DETERMINANTS OF FOREIGN DIRECT INVESTMENT INFLOWS INTO ASEAN COUNTRIES: A GLS ESTIMATION TECHNIQUE APPROACH

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Abstract

In this article, a strongly balanced panel data during 1997-2014 of 10 ASEAN countries and the Generalized Least Squares (GLS) estimation technique have been employed. This is to identify the factors inducing foreign direct investment (FDI) inflows into the area. The estimated results vary across the groups of country members. For the ASEAN 10, the deterministic factors of FDI are the Real GDP Growth, low Inflation, high Trade Openness Ratio, the Improvement of Infrastructure, and the Political Stability. This is consistent with the theoretical model of the determinant of FDI. Unexpectedly, the Exchange Rate Regime and the Labor Productivity have had a negative impact on FDI flows to the region. In addition, the Asian financial crisis 1997 has had a great negative impact on FDI inflows into the area. For the ASEAN 6, the attractive factors of FDI inflows are low Inflation and the Improvement of Infrastructure. The Asian financial crisis 1997 has also had a great negative impact on FDI flows to ASEAN 6 countries. For the ASEAN 4, the Improvement of Infrastructure and the Labor Productivity have strongly induced FDI flows. However, the Exchange Rate Regime has not encouraged FDI flows to the region like the case of ASEAN 6. And, the Asian financial crisis 1997 has not reduced the FDI flows to the four.

Keywords: ASEAN, determinants, FDI inflows, GLS estimation technique

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1. Introduction

The International Monetary Fund (IMF) defines foreign direct investment (FDI) as "cross border investment" in which an investor that is "resident in one country has control or a significant degree of influence on the management of an enterprise that is resident in another economy".[4] Foreign direct investment is "a form of international capital flows".[5] Nowadays, the issue of FDI catches the attention of both national and international levels. This is probably due to its growing economic importance for both home countries and host countries. FDI has innumerable effects on the income, production, prices, employment, technological spillover, economic growth, managerial skills, development, and general welfare of the recipient country. FDI generates higher profits and reduces risks for investors of home countries. In turn, the coming back of profits to home countries can improve the current account of the national balance of payment. FDI is one of the most significant factors leading to globalization. The enormous increase in FDI flows across countries recently is one of the clearest signs of the globalization of the world economy (UNCTAD, 2006).

ASEAN (the Association of Southeast Asian Nations) was founded on 8 August 1967 in Thailand with the sign of the Declaration, namely Indonesia, Malaysia, Philippines, Singapore and Thailand. Brunei Darussalam, then, joined on 7 January 1984, Viet Nam on 28 July 1995, Laos PDR and Myanmar on 23 July 1997, and Cambodia on 30 April 1999. At the end of 2015, leaders of ASEAN countries declared the establishment of ASEAN Economic Community (ACE). The establishment of the ASEAN Economic Community in 2015 is a major milestone in the regional economic integration agenda in ASEAN, offering opportunities in the form of a huge market of US$2.6 trillion and over 640 million people. In 2014, AEC was collectively the third largest economy in Asia and the seventh largest in the world.[6] Among East Asian countries, in the past decades, ASEAN countries has becoming attractive places for overseas investors with its unique competitive advantages, such as a cheap labour markets, stably political-economic environment, relatively high economic growth rates, rapidly expanding middle-class consumers, and strong locational complementarity. Thus, many TNCs increased their investments and expanded their operations in the region. Rising intra-ASEAN investments and further growth in cross-border mergers and acquisitions (M&As) in the region played an important role. Moreover, the improved policy environment, strong macroeconomic fundamentals, regional market prospects and growing positive investor sentiment towards an integrating ASEAN also contributed to the recent surge in inflows.[7] At the end of 2010, the total stock of FDI is mainly concentrated in countries ASEAN6[8] with a total value of 945.9 billion U.S. dollars, representing about 97.17% of total FDI in ASEAN. In particular,

[4] See IMF, *Balance of Payments and International Investment Position Manual 100* (6th Edition 2009). Accessed on 15 Nov. 2015, website: http://www.law.cornell.edu/wex/foreign_direct_investment.

[5] See Razin, A. and E. Sadka, 2007. *Foreign Direct Investment: An analysis of aggregate flows*. Princeton, Princeton University Press: p. 8.

[6] Accessed on 27 Feb. 2016, website: http://www.asean.org/asean-economic-community/.

[7] See ASEAN Investment Report 2013-2014, FDI Development and Regional Value Chains

[8] ASEAN6 includes Singapore, Thailand, Malaysia, Indonesia, Vietnam, and Philippines.

Singapore has attracted 461.4 billion U.S. dollars, which represents approximately 47.4% of the total FDI in ASEAN; Thailand, 14.1%; Malaysia 10.4%; Indonesia, 15.8%; Vietnam, 6.7%; and Philippines, 2.7%. The rest is only 2.83% of total FDI capital in ASEAN (Hoang and Bui, 2015). In the duration of 2011-15 ASEAN attracted about 566 billion U.S. dollars of FDI capital. FDI capital comes mainly from major partners such as China, India, Japan, Korea, the U.K., France, The U.S.A, and intra ASEAN.[9]

Host ASEAN countries usually acquire capital and technology from the multinational enterprises (MNEs) or transnational corporations (TNCs) such as AIG, Coca-Cola, Pepsi Cola, Conoco, Intel, Ford, Hilton, GE, P&G, Unocal, Bridgestone, Honda, Mazda, Mitsubishi, Nissan, Sony, Suzuki, Toyota, Hyundai, Sam Sung, LG, Daewoo, Formosa, HSBC, ANZ, City Bank, Siemens, BP, etc. FDI has largely contributed to tremendous growth performance of most ASEAN countries as a major source of capital and technological know-how. FDI has also established trade linkages between foreign subsidiaries, local suppliers and parent companies by means of an efficient international division of labour. Moreover, FDI has had technological spillover effect to domestic firms. These explain why attracting FDI is an important issue of concern to many ASEAN countries in the process of industrialisation and modernisation for escaping from the so-called the "middle-income trap".[10]

The main purpose of this article is to investigate the best determinants of FDI inflows into 10 ASEAN countries using a strongly balanced panel data during 1997-2014 offered by the World Bank and the GLS estimation technique. The remainder of this article is constructed as followings. Section 2 gives a brief literature review on determinants of FDI recently. Section 3 specifies the economic model and decrypts the dataset. Section 4 gives an analysis of empirical results. Final section epitomizes concluding remarks and proposes some recommendations.

2. A Brief Literature Review on Determinants of Foreign Direct Investment

A considerable number of researches done to identify the best determinants of FDI but no consensus have emerged. There are several studies contributing to the economic literature on the determinants of FDI. Table 1 below presents a brief survey on the studies about the determinants of FDI recently.

[9] See ASEAN Investment Report 2016, Foreign Direct Investment and MSME

[10] For the ASEAN 4, including Cambodia, Laos, Myanmar, Vietnam (CLMV), these countries are in the Stage 1-Agglomeration. It means they mostly produce products under the guidance of foreign investors. The value added is quite low. Indonesia, Malaysia, Philippines, Thailand are in the Stage 2-Technplogy absorption. Those countries have supporting industries, but are still under foreign guidance in manufacturing. Brunei and Singapore are exceptional cases. They have comparative advantages in service sectors and high GDP per capita. CLMV countries do not have supporting/subsidy industries. Therefore, it will take at least 15 to 20 years to have those to move to the Stage 2 if they have good industrial policy. For the cases of Indonesia, Malaysia, Philippines, Thailand, these countries have to try their bests to upgrade modern technology and produce internationally competitive products, promote the economic growth and improve the GDP per capita. Through which, they can jump/move to the Stage 3-Creativity and escape from the so-called the "middle-income trap" like what Japan, South Korea and Taiwan did in the past decades. However, this is not sure for all if they do not have their right choices and good industrial policy in the current free trade time.

Table 1. Some Notable Studies on Determinants of FDI

Author, year	Methodology	Results
Kevin Williams (2015)	Data of 68 developing countries (1975-05); OLS, FE, RE estimates	The stock of infrastructure attracts FDI to LAC and constraints on the executive and high debt discourage FDI to non-LAC.
Hong Hiep Hoang and Duc Hung Bui (2015)	Panel data (1991-09) of Six ASEAN countries: Vietnam, Indonesia, Malaysia, Philippines, Singapore, and Thailand;	Market size, Trade openness, Quality infrastructure, Human capital, Labour productivity: +; Exchange rate policy, Real interest rate, Political risk and Corruption also affect FDI inflows; Cheap labour does not help to attract FDI.
Dauti, Bardhyl (2015)	Data for 5-SEEC and 10 New member states of the EU; Gravity model	Control corruption, Political stability, FDI agreement, WTO membership, Transition progress: + to the Southeast European region and new EU states
Bruce A. Blonigen and Jeremy Piger (2014)	Data of OECD and some non OECD countries; Linear regression model (Bayesian Model Averaging)	Cultural distance factors, Relative labour endowments, Trade agreements: +; There is little support for Multilateral trade openness, Host-country business costs, Host-country infrastructure and Host-country institutions.
Ullah, Muhammad Shariat and Inaba, Kazuo (2014)	Panel data for ASEAN and AFTA member countries (2001-10); Gravity model	Bilateral Investment Agreement, Bilateral Trade Agreement, Regional Trade Agreement promote FDI
Hem C. Basnet and Kamal P. Upadhyaya (2014)	Cross-sectional data of 35 middle-income countries (1980-10), Panel of time-series; OLS estimates	No significance to remittances in explaining cross-country variation in FDI
Hossain, M. Sharif and Mitra, Rajarshi (2013)	Panel data for 35 African countries (1974-09); Granger causality test, Johansen co-integration test	Domestic investment, External debt, Government spending: + in short-run; Domestic investment and Trade openness: + in long-run
Yutaka Kurihara (2012)	Panel data of ASEAN countries and U.S. (2002-11)	Economic growth, Domestic prices in ASEAN and U.S. prices promote FDI into ASEAN
Ozkan-Gunay, E. Nur and Bogazici U (2011)	Panel data Model for EU-15 and EU-12+2 (1998-08)	Energy intensity: -; Investment in human resources, Innovation, R&D, Infrastructure, Gross capital formation, Domestic market size: +
Alfredo Jiménez (2011)	Dynamic Panel Data (1999-06) of north African countries and new European Union member states; GMM	Good economic perspectives, Human capital, Development of infrastructures, Greater levels of political risk: +
Chee-Keong Choong and Siew-Yong Lam (2010)	Time series (1970-06) in Malaysia; Linear regression model	GDP of Malaysia and China, Literacy rate, and Openness level promote FDI in both the long-and short-run
Mohamed Amal, Bruno Thiago Tomio and Henrique Raboch (2010)	Panel data model of economic and institutional determinants of FDI in eight Latin American countries (1996-08)	Economic stability, Growth, Trade openness, Improvement in the institutional and political environment are determinants of FDI

Author, year	Methodology	Results
Narayanamurthy Vijayakumar, Perumal Sridharan & Kode Chandra Sekhara Rao (2010)	Panel data (1975-07) in BRICS countries; FE, RE	Market size, Labour cost, Infrastructure, Currency value and Gross Capital formation are the potential determinants of FDI
Piyaphan Changwatchai (2010)	Gravity model; Data for five ASEAN countries (1999-03): Indonesia, Malaysia, Philippines, Thailand and Vietnam	GDP of the host and home countries, GDP per capita of the host and home countries, Industry imports from home country, Industry exports to home country, Industry tariff rates, and Industry output levels all have a positive effect on FDI. Distance, Wage and Education have a negative effect on FDI.
Masron and Abdullah (2010)	Panel data (1996-08) for ASEAN countries	Improving the institutional quality, Market size, Human capital, Opening of the economy: +
Oladipo, Olajide S. (2010)	Data of Nigeria (1970-05); Economic Model	Market size, Exports, Human capital, Infrastructure, Macroeconomic Stability: +
Christian Bellak, Markus Leibrecht and Joze P. Damijan (2009)	Augmented gravity model, Panel data (1995-04)	Infrastructure Endowment and Corporate Income Taxes are determinants of FDI
Ismail (2009)	Gravity model (1995-03) of 18 source countries and 9 ASEAN countries except Cambodia	Market size of host and source country, shorter the Distance, common in Language, Border, extended Market relative to distance, lower Inflation rate, higher in Exchange rate, good Government budget, good Telecommunication and Infrastructure, Transparency and Trade policy: +
Recep Kok and Bernur Acikgoz Ersoy (2009)	Panel data of 24 developing countries during (1983-05) for FMOLS and (1976-05) for cross-section SUR.	Total debt service/GDP and Inflation: -; Communication variable: +
Birsan, Maria and Buiga, Anuta (2009)	Data of Romania; Method of factors analyses; Leaner regression model	FDI determinants are: Market size, Reform, Business liberalization, Labour cost
Isabel Faeth (2009)	Presents nine theoretical models: early studies of determinants of FDI (1), determinants of FDI based on the neoclassical trade theory (2), ownership advantages (3), aggregate variables (4), the ownership, location and internalization advantage framework (5), horizontal and vertical FDI models (6), the knowledge capital model (7), diversified FDI and risk diversification models (8) and policy variables (9)	FDI should be explained more broadly by a combination of factors from a variety of theoretical models such as ownership advantages or agglomeration economics, market size and characteristics, cost factors, transport costs, protection, risk factors and policy variables.

Author, year	Methodology	Results
Xose´ A. Rodrı´guez and Julio Pallas (2008)	Panel data (1993-02); GLS (cross-section weights)	The differential between labour productivity and the cost of labour has been an important determinant of FDI in Spain during 1993-2002. Factors related to demand, the evolution of human capital, the export potential of the sectors and certain macroeconomic determinants that measure the differential between Spain and the European Union average, also play an important role in attracting FDI.
Dunning and Lundan (2008)	Comprehensive theoretical framework relatively of the determinants of FDI	Market-seeking; Resource-seeking; Efficiency-seeking; Strategic asset-seeking are factors inducing FDI inflows
Ramjee Singh et al. (2008)	Cross sectional data of Small developing Nations	Tourism, Infrastructure, Economic growth, Openness: +
Mina, Wasseem (2007)	Panel data (1980-02); Panel data Model	Oil potential, Oil price, Oil utilization, Human capital: -; Oil production, Institutional quality, Trade openness, Infrastructure: +
Klimis Vogiatzoglou (2007)	Panel-gravity model for South and East Asia (1994-03)	Location factors (Host-market size), Trade, Vertical specialization, and International integration are related location determinants.
Kimino, Satomi; Saal, David S.; Driffield, Nigel (2007)	Pooled panel data (1989-02) of 17 countries; FE, RE	Trade flows, Political and economic stability are determinants of FDI; Exchange rates, Relative borrowing costs, and Labour costs are sensitive to the econometric specification and estimation approach.
Kobrin, Stephen J. (2005)	Data of 116 developing countries (1992-01); Cross-sectional regression	Country Size, Human Resource, Trade Openness are FDI determinants
Hubert P. Janicki and Phanindra V. Wunnava (2004)	Cross-section data of bilateral FDI between the members of the EU and 8 central and east European candidate (CEEC) economies in transition in 1997; Regression (WLS)	Size of the host economy, Host country risk, Labour costs in host country, and Openness to trade: +
Davoodi, Parviz and Shahmoradi, Akbar (2004)	Panel data (1990-02) for 46 developed and developing countries; the Hausman-Taylor, FE, RE estimates, Hadri (2000) test	FDI determinants are: Laws and Regulation, Motivating Private investment, Increasing R&D, Enhancing Infrastructure, Skilled and Productive Labour Force, Political Stability.
Marios B. Obwona (2001)	Time-series data (1975-91) of Uganda; A two-stage least squares (2SLS) estimation	Market size: +; GDP growth: +; Inflation: -; Trade account balance: -
Dunning (1981, 1988)	OLI paradigm	Ownership-specific advantages (“O”); Location-specific advantages (“L”); Internalization (“I”) are factors promoting FDI

Source: The author’ compilation

Generally, the above mentioned researches are investigated for developing countries, transition economies as well as for the groups like the European Union, the Latin American countries (LAC), the Southeast Asia or the BRICS countries using the gravity model, Poisson regression model, time series, panel data with the various use of the OLS, FE, RE, GMM, GLS, WLS estimates.[11] In all the above, presently available research literature pertaining to ASEAN is still scared with a few notable exceptions such as Hoang and Bui (2015), Ullah and Inaba (2014), Kurihara (2012), Changwatchai (2010), Masron and Abdullah (2010), Ismail (2009) and usually not included all 10 members in a longer duration of time with better estimation techniques. In line with Dunning's eclectic theory of FDI, works may be highlighted that analyze the specific advantages of localization in the host country based on the economic, institutional, and political characteristics that make it more attractive than other alternatives (Dunning 1981, 1988, 2008). In this context, to provide the originality and significance of the research, this article intends to identify the best determinants of FDI inflows into the ASEAN 10, the ASEAN 6 (Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand) and the ASEAN 4 (Cambodia, Laos, Myanmar, and Vietnam) by employing a long term and updated panel data with superior estimation techniques. The author breaks them down into the three groups as for the two main reasons. The first is to observe the differences between the ten ASEAN members as a whole and the ASEAN 6, and ASEAN 4. The second is to divide them into two groups with similar characteristics of attracting FDI capital. This is to reduce the bias of the estimated results. Then, the author will make a comparison between the three groups. The author hopes to contribute to the existing literature on the determinants of FDI inflows into ASEAN countries in terms of testable implication from multiple regression models using the Generalized Least Squares (GLS) estimation technique. This will also have an important implication for the design of supporting policy for further attracting high quality FDI projects in the future. The next section will specify economic model and decrypt the dataset.

3. Specification of Economic Model and Decrypting the Dataset

According to the discussion of the literature review above, this study employs a set of potential determinant variables that may influence the FDI flows into ASEAN countries as followings:

Growth prospects

A host country, which has stable macroeconomic condition with high and sustained growth rate, will receive more FDI flows than a more volatile economy. The proxies measuring growth rate are GDP growth rates, Industrial production index, Interest rates, etc (see: Duran, 1999; Dassgupta and Ratha, 2000). In this paper, the authors employ the growth rates of real GDP of ASEAN countries.

Inflation rate

Inflation rate reflects the macroeconomic instability. The instability of macroeconomics may increase the uncertainty of the investment environment, and reduce the level

[11] For further empirical studies on determinants of FDI, please see Kok and Versoy (2009).

of confidence of overseas investors for the host countries. Therefore, low inflation rate could attract more FDI flows and vice versa. The inflation rate has been found negatively significant impact on FDI inflows in the studies of Asiedu (2006) and Kinda (2008) etc. In this paper, the authors use the inflation rate, GDP deflator, of ASEAN countries to reflect the macroeconomic instability that may affect FDI flows to the area.

Openness

Trade openness is considered to be a key determinant of FDI since it presents the level of economic integration in the host countries with the world economy. The high trade openness ratio means that the trade barriers for goods and services of the host country have been gradually reduced/removed. This will create the opportunities for foreign investors to exploit the comparative advantage of the host countries to re-export to the country of origin as well as to the rest of the world (vertical FDI) (Hoang and Bui, 2015). Moreover, according to Narayanamurthy et al. (2010) much of FDI is export oriented and may also require the import of complementary, intermediate and capital goods. In either case, volume of trade is enhanced and thus trade openness is generally expected to be a positive and significant determinant of FDI (see more in Lankes and Venables, 1996; Holland and Pain, 1998; Asiedu, 2002; Sahoo, 2006; Asiedu, 2006; Wahid et al., 2009; Mottaleb and Kalirajan, 2010; Masron and Abdullah, 2010). In this study, trade openness is taken by the sum of merchandise exports and imports divided by the value of GDP.

Infrastructure

A country, which has opportunity to attract FDI flows, will stimulate itself to equip with good infrastructure facilities. Infrastructure development increases the productivity of investment so the high quality of the infrastructure is an important determinant of FDI flows. Therefore, the authors expect a positively significant relationship between FDI and infrastructure. Asiedu (2002, 2006), Moosa and Cardak (2006), Kinda (2008), Mengistu and Adhikary (2011), Hoang and Bui (2015) etc found that the quality of infrastructure has a positive effect on FDI flows. In this research, the authors use the registered carrier departures worldwide of ASEAN countries as the proxy for infrastructure. They are domestic takeoffs and takeoffs abroad of air carriers registered in the ASEAN countries.

Labor productivity

Labor productivity reflects the efficiency of labor in the economy. Cushman (1987) found that the decline in labor productivity has limited FDI flows from the U.K., France, Germany, Canada, and Japan into the United States. Woodward (1992) and Axarloglou (2004), Hoang and Bui (2015) also found a positive relationship between labor productivity and FDI inflows. Labor productivity in this study is measured by dividing the GDP by total labour.

Exchange rate

The Exchange rate represents price competition. An increase of the exchange rate means the currency of the host country depreciates against the currency compared. As the currency of the host country depreciates, the purchasing power of the investors in foreign currency terms will be enhanced, thus the authors expect a positive and significant relationship between the exchange rate and FDI flows. Klein and

Rosengren (1990) found that after controlling for relative wages, a percentage increase in the value of foreign currency (as a percentage of depreciation of U.S. dollar) will have a significant impact on FDI flows to the United States. Froot et Stein (1992) also concluded that in general FDI flows to the United States have a significantly negative correlation with the value of U.S. dollar and that a currency devaluation will encourage foreign investors to buy the control productive assets of domestic companies. Hoang and Bui (2015), Mamadou (2002) found a significant positive correlation between the exchange rate and FDI flows into ASEAN countries.

Institutional quality

Political stability indicates the level of political risk, institutional quality, and it also partly reflects the attractiveness of the investment environment of the host country. Wei (2000), Asiedu (2006), Hattari et al. (2008), Wahid et al. (2009), Masron and Abdullah (2010), Hoang and Bui (2015) found a significantly positive relationship between FDI inflows and political stability. The empirical specification model in this study takes the following form:

$$FDI_{it} = \beta_i X_{it-1} + \varepsilon_{it-1} \quad (1)$$

Where FDI_{it} is the net foreign direct investment inflows into country i/ASEAN country i at year t. X_{it-1} is the matrix of independent/exogenous variables in year t-1. β_i is the vector of coefficients of the independent variables that need estimating. ε_{it-1} is the vector of random disturbances/ standard errors. To identify the best determinants of foreign direct investment inflows into ASEAN countries, a log-linear model is employed. To avoid the endogeneity bias the authors use one period lag for all independent variables. Thus, equation (1) in logarithmic form is:

$$LnFDI_{it} = \beta_0 + \beta_1 LnGDPG_{it-1} + \beta_2 LnINFL_{it-1} + \beta_3 LnOPEN_{it-1} + \beta_4 LnAIRP_{it-1} + \beta_5 LnEXCR_{it-1} + \beta_6 LnINST_{it-1} + \beta_7 LnPROD_{it-1} + \beta_8 CRIS_{1997} + \varepsilon_{it-1} \quad (2)$$

In which:

FDI_{it} is the net foreign direct investment inflows into country i at year t (in current U.S. dollars)

$GDPG_{it-1}$ is the real GDP growth rate (2005 price) of country i at year t-1 (%)

$INFL_{it-1}$ is the inflation rate, GDP deflator, of country i at year t-1 (%)

$OPEN_{it-1}$ is the Merchandise trade as a share of GDP of country i at year t-1 (%), taken by the sum of merchandise exports and imports divided by the value of GDP, all in current U.S. dollars.

$AIRP_{it-1}$ is the registered carrier departures worldwide of country i at year t-1. They are domestic takeoffs and takeoffs abroad of air carriers registered in the country.

$EXCR_{it-1}$ is the real effective exchange rate of domestic currency of country i at year t-1. Real effective exchange rate is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs.

$INST_{it-1}$ is the rank of Political Stability and Absence of Violence/Terrorism of country i at year t-1. It measures perceptions of the likelihood of political instability and/ or politically motivated violence, including terrorism. The lowest rank is zero and the highest rank is 100.

$PROD_{it-1}$ is the productivity of the labor of country i at year t-1 taken by dividing the GDP by total labour.

$CRIS_{1997}$ is a dummy variable that takes the value of 1 in the duration of 1997-2001 and vice versa. This variable captures the impact of the 1997 regional financial crisis on FDI flows to ASEAN countries.

This article uses a strongly balanced panel of annual data on the net foreign direct investment inflows into 10 ASEAN countries for the period from 1997 to 2014. The year 1997 is chosen as the starting year for the reason of available data in all ASEAN member countries. Table 2 below presents the variables and the resources of data.

Table 2. The Variables and the Resources of Data

Variables	Resources of Data
FDI_{it}	The World Bank, accessed on 27 February 2016, website: http://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD?display=default
$GDPG_{it-1}$	The World Bank, accessed on 27 February 2016, website: http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?display=default
$INFL_{it-1}$	The World Bank, accessed on 27 February 2016, website: http://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG
$OPEN_{it-1}$	The World Bank, accessed on 27 February 2016, website: http://data.worldbank.org/indicator/TG.VAL.TOTL.GD.ZS?display=default
$AIRP_{it-1}$	The World Bank, accessed on 27 February 2016, website: http://data.worldbank.org/indicator/IS.AIR.DPRT?display=default
$EXCR_{it-1}$	The World Bank, accessed on 27 February 2016, website: http://data.worldbank.org/indicator/PX.REX.REER
$INST_{it-1}$	The Worldwide Governance Indicators, accessed on 27 February 2016, website: www.govindicators.org
GDP_{it-1}	http://knoema.fr/tbocwag/gdp-by-country-1980-2015?country=Myanmar, accessed on 06 December 2016
$LABO_{it-1}$	The World Bank, accessed on 27 February 2016, website: http://data.worldbank.org/indicator/SL.TLF.TOTL.IN
$PROD_{it-1}$	http://knoema.fr/tbocwag/gdp-by-country-1980-2015?country=Myanmar http://data.worldbank.org/indicator/SL.TLF.TOTL.IN, calculated by the authors

4. The Empirical Results and Discussions

The authors use Unit-root tests for panel data and find some panels are stationary. Notably, an important assumption for the multiple regression models is that independent variables are not perfectly multicolinear. One regress should not be a linear function of another. When multicollinearity is present standard errors may be inflated. The author uses variance inflation faction (VIF) to analyze the multicolinearity. If Mean VIF > 10 or 1/VIF < 0.1 indicates trouble. In this case, Mean VIF = 2.35 indicating no trouble.

Another issue of multiple regression models is the autocorrelation, to test this issue, the author employs Wooldridge test.

Because serial correlation in linear panel-data models biases the standard errors and causes the results to be less efficient, researchers need to identify serial correlation in the idiosyncratic error term in a panel-data model. While a number of tests for serial correlation in panel-data models have been proposed, a new test discussed by Wooldridge (2002) is very attractive because it requires relatively few assumptions and is easy to implement. The null hypothesis is no first-order autocorrelation. In this case, Prob > F = 0.0622, we reject the null hypothesis or there is autocorrelation.

Regarding the heteroskedasticity, a non-graphical way to detect heteroskedasticiy is the Breusch-Pagan test. The null hypothesis is that residuals are homoskedastic. In this case we reject the null at 95% because Prob > chi2 = 0.000 or a significant Breusch-Pagan test.

Technically, the panel data may exist group effects, time effects, or both. These effects can be fixed effects or random effects. The Hausman test is performed to find whether the fixed effects model (FEM) or random effects model (REM) is suitable. The result shows that the FEM is more appropriate than the REM.

To deal with the issues of the heteroskedasticity and autocorrelation the feasible Generalized Least Squares (GLS) with option 'panels(correlated)', use heteroskedastic and correlated error structure, is the right choice (Beck & Katz, 1995; Hoechle, 2007; Hoang and Bui, 2015). The GLS regression results are presented in Table 3 below.

Table 3: The Empirical Results of the $LnFDI_{it}$ Equation for the ASEAN 10 Using the GLS

Independent Variable	Dependent variable: $LnFDI_{it}$	P-value
$LnGDPG_{it-1}$	0.4602*	0.005
$LnINFL_{it-1}$	-0.5277*	0.000
$LnOPEN_{it-1}$	0.4052*	0.002
$LnAIRP_{it-1}$	0.2825*	0.000
$LnEXCR_{it-1}$	-0.1531**	0.051
$LnINST_{it-1}$	0.7438*	0.000
$LnPROD_{it-1}$	-0.3920**	0.080
$CRIS_{1997}$	-3.0435*	0.000
Constant	18.0783*	0.000
Number of observation = 180 Wald chi2(8) = 206.94 Prob > chi2 = 0.0000		

*Notes: *, **, *** indicate the coefficient is significant at 1%, 5%, and 10% respectively.*

The same estimation techniques are applied to ASEAN 6 including Brunei, Indonesia, Malaysia, Philippines, Singapore, and Thailand. The authors also use a strongly balanced panel data in the period from 1997 to 2014. The panel data faces with the issue of heteroskedasticity and no multicolinearity and autocorrelation using Breusch-Pagan test, variance inflation faction, and Wooldridge test. To deal with the heteroskedasticity, the authors employ the Generalized Least Squares with option 'panels (heteroskedastic)', use heteroskedastic but uncorrelated error structure, as the right choice that stated in the previous studies. Table 4 below presents the GLS regression results for ASEAN 6.

Table 4: The Empirical Results of the $LnFDI_{it}$ Equation for the ASEAN 6 Using the GLS

Independent Variable	Dependent variable: $LnFDI_{it}$	P-value
$LnGDPG_{it-1}$	0.2728	0.572
$LnINFL_{it-1}$	-0.8892***	0.057
$LnOPEN_{it-1}$	1.4404	0.200
$LnAIRP_{it-1}$	1.2790**	0.017
$LnEXCR_{it-1}$	-0.3456	0.350
$LnINST_{it-1}$	0.6038	0.348
$LnPROD_{it-1}$	-0.9293	0.118
$CRIS_{1997}$	-1.8610**	0.041
Constant	8.6438	0.303
Number of observation = 108 Wald chi2(8) = 32.32 Prob > chi2 = 0.0001		

*Notes: *, **, *** indicate the coefficient is significant at 1%, 5%, and 10% respectively.*

The same techniques are applied to the ASEAN 4 model including Cambodia, Laos, Myanmar, and Vietnam. After running regression, the author tests for multicolinearity, autocorrelation and the heteroskedastic. The results indicate the issue of autocorrelation. To deal with the issue of autocorrelation, the authors occupy the GLS estimation technique with the option 'corr(independent)', use independent autocorrelation structure, as the right choice. Table 5 below presents the estimation results using the GLS.

Table 5: The Empirical Results of the LnFDIit Equation for the ASEAN 4 Using the GLS

Independent Variable	Dependent variable: $LnFDI_{it}$	P-value
$LnGDPG_{it-1}$	0.0668	0.803
$LnINFL_{it-1}$	-0.2118	0.237
$LnOPEN_{it-1}$	0.3224	0.170
$LnAIRP_{it-1}$	0.1753***	0.056
$LnEXCR_{it-1}$	-0.2943**	0.040
$LnINST_{it-1}$	0.6346	0.266

Independent Variable	Dependent variable: $LnFDI_{it}$	P-value
$LnPROD_{it-1}$	1.0983*	0.003
$CRIS_{1997}$	0.6375	0.158
Constant	9.8884*	0.000
Number of observation = 72 Wald chi2(8) = 54.37 Prob > chi2 = 0.0000		

*Notes: *, **, *** indicate the coefficient is significant at 1%, 5%, and 10% respectively.*

Table 6. The Summary of the Statistics

(Period: 1997-2014; Countries: 10; Observation: 180)

Variable	Mean	Standard Deviation	Min	Max
$LnFDI_{it}$	20.1324	4.9948	0	24.9357
$LnGDPG_{it-1}$	1.4775	0.7699	0	2.7239
$LnINFL_{it-1}$	1.5329	1.0720	0	4.8518
$LnOPEN_{it-1}$	4.1625	1.4110	0	5.8447
$LnAIRP_{it-1}$	10.4165	2.3569	0	13.3905
$LnEXCR_{it-1}$	4.6949	3.6510	0.2227	9.9491
$LnINST_{it-1}$	3.4198	0.8837	1.0593	4.5759
$LnPROD_{it-1}$	8.3961	1.6293	5.4901	11.4982
$CRIS_{1997}$	0.2777	0.4491	0	1

Table 7. The Correlation Matrix

Corre.	$LnFDI_{it}$	$LnGDPG_{it-1}$	$LnINFL_{it-1}$	$LnOPEN_{it-1}$	$LnAIRP_{it-1}$	$LnEXCR_{it-1}$	$LnINST_{it-1}$	$LnPROD_{it-1}$	$CRIS_{1997}$
$LnFDI_{it}$	1								
$LnGDPG_{it-1}$	0.1798	1							
$LnINFL_{it-1}$	-0.2713	0.2430	1						
$LnOPEN_{it-1}$	0.1267	0.0685	-0.1490	1					
$LnAIRP_{it-1}$	0.1768	-0.1066	-0.0134	0.1373	1				
$LnEXCR_{it-1}$	-0.1102	0.3593	0.3946	0.0303	-0.2052	1			
$LnINST_{it-1}$	0.1582	-0.0643	-0.2191	0.4930	0.0324	-0.2952	1		
$LnPROD_{it-1}$	0.1224	-0.3081	-0.3723	0.5559	0.3535	-0.6557	0.5633	1	
$CRIS_{1997}$	-0.3480	0.0048	0.2377	-0.0389	-0.2306	-0.0295	0.0243	-0.1594	1

The followings are some discussions:

First, for the ASEAN 10, the deterministic factors of FDI to the region are the Real GDP Growth, low Inflation, high Trade Openness Ratio, the Improvement of Infrastructure, and the Political Stability. This is consistent with the theoretical model of the determinant of FDI stated in some previous studies of the literature (see Kurihara, 2012; Changwatchai, 2010 etc). Notably, in contrast to some previous studies (e.g., Hoang and Bui, 2015; Masron and Abdullah, 2010; Ismail, 2009), the Exchange Rate Regime and the Labor Productivity have had a negative impact on FDI flows to the region. In addition, the Asian financial crisis 1997 has had a great negative impact on FDI flows to ASEAN countries (see Table 3 above).

Second, for the ASEAN 6 (Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand), the factors attracted FDI flows are Low Inflation and the Improvement of Infrastructure. The Asian financial crisis 1997 has also had a great negative impact on FDI flows to ASEAN 6 countries (see Table 4 above).

Third, for the ASEAN 4 (Cambodia, Laos, Myanmar, Vietnam), the Improvement of Infrastructure and the Labor Productivity have strongly induced FDI flows. It means that foreign investors consider the Labor Productivity as important criteria when they decide to invest in the ASEAN 4. However, the Exchange Rate Regime has not encouraged FDI flows to the region like the case of ASEAN 6. And, the Asian financial crisis 1997 has not reduced the FDI flows to the four as the coefficient of the Crisis1997 variable is not statistically significant. This is due to ASEAN4 economies were quite closed in the time crisis happened (see Table 5 above).

5. Conclusion

It is undeniable that FDI is one of the key ingredients for successful economic growth in developing world, because the very essence of economic development is the rapid and efficient transfer and adoption of "best practice" across border (Kok and Ersoy, 2009). In addition, in general, foreign investors are attracted by three broad groups of factors: (1) The profitability of the projects; (2) The ease with which subsidiaries' operation can be integrated into investors' global strategies; (3) The overall quality of the host country's enabling environment (Christiansen and Ogutcu, 2002).

In this study, the empirical evidences show that the Real GDP Growth, low Inflation, high Trade Openness Ratio, the Improvement of Infrastructure, and the Political Stability are crucial factors inducing FDI flows to 10 ASEAN countries recently. However, the Exchange Rate Policy has not supported for foreign capital attraction. Thus, the Asian financial crisis 1997 has had a great negative impact on FDI flows to the region. The followings are some policy implications.

The ASEAN 6 should focus on human capital development, Research and Development (R&D), allowing them to compete in attracting FDI and to absorb modern technology effectively. This is to move up to the next/higher stage of the global value chain (GVC). Through which, they can master modern technology, produce high quality products and then escape from the so-called the "middle-income trap" like what Japan, South Korea, and Taiwan did in

the past decades. One should be aware that this is not an easy task.

The ASEAN 4 countries have attracted FDI flows by improving the infrastructure and increasing the productivity. The ASEAN 4 can also attract FDI capital through their integration with global trade. Therefore, these countries should accelerate infrastructure development, trade liberalization, and regional integration toward the ASEAN 6 as the future strategy to attract more FDI inflows. Regarding investment environment, the ASEAN 4 must further improved emphasizing on regulatory reform, administrative procedures reform, apparatus reform, capacity enhance for cadres and civil servants, and administration modernization. These are to reduce the obstacles, and to create a clear business environment, transparent legal framework to satisfy foreign investor's requirements. Especially to jump to the next stage of the development process (technology absorption) these four must have good strategy and concrete actions to build subsidy industries in the economy from technology transfer and practices of oversea investors.

In conclusion, this article has contributed to the existing literature about the determinant of FDI flows to developing economies by implementing an empirical study on the case of 10 ASEAN countries with sub-smaller groups using the GLS estimation technique and a strongly balanced panel data from 1997 to 2014. This can help to identify more specifically deterministic factors of FDI flows to each group in the region. Future researches should focus on the FDI flows to specific industries of the region or the impact of the FDI on the economic growth, institutional improvement, technology innovation, etc to perfect the picture of FDI in the Southeast Asia Nations. Thus, the estimation results vary across the estimation techniques and data employed so researchers should pay attention to these issues.

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