

FDI and Domestic Investment in Malaysia

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Abstract. Motivated by a persistent increase in FDI inflows in Malaysia since the early 1970s, this study examines the impact of inward FDI on domestic investment between 1970 and 2011. The Johansen and Juselius co-integration technique employed in this study reveals that there is a long run relationship between domestic investment, FDI and economic growth. The error correction model suggests that there is a slow correction of disequilibrium of the investment model in the short run. The findings further suggest that FDI inflows in Malaysia “crowds out” domestic investment in the short run, in which an increase in one percentage point of inward FDI merely raises capital formation by 0.56 percentage point. Thus, policy makers may want to stimulate domestic investment by encouraging greater participation of local investors in production activities.

Keywords: Crowd Out, Co-Integration, Domestic Investment, FDI, Error Correction Model, Malaysia

1. Introduction

Malaysia has launched the New Economic Model in 2010, to achieve the high-income nation status by 2020. Through the model’s Economic Transformation Program, the economy is set to achieve the target of \$15,000 per capita income by 2020. In line with the vision, the economy would rely on domestic and foreign investors to stimulate domestic consumption through an active participation of investment activities. Specifically, the investment would take two forms, through (i) domestic investment which is the flow of capital within local activities or (ii) foreign investment where new capital is brought in which may involve the transfer of ownership. Both types of investments contribute to total domestic investment, which determines the rate at which physical capital is accumulated, subsequently influencing the rate of economic growth. Since 2010, it has been recorded that about 80 percent of the approved investment projects in Malaysia have come from the domestic investment and the remainder was from foreign direct investment (FDI) [1].

As is widely known, investment activities provide many benefits to the country. Among the benefits are the creation of job opportunities for skilled or unskilled workers and the increase in productivity growth. The latter is achieved particularly through foreign investment via the absorptive capacity of technology transfer and knowledge spread by this FDI participation [2]. The country’s manufacturing sector seems to have benefited greatly from inward FDI as seen in the increased efficiency and level of productivity in the sector [2]. In addition, the development of new prospect areas due to investments generate a large impact on the rural economy, as facilities that improve in certain areas have encouraged more local firms to take advantage of business activities, leading to the reduction in the incidence of poverty among rural communities All these benefits would subsequently translate into greater economic growth.

Thus far, the effective promotion of investment has brought Malaysia to the top fifth position in Asia as a hub for FDI destination and the inward investment is poised to grow and contribute to the increase in the country’s capital formation. Given the importance of FDI in the country’s gross fixed capital formation, this study seeks to examine the relationship between inward FDI and Malaysia’s total investment between 1970 and 2011. The long run and short run relationship amongst total investment, FDI and economic growth are analyzed to determine the extent to which FDI stimulates the country’s total investment. Specifically, would

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inward FDI exert a strong impact on the country's domestic capital accumulation or would the impact be slow or insignificant?

The model of investment developed by [3] is used as the basis of the study to determine the crowd out or crowd in impact of inward FDI on the total investment in Malaysia. Results from the study would enable policy makers to implement measures to increase the capital formation in Malaysia.

2. Existing Studies on Effects of FDI on investment

In evaluating the impact of FDI on development, it is important to determine whether or not multinational corporations crowd in domestic investment or displace or deter domestic investment opportunities [3]. Reference [4] claims that FDI could crowd in domestic investment as it provides new investment opportunities to local firms through the provision of machinery and technology, which cannot be produced domestically. Local firms could emulate the technology introduced by foreign firms [5]. Meanwhile, new industries may be introduced to the host country, contributing to the reduction in transaction costs and extending inter-firm division of labor [6]. However, there is a drawback of inward FDI on domestic investment, where more competitive business environment would arise when firms compete for scarce domestic resources such as skilled labor and financial resources. Inward FDI also may disrupt the linkages in domestic manufacturing through the substitution of imports for domestic goods. Besides, FDI may itself be a substitute to domestic investment if foreign firms have an edge in technological and managerial expertise or provided tax benefit by the host country [3].

In Malaysia there is scarce studies that examine the role of FDI in influencing domestic investment (see, for example [3]; [7]; [8]). Instead, many studies examined the linkages between domestic investment and FDI to economic growth. Several such studies ([2]; [9]; [7]; [10]) found that FDI is a determinant of economic growth and has a complementary effect on domestic investment.

The study by [3] on the effect of inward FDI on total investment in developed and developing countries from 1970 to 1996 found that the effects of inward FDI vary from country to country depending on the domestic policy applied. The study found that only three countries in Asia (South Korea, Thailand and Pakistan) have a crowd in effect of inward FDI on their total investment while other Asian countries such as China, Indonesia, Philippines, Sri Lanka and Malaysia show a neutral effect of inward FDI on total investment.

More recently, [8] observed that there is a long run relationship between Malaysia's inward FDI, outward FDI, domestic savings and domestic investment. Using the ARDL approach, they found that outward FDI exerts a negative effect on domestic investment while inward FDI yields a positive effect on domestic investment. The positive relationship may be due to Malaysia's FDI-friendly policy to attract high participation of foreign capital. In 2011, [9] analyzed the dynamic linkages between FDI, domestic investment and economic growth from 1970 to 2009 in Malaysia. Findings from their study indicate that FDI, domestic investment and economic growth are co-integrated in the long run. The results show that the increase in FDI brings a positive effect on domestic investment. Thus, FDI has complementary effects on domestic investment in Malaysia. In the short run, domestic investment has a one-way causal relationship with FDI.

Reference [4] further investigated the effects of inward FDI on domestic investment by separating the latter into two different types, namely, private domestic investment (PDI) and public domestic investment (PUB). The study used multivariate Johansen co-integration technique between the period 1960 and 2003 for Malaysia and found evidence that PUB crowds in PDI and FDI is a complement rather than competition to PDI. Another study by [7] that focuses on public and private investment found evidence that government public investment crowds out private investment in the long run.

Studies in other parts of the world such as that of [5] who examined empirically the role of FDI in the process of technology diffusion and economic growth in 69 industrial countries found evidence of a crowding in effect of FDI on total investment. Adopting the model of investment by [3], [11] also found strong evidence of crowding in effects for Czech Republic and Hungary but a crowd out effect of FDI on domestic capital formation in Poland. The crowd in effect for Czech Republic is consistent with the role of

inward FDI in the country's export oriented sector, which results in a positive development for the overall investment activity. Meanwhile, the crowd out effect in Poland occurs as the total investment increased much less than FDI or even fails to rise when FDI increased.

More recent studies found that FDI has indeed played a positive role in economic development. This was empirically proven by the study of [12] on the crowding in and crowding out effects of FDI on domestic investment in Yangtze Delta Region. They found that FDI could lead to increases in capital of local producers, subsequently stimulating economic development. Reference [13] in 2011 also tested the model of investment with FDI for Indo-China. The result from the Johansen co-integration test among gross fixed capital formation (used as the proxy of domestic investment), inward FDI and GDP demonstrates that there is no long run relationship amongst the variables for China but there is co-integration in the case of India.

The review of existing studies demonstrates that FDI generally offsets domestic investment whilst in developing countries FDI stimulates increases in domestic investment. Nevertheless, such studies on Malaysia still yield ambiguous results, which call for the present study to examine the effects of FDI on the country's capital formation.

3. Model of Investment

Reference [3] introduced the theoretical model of investment with FDI, which discussed the effects of inward FDI on total domestic investment of a country. The theoretical viewpoint is that there is uncertain impact of inward FDI on host country's domestic investment, as the different policy implementation of a country can lead to varying effects of FDI on total domestic investment. The theory explains the relationship between inward FDI and total domestic investment when the stream of past net investments is included in the model (see [3]). Based on the model, the transformation of final investment equation will be in the following form:

$$I_{t,d} = \alpha + \beta_1 F_t + \beta_2 F_{t-1} + \beta_3 F_{t-2} + \beta_4 I_{d,t-1} + \beta_5 I_{d,t-2} + \beta_6 G_{t-1} + \beta_7 G_{t-2} + \varepsilon_t \quad (1)$$

where

I is total investment, F is FDI and G is GDP (gross domestic product). α = Fixed country effect, and ε_t = serially uncorrelated random error.

In this study, gross fixed capital formation (GFCF) is used as a proxy to measure total domestic investment¹ that included both investments from the local and foreign investors [14]. The total investment (INV) variable is then represented by the ratio of GFCF to GDP while FDI is measured as the ratio of FDI to GDP. The data for GDP is measured in natural logarithm and expressed in real terms (LRGDP). This study used the annual data from 1970 to 2011 obtained from the World Bank's World Development Indicator database.

The model above is tested using Johansen and Juselius (1990) cointegration framework to ascertain whether there is a long run equilibrium relationship between the variables. Granger (1986) note that test of co-integration is sort of preliminary test to avoid any spurious regression situation. In verifying the long run co-integrating relationship, this method is likely more powerful than other forms of tests in explaining the relationship between domestic investment and the respective independent variable [7].

If the variable of interest is confirmed to have a long-term equilibrium relationship, the next step is to check for an error correction term for a better-fit estimation regression of investment behavior in the short run. Therefore, the error correction modeling is important to determine the speed of adjustment to correct the disequilibrium among variables in the short run as they achieve long run equilibrium.

4. Findings

Table 1 shows the results of Augmented Dickey Fuller and Phillip-Perron unit root tests with trend and intercept for INV, FDI and LRGDP at level and first difference. Based on the Phillip-Perron test results, all

¹ Gross Fixed Capital Formation (GFCF)¹ is a proxy for total investment according to a previous studies (see example; Agosin and Mayer,2000; Misun and Tomsik,2002; Kim and Seo,2003; Wu et.al,2010; Lean and Tan, 2011)

the series are integrated of an order one i.e. I(1). Thus, the Johansen Juselius (1990) approach to cointegration is appropriate for use in this study.

Table 1: Results of ADF and Phillip-Perron unit root tests

Variable	ADF		Phillip-Perron	
	Level	Δ	Level	Δ
INV	-2.138(3)	-3.299(3)*	-2.104(3)	-4.542(3)***
FDI	-2.905(3)	-3.432(3)*	-3.130(3)	-7.260(3)***
LRGDP	-1.508(1)	-3.167(1)	-1.506(3)	-4.593(3)***

Note: *** and * denotes the significant levels of 1% and 10% respectively and Δ denotes at first difference. Value of number in () indicates the lag length.

The Johansen Juselius cointegration test, which was pursued next, indicates that there is one cointegrating equation present, based on the trace test statistic obtained (see table 2). This implies that there is a long run relationship between INV, FDI and LRGDP. Based on the normalized cointegrating coefficients, the following long run model between INV, FDI and LRGDP is derived (see equation (2)).

Table 2: Johansen Cointegration test on INV, FDI and GDP

Hypothesized no. of CE(s)	Eigenvalue	Trace stat	0.05 CV	Prob
None*	0.418967	41.88378	35.193	0.0082
At most 1	0.308388	20.16588	20.262	0.0515
At most 2	0.126649	5.416689	9.165	0.2408

Note: * denotes rejection of hypothesis at 5% significant level.

$$\text{INV} = 5.474 + 1.163\text{FDI} + 0.312 \text{LRGDP} \quad (2)$$

(0.139) (1.403) (0.205)

Note: Number in () denotes the t-statistic

As shown in equation (2), FDI appears to be statistically insignificant in determining domestic investment (INV) in the long run. Thus, we can conclude that FDI does not influence gross fixed capital formation in Malaysia in the long run. This finding is similar to [3], in their study on Malaysia. The model is further examined using the error correction model (ECM) general to specific modeling technique. Results from the parsimonious model can be seen in Table 3.

Table 3: ECM Result

Dependent Variable: INV				
Method : Least Squares				
Sample (adjusted): 1972 - 2011				
Included observations: 40 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.6800	1.8853	2.4823	0.0179
D(INV(-1))	0.3677	0.1410	2.6077	0.0132**
D(FDI)	0.5610	0.3018	1.8587	0.0713*
ECT(-1)	-0.2245	0.0866	-2.5924	0.0137**
R-squared	0.2967	F-statistic	5.0629	
Adjusted R-squared	0.23811	Prob.(F-statistic)	0.0050	
Durbin-Watson stat	2.0060	S.S. residual	349.4002	

Note: The asterisks ** and * denote the significance level of 5% and 10% respectively.

From Table III, the growth of total investment is influenced by its growth lagged one year at 5% significance level. The growth of FDI in the current year also appears to positively influence the growth of total investment albeit at 10% significance level where a one-percentage point increase in FDI growth results in a 0.56 percentage point increase in total investment. The negative and significant error correction term validates that there is indeed an adjustment towards long run equilibrium arising from shocks in the short run.

However, the speed of adjustment is slow at 22%. The model passes the usual diagnostic tests². Nevertheless, the residual term in the model does not pass the normality test.

5. Conclusion

Inward FDI have weighed in, as an important factor in stimulating economic growth, but how far this component has contributed to the formation of the country's capital deserves greater attention. Thus, this paper studies the effects of inward FDI on Malaysia's total investment (gross capital formation).

The findings from this study show that there is a long run relationship between total investment or capital formation and inward FDI and GDP. However, FDI does not seem to influence total investment in the long run. On the contrary, the short run relationship between FDI growth and investment growth seems to be significant and positive. A one-percentage point increase in the growth of FDI would stimulate a 0.56 percentage point increase in the growth of total investment. Nevertheless, this figure suggests that there is a crowding out effect of FDI on total investment in Malaysia. This crowding out effect could also imply that there is a displacement of domestic investment by inward FDI. This may be attributed to the higher competition between the domestic and foreign investors for the scarce local resources to be used in production activities. Therefore, inward FDI only contributes an increase in the gross fixed capital formation³ by 0.56 percent.

The results also suggest that in the long term, inward FDI might not be a strong variable to increase the country's capital formation. Thus, if inward FDI crowds out domestic investment or fail to contribute to capital formation, there will be a good reason for Malaysia to stimulate domestic direct investment instead, by encouraging more local investors to put more money into the country. Therefore, it is advisable for policy makers to emphasize domestic direct investment in order to increase total investment. The government could encourage domestic private investors particularly the small medium enterprises to utilize the technology and skills transfer from FDI to improve business efficiency. Besides, improvements in the role of bank credit [7] and financial development [15] could be generated, to encourage greater participation of domestic investors in the country's capital formation.

6. Acknowledgements

The authors would like to thank Arshad Ayub Graduate Business School, Universiti Teknologi MARA for permitting the use of its facilities in the conduct of the research.

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² The probability of the F-statistics for each test is 0.9886 for BG Serial Correlation LM test, 0.9975 for ARCH test and 0.0951 for Ramsey RESET test respectively. In addition, the model is stable in its parameters over time since the CUSUM plots are kept within the 5% critical bounds parameter stability.

³ Note that the GFCF is the proxy used for the total investment in this study that accounted for the overall domestic investment include both domestic and foreign capital.

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