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Asian Journal of Agricultural Extension, Economics & Sociology
3(6): 505-520, 2014; Article no. AJAEES.2014.6.004

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Foreign Direct Investment and Gross Domestic Investment: Evidence from Asean 5

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

Original Research Article

Received 28th March 2014
Accepted 12th May 2014
Published 18th June 2014

ABSTRACT

This paper is aiming to evaluate the impact of foreign direct investment (FDI) and gross domestic investment (GDI) on the growth rate of real gross domestic per capita of the founding members of ASEAN group namely Malaysia, Singapore, Thailand, Indonesia and Philippines. By following the neo classical cum neo-liberal theories, and the dependency theory, this study maintains that the economic growth rates as one of the best proxy to measure economic development for developing countries. Time-series analyses utilizing the Autoregressive Distributive Lag (ARDL) technique were employed. The results of the ECM-ARDL for long run analysis showed that most of the coefficients in the long run derived from Malaysia, Thailand, Singapore and Philippines are significant. These results are consistent with the Dependency, Neo-classical and neo-liberal theory. Other country in this study shows a mix evidence of relationship between their independent variables and the dependent variables.

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Keywords: FDI; economic growth; ASEAN 5; ARDL.

1. INTRODUCTION

In the last three decades, FDI flows have grown rapidly in all over the world. This is because many developing countries see FDI as an important element in their strategy for economic development [1]. The success of the Association of South East Asia Nations (ASEAN) especially the main ASEAN5 economies (Malaysia, Indonesia, Singapore, Philippine and Thailand) has often been cited as a referred model for the rest of the developing world. It has attracted very huge amount of FDI compared to other regions in the world. Although these countries faced a challenging period such as the Asian financial crisis in 1997 and global recession in 2008, these countries have managed to sustain their economy well and cushion the impact during these periods as they have achieved a steady development between 1970-2000. This admiration led World Bank in 1993 to introduce a book called "The East Asian Miracle" that analyzed why East Asian economies grew faster than emerging markets in Latin America, Africa, and elsewhere. These economies, the study concluded, achieved high growth rates by getting the basics right, promoting investment, nurturing human capital, and opening up to export manufacturing [2]. These countries have even outperformed all regions in the world including the industrial countries in certain aspects [3,4]. The governments of all five ASEAN nations in this study have made a considerable effort to attract FDI into their nations. FDI is believed to have the potential to increase economic growth and enlarge the productive capacity of the economy by creating both forward and backward linkages. In general, the spillover effects of foreign capital and technology transfer have an impact on both demand and supply sides of the economy that in turn, have created new employment opportunities and stimulated aggregate demand of the nation.

Based on previous studies, it appears that a fall in FDI is strongly connected to growth levels among the ASEAN5 nations [5]. If indeed there is a strong association between FDI flows and growth levels, then the trend of falling FDI share of the individual ASEAN5 nations in both the developing nations and world blocs coupled with decreasing values of FDI inflows per se for some nations it would be problematic to sustain growth levels in these nations. Hence, it appear that the ASEAN5 nation's growth levels are affected by FDI inflows and world FDI share [6,7,8]. These observations suggest that the growth levels of ASEAN5 nations are strongly depending on the MNC that transmit FDI to these nations. The ASEAN5 nations have to use the best strategies to attract more FDI into their country besides improving their domestic investment to achieve more sustainable development. Domestic capital is regarded as the more sustainable capital if FDI-led growth nations are unable to master from the FDI technology when it declines significantly over time. At another level of argument, while ASEAN5 nations expand a great deal of effort and resources to attract FDI, dependency theorists postulate that Gross Domestic Investment is the more potential capital than the neo-liberal FDI in impacting growth.

2. BACKGROUND OF THE STUDIES

Given the significance of FDI towards the countries' growth, the main purpose of this study is to examine individually the economic impact of FDI on Malaysia, Thailand, Indonesia, Singapore and Philippines (ASEAN5). Studying on how growth levels are affected by FDI is important for the ASEAN because apparently when FDI decrease, it will also decrease the growth levels. As seen by the global trend, it is observed that the FDI inflows into some of ASEAN5 countries have been declining for some years. Besides, the share of each of the

ASEAN5 countries in the developing world and world bloc are also declining. Therefore, against this uncertain investment climate, it becomes imperative to investigate the impact of FDI on growth, its dependency and the extent of that dependency to be understood in the economics and not sociological discourse.

The link between FDI inflow and GDP per capita (growth) for ASEAN5 can be viewed on Diagram 1 below. The diagram reveal that most of the time, as FDI inflow increases, the GDP per capita for the countries will also increase.

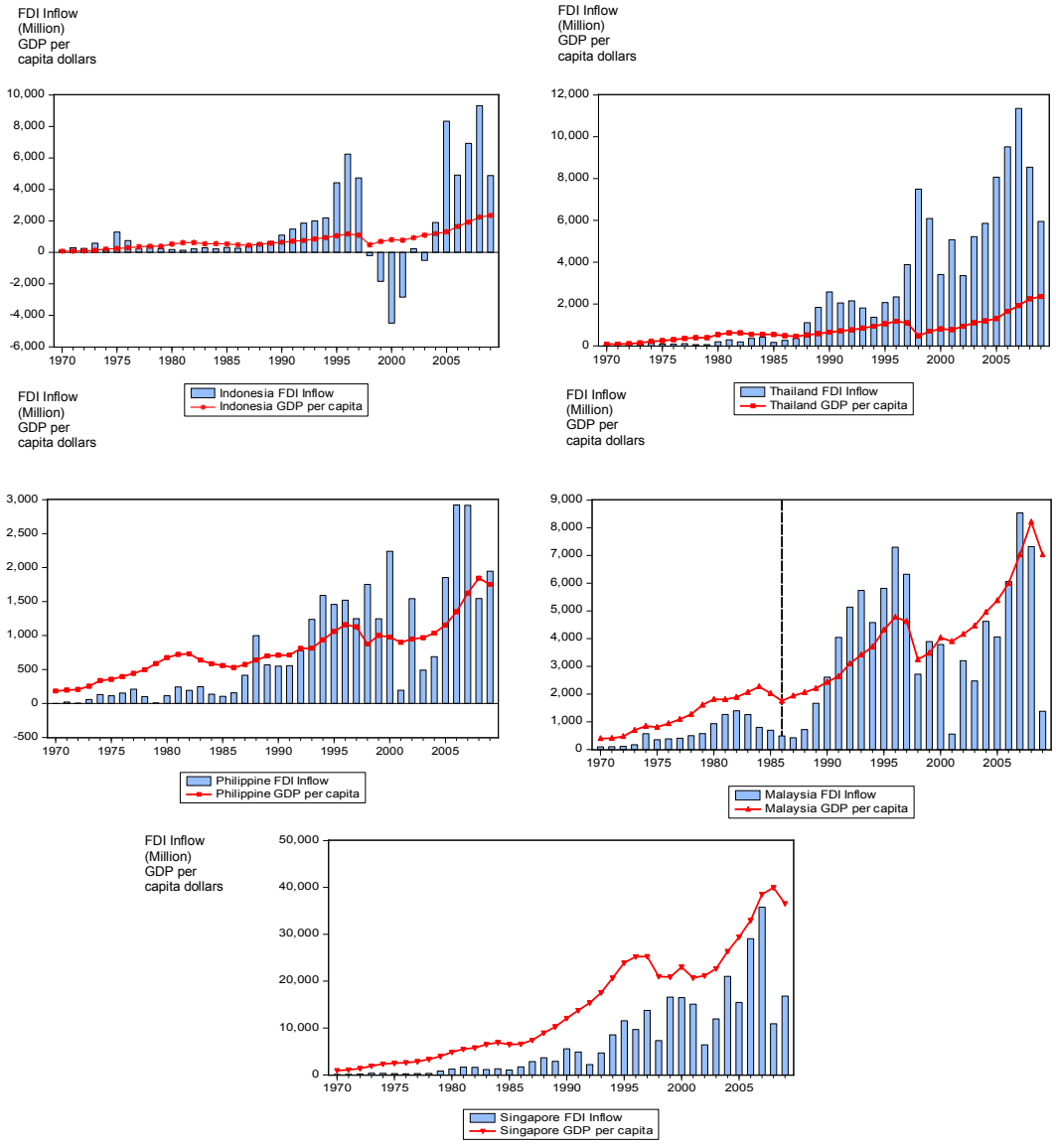


Diagram 1. FDI Inflow and GDP Growth

3. EMPIRICAL STUDIES

Earlier studies based on theoretical literature examining the relationship between FDI and growth had suggested a negative relationship for developing countries [9,10]. The idea of this study is that FDI was concentrated on low-priced primary exports to developed countries, and had a negative impact on overall growth. However studies by [11,12] showed that FDI had a positive impact on productivity and growth in developing countries. Further, a positive impact effect of FDI on improving growth and per capita growth is found in studies such as [13,14,15]. The past findings of the impact of growth from FDI were also mostly following different school of thought.

The more recent studies support the empirical studies but show ambiguous findings. For example, [16,17] find that FDI has a positive significant effect on economic growth while others suggest a nonsignificant or negative effect of FDI on economic growth [18,19,20]. Few studies have proven that FDI can contribute to growth through capital formation and technology transfer [21] along with accumulation of knowledge due to labor training and skill acquisition [22].

Most of the previous studies also show a positive impact of FDI on the host country economy [23,24,25,26,27]. However, the impact varies among countries [28,29,30,31]. For example, [32] found unidirectional causality running from growth to FDI in the case of Chile but found bidirectional causality for Thailand and Malaysia. [33] demonstrates that FDI improves growth in MENA countries, though the effect varies differently among countries. [34] found that the output of less developed countries responds more positively to FDI. [35] found that FDI has a positive impact on growth in rich countries.

These massive finding of FDI impact towards growth are adopting various conventional econometric testing but yet not many have applied more concrete and advance technique such as panel and bound test approaches. Perhaps, by using more recent techniques, this paper is able to fill up the literature gap of studies on FDI impact towards GDP especially in ASEAN region.

4. METHODOLOGY

4.1 The Model

In this study, the short and long-run dynamic relationships between economic growth and FDI are estimated by using the newly proposed ARDL bound testing approach which was initially introduced by [36]. The ARDL has numerous advantages. Firstly, unlike the most widely method used for testing cointegration, the ARDL approach can be applied regardless of the stationarity properties of the variables in the samples and allowed for inferences on long-run estimates, which is not possible under the alternative cointegration procedures. In other words, this procedure can be applied irrespective of whether the series are I(0), I(1), or fractionally integrated [37,38] thus avoids problems resulting from non-stationary time series data [39]. Secondly, the ARDL model takes sufficient numbers of lags to capture the data generating process in a general-to-specific modelling framework [40]. It estimates $(p+1)^k$ number of regressions in order to obtain optimal lag-length for each variables, where p is the maximum lag to be used, k is the number of variables in the equation. Finally, the ARDL approach provides robust results for a smaller sample size of cointegration analysis. Since

the sample size of our study is 41, this provides more motivation for the study to adopt this model.

Following the simple model introduced by [41],

$$GDP = \beta_0 + \beta_1 FDI_t + \beta_2 EXP_t + \varepsilon_t \quad (1)$$

we expand the model by incorporating domestic investment from [42,43].

The ARDL model used in this study can be written as follow:

$$GDP = \beta_0 + \beta_1 FDI_t + \beta_2 GDI_t + \beta_3 EXP_t \varepsilon_t \quad (2)$$

GDP_t = Gross Domestic Product Per Capita in US (2000) Dollars
FDI_t = FDI inflows in terms of % GDP
GDI_t = Gross Domestic Investment in terms of % GDP
EXP_t = Exports of goods and services as % GDP

Based on neo-classical theory, neo-liberalism, dependency, we expect:

$$\beta_0, \beta_1, \beta_2, \beta_4 > 0,$$

Based on dependency theory (level of investment hypothesis), we expect:

$$\beta_1 < \beta_2$$

Based on neo-classical and neo-liberal theory, we expect:

$$\beta_1 > \beta_2$$

Sahoo and Mathiyayazhagan demonstrate that FDI impacts growth through export promotion. It assumed that FDI can play important role as a source of capital, management, and technology in developing countries such as ASEAN5 countries. While there is a postulation that FDI promotes domestic investment, there is also contestation that FDI crowds out domestic investment [44].

Let the long run relationship between the four variables in log linear form is given as follows:

$$LnGDP_t = \underbrace{\alpha + \beta_1 LnFDI_{t-1} + \beta_2 LnGDI_{t-1} + \beta_3 LnEXP_{t-1} + \varepsilon}_{\text{(Long Run Estimates)}} \quad (3)$$

Equation 4 below basically incorpates the short run dynamics into the adjustment process.

$$\underbrace{\Delta LnGDP_t = \alpha + \sum_{i=1}^{v} \sigma_i \Delta LnGDP_{t-i} + \sum_{i=0}^{s} \beta_i \Delta LnFDI_{t-i} + \sum_{i=0}^{r} \epsilon_i \Delta LnGDI_{t-i} + \sum_{i=0}^{q} \in_i \Delta LnEXP_{t-i} + d\varepsilon_{t-1} + u_t}_{\text{(Short Run Estimates)}} \quad (4)$$

Finally, we transform the model into Bound testing approach in equation (5) below:

$$\Delta \mathrm{LnGDP_t} = \alpha + \sum_{i=1}^{v} \sigma_i \Delta \mathrm{LnGDP_{t\text{-}i}} + \sum_{i=0}^{s} \beta_i \Delta \mathrm{LnFDI_{t\text{-}i}} + \sum_{i=0}^{r} \epsilon_i \Delta \mathrm{LnGDI_{t\text{-}i}} + \sum_{i=0}^{q} \in_i \Delta \mathrm{LnEXP_{t\text{-}}} \beta_0 \mathrm{LnGDP_{t\text{-}1}} + \beta_1 \mathrm{LnFDI_{t\text{-}1}} + \beta_2 \mathrm{LnGDI_{t\text{-}1}} + \beta_3 \mathrm{LnEXP_{t\text{-}1}} + u_t \quad (5)$$

where Δ is the first-difference operator, u_t is a white-noise disturbance term and all variables are expressed in natural logarithms. The above final model also can be viewed as an ARDL of order, (v s r q). The model indicates that economic growth in terms of real GDP per capita tends to be influenced and explained by its past values, so it involves other disturbances or shocks. From the estimation of ECMs, the long-run elasticities are the coefficient of the one lagged explanatory variable (multiplied by a negative sign) divided by the coefficient of the one lagged dependent variable [45]. For example based on the final model above, the long-run FDI, GDI and EXP elasticities are (β_2 / β_1), (β_3 / β_1) , and (β_4 / β_1) respectively. The short-run effects are captured by the coefficients of the first-differenced variables. The null of no cointegration in the long run relationship is defined by: $H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ is tested againsts the alternative of $H_1 : \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$, by means of familiar F-test. However, the asymptotic distribution of this F-statistics is non-standard irrespective of whether the variables are I(0) or I(1). For a small sample size study ranging from 30 to 80 obervations, [46] has tabulated two sets of appropriate critical values. One set assumes all variables are I(1) and another assumes that they are all I(0).

This provides a bound covering all possible classifications of the variables into I(1) and I(0) or even fractionally integrated. If the F-statistic falls below the bound level, the null hypothesis cannot be rejected. On the other hand, if the F-statistic lies exceed upper bound level, the null hypothesis is rejected, which indicated the existence of cointegration. If however, it falls within the band, the result is inclonclusive.

The main aim of this model is to verify the dependency of school's level of investment hypothesis that FDI is not as good as Gross Domestic Investment in generating growth. Furthermore, the model will also test if FDI and exports are positively associated with growth in the ASEAN5 countries. Since our study utilizes annual data with only 41 numbers of observations, the possible optimal lag-length to be considered is only 2.

4.2 Sources of Data

The data used in this research paper (GDP, FDI, Gross Fixed Capital formation as a proxy for GDI and EXP) for ASEAN5 countries (Malaysia, Thailand, Singapore, Indonesia, Philippines) are all collected from various sources such as International Monetary Fund Statistical Database, World Bank and UNCTAD database that can be found freely from the internet. The sample data used is annual data starting from 1970 up to 2010 comprising 41 years. The entire result of this paper is run by using Eview7 and Microfit 4.1 software.

5. RESULT AND ANALYSIS

5.1 Testing The Stationarity Of The Data

The analysis began with testing the unit root of every variable for each country in ASEAN5 which can be seen in Table 1. Unit root test such as augmented Dickey-Fuller (ADF) and the Phillip Perron (PP) test are done to determine the order of integration of the variables. The selection of lag is based on Schwarz Info Criterion. Based on the table below, the dependent

variable which is the GDP is found to be stationary at first difference for both no trend and with trend mostly at 1% and 5% significant level for each ASEAN5 countries. However, there is a mixed evidence of stationarity for the explanatory variables such as FDI where it is found to be stationary even at level for both no trend and with trend. Given that there is a mixed evidence of stationarity for the explanatory variables, we can conlude that the data used for each ASEAN countries' model of growth is suitable for running using ARDL approach.

5.2 Detecting The Long Run Relationship

In order to proceed with the ARDL testing, we first tested for the existence of long run relationship between the series of the variables. Table 2 above display the results of F-statistic for each ASEAN5 countries by using lag order equal to 2. The critical value is also reported in Table 2 based on the critical value suggested by [47] for a small sample size between 30 and 80. The test outcome has shown that the null hypothesis of no cointegration for Malaysia, Singapore, Thailand and Indonesia is rejected at 1% significant level given their F-statistic value is larger than the critical value for both restricted intercept with no trend and with trend while for the case of Indonesia, it is rejected at 5% significant level. This implies that the null hypothesis of no cointegration is rejected and therefore proving that there is a tendency for the variables to move towards long run equilibrium.

Table 1. Unit Root Test

Country	**DF/ADF Unit Root Test**			
Malaysia	**Level**		**First Difference**	
	No Trend	**With Trend**	**No Trend**	**With Trend**
LGDP	-1.532 (0)	-1.885 (0)	-5.366 (0)***	-5.535 (0)***
LFDI	-4.247 (0)***	-4.190 (0)**	-8.685 (0)***	-8.575 (0)***
LGDI	-2.128 (1)	-2.176 (1)	-4.459 (0)***	-4.489 (0)***
LEXP	-1.143 (0)	-1.561 (1)	-5.417 (0)***	-6.1555 (1)***
	PP Unit Root Test			
LGDP	-1.495 (1)	-1.993 (2)	-5.374 (1)***	-5.542 (1)***
LFDI	-4.215 (1)***	-4.157 (1)**	-9.021 (3)***	-8.922 (3)***
LGDI	-2.051 (2)	-1.870 (0)	-4.398 (3)***	-4.355 (4)***
LEXP	-1.142 (5)	-1.459 (1)	-5.382 (3)***	-5.609 (6)***
Country	**DF/ADF Unit Root Test**			
Indonesia	**Level**		**First Difference**	
	No Trend	**With Trend**	**No Trend**	**With Trend**
LGDP	-1.403 (0)	-2.116 (1)	-4.587 (0)***	-4.642 (0)***
LFDI	-3.176 (0)**	-3.113 (0)	-7.912 (0)***	-7.894 (0)***
LGDI	-2.207 (1)	-2.426 (1)	-4.311 (0)***	-4.256 (0)***
LEXP	-3.425 (0)**	-3.239 (0)*	-7.514 (0)***	-7.758 (0)***
	PP Unit Root Test			
LGDP	-1.312 (1)	-1.807 (2)	-4.587 (0)***	-4.662 (1)***
LFDI	-3.130 (1)**	-3.019 (2)	-10.023 (14)***	-14.856 (23)***
LGDI	-1.697 (1)	-1.869 (1)	-4.276 (5)***	-4.219 (5)***
LEXP	-3.406 (1)**	-3.179 (1)	-7.535 (1)***	-7.885 (2)***

Table1 Continued.....

Country	**DF/ADF Unit Root Test**			
Philippines	**Level**		**First Difference**	
	No Trend	**With Trend**	**No Trend**	**With Trend**
LGDP	-0.305 (2)	-1.130 (2)	-3.280 (0)**	-3.611 (1)**
LFDI	-9.148 (0)***	-9.723 (0)***	-13.941 (0)***	-13.690 (0)***
LGDI	-3.328 (1)**	-3.404 (1)*	-4.414 (0)***	-4.374 (0)***
LEXP	-1.153 (0)	-1.309 (0)	-5.711 (0)***	-5.737 (0)***
	PP Unit Root Test			
LGDP	-0.726 (3)	-1.411 (3)	-3.301 (2)**	-3.284 (2)*
LFDI	-7.823 (4)***	-8.576 (3)***	-14.732 (1)***	-13.690 (0)***
LGDI	-2.501 (1)	-2.554 (2)	-4.168 (5)***	-4.098 (5)**
LEXP	-1.175 (1)	-1.395 (2)	-5.711 (0)***	-5.737 (0)***
Country	**DF/ADF Unit Root Test**			
Singapore	**Level**		**First Difference**	
	No Trend	**With Trend**	**No Trend**	**With Trend**
LGDP	-2.644 (0)	-2.055 (0)	-5.468 (1)***	-6.214 (1)***
LFDI	-3.64 (0)***	-5.125 (1)***	-6.333 (4)***	-6.265 (4)***
LGDI	-1.548 (1)	-2.650 (1)	-4.215 (0)***	-4.187 (0)**
LEXP	-1.733 (0)	-2.803 (1)	-5.689 (0)***	-5.677 (0)***
	PP Unit Root Test			
LGDP	-4.423 (8)	-2.016 (3)	-4.822 (3)***	-5.736 (9)***
LFDI	-3.654 (1)***	-5.031 (13)***	-21.225 (38)***	-21.007 (38)***
LGDI	-1.341 (2)	-2.531 (2)	-4.237 (3)***	-4.215 (3)***
LEXP	-1.754 (2)	-2.293 (0)	-5.689 (0)***	-5.677 (0)***
Country	**DF/ADF Unit Root Test**			
Thailand	**Level**		**First Difference**	
	No Trend	**With Trend**	**No Trend**	**With Trend**
LGDP	-0.941 (1)	-1.968 (1)	-3.739 (0)***	-3.756 (0)**
LFDI	-1.816 (0)*	-2.849 (0)*	-6.504 (0)***	-6.437 (0)***
LGDI	-2.451 (1)	-2.349 (1)	-3.962 (0)***	-3.963 (0)**
LEXP	-0.914 (0)	-2.132 (0)	-6.630 (0)***	-6.576 (0)***
	PP Unit Root Test			
LGDP	-0.873 (3)	-1.417 (3)	-3.786 (1)***	-3.733 (2)**
LFDI	-1.816 (1)*	-2.849 (0)*	-6.525 (2)***	-6.455 (2)***
LGDI	-1.775 (1)	-1.661 (1)	-3.839 (4)***	-3.816 (4)**
LEXP	-0.914 (0)	-2.292 (2)	-6.630 (0)***	-6.576 (0)***

Note: (*),(**),(***) indicate significant at 10%,5% and 1% significance level respectively. Number in parentheses is standard errors.

Table 2. F-Statistics for Testing the Existence of Long Run Equation

ASEAN5	**F Statistics**	**Significant Level**	**Bound Testing (restricted intercept and no trend)**		**Bound Testing (restricted intercept and trend)**	
Malaysia	9.9975		I (O)	I (1)	I (0)	I (1)
Thailand	21.5281	1%	4.324	5.642	5.023	6.698
Singapore	5.7121	5%	3.116	4.094	3.560	4.798
Philippine	9.3167	10%	2.596	3.474	2.940	4.028
Indonesia	4.4630	Lags=2, k=3 and n=39 (41-2). This bound test statistic based on Narayan.				

5.3 The Short Run Analysis

The results of the ECM-ARDL for short run analysis show (Table 3) that most of the coefficients in the short run derived from Malaysia, Thailand, Singapore and Philippines are significant. Based on Malaysia's model, the GDI, FDI and EXP have a positive relationship with the country's GDP per capita in the short run. These results are consistent with the Dependency, Neo-classical and neo-liberal theory. Other countries in this study show a mix evidence of relationship between their independent variables and the dependent variables. For example, Thailand's FDI and EXP are negatively associated with GDP per capita while the change in GDI has strongly influenced the country's GDP per capita.

Table 3. Estimation of Short Run Restrictred Error Correction Model (ECM)

Panel A. Estimated Model					
	Malaysia	**Thailand**	**Singapore**	**Philippines**	**Indonesia**
Dependent variable: D(LGDP)	ARDL(1,2,0,2)	ARDL(2,1,1,0)	ARDL(1,0,0,0)	ARDL(2,1,0,2)	ARDL(1,0,0,0)
Constant	0.34948**	-0.10408	0.76779**	0.40273	0.38012
	(0.14948)	(0.098870)	(0.28431)	(0.35320)	(0.14675)
ECT_{t-1}	-0.086340**	-0.097639*	-0.063085***	-0.052638*	0.0047110*
	(0.042372)	(0.054442)	(0.016425)	(0.055997)	(0.018340)
$D(LGDP)_{t-1}$	-	-0.28658*	-	0.39926***	-
		(0.14443)		(0.14470)	
D(LGDI)	0.20013***	0.41298***	-0.064912*	0.14600***	-0.016493
	(0.046130)	(0.049598)	(0.035636)	(0.051058)	(0.044317)
$D(LGDI)_{t-1}$	-0.088121*	-	-	-	-
	(0.044786)				
D(LFDI)	0.028126***	-0.025928**	0.040002***	-0.0024700	0.0077341
	(0.0087773)	(0.0096227)	(0.013059)	(0.0049786)	(0.0058671)
$D(LFDI)_{t-1}$	-	-	-	-	-
D(LEXP)	0.12140*	-0.10408	0.76779**	0.061316	-0.095314***
	(0.064697)	(0.098870)	(0.048391)	(0.046155)	(0.034232)
$D(LEXP)_{t-1}$	-0.22530***	-	-	-0.13643***	-
	(0.070634)			(0.049914)	
Panel B. Diagnostic Testing					
Serial Correlation[a]	0.85482	0.054935	0.026048	2.4683	1.9456
	(0.355)	(0.815)	(0.872)	(0.116)	(0.163)
Functional Form[b]	1.2039	0.17637	0.91264	2.5815	1.2903
	(0.273)	(0.675)	(0.339)	(0.108)	(0.256)
Normality[c]	0.049914	0.73896	0.85157	1.9166	79.3184
	(0.975)	(0.691)	(0.653)	(0.384)	(0.000)
Heterosced asticity[d]	0.078895	0.1589E-5	1.6516	0.089005	0.027673
	(0.779)	(0.999)	(0.199)	(0.765)	(0.868)

Note: Dependent variable is D(LGDP). (*),(**),(***) indicate significant at 10%,5% and 1% significant level respectively. [a] Langrange multiplier test of residual; [b] Ramsey's RESET test using the square of the fitted values; [c] Based on a test of skewness and kurtosis of residuals; [d] Based on the regression of squared residuals on squared fitted values.

Meanwhile, Singapore model exhibit similar result like Malaysia for all the variables except that the country's growth on GDI has negative impact towards the GDP per capita and the impact was minimal which is only 6 percent is. For Philippines model, all the variables have the correct signs except for FDI which has shown negative relationship with the GDP per capita. Indonesia model also revealed mix evidence in term of their sign. The country's GDI

and EXP are negatively affected by the growth of the country's GDP per capita while the increase in FDI inflow has positively increased the growth of the country's GDP per capita.

The error correction term (ECT_{t-1}) for ASEAN5 countries except for Indonesia are significant and have the negative sign. Specifically, the estimated values of ECT are equal to -0.08,-0.09,-0.06 and -0.05 for Malaysia, Thailand, Singapore and Philippines respectively. The significant of ECT suggest that more than 8, 9, 6 and 5% of disequilibrium caused by previous years shock will be corrected in the current year and converges back to long run equilibrium for the countries respectively. These results show that speed of adjustment for those countries are very slow especially for Philippines.

To make sure that the models are robust, we applied various diagnostic checking. Based on Panel B, all the models passed all diagnostic checking which renders the long term estimates of these models to be reliable. In summary, the models have no evidence of serial correlation and heteroscedasticity effect in disturbances. Besides, those models also pass the Jarque-Bera normality test which suggest that the errors are normally distributed and all the model specification are well specified.

5.4 The Long Run Elasticities

Having found a long run relationship for all the ASEAN5 countries, we estimated long run model from equation 3 by normalizing the output growth. Since the sample observations are annual from 1970 to 2010, the maximum order of lags is chosen to be two as suggested by [48,49]. From this, the lag length that minimizes Schwarz Bayesian criterion (SBC) is selected. Table 4 reveals the summary of the long run estimation for ASEAN5 countries.

For Malaysia, EXP and FDI have significant effect on output or GDP per capita. Every 1 per cent increase in EXP lead to 0.96 per cent increase in output which is it coefficient value is relatively higher and significant at 5 per cent level. While for FDI, 1 per cent increase in its value shows that there will be 0.32 per cent increase in output. The GDI reveals a negative relationship in the long run and not significant with the country output with its very small value of coefficient. It shows that at 1 per cent increases in GDI, it leads to only 0.05 per cent decrease it its GDP per capita. The significantly positive values for coefficient FDI (β1), GDI (β2) and EXP (β3) confirm both neo-liberal and dependency. However the neo-liberal and dependency theorist differ in their postulation of the size of β. A more robust coefficient for FDI as opposed to GDI means that FDI contributes more to growth than GDI. Hence, FDI flows are better than Gross Domestic Investment in promoting growth in Malaysia which invalidate the postulation of FDI flows are not as good as Domestic Investment flows in promoting growth as hypothesized by the dependency side. [50] who extolled the virtue of FDI and its necessity to the Malaysian economy support this finding.

For case of Thailand, both GDI and EXP are strongly significant at 1 per cent level and this reveals a positive relationship with it output. As such, 1 per cent increase in GDI and EXP will lead to increase in GDP per capita by 1.54% and 1.01% respectively. Furthermore, Thailand's FDI is only significant at 10% level in determining growth in this model. The significantly positive value for GDI and significant negative value of FDI has validated the hypothesis that FDI is not as good as Domestic Investment in promoting growth. Hence, this finding support the idea of Dependency theory and challenges the view point that capital is capital regardless of its origin as put forth repeatedly by the neoliberal [51].

Table 4. Estimation of Long Run Elasticities

Country/ARDL (p,q,r,s)	Malaysia ARDL(1,2,0,2)	Thailand ARDL(2,1,1,0)	Singapore ARDL(1,0,0,0)	Philippines ARDL(2,1,0,2)	Indonesia ARDL(1,0,0,0)
Dependent variable: LGDP*					
Constant	4.0477	-1.0660	12.1707	7.6510	-80.6885
	(3.6414)	(1.3805)	(4.9800)	(2.7827)	(304.3866)
LGDI*	0.056819*	1.5421***	-0.0290*	-0.79473*	3.5009*
	(0.25899)	(0.50162)	(0.75865)	(1.0948)	(10.1300)
LFDI*	0.32576*	-0.10722*	0.63410*	-0.046924*	-1.6417*
	(0.19765)	(0.087491)	(0.23200)	(0.088272)	(6.7403)
LEXP*	0.96072**	1.0164***	0.059761*	0.65130*	20.2323*
	(0.15275)	(0.15128)	(0.75865)	(0.42712)	(74.1792)

Note: (*),(**),(***) indicate significant at 10%,5% and 1% significance level respectively. Number in parentheses is standard errors.

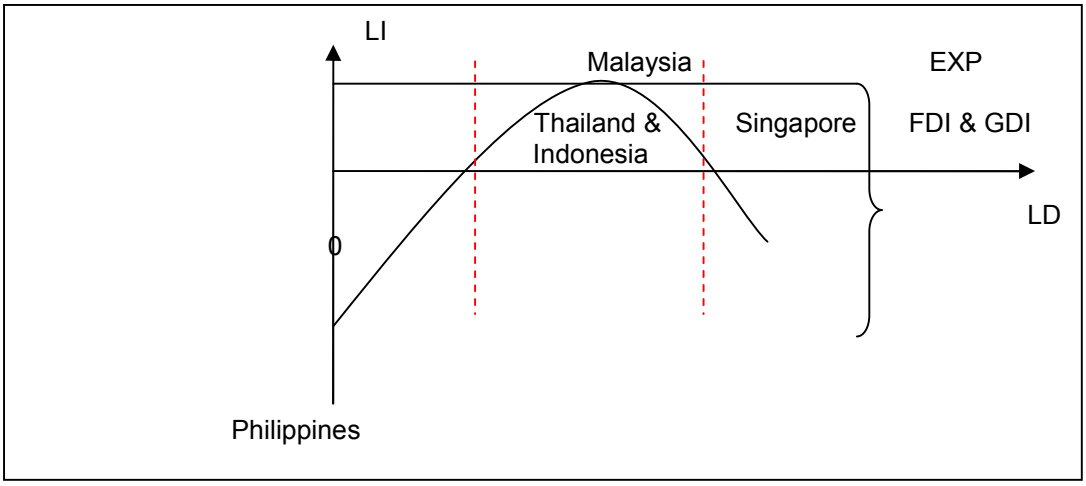
For Singapore, it is found out that FDI and EXP have significantly influenced the level of growth which is consistent with the evidence from the short run. 1 per cent increase in FDI and EXP lead to 0.63% and 0.059% increased in GDP per capita respectively. Conversely, 1% increase in GDI lead to 1.02 per cent decrease in GDP. In this case, FDI flows better than GDI in promoting growth and therefore exhibit similar situation happen in Malaysia. Singapore's GDI is only significant at 10% level has a negative sign which reflect that for every 1% increase in GNI, it will lead to a 2% decrease in the country's GDP per capita.

For the case of Philippines, we found out that GDI, FDI and EXP are significant at only 10% significant level and can influence the country's GDP per capita. 1% per cent increase in EXP will lead to 0.65% increase in output which reveals that the country growth is quite heavily influenced by their export activities. However, a 1% increase in both GDI and FDI which is significant at 10% level will only lead to the deterioration of the country GDP per capita by 0.79% and 0.04%. This finding obviously challenged the postulation made by neo-liberal and dependency theorist.

Lastly, Indonesia also shows that all the variables are significantly influenced the growth of Indonesia economy. 1 percent increase in GDI and EXP will lead to 3.5% and 20.2% increased in their GDP per capita and thus revealing that export growth lead to a greater contribution compared to their level of domestic investment while FDI reveal a negative relationship which lead to the decrease in the country GDP per capita. This result is contradicted with the evidence from [52] which stated that FDI is better than Domestic Investment in promoting growth.

6. POLICY RECOMMENDATION

Diagram 2 above represent the the curve constructed derived from the long run ARDL output for ASEAN5 countries. Export is found to be the major determinant that derived the growth of ASEAN5 countries. But the FDI and GDI output are varied between the level of development of the countries. In this case, Philippines reject the investment important theorem that the FDI and GDI have a negative relationship with the GDP growth and the policy. Second, the capital importance (FDI&GDI) for Indonesia, Thailand and Singapore are partially important to determine the growth and policy. Lastly, for Malaysia case found that it fully supports capital importance for engine of growth. Below are the lists of recommendation that the ASEAN5 countries can take into consideration.



Main assumption:
1) Level of importance (LI) is level of policy needed to implement.
2) Level of development (LD) is based on rank of countries development
3) Export importance EXP: (constant)
4) Investment importance I (I): quadratic form
5) There only two resource to generates growth (export and capital)

School of thought	**Conclusion**	**Policy recommendation generate from the diagram**
Dependency/Classical/Keyness GDI, FDI and EXP are positive	Only Malaysia achieves this state in the long run. Other ASEAN countries found mix evidence.	Philippines: The government should consistently focus in export orientation that will-led growth. Besides, the government cannot fully depend on fix and foreign capital to boost the growth.Thailand and Indonesia: Export also determinant of growth Partial important in fix and foreign capital to regenerate the growth Malaysia: All of the export and capital important in policy and growth Singapore: Export are major contribution of growth Capital also partial important of growth.
Dependency Theory FDI contribution < GDI contribution	Malaysia rejects this theory. Although it has corrected expected sign but it contradict in term of the contribution. Other countries reject this hypothesis given that the expected sign and contribution between the FDI and GDI are mixed.	
Neo Liberal/Neo Classical FDI contribution > GDI contribution	Only Malaysia supports this theory. Other ASEAN countries also reject this hypothesis given that the expected sign and contribution between the FDI and GDI are mixed.	

7. CONCLUSION

This study assesses the strength of two types of investments or capital namely Gross Domestic Investment with FDI in determining growth levels for five ASEAN countries spanning from 1970 to 2010 using the most recent time series technique name as Bound test. Other variable, exports were included in the study to help explain the level of GDP per capita in each nation. Essentially, this study tests the postulation of dependency theorist that FDI is not as good as Gross Domestic Investment in promoting growth and conversely that of neo-liberalism theorist. Below is the summary of findings derived from the outcome of the long run ARDL coefficient analysis. The results of the ECM-ARDL for short run analysis showed that most of the coefficients in the short run derived from Malaysia, Thailand, Singapore and Philippines are significant. Based on Malaysia's model, the GDI, FDI and EXP have a positive relationship with the country's GDP per capita in the short run. These results are consistent with the Dependency, Neo-classical and neo-liberal theory. Other countries in this study show a mix evidence of relationship between their independent variables and the dependent variables. For example, Thailand's FDI and EXP are negatively associated with GDP per capita while the change in GDI are strongly influenced the country's GDP per capita. Meanwhile, Singapore model exhibits similar result like Malaysia for all the variables except that the country's growth on GDI has negative impact towards the GDP per capita and the impact was minimal which is only 6 percent. For Philippines model, all the variables have the correct signs except for FDI which has shown negative relationship with the GDP per capita. Indonesia model also reveals mix evidence in term of their sign. The country's GDI and EXP are negatively affected by the growth of the country's GDP per capita while the increase in FDI inflow is positively increased the growth of the country's GDP per capita.

A long run relationship has been found in ASEAN5 countries, in Malaysia's case, EXP and FDI have significant effect on output or GDP per capita. The significantly positive values for coefficient FDI (β1), GDI (β2) and EXP (β3) confirm for both neo-liberal and dependency. Nevertheless, the neo-liberal and dependency theorist differ in their postulation of the size of β. A more robust coefficient for FDI as opposed to GDI means that FDI contributes more to growth than GDI. Hence, FDI flows has better than Gross Domestic Investment in promoting growth in Malaysia which invalidate the postulation of FDI flows are not as good as Domestic Investment flows in promoting growth as hypothesized by the dependency side. Moreover, in the case of Thailand, both GDI and EXP are strongly significant at 1 per cent level and revealing a positive relationship with it output. The significantly positive value for GDI and significant negative value of FDI validate the hypothesis that FDI is not as good as Domestic Investment in promoting growth. In this regard, in Singapore case, it is initiated that FDI and EXP are significantly influenced the level of growth which is consistent with the evidence from the short run. In this case, FDI flows better than GDI in promoting growth and therefore exhibit similar situation happen in Malaysia. Singapore's GDI is only significant at 10% level has a negative sign which reflect that for every 1% increase in GNI, it will lead to a 2% decrease in the country's GDP per capita. For the case of Philippines, it is established that GDI, FDI and EXP are significant at only 10% significant level and can influence the country's GDP per capita. Last of all, Indonesia has shown that all the variables are significantly influenced the growth of Indonesia economy. The result revealed that export growth lead to a greater contribution compared to their level of domestic investment while FDI reveal a negative relationship which lead to the decrease in the country GDP per capita.

ACKNOWLEDGEMENT

We are deeply grateful and indebted to Ministry of Higher Education Malaysia for the FRGS grant (600-RMI/SSP/FRGS 5/3/Fsp 133/2010) received as well as RMI UiTM Shah Alam for the cooperation and support given. We wish to thank to all our family and friends who always encouraging us to do this research.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sciencedomain.org/review-history.php?iid=566&id=25&aid=4975