THE RELATIONSHIP BETWEEN ECONOMIC GROWTH AND FOREIGN DIRECT INVESTMENT IN MALAYSIA:
ANALYSIS BASED ON LOCATION ADVANTAGE THEORY

Derrick Tanggapan¹, Caroline Geetha², Rosle Mohidin³, Vivin Vincent⁴
¹Postgraduate Student Universiti Malaysia Sabah, Malaysia. E-mail: tderrick85@gmail.com
²Senior Lecturer Universiti Malaysia Sabah, Malaysia. E-mail: caroline@ums.edu.my
³Lecturer Universiti Malaysia Sabah, Malaysia. E-mail: awgdin@ums.edu.my
⁴Lecturer Universiti Malaysia Sabah, Malaysia. E-mail: vivin19@ums.edu.my

ABSTRACT

Foreign direct investment is an important indicator to boost the economic growth of Malaysia. Foreign direct investment was identified as a medium in order to acquire skills, knowledge, technologies and to internationalize business and at the same time to reduce debts. However, in the year 2009, inflow of foreign direct investments into Malaysia had declined as much as 81.13 percent. McKern (1996), Kathuria (1998, 2000 and 2001) and Noorbakhsh et al., (2001) believed that foreign direct investment does not take place automatically in a nation. Whereby, inflow of foreign direct investment should be encouraged. Hence, this study aims to identify which location advantage channels and its threshold value that can influence the inflow of foreign direct investment into Malaysia. Location advantage channels were formed using human capital development, financial development and environmental condition whilst foreign direct investment was used as an interactive term as well as an independent variable. The results revealed that, without incorporating interactive terms, all the location advantage channels were able to stimulated economic growth. However, when location advantage channels were used as an interactive term with foreign direct investment, the result revealed that all the interactive term variables become insignificant towards economic growth. Thus, the study support that a certain value of location advantage channels are important as a precondition for foreign direct investment to have a positive effect on economic growth in Malaysia.

Keywords: Threshold Regression, Location Advantage Channels, Foreign Direct Investment and Economic Growth.
JEL classification numbers: E01, E02, G18

1. PROBLEM STATEMENT

Malaysia has a consistent performance of gross domestic product from the period of 1970 to 2010. Based on the International Monetary Fund (2011), Malaysia’s economy was ranked the 30th largest economy in the world by purchasing power parity with gross domestic product estimated to be USD 414.43 billion. Particularly, foreign direct investment was the key driver underlying the strong growth performance experienced by the Malaysian economy until 1980. However, after 1980 the influence of foreign direct investment in contributing to the economic growth of Malaysia begin to decline. According to Mahani Zainal Abidin (2010), the decline of foreign direct investment inflow to Malaysia was mainly due to shortage of human capital, corruption and low level of technological capacity. Furthermore, financial crisis at different parts of the World Economy has made Malaysia’s inflow of foreign direct investment to decline from USD 7.3 billion (2008) to USD 1.4 billion (2009).

However, this scenario became bad to worse during the ninth Malaysian plan whereby the ninth Malaysian plan had an outlay of RM 220 billion (9th Malaysia Plan, 2009). The 6 percent projected growth in the revenue was expected to create a surplus but with the global financial crisis, the Gross Domestic Product (GDP) of Malaysia grew only 1 percent and it’s expected only to grow as much as 6 percent with the stimulus package. Therefore, up to date Federal Government had accumulated a total debt of RM 362.3 billion (2009) compared to RM 306.4
billion (2008) (Shazwan Mustafa Kamal, 2010). The deficit was caused by large subsides and bloated inefficiency in public services (Martin Jalleh, 2010). A high cost was also acquired by the government because of non-competitive, bidding practices employed by the government due to corruption and tax fraud contributed to unmeasured revenue loss (9th Malaysia Plan, 2009). Thus, according to Idris Jala (2010), if the level of debt persists, the Malaysian economy will have to take another 15 years to settle all its debt or even face a similar situation like Greece that could lead to bankruptcy (Quah Boon Huat, 2010).

Over the years, the focus of foreign capital changed in Malaysia. The largest component of foreign direct investment was equity capital, followed by reinvested earnings and other capital. The value for equity capital increased from RM 63.2 billion (2001) to RM 135.7 billion (2007). The increased of 114.7 percent was contributed by new investment and expansionary investment in the existing companies. Meanwhile, the second largest component, reinvested earning accumulated to RM 49.9 billion (2001) to RM 107.1 billion (2007) with an increase of 114.6 percent. However, other capital experienced a downward trend as much as 31.3 percent from RM 16 billion in (2001) to RM 11 billion in (2007). In fact, this problem turn from bad to worse in the year 2009, where a drop of 81.13 percent in the inward and outward of foreign direct investment in Malaysia (Refer to Figure 1.1).

![Figure 1.1: Inward and Outward of Foreign Direct Investment in Malaysia](source: www.unctad.org/fdistatistics)

In today’s fastest growing economy, it is the size and dynamism of their markets that make them attractive to foreign capital. Small economies like Malaysia therefore need to enhance their competitive advantage through innovation, technological advancement and value addition. This can convert low value assembly line to one that is driven by innovation and built on attracting talent. Furthermore, in line with the 10th Malaysian plan’s vision to be a high-income country by the year 2015, a steady income growth of 8 percent was needed. A New Economic Model was formed to overcome the weaknesses and enhance the strength of the economy to increase the attractiveness of Malaysia based on the location advantage theory.

Therefore, attention needs to be given to the location advantage channels as a crucial determinant of foreign direct investment that eventually contribute to economic growth in Malaysia. Furthermore, attention on the determination of the critical value for location advantage channels will be essential to encourage inflow of foreign direct investment and economic growth. Thus, these issues provides the purpose if this study. This study aims to identify which location advantage channels and its threshold value that can influence the inflow of foreign direct investment into Malaysia.

2. LITERATURE REVIEW
Foreign direct investment has grown dramatically worldwide over the last decade. Inflows of foreign direct investment into developing countries grew by an average of 23 percent a year during 1990-2000 (IMF, 2003). In addition, foreign direct investment was now the largest and the most stable source of private capital for developing countries and also economies in transition, which accounting for nearly 50 percent of all capital
flows (Kraay, 1998). However, less developed countries have greater expectation on foreign direct investment. Foreign direct investment was considered as a medium for acquiring skills, technology, organizational and managerial expertise. Unfortunately, the recent bulk of the inflow has been directed to only a limited number of countries. Moreover statistical data showed that from a yearly average of US$50 billion in 1980 to 1984, foreign direct investment inflows increased to US$300 billion in 1994 to 1996.

Developing countries only received 40 percent of foreign direct investment in 1994 to 1996 compared to 25 percent in 1980 to 1984. Meanwhile, China has been the largest developing country that received the most of the foreign direct investment since 1992. From the year 1993 to 1996, 35 percent of foreign direct investment that flowed to developing countries went to China (World Bank Report, 1998). Mohd Ridauddin Masud et al., (2009) claimed there were four elements that encouraged the inflow of foreign direct investment to the host country, which was the component of investment, origin of foreign investor, economic sectors and investment income generated. The openness of the economy with the rest of the world has significant liberalization in terms of trade. The open economic encouraged more confident investment. Other than trade liberalization, financial liberalization was also important to sustain capital inflows.

Since early 1990s, many economic activities of firm, industries and countries were concentrated geographically. Most people in developed countries or in developing countries live in large and compactly populated urban areas. Generally, many industries were geographically concentrated and such clusters are clearly an important source of international specialization and trade. Location advantage was the additional advantage that a firm, industry or country have in a particular geographical area. Firm, industry or country benefited from a location advantage mainly because they are able to access into resources compare to others.

Thus, the determinants of location advantage can be explained in the terms of difference in technologies, endowments and policy management (Ottaviano and Puga, 1997). Besides that, innovation and competitiveness was also identified as an indicator that can push output to internationalize (Vernon, 1966). Meanwhile, Florida (2002) claimed that new economic geography has two implications on how economic theory as a whole was conducted. Firstly, it involves increasing returns. Increasing returns in one form or another are central to modern theory in industrial organization, international trade and economic growth. Whereas, the second implication was related to geography turns out that perhaps the most naturally nonlinear area of economics. Thus, the new economic geography on specific issue of location may help to make economic activities friendlier.

Generally, location is home to market based forces, which created the demand for talent. This reflects a set of location based characteristics such as a bundle of facilities, which attracted human capital. Black and Henderson (1999) claimed that workers are more productive when they located around others with high levels of human capital. Besides that, Romer (1990) also claims the importance of knowledge and human capital in generating economic growth through economic geography. Romer (1990) stressed that what was important for growth was integration not into an economy with a large number of people but rather into one with a large amount of human capital.

Foreign direct investment increased the demand for skilled labor that leads to an increase in the share of total wages of skilled labor meanwhile multinational firms are more often interested towards skilled labor intensive than the rest of the economy. This initially supports the study by Feenstra and Hanson (1996) that there was a causality effect between human capital development and foreign direct investment by using an outsourcing as an explanatory variable during the period of 1972 to 1994 in manufacturing industries of the United States. Human capital generally played an important role in the process of economic growth. Human capital development generated knowledge spillovers, which leads to higher productivity growth in host country. Moreover, differences of human capital across regions may be associated with threshold effects and therefore a persistent growth differential across regions takes place.

Knowledge in the form of education, training, public good, research and development with other investments generate spillover that convert decreasing return into increasing return. Thus, technical progress and growth can be based on creating a new knowledge by adopting and transferring existing technology, hence developing countries has the potential to grow faster than developed countries. However, the potential of converting the technology depend on the availability of capital. In most of the developing countries like Malaysia, capital was obtained through foreign direct investment. Kathuria (2001) recognized the spillover of technical skills. Investment in technical training in conducting of new technology was required in Brazilian and Malaysian manufacturing. Furthermore, Thangavelu (2010) claimed that a high-income economy should not only be driven by accumulation of labor, capital and other factors but emphasis should be given to technology, which was the
key competition industry. He also added that, this could be achieved through the maintenance of human capital quality based on industries relevant education and training.

The finding showed also that, foreign direct investment was an important variable for technology transfer in host country and there was a strong complementary effect between foreign direct investment and human capital with economic growth. This supported the finding by Levine and Renelt (1992) who conducted a research using 50 variables in at least ordinary regression claiming that there was a robust relationship between economic growth, foreign direct investment and human capital. However, the results by Borensztein et al., (1998) implied that foreign direct investment was more productive than domestic investment only when the host country has a minimum threshold stock of human capital. Blomstrom et al., (1994) also claimed that a strong evidence indicating spillover of foreign direct investment towards economy growth in creating a high-income economy does not take place automatically. Similar result were also reported by Balasubramanyam (1998) that foreign direct investment can be an important instrument for development when only certain threshold of human capital with well infrastructure facilities and stable economic climate were attained.

On the other hand, Hermes and Lensink (2003) claimed that financial development channel was an important indicator that influenced the economic growth in a host country. This is because, foreign direct investment can be beneficially to its recipient country through the spillover of technological change. However, the impact of spillover to the recipient country largely depends on the role it play and the circumstances of the recipient country. Absorption of technology in the form of production processes, techniques and new variety of capital goods does not only depend on the human capital of the recipient country but also on the financial development. This means technological spillover was only possible when there was a certain minimum value or threshold level of financial development available in the recipient country. Hence, the process of technology spillover will be more efficient in the present of well-functioning financial market.

The more developed the financial system, then it will better to mobilize saving and maintaining investment project in the recipient country. Financial system will help to speed up technological innovation that leads to economic growth. Furthermore, domestic financial system can also determine to what extent that they can be innovative and increase the technological spillover of foreign direct investment. Hermes and Lensink (2003) created a model using interactive terms of foreign direct investment with financial development and interactive term foreign direct investment with human capital development as independent variables. The results revealed interactive term of foreign direct investment with financial development were significance meanwhile interactive term foreign direct investment with human capital development was insignificant. This again confirmed that a certain level of financial development was important for foreign direct investment to have a positive effect on economic growth. Similarly, a certain level of human capital was also important to attract foreign direct investment into the recipient country.

This means foreign direct investment can generate positive economic growth based on the condition of the recipient country. The condition was measure based on the role of human capital and the financial development of the recipient country. Therefore, the development of both human capital and financial system contributed positively to the process of technology. Out of the 67 countries, 37 countries have a sufficiently developed financial system. Most of these countries were from Latin America and Asia. Meanwhile, all other Sub-Saharan African countries have very weak financial system thus foreign direct investment does not contribute to positive economic growth.

Apart from this, Barro (1996) argued that economic growth in a nation depends on the number of government policies. In his studies, he used a panel data of 100 countries from 1960 to 1990. Barro (1996) claimed that, government policies will influence the economy by promoting or discouraging free markets, regulations of labor and capital market, freedom to trade and lastly on public investment towards infrastructural. Meanwhile, Mun et al., (2009) claimed that the key success factor of the foreign direct investment contributed to the economic growth in Malaysia because of the good environment. A better environmental condition makes investors faced fewer problems because all investors were able to run their business conveniently and profitability. Besides that, the researcher added, other fundamentals that helped to attract the inflow of foreign direct investment included political stability, economic stability, lower wages, accessibility, special rights. However, economic instability such as inflation, foreign exchange flow and economic crisis was also important environmental factors for investor to consider because it can cause the business to lose without knowing in advance.

Furthermore, researchers like Ghosh and Philips (1998), Khan and Senhadji (2001), Noorbakhsh et al., (2001), Saggi (2002) and Abdul Latib Talib (2005) identified several fundamentals such as government size, inflation, trade openness, interest rate and exchange rate to represent environmental condition. All these variables refer to
the macroeconomic stability in a nation that will encourage inflow of foreign capital and enhance growth. Moreover, Ang (2008) identified that economic growth has the smallest effect on foreign direct investment inflow while exchange rate has the biggest role in attracting more foreign direct investment. Zubair Hasan (2004) claimed that exchange rate, export expansion and infrastructural development were important factors in attracting foreign capital into Malaysia. Zubair Hasan (2004) claimed that exchange rate has a negative relationship with foreign direct investment. This implied that a weak currency reduced inflow of foreign capital inflow into the host country while other factors such as capital flight, balance of payments and growth rate had a smaller impact on foreign direct investment.

Based on the literature, there was a relationship between foreign direct investment towards economic growth through various channels. However, adding to the body of literature, this paper examined the relationship of foreign direct investment and economic growth using location advantage in Malaysia with an interactive term model. The study was extended using an advance econometric methodology known as threshold regression to identify the critical value for human capital development, financial development and environmental condition that encourage the inflow of foreign direct investment and eventually leads to economic growth in Malaysia.

3. Methodology and Data
This study used quarterly time series data from 2000 to 2010 to obtain a more accurate result. The quarterly time series data was obtained from the Malaysia Statistical Report, Monthly Bulletin of Bank Negara Malaysia and Ministry of Finance. Location advantage channels were grouped into human capital development channel, financial development channel and environmental condition channel. Therefore, the analysis begins with identification of economic growth as the dependent variable while the independent variables government expenditure on education and training that represented human capital development. Financial development was measured by total loans/GDP and exchange rate represented environmental condition in the nation. Foreign direct investment was measured using inflow of foreign capital as independent variable and as an interactive term.

Initially, the model was established using Ordinary Least Square estimation (OLS) whereby, the multiple coefficient of determination $R^2$ was used to analyze how well the sample regression line fits the data. Then, the F-Test was conducted to measure overall significance of the estimated regression. Thirdly, the T-Test was used to verify the truth or false of a null hypothesis. Durbin Watson was developed to detect correlation in Least-Squares Regressions. If the value of R2 was high but the variables were insignificant, then there was an autocorrelation problem. This was followed by the Unit Root Test to determine whether the variables were stationary. Next, the Co-integration test was carried out to form the long-run relationship among the variables. Meanwhile, the Vector Error Correction (VEC) modeling established the short-run relationship between the variables. Finally, the study was extended to investigate the relationship between the factors of location advantage theory with economic growth of Malaysia using the Threshold Regression method.

4. FINDINGS
Since Ordinary Least Square estimation produces spurious regression, Johansen Cointegration method was used to determine the long-run relationship between the variables. When no interactive terms and only location advantage channels represented by human capital development, financial development and environmental condition was used as independent variables, 2 cointegrating vectors determined long-run relationship between location advantage channels and economic growth.

Table 1.1: Normalized Cointegrating Coefficients

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOG(GDP)</td>
<td>1.000000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOG(HCD)</td>
<td>-0.800825</td>
<td>0.10147</td>
<td>-7.89223</td>
</tr>
<tr>
<td>LOG(FD)</td>
<td>1.782161</td>
<td>0.17561</td>
<td>10.1484</td>
</tr>
<tr>
<td>LOG(EC)</td>
<td>-2.083059</td>
<td>0.47224</td>
<td>-4.41101</td>
</tr>
<tr>
<td>LOG(FDI)</td>
<td>0.057991</td>
<td>0.03825</td>
<td>1.51610</td>
</tr>
<tr>
<td>LOG(INTERACTIVE TERM OF FDI x HCD)</td>
<td>1.704164</td>
<td>13.8031</td>
<td>0.12346</td>
</tr>
<tr>
<td>LOG(INTERACTIVE TERM OF FDI x FD)</td>
<td>9.034856</td>
<td>15.6304</td>
<td>0.57803</td>
</tr>
<tr>
<td>LOG(INTERACTIVE TERM OF FDI x EC)</td>
<td>-0.572139</td>
<td>15.1776</td>
<td>-0.03769</td>
</tr>
</tbody>
</table>
Table 1.1 revealed that all the variables that represent location advantage channels were significant with economic growth in the long-run. Human capital development and environmental condition were negatively significant while financial development was positively significant. Only foreign direct investment was found to be insignificant. This was followed by the inclusion of the interactive terms of human capital development, financial development and environmental condition. However, the results revealed that all the interactive terms were insignificant in explaining the changes in economic growth.

Table 1.2: Vector Error Correction

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC term 1</td>
<td>-0.459292</td>
<td>0.10775</td>
<td>-4.23069</td>
</tr>
<tr>
<td>EC term 2</td>
<td>-0.152655</td>
<td>0.04185</td>
<td>-3.68151</td>
</tr>
<tr>
<td>D(LOG(GDP(-1)))</td>
<td>0.180836</td>
<td>0.13322</td>
<td>1.35739</td>
</tr>
<tr>
<td>D(LOG(HCD(-1)))</td>
<td>0.041870</td>
<td>0.03148</td>
<td>1.33001</td>
</tr>
<tr>
<td>D(LOG(FD(-1)))</td>
<td>-0.421040</td>
<td>0.40949</td>
<td>-1.02821</td>
</tr>
<tr>
<td>D(LOG(EC(-1)))</td>
<td>-0.455611</td>
<td>0.37017</td>
<td>-1.23082</td>
</tr>
<tr>
<td>D(LOG(FDI))</td>
<td>-0.004194</td>
<td>0.02737</td>
<td>-0.15324</td>
</tr>
<tr>
<td>D(LOG(FHCD(-1)))</td>
<td>6.471044</td>
<td>5.69967</td>
<td>1.13534</td>
</tr>
<tr>
<td>D(LOG(FFD(-1)))</td>
<td>3.729444</td>
<td>6.39819</td>
<td>0.58289</td>
</tr>
<tr>
<td>D(LOG(FEC(-1)))</td>
<td>0.926529</td>
<td>5.69370</td>
<td>0.16273</td>
</tr>
</tbody>
</table>

Table 1.2 showed the Vector Error Correction between economic growth with human capital development, financial development, environmental condition, foreign direct investment and interactive terms of human capital, financial development and environmental condition. Both the error correction term (ECT) 1 and 2 in Table 1.2 showed that the estimated t-value of -4.23069 and -3.68151 were greater than the critical of (1.684) at 5 percent significance respectively. Thus, it can be concluded that there was a short-run relationship between the variables. However, all other variables were insignificance in explaining the changes in economic growth at 5 percent significance level.

Figure 2 showed the critical value of human capital development that will enhance economic growth in Malaysia. Based on Figure 5.1, the critical value of human capital development measured by government expenditure on education and training was RM 4,989.9 million. Therefore, in order to have a positive economic growth, Federal Government needs to spend a minimum amount of RM 4,989.9 million. Similarly, Figure 3 showed the critical value of financial development that will enhance economic growth in Malaysia. Based on Figure 5.2, the critical value of financial development measured using the ratio of total credit to GDP was RM 108 088.2 million. Thus, in order to have a positive economic growth, banking system in Malaysia needs to ensure a reasonable interest rate that attract borrowers to increase the total credit/GDP. Finally, Figure 4 showed a linear line graph for the critical value of environmental condition that will enhance economic growth in Malaysia. This was because that the changes in exchange rate is small between Ringgit and USD. In spite of this, based on the Figure 4, the critical value of environmental condition that measured by exchange rate was RM 2.93 per USD. Therefore, in order to have a positive economic growth, Federal Government needs to ensure that the exchange rate between Ringgit and US Dollar must be at RM 2.93 to encourage the inflow of trade.

5. CONCLUSION

Malaysia as a developing country aims to be a developed country by the year 2020, where it desires a huge flow of foreign direct investment to boost the economic growth. However, the inflow of foreign direct investment will not take place automatically with the presence of multinational companies. Hence, attention needs to be address to the channels of the location advantage as human capital development, financial development and environmental condition that eventually contribute to economic growth. Thus, this paper empirically investigates the relationship of location advantage channels while foreign direct investment was used as an interactive term towards economic growth in Malaysia. Furthermore, the critical value for human capital development, financial development and environmental condition will also be determined.

The findings of the analysis clearly indicated that all the location advantage channels were able to stimulated economic growth in the long-run without converting them as an interactive term. Only financial development was found to have a positive relationship with economic growth while human capital development and environmental condition had negative relationships with economic growth in Malaysia. However, when location advantage channels were used as an interactive term with foreign direct investment, the results revealed that all the interactive term variables become insignificant in explaining the changes in economic growth. Thus, this
again reiterates that a certain level of location advantage channels such as human capital development, financial development and environmental channels are important as a precondition for foreign direct investment to have a positive effect on economic growth in Malaysia.

REFERENCES
Rancangan Malaysia Kesembilan. 2006. Unit Perancang Ekonomi, Malaysia.

APPENDIX
Figure 2: Threshold Regression for Human Capital Development

Figure 3: Threshold Regression for Financial Development

Figure 4: Threshold Regression for Environmental Condition