THE LINKAGE BETWEEN FOREIGN DIRECT INVESTMENT AND MACROECONOMIC INDICATORS

Masturah Ma'in*

Faculty of Business and Management, Universiti Teknologi MARA, Puncak Alam, Selangor, Malaysia
maszan@uitm.edu.my

Norfaiezah Nordin

Faculty of Business and Management, Universiti Teknologi MARA, Puncak Alam, Selangor, Malaysia
norfaiezahnordin@gmail.com

Zaidi Mohd Aminuddin

Faculty of Business and Management, Universiti Teknologi MARA, Puncak Alam, Selangor, Malaysia
zaidi220@uitm.edu.my

and

Siti Sarah Mat Isa

Faculty of Business and Management, Universiti Teknologi MARA, Puncak Alam, Selangor, Malaysia
sitisarahmatisa@ymail.com

Abstract

Foreign Direct Investment (FDI) has an important role in developing the Malaysian economy. This study examines the short-run and long-run relationship between macroeconomic indicators and FDI, from 1982 to 2015. The macroeconomic indicators were trade openness, real exchange rate, export goods and services, real gross domestic product (GDP), and gross fixed capital formation (GFCF). The co-integrating test had shown that FDI was significantly related to trade openness, real exchange rate, export of goods and services,

* Corresponding Author

GDP, and GFCF. The findings of vector error correction model (VECM) indicated that a short-run relationship existed between FDI and variables like GDP and GFCF. This study found that there was long-run relationship between FDI and the macroeconomic indicators. While encouraging inflows of FDI, governments should to implement policies, to augment the macroeconomic indicators, so as to achieve the high-income status in future.

1. Introduction

Foreign Direct Investment (FDI) is the process where investors of the home country acquire assets for the intention of controlling all activities of the firms abroad **(Tan, C-H, 2015)**. **Zhigang et al., (2011)** report that FDI is a type of investment, that involves the injection of foreign funds into a firm, that is operated in a different country of origin from the country of the investor. More specifically, FDI is referred to as the investment of foreign assets into domestic goods and services, which exclude the foreign investments in stock markets. FDI can be carried out through cross-border acquisitions, joint ventures and greenfield investments. Joint venture is a shared ownership, with domestic investors, in a foreign business.

FDI has positive effects on a country's income and employment. Productivity and competitiveness will be improved, through new technology systems and new machines, and the global communication costs will be reduced through effective management, which is particularly more effective when handled by foreign investors. To attract FDI, policymakers should ease the procedure and regulation through deregulation and privatisation of industries, which enable foreign investors and the host country to venture into business. The importance of FDI in promoting economic development is evident in the recent global financial crisis and earlier financial crises in Asia.

According to **Yol and Teng (2009)**, if size, technology, scope of business and method of foreign investment were to change, the structure of the enterprise would change as well, with growing liberalisation in the country of origin. Malaysia is an example of Asian economy, that is stimulated by a strong FDI, as a major source of growth in the manufacturing sector **(Shahrudin, Yusof, and Satar, 2010).**

2. Literature Review

FDI has become one of the key factors, in sustaining high economic growth and development and in this matter, Malaysia achieved success for many years **(Mun, Lin, and Man, 2008).** According to **Belloumi (2014),** the FDI was brought mainly by Multinational Corporations (MNCs) from all around the world, which not only brought in capital, but also technology and management expertise for economic growth, especially in developing countries. Due to the deficiency of funds domestically and the small size of private sector, Malaysia has become more dependent on FDI, which is brought into Malaysia by these

MNCs, in order to absorb new advanced technology **(Changwatchai, 2010).** Therefore, the government is really concerned about providing special incentives, to motivate foreign companies to set up business in the country. Malaysia is one of the countries in Asia, which has been stimulated by strong FDI inflow and it is a major source of growth for manufacturing development that targets the export market **(Shahrudin et al., 2010).**

Dunning et.al., (2008) agrees on both microeconomic and macroeconomic perspectives, to develop his theory. Firstly, foreign investors are concerned about the profitability of the foreign investment project. Second, the degree of ease with which subsidiary operations can be integrated into the business strategies of foreign enterprise. Lastly, it depends on the overall performance of the investment situation in the host country. According to **Chandran and Munusamy (2009),** there is mixed evidence, concerning the significance of trade openness, which was measured after deducting the number of export to import in determining the FDI. A country's degree of trade openness to international trade, should be a relevant factor in the decision. When investors were market seeking, less restrictions and openness, would have positive impact on FDI. **Ridzuan, Ismail, and Che Hamat's (2018)** proved that FDI has a significant relationship with trade openness in Malaysia. This study shows that the removal of protectionism tools on imports and exports, can attract more FDI activities into the country.

Stable exchange rates will generate a positive impact on FDI, compared to a very volatile exchange rate, which may present difficulties for investors to forecast the costs and profits. According to **Ullah, Haider, and Azim (2012),** the reduction of exchange rate in the host country means lower Dollar price in its industries or growth of the host country's

value of money, that attracts the foreign investors, to invest in the host country. In addition to the size of the domestic market in the host country, export orientation may be crucial in determining the FDI flows into Malaysia. When the economic activities increased, this would encourage FDI in the host country.

According to the study by **Saad, Noor, and Nor¼s (2014),** GDP growth rate measures and market size bring opportunities of investment, which attract investors as well as FDI. A study conducted by **Singh and Paul (2014),** revealed that GDP and export activities have significant and positive impact on inflows of FDI. According to **Sunde (2017),** the size of the economy of a country is one of the vital factors to attract FDI. The result of the study showed that there was co-integration relationship between economic growth, FDI, and export. Besides that, a study conducted by **Ridzuan, Ismail, and Che Hamat (2018)** showed that economic growth has a positively significant relationship with FDI, in the selected ASEAN-5 countries, particularly Malaysia, Indonesia, and Thailand. According to **Yol and Teng (2009)**, researchers used Gross Fixed Capital Formation (GFCF), as a proxy, to measure the expenditure on infrastructure in Malaysia.

3. Statement of the Problem

FDI in Malaysia could affect the economic growth of Malaysia. Previous studies showed that the strong economic growth of Malaysia depended largely upon FDI. However, the FDI in Malaysia has been declining as it is vulnerable to internal and external shocks. The FDI ranged from USD 9–12 billion since 2010, and to USD 9.9 billion in 2016. One of the reasons was the slow economic growth when the increment amount of goods and services produced by the economy, was low. In other words, the market size was not growing rapidly and the purchasing

power of the residents in the country was increasing very slowly.

4. Need of the Study

Macroeconomic indicators attract FDI flows into Malaysia. Therefore, this study examined the macroeconomic indicators and the general level of infrastructure, that was ignored in developing countries, particularly in Malaysia. This study attempts to fill this gap by using the current data, thus contributing to the growth of literature on FDI.

5. Objective of the Study

The objective of this study was to examine the long-run and short-run relationships between FDI and macroeconomic variables, namely, trade openness, real exchange rate, export goods and services, real gross domestic product (GDP), and gross fixed capital formation (GFCF). It also aims to investigate the factors, that influence FDI. Therefore, the following statistical methods, namely co-integration test and vector error correction model (VECM) were used:

6. Hypotheses of the Study

NH-1: There is no relationship between FDI and macroeconomic indicators

NH-2: There is no relationship between FDI and infrastructure

7. Research Methodology

7.1 Sample Selection

The population of this study included Malaysian FDI inflow and macroeconomic indicators, over the period of 1982 to 2015. The sample was selected, on the basis of the time series data method.

7.2 Sources of Data

The data were extracted from various sources of databases available in websites. The data were obtained from the World Bank website, except for the trade openness, which was obtained from the Department of Statistics in Malaysia.

7.3 Period of the Study

This study covered a period of 34 years, spanning from 1982 to 2015.

7.4 Tools used in the Study

Johansen co-integration test, short-run error correction model and long-run error correction model were used in this study. FDI, in the general equation (1), represents the foreign direct investment inflow, OPN, the trade openness, RER, the real exchange rate, EX, the export of goods and services, GDP, the real gross domestic product, and GFCF represents the gross fixed capital formation (proxy for infrastructure). The theoretical framework was adapted from **Yol and Teng (2009),** to estimate the determinants of FDI flows into Malaysia. The long-run relationship between the dependent and independent variables, was measured by using the Johansen co-integration method and the short-run relationship was tested by using the vector error correction model.

FDI = F (OPN, RER, EX, GDP, GFCF) (1)

8. Data Analysis

Since all the variables were integrated in order one, which was I (1) in the stationary test, it was feasible to employ the co-integration test, to investigate the long-run relationship between the FDI inflow and trade openness, real exchange rate, export goods and services, real GDP, and GFCF. The co-integration test was used to determine the presence of any co-integration or long-run relationship, among the variables, based on the Johansen co-integration test. **Table-1** displays four co-integration equations, based on the trace and maximum eigen value tests. The results, shown in **Table-1,** indicated that there was long-run relationship

between LFDI, LOPN, LRER, and LEX. The results of Johansen co-integration and maximum eigenvalue tests are shown in **Table-1**.

VECM model was employed in this study to examine the long-run relationship and short-run dynamic between the variables. The long-run relationship was determined by the following formula:

$$LFDI = -59.9488 + 42.4729LOPN - 54.1620LRER - 40.2638LEX + 50.2927LGDP \qquad (2)$$

From the equation (2), all the estimated parameter coefficients carried the expected signs and they were consistent with the economic theory in general.

Table-2 shows the vector error correction model, to find the short-run impact of trade openness, real exchange rate, export of goods and services, GDP, and GFCF, on FDI flows into Malaysia. The coefficient of trade openness indicated that a one percent decrease in the trade openness, will increase the FDI flows by 20.74 percent in the short-run. The coefficient of real exchange rate indicated that one percent increase in the trade openness will increase the FDI flows by 15.14 percent in the short-run. This result is consistent with the findings, revealed in the study by **Wang Lin (2012),** according to which the real appreciation of Yen excercised no overall short-run impact, on China's trade balance.

The export of goods and services (LEX) coefficient of 30.04 percent, is presented in **Table-2,** under the short-run error correction model. The result revealed that there was no significant relationship between the total export of goods and services, and FDI flows into Malaysia. This result concurs with the findings of **Srivastava (2006)** study, according to which FDI and trade can be substitutive or complementary to each other, depending on the nature of investment and host country's characteristics. Therefore, it can be summarised that the FDI inflows into the Malaysian economy were not export-oriented and foreign investors were not likely to look at the export activities, in the short-run, to attract them to invest in Malaysia.

The result for the coefficient of GDP, in **Table-2,** indicated that a one percent decrease in the total GDP, will increase the FDI flows by 55.29 percent, in the short-run. This is in line with the economic theory as GDP has a significant effect and positive relationship with FDI flows **(Nosheen, 2013)**. In addition, the coefficient of GFCF specifies that a one percent increase in the GFCF will increase the total FDI flows, by 9.57 percent, in Malaysia. This is in line with the economic theory that infrastructure will be as an indicator of the host country development **(Ramirez, 2014)**. Hence, **"NH-2: There is no relationship between FDI and infrastructure",** was rejected.

Table-3 presents the ECM result of the long-run error correction model. The result revealed that the ECM coefficient reported negative loading as expected, given that the equilibrium correction of the ECM was estimated at -0.3777 and significant at five percent and had the correct sign **(Ali Bekhet Al-Smadi, 2016)**. The error correction term was rejected at 5 percent significant level, thus proving the existence of long-run causality between FDI inflows with the five variables, which were OPN, RER, EX, GDP, and GFCF. Hence, **"NH-1: There is no relationship between FDI and macroeconomic indicators",** was rejected. The negativity and significance of ECM coefficient indicated that the speed of long-run equilibrium would adjust, if a shock existed in the equilibrium.

9. Findings of the Study

The study found long-run relationship between LFDI, LOPN, LRER, and LEX. In other words, there was long-run relationship

between FDI and its macroeconomic indicators in Malaysia. GDP exercised significant effect on FDI flows in the short-run. This is in line with the economic theory and consistent with the findings, reported in **Nosheen's (2013)** study. In addition, the GFCF (proxy for infrastructure) revealed positive relationship with FDI. This finding is consistent with the economic theory, that infrastructure will be as an indicator of the host country development **(Ramirez, 2014)**.

10. Suggestion

It is suggested that the government should focus on improving GDP, as it represents the Malaysian economic condition and potential demand for investors' output. Therefore, it can be increased by providing more incentives to domestic firms, as they contribute to the total GDP of Malaysia. Incentives such as subsidies and lesser cost and term of regulations for domestic business growth, are the significant factors which would increase the GDP. In view of the physical infrastructure of Malaysia, it can promote linkage with foreign investors and establish domestic firms, to increase trading activities. Therefore, having a developed infrastructure will encourage more FDI flows into Malaysia as well as economic growth in trade activities. However, the infrastructure in Malaysia is still limited in terms of logistic hub and investors are more likely to export their products, through Singapore, to be distributed in the global market.

11. Conclusion

Using the annual data from 1982 to 2015 and employing the Johansen co-integration and error correction model, this study attempted to examine the short-run and long-run relationship between macroeconomic indicators and FDI. This study found that there was long-run relationship between FDI and the macroeconomic indicators. Meanwhile, the short-run effect of FDI flows was determined by the GDP growth rate and GFCF. FDI was negatively influenced by the real exchange rate and positively affected by the GDP growth rate and GFCF variables. The results indicated the existence of long-run and short-run relationships between FDI and macroeconomics indicators (OPN, RER, EX, GDP, and GFCF). Even though there were only two short-run effects between the indicators, it is important for the Malaysian Government, to expand the investment climate, by opening up the Malaysian economy to foreign trade and developing all indicators, that may encourage investment in Malaysia.

12. Limitations of the Study

This study suffered from certain limitations, in terms of data availability, where there were only 34 observations for the FDI, macroeconomic variables, and GFCF.

13. Scope for Further Research

It is recommended that researchers could use other FDI indicators, such as human capital, financial development, and human development for future studies. Further, FDI effects on firms, profitability and performance should be explored, by analyzing the current economic scenario.

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Table-1: Results of Johansen Co-integration Test

Hypothesized No. of CE(s)	Max-Eigen Statistic	0.05 Critical Value	Trace Statistic	0.05 Critical Value
None*	41.89851*	39.37	134.3277 **	94.15
At most 1	34.19448*	33.46	92.42920**	68.52
At most 2	27.23512*	27.07	58.23472**	47.21
At most 3	22.71006*	20.97	30.99960*	29.68
At most 4	7.695993	14.07	8.289539	15.41
At most 5	0.593546	3.76	0.593546	3.76

*(**) Significant at 5% level of confidence
*(**) Denotes rejection of the hypothesis at 5% significance level
L.R test indicates 4 co-integrating equation(s) at 5% significance level
Source : Data extracted from world bank website and computed using Eviews

Table-2: Results of Short-run Error Correction Model

Variables	D(LFDI)	D(LOPN)	D(LRER)	D(LEX)	D(LGDP)	D(GFCF)
Constant	0.504718	0.014867	-0.000905	0.106741	0.075873	0.051002
D(LFDI)	-----	0.004466	-0.002034	0.014524	0.004048	-0.042060
	-----	(0.17143)	(-0.12048)	(0.75742)	(0.38953)	(-1.48861)
D(LOPN)	-20.7378	------	-0.367119	-0.04693	0.524148	3.027881
	(-1.8544)	------	(-0.38283)	(-0.0431)	(0.88786)	(1.88641)
D(LRER)	15.1368	1.674675	-----	-0.43719	-1.2953**	-4.8969**
	(1.30405)	(1.09008)	-----	(-0.3866)	(-2.11396)	(-2.93931)
D(LEX)	30.04238	0.639292	-0.244971	-----	0.235398	-1.702123
	2.49841	(0.40170)	(-0.23758)		0.37084	(-0.98624)
D(LGDP)	55.297**	-0.527074	0.713213	-2.18501	-----	2.564686
	(3.30275)	(-0.23786)	(0.49677)	(-1.3397)	-----	(1.06726)
D(LGFCF)	9.5655**	0.241467	0.016880	0.221083	-0.006980	-----
	(3.10735)	(0.59267)	(0.06395)	(0.73727)	(-0.04295)	-----
R Square	0.606901	0.229369	0.268721	0.392888	0.521987	0.495325
Adjusted R Square	0.492247	0.004602	0.055431	0.215814	0.382567	0.348128
F-Statistic	5.293335	1.020474	1.259885	2.218776	3.743979	3.365050
D.W	2.061838	2.142738	2.205300	1.857990	2.147733	2.156567

Notes: The asterisk (**) denotes as of the hypothesis at 5% significance level. t-values in bracket
Source : Data extracted from world bank website and computed using Eviews

Table-3: Results of Long-run Error Correction Model

ECM (*p*)	-0.377765**
	(-2.14784)

***denotes rejection of hypothesis at 5% significance level. t-values in bracket.
Source : Data extracted from world bank website and computed using Eviews