International Journal of Business and Society, Vol. 14 No. 1, 2013, 163 - 172

OUTWARD FDI AND ECONOMIC GROWTH IN MALAYSIA: AN EMPIRICAL STUDY

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ABSTRACT

This paper attempts to explore the causality relationship between outward foreign direct investment (OFDI) and home country economic growth using Malaysia as a case. The main findings do not advocate the OFDI-led growth hypothesis. In order to promote OFDI-led growth, the home government should prepare the private sector for increasing competition in the era of globalization so that linkages can be forged with Malaysian multinationals, and to facilitate home sourcing for OFDI activities. However, the study reveals the evidence of growth-led OFDI, which conforms to the investment development path theory, can potentially internationalize business activities of Malaysian firms abroad that could raise the economic activity and social well-being of the nation.

Keywords: Outward FDI, multinationals, Malaysia

1. INTRODUCTION

It is well documented that foreign direct investment (FDI) inflows have played an instrumental role in promoting economic growth and development of the Malaysian economy as a result of the adoption of a series of industrialization initiatives.[2] The literature review of a number of empirical studies advocated the inward FDI-led growth hypothesis can shed some light on the link between FDI inflows and economic growth for Malaysia. By and large, these findings suggested that FDI inflows could encourage economic growth in Malaysia through channels like spillover effects (Bende-Nabende *et al*. (2001)), openness (Marwah and Tavakoli (2004)), and developing the financial sector (Tang, 2003; Choong *et al*., 2005). Moreover, Wong and Tang (2007) also found the important causal link from FDI inflows to Malaysian semiconductor exports that could potentially enhance the economic growth in the host economy because semiconductors were the largest export earner in the electronics industry

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1 The author would like to take this opportunity to thank Tang Tuck Cheong (Monash University Sunway Campus) and an anonymous referee for helpful comments and suggestions. Jae Kim's (La Trobe University, Australia) helpful advice on indirect causality effect is gratefully acknowledged. Responsibility for any remaining errors is entirely my own.

2 The industrialization programs undertaken were import-substituting industrialization policy in the 1960s, export-oriented industrialization policy in the 1970s and the industrial Master Plans in the 1980s and 1990s.

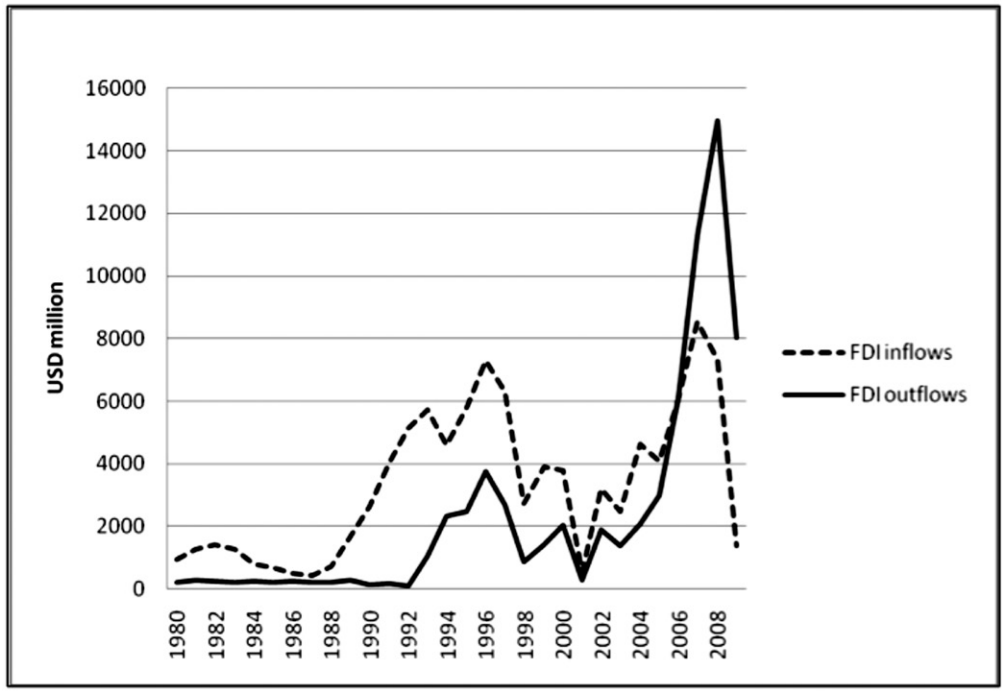
and also, the industry happened to be one of the major recipients of FDI. Empirical literature studying the economic growth effects of inward FDI for other host countries can be found from Balasubramanyam *et al*. (1996, 1999), De Mello (1997; 1999), Bende-Nabende and Ford (1998); Borensztein et al. (1998), Alguacil *et al*. (2002), Chakraborty and Basu (2002), Liu et al. (2002) and Baharumshah and Thanoon (2006), to name a few. On the other hand, according to Ang's study (2008), apart from both financial and infrastructure developments, and trade openness, Malaysia's economic growth had a positive impact on its FDI inflows. Choong and Lam (2010) also provided similar findings that in addition to degree of openness and literacy rate, there was a unidirectional causality that ran from Malaysia's real GDP to FDI inflows.

However, recently, Malaysia as a host country suffered a massive decline in FDI inflows whilst it also experienced a substantial increase in FDI outflows especially after 2007 (see Figure 1). These were attributed to the higher cost of labour in the home country (Tham, 2005) as well as the emergence of more attractive destinations for FDI such as People's Republic of China (PRC), India and transitional economies from Indochina, due mainly to their relative lower labour cost (see Hussain and Radelet, 2000) and larger market size. For instance, Goh and Wong (2011) found that foreign market size was one of the key determinants of OFDI from Malaysia using multivariate cointegration and error-correction modelling approach.[3] Besides, other macroeconomic determinants like income, real effective exchange rate and trade openness were also positively related to Malaysia's OFDI in short and long run (Kueh, Puah, and Apoi (2008)). Besides, it was also found that interest rate had a positive impact on OFDI from Malaysia in the long run only (Kueh, Puah, and Mansor (2009)). Since 2007, the outflows of FDI exceeded its inflows, and this trend continued in 2008 (UNCTAD, 2008, 2009; refer to Fig. 1). In the literature, there are two economic views put forward pertaining to the possible impacts of outward foreign direct investment (OFDI) on the home country economic growth. One view argues that if OFDI is a substitute for domestic investment (e.g., domestic production that has been relocated abroad due to diminished domestic investment opportunities), an increase in foreign direct investment by home country multinational firms may cause a decrease in output at home economy (Stevens and Lipsey, 1992). On the other hand, if OFDI is complementary to domestic production (e.g., foreign affiliates use home inputs to produce outputs in the host country), an increase in OFDI activities by home country multinationals may promote higher domestic output (Desai *et al*., 2005). In light of these views, we can postulate that there is a potential causal linkage that runs from OFDI to home country economic growth. Correspondingly, higher economic growth in the home country may also encourage OFDI. As shown by the investment development path model (Dunning, 1981, 1986), a steady high economic growth in the home economy could foster higher level of economic development, in which domestic firms would have established ownership advantages before they would expand their operations abroad. Hence, conceptually, the causal relationship between OFDI and home country economic growth could run in either direction.

3 For similar evidence based on case study findings, see Ragayah (1999), Sim (2005), Tham (2005) and Kitchen and Ahmad (2007).

Since the existing literature on the empirical knowledge about the causality patterns between OFDI from Malaysia and its economic growth is limited [4], this paper aims to explore empirically whether OFDI could be the new sources of growth for the country and in turn, to examine whether higher home economic growth would encourage cross-border direct investment by Malaysian multinational firms so that they can improve their international competitiveness. Such an empirical study has implications for policy formulation and analysis for Malaysia's OFDI especially in the current wave of globalization. The structure of this paper is as follows. Section II provides a description of the data as well as their time series properties based on unit root tests, which are a prerequisite for Granger causality analysis (Granger 1969, 1988). Section III presents and discusses the empirical results. The main conclusions and policy discussions are summarized in Section IV.

Figure 1: Malaysia's FDI inflows and outflows, 1980 to 2008



Source: UNCTADstat

4 Recently, Herzer (2010) found that OFDI is both a cause and a consequence of economic growth for the USA based Granger causality test using annual data from1980 to 2004 with 25 observations.

2. DATA, UNIT ROOT AND GRANGER CAUSALITY TEST

The sample period for the present study is from the first quarter 1999 to the fourth quarter 2008. The choice of this sample period is based on the availability of data especially OFDI from Malaysia. The time-series data (i.e. OFDI and Gross Domestic Product (GDP)) were retrieved from the *International Financial Statistics*. Moreover, the raw data have been converted into real terms[5] before they are transformed into natural logarithm *(ln)*.

Performing Granger non-causality test in a VAR (vector autoregressive) framework assumes the endogenous variables entering into the VAR system to be stationary (i.e., *I*(0)). Conversely, estimating a VAR system using non-stationary variables (i.e., integrated of order one, I(1)) may result bias in inference. Therefore, it is necessary to examine the time series properties (i.e., the degree of integration, I(d)) of real OFDI and real GDP in this study. Two different unit root tests are applied in order to assume consistency, namely the Phillips-Perron (PP) unit root test (Phillips and Perron, 1988) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) stationary test (Kwiatkowski *et al*., 1992). The former assumes each series to be a unit root under the null and allows for heterogeneous residuals of a unit root process, while the latter assumes the null is stationary.

Table 1 presents the results of PP and KPSS tests for both data in levels and first differences (as symbolized by Δ). Both PP and KPSS test statistics show that the variables *ln*OFDI and *ln*GDP are integrated of order one (*I*(1)), concluding that both series have a unit root. Hence, both variables are first differenced once, and both tests confirm they are stationary *I*(0).

Table 1: Testing for stationarity

	KPSS (H_o: stationary)	**PP (H_o: a unit root)**
*ln*OFDI	0.6180** ~ I(1)	-0.371641 ~ I(1)
Δ*ln*OFDI	0.2377 ~ I(0)	-5.001017*** ~ I(0)
*ln*GDP	0.7817*** ~ I(1)	-1.543381 ~ I(1)
Δ*ln*GDP	0.3181 ~ I(0)	-5.634609*** ~ I(0)
Critical values		
1%***	0.739	-2.63
5%**	0.463	-1.95
10%*	0.347	-1.61

Notes: Δ denotes variables in first differences. The critical values for KPSS test are from Kwiatkowski, *et al*. (1992, Table 1) while the critical values for the PP test are based on MacKinnon's (1991) critical values.

5 The price index used to deflate both variables is GDP deflator.

Since the unit root tests indicate both series are non-stationary *I*(1), it is essential to perform a cointegration test prior to conducting a Granger causality test. Moreover, the choice between estimating a VECM (vector error correction model) or VAR model depends very much on the outcome of cointegration test. If there is a cointegrating relation between these two variables, then the former is appropriate, otherwise, the latter is suited for estimation. Table 2 reports the estimated maximum eigenvalue statistics and trace statistics with their respective critical values. Both test statistics suggest the non-rejection of the null hypothesis of no cointegrating relation.

Table 2: Results of cointegration tests

Hypothesized No. of Cointegrating Relation(s)	Maximum Eigenvalue Statistic	5 Percent Critical Value	Trace Statistic	5 Percent Critical Value
None	11.58538	14.07	13.26862	15.41
At most 1	1.683235	3.76	1.683235	3.76

Notes: Critical values are from Eviews

Accordingly, the non-stationary *I*(1) *ln*OFDI and *ln*GDP, which are to be included in the VAR specification for Granger non-causality test, have to be differenced once to ensure all variables are stationary within the VAR system. Thus, the prospective causality between *ln*OFDI and *ln*GDP can be written in a bi-variate VAR as follows:

$$\Delta InOFDI_t = a_0 + \sum_{j=1}^{p} a_{1j}\Delta InOFDI_{t-j} + \sum_{j=1}^{p} a_{2j}\Delta InGDP_{t-j} + e_t \quad (1)$$

$$\Delta InGDP_t = b_0 + \sum_{j=1}^{p} b_{1j}\Delta InOFDI_{t-j} + \sum_{j=1}^{p} b_{2j}\Delta InGDP_{t-j} + u_t \quad (2)$$

The direction of the Granger non-causality between Δ*In*OFDI and Δ*In*GDP can be determined by using a Wald test, which follows the chi-square distribution, to examine the joint significance of the right-hand-side variables in equations (1) and (2). If, for instance, the null hypothesis of non-causality from Δ*In*GDP to Δ*In*OFDI in equation (1) (i.e. H_o: $a_{21} = a_{22} = ... = a_{2p} = 0$) is rejected, the test suggests that the direction of causality is running from Δ*In*GDP to Δ*In*OFDI supporting the investment development path theory. Similarly, if the null hypothesis of non-causality from Δ*In*OFDI to Δ*In*GDP in equation (2) (i.e. H_o: $b_{11} = b_{12} = ... = b_{1p} = 0$) is rejected, the test implies that there is also a reverse causality running from Δ*In*GDP to Δ*In*OFDI advocating the OFDI-led growth hypothesis.

3. EMPIRICAL RESULTS

It is essential in the initial stage to identify the order of lag length for the unrestricted VAR, VAR(*d*) before the Granger non-causality tests are performed. The optimal lag length is chosen based on a set of statistical selection information criterions viz. Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC) and Hannan-Quinn Information Criterion (HQ). Table 3 provides the calculated values of the loss functions based on the proposed information criterions. Since the study involves small sample, a maximum lag order of eight is considered. The VAR(*d*) that judged to be adequate are those with five lags (as indicated by LR, FPE, SC and HQ) and six lags (as shown by AIC).

Table 3: Lag length selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	59.80342	NA	8.23E-05	-3.729253	-3.636737	-3.699095
1	62.77287	5.364169	8.81E-05	-3.662766	-3.38522	-3.572293
2	86.78193	40.27326	2.43E-05	-4.953673	-4.491096	-4.802884
3	96.51795	15.07513	1.70E-05	-5.323739	-4.676131	-5.112635
4	110.2291	19.46102	9.24E-06	-5.950266	-5.117628	-5.678847
5	127.7201	22.56901*	3.99e-06*	-6.820652	-5.802983*	-6.488917*
6	132.1504	5.144847	4.06E-06	-6.848412*	-5.645713	-6.456362
7	134.1896	2.104969	4.93E-06	-6.721908	-5.334178	-6.269543
8	139.6038	4.890268	4.94E-06	-6.813148	-5.240388	-6.300468

Notes: * indicates lag order selected by the criterion; LR: sequential modified LR test statistic (each test at 5% level); FPE: Final prediction error; AIC: Akaike information criterion; SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion.

As a result, the order of the lag length for the dynamic bi-variate VAR models ranges between five and six lags and their respective causality test results are reported Table 4. The test results using bi-variate VAR(5) suggest that there is no evidence of causality running from OFDI from Malaysia to home country GDP growth as well as in the reverse direction, partly because the time horizon of 5-quarter lag is too short for both macroeconomic variables to have impact on each other. However, if bi-variate VAR(6) is estimated, the test results advocate that there is a unidirectional causal linkage that runs from the home country GDP growth to OFDI from Malaysia.[6] To explore whether this evidence is sensitive to longer lag length, bi-variate VAR(7) and VAR(8) had been estimated. Consequently, the test results (see Table 4) confirm

6 Causality is based on the notion that the past values of Y can be used to predict X one period ahead. However, there is a concern about the indirect effects that might exist in multivariate causality tests (e.g., Lütkepohl, 1993 and 2005; Dufour and Renault, 1998; Dufour and Taamouti, 2010). For instance, given the presence of an auxiliary variable Z, it is possible that the variable Y does not cause variable X at horizon one but does cause variable X at a longer horizon via Z. Lütkepohl (1991 p. 45) states that, "For a stationary VAR(p), if the first pK-p responses of variable j to an impulse in variable k are zero, all the following responses must also be zero". As Kónya (2004, p. 79) stated, "However, if there is no causality between two variables for two periods ahead then there is no causality between them at, or up to longer horizons either". Therefore, the bi-variate model with lags 1 and 2 were estimated

that high home economic growth has strong tendency to encourage Malaysian firms to invest abroad in order to gain competitive/cost advantage and expand markets.[7]

Table 4: Results of Granger causality tests

Lags	ΔlnGDP $\rightarrow$ ΔlnOFDI	ΔlnOFDI $\rightarrow$ ΔlnGDP
5*	7.107 (0.2128)	3.917 (0.5614)
6#	14.736 (**0.0224**)	5.819 (0.4437)
7	12.091 (**0.0976**)	
8	18.596 (**0.0172**)	

Notes: The reported test statistics are based on a Wald test with a chi-square distribution; (.) is p-value; * denotes lag length selected by LR, FPE, Sc and HQ; # denotes lag length selected by AIC.

4. CONCLUSION

In the current wave of globalization, Malaysia has become an emerging source of FDI in the region (see UNCTAD, 2008). Cross-border direct investment by Malaysian firms could potentially internationalize their business so that home production can be formed as an integral part of the global supply chain. Can OFDI activities from Malaysia generate new sources of economic growth given that OFDI can be used as a channel for globalization of business? In turn, can higher home country economic growth enable Malaysian firms to undertake cross-border direct investment so that they not only can take advantage of better opportunities (e.g. low input prices; access to new markets) in the host countries but also have the propensity to improve their international competitiveness, which is seen as an important outcome of globalization? This paper attempts to explore the causal relationships between Malaysia's OFDI and its economic growth using the conventional Granger non-causality approach.

Based on the Granger causality tests, the main findings do not advocate the OFDI-led growth hypothesis, suggesting the Malaysian multinational firms may have lower tendency to establish linkages with domestic firms because the home inputs might not be price competitive internationally and perhaps, they are not suited to global market requirements. To forge linkages between domestic firms and Malaysian multinationals, and to facilitate home sourcing for OFDI activities, the Malaysian government should prepare the home private sector for increasing competition in the era of globalization. For instance, to make the sector more competitive, the government can design policies to facilitate the sector to achieve economies of scale in production, to reduce the cost of doing business, and to enhance local business linkages with Malaysian multinationals. Furthermore, Malaysian multinationals should be encouraged to

and found that the results were the same for both lag lengths (i.e., lags 1 and 2), suggesting that the indirect effect is not a concern in this study. I thank the referee for highlighting this concern.

7 Dunning (1998) categorized OFDI into four motives: natural resource seeking, market seeking, efficiency seeking and strategic asset seeking.

remit their profits from their direct investment abroad and reinvest their remittances in the home country to stimulate economic growth. Finally, there is evidence of a unidirectional causality that runs from home country economic growth to OFDI from Malaysia, implying higher real GDP growth, the more developed is the economy, the higher is the level of OFDI from Malaysia. This evidence, which conforms to the argument put forward by the investment development path model, is imperative for Malaysian firms to internationalize their business activities abroad so that they can integrate themselves into the global supply chain. Hence, potentially, this can raise the economic activity and social well-being of the nation not only in terms of higher international trade but also forging intra-firm trade between a parent firm based in Malaysia and its foreign affiliates.

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