of the member countries of ASEAN have also tried to encourage more FDI inflow to their countries by making improvements to their policies. (Figure-1).

Figure 1 shows that ASEAN countries are the countries which contribute to policy changes in attract more FDI inflow. Since each ASEAN country has differences (such as economic level, monetary policies, natural resources, and human capital) then there is potency that FDI determinants of them could be different from the other region.

Therefore, this study seeks to identify the determinants of FDI among ASEAN member countries. As a result, this paper divides ASEAN member countries into two groups, ASEAN-9 and ASEAN-7 which be explained in detail in the methodology. Laos PDR was not included on this study because of the data limitations.

The determinants which are of interest to this study are market size, trade openness, infrastructure, human capital, research and development (R&D), inflation, and real interest rates (RIR), since there is no consensus what the determinants of FDI truly are.

The main purpose of this study is to find the effect of the determinants which have been mentioned previously on FDI inward into ASEAN-9 and ASEAN-7 countries. Then, this study will analyze the trends for FDI before and after 2008, the start of the financial crisis.

The rest of the paper is organized as follows. Section 2 discusses the literature review. Section 3 presents the methodology, model, and data which be used in this study. The results, analysis and conclusion are in Sections 4 and 5. Then, the author presents the limitation and implication at section 6.

2. LITERATURE REVIEW

This section discusses the theoretical concepts of FDI, especially for OLI Model (OLI stands for Ownership, Location, and Internalization), followed by prior empirical studies. This section will discuss and explain each of the determinants then identify how determinants influence the inflow of FDI into ASEAN, which is a goal of this paper.

2.1. Overview of the Concept of Foreign Direct Investment (FDI)

According to the OECD benchmark definition of FDI, Foreign Direct Investment is "a category of cross-border investment made by a resident in one economy (the direct investor) with the objective of establishing a lasting interest in an enterprise (the direct investment enterprise) that is resident in an economy other than of the direct investor" (OECD, 2009). The primary goal of the direct investor is a significant effect on the management of the direct investment enterprise.

FDI plays an important role in boosting the development and economic growth of the country, in either developing or developed countries. For example: Gunby, Jin, & Reed (2017) mention that FDI has a role

for economic growth. They assert that the growth of the Chinese FDI from $430 million to $347.8 billion is causing the Chinese GDP to grow from $148 billion to $10.360 billion.

Moreover, most of the studies show that FDI affects the economic development in positive ways, such as by providing capital, raising skill levels of labor, enhancing market access and competition, and contributing to technology transfers and good governance. However, the determinants of FDI cannot be generalized. However, the determinants of FDI for developed countries may be different from the determinants of FDI in developing or emerging countries.

2.2. Theoretical Framework

OLI Model was developed by John H. Dunning in 1981 (Dunning, 1981). This theory explains the motivation behind the decision of multinational enterprises (MNE)'s to invest in one country rather than other countries. The focus of this theory is firm's behavior, which highlighted three advantages of investment: ownership-specific, location, and internationalization advantages.

First, ownership-specific advantage explains the comparative advantages which encourage MNE to join in production activity outside the home country. The greater the comparative advantages, the more investments inflow to that country. Ownership-specific advantages cover capital, technology, marketing, organization and management skills, and benefits of economies of scale. Hence, it addresses why several MNE go abroad.

Second, location-specific advantages explain specific advantage of the country that attract MNEs from other countries to move into and invest in a host country. This advantage covers the vast scope, such as availability of endowments factors (capital and labor), potential markets, wages, market size, macroeconomics conditions, infrastructure, tax rates, and other investment facilities. As a result, location-specific advantages show where the location of MNE's investment can be seen to be advantageous, or it can be said that location-advantages explain the factors influencing the choice of the destination country.

Lastly, internalization advantages represent the benefit of a country's own production compared with producing products through a partnership agreement. Investors can join in with organizing the creation, exploiting the main competencies, and controlling some economic aspects related to production activities; even making some interventions, especially in government policy. Thus, internalization advantages explain how MNEs operate in a foreign country.

Hence, this study summarizes how ownership-specific advantages and internalization advantages are focused at company level. On the other hand, locational-specific advantages focused at country level are the goal of this study.

In terms of motivation, Dunning (1994) proposed a popular taxonomy of FDI motivations. He asserts several motivations that affect foreign investors when investing abroad: market seeking, resource seeking, efficiency seeking, and strategic asset seeking.

First, based on market-seeking, the domestic market size becomes a consideration for investors seeking to invest abroad. Investors search larger local markets because they can participate not only in production activities but also in serving the domestic market directly. Moreover, market-seeking investors can reduce their transportation costs because production and marketing activities being located in a similar area. Therefore, market size becomes essential for investors with a market-seeking motivation.

Secondly, resource-seeking investors focus on extraction and natural resources processing for domestic and international markets. Therefore, the FDI movement is affected by the natural resources supply, human resources supply, and power resources, which are either limited, not available or could be more expensive in their home country. Therefore, the quantity and quality of human capital and infrastructure become a consideration for investors with a resource-seeking motivation.

Next, based on efficiency-seeking, FDI is affected by production costs (labour costs, tax incentives, lower tariffs, and physical infrastructure quality). The fewer the production costs, the more competitive the recipient countries in the global market will be. There are some factors which will be considered by investors with an efficiency-seeking motivation, for example: trade openness, infrastructure, inflation, real interest rates, and human capital. These factors make the process easier and minimise production costs.

Lastly, strategic asset-seeking explain the MNE's investment motivation is to attain and create a new technology in their home country rather than explore the existing technology in the host country. Hence, a country which is more concerned with research and development can attract foreign investors who are focused on strategic asset seeking.

2.3. Empirical Backgrounds: Determinants of Inward FDI

The factor of determining FDI have empirically investigation with a panel regression approach, comparing the effect on multiple countries. This is in line with the theory explained above when the analysis is formed on location-specific advantages. These include number of different factors, consequantly many authors have investigated FDI to understand which factors are relevant in which situation (Kumari and Sharma, 2017; Rodriguez and Pallas, 2008).

This paper focuses on the effect of determinants on FDI inflow into ASEAN, so it is important to show evidence about influences on the flow of FDI. Then, author will discuss prior empirical studies to describe the factors of FDI inflow at country rather than at company level in the next section.

There is no consensus about which determinants should be included in the study of the factors that influence the flow of FDI into a country. This literature review will take variables that were used by Mengistu and Adhikary (2011). The reason behind the choice of this study is that it is a recent study and focused on the determinants of FDI in developing countries.

Based on their research, the determinants are market size, trade openness, infrastructure, inflation, interest rates, research and development (R&D), and human capital. All variables are available and observable. They can be categorized as location-specific advantages of the destination country because location-specific advantages are concerned with the specific advantages of the country to attract MNEs from other countries to enter and invest in the host country.

2.3.1 Market Size

One of indicators of a country's economic size is the gross domestic product (GDP). It represents the total dollar value of all goods and services produced over a specific period. A country with larger market size is more attractive because market size can be used as a representation of the potential buyers of a product or service. Therefore, before they make an investment decision, investors with market-seeking motivations will consider the size and economic growth of a country.

In 2010, Mottaleb and Kalirajan, studied FDI determinants with a focus on developing countries, find that the effect of GDP on FDI inflow is a statistically significant positive. They use the annual GDP growth and GDP (which measured current US dollars).

Then, Mengistu and Adhikary (2011) found a similar result in terms of the relationship between market size and FDI in Asian countries.

However, Asiedu (2002) studied the determinants of FDI in sub-Saharan Africa (SSA). She claimed that market size influenced FDI flow insignificantly. She stated that Africa has different characteristics, which made the determinants of FDI in that region different from the others.

Lastly, Xaypanya, Rangkakulnuwat & Paweenawat (2015) observed ASEAN between 2000 and 2011. They also showed different results for this variable. They used the first differencing technique to estimate the parameters and found that market size is not statistically significant, even though the coefficient is positive. Hence, they claimed that market size does not affect inward FDI in ASEAN countries around that period.

Therefore, based on the literature review, the relationship between market size and FDI is positive, but showed different results for its level of significance.

2.3.2 Trade Openness

The Asia-Pacific Trade and Investment Report (2015) stated that "openness is essential for the growth, job vacancies, and poverty reduction of the country. Trade creates new market opportunities for local firms, stronger productivity, and innovation through competition. Therefore, some scholars have claimed how important a country's openness is to encourage foreign investors".

In developing countries, Demirhan and Masca (2008) studied 38 developing countries in the period between 2000 and 2004. They found that the degree of openness was statistically and positively significant to attract more inflow investment.

Related to the degree of openness, Xaypanya, Rangkakulnuwat & Paweenawat (2015) stated that MNEs prefer to invest in a country which is active in export activities, rather than a closed country. They also mentioned that the degree of openness has a statistically positive significant effect on inward FDI, especially for ASEAN-3 countries (Cambodia, Laos, and Vietnam).

Hence, most of the studies showed that the openness of trade gives a positive effect on FDI. This conclusion was not only found in cross-country studies, but also at regional level.

2.3.3 Infrastructure

Based on eclectic theory, locational-specific advantages focus on a country' attractiveness, which draws investors to invest (Anastassopoulos and Maroudas, 2008). One of the aspects of concern in terms of location advantages is infrastructure. It is vital because infrastructure facilitates product distribution.

Mengistu and Adhikary (2011) stated that physical structures, such as communication services, road networks, energy sources, are needed for inward FDI, especially at the Asian level. Moreover, Vogiatzoglou (2008) stated that investors not only focus on the availability of infrastructure, but also its excellent quality. He asserted that infrastructure can help the production and distribution process, which can help to minimize operating costs.

By contrast, Asiedu (2002) found the development of infrastructure does not influence the inflow of FDI into sub-Sahara Africa (SSA) countries. She uses the number of telephones per 1000 population, which focused on the availability and reliability of the facilities. She claimed that the relationship is insignificant because two main reasons: the FDI to SSA tends to be natural resource-based and measurement for infrastructure which be used in this study.

From all the explanations above, there is no single consensus for infrastructure measurement. It can vary across electrical power access, the quantity of roads or ports, and the number of telephone lines. This led to the different results for the effect of infrastructure on FDI, especially in terms of its significance level.

2.3.4 Human Capital

Currently, countries deal with high levels of technology in production activities. In 2011, Gwenhamo claimed that a high level of technology needs a human to create and to operate it. Therefore, the quality of human capital becomes extremely important to support technological innovation. Good innovation can lead more investors to come and invest in that country. Thus, the author considers human capital as an important factor to be analyzed.

In 2011, Gwenhamo, who studied the effect of human capital on FDI for the period 1964-2005 in Zimbabwe mentioned that changes in technology need to be supported by good education levels in the human resources. He also claimed having well-educated and healthy workers is important and has a positive correlation with FDI.

Furthermore, Rodríguez and Pallas (2008) conducted a study in Spain between 1993 and 2002, showing that individual factors (such as: human capital and technology) are important to attract FDI flows. They claim that FDI not only concern with quantity, but also with quality of the human resources. Quality human resources tend to lead increased levels of labor productivity per worker.

However, Cheng and Kwan (2000) found different results of the effect of education on FDI inflows when China opened the door for foreign investors. They use three measurements as indicators of workers' education levels: the percentage of the population with at least elementary school education, the percentage of the population with at least junior secondary school education, and the percentage of the population with at least senior secondary school education. All the educational variables showed insignificant result, but the measurements for junior and senior high school levels of education showed better results compared with those for elementary school alone. They concluded that foreign investors were more interested in workers who were not highly educated when China opened the door for its FDI policy.

Therefore, it can be concluded from the literature review that differences of human capital proxies, areas of observation, and observation condition show different results of the effect of human capital on FDI.

2.3.5 Research and Development (R&D)

Since globalization, most of countries must deal with global competition, which forces them to reach a higher performance level each day. Countries with good R&D tend to have many innovations that create a high level of performance from the country. R&D can help a country to attain better technology capacity and more products. Hence, the author asserted that R&D is an important aspect to lead a country to become more competitive and innovative.

In India, Singhania and Gupta (2011) studied the effect of scientific progress on inward FDI by considering the number of patent application fields as a measurement of scientific progress. Scientific progress needs to be considered because it is valuable for supporting production activities through technology. They claimed that scientific progress in a country will be followed by money growth and so the country will be able to attract more FDI inflow.

However, Hübler & Keller (2010) examined the effect of inward foreign direct investment on energy intensities in developing countries over the period 1975-2004. They used the sum of total energy use in all 20 countries divided by their GDP as the measurement of energy intensity. Even though one of the FDI advantages is technology transfer, they found a significantly negative correlation between FDI and energy intensity. The aggregate FDI inflows do not reduce according to the intensity of energy of developing countries. This means R&D development in energy sources does not influence the flow of FDI to developing countries.

In summary, the differences of proxies, time periods, and observations of countries can lead to different results in terms of the relationship between R&D and FDI.

2.3.6 Inflation Rates

Inflation rates are a sign for understanding the economic conditions and a stabilising tool for the economy of a country. When the inflation rate is high, the country can be categorized as a risky country and give a lower return on investment for investors.

Since most of foreign investors want to get a high return on investment, a country with a low inflation rate is more attractive than a country with a high inflation rate. Therefore, the author considers the inflation rate as a crucial factor in encouraging foreign investors and suggests this as a factor that should be considered.

In 2017, Kumari and Sharma found the correlation between the inflation rate and FDI is negatively significant. They also suggest that governments in developing countries should take control of inflation rates. They claim that inflation rates act as a proxy for a country's macroeconomic stability.

However, Mottaleb and Kalirajan (2010) found uncertainty in the effect of the inflation rate and FDI inflow. They use GDP deflator as the measurement. They assert that the rate of inflation is not statistically significant in all regions in developing countries.

Moreover Xaypanya, Rangkakulnuwat & Paweenawat (2015) found similar finding likes Mottaleb and Kalirajan (2010). They assert that, with first differencing, the effect of the inflation rate on the FDI in ASEAN-5 (Indonesia, Malaysia, the Phillipines, Thailand, and Singapore) is positively statistically significant. This is a different result from that found in the correlation between the inflation rate and FDI in ASEAN-3 (Cambodia, Laos, Vietnam). They mentioned that the different effect may arise because the origin of majority foreign investors in ASEAN-5 countries lies in the USA and Europe. Moreover, they mention that ASEAN-5 countries are still an attractive destination for investment, even though there was a global economic crisis during the period of the study (a situation when inflation rates are quite high).

Hence, the literature reviews of the relationship between FDI and inflation rates do not show a specific pattern. It is not influenced by the economic level (developed or developing countries), but the chronological period of the studies appears to have an impact on the observations of the relationship between FDI and inflation rates.

2.3.7 Real Interest Rates

Real interest rates are usually used as the measurement of how credible a country's economic policy is for investors. The interest rate is also used to predict the future economics of the country, including policy changes. Thus, the author has concluded that it is important to put interest rates as one of determinants of FDI in this analysis.

Amal, Thiago & Raboch (2010) assert that a higher real interest rate leads to a higher probability of policy changes. Therefore, foreign investors are more interested in a country which has a low interest rate than a country with a high interest rate. Mengistu and Adhikary (2011) also use interest rates as the one of determinants of FDI in their study of some Asian countries. The proxy for interest rates used in their study is commercial bank lending rates. They stated that higher lending rates lead to higher costs for capital and higher interest rates of return. This fact discourages foreign investors from starting their business activities in that country.

However, Kumari and Sharma (2017) mention that the existing research shows mixed results about the correlation between RIR and FDI. They used real interest rates as the proxy for interest rates in their study and the result shows that interest rates influence FDI inflow in a negatively significant manner.

The other study results may also differ due to differences in time periods of research. Mahmood (2018) claims two different findings based on the type of period studied. In the short run, interest rates affect FDI inflows negatively. He asserts that a higher interest rate could influence decisions about investment because of the cost-push effect. He also mentions that the foreign investors' decisions show their goals of reaching higher profits through minimizing their costs. When the investment profit is low, then THE FDI amount is decreased. In the long run, the correlation between FDI inflows and interest rates is positive. A higher interest rate in the long run creates a higher expected return, which then leads to a higher FDI inflow into that country.

Therefore, the authors conclude that the proxy used does not affect the findings, but the different types of data periods (short term or long term) indicate differences in the results of the relationship between interest rates and FDI.

2.3.8 Summary

This overview summarizes the main variables need to explain FDI flows on a country-level and the expectation about the direction of their potential effect. The next section will take this up and introduce what data is used to test for the effect of these factors.

3. DATA AND METHODOLOGY

3.1. Data Sources.

This study uses the panel data set which consist of 9 countries as the member of ASEAN from 1990-2017, using annual data. Data are retrieved from multiple sources and credible institutions such as the United Nations Conference on Trade and Development (United Nations Conference on Trade and Development, 2019), the World Bank Development Indicator (World Bank, 2019), and some government agencies from the selected countries because limitation data on UNCTAD and World Bank, including Singapore (Singapore's Public Data, 2019) and Cambodia (Ministry of Education, Youth and Sport of Cambodia, 2019) and Vietnam (Education Policy and Data Center, 2019). All the detail of sources can be founded at the references of this article.

The ASEAN-9 consists of Brunei Darussalam, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. Since Singapore and Brunei Darussalam, differ systematically from the other member states in terms of economic development. Consequently, the analysis is also conducted for the remaining seven countries (ASEAN-7) without Singapore and Brunei Darussalam.

This study also investigates whether the crisis (global financial crisis at 2008) had a systematic impact through year dummies with 2008 as the base year.

This study includes seven independent variables: market size (MS), trade openness (TO), infrastructure (INFRA), inflation (INFL), real interest rate (RIR), research and development (R&D), and human capital (HC). Four independent variables (MS, TO, INFRA, and

HC) are categorized as the basic specification and are the main interest of this study.

3.2. Description of Variables and Hypothesis

Dependent Variable:

This study uses the FDI inflow, measured in current USD, as the dependent variable.

Independent Variables:

Market size: This study uses a logarithm of GDP (current US$) in order to evaluate the variable at country level.

Trade Openness: The proxy of trade openness in this study use the ratio of the sum of the exports and imports divided by the GDP as a trade openness measurement.

Infrastructure: This study uses the number of fixed telephone subscriptions per 100 people as the measurement because it can be used as the indicator how effective communication between home (as foreign investors) and host (destination) countries.

Inflation Rate: One of the indicators of a country's economic regulation of the monetary sector is the inflation rate. A lower inflation rate provides a higher level of certainty for investors. A stable and strong economy is more attractive for foreign investors considering investing in a country. This study uses the consumer price index (CPI) as a measurement of the inflation rate of a country.

Real Interest Rates (RIR): Countries with low RIR values tend to be more able to attract foreign investors than countries with high RIR values. A high RIR value can prevent foreign investors from investing in the country. The reason of it because when the interest rate rises, the loan will become more expensive and lead to a few projects that the investor can run. Conversely, if interest rates fall, borrowing costs are cheaper and will increase the number of projects an investor can run.

Research and Development: Technology development attracts foreign investors to invest in the country. Developing technology requires R&D. Countries with good research and development will be able to attract FDI. One indicator of research and development is the number of patent applications submitted in one year by residents. This study uses a logarithm of the number of residents' patent applications.

Human Capital: Countries that pay attention to development of human capital should be able to get a greater return on investment. Investment in human capital is important because it helps human resources to become skilled and advanced. This study uses school enrollments at secondary (% gross) and upper secondary levels as the measurement of human capital. All expected sign of the variables is shown in Table 1.

Furthermore, to give a general overview about the data statistically, I provide summary of descriptive statistics for each variable in Table 2.

3.3. Model Specification

This study will use a panel approach. Panel data (known as longitudinal or cross-sectional time series data) are a set of data which observes the behavior of entities (states, companies, individuals, or countries) across time. Through panel data, we can find some uniqueness and variation of the data points, which also increases the level of freedom to explore the relationships between explanatory variables and dependent variable.

Gujarati (2012) states that panel data are particularly useful because they provide more informative data, more variability, consistency, and less co-linearity amongst the explanatory variables, coupled with greater efficiency and a greater degree of freedom. Moreover, panel data can control for unobserved sources of individual heterogeneity that vary across individuals but do not vary over time, omit variable bias, and can be used to detect and measure effects.

The aim of this study is to investigate the determinants of FDI inflows in ASEAN-9. For this purpose, the model which adopted from Kumari and Sharma (2017) was adopted to estimate the determinants of FDI inflow into ASEAN countries:

$$FDI\_1_{it} = \beta_1 + \beta_2\,MS\_1_{it} + \beta_3\,TO_{it} + \beta_4\,INFRA_{it} + \beta_5\,INFL_{it} + \beta_6\,RIR_{it} + \beta_7\,R\&D\_1_{it} + \beta_8\,HC_{it} + \delta_1\,YDV_t + \mu_{it}$$

Where β_1, β_2,...,β_8 and δ_1 are the coefficients of scalar. The subscript i denotes individual countries and subscript t denotes time of data periods. YDV are the year dummy variables.

4. Empirical Results

The analysis of this study consists of several results. However, in this paper, I will only briefly discuss the result of regression from all variables which can be found in Table 3[a].

4.1. Market Size

This study uses logarithm of GDP as a measurement. Market size is positive and significant at 1 percent level for both ASEAN-9 and ASEAN-7. The coefficients are 0.5675 and 0.3733 for ASEAN-9 and ASEAN-7. It means that one percent increase in GDP leads to an increase of 0.5675 percent in FDI inflow in ASEAN-9 and one percent increase in GDP leads to an increase in 0.3733 percent in FDI inflow in ASEAN-7. For example, if Singapore had an FDI inflow of US$100 billion in 2017, then based on the regression result above an increase 1 percent of GDP will increase 0.5675 percent FDI inflow which is around US$ 5,675 million (0.5675% * US$100

billion) in 2018. In my view, based on the ASEAN-9 results, this variable is important given the magnitude of the coefficient. A one percent increase leads to more than 0,5 percent increase of FDI which means an improvement of a country's market size encourages substantially more FDI inflow into the country.

The findings are in line with the study of literature reviews (Mottaleb and Kalirajan, 2010; Mengistu and Adhikary, 2011; Kumari and Sharma,2017). It suggests that a higher country's GDP tends to raise the inflow of FDI into ASEAN countries.

4.2. Trade Openness

The coefficient of effect trade openness to FDI in ASEAN-9 shows positive significant effect at 1 percent level. The coefficient magnitude is 0.0053 which means a 1 percent increase in degree of openness leads to an increase of 0.0053 percent in FDI inflow into ASEAN-9. Then, the positive effect was also found the effect of trade openness into FDI in ASEAN-7 but not significant. Therefore, an improvement of a country's trade openness affects FDI inflows into a country in a positive way. Even if the effect is not very large, trade openness is a variable which needs to be of concern for policy makers because it directly affects FDI inflow into a country.

The result signs are consistent with the other empirical studies which support positive relationship between trade openness and FDI in the literature review (Asiedu, 2002; Demirhan and Masca, 2008; Vogiatzoglou, 2008; Mengistu and Adhikary, 2011).

The result shows that these countries have a higher degree of openness which might attract foreign investors to be more willing to invest. The intuition behind that is a country which more open will easier get the component of their production. Hence, the process of production is more effective then rises productivity of country. When productivity increases, a country economics growth getting increase and encourage more investment to come. Moreover, a country which has higher degree of openness will increase competition which encourage people to be more creative and give lower prices and more choices for consumers and firms. All benefits from trade liberalization will encourage more investor to invest in the destination country.

4.3. Infrastructure

In this study, infrastructure, which is measured by the number of telephone lines per 100 people, is positive and significant statistically in both ASEAN-9 and ASEAN-7 at 1 percent level. The coefficients are 0.0349 and 0.0472. Infrastructure is an important determinant for FDI inflow. However, based on the magnitude of the coefficient, a 1 percent increase leads to less than a 0.05 percent increase. This means that an improvement of country's infrastructure leads to an increase of FDI inflow, but the effect is not very big.

The result is in line with several studies in the literature review (Asiedu, 2002; Mengistu and Adhikary, 2011) for the effect of infrastructure on FDI. If we compare with the other study such as: the effect of infrastructure in sub-Sahara Africa. The result showed that the effect of the number of telephone line on inward FDI in sub-Sahara Africa is higher compare to Asian countries. It was reflected from the coefficient of effect of infrastructure on FDI in sub-Sahara Africa (0.837) is higher than in Asian Countries, about 0.0538 (Mengistu and Adhikary, 2011).

4.4. Human Capital

Human capital is the only variable which shows a different sign than expected. This study uses secondary (% gross) and upper secondary levels. In ASEAN-9, the coefficient is -2.291 with significance at 1 percent level. It means an increase 1 percent of human capital tend to decrease the FDI inflow by 2.291 percent. Aligned with previous result, in ASEAN-7, the coefficient magnitude was −2.044 at 1 percent level which means that an increase 1 percent of human capital tend to decrease the FDI inflow by 2.044 percent. The increase of inflation leads to a decrease of FDI inflows and similarly, human capital changes have a strong, negative impact on FDI. Consequently, human capital is an important factor to impact foreign investment, though the direction of the impact is contrary to the normal expectation.

The intuition behind those result is type of FDI which came into ASEAN countries might be different and effect on educational level requirement. Moreover, the high educated workers generally should be paid by higher salaries compare to low educated workers. A higher salary means higher cost of production which can reduce the return of investment (ROI) for the investors. A low ROI will make foreign investors less interest and might reduce their investments (FDI) into ASEAN countries.

4.5. R&D

R&D coefficients were 0.1167 and 0.1171 for ASEAN-9 and ASEAN-7. From the coefficients, we can imply that there is positive effect from R&D to FDI. However, both coefficients show insignificant level for both categories.

Even tough statistically, R&D shows insignificant effect to FDI, in my opinion, R&D is an important factor to attract more foreign investors to invest. A country which facilitate development of R&D and protection of intellectual property will encourage more creativity from citizens and attract more FDI inflows.

There are potential reasons behind the insignificant of the effect of R&D on FDI inflow in ASEAN. First, the quality data is not good. Second, the number of patents as the measurement of R&D might be so low, therefore it does not have a noticeable effect yet.

4.6. Inflation

Then, based on Table 3, the inflation coefficient is 0.049 and insignificant for ASEAN-9. On the other hand, after excluding Singapore and Brunei Darussalam, this study finds that negative effect of inflation on FDI inflows. The coefficient is -.0152 and statistically significant for ASEAN 7. For example: if total inflow of investment was $100 billion in current year and inflation increased by 1% then the investment will decrease $15 million.

It means that the higher inflation of country, the lower FDI inflows into the country. A higher inflation will increase price of goods and services which will impact cost of production. Because of the increase of input prices, cost of raw material, and labour wages will lead to lower business profits and discourage foreign investors to invest in that country.

Therefore, in my opinion, inflation is an important factor that needs to be considered to attract foreign investors because the negative effect of inflation on FDI.

4.7. Real Interest Rates (RIR)

Real interest rates variable shows a negative significant effect for both groups of countries. The coefficients are -0.0564 and -0.0537 for ASEAN-9 and ASEAN 7. Both coefficients suggest that a 1 percent increase in RIR is associated with a decrease of 0.0564 percent in FDI inflow into ASEAN-9 and 0.0537 percent in FDI inflow into ASEAN-7.

RIR is reflection of the real cost of funds to the borrower and become the real income for the lender. Based on literature review of this study, some of studies state a positive effect of RIR (Mahmood, 2008; Kumari and Sharma, 2017). However, some studies also mention a negative effect of RIR (Mengistu and Adhikary, 2011; Kumari and Sharma, 2017).

Based on the results above, the coefficient of RIR here shows a consistent negative sign. When the real interest rate is low, more people will take loans which increase the demand of goods and services. An increase of goods and services demand will encourage more foreign investors to come and increase the investment spending on the destination country. In summary, RIR is an important factor to attract foreign investors because the negative effect of RIR on FDI.

4.8. Time Trends

Based on table 2, after 2010, we can find the same pattern that holds the time trend for both regressions. For the period between 1990 and 2000, there were different pattern between ASEAN-9 and ASEAN-7. For ASEAN-9 of before 2000, the FDI trend was positive and changing into a negative trend between 2001 and 2004. On the other hand, for ASEAN-7, the FDI pattern is not clear between 1990 and 2004. The annual FDI trend in ASEAN-9 showed a positive trend

after 2005 to 2017 and the magnitude increased after 2006 but decreased dramatically at 2016. Furthermore, we can see a consistent trend for annual FDI for both groups in all variables after 2005. Therefore, a global finance crisis in 2008 did not give a big impact for FDI inflows into ASEAN countries after crisis.

5. Conclusions

This paper identifies the determinants of FDI inflows to ASEAN countries based on OLI model, as described by Dunning (1988). There are three advantages included in OLI model, and one of them is locational advantages. It explains the factors influencing the choice of the destination country which is goal of this study. Moreover, this study also identifies the trends for FDI from 1990 to 2017, with 2008 as the base year since one of global crises occurred in 2008. The results are presented in two big groups: ASEAN-9 and ASEAN-7 countries. Then, after performing the Hausman test and the Breusch Pagan multiplier test, this study has data limitations. The model used is the Pooled Least Square (PLS).

Based on the regression results for ASEAN-9 countries, I find that market size, trade openness, infrastructure, and research and development all have a positive association with FDI inflows. However, the different results show opposite signs from the estimation signs for the effect of inflation rate and human capital into FDI inflows.

Based on the sign and significance levels of market size, trade openness, and infrastructure on FDI, I argue that those determinants indicate that the GDP, ease of trading procedure, and communication facilities are important to encourage more FDI inflows into ASEAN-9 countries. With lower human capital and a higher inflation rate, foreign investors were still attracted to invest more in this region during the period of the study. This could be explained by the fact that foreign investors choose ASEAN-9 as recipient countries because of the lower costs of production compared with other regions.

Similar results are also found for ASEAN-7 countries, except for trade openness, which is insignificant. In terms of ASEAN-7 countries, there are some policies which should be considered, especially for trade openness. In my opinion, some of the ASEAN-7 countries, especially Cambodia, Myanmar, and Vietnam, still have few agreements to support trade liberalization at international level. Therefore, the governments should gradually build more bilateral agreements with the other countries and make regulations which support a friendly international trade environment.

In this study, for ASEAN-9 countries, the inflation rate was found to have a positive effect on FDI inflows. From the literature review in this study, a negative

effect can be seen from inflation into FDI. Moreover, I found that there is a negative association between human capital and FDI inflows. Even though there are some studies (with different measurements) which are in line with these results, most of the studies show a positive effect for the association between human capital and FDI.

6. Limitation and Implication

This study also has some limitations. First, the indicator for measurements of variables, such as: the total secondary level of education (human capital), the number of patents (R&D), the inflation rate, and the real interest rate. For the next studies, the writer suggests to choose difference proxies for some variables, especially for market size, human capital, and inflation. The issue of missing data is found in some countries in this study, such as: Brunei Darussalam, Cambodia, and Vietnam.

Moreover, the future studies can consider with use difference period of analysis because there some missing data for some countries in this region especially for year before 2000.

The writer also suggests for future studies to make comparison of FDI determinants either between developing and developed countries of ASEAN countries or in individual countries of the members of ASEAN. Furthermore, future studies could try to identify which is the most important FDI determinant for attracting FDI at ASEAN level.

Moreover, any future studies could also observe the determinants of FDI into ASEAN countries not only in terms of economic factors, but also for other factors, such as corruption and political risk

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ILUSTRATION TABLES

Table 1. Variable Names with Expected Sign		
Variables Names	Symbol	Expected Sign
Market Size	MS	+
Trade Openness	TO	+
Infrastructure	INFRA	+
Inflation	INFL	-
Real Interest Rates	RIR	+/-
Research and Development	R&D	+
Human Capital	HC	+

Table 2. Summary of Descriptive Statistic				
Variable Name	Mean	Std. Dev.	Min	Max
FDI (in million)	6,170	1,1800	-4,550	77,500
FDI_1[1]	21.36	1.87	14.60	25.07
MS (in billion)	140	181	1,7	1,020
MS_1[2]	24.76	1.56	21.25	27.64
TO	130.69	95.18	0.16	441.06
INFRA	11.41	12.66	.034	49.72
HC	0.69	0.25	0.087	1.20
INFL	6.04	8.59	-2.31	58.45
RIR	3.59	6.96	-24.6	35.42
R&D	377.9343	428.0653	0	2271
R&D_1[3]	5.479	1.322	0	7.727

FDI_1 as the log of FDI; [2] MS_1 as the log of MS; [3] R&D_1 as the log of (R&D)

	Table 3 Regression Result of PLS Estimation-All Variables			
	ASEAN-9		ASEAN-7	
Variables	Coefficient	SE	Coefficient	SE
Market Size	.5675***	.1000	.3733***	.1320
Trade Openness	.0053***	.0012	.0013	.0027
Infrastructure	.0349***	.0104	.0472***	.0223
Human Capital	-2.291***	.4019	-2.044***	.5246
R&D	.1167	.0950	.1171	.1391
Inflation	.0049	.0200	-.0152	.0247
Real Interest Rates	-.0564***	.0201	-.0537*	.0317
Intercept	7.2891	2.3619	12.864	3.4442
R-squared		0.8391		0.7462
Adj R-Squared		0.7889		0.6423
Year				
1990	0.269	.2894	-0.182	.3691
1991	0.230	.3737	-0.122	.4704
1992	0.448	.3796	0.036	.4917
1993	0.186	.4024	-0.203	.4210
1994	0.115	.3673	-0.216	.4258
1995	0.347	.2816	0.055	.3892
1996	0.608	.3059	0.313	.4216
1997	0.619	.2519	0.250	.3584
1998	0.223	.3410	-0.012	.4041
1999	0.358	.2737	-0.156	.3610
2000	0.049	.3563	-0.257	.4236
2001	-0.444	.5871	-1.086	.7133
2002	-0.642	.5666	-0.956	.6526
2003	-0.257	.2997	-0.821**	.3413
2004	-0.171	.2446	-0.522*	.3070
2005	0.050	.3208	-0.157	.3779
2006	0.368	.2414	0.113	.2654
2007	0.644***	.2260	0.405	.2588
2009	0.178	.3056	-0.167	.3712
2010	0.712***	.2728	0.356	.2985
2011	0.281	.4404	0.089	.5305
2012	0.840***	.2401	0.567*	.3002
2013	1.060***	.2614	0.812*	.3618
2014	1.116***	.2814	0.909***	.3337
2015	1.265***	.3062	1.062***	.3948
2016	0.942***	.4002	0.411	.3964
2017	1.378***	.4553	1.097**	.4859

Nb: [a] For futher information, please contact at gabriela.grace88@gmail.com

ILUSTRATION FIGURE

Figure.1 Changes in investment policy in Asia-Pacific Countries-2016
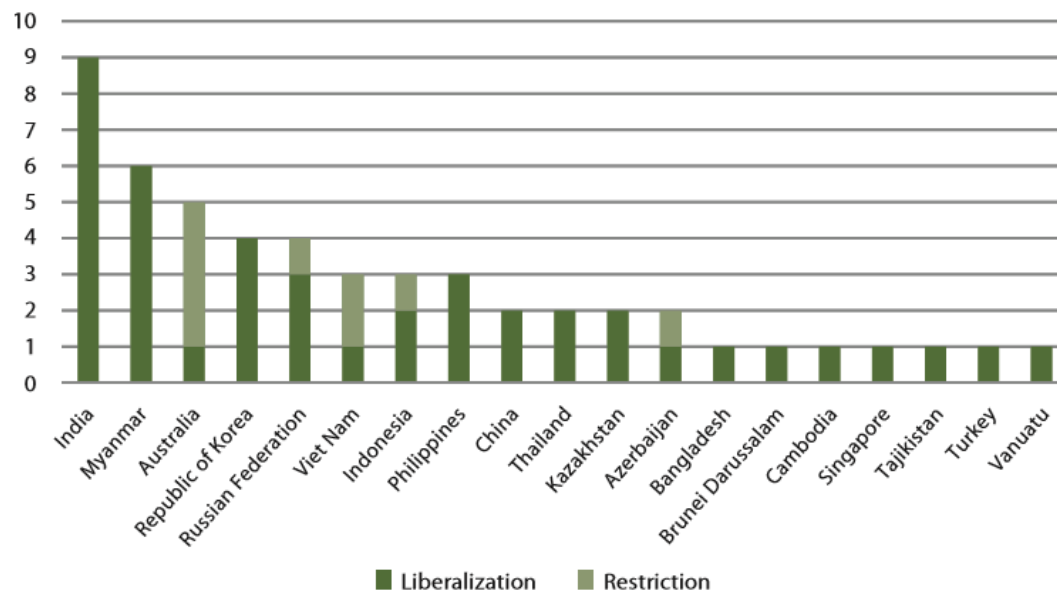
Sources: ESCAP calculations based on the UNCTAD Investment Policy Monitor database (accessed June 2019)