The purpose of this study is to analyze the impact of foreign direct investment (FDI) on economic growth in Malaysia. This study was developed in order to see the relevance of such policies made by Malaysia government in order to attract FDI inflow into Malaysia. This has become an issue because of the many mixed results of the impact on FDI toward developing countries economic growth. To achieve the objective, we choose the period of 1975-2015 to investigate the relationship of FDI and economic growth in Malaysia. Thus, the model developed for this study is estimated using auto-regressive distributed lag (ARDL) method to investigate the long-run relationship of FDI and economic growth. Other than FDI, we also include other determinants of economic growth based on endogenous growth model as the controlled variables which are capital and labour whereas for capital, we include human capital and asset capital in the model. From the result, the bound test suggests that FDI, human capital, asset capital and labour have a long-run relationship with economic growth. This is supported by the significant correction term which confirming the existence of a long-run relationship. However, as FDI, human capital and asset capital appear to have a positive impact on Malaysia’s economic growth, labour on the other hand shows opposite impact on economic growth in Malaysia.

Keywords: Foreign Direct Investment, Economic Growth, Malaysia

1. Introduction

Foreign direct investment (FDI) is a type of investment made by businesses from one country to another country or also known as host country. Frequently, firm would do or interested in investing in an open economy which offer a lot of benefits to the investors such as better growth potential, cheaper workforce and highly-skilled labor. 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 point of view between the investors and recipient (host country). For investors point of view there are three types of FDI which are horizontal, vertical and conglomerate. Horizontal FDI is when a firm invests in the same business in foreign country meanwhile vertical FDI is when firm invests in business that involves in their business chain which can be either a supplier or a distributor. For host country point of view, FDI can be differentiating into import-substituting, export-increasing and government initiated FDI. For import-substituting FDI the main objective is to reduce the import of the host country by producing goods and services that was previously imported. As export-increase FDI the main purpose is to increase the export of the recipient country. The export products can be either export to the investing country or to the other countries. For the third type government incentive FDI is conducted by the host country government by offering incentives to foreign investors with the mean to eliminate deficit of balance of payment of the recipient country. In this study, Foreign direct investment (FDI) is a crucial factor that will be analyze on it impact toward economic growth in Malaysia.

In 1950s to 1970s, Malaysia industrialization through import substitution became the key factor for economic plan. Since 1970, Malaysia’s economic had become one of the most successful in the region by averaging 6.48 percent of economic growth from 1970-2015 which is above world average economic growth. Most of the successes are cause by the changes toward multi-sector economy. After the transition, industrial sector has become major contributor toward Malaysia’s economic growth. Malaysia also became world’s largest producer of tin, rubber and palm oil. After the recession in 1985, Malaysia began to recover in late 1986 and gained strength during 1987. To recover the recession, Malaysia improved the commodity price and strong growth in exports of manufactured goods.

As we all know, FDI global flow have significantly move upward over the past thirty years. This explosion of FDI is mainly cause by the changes in policy especially from developing countries in order to attract more inflow of capital. Some of the changes made by most of these countries are by reducing barriers and also offered incentives in term of tax reduction and subsidies, believing that FDI promotes growth. Throughout the years, there have been a lot of empirical studies been carried out to investigate the relationship of FDI and economic growth. Moreover, most of the study that gave mixed results were study the examine for the effect of FDI on economic growth of developing country for example Akinlo (2004) and Herzer, Klasen, and Nowak-Lehmann (2008).

Thus, for this study we choose Malaysia as our sample country to examine the effect of FDI on economic growth. Since 1970, Malaysia had experienced a significant economic growth. Along with the growth, trade policy also had changes to attract FDI inflow into the country. FDI inflow into Malaysia had changes from USD10.172 billion in 1970 to its highest USD3.065 trillion in 2007. As part of the development strategies, FDI become one of the crucial components in Malaysia Plan. Since year 2000, FDI inflow into Malaysia had changes by a significant amount. Although with the significant changes in FDI inflow, Malaysia’s economic growth does not show any increase from before the increase in FDI inflow. From the 1970-1980, Malaysia economic growth averaging 7.7% meanwhile, between the period of 2005-2015 the growth averaging 4.960%. This raise questions on whether FDI has any significant impact on the growth of Malaysian economy.
2. Literature Review

2.1 Theoretical Literature

The economic growth depends on sustained growth of productive capacity, consisting in investment and saving. The low levels in investment and saving implies low economic growth. Being a source of economic growth, the need of FDI inflows had increased in the last years. Several determinants of the linkage between FDI and economic growth were identified by Anwara and Nguyen (2010): learning by doing, exports, human capital, macroeconomic stability, public investment, level of financial development. Using these determinants, Neuhouse (2006) showed that there are three principal channels through which FDI influences economic growth such as direct transmission through Greenfield investments, indirect transmission through ownership participation and second round transmission through technology spillover.

In theory, FDI does effects the host country economy mainly through technology transfer and spillover. Solow (1956) used technological change from FDI spillover effects into a growth model into the model’s production function. This is to include the reactions between price, wage and interest. Lucas (1988) continues the theory by including human capital in the growth model to investigate influence of school attainment on growth. Further study of human capital and growth were done by (Romer, 1990) which latter expanded by (Barro and Lee, 2000) where the authors include 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 toward the recipient country. All the authors agree that investment in human capital positively effects economic growth. However, based on neoclassical growth model, it contradict the theory whereas it stated that technological process are exogenous with labor growth and FDI does not have that much big of an impact on investment rate which increase per capita income growth in the short run but has no effect on growth in the long run.

The differences among these theories mostly because of the criteria that each theory emphasizes that will affect the economic development. For endogenous growth theory it highlights the important 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 will reflect significantly on economic growth. In addition, based on endogenous growth theory externalities such as investment in research and education can help to improve innovation which will lead to stable long-run economic growth. All of these factors can be greatly improved through positive FDI spillover effects. In early post-Keynesian growth models, the focal points are savings and investment, and for neoclassical growth theory it underlines the role of technical progress. Other than that, in developing countries, growth rates can be explained by the catch up process in level of technology. This is proven by recent literature where it focuses on the dependence of growth rates on the state of domestic technology.

Another important theory is Dunning’s Eclectic Theory of FDI. This theory was presented in 1976 (Dunning, 1977) by John Dunning and had been perfected by him in 1988 and 1993. The idea behind the Eclectic Paradigm is to merge several isolated theories of international economics in one approach. This theory also is one of the major reasons in separating
international business studies from international economics and trade theory to the development of global strategy. The Eclectic Model uses three components from three different theories which are neo-classical theory - location; industrial organization theory – monopolistic advantage; and internalization theory – transactional efficiency (Tallman, 2015). Dunning (1977) stated three important factors for international expansion which are ownership factors, location factors, and internalization factors. As described by Dunning (1977) ownership factors are advantages which develop by firms to help them compete in overseas markets. These factors can be divided into two types: asset advantages and transactional advantages. For the location factors, it is related to the local foreign market the firms invest to business or relocate their production which help firm’s business activities in the foreign countries are preferable. Dunning (1977) also mentioned that location factors will encourage FDI and local production through structural barriers to free market entry. The last factors, internalization factors are related to the industry whereas it moved the advantages in ownership factors to the foreign market. As proposed by the theory, only when all these three factors are favorable only then can international production take place.

2.2 Empirical Literature

Throughout the years, a lot of empirical researches had investigates the relationship between FDI and economic growth. Though the vast numbers of empirical researches have been conducted but still the influence of FDI on economic growth is still unconvincing where empirical studies on the subject still divided on the results where some studies describe the impact are positive while some studies describe it as negative. Study by Beugelsdijk (2008) concludes that the difference was caused by selection of sample between developed and developing countries. As shown in his study, most research that investigate interrelation between FDI and economic growth for developed countries find a significant results, For developing countries, the results are varied where FDI may have positive or no efficiency gains and even negative relationship with economic growth. Akinlo (2004) are the example studies that find negative effect of FDI on economic growth. Herzer, Klasen, and Nowak-Lehmann (2008), find there exist neither long term nor short term effects of FDI on economic growth. The authors argue these negative effects are cause by few reasons. The assumption is foreign firm have more competitive advantage which foreign firms use the advantages to attract demand away from domestic firms with their lower marginal cost (Akinlo, 2004).

Other than that, Edrees (2017) stated that impact of FDI on growth can be explained by Dependency theory of FDI and Modernization FDI theory. In Modernization theory stated that poor countries were failed to industrialize because of the poor capacity of advance technology and finance which results in bad economic development. However the theory suggests that in order to improve economy of these countries they need to attract more FDI inflow so that they can benefit from the spillover effects. For Dependency theory it contradict Modernization theory in which it believed that the failure of the third world countries is cause by development of first world countries. Because of the fast economic development if first world countries it cause a negative impact of third world countries.

In recent study, there are few researches that examine causality of FDI and gross domestic product (GDP). Study by Hsiao and Hsiao (2006) examines the Granger causality relations between three variables which are GDP, exports and FDI for eight economies in East and Southeast Asia from 1986 to 2004. The findings show 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 show that the causality
relationship is dissimilar for each economy. For developing country, the government needs to change policy which focused on export promoting regime so that economic development will be induced by the interaction between GDP and exports (Hsiao et al., 2006). Lee and Chang (2009) also do causality study but between FDI, financial development and growth. As mentioned by the authors, a lot of researches had been done that focuses on FDI and economic growth but ignoring financial development as a crucial variable and otherwise where researches mainly focusing on financial development and economic growth. Causality directions between the three variables prove there is a strong relationship in the long-run with results show that financial development indicators have more influence on economic growth than FDI (Lee et al., 2009).

As a conclusion, empirically there still inconclusive result whether FDI have impact on host country economic growth. However, we can conclude that absorptive capability of host country play a major role in order for FDI to impact country economic growth. Host country need to achieve minimum threshold of human capital for FDI to be productive. Other than that, host country need to increase level of technological for spillover of new technology from FDI to be effective. Moreover, host country’s financial development also important for FDI to have an impact on economic growth.

3. RESEARCH DESIGN AND METHODOLOGY

3.1 Theoretical Framework

Framework that we choose is based on study by Borensztein et al. (1998). In this framework, the authors FDI is measured by the fraction of products produced by foreign firms in the total number of products reduced the costs of introducing new varieties of capital goods, thus increasing the rate at which new capital goods are introduced. The cost of introducing new capital goods is also smaller for more backward countries; that is; countries that produce fewer varieties of capital goods than the leading countries with lower capital varieties which will enjoy lower costs of adoption of technology and will tend to grow faster.

As stated earlier, effect of FDI on economy growth rate depend on level of human capital, where, the higher level of human capital, the higher effect of FDI on economic growth. General model of the framework is as follow:

\[ g = \beta_0 + \beta_1 FDI + \beta_2 FDIxH + \beta_3 H + \beta_4 A + \epsilon \]

3.2 Model Specification

Based on the general model adopted by the previous research, this is model specification of this research:

\[ \log g = \beta_0 + \beta_1 le + \beta_2 gfcf + \beta_3 pop + \beta_4 FDI + \epsilon \]
Log g = Log y Real GDP per capita  
le = Life expectancy at birth  
gfcf= Gross fixed capital formation % of GDP  
pop= Population growth  
FDI = Foreign direct investment inflow % of GDP

3.3 Variable Description and Justification

3.3.1 Real GDP per capita
Real GDP per capita is calculated as the ratio of real GDP to the average population of that year. Real GDP per capita growth is changes of real GDP per capita this year imposed to the year before. It is usually used as an indicator for country economic growth since it the measure of average real income in the economy.

3.3.2 Life expectancy at birth
This variable is the chosen as a proxy for human capital which is a vital variable in this model. This variable is an indicator to the number of years that a person would live if the prevailing patterns of mortality will not change from the point of birth.

3.3.3 Gross Fixed Capital Formation
This variable is the chosen as a proxy for asset capital which is a vital variable in this model. GFCF is an indicator for amount of total domestic investment in the country which include land improvements, plant, machinery, and equipment purchases and the construction of roads, railways, schools, offices, hospitals, offices, hospitals, and commercial and industrial buildings.

3.3.4 Population growth
Population growth rate is the rate of growth of midyear population from year t-1 to t in term of percentage. Population is based on the definition where it includes all residents regardless of legal status or citizenship.

3.3.5 Foreign Direct Investment
This data is the net inflows in the economy from foreign investors divided by GDP of that particular year.

3.4 Empirical Methodology and Justification

Autoregressive Distributed Lag (ARDL)

This technique was firstly known by Pesaran and Shin (1999) and Pesaran et al (2001). The reason to use this technique is because of the advantages it brings. As mentioned by Pesaran and Pesaran (1997), ARDL technique eliminate the restriction that all time-series data variables have the same order of integrations where it is applicable whether the regressors are I(0) or I(1). As explained by Narayan and Narayan (2005), this is due to estimating using ARDL does not depend on pre-testing the order of integration among the variables. Then because of the following reason this technique eliminates the uncertainty regarding pre-testing of the variables. Other than that, in small sample size and cases true parameters can be create in ARDL compare with Johansen and Juselius’s cointegration technique (Pesaran and Shin,1999). Furthermore, coefficients in ARDL estimators are better uniform. Besides that,
Laurenceson and Chai (2003) also stated that ARDL also capture the data generating process in a general-to-specific modeling framework through the sufficient number of lags it uses.

3.5 Estimation Method

3.5.1 Unit root test
Before we continue to estimate our data, we carry out unit root test to examine stationarity in time series data. Time series has stationarity if a shift in time doesn’t cause a change in the shape of the distribution; unit roots are one cause for non-stationarity. For this study, we choose to use Augmented Dickey Fuller (ADF) to test for unit root and we also use Philip-Perron test to test for unit root. For both test, the null hypothesis is the variable has a unit roots and the alternative hypothesis is the variable does not has unit roots. This test is important because of the need to examine level of stationarity of all the variables in order to carry out estimating the model using ARDL technique.

3.5.2 Error Correction Model
This test is to generate a set of models that capture the short and long run behavior of the output relationship. The changes in the relevant variables represent short run elasticities, while the coefficients on the EC term represents the speed of adjustment back to the long run relationship among the variables.

3.6 Data Sources
To test for impact of FDI on Malaysia economic growth, we use data from worldbank.org and unctadstat.unctad.org. Other than that, we also use the data from Department of Statistics Malaysia. The data that we will use is real GDP, life expectancy at birth, population growth, FDI inflow and gross fixed capital formation. To achieve the objective, we choose the period of 1975-2015 which cover 40 years to investigate the relationship of FDI and economic growth in Malaysia.

4. RESULT AND DISCUSSION

4.1 Unit roots test results
To test the stationarity of our variables, we chose to run Augmented Dickey-Fuller (ADF) and Phillip Perron (PP) test to examine order of integration of each of our variables in the model. The results of the test are presented in table 4.1.

From the result that presented in table 4.1, 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 were non-stationary at level and significant after first order difference which said to be I(1). As ARDL technique require 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>
<thead>
<tr>
<th>Variable</th>
<th>ADF</th>
<th>PP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>First order</td>
</tr>
<tr>
<td></td>
<td></td>
<td>difference</td>
</tr>
<tr>
<td>FDI</td>
<td>CONSTANT</td>
<td>-3.451319**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>7.509415***</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>-3.403043*</td>
<td>-</td>
</tr>
</tbody>
</table>
4.2 Bound test results

As presented in table 4.2 the result for bound test for this growth model the 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. As a conclusion, we can conclude that there exists a steady-state long run relationship among GDP Per Capita, FDI, Life Expectancy, Population Growth and Gross Fixed Capital Formation for Malaysia between the years 1975-2015.

<table>
<thead>
<tr>
<th>Test statistic</th>
<th>Value</th>
<th>k</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>3.312554</td>
<td>4</td>
</tr>
<tr>
<td>Significance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10%</td>
<td>2.2</td>
<td>3.09</td>
</tr>
<tr>
<td>5%</td>
<td>2.56</td>
<td>3.49</td>
</tr>
<tr>
<td>2.5%</td>
<td>2.88</td>
<td>3.87</td>
</tr>
<tr>
<td>1%</td>
<td>3.29</td>
<td>4.37</td>
</tr>
</tbody>
</table>

Table 4.2 Bound test result

4.3 Long run co-integration and diagnostic checking

The results for long run co-integration are presented in table 4.4. Based on the results all the variable are significant with various significance level. For FDI it is significant at 5% significance level with probability of 0.0462 where it is the same as GFCF with probability value of 0.0462. As for LE and 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% significance value. This indicates that the converge speed for this model is 42% where approximately it will converge for about more than 2 years from short run to long run. The R-squared and adjusted R-squared also shows that more than 90% variations in the growth model is explained by the variables in this model.
### Table 4.2 Long run co-integration

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1.037598</td>
<td>1.235925</td>
<td>0.4083</td>
</tr>
<tr>
<td>FDI</td>
<td>0.033568</td>
<td>0.016091</td>
<td>0.0462</td>
</tr>
<tr>
<td>GFCF</td>
<td>0.006383</td>
<td>0.002841</td>
<td>0.0327</td>
</tr>
<tr>
<td>LE</td>
<td>0.115981</td>
<td>0.014980</td>
<td>0.0000</td>
</tr>
<tr>
<td>POPULATION</td>
<td>-0.315655</td>
<td>0.057662</td>
<td>0.0000</td>
</tr>
<tr>
<td>ECT</td>
<td>-0.425578</td>
<td>0.087931</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

N=26
R-squared 0.997803
Adjusted R-squared 0.996861
S.E. of regression 0.024120
Prob(F-statistic) 0.000000

Table 4.3 Diagnostic check results

<table>
<thead>
<tr>
<th>Diagnostic test</th>
<th>Null hypothesis</th>
<th>Chi-Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breusch-Godfrey Serial Correlation LM Test</td>
<td>H$_0$: There is no autocorrelation</td>
<td>0.0674</td>
</tr>
<tr>
<td>Breusch-Pagan-Godfrey</td>
<td>H$_0$: There is no heteroskedasticity</td>
<td>0.8604</td>
</tr>
<tr>
<td>Jarque-Bera test</td>
<td>H$_0$: The error terms has a normal distribution</td>
<td>0.97694</td>
</tr>
<tr>
<td>Ramsey REST test</td>
<td>H$_0$: Functional form is linear</td>
<td>0.6187</td>
</tr>
</tbody>
</table>

Based on table 4.3, the results gained from diagnostic test, we failed to reject the null hypothesis which shows that there no diagnostic problem with the variables selected in this model. Based on figure 4.1 and figure 4.2 we can see that there no structural break as line is all inside the 5% significance area.

### 5. CONCLUSION AND RECOMMENDATION

#### 5.1 Conclusion

As mentioned earlier, based on theories and empirical review FDI do shows a significant impact on host country economic growth in the long run. However, due to some mixed results conducted in previous researches it raise few problem whether FDI really have impacts on developing countries economic growth. Thus, this research was conducted to investigate the impact of FDI on economic growth by using Malaysia as it sample. Thus, this research was constructed with four identified independent variables (FDI, life expectancy, population growth and gross fixed capital formation) and one dependent variable (GDP per capita) with the purpose to identify the relationship of these four independent variables toward economic growth in Malaysia. To identify this relationship, we chose Autoregressive Distributed Lag (ARDL) technique to estimate the relationship the relationship of the chosen variables in this study. As presented in table 5.1, we can see that FDI do significantly has positive impact toward economic growth in Malaysia economy. This is aligns with the proposed idea by endogenous theory where FDI inflow
will have a positive impact toward host country economic development through spillover effects created by foreign investments. Other than, life expectancy and gross fixed capital formation which represent human capital and asset capital also show a positive impact on economic growth in the long run. This shows that theory developed to prove that an improved human capital will eventually have a significant impact on economy growth is accepted. With this we can conclude that, this improvement in human capital was influenced by positive spillover received through FDI inflows into Malaysia.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Impact / Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDI</td>
<td>Positive</td>
</tr>
<tr>
<td>Life Expectancy</td>
<td>Positive</td>
</tr>
<tr>
<td>Gross Fixed Capital Formation</td>
<td>Positive</td>
</tr>
<tr>
<td>Population Growth</td>
<td>Negative</td>
</tr>
</tbody>
</table>

Table 5.1 Relationship/impacts of independent variable toward economic growth

5.2 Recommendation

Based on the result that had been gathered, recommendation that suitable be proposed to Malaysia government is to attract more FDI inflows into the economy with the main focus to improve the welfare and health of human capital. As seen from the results, human capital has the highest impact toward economic growth in Malaysia. Moreover, they also need to emphasize on policy to improve the wellbeing of 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 a lot more. Other than that, Malaysia 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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