Investment and Economic Indicators in Malaysia

Masturah Ma'in, Norfaiezah Nordin, Izza Hazira Zailan, Saliza Sulaiman, Zuraidah Ismail

Faculty of Business and Management, Universiti Teknologi MARA, Selangor, Malaysia

**Corresponding author e-mail: maszan@uitm.edu.my*

***Abstract* — This study is to investigate the relationship between economic indicators and investment in Malaysia using secondary data spanned through 1982-2015. This study employs an empirical analysis by adapting the unit roottest, Johansen co-integration test and vector error correction model (VECM) to determine the short-run and long runeffect among variables. The cointegrating test indicates that investment is significantly related to the trade openness, GDP and population. Based on the VECM results, the findings show that a long run relationship exists between the trade openness and investment in Malaysia. Hence, these reveal that it is important for the Malaysian government to enhance the economic policy in liberalizing foreign trade in order to encourage more investments.**

Keywords: *Malaysia, Investment, Trade Openness, Economic Growth, Population*

ARTICLE INFO

Received 5 October 2018
Received in revised form 10 November 2018
Accepted 15 December 2018
Published 30 December 2018

I. Introduction

In the past two decades, investment has gained more importance in the developing world. This is due to the current economy growth among the developing countries that attracts considerable foreign investments. Among the ASEAN countries, Malaysia is the third largest economy after Indonesia and Thailand. In terms of competence and business regulation, Malaysia is one of the top competitive economies in the region even though the country had a Gross Domestic Product (GDP) growth of 4.1 percent in 2016 which was below the ASEAN average of 4.5 percent. The growth has been supported and preserved by continuous reforms and efforts taken by the Malaysian government**.**

Malaysian Investment Development Authority (MIDA), which is the accomplishment agency for the nation's investment plans, is focusing on generating quality reserves in new and developing technologies that are necessary to promote investments in the country. Malaysia's total approved investment in 2016 was RM 207.9 billion, which increased by 7.7% from the previous year consisting the primary sector, manufacturing sector and services sector which was RM 8.2 billion, RM 58.5 billion and RM141.2 billion respectively (MIDA, 2016). The year 2016 was an unusually difficult year for the nation's economy due to low commodity prices and submissive external demand. According to the Statistics Department of Malaysia, in the final quarter of year 2016, resilient private expenditure and fixed investment helped balance the reduction in government expenditure, and it was confirmed that the role of private expenditure as the growth engine was eminent for the economy after the government had to borne the collapse of oil prices. However, Malaysia was supported by strong private investments and expenditures, growth rates of over 4% that had become conventional in Malaysia and had been expected to remain steady. This was in comparison with other medium-to-high income economies that have had the growth rate of between 1 and 2 percent.

The objective of this study is to examine the relationship between economic indicators on investment and investigate the long run effects of economic indicators on Malaysia's investment. Hence**,** this research studies three **v**ariables which are trade openness (OPN), gross domestic product (GDP) and population (POP) on the relationship between trade openness and investment in Malaysia. Many studies have been conducted to show how important investment toward a country's economy. If investment continuously decline, it will cause low productivity, low economic growth and finally affect the potential employment growth.

According to this issue, Clean Development Mechanism (CDM) has managed to transfer the technology from developed countries to developing countries to promote feasible economy growth. It has been found that environmental regulations, competitiveness, and financial benefits have a progressive impact on CDM implementation which shows significant positive effect of CDM application on economy performance. Therefore, it is crucial for this research to be conducted as to determine how economic indicators, for example, trade openness can influence investment in Malaysia by using the projected variables. The findings can reveal insights to investors and policy makers to predict the investment inflow, promote linkages with foreign investors and establish domestic firms in increasing trading activities.

II. Literature Review

There are many empirical literatures that explain the relationship between investment and determinants. This study uses Gross Fixed Capital Formation (GFCF) as the proxy for investment. This is in agreement with the study by (Perić & Đurkin, 2015) which used the GFCF as the proxy. Small firms tend to invest in new fixed assets. GFCF consists of six broad asset types which are dwellings, other buildings and structures, transport equipment, other machinery and equipment, cultivated assets and intangible fixed assets (Kosma, 2015). This comparison of gross investment spending to GDP can misrepresent trends in capital formation. Another standard for judging the rate of capital formation compares the stock of capital assets to the number of people who might use that capital or benefit from its services (Fallis, 2013).

Trade openness can be defined as expanding business prospects for local and international companies by opening up new markets by removing unnecessary barriers and giving exporting activities the easy access. It can help to boost economy growth, reduce poverty and expand private sector development. The results suggest that in the long-run, trade openness had positive relationship in manufacturing growth in Malaysia. It was also suggested that openness should be viewed as the long-term policy initiative for the sector to benefit (Govindaraju & Appukutty, 2009). The study found that in short run trade openness and foreign direct investment had significant but negative effect on economic growth. Based on the result, government development expenditure had influenced the economy growth in Malaysia (Hussin, Mat Ros, & Zamzuri Noor, 2013).

Based on the accelerator theory of investment behavior, actual investment is a function of changes in demand or output where *INV = f(GDP)* (Adugna, 2013). Investment decision needs consideration of income level (Riffin & Ahmad, 2012). This is supported by a study that explains the reasons for the importance of GDP in stimulating domestic investment (Al Khatib, Altaleb, & Alokor, 2012). Private investment also has positive correlation to GDP growth, to credit extended to the private sector and to government investment (International Monetary Fund, 1993). Furthermore, investment is simply proportional to changes in output, with assumption that capital stock is always optimally adjusted (Kosma, 2015). In addition, the richer countries appear to be, the more they can attract a lower share of FDI relative to GDP compared to the poorer countries (Yu & Walsh, 2010). Likewise, the countries with larger GDP or with high GDP growth rate, higher proportion of international trade and with more business friendly environment are more successful in attracting FDI (Abdul, 2010).

In term of population and market size, Pakistan fits well into the large market argument because many products in this market can be served better through local production than exports from the source country (Akhtar, 2000). In other words, in developing countries, both population and GDP are crucial. The FDI is concerned with the size of market in developing countries not in only per capita basis but rather in aggregate size (Seref Akin, 2010). Other study done by Kostin (2018) found that implementation of valued-based management principle leads to growth and greater investment attractiveness of the Russian companies. In addition, (Kristjansdottir, 2004) about the low foreign direct investment in Iceland can be explained by its geographical location together with market size measures. Results indicate that distance negatively affects FDI and from this view, FDI appears to be more driven by wealth effects than market size effects.

The favorable investment climate is characterized not only by traditional policy areas that can foster private sector investment but also by the broader institutional environment in which the firm operate (Lim, 2014). In developing countries, market size is the most important determinant of foreign direct investment (Hussain, 2012). Moreover, the size of market's firm tending to be positively significant towards investment in China. This is due to the larger

economies attract relatively more investment, economic growth can be viewed as a possible drivers for increasing a province's investment's stock (Coughlin & Segev, 2000).

III. Methodology

This study uses the cointegration and vector error correction model (VECM) that consists of four variables which are investment, trade openness, GDP and total population in Malaysia. Investment is the dependent variable and trade openness, GDP and population are the independent variables. The model follows Mohsen (2015) and is presented as follows:

$$LINV = \alpha + \beta 1\ OPN + \beta 2\ LGDP + \beta 3\ LPOP + \varepsilon t$$

where α is the intercept, $\beta 1$, $\beta 2$, and $\beta 3$are the coefficients of the model, *LINV* is the natural log of gross fixed capital formation as proxy to investment in real value (Millions of Ringgit Malaysia), *OPN* is the tread openness (the percentage of total exports and imports to GDP), *LGDP* is the natural log of the gross domestic product (Millions of Ringgit Malaysia), *LPOP* is the natural log of population, and εt is the error term.

3.1 Unit root test

The process examines the characteristics of the variables selected to avoid the problems of spurious that are often associated with non-stationary time series and generate long -run equilibrium relationships concurrently. The data series will be tested for stationary using the Augmented Dickey Fuller (ADF) test as the starting point to assess the order of integration. Whether the variable series is stationary or does not have a unit root will imply that the alternative hypothesis is accepted and the null hypothesis is rejected. The results of the tests indicate that null hypothesis at 5% significance level cannot be rejected at any level. At the first difference, all the variables are stationary, therefore, the null hypothesis is rejected and the alternative is accepted for each of the variables.

3.2 Johansen cointegration test

After all variables are integrated of order one I(1), then study should proceed to test whether a long run relationship exist between variables. The Johansen test approaches the testing for cointegration by examining the number of independent linear combinations (k) for an (m) time series variables set that yields a stationary process. The Johansen test can be seen as multivariate generalization of the Augmented Dickey-Fuller (ADF) test. The generalization is the examination of linear combinations of variables for unit roots. The Johansen test and estimation strategy makes it possible to estimate all co integrating vectors when there are more than two variables

3.3 Vector error correction model (VECM)

When results show that the variables have long run relationship between them, then VECM is applied in order to evaluate the short run properties of the cointegrated series. In VECM, a negative and significant coefficient of the ECM indicates any short run fluctuations between variables and will stabilize long run between them. However, if there is no cointegration, the researchers have to proceed with Granger causality to test the casual links between variables and VECM will be no longer used.

IV. Empirical Results and Discussion

4.1 Unit Root Test

Standard econometric methodologies assume stationary in the time series while they are in the real sense non-stationary. The essence of testing for unit root is because if the series is not stationary then all the results from the classical linear regression analysis are not valid. It is also to determine the stationary level using the Augmented Dickey-Fuller (ADF) test. The variables are stationary when the Augmented Dickey-Fuller (ADF) value is greater than the critical values of the variables. The table below shows the results of the unit root test.

Table 1: ADF Unit Root Test Results

Augmented Dickey Fuller (ADF)				
Variables	Intercept		Intercept and Trend	
	Level	First Difference	Level	First Difference
LINV	-0.330637	-3.985492**	-1.784473	-3.925097**
OPN	-1.722621	-3.558780**	0.086276	-3.957895**
LGDP	-1.088793	-3.614713**	-1.052254	-3.617131**
LPOP	1.261402	-16.01474**	2.352512	-4.292379**

** Denoted significant at 5% level of confidence

Based on the results in Table 1 above, it can be concluded that none of the variables was at stationary level. However, to attain stationary level, all the variables were differentiated once and were stationary at the first difference. This indicated that there was no unit root at the first difference.

a. Cointegration Test

Having established that the variables were stationary and had the same order of integration, we proceeded to test whether they were cointegrated. To achieve this, Johansen Multivariate Cointegration test was employed. The Johansen procedure was used to identify long run relationship among the variables. Cointegration of the dependent variable with the independent variables formed a dynamic basis which enabled forecast to be made. The results of the Johansen's Trace and Max Eigenvalue tests are shown in Table 2 below.

Table 2: Johansen Cointegration Test

Hypothesized No. of CE(s)	**Max-Eigen Statistic**	**0.05 Critical Value**	**Trace Statistic**	**0.05 Critical Value**
None*	39.76762	27.58434	68.14397	47.85613
At most 1	16.52305	21.13162	28.37635	29.79707
At most 2	11.58232	14.26460	11.85330	15.49471
At most 3	0.270980	3.841466	0.270980	3.841466

*Denotes rejection of the hypothesis at 5% significance level
Long run test indicates one cointegrating equation(s) at 5% significance level

At 5% significance level, the Trace test and the Max Eigenvalue test suggested that there was cointegration in each model, hence null hypothesis was rejected. The long run indicated one cointegrating equation at 5% significance level. The result further explained that there was long run relationship between the variables.

b. Vector Error Correction Model (VECM)

Based on the cointegration test conducted, it is found that there was long-term relationship between the variables. Therefore, error correction term (ECT) was included in order to run vector error correction model. By doing this, ECM captured the short-run as well as long run equilibrium adjustments between variables.

Table 3: Short-run Error Correction Model

Variables	**Dlog(INV)**	**D(OPN)**	**Dlog(GDP)**	**Dlog(POP)**
Constant	0.068001	-15.48239	-0.078130	-7.07E-05
Dlog(INV)	-----	5.773198	-2.190384	-0.003984
	-----	(0.05856)	(-1.17511)	(-0.86175)
D(OPN)	-0.013975	------	-0.015600	-2.10E-05
	(-1.20404)	------	(-1.28365)	(-0.69835)

Dlog(GDP)	2.026348	-6.855280	-----	0.003433
	(1.21356)	(-0.07414)	-----	(0.79167)
Dlog(POP)	-1.160211	808.4069***	6.484870	-----
	(-0.14749)	(1.85567)	(0.78734)	-----
R Square	0.325199	0.315269	0.423156	0.995672
Adjusted R Square	0.195430	0.183590	0.312224	0.994840
F-Statistic	2.505975	2.394228	3.814567	1196.368
D.W	2.061838	1.858942	2.045004	0.574238

***Denotes rejection of the hypothesis at 10% significance level

T-values in bracket

Based on the results in Table 3, it can be concluded that there is no short run causality among or between the variables. There is a negative coefficient between investment and trade openness, which is one percent increase in trade openness, will cause the investment to decrease by 0.0139 percent. This is consistent with Hussin, Mat Ros, & Saifoul Zamzuri Noor (2013) who examined the causal relationship between INV and OPN; the results showed there was no causal link because Malaysia experienced exchange rate depreciation and total imports exceed total exports which had created negative trade balance positions in almost all the years studied.

There is a positive coefficient between investment and GDP, where one percent increase in GDP, will increase the INV by 2.0263 percent. However, GDP and INV have no short run causal relationship. This is consistent with Abu Hassan Asari et al. (2011) who stated that there is no short run relationship exist between investment inflows and GDP. There is also a negative relationship between INV and POP, where one percent increase in POP will cause the INV to reduce by 1.1602 percent. This is supported by Aziz & Makkawi (2012), there is no short run linkage between investment and population. Countries with large population may have difficulties in receiving investments if they lack technical institutions necessary for developing a highly skilled workforce.

Table 4: Long Run Error Correction Model

Independent Variables	Dependent Variable
	Log(INV)
Constant	8.640150
Dlog(INV)	------
D(OPN)	0.006731 (21.2642)
Dlog(GDP)	-0.821785 (-41.1045)
Dlog(POP)	-0.594598 (-3.88788)
ECM (*p*)	-1.150848** (-2.14784)

*Denotes rejection of the hypothesis at 5% significance level

Table 4 presents the ECM results whichclearly show that ECM coefficient is correctly signed in negative as expected. In other words, there is long run causality from the three independent variables such as OPN, GDP and POP. In the long run, OPN, GDP and POP have an influence on INV. Given that the equilibrium correction of the ECM is estimated at -1.150848 and significant at 5 percent and has the correct sign. This indicates a low speed of adjustment to equilibrium. This finding supports similar finding from a previous study conducted by Matadeen (2011), which observed that OPN and GDP had a relatively high impact and long run relationship with investment.

V. Conclusion

The effect of trade openness, economy growth and population on the investment in Malaysia was investigated in this study using annual data series from 1982 to 2015 which consisted of 34 observations. The model employed had four variables. The dependent variable was investment and the independent variables were trade openness, GDP, and population. The ADF unit root test, Johansen cointegration test, and Vector error correction model analysis were employed in this study. The results on cointegration test showed the existence of long-term relationship between the variables. Therefore, error correction term (ECT) was included in order to run vector error correction model. The results showed that all variables had no short run causality effect between them. However, ECM coefficient was negative as expected. Thus it can be concluded that there is long run causality from the three independent variables and they have low speed of adjustment to equilibrium.

Based on the findings of this study, trade openness has long run effect toward investment in Malaysia. This is due to the easier process of import and export, hence this attracts more investors to invest and eventually, economy growth can be achieved. Therefore, it can be said that this study has achieved its objective. Besides, improving the economy management will also help to attract more investors. Moreover, population growth provides more human capital as well as creates more demand in the market. It also opens up more potential market size (GDP) for investors to maximize profits.

Hence, although there is no short run effect between variables it is important for the Malaysian government to improve the investment climate by opening up the Malaysian economy to foreign trade and improve the quality of the human capital in order to encourage more investments in this country. This study recommends that Malaysia should conduct serious study on joining trade treaties and seize advantages as a member of World Trade Organization (WTO). At the ASEAN level, Malaysia should also play a more significant role in establishing Free Trade Agreements (FTAs). Finally, the government's economy policy in liberalizing foreign trade has been successful in enhancing the investments in Malaysia that has always been a trading nation.

References

Abdul, K. (2010). Determinants of Foreign Direct Investment in Developing Countries : A Comparative Analysis. Margin: *The Journal of Applied Economic Research*, *4*(4), 369-404., 1–27. https://doi.org/10.1177/097380101000400401

Abu Hassan Asari, F. F., Shamsudin, N., Hamid Abd Kadir, R. A., Baharuddin, N. S., Affandi, S., & Jusoff, K. (2011). Impact of export and gross domestic product towards foreign direct investment inflows in Malaysia. *World Applied Sciences Journal*, *12*, 27–33. Retrieved April 28, 2017 from https://www.idosi.org/wasj/wasj12(BES)11/5.pdf

Adugna, H. (2013). Determinants of Private Investment in Ethiopia. *Journal of Economics and Sustainable Development*, *4*(20), 75–126. Retrieved from www.iiste.org

Akhtar, M. (2000). The Determinants of Foreign Direct Investment in Pakistan: An Econometric Analysis. *The Labour Journal of Economics*, *5*(1), 1–22. Retrieved February 27, 2017 from http://121.52.153.178:8080/xmlui/handle/123456789/5152

Al Khatib, H., Altaleb, G. S., & Alokor, S. M. (2012). Economical Determinants of Domestic Investment, *European Scientific Journal*, 8(7), 1–17.

Aziz, A., & Makkawi, B. (2012). Relationship between foreign direct investment and country population. *International Journal of Business and Management*, *7*(8), 63–70.

Coughlin, C. C., & Segev, E. (2000). Foreign direct investment in China: A spatial econometric study. *The World Economy*, *23*(1), 1. https://doi.org/10.1111/1467-9701.t01-1-00260

Fallis, A. (2013). The Determinants of Business Investment: Has Capital Spending Been Surprisingly Low? *Journal of Chemical Information and Modeling*, *53*(9), 1689–1699. https://doi.org/10.1017/CBO9781107415324.004

Govindaraju, C. V., & Appukutty, M. (2009). Trade openness and manufacturing growth in Malaysia. *Journal of Policy Modeling 31(5):637-647.* https:// 10.1016/j.jpolmod.2009.06.002

Hussin, F., Mat Ros, N., & Saifoul Zamzuri Noor, M. (2013). Determinants of Economic Growth in Malaysia 1970-2010. *Asian Journal of Empirical Research*, *3*(9), 1165–1176. Retrieved May 30, 2017 from http://www.aessweb.com/pdf-files/ajer-3(9)-1165-1176.pdf

Hussain, F., & Kimuli, C. K. (2012). Determinants of Foreign Direct Investment to Developing Countries, *SBP Research Bulletin, Vol 8 (1),* 1—31.

International Monetary Fund (1993). Room C-525 IMF Working Paper © 1993, Washington, D.C., United States.

Kosma, O. (2015). Determinants of Investment Activity: the Case of Greece. *Eurobank Research*, *Vol IX (7)*, 1–21. ISSN: 2241-4851.

Kostin, K. B. (2018). Investment Attractiveness Assessment of Global Russian Companies. *Journal of Economics Studies and Research*, Vol 2018 (2018), Article ID 783590, ISSN: 2165-9966. DOI: 105171/2018.783590.

Kristjansdottir, H. (2004). Determinants of foreign direct investment in Iceland, Department of Economics, University of Copenhagen. Retrieved 30 July, 2017 from https://doi.org/10.1016/j.jpolmod.2007.06.014

Lim, J. J. (2014). Institutional and structural determinants of investment worldwide. *Journal of Macroeconomics*, *41*, 160–177. https://doi.org/10.1016/j.jmacro.2014.05.007

Matadeen, J., & Matadeen, J. S. (2011). Trade Liberalization and Economic Performance: An Overview. Retrieved 15 September, 2017 from http://sites.uom.ac.mu/wtochair/Conference Proceedings/2.pdf

MIDA. (2016). Malaysia 2016 Investment Performance Report. Retrieved August 30, 2017 from Malaysia Investment Development Authority. http://www.mida.gov.my/home/administrator/system_files/modules/photo/uploads/20170302155931_Slides%20Presentation%20Malaysia%20Investment%20Performance%202016.pdf

Mohsen, A. S. (2015). The Relationship between Trade Openness and Investment in Syria. Retrieved Sept 21, 2017 from https://www.semanticscholar.org/.../The-Relationship-between-Trade-Openness.../2f33e6...

Perić, M., & Đurkin, J. (2015). Determinants of Investment Decisions in a Crisis: Perspective of Croatian Small Firms. *Management*, 20(2), 115–134.

Riffin, N. A. M., & Ahmad, N. (2012). A conceptual paper on factors affecting investment decision of Malaysian investor. ICIMTR 2012 - 2012 *International Conference on Innovation, Management and Technology Research*, 450–453. https://doi.org/10.1109/ICIMTR.2012.6236437

Seref Akin, M. (2010). How Is the Market Size Relevant as a Determinant of FDI in Developing Countries? A Research on Population and the Cohort Size. *International Symposium on Sustainable Development*, (1980), 425–429.

Yu, J., & Walsh, J. P. (2010). Determinants of Foreign Direct Investment: A Sectoral and Institutional Approach. *IMF Working Papers*, *10*(187), 1–27. https://doi.org/10.5089/9781455202218.001