The Impact of Foreign Direct Investment on Economic Growth in Malaysia

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Abstract

This study analyzes the impact of Foreign Direct Investment (FDI) on economic growth in Malaysia. The Auto-Regressive Distributed Lag (ARDL) method is used to investigate the long-run relationship between FDI and economic growth. The controlled variables are life expectancy, gross fixed capital formation and population growth. The bound test suggests that FDI, life expectancy, gross fixed capital formation and population growth have a long-run relationship with economic growth. This is supported by the significant correction term, which confirms the existence of a long-run relationship. However, as FDI, life expectancy and gross fixed capital formation have positive impact on Malaysia's economic growth, population on the other hand, shows otherwise.

Keywords: Foreign Direct Investment, Economic Growth, Life Expectancy, Gross Fixed Capital Formation, Population Growth

1. Introduction

Foreign direct investment (FDI) is a type of investment made by businesses from one country to another country or also known as the host country. Frequently, interested firms would invest in an open economy which offers a lot of benefits the investors. such as better growth potential, cheaper workforce and highly-skilled labor to Besides that, FDI encourages job opportunities, increases output, generates competition among local business and achieves advantages through technological knowledge enhancement and innovative capability of other firms and countries (Denisia, 2010). Tabassum and Ahmed (2014) state that FDI generates higher exports, replacement of bank loan, association to foreign markets and currencies especially among developing countries. FDI can be done either by establishing new businesses, joint venture with foreign businesses or by acquiring foreign asset in the host county.

FDI can be divided into few types according to the point of views between investors and recipients (host country). For investors' point of view, there are three types of FDI which are horizontal, vertical and conglomerate (Herger and Mccorriston, 2016). Horizontal FDI is when a firm invests in the same business, produce the same goods and services in foreign country meanwhile vertical FDI is when a firm invests in business that is geographically dispersed and involves chain in their business which can be either suppliers or distributors (Alfaro and Charlton, 2009).

For host country's point of view, FDI can be grouped into import-substituting, export-increasing and government initiated FDI (Moosa, 2002). The main objective for import-substituting FDI is to reduce the import of the host country by producing goods and services that have been previously imported. Then, for export-increase FDI is to increase the export of the recipient country. The export products can be either exported to the investing country or to

the other countries. Finally, for government incentive FDI is conducted by the government of the host country by offering incentives to foreign investors in return to eliminate deficit of balance of payment of the recipient country. In his study, FDI is a crucial factor that will be analyzed on its impact towards economic growth in Malaysia.

Between 1960s and 1970s, Malaysia's industrialization was through import substitution which became the key factor for the economic plan (Zakariah, 2012). Since 1970, Malaysia's economic has become one of the most successful in the region by averaging six point forty eight per cent of economic growth. From 1970-2015 it was above world average economic growth. Most of the success are due to the changes toward multi-sector economy. After the transition, industrial sector has become a major contributor in Malaysia's economic growth. Malaysia has also become the world's largest producer of tin, rubber and palm oil. After the recession in 1985, Malaysia began to recover in late 1986 and regained strength in 1987. To recover the recession, Malaysia improved the commodity price and experienced strong growth in exports of manufactured goods.

In addition, FDI global flows have significantly increased over the 30 years. This explosion of FDI is mainly caused by the changes in policy especially among developing countries in order to attract more inflow of capital. Some of the changes made by most of these countries are reducing barriers and also offering incentives in term of tax reduction and subsidies, believing that FDI promotes growth. Throughout the years, there have been many empirical studies carried out to investigate the relationship of FDI and economic growth. Moreover, most of the study have mixed results the effect of FDI on economic growth of developing country for example Akinlo (2004) and Herzer, Klasen, and Nowak-Lehmann (2008).

Thus, Malaysia has been chosen as the example of a developing country in examining the effect of FDI on economic growth. Since 1970, Malaysia has experienced significant economic growth. Along with the growth, trade policy had also been changed to attract FDI inflow into the country. FDI inflow into Malaysia increased from USD 4,453 million in 1980 to its highest USD 15,119 in 2011 (Rasiah, Asirvatham and Adamu, 2017). As part of the development strategies, FDI has become one of the crucial components in the Malaysia Plan. Since 2000, FDI inflow into Malaysia has changed significantly. Although there have been significant changes in FDI inflow, Malaysia's economic growth has not shown any rise in the FDI inflow. From the 1970-1980, Malaysia's economic growth averaging seven point seven per cent. Meanwhile, between 2005 and 2015, the average growth reduced to four point ninety six per cent. Hence, this study will fill in gap on whether FDI has any significant impact on the growth of Malaysia's economy. Moreover, this study will enrich the literatures on FDI and economic growth.

2. Literature Review

The economic growth depends on sustained growth of productive capacity, consisting in investment and saving. The low levels in investment and saving imply low economic growth. Being a source of economic growth, the need of FDI inflows has increased in the last years. Throughout the years, a lot of empirical research works have investigated the relationship between FDI and economic growth. Although there is many empirical researches have been conducted, the influence of FDI on economic growth is still inconclusive; some studies described the impact positively while others described it as negative.

Akinlo (2004) is an example of study stated the negative effects of FDI on economic growth. The author proposed that these negative effects were caused by several reasons. The assumption was foreign firms had more competitive advantage by using the advantages to attract demand away from the domestic firms with their lower marginal cost (Akinlo, 2004). However, a study conducted by Beugelsdijk (2008) concluded that the difference was caused by a selection of sample between developed and developing countries. As shown in his study, most research that investigated the interrelation between FDI and economic growth for developed countries found significant results. For developing countries, the results varied where FDI may have positive or no efficiency gains and even negative relationship with the economic growth. Herzer, Klasen, and Nowak-Lehmann (2008), found that neither long term nor short term effects of FDI on economic growth existed.

There are several research works that examine causality of FDI and gross domestic product (GDP). A study by Hsiao and Hsiao (2006) examined the Granger causality relations among three variables, which were GDP, exports, and FDI for eight economies in East and Southeast Asia from 1986 to 2004. The findings showed that FDI has unidirectional effect on GDP directly and also indirectly through exports bidirectional causality between exports and

GDP using panel data. On the other hand, for time-series data, the results showed that the causality relationship was dissimilar for each economy. For developing countries, the government needed to change the policy, which focused on export promoting regime so that economic development would be induced by the interaction between GDP and exports (Hsiao et al., 2006).

Lee and Chang (2009) also conducted a causality study among FDI, financial development and growth. These authors highlighted that a lot of research works had been ignoring financial development as a crucial variable. Many researches mainly focused on the financial development and economic growth. Causality directions between the three variables proved that there was a strong relationship in the long run with results showed that the financial development indicators had more influence on economic growth than FDI (Lee et al., 2009). By using panel data of 61 provinces of Vietnam for year 1996 to 2005, Anwar and Nguyen (2010) proved that there was a relationship between FDI and economic growth in Vietnam and it would be expanded further if the technology gap between the foreign and host country was reduced.

This was contradicting with the result obtained by Ousseini, Hu and Aboubacar (2015) in which there was no significant relationship between FDI and economic growth in Nigeria compared to domestic investment. Tabassum and Ahmed (2014) highlighted that FDI was less significant on Bangladesh's economic growth compared to domestic investment. However in 2016, Hussain and and Haque proved that by adopting The Vector Error Correction Model (VECM) on annual data from 1973 to 2014, FDI became an impact factor on Bangladesh's economic growth.

Edrees (2017) stated that the impact of FDI on growth could be explained by the Dependency theory of FDI and Modernization FDI theory. Modernization theory stated that poor countries failed to industrialize because of the poor capacity of advanced technology and finance, which resulted in bad economic development. However the theory suggests that in order to improve the economy of these countries, they need to attract more FDI inflow so that they can benefit from the spillover effects. However, the Dependency theory believed that the failure of the third world countries are caused by the development of the first world countries. If there is fast economic development in the first world countries, it will cause a negative impact on the third world countries.

In addition Ajibola et.al, (2018) conducted a study of FDI on economic growth in Nigeria. The data samples were from 1986 to 2017 and it was focused on sector analysis. The result revealed that, only the flow of FDI into communication sector had a positive significant effect on Nigeria's economic growth. Ali and Minque (2018) also conducted a study of FDI and GDP in Bangladesh, India, Indonesia and Malaysia from 1990 to 2014. By using the Co-integration test, the result showed that there was a long-term relation between FDI and GDP in these countries. However, by applying to Granger causality test, there was an ambiguous result between both variables. In both short run and long run, there was an inexistence causality relationship between FDI to the GDP. Currently in 2019, Cahyadin and Sarmidi have conducted a study to estimate FDI, labor and external debt on Indonesia and Malaysia's economic growth. The result of the study highlighted that labor and external debt have a significant relationship with the economic growth in both countries. Thus, both countries should increase their attraction of FDI inflows activities, manage external debt properly and expand more on high skilled labor force.

Other than FDI, there are other determinants of economic growth, which are human capital, asset capital and population that act as the controlled variables that have been critically analyzed based on endogenous growth model. Theoretically, FDI does affects the host country economy mainly through technology transfer and spillover. Solow (1956) used technological change from FDI spillover effects a growth model into the model's production function. This was to include the reaction between price, wage and interest. Lucas (1988) continued the theory by including human capital in the growth model to investigate influence of school attainment on growth. Further study on human capital and growth were done by (Romer, 1990) which was later expanded by (Barro and Lee, 2000) where the authors included health of human capital as a determinant of economic growth.

As stated by Hsiao and Hsiao (2006), the new growth theory in the 1980s mentioned that there is indefinite growth effect of FDI and technological transfer towards the recipient country. All the authors agreed that investment in human capital positively effects economic growth. However, based on the neoclassical growth model, it contradicts the theory that states that technological process are exogenous with labor growth and FDI does not have that much big of an impact on the investment rate which increases per capita income growth in the short run but has no effect

on growth in the long run. The differences among these theories are mostly because of the criteria that each theory emphasizes that may affect the economic development.

The endogenous growth theory highlights the importance of science and technology, human capital and externalities. Moreover, endogenous growth theory also believes that knowledge and innovation significantly impact economic growth. Other than that, they also mentioned that highly invested human capital would reflect significantly on this.

Pelinescu (2015) conducted a study of European Union human capital on GDP per capital by using annual data from 2000 to 2012. The result proved that slow investment in human capital could reduce the effort to increase the sustainable development of a country. Alatas and Cakir (2016) conducted an empirical study to examine the linkage between human capital and economic country among 65 selected countries from 1967 to 2011. The result showed that there was a positive and statistically significant relationship of human capital on economic growth. Kazmi, Ali and Ali (2017) used formal education as an indicator for human capital on economic growth. Johansen co-integration result stated there was a long relationship between human capital and economic growth in Pakistan. Recently, Muhamad, Che Sulaiman and Saputra (2018) conducted a study of human capital and innovation capacity on economic growth among selected ASEAN countries from 1985 to 2015. The result revealed that, there is a relationship between human capital and innovation capacity for the economic growth in Indonesia and Thailand but not in Malaysia. This is due to the level of economic growth in Malaysia, which is of medium to high-income nation.

The next discussed variable is asset capital. In prior studies, using a different measurement has set asset capital., Bloom Canning and Finlay (2010) examined the relationship between capital stock with economic growth in Asia from 1960 to 2005. The findings showed that, there was a positive relationship between these variables. Rutger and Jeroen (2011) analyzed the association between asset index and growth rate output per capita among developing countries from years 1997 to 2008. The empirical result revealed that there was a negative and significant relationship between both variables. Aidi, Emecheta and Ngwudiobu (2016) highlighted the relationship between asset capitals and economic growth. By using capital in formation as an indicator, it was found that asset capital was a vital component in generating the economic growth.

Finally, the last variable discussed is the population. Dao (2012) examined the relationship between population and economic growth among 43 selected developing countries. By adopting the least-square estimation method, the result of the study showed that there was a linear relationship between population and economic growth. Due to extensive debate on the relationship between population and economic growth, Thuku, Paul and Almadi (2013) conducted an empirical from the perspective of Kenya. By employing 46 annual time series set sample of data, the result highlighted that the expansion of Kenya's population contributed to the development of the economy. In 2014, Nwosu, Dike and Okwara estimated the association relationship between population and economic growth in Nigeria for the period 1960 to 2008. By applying Augmented Dickey Fuller (ADF) test and Granger Causality and Co-integration test the result revealed that there is a long run relationship between population growth and economic development. However, there is unidirectional causality relation between these both variables.

Besides that, Mahmud (2015) examined the connection between population growth and economic enhancement in India from 1980 to 2013. Conclusively, the result showed that the relationship between these variables was positive and was contradicting to the result obtained by Abdullah et.al, (2015). The researchers proved that population growth in Bangladesh have negative impact on the economic development. The reasons that contributed to this situation which were people's consumption increased tremendously; resources were scare and lacking of job opportunities. By using time series data from 1970 to 2014, Aidi, Emecheta and Ngwudiobu (2016) studied the relationship between populations dynamic, which included fertility, mortality and net-migration and economic development in Nigeria. The result of Ordinary Least Square (OLS) method revealed that all main independent variables were inversely related to the Nigerian economic growth. In addition, theoretically, Economic Outloook (2019) believed that population ageing will negatively impacts the economic growth of a country. This is because ageing population causes reduction in components of economy such as productivity, labor force participation and savings rates (Bloom et.al, 2010). However, astonishingly, some empirical studies have shown opposite results.

By the year 2020 Malaysia is expected to meet the ageing population problem. However, Ismail et.al, (2016) believed that Malaysia's economy will grow at a steady pace as there is an increasing participation of women in the labor market in which contributes to the economic growth and production. In 2017, by using historical data, Peterson highlighted the role of population in per capita output in different perspective. He found that, in high

income countries low population growth would create social and economic problems. Meanwhile, for low income countries high population may affect their development.

Recently, Ogunleye, Owolbi and Mubarak (2018) have explored the relationship between population specifically on growth rate, fertility rate, death rate and crude death rate on Nigerian economic growth. The data were collected from Nigeria Statistical Bulletin of Central Bank for the period of 1981 to 2015. The empirical results revealed that population growth rate had a positive and significant relationship with Nigeria's economic growth while fertility growth rate was negative and significant relation to Nigeria's economic growth. However, crude rate did not have significant relationship with the independent variable.

As a conclusion, empirically it can be said that there are still inconclusive results whether FDI and other selected independent variables have impact on a host country's economic growth. However, we can say that absorptive capability of a host country plays a major role in order for FDI to impact the country's economic growth. Host countries need to achieve minimum threshold of human capital for FDI to be productive. Other than that, to be effective, host countries also need to increase the level of spillover of new technologies from FDI. Moreover, host countries' financial development is also important for FDI to have an impact on economic growth.

3. Methodology

In this study, two specific objectives are formulated; first, to examine the relationship between FDI and economic growth and second, to assess the relationship between controlled variables, which are life expectancy, gross fixed capital formation and population growth. These additional variables are included based on endogenous growth model. The data has been gathered from the World Bank, UNCTAD statistic and Department of Statistic Malaysia that covered 40 years from 1975 to 2015. The data for each variable was available only until the year 2015, which was this study, was conducted.. The scope of the study focuses on Malaysia economic growth.

Auto-Regressive Distributed Lag (ARDL) method has been employed to address the objectives of the study. Several reasons are highlighted on why this method has been chosen. ARDL technique is able to eliminate the restriction that all time-series data variables have the same order of integrations. This technique is applicable whether the regressors are I(0) or I(1) (Pesaran and Shin, 1997). This is because estimating using ARDL does not depend on pre-testing the order of integration among the variables. Thus, this technique eliminates the uncertainty regarding pre-testing of the variables (Narayan and Narayan, 2005).

Besides, in small sample size and cases true parameters can be created in ARDL compared with Johansen and Juselius's cointegration technique (Pesaran and Shin, 1999). Furthermore, coefficients in ARDL estimators are better uniformed. Laurenceson and Chai (2003) have also stated that ARDL also captures the data generating process in a general-to specific modeling framework through the sufficient number of lags it uses. Unit Root Test and Error Correction model is employed in empirical analysis. This study also modifies an empirical model adapted from previous studies (Borensztein et al., 1998). The empirical model is written as follows:

$$\log g = \beta_0 + \beta_1 le + \beta_2 gfcf + \beta_3 pop + \beta_4 FDI + \varepsilon \quad (1)$$

Where log *g (growth)* is the value of real GDP per capita that is calculated as the ratio of real GDP to the average population of that year. *le* is the life expectancy at birth act as a proxy for human capital. This variable is an indicator to the number of years that a person would live if the prevailing patterns of mortality do not change from the point of birth. G*fcf* is a gross fixed capital formation % of GDP. It is a proxy for total domestic investment in the country, which includes land improvements, plant, machinery, and equipment purchases and the construction of roads, railways, schools, offices, hospitals, offices, hospitals, and commercial and industrial buildings. *Pop* is the population growth rate in which the rate of growth of midyear population from year t-1 to t in term of percentage. Finally, FDI is the net inflows in the economy from foreign investors divided by GDP of that particular year.

4. Results and Findings

Unit root test has been run to examine whether the time series data is stationary or non-stationary (Nielsen, 2017). Time series has stationary if a shift in time does not cause a change in the shape of the distribution; unit roots are one cause for non-stationary. Augmented Dickey Fuller (ADF) and Philip-Perron test is used to test for unit root. For both tests, the null hypothesis is the variable that has unit roots and the alternative hypothesis is the variable that does not have unit roots. This test is important because of the need to examine level of stationary of all the variables in order to carry out the estimation using the ARDL model technique. The results of the test are presented in table 1.0

Based on Table 1, both ADF and PP test shows that FDI, life expectancy and the dependent variable log GDP per capita are all stationary and can be said to be I(0). However, for population growth and gross fixed capital formation non-stationary at level and significant after the first order difference which said to be I(1). As ARDL technique requires that all the variables must be either I(0) and I(1), thus all the variables are valid to be used to estimate the proposed model.

Table 1 Unit root test result

Variable		ADF		PP	
		Level	First order difference	Level	First order difference
FDI	CONSTANT	-3.451319**	-7.509415***	-3.451319**	-8.022718***
	CONSTANT WITH TREND	-3.403043*	-7.433313***	-3.403043*	-7.940229***
POPULATION	CONSTANT	1.749580	-2.742552*	-0.283156	-2.497561
	CONSTANT WITH TREND	-1.214364	-3.443145*	-1.489849	-2.753369
GFCF	CONSTANT	-2.542100	-4.852771***	-2.190805	-4.801389***
	CONSTANT WITH TREND	-2.626562	-4.811724***	-2.281243	-4.758625***
LE	CONSTANT	-7.765568***	-2.695231*	-10.08276***	-2.263210
	CONSTANT WITH TREND	-5.839683***	-0.065537	-3.939127**	-1.417844
LOG GDP/C	CONSTANT	-1.521758*	-5.736972***	-1.521758*	-5.747137***
	CONSTANT WITH TREND	-2.069817*	-5.887282***	-2.141288*	-5.887282***

Table 2 shows the result from the bound test. The growth model computed F-statistic in bound test is 3.312554, which is greater than the upper bound critical of 3.09 at 10% significance level, thus null hypothesis of no co-integration is rejected at 10% significance level. The result concluded that there is an exists of a steady-state long run relationship among GDP per capita, FDI, life expectancy, population growth and gross fixed capital formation for Malaysia between the selected years.

Table 2 Bound test result

Test statistic	Value	k
F-statistic	3.312554	4
Significance	I0 Bound	I1 Bound
10%	2.2	3.09
5%	2.56	3.49
2.5%	2.88	3.87
1%	3.29	4.37

Further analyses were extended to long run co-integration and diagnostic checking. The results for long run co-integration are presented in table 3. Based on the results, the entire variable are significant with various significance levels. For FDI it is at 5 per cent significance level with probability of 0.0462 where it is the same as gross fixed capital formation (GFCF) with probability value of 0.0327. As for life expectancy (LE) and population growth

(POPULATION), both variables are significant at 1% significance value with the probability value of 0.0000 and 0.0000 respectively. This shows that all the variables have long run co-integration in this growth model.

Other than that, the error correction term (ECT) for this model is -0.425578 with 1 per cent significance value. This indicates that the converge speed for this model is 43 per cent where approximately it will converge for about more than two years to reset to the equilibrium state. Likewise the negative sign of the ECM (-0.425578) shows the convergence of the system back to the long-run equilibrium that indicates the stability of the system in an economy (Faisal, Muhamad and Tursoy, 2016). The R-squared and adjusted R-squared also show that more than 90% variations in the growth model is explained by the independent variables in this model.

Table 3 Long run co-integration

ARDL (1, 2, 1, 2, 2)			
Dependent variable: log y GDP per capita			
Variable	Coefficient	Std. Error	Probability
C	1.037598	1.235925	0.4083
FDI	0.033568	0.016091	0.0462
GFCF	0.006383	0.002841	0.0327
LE	0.115981	0.014980	0.0000
POPULATION	-0.315655	0.057662	0.0000
ECT	-0.425578	0.087931	0.0000
N=26			
R-squared	0.997803		
Adjusted R-squared	0.996861		
S.E. of regression	0.024120		
Prob(F-statistic)	0.000000		

Results from diagnostic test are presented in table 4. The test fails to reject the null hypothesis which shows that there are no diagnostic problem with the variables selected in this model.

Table 4 Diagnostic check results

Diagnostic test	Null hypothesis	Chi-Square
Breusch-Godfrey Serial Correlation LM Test	H_0: There is no autocorrelation	0.0674
Breusch-Pagan-Godfrey	H_0: There is no heteroskedasticity	0.8604
Jarque-Bera test	H_0: The error terms has a normal distribution	0.9769
Ramsey REST test	H_0: Functional form is linear	0.6187

5. Conclusion and Recommendation

Based on the theories and empirical reviews, FDI does show a significant impact on a host country's economic growth in the long run. However, due to some mixed results in prior studies it was argued whether FDI really has impacts on the developing countries' economic growth. Thus, this research was conducted to investigate the impact of FDI on economic growth by using Malaysia as its sample of study.

There were four identified independent variables (FDI, life expectancy, population growth and gross fixed capital formation) and one dependent variable (GDP per capita) studied with the purpose to identify the relationship of these four independent variables toward the economic growth in Malaysia. The Autoregressive Distributed Lag (ARDL) method has been applied in this study.

The empirical result of this study is able to prove that FDI has significant positive impact toward the economic growth in Malaysia. This is aligned with the proposed idea by endogenous theory where FDI inflow will have a positive impact toward a host country's economic development through spillover effects created by foreign investments. Other than that, life expectancy and gross fixed capital formation, which represent human capital and total domestic investment respectively, also show a positive impact on economic growth in the long run. This shows that the theory developed to prove an improved human capital will eventually have a significant impact on economic

growth is accepted. Conclusively, this improvement in human capital has been influenced by positive spillover received through FDI inflows into Malaysia.

Based on the findings, a suitable recommendation should be proposed to Malaysia's government is to attract more FDI inflows into the economy with the main focus to improve the welfare and health of the human capital. As proven by results, human capital (life expectancy) and population growth have the highest impact towards the economic growth in Malaysia. Moreover, they also need to emphasize on the policy to improve the wellbeing of the current economy, which will indirectly attract more FDI inflow and also properly serve the investments. As for improvement for human capital, the government can help by introducing more policies that involves local upstream parties. Other than that, Malaysian government also can facilitate more implementation of local management trainee programs with valuable foreign firms in the country to gather more experiences and knowledge from such firms.

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