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Determinants of Foreign Direct Investment Inflows in Asia and the Pacific Region: Ways Forward

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Abstract: The study examined the nexus between FDI net inflows, GDP growth rate, degree of financial openness, gross fixed capital formation, inflation, industry value added, and corporate tax rates in Asia and the Pacific Region for the period 2002-2015. It also explored the determinants' effect on FDI inflows before and after the financial crisis. For the three (3) panel regression models (pooled OLS, fixed effects and random effects) using aggregate data, random effects model was preferred in explaining the relationship between FDI inflows and its determinants. There is strong evidence of positive impact of degree of openness and GFC while a strong negative impact of corporate tax rate on FDI inflows. As majority are low and middle income countries, conducive business environment for FDI to flourish through better tax and lower inflation rates were provided. On the other hand, mixed results were generated for the impact of global crisis where a fixed effect was preferred over random effects model. Trade openness and corporate tax rates were found to be significant predictors of FDI net inflows before the crisis. After the crisis, consumer price index and inflation showed positive and significant effects, which are deemed to provide negative implications to most countries due to high cost of investments. The results provides certain policy implications for the countries in the region where FDI inflows can be influenced by the type of incentives provided by host country and the attractiveness of the domestic businesses which have not been too vibrant for international business to consider capital investments.

Keywords: FDI, Asia and the Pacific, Trade, Investments, Panel Regression

I. Introduction:

Over the past three decades, liberalization provided opportunities for many economies to open their markets to many countries worldwide. It can be noted that globalization had facilitated in shaping the patterns of investments in the international market. National authorities worldwide started to bring forth domestic investments through the free movement of capital, labor and other resources. With trade and trade in services liberalization occurring at various levels, business and financial activities were enhanced and these allowed countries to become competitive in an international and imperfect market. Large capital flows, both direct and portfolio investments, in developing and/or transition economies were evident where excess funds from developed economies are invested into these economies.

Thorbecke, W and Salike, N. (2011) noted that over the past decades, inflows of FDI in East Asian Region were driven by the movement of Japan MNCs' investments in South Korea and Taiwan. ASEAN member states were also recipients of investments not only from Japan but also from Europe and the United States. After the 1997 crisis, new investments tightened and with the Accession of China in the WTO, China became the center of investments for both production and distribution networks from various developed economies. This was also highlighted in the study of Kawai and Naknoi (2015) where direct investment activities were evident through the formation of production network in Singapore, Malaysia, Thailand and Indonesia.

Despite investment contraction after the Asian and Global Financial Crises, ASEAN member states continuously pursued investment policies by instituting reforms at both national and regional levels. However, recent report from IMF (2018) revealed that there is a shift in the movement of capital flows which used to be enjoyed by developing economies due to the spillover effect of the tighter financial condition in the United States.

II. Review of Related Literature:

Several empirical researches were conducted in providing evidence on the existence of the relationship between foreign FDI and its determinants. These studies were either conducted for individual country or group of countries. The patterns of inward foreign direct investments

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mostly centered among developing or transition economies, which are usually the recipients of these investments.

Akpan, Isihak and Asongu (2014) examined the effect of the factors that drove foreign direct investment inflows among MINT and BRICS countries. Using panel data analysis, they found GDP, infrastructure and openness as the crucial drivers of FDI. This was also confirmed in many studies that utilized macro-economic indicators as drivers of FDIs (Phung, 2016; Mottaleb, 2008, Nagou, 2016; Abimbola and Oludiran, 2017). The presence of natural resources, institutional factors and market stability was confirmed by Akpan et al (2014) where they found that these factors did not provide significant effect on direct investments. Hence, their findings showed that despite high market instability and low governance and institutional underpinnings, multinational firms continued to establish business in these countries and did not consider these factors as potential threat for their investments.

Phung (2016) utilized selected indicators that influence FDI into developing countries worldwide. Trade openness, labor, natural resources, and infrastructure were found to have positive significant effects on the foreign direct investment inflows in developing countries. Using three estimation models for the two sample periods (1990-2014 and 1980-2014), trade openness and infrastructure showed significant influence on these investments. Brima (2015) also found strong and positive correlation between FDI and the two significant determinants, namely, market size and trade openness. He added that exchange rate and availability of natural resources can facilitate inward direct investments in Sierra Leone. However, money supply, inflation, resource endowment, exchange rate volatility, world price index provided negative effect on FDI.

In making investment decisions, multinational companies typically consider the contribution of the industrial sector on their investments in the host country. Very few studies were conducted to measure the impact of industry value added as a percentage of GDP on inward direct investments. Most studies (Sjöholm, 2016 and Al-Rashid, 2015) that were conducted for the industry value added (IVA) relate to the impact of FDI on IVA. Their findings reveal a positive effect of FDI on industry value added. Sjöholm (2016) further provided evidence that high level of value added increases local and foreign investments, government revenues through tax collections and salaries of employees. Federke and Romm (2006) considered trade openness and corporate tax rates as policy factors that influence foreign direct investments. Other studies (Raudonen, 2014; Iamsiraroj and Doucouliagos, 2015; Mudenda, 2015; Mandinga, 2015) examined the impact of corporate tax rate on inward direct investments and found its negative influence on FDI. Iamsiraroj and Doucouliagos (2015) mentioned that tax rate is one of the most common locational determinants of foreign direct investments. Mudenda (2015) found insignificant effect on investments along with unemployment.

On the other hand, Mottaleb (2008) investigated the impact of factors on FDI and the latter's influence on the economic development of 60 emerging economies. Together with other determinants such as GDP growth rates and the natural log of GDP, positive and significant correlations with FDI were existent. He also revealed that low-middle income economies are able to attract more inward FDIs compared to lower income economies. Infrastructure facilities, such as provision of better communication facilities, also foster foreign direct investments inflows. It was suggested that countries should provide conducive business environment in the long-run, particularly those activities that relate to business set-up, political reforms and stability and other related transactions. Hence, they found that FDI positively influence many developing countries' economic growth.

The importance of communication was also emphasized in the study conducted by Nagou (2016) among Western African Economic and Monetary Union countries from 1996 to 2014. He utilized three indicators of electronic communications along with other macroeconomic variables as determinants of inward investments. The influence of this infrastructure was found

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to be insignificant, which is in contrast to the findings of Abimbola and Oludiran (2017) who revealed that having developed infrastructure facilities is fundamental to inward FDIs. Along with this finding, both Nagou (2016) and Abimbola and Oludiran (2017) found most macroeconomic variables (trade openness, market size and human capital) as having significant effects on direct investments, which are consistent with the findings of other studies previously mentioned. Only inflation and fiscal policy showed negative relationship. This is understandable considering that high inflation rate and large fiscal imbalance can provide negative effect on an MNC's outward investment decision. This explains why inward FDI in the region are lower than other developing economies worldwide.

In South Asia, Jha, Agrawal, Gupta and Mishra (2012) also examined the drivers to FDI inflows and found GDP, trade openness and stock of foreign direct investments as the major indicators affecting investments in the region. They further cited that cheap labor costs, stable political and economic underpinnings are crucial in attracting foreign direct investments. In Central Asia, particularly in Uzbekistan and Kazakhstan, Sattarov (2012) used OLS and Seemingly Unrelated Regressions (SUR) methodologies to investigate the effects of location specific drivers of FDI inflows and found economic stability, market size and stock of FDI as the primary factors. This is similar to the findings of Jha, et al. (2012), Nagou (2016) and Abimbola and Olidurin (2017) where the stock of direct investments in the host country already signals a favorable business environment provided by the host country.

In another study, Shukurov (2016) investigated the factors influencing direct investments in eleven (11) Commonwealth Independent States in Asia for the period 1995-2010. Like Sattarov (2012), Jha et al (2012), Abimbola and Olidurin (2017) and Nagou (2016) examined on the provision of better infrastructure facilities, market size and abundance of natural resources attracts direct investments while investment risks such as large fiscal imbalances and inflation discourage companies in establishing businesses in a host country. Hence, investment decisions are usually made based on the specific motivations of the MNC.

In South East Asia, Diaconu (2014) cited that foreign direct investments will continue to flourish in the region. Its attractiveness among investors in developed countries prior to the 1997 financial crisis was driven by their export orientation. She reported that Malaysia, Singapore, Thailand and Indonesia's competitive advantage started to dwindle for a decade now, with China and India attracting these types of investments. Hence, the author cited that with the relaxation of barriers to entry, good economic and political environment, and continued growth of these countries the region will enable them to maintain their attractiveness for direct investments.

Mixed results were generated for gross fixed capital formation's effect on foreign direct investments. Gupta and Singh (2016) and Maheswari (2015) found significant and positive effect of total investments on FDI while Ojong, Arikpo and Ogar (2015) revealed different findings. While India lagged behind other BRICS Countries, Gupta and Singh (2015) noted that it remains a very attractive destination for foreign direct investments next to China due to its high GDP growth rates, gross capital formation and industrial production index. Aside from these attributes, they added that China's maximum liquidity ratio and its institutional underpinnings significantly contributed in attracting direct investment. The authors suggested that India should strengthen its ease of doing business indicators to attract more investments. In another study, Maheswari (2015) utilized 10 macro-economic indicators affecting FDI in the country and found positive relationship between market size, trade openness, gross fixed capital formation, bank credit to private firms, index of industrial production, exchange rate, research and development and quality of labor force, while a negative relationship exist with wholesale price index. He suggested that India should maintain its growth and competitive advantage to attract more investments to flourish. Ojong, Arikpo and Ogar (2015) utilized OLS to measure the effect of market capitalization, trade openness, gross foxed capital formation and

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level of economic activity in FDI in Nigeria. They found negative and insignificant effect of GFCF on inward FDI.

Against this backdrop, the researchers would like to investigate the effect of six macroeconomic determinants on the foreign direct investment inflows in selected Asia and the Pacific Region. Given that there are empirical studies that were conducted on the factors that influence inward direct investments in the region, it is believed that they can fill this gap in the existing literature and shed light in explaining the drivers thereto.

The researchers utilized three panel (3) regression models to measure the impact of the macroeconomic indicators on the Foreign Direct Investment inflows, namely, Pooled OLS, Fixed-Effects and Random-Effects estimations.

III. Statement of the Problem:

The study seeks to investigate the drivers of inward FDIs in Asia and the Pacific region. Specifically, it seeks to answer the following problems:

1. What are the factors that significantly influence foreign direct investments in Asia and the Pacific region for the period 2002-2015?
2. Does Global Financial Crisis affect foreign direct investment inflows in the region?
3. What measures can be undertaken to enhance FDI in the region?

IV. Framework of the Study:

A. Theoretical Framework:

To date, there are several theories that explain the crucial role of foreign direct investments to the companies, especially if it wants to take advantage of the benefits that can be derived from it. While there are risks associated with the investments abroad, multinational firms will seek those investments where profits can be maximized and can provide competitive advantages.

Transaction Cost Theory. It was introduced by Oliver Williamson in 1975 who mentioned that the goal of the company is to minimize its costs related to the transfer or exchange of its available resources within the organization to the place where it intends to operate. Williamson believes that there should be an open system where economic activities occur outside the country's production system.

"(1) Markets and firms are alternative instruments for completing a related set of transactions; (2) whether a set of transactions ought to be executed across markets or within a firm depends on the relative efficiency of each mode; (3) the costs of writing and executing complex contracts across a market vary with the characteristics of the human decision makers who are involved with the transaction on the one hand, and the objective properties of the market on the other; (4) although the human and the environmental factors that impede exchanges between firms (across markets) manifest themselves somewhat differently within the firm, the same set of factors apply to both." (Williamson, 1975, p. 8)"

Theories of the Multinational Corporation: This theory was introduced by Stephen Hymer in 1960 where he found that international cross-border transactions were triggered by the firm's decision to move its resources to a host country such as finance, labor, expertise, etc. These types of investments through FDI will provide the firm economic rent from its investments. Hymer's dissertation revealed that market power and the counterparty's competitive advantages on certain activities which the multinational company does not have. (Ietto-Gilles, 2013)

Internationalization Theory: Buckley and Casson (as cited in Martynoga and Jankowska, 2017) introduced the said theory in 1976 which states that a firm prefers to invest in another

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country compared to its home country, to produce the goods and export them to maximize its returns in an imperfect environment.

Eclectic Paradigm: Dunning in 1977 (as cited in Rahman, Bridge, Rowlinson, and Kwok, 2011; Martynoga and Jankowska, 2017, introduced the Eclectic Paradigm, also known as OLI Paradigm, where he grouped firm-specific and macro-level factors to examine reasons why MNCs invest outside the home country. It states that they invest to find the ownership (O), location (L) and internationalization (I) advantages. He pointed out that these are important consideration when one makes a decision as it considers the sum of its total costs and benefits that can be derived from investing abroad.

B. Conceptual Framework:

As mentioned earlier, the study examines the impact of macroeconomic variables on FDI net inflows among 14 countries in Asia and the Pacific Region.

The model is shown below:

$$FDI_{it} = \beta_0 + \beta_1 IFL_{it} + \beta_2 GFC_{it} + \beta_2 TRD_{it} ++ \beta_6 CTR_{it} \quad \beta_3 IVA\_GDP_{it} + \varepsilon_{it}$$

Where:

FDI = Foreign direct investment inflows,
β = vector of coefficients,
GDP_gr = GDP growth rate
IFL= Inflation, consumer prices (annual %)
GFC = gross fixed capital formation (% of GDP)
TRD= ratio of total trade (import and export)/GDP
CTR = corporate Tax Rate
IVA_gdp = Industry Value Added (output)/GDP
ε = error term

Table 1: A-Priori Expectations

Variables	Description	Expected sign
GDP_gr	Gross Domestic Product growth rate	+
IFL	Market instability	-
GFC	Gross Fixed Capital Formation	+
TRD	Trade (total of import and export)/GDP	+
CTR	Corporate Tax Rate	-
IVA_GDP	Industry Value Added/GDP	+

A. Description of Variables

GDP growth rate is utilized to capture the short term fluctuations in macroeconomic conditions existing in a host country for the foreign direct investments.

Inflation is an indicator for risk or macroeconomic instability (Buckley et al, 2007; Anyanwu, 2011). This is viewed as the inability of the country to manage its political and economic activities, which more than often than discourages foreign investors. High costs of investments brought about by high interest rates and inflation will detract foreign investors, as they find this as the inability of the government to monitor its monetary and fiscal policies which reduce the MNC's return on investments (Anyanwu, 2011, Suleiman, Kaliappan and Ismail (2015). Foreign investors would prefer to invest in a country that has a stable institutional and financial environment (Akpan, Isihak and Asongu, 2014).

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TRD/GDP represents the ratio of total exports and imports vis-à-vis Gross Domestic Product. It signifies financial openness. Dunning mentioned that greater trade openness in a host country results to higher investments from outside the country.

Gross Fixed Capital Formation – it represents capital stock (fixed income securities, stocks and etc.) in the host country and the availability of infrastructure. As defined in the World Bank website, it comprises improvements made on land, offices, schools, houses, machinery and equipment purchases, plant road constructions, and other buildings.

Corporate Tax Rate: It represents an incentive or disincentive to the MNEs where the host country provides access to markets and profits.

Industry Value Added/GDP – it represents the contribution of the industry to the local business activities over the company's gross domestic product.

V. Research Methodology:

A. Research Design

The study utilizes both descriptive and causal/explanatory research designs. Descriptive research design is utilized to describe the characteristics of the phenomenon and how the different variables interact with each other. Since it will also consider the pre- and post-global financial crisis, descriptive research design is important to compare the results for the two sample periods (pre-and post-Global Financial Crisis and draw inference that may be relevant for policy-making. The study also utilizes causal/explanatory research design, as it will explain the levels of the effects of different factors on the foreign direct investment inflows in Asia and the Pacific region.

B. Method of Data Collection/Analysis

For this study, purposive sampling technique is used to gather a strongly balanced data. Only a total of 14 countries were included in the study, namely, Australia, Cambodia, China, Hong Kong SAR, India, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, South Korea, Thailand and Vietnam. In ASEAN, seven countries were included in the study as these are the only countries that have complete data.

The researcher utilizes secondary data sources. Aggregate data was culled from the World Development Indicators (2002-2015) from the World Bank website. The study utilizes panel data to evaluate the effects of six (6) macro-economic ,namely, GDP growth rate, inflation, gross fixed capital formation, trade openness, corporate tax rate and industry value added/GDP on the level of foreign direct investments in the region. Panel data is sometimes called longitudinal data, as it consists of multi-dimensional data that were collected at different points in time.

Initially, the researchers run the model using macroeconomic data that covered the full sample period from 2002 to 2015. The sample period was also divided into two time period to examine whether global financial crisis affected the level of inward foreign direct investments by measuring the impact of the six factors mentioned on the latter.

In this study, the regression model utilizes both pooled cross sectional data from the sample of fourteen (14) countries in Asia and the Pacific using several indicators and time series data for the period 2002-2015. It analyzes data to measure impact of the 2008 financial crisis on the level of Foreign Direct Investment inflows by dividing the sample period as follows: the pre-crisis period covers 2002-2008 while the post-crisis period covers 2009-2015. Pooled OLS was initially run the measure the effect of the macroeconomic indicators on foreign direct investment. The Fixed Effects Model was then utilized to eliminate any time invariant

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characteristics to determine the net effect of the independent variables. The Random Effects Model was also utilized after generating the data using FEM.

VI. Results and Discussions

Shown below are the results of the panel data regression model to measure the impact of macro-economic indicators on the inward foreign direct investments in Asia and the Pacific. Initial analysis was made using the entire period (2002-2005), followed by comparing pre- and post-crises periods.

A. Data Analysis for Model 1: 2002-2015

To examine the influence of the determinants on the foreign direct investment inflows, regression analysis using strongly balanced panel data were utilized. In the model, the regression estimate is as follows:

The model was initially estimated using Pooled Ordinary Least Square using Stata. The researchers will begin by estimating the full sample model for the period 2002-2015 (Model 1) using the three estimation methods, namely, Pooled Ordinary Least Square method, Fixed-Effects Method and Random-Effects Method. After the full sample is presented, discussion will be followed for the impact of Global Financial Crisis on FDI net inflows using the pre-crisis from 2002 to 2008 (Model 2) and post-crisis from 2009-2015 (Model 3)) data.

Table 2: Regression Results for Model 1 using Pooled OLS Model

Regression Method:	Pooled OLS		
		Number of observations =	196
		F (7, 188) =	10.82
		Prob > F =	0.0000
		R^2- =	0.5146
		Prob > x^2 =	3.70

np1	Coefficient	SE	t	Pr >|z|	[95% Confidence Interval]	
gdp_gr	2.19	8.85	2.47	0.014	4.41	3.93
ifl	-1.68	7.87	-2.14	0.034	-0.323	-1.28
gfc	5.72	8.34	6.86	0.000	4.07	7.36
ctr	3.21	4.91	0.65	0.514	6.47	1.29
trd	1.23	3.72	3.30	0.001	4.93	1.96
iva_gr	-7.9	2.41	-0.33	0.743	-5.54	3.96
_cons	-1.84	294	-6.27	0.000	-2.42	-1.26

Table 2 in the preceding page depicts the estimation results using robust Pooled Ordinary Least Square method, also known as the naïve model. Corporate tax rate and industry value added did not provide positively and negatively significant relationship with FDI inflows in the region, respectively. Only four (4) indicators were found to be significantly influencing FDI inflows for the full sample period. These are GDP_gr, IFL, GFC and TRD. Trade/gdp ratio and gross fixed capital formation/gdp were found to be statistically significant, with p-values at 0.001 and 0.000 at 99% confidence intervals. The coefficient generated for trade openness was significant and positive, which confirms the theory on internationalization of firms where firms will invest in countries with no trade barriers and economic environment allows business to flourish.

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On the other hand, the negative significant coefficient derived for inflation, which is a measure of macroeconomic instability, is similar to the findings of Anyanwu (2011) and the expected sign related to FDI inflows as shown in the a priori expectations provided in Table 1 . Gross fixed capital formation is found to be positive and significant at 0.01. Overall, the regression method is good because it passes the F-test with a value of 10.82, and a chi-square value of 0.0000. Thus, it is highly significant at 99% confidence level. The R^2 value = 0.5146 only suggests that 51.46% of the variation of FDI can be explained by the indicators provided above.

Table 3: Hausman Test Results for Fixed Effects and Random Effects Models

	--------- Coefficients --------			
Variables	(b) FEM	(B) REM	(b-B) Difference	Sq.rt. (diag (V_b-V_B) S.E.
gdp_gr	-1.18e	-2.69e	-9.08e	5.17e
ifl	8.98e	7.88e	1.1e	1.76e
gfc	3.03e	4.09e	-1.06e	3.83e
ctr	-2.03e	-1.13e	-9.01e	3.27e
trd	1.89e	9.33e	9.52e	7.43e
iva_gr	5.67e	1.06e	4.61e	4.24e

b= consistent under Ho and Ha

B= inconsistent under Ha, efficient under Ho

Test: Ho: difference in coefficients not systematic

$x^2(7)$ = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 12.23

Prob > x^2 = 0.0934

(V_b-V_B is not positive definite)

Table 3 shows the results for Model 1 using Generalized Least Square method using Fixed Effects and Random Effects estimators, respectively. For both types of regression estimations, it shows that GDP is no longer considered as a statistically significant driver of foreign investment in the region. In the study of Iamsiraroj, S. and Doucouliagos, H. (2015), they mentioned that the use of this indicator is more effective when a single country study is conducted compared to the multiple country or cross-country data. In their study, they also found that the influence of GDP on FDI is more evident in developing countries compared to the developed countries.

It also presents the Hausman Test is important to examining which among the two models is better (Fixed-Effects or Random Effects**).** Comparison between the fixed effects specification and the random effects results are undertaken. When Ho = 0, FEM and REM estimates do not differ from each other; thus, REM is better compared to FEM. However, when the null hypothesis is greater than 0, the Fixed effects Model is better. Since the p value is greater than 0.0, therefore FEM is a better estimation model compared to REM. Hence, one can also use the Pooled OLS estimation results shown in the preceding discussion as it generated more significant variables compared to the two methods.

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Table 4: Regression Results for Model 1 using Random Effects Model

Coefficients: generalized least squares
Random Effects Model

			No. of observations =	196
R^2	within =	0.2507	No. of groups =	14
	between=	0.4752	Time periods =	0
	overall =	0.4107	F (7,175) =	74.04
			Prob > x^2 =	0.0000

np1	Coefficient	SE	z	Pr > |z|	[95% Confidence Interval]	
GDP_gr	-1.18	0.15	-0.102	0.309	-3.45	1.1
IFL	8.98	6.72	1.34	0.183	-4.27	2.22
GFC	3.03	7.99	3.79	0.000	1.45	4.61
CTR	-2.03	7.44	-2.73	0.007	-3.5	-5.75
TRD	1.89	9.33	2.02	0.045	0.04	3.73
IVA_gr	5.67	6.42	88	0.378	-7	1.83
_cons	-5.87	3.74	-1.57	0.119	-1.33	1.52

As can be gleaned on Table 4, Random Effects Model is considered a better model than the other two models just discussed since the panel data regression model utilized cross sectional and time series data. Results of the panel data regression for the entire period are shown on the table above. Unlike the naïve model, two variables appeared to be significantly affecting FDI inflows, namely, gfc and ctr.

Like the two models, the p-value of 0.000 is less that 0.05; thus, it is a really a good fit. The fact that the projected F Test value = 74.04 is already a good sign. Similar to the Fixed Effects estimation, same results were generated for GFC, CTR and trade where these variables are statistically significant at different confidence intervals. Corporate tax rate has significant negative influence on FDI with a p-value of 0.007, which is significant at 99% confidence interval. This is consistent with the findings of (Roudonen, 2014; Iamsiraroj and Doucouliagos, 2015 and Mandinga, 2015) where they found its negative and significant effect on FDI. This is understandable considering that lower taxes attract foreign direct investors to relocate or establish business in a country where long-term growth of the company can be enhanced.

Looking at the R2, it shows that it indicates that 41.07% variations in the level of FDI inflows among countries can be explained by the 7 measures of macroeconomic indicators as contrasted to the R2 = 0.1904 using FEM. Given this value, which is lower than the critical value, with an R2 of 19.22, the model is good.

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B. Data Analysis for Model 2: Comparison between Pre-Crisis and Post-Crisis Periods

Table 5: Regression Results on the Effects of Macro-economic variables on FDI net Inflows using Pooled Ordinary Least Square Method for two Sample Periods
(Pre- and Post- Global Financial Crisis)

No. of observations	98	R^2	0.5427
F (7, 90)	8.52	Prob > x^2 =	0.0000

No. of observations	98	R^2	0.6453
F (7, 90)	10.09	Prob > x^2 =	0.0000

Dep. Variable = FDI_NI	Model 2 (2002-2008)				Model 3 (2009-2015)			
	Robust				Robust			
	Coefficient	SE	t	P > |t|	Coefficient	SE	t	P > |t|
GDP_gr	4.29E+09	1.19E+09	3.61	0.000	4.33E+09	1.75E+09	2.47	0.015
IFL	-4.44E+08	3.81E+08	-1.17	0.247	-4.70E+09	1.54E+09	-3.05	0.003
GFC	2.87E+09	4.99E+08	5.75	0.000	7.45E+09	1.02E+09	7.26	0.000
CTR	3.55E+10	4.72E+10	0.75	0.454	1.05E+11	8.69E+10	1.21	0.229
TRD	4.65E+07	3.37E+07	1.38	0.171	2.08E+08	6.46E+07	3.22	0.002
IVA_gr	3.39E+08	2.04E+08	1.66	0.100	-6.62E+08	3.30E+08	-2.01	0.048
_cons	-1.64E+11	2.86E+10	-5.75	0.000	-1.85E+11	5.45E+10	-3.4	0.001

As shown in Table 5, regression estimation using Ordinary Least Squares (OLS) method finds that prior to the financial crisis, GDP_gr and GFC are positively correlated with FDI inflows among the 14 countries that were included in the study, where the relationship is even more pronounced as it posted significant relationship with the latter. For the post-crisis period (Model 3), its results are more glaring, with the macro-economic variables except corporate tax rate showing significant relationship with inward FDIs. The estimated coefficients for Model 2 are highly significant at 99% confidence intervals.

It can be noted that while some countries such as China, Hong Kong and India reduced their corporate tax rates prior to the crisis, there is a positive insignificant findings between the relationship of taxes and FDI inflows. This means that despite the reduction, whether prior to or after the crisis, FDI Inflows are still favorable affected by the variables just mentioned.

It is only inflation, after the crisis, where a negative yet significant effect of investments is evident. This only reaffirms the A-priori expectations and the findings of Abimbola and Oludiran (2017), Nagou (2016), Suleiman, Kaliappan and Ismail (2015) and Anyanwu (2011) that in increase in inflation results to decrease in foreign direct investments due to the perception by the MNCs of the risks associated with their future investments. This is understandable considering that most of the countries' inward FDIs declined substantially after the crisis. Hence, higher inflation does not help as it will cost more for MNCs operate. Despite

this, with the increase domestic investments and a favorable short-term economic condition in most of these countries, FDI inflows slowly bounced back, given that the region is still attractive investment for MNCs in developed economies.

As a whole, this regression method is good because it passes the F-test with a value of 8.52 for Model 1 and 10.01 for Model 2, respectively, generating chi-square values of 0.000. Thus, it can be noted that the effect of these variables is highly significant at 99% confidence interval. The R^2 value = 0.4802 for the pre-crisis period only suggest that almost 48 percent of the variation of FDI can be explained by the indicators while the slightly higher R^2 value = .4889 also proves that almost 49% of the variations in the level of FDI are explained by the sets of indicators used in the research.

Table 6: Hausman Test Results using Fixed Effects and Random Effects Models for Pre-Crisis Period

	--------- Coefficients --------			
Variables	(b) FEM	(B) REM	(b-B) Difference	Sq.rt. (diag (V_b-V_B) S.E.
gdp_gr	1.05e	2.42e	-1.37e	3.15e
ifl	-1.55e	1.58e	-3.14e	5.18e
gfc	1.85e	2.25e	-2.06e	8.77e
ctr	-2.77e	-4.51e	-2.32e	6.33e
trd	2.83e	3.49e	2.48e	9.58e
iva_gr	4.64e	1.14e	3.50e	6.47e

b= consistent under Ho and Ha
B= inconsistent under Ha, efficient under Ho

Test: Ho: difference in coefficients not systematic
$x^2(7)$ = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 27.57
Prob > x^2 = 0.003
(V_b-V_B is not positive definite)

Table 7: Hausman Test Results using Fixed Effects and Random Effects Models for Post-Crisis Period

	--------- Coefficients --------			
Variables	(b) FEM	(B) REM	(b-B) Difference	Sq.rt. (diag (V_b-V_B) S.E.
gdp_gr	1.29e	1.29e	-.172	2.47e
ifl	2.38e	6.48e	1.73e	-
gfc	8.31e	4.28e	-3.45e	7.22e
ctr	6.85e	3.75e	3.10e	-
trd	-2.26e	9.72e	-3.23e	1.70e
iva_gr	-5.62e	-4.27e	-1.35e	3.21e

b= consistent under Ho and Ha

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B= inconsistent under Ha, efficient under Ho

Test: Ho: difference in coefficients not systematic
$x^2(7)$ = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 40.08
Prob > x^2 = 0.000
(V_b-V_B is not positive definite)

Table Nos. 6 and 7 depict the Hausman Test results for the pre-crisis and post-crisis results using Fixed-Effects or Random Effects, to determine which of the two estimators or models is better). As mentioned earlier, when Ho = 0, FEM and REM estimates do not differ from each other; thus, REM is better compared to FEM. Since the null hypothesis is less than 0.05, the Fixed Effects Model is better compared to random effects.

Table 8 in the succeeding page depicts the regression estimation derived from the Fixed Effects Model on the inward foreign direct investments. The left panel of the table depicts the results generated before the Global Crisis (2002-2008) while the right panel presents the findings for the 2009-2015 (post-crisis period). It can be observed that the explanatory power of the FEM model is slightly higher for the pre-crisis period (Model 2) compared to the post-crisis period.

Prior to the crisis, only two variables (CTR and TRD) are statistically significant, while inflation was found to be statistically significant after the crisis. The corporate tax rate was found to be significant and negatively correlated with FDI net inflows prior to the crisis, reflecting a p-value of 0.001, at 99% confidence interval. As mentioned earlier, most of the countries except for Vietnam, Australia, Philippines and Indonesia reduced their corporate tax rates. Among the countries in the region, Cambodia significantly reduced its tax rate from 30% to 21.5% prior to the crisis and as a result, its FDI inflows greatly increased in size. Hong Kong SAR's reduction of 1% in tax rates is already crucial considering that it has the lowest income tax rate regime among the countries in the region. Singapore showed several decreases in tax rates from a high of 25% in 2002 to as low as 18% in 2008. Majority of the countries maintained their tax rates immediately after the crisis.

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Table 8: Regression Results on the Effects of Macro-economic variables on FDI net Inflows using Fixed Effects Model for two Sample Periods
(Pre- and Post- Global Financial Crisis)

R^2		No. of observations	98
within =	0.3055	No. of groups=	14
between=	0.0079	F (7,77) =	4.84
overall =	0.0162	Prob > x^2 =	0.0001

R^2		No. of observations	98
within =	0.1725	No. of groups=	14
between=	0.0050	F (7,77) =	2.29
overall =	0.0016	Prob > x^2 =	0.0355

Dep. Variable = FDI_NI		Model 1 (Pre-Crisis Period)					Model 2 (Post-Crisis Period)			
		Coefficient	SE	t	P > |t|		Coefficient	SE	t	P > |t|
GDP_gr		1.05E+09	1.00E+09	1.05	0.297		1.29E+09	1.45E+09	0.89	0.375
IFL		-1.55E+08	8.14E+08	-0.19	0.849		2.38E+09	1.05E+09	2.27	0.026
GFC		1.85E+08	1.10E+09	0.17	0.867		8.31E+08	1.29E+09	0.65	0.52
CTR		-2.77E+11	9.40E+10	-2.94	0.004		6.85E+10	1.28E+11	0.53	0.595
TRD		2.83E+08	1.07E+08	2.63	0.01		-2.26E+08	1.93E+08	-1.17	0.245
IVA_gr		4.64E+08	7.48E+08	0.62	0.537		-5.62E+08	6.88E+08	-0.82	0.417
_cons		1.80E+10	4.38E+10	0.41	0.683		-6.71E+10	7.01E+10	-0.96	0.341

Japan surprisingly reduced its tax rates from 41% until 2009 to 31 percent in 2015. Within this period, four series of reduction in corporate tax rates were undertaken. Philippines started to catch up with its neighboring countries by reducing the rate from 32% to 30%.

Inflation after the crisis posted a significant and negative effect on the inward direct investments, as can be gleaned from the p-value of 0.026, at 95 percent confidence intervals. This only suggests that when inflation is controlled or reduced, many direct investors would prefer to establish their operations in the host country that provide them lower possible costs not only in the allocation of capital funds but also in the costs of procuring the services and payment of labor, etc.

So far the goodness of the fit of the Fixed Effects Model (REM) is indicted by its R2 value of 0.0162 for the pre-crisis period (Model 2) and 0.0016for the post-crisis period (Model 3), which indicates that the model is good. While the value is low, it still shows that the overall variation in the observed level of FDI net inflows is jointly predicted by the six macro-economic indicators used in the study.

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VII. Conclusion and Recommendations:

Foreign direct investments in Asia and the Pacific have undergone a lot of improvements over the years, as the region is considered as one of the important host of investments by Multinational Corporations. The empirical evidence reveal that fixed effects is preferred over Random Effects estimation. For the entire period, it shows that random effects is better compared to the fixed effects while for the effect of the global financial crisis, fixed effects is the preferred model.

The results for the entire period, gross fixed capital formation and corporate tax rate appeared to be the important drivers of inward foreign direct investments in the region. The total investments generated by a country, with or without the participation of the MNC in the production and/or distribution network significantly affect inward foreign direct investments. Potential investors from developed economies consider this advantage inherent in a host country in making their preliminary investigation of the competitive environment it will consider prior to establishing its operations abroad. On the other hand, a good fiscal environment as seen by the foreign investors through tax incentives can signal favorable business environment which will lead to more direct investments from advanced or developed economies. Prior to the global financial crisis, taxes were reduced by many countries in the to attract investments. Despite further reduction after the crisis, it did not show any impact on foreign direct investments. Especially in Asia, many governments have instituted reforms and created policies that are conducive in attracting business to establish operations in their country. While it is the goal of the government to protect domestic firms, it usually strikes a balance between where it wants to be in the international markets and what the local firms need to protect their businesses.

The empirical evidence has pertinent policy implications for the Asia and the Pacific Region. First, Asia will still remain as a very attractive host for foreign direct investments not only from the developed economies but also within the region. It is believed that with better financial environment, institutional underpinnings and a conducive environment for investors to locate their business in the region. It must be noted that the countries included in the study consist of a mixture of developed and developing countries; thus, intra-regional trade among them may also be possible.

As the study only focused on the macro-economic variables as indicators of FDI inflows, it is suggested that the use of a combination of macro-economic and firm-specific variables as determinants of foreign direct investment must be undertaken in the region. Moreover, it is also suggested that institutional environment's impact, unemployment or quality of labor and infrastructure development is seen as important indicators of inward FDIs. A comparison among countries in Asia and Latin America, or Southeast Asia and South Asia will also prove to be a promising research. It is further suggested that country comparisons can also be undertaken using multiple regression model.

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