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The Impact of Economic Integration and Macroeconomic on Indonesia Foreign Direct Investment (FDI): A Panel Gravity Model

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Abstract

Purpose – This study purposes to analyze the impact of regional economic integration and macroeconomic on Indonesian FDI inflows.

Research design, data, and methodology – Data were collected from bilateral relation between Indonesia and 21 home countries whose dominant share FDI to Indonesia from 2005 to 2013. Analysis method was conducted by panel gravity model to find the impact of regional economic integration and macroeconomic on Indonesian FDI inflows.

Results – The empirical results show that GDP of the home country and Indonesia have a positive impact on Indonesia FDI. Distance and home country real interest rate have a negative impact on Indonesia FDI. Economic integration of European Union (EU) and Indonesia's cooperation with Japan in ASEAN-Japan Comprehensive Economic Partnership (AJCEP) have created impact of investment creation on Indonesia FDI, unfortunately, economic integration of ASEAN has created impact of investment diversion on Indonesian FDI.

Conclusions – In order to increase FDI inflow to Indonesia, Indonesia government should improve the physical and social infrastructures to drive the productivity and economic efficiency. It will increase the GDP and also attract more investors. Low interest rate policy should be considered.

Keywords: Economic Integration, FDI, Gravity Model.

JEL Classifications: C23, E22, F36.

1. Introduction

Indonesia as one of the developing countries needs lots of funds to pursue high economic growth. Per capital society income is relatively low because of low community saving ability, while the high investment needs because there is a saving investment-gap. One of the solutions reached by the Indonesian Government in overcoming it is to invite the investment from abroad in the form of Foreign Direct Investment (FDI) (Sarwedi, 2005). The attraction of FDI is important for Indonesian government to an outward-looking development strategy in contemporary global economy. They bring in new (risk-sharing, non-debt-creating) capital flows, foreign exchange, easy access to foreign markets, and technology transfer. Furthermore, FDI is expected to be the closing gap between economic development needs with available resources, which eventually became the driving force of economy growth in Indonesia (Panayotou, 2000).

ASEAN leaders agreed to put Foreign Direct Investment(FDI) as a major component in the economic development of ASEAN countries and making it as one of the principal objectives of ASEAN in realizing the ASEAN Economic Community (AEC) at the end of 2015. Increased FDI in ASEAN countries is realized through a policy of free capital flows between ASEAN countries. Beside increasing FDI in among ASEAN countries, free capital flows are also useful for obtaining more efficient financial transactions, financing development, facilitating international trade, supporting the development of the financial sector and boosting economic growth (Ministry of Commerce of the Republic Indonesia, 2015).

Indonesian Government wants to make the moment of ASEAN Economic Community as an opportunity to increase inflow of FDI to Indonesia. However, the conditions of investment climate in Indonesia that have continued to get worse will reduce investor's interest for investing in Indonesia. According to the World Bank doing business levels in 2014, Indonesia was ranked 120 of 189 economies in the world. The business doing ratings of Indonesia are lower than other ASEAN countries such as Singapore, Malaysia, Thailand, Brunei Darussalam, Vietnam and Philippines. Moreover, According to Indonesia Investment Coordinating Board (BKPM), Indonesia's FDI decrease from

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28,62 billion US\$ to 28,53 billion US\$ during 2013 to 2014. Indonesia's FDI growth also continues to fall from 0.5 per cent in 2013 to minus 0.003 percent in 2014.

Therefore, with important consideration, this research is done to encourage the influx of Foreign Direct Investment (FDI) to continue in Indonesia. It is interesting to gauge empirically, whether or not economic integration agreement approved by Indonesia has had any impact on Indonesia's FDI inflows. In addition, this paper also analyzes the macroeconomics determinants of bilateral FDI flows between Indonesia and home country, both pulling factors and inhibiting factors of FDI flows such as GDP per capita, inflation ratio and real interest rate originating from countries source FDI (home country) and Indonesia against Indonesia FDI.

2. Literature Review

2.1. Economic Integration

United Nation Conference on Trade and Development (UNCTAD) defines economic integration as a deal which was done to facilitate international trade and cross-country movement of production factors. Holzman(1976) defines economic integration was a situation in which the prices of all similar goods and similar factors in two regions were equalised. This made the two regions in essence one region or market. This definition implies that economic integration was the realization of factor price equalization between two regions. The implicitly assumes that there are no barriers to the movements of goods, service and factors between the two regions and that there are institutions that facilitate those movements.

Balassa (1961) differentiated integration as a dynamic concept through elimination of discrimination among different countries, as well as in the static concept by looking at whether there are differences in discrimination. Jovanovic (2006) defines the concept of integration is a complex notion which must be defined with care. In General, economic integration can be defined as a process and means by which a group of countries strive to increase their level of welfare.

2.2. How the Economic Integration Impact on FDI

Bilateral and regional Free Trade Agreements (FTA) formation attracts long-term, risk-sharing investment flows by creating a more integrated marketplace within which multinational corporations can enjoy a regional division of labor with low transaction costs and exploit economies of scale. A multinational corporation, that believes an FTA will lead to greater economic dynamism, may be compelled to invest more in one of the members, thus resulting in "investment creation." An FTA may induce more FDI flows into the region by multinationals that are headquartered outside the region. An FTA may also induce intrabloc investment by multinationals with a regional origin.

However, if the multinational decides to invest in the member

country not because of a perceived increase in dynamism but because it will now have preferential access to the FTA market, then we have "investment diversion." In other words, although investing in an outsider country might have been more cost effective, the multinational diverts investment to the FTA because of this regional accord. Motivation would be the same as in "tariff hopping" FDI (Plummer et al., 2010).

Ismail et al. (2009) examined the effects of the economic integration of ASEAN toward FDI using gravity models. They found ASEAN-5 invest in each other less than they invested in new ASEAN members. Results from extra-regional-FDI revealed that European countries increase investment in ASEAN than any other region in the sample. Moreover, further enquiry also found that USA and Japan invested more in ASEAN-5 than in new ASEAN members.

Plummer & Cheong (2008) using a gravity model is expanded to capture the influence of regional economic integration towards the flow of FDI in the EU, NAFTA, MERCOSUR, and ASEAN. Their search resulted three important conclusions: (1) regional integration has a positive and significant influence towards FDI, which is a combination of the effects of investment diversion and creation (2) investment diversion effects happen in some cases, and thus need to get attention, particularly among developing countries that are not part of regional members with developed countries (3) FDI act as substitutes for trading, although in some cases are complement to trade.

2.3. Other Determinants FDI

Several studies have explained the factors that can affect bilateral FDI between countries. Ridwan (2009) examined the impact of economic integration against ASEAN investment using gravity model. He found that GDP of home country and host country, real interest rate, home country population and Regional Economic Integration (REI) dummy of AFTA and NAFTA had a positive impact on ASEAN FDI. Meanwhile, population and real interest rate of host country, distance, tax and REI of EU, Mercosur and CIND (China and India) had a negative impact on ASEAN FDI.

Another study that undertakes an empirical investigation of influence factors of FDI performed by Ceviz & Camurdan (2007) who examined the influence factors analysis of FDI in transition countries and developing countries. They found that FDI in previous period which is directly related to the host countries' economic resources is important as an economic determinant. Besides, it is also understanding that the main determinants of FDI inflows are the inflation rate, interest rate, growth rate, and trade (openness) rate and FDI inflows give power to the economies of host countries.

2.4. Hypotheses

Based on previous study (Ridwan, 2009; Ceviz & Camurdan, 2007; Ismail et al., 2009; Plummer & Cheong, 2008), hypothesis proposed in this study is:

- GDP per capital both of Indonesia and home country have a positive impact on Indonesia FDI, while their distance has negative impact on Indonesia FDI.
- Indonesia real interest rate, home country real interest rate and inflation ratio (home country / Indonesia) have negative impact on Indonesia FDI.
- Regional economic integration such as ASEAN, EU and Indonesia's cooperation with Japan, South Korea, China, Australia has a positive impact on Indonesia FDI.

3. Methodology

3.1. Data

This research uses panel data from bilateral relation between Indonesia and 21 home country whose dominant share FDI to Indonesia from 2005 to 2013. The countries are European Union (Germany, Holland, Italy, Switzerland, France, England, Spain, Belgium), ASEAN (Singapore, Malaysia, Thailand, Philippines), Japan, China, Hongkong, South Korea, Turkey, US, Canada, Seychelle and Australia. The data obtained from the Indonesia Capital Investment Coordinating Board (BKPM), World Bank and International Financial Statistics (IFS).

3.2. Gravity Model

The Newtonian law of gravitation states that two celestial bodies are subjected to a force of attraction that is directly proportional to their mass and indirectly proportional to their distance. In 1860s, H. Carey was the first to apply the Newton's law of universal gravitation to the study of human behaviour and subsequently the so – called "gravity equation or model" has been widely used in the social science. Later, social scholars have transferred the gravity equation to the empirical analysis of international trade flows. In particular, Tinbergen (1962), use a simple form of gravity model of bilateral trade in analyzing bilateral trade flows.

After the second period in 1970s, some economists have tried to use the gravity equation for formal economic theory, in recognition with the lack of a strong theoretical basis of gravity model. Linnemann (1966) suggested the model, which describes the flow of goods from one country to another in terms of supply and demand factors (income and population). Anderson (1979) assumed product differentiation and Cobb-Douglas preferences. Bergstrand (1985) concluded that price and exchange rate variation have significant affects on aggregate trade flows. Deardorff (1995) derived a gravity model into FDI for the first time. The basic Model developed by Deardorff is :

$$FDI_{ij} = \frac{GDP_i \times GDP_j}{\text{distance}} \quad (1)$$

If the equation is modified in the form the logarithmic, then retrieved empirical equation as follows:

$$\ln FDI_{ij} = \ln(GDP_i) + \ln(GDP_j) - \ln(\text{Distance}) \quad (2)$$

Based on the empirical Equation 2, then the model specification equation FDI_{ijt} are built on this research are:

$$\begin{aligned} \ln(FDI_{ijt}) = & \alpha_0 + \alpha_1 \ln(GDP_{Pit}) + \alpha_2 \ln(GDP_{Pjt}) + \alpha_3 \ln(Dij) + \alpha_4 Rit \\ & + \alpha_5 Rjt + \alpha_6 Rinf_{ijt} + \alpha_7 ASEAN + \alpha_8 EU + \alpha_9 Japan \\ & + \alpha_{10} China + \alpha_{11} South Korea + \alpha_{12} Australia \end{aligned} \quad (3)$$

FDI_{ijt} : FDI inflows from home country (i) to Indonesia (j) with respect to year (t),

GDP_{Pit} , GDP_{Pjt} : Gross Domestic Product per capita with respect to year (t)

Dij : Distance between capital of home country i and Indonesia,

Rit , Rjt : Real interest rate with respect to year (t)

$Rinf_{ijt}$: Inflation Ratio (Home Country / Indonesia) with respect to year (t)

ASEAN: Dummy variable, value 1 while home country (i) is ASEAN country

EU: Dummy variable, value 1 while home country (i) is EU Country

Japan : Dummy variable, value 1 while home country (i) is Japan

China: Dummy variable, value 1 while home country (i) is Cina

South Korea : Dummy variable, value 1 while home country (i) is South Korea

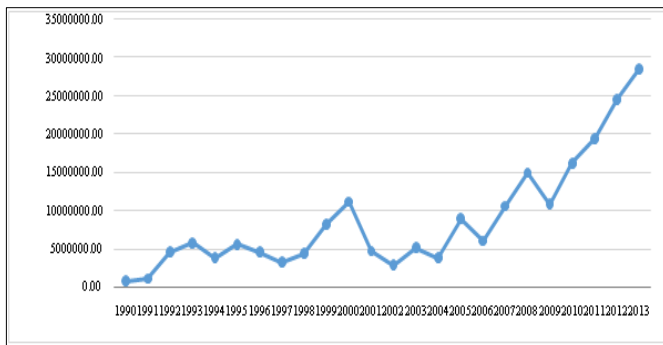
Australia: Dummy variable, value 1 while home country (i) is Australia.

Estimation of the gravity equation Indonesia FDI using regression data panel can be estimated by common effects model and random effects model. The fixed effects model cannot be used in this study because of the gravity equation built in this research contain a time-invariant variables (Baltagi, 2008). The selection of the best model among the common effects and random effects obtained by Breush Pagan (LM Test). Normality assumption testing with the Jarque-Bera test. multicollinearity test assumptions by Variance Inflation Factors (VIF).

4. Results and Discussion

4.1. Indonesia FDI Inflows

In general, Indonesia FDI increased from 1990 to 1995. The decline in non-oil imports during the last quarter of 1995 led to FDI decline in 1996. The Asian economic crisis of 1997 led to the source of investment from Asian countries has decreased. Indonesia FDI realization in 1997 fell by 30 percent compared to the previous year.



Source: Indonesia Investment Coordinating Board (2014)

<Figure 1> Indonesia FDI inflows from 1990 to 2013

<Table 1> Top Ten Sources of Indonesia Foreign Direct Investments Inflow

No	Country/Region	Project	FDI Inflows to Indonesia	
			Value (million US\$)	percent of total FDI
(1)	(2)	(3)	(4)	(1)
1	Japan	958	4712.89	16.47
2	Singapore	1592	4670.78	16.32
3	US	210	2435.75	8.51
4	South Korea	807	2205.48	7.71
5	England	231	1075.80	3.76
6	Netherlands	233	927.81	3.24
7	British Virgin Island	307	785.71	2.75
8	Mauritius	55	779.99	2.73
9	Malaysia	574	711.26	2.48
10	Taiwan	158	402.64	1.41

Source: Indonesia Investment Coordinating Board (2014)

The implementation of regional autonomy and fiscal decentralization in Indonesia in 2001 led FDI dropped by 58 percent compared to 2000. This occurred due to the implementation of regional autonomy led to increased extortion, lack of transparency and efficiency thus resulting in higher cost of investment in Indonesia. Indonesia FDI down in 2004, 2006 and 2008. This is due to the rise in oil prices in 2005 and 2008, followed by a rise in the price of fuel by the Indonesian government as well as the global economic crisis of 2008. Oil is an important component for the industry. Rising oil prices are additional costs for manufacturers in the production so as to reduce investment in Indonesia.

The largest source of Indonesia FDI come from Japan with 958 projects and value of 4.71 billion US\$ or 16.47 percent of total Indonesia FDI in 2013. Indonesian second largest source of FDI come from Singapore with 1,592 projects and value of 4.67 billion US\$ or 16.32 percent of the total Indonesia FDI in 2013. Indonesian third largest source of FDI come from US with 210 projects and value of 2.43 billion US\$. Basic on <Table1> can be concluded that the average Japanese investment projects in Indonesia have a greater value than the average of other state projects.

4.2. Model Estimation

Based on the test results of the Breush Pagan (LM Test), we obtained the value of the test statistic is 146,57 which larger than value of χ^2 (0.05; 1) = 3.84, so it can be concluded that random effects approach is better used to describe the influence of the independent variables to the variation value of Indonesia FDI. Jarque-Bera test shows that residual Gaussian. Testing the assumption of non-multicollinearity with Variance Inflation Faktor (VIF) obtained the results of non-multicollinearity are met.

<Table 2> Gravity estimation result for Indonesia Foreign Direct Investment

Dependen variabel : FDI Inflows from home country to Indonesia ($\ln FDI_{it}$)				
independent variables	coefficient	standard Error	t-stat	p-value
(1)	(2)	(3)	(4)	(5)
C	40.584*	7.4493*	5.4479*	0.0000*
GDPP home country ($\ln GDPP_{it}$)	0.5270*	0.1217*	4.3302*	0.0000*
GDPPIndonesia ($\ln GDPP_{it}$)	1.4186*	0.3001*	4.7276*	0.0000*
Distance ($\ln D_{ij}$)	-3.7837*	0.8422*	-4.4923*	0.0000*
Home country real interest rate ($\ln R_{it}$)	-0.0549*	0.0258*	-2.1310*	0.0345*
Indonesia real interest rate ($\ln R_{it}$)	-0.0318	0.0448	-0.7110	0.4780
Inflation ratio ($\ln Rinf_{it}$)	0.4135	0.4473	0.9244	0.3565
ASEAN	-3.2768*	1.5861*	-2.0660*	0.0403*
EU	2.5191*	0.8520*	2.9568*	0.0035*
Japan	3.3897*	1.5003*	2.2593*	0.0251*
China	1.3009	1.5455	0.8417	0.4011
South Korea	2.7496	1.5066	1.8251	0.0697
Australia	0.4367	1.4956	0.2920	0.7706
R-square	0.3414			
F-stat	7.6030			
(P-value)	0.0000			

Notes: * significant at 5 percent

Over-all F-test show that model was significant at five percent level, while R-square is 0,3414 which means that 34.14 percent of Indonesian FDI variation value could be explained by all of independent variable in the model, while 65.86 percent of the rest is explained by other variables outside the model.

4.3. The Impact of Economic Integration

ASEAN economic integration has created impact of investment diversion on Indonesia FDI. The ASEAN economic integration has lowered Indonesia FDI of 3.28 percent, *ceteris paribus*. This result shows that there was a competition among ASEAN countries in attracting FDI. This happens due to the similarity resources owned by the ASEAN countries, mainly on primary commodities. In addition, Indonesian investment climate getting worse is also a factor of investment diversion. Based on the level of doing business issued by World Bank, Indonesia doing business level was 128 in 2013. Indonesia doing business level was lower than in Singapore, Malaysia and Thailand so the decision of investors to invest in their own country or to another country will be securely than investing in Indonesia.

Economic integration of Europe has created impact of investment creation on Indonesia FDI. Interpretation of ASEAN economic integration coefficient in model shows that the ASEAN economic integration has increased Indonesia FDI of 2,52 percent, when *ceteris paribus*. It showed a high attraction of the investors are Member States of the EU against investment climate and market potential in Indonesia.

Indonesia's cooperation with Japan in ASEAN-Japan Comprehensive Economic Partnership (AJCEP) has created impact of investment creation on Indonesia FDI. This occurs due to the high attractiveness of Japan investors against investment markets in Indonesia. According to the Japan Bank for International Cooperation (JBIC), there were 30 percent of investors Japan argued that Indonesia's market very attractive for investment purposes and 80 percent of the 500 respondents to the Japan investor stated that in the future the consumption market and Indonesia will be bigger again.

Indonesia's cooperation with China in ASEAN-China Free Trade Area (ACFTA), South Korea in ASEAN-Korea Free Trade Area (AKFTA) and Australia in ASEAN-Australia-New Zealand Free Trade Area (AANZFTA) haven't been able to increase the flow of Indonesia FDI. It can be seen from the probability value dummy integration China, South Korea and Australia are greater than 5 percent. This happens because the integration of the ACFTA, AKFTA and AANZFTA began running effective since January 1, 2010 so that the impact of economic integration hadn't given significant influence to Indonesia FDI, considering FDI is an investment that is long term.

4.4. The Impact of Economic Factor

4.4.1. GDP per Capita

Home country GDP per capita has positive and significant impact on Indonesia FDI. Every increase of home country GDP

per capita by 1 thousands US\$/people then Indonesia FDI growth will increase by 0.52 percent, when *ceteris paribus*. A high level of national income will increase investor revenues, and further high-income investors will increase their ability to invest. This causes an increase in capital outflows from the home country to Indonesia so that FDI Indonesia will also increase. The increase in home country GDP per capita will be increasing capital outflow in the form of FDI to Indonesia.

Indonesia GDP per capita has positive and significant impact on Indonesia FDI. Every increase of Indonesia GDP per capita by 1 thousands US\$/people then Indonesia FDI growth will increase by 1,42 percent, when *ceteris paribus*. A high level of national income will increase public revenues, and further high-income societies will increase demand for goods and services. Then, corporate profits will be increase so that it will encourage more investment (Sukirno, 2006). The increase in Indonesia GDP per capita will increase the size of the domestic market which gives profit potential for investors.

4.4.2. Distance

Distance between capital of home country and capital of Indonesia has a negative and significant impact on Indonesia FDI. Every increase of distance between capital home country and capital of Indonesia by 1 KM then Indonesia FDI growth will decrease by 3,78 percent, when *ceteris paribus*. This is due to investments related to bilateral trade. The farther distance traveled then the greater the transport costs and time incurred thereby lowering the interest investors to invest in Indonesia.

4.4.3. Real Interest Rate

Home country real interest rate has negative and significant impact on Indonesia FDI. Every increase of home country real interest rate by 1 percent then Indonesia FDI growth will decrease by 0.05 percent, when *ceteris paribus*. The real interest rate rises would cause the community prefer saving in banks rather than spend on goods and services. High interest rates will cause purchasing power decreased so that the lower sales of goods and services. Besides that, higher interest rates also illustrate the high risk that must be borne by the investors because the interest rate is the price of loanable funds to be paid by the investor.

The amount of capital required depends on the interest rate, which measures the costs used to finance investment. At the lower interest rate, the more profitable investment projects will get so that total investment spending in the economy will increase. This happens because the interest rate that reflects the "opportunity cost" of a capital investment declined, on condition of *ceteris paribus*. The higher interest rates, the less desires to invest. This is because investors will increase investment spending when the expected benefits of investment greater than the interest rate to be paid to fund. Conversely, investors will be encouraged to make investments when interest rate became lower, it happened because the smaller financing cost then the profit rate will be greater (Samoelson & Nordhaus, 1996).

4.4.4. Inflation Ratio

The estimation results showed that at 5 percent significance level, inflation rate home country against Indonesia didn't significant impact on Indonesia FDI. This is due largely home country can suppress inflation below 10 percent. The positive coefficient indicates that when inflation rate ratios home country on the inflation rate in Indonesia increase then the flow of FDI to Indonesia will increase. Increasing inflation ratio indicates that inflation rate in home country is greater than the inflation rate in Indonesia. High inflation will increase the prices of goods, services and production input costs. This condition will show that output price competitiveness of goods and services lower. Inflation causes the purchasing power lower so that decreased trading activity and investor difficult to get a return and profit (Sukirno, 2006).

5. Conclusions

The gravity estimation reveals that Economic integration of European Union (EU) and Indonesia's cooperation with Japan in ASEAN-Japan Comprehensive Economic Partnership (AJCEP) have investment creation on Indonesia FDI, economic integration of ASEAN has investment diversion on Indonesia FDI. The economic integration of NAFTA, ACFTA and AKFTA were notable to increase Indonesia FDI. Other factors such as GDP per capita for both home country and Indonesia have a significant and positive impact on Indonesia FDI. The distance between capital of home country and capital of Indonesia and home country real interest rate have a significant and negative impact on Indonesia FDI.

In order to increase FDI flow to Indonesia, Indonesia government should improve the physical and social infrastructures to drive the productivity and economic efficiency. It will increase the GDP and also attract more investors. Low interest rate policy should be considered. A negative association between FDI by distance, indicating Indonesia should maintain good relations with neighboring countries. Indonesia also should strengthen cooperation with investors from European Union (EU) and Japan as well as continue to improve cooperation with other integration cooperation countries and does not just depend on ASEAN countries.

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