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The Impact of Foreign-direct Investment on Economic Growth in Malaysia: The Role of Financial Development

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ABSTRACT

This paper investigates the impact of foreign-direct investment (FDI) and financial development on economic growth in Malaysia over the period of 1975-2014. According to autoregressive distributed lag bound test approach to co integration analyses, the results found that financial development plays an essential role in mediating the impact of FDI on economic growth in Malaysia. This implies that well-developed financial sectors lead to further and facilitate FDI spill over and hence yield economic growth, particularly for the case of Malaysia.

Keywords: Financial Development, Economic Growth, Foreign-direct Investment, PCA, Autoregressive Distributed Lag
JEL Classifications: F23, O16, O40

1. INTRODUCTION

Over the past decades foreign-direct investment (FDI) has considered as the main engine of economic growth especially among emerging countries. The importance of FDI can be seen through the channels of technological transfer, new skill, knowledge and techniques in firms' production process, increase rivalry among the production for local and foreign producers, export and import as well as economic growth (Levine, 1997; Borensztein et al., 1998). As a result, FDI inflow in the globe has increased significantly from $57 billion in 1982 - $1271 billion in 2000. The significant contribution of FDI to economic growth in the developing countries has been highlighted by Nair-Reichert and Weinhold (2001). Since Malaysia is one of the developing countries, FDI has been well recognized in order to sustain Malaysia's economic performance in the long run as well as increase the welfare of the nations. For instance, by having more FDI inflows in the country, the new and existing firms will contribute more towards gross domestic product (GDP) by having new skill, knowledge, and techniques in their production process (Xu and Wang, 2000; Jenkins and Thomas, 2002). As a whole, Malaysia is considered the second quickest growing economy in the South East Asian area where the average Gross National Production growing of 8% annually in the latest years. Meanwhile, in the 1957 Malaysia was considered as agriculture based economy then has shifted to more versatile and export-oriented.

Even though theoretical literature predicts that FDI inflows bring huge benefits to the recipient country, empirical studies on the FDI-growth nexus have stated contradictory results (Herzer and Clasen, 2008; Gorg and Greenaway, 2004). Some studies found to have positive effect (De Gregorio, 1992; Borensztein et al., 1998), while others have found no such evidence (Irandoust and Ericsson, 2001) or even no effect on growth (Moran, 1998; Gorg and Greenaway, 2004). The ambiguity findings might be due to the failure to capture the model contingency effect between FDI and growth. Hermes and Lensink, (2003) and Alfaro et al. (2004) found that well-developed financial markets stimulate higher economic growth by absorbing the benefits embodied in foreign capital flows, particularly FDI. The absorptive capacity of the recipient country seems to be the key explanatory variable for conflicting relationship between FDI-growth. According to World Bank (2001) emphasizes that only countries with greatest absorptive capacity are likely to benefit from the presence of foreign capital (World Bank, 2001). More recently, Azman-Saini et al. (2010) argued that there is a minimum threshold level of financial development required for the positive effect of FDI on growth.

In addition, one main source of dispute on the growth literature is the issue of the most suitable or correct measure of financial development indicator. Therefore, this paper examines the role of financial market in mediating the impact of FDI on economic growth within an endogenous growth model for Malaysia. This paper contributes to the previous literature in many ways, (i) applying time series estimation procedures. As far as we know, most of the existing studies have either ignored the role of financial sector or have relied mainly on the panel estimation technique, (ii) previous studies have used either one or two indicators of financial development, which lead to conflicting results.

2. LITERATURE REVIEW

The role of FDI on economic growth has been widely discussed in the literature. The endogenous growth model has been developed by Lucas, (1988), Rebelo (1991) and Romer (1986). This growth model introduces capital in the form of human capital accumulation and R and D and spotlights the externalities that spring up from these types of capital. FDI inspires the integration of new inputs and technologies in the production systems of host countries. In addition, FDI might also encourage economic growth endogenously if it generates productivity, positive externalities and spill over effects. De Mello (1997) shows that FDI can boost long run economic development through technological progress, capital accumulation and human capital augmentation. In a broadly referred to work, Borensztein et al. (1998) look at the impact of FDI on economic growth which they found that FDI is a vital vehicle for adoption of new technologies, contributing comparatively more to growth than domestic investment.

The role of financial sector development on economic growth was first studied by Schumpeter (1911/1934). After that followed by Patrick and Charles (1966) conducted that financial sector development can encourage the economic growth through the following channels, first; reallocation of resources from traditional to growth-inducing sectors and the promotion of entrepreneurship in growth-inducing sectors. Romer (1986) and Lucas, (1988; 1993) mentioned that a well - developed financial system will attract more saving mobilization and decrease asymmetric information this will affect to better allocation of resources. In recent studies, Choong et al. (2004) examined the complementary influence for three developed countries (Japan, US, UK) and six East Asian countries using Johansen multivariate cointegration technique and Granger Causality test. The later study concluded that, financial sector development is fundamental for FDI to have positive effects on economic growth in seven out of nine countries observed in the long run, whereas short run causality tests shown that financial sector development is significant in six out of nine countries observed. In the case of Malaysia, Choong et al. (2005) applied the bounds test and unrestricted error correction model (UECM) approach on Malaysia. The result shows that short run elasticities for FDI, financial sector development and the complementary effect to be greater than their corresponding long run elasticities. On the other hand, Alfaro et al. (2006) suggested that financial sector development influences the extent to which FDI promotes higher economic growth in host countries via backward linkages. For instance, by easing credit constraints via lower lending and borrowing rates, financial sector development is capable to smooth the relations between foreign firms and domestic firms. For recent literature review also Ozturk (2008), Ayouni and Issaoui (2014), Babajide et al. (2015), Faisal et al. (2016), Sbia and Alrousan (2016).

Second, there are also a few studies have shown that the complementary hypothesis is not supported. Durham (2004); for instance, empirically showed that the complementary effect between FDI and financial sector development was not statistically significant in influencing economic growth. However, Azman-Saini et al. (2010) argued that there is a minimum threshold level of financial development required for the positive effect of FDI on growth. Adams and Opoku (2015) show that neither FDI nor regulations have independent significant impact, though, their connection has a major positive influence on economic growth. Their study concluded the regulatory regime of the countries affects the FDI-GDP correlation for 22 sub-Saharan African countries over the period 1980-2011 by using (GMM) estimation technique. Some studies argued that FDI-growth nexus may happen indirectly and via conditional effect of some factors. For instance, Hermes and Lensink (2003), and Alfaro et al. (2004) stated that countries should take into account the related policies that can help financial system to be well-developed. In addition, Hermes and Lensink (2003) stated that FDI inflow may lead to enhance economic growth of LDCs. This is only true after these countries have developed their local financial systems.

3. METHODOLOGY AND MODEL SPECIFICATION

3.1. Methodology

In this study, following (Shahbaz and Rahman, 2012; Belloumi, 2014), with modifications, we use the autoregressive distributed lag or Bounds testing approach to cointegration autoregressive distributed lag (ARDL) technique introduced by Pesaran et al. (2001) to test the long run equilibrium relationship between economic growth, FDI and financial development. Some of the feature of using the ARDL cointegration approach over other methods include: Derivation of the error correction model via a simple linear transformation which combines short run adjustment from shocks with long run without compromising long run information; it can be used irrespective of the fact that variables are stationary at I(0), I(1) or combination of both; ARDL cointegration has a good property for small sample size.

3.2. Model Specification

In order to model the relationship between economic growth and FDI, a functional form model is constructed as:

$$Y_t = f(FDI_t, FD_t, INV_t, GE_t, POP_t) \quad (1)$$

The functional equation 1 was converted to an econometric model by introducing a drift parameter, slop of each explanatory variable and stochastic error term. We have further converted equation 1 into natural log to enable efficient estimation as shown below, we employed a specification that is broadly similar to Choong and Lim

(2009). The impact of FDI on growth can be expressed as follows:

$$LY_t = \alpha+\beta_1 LFDI_t+\beta_2 LFD_t+\beta_3 LINV_t+\beta_4 LGE_t+\beta_5 LPOP_t+\varepsilon_t \quad (2)$$

Equation 3 below is created with an inclusion of interaction term between FDI and financial development. The efficient role of the financial sector cannot be ignored. Well-functioning and efficient financial system also enhances the absorptive capacity of a country regarding foreign capital inflows (Choong and Lim, 2009; Ang, 2008; 2009). One may conclude that a more developed financial sector would stimulate the process of technological diffusion with respect to foreign capital inflows (FDI). That is why interaction term between financial development and FDI has been included in the basic model to investigate this particular hypothesis.

$$LY_t = \alpha+\beta_1 LFDI_t+\beta_2 LFD_t+\beta_3 INV_t+\beta_4 LGE_t+\beta_5 LPOP_t+\beta_6 LFDI*LFD_t+\varepsilon_t \quad (3)$$

Where Y_t represents economic growth, FDI which denotes FDI net inflow as a ratio to GDP. LFD represents financial development. POP represents population size (proxy of labour force), (INV) which is a measure of domestic investment as proxies of gross capital formation in the percentage of real GDP (represent capital), (GE) government expenditure, (FDI*FD) represents the interaction term between FDI and financial development. β is the intercept or drift parameter while is the random error term that is expected to be normally distributed with zero mean and constant variance. According to Azman-Saini et al. (2010) in order to avoid multi collinearity problem, the interaction term must be following the two-step procedure: Firstly, the interaction term FDI×FD was regressed on the FDI and FD variables. Secondly, we used the residuals from the regression in the first step to represent the interaction term.

3.3. Data Description

This paper tests the empirical impact of FDI and the role of financial market development on economic growth in Malaysia. To achieve this, annual data were collected from World Bank development indicator in 2016. The data collected covers the period from 1975 to 2014. The variables of interest include real GDP per capita as a proxy for economic growth while two separate indicators were used to represent FDI and financial development. These include; FDI, net inflows (% of GDP), various measures of financial development (discussed in greater detail below). In addition, our control variables are: Gross fixed capital formation (% of GDP), general government final consumption expenditure (% of GDP) and population in total. These indicators were used to ascertain the influence of FDI and financial market development on economic growth in Malaysia.

The aim of PCA is to describe the maximum amount of variance with the fewest number of principal components. We follow Ang and McKibbin (2007) in constructing a single measure of financial development by using principal component analysis. There are some advantages of doing this are twofold. Firstly, the variables of financial development are much correlated among themselves. By using PCA helps to overcome multi-collinearity problem. Secondly, studies trying to examine the relation between financial development and growth have no uniform argument as to which proxies are most suitable for capturing this relationship. We apply principal component analysis procedure in order to extract the most significant index to measure financial development. Therefore, we combined four different measures of financial development into a single index as following: First, the ratio of aggregate money (M2) to nominal GDP. Second, the ratio of credit to private sector to nominal GDP. Third, the ratio of the total financial sector to nominal GDP. Fourth, The ratio of liquid liabilities (M3) to nominal GDP.

Based on the four different measures of financial development that listed above, Table 1 shows the result that obtained from principal component analysis. It is clear that, 97.4% of the variance in the data has been explained by component 1 and its eigenvalue is bigger than one. However, the remaining components explains only a small portion of the variation 2% 1% and 1% respectively, and their eigenvalue is less than one. Therefore, based on the result that illustrated above, the first principal component has the maximum explanatory power. To do so, we use it as our financial development indicator (FD). Below, we symbolize this new indicator as FD.

On the bases of these justifications we construct the UECM of ARDL cointegration approach as follows:

$$\Delta LY_i = \beta_0 + \sum_{i=1}^{k}\varphi\Delta LY_{t-1} + \sum_{t=1}^{k}\varphi\Delta LFDI_{t-1} + \sum_{t=1}^{k}\psi\Delta LFD_{t-1}$$
$$+\sum_{t=1}^{k}\gamma\Delta LINV_{t-1} + \sum_{t=1}^{k}\phi\Delta LGE_{t-1} + \sum_{i=1}^{k}\psi\Delta LPOP_{t-1}\beta_1 LY_{t-1}$$
$$+\beta_2 LFDI_{t-1} + \beta_3 LFD_{t-1} + \beta_4 LINV_{t-1} + \beta_5 LGE_{t-1} + \beta_6 LPOP_{t-1} + \varepsilon_t. \quad (4)$$

In order to establish the long run equilibrium relationship among the variables, we progress to test the null hypothesis of them. The null hypothesis is given as H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$ and the alternative hypothesis remains as H_1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0$. The null hypothesis proposes the lack of cointegration whereas the alternative shows the presence of cointegration among variables. In order to establish the existence of cointegration between economic growth, FDI and financial development indicators in Malaysia. We estimate the value of F-statistics of the ARDL approach to cointegration through the OLS and compare with critical bounds table of Narayan (2005). If the F-statistic is above the upper bounds of the Narayan critical bounds table, the null hypothesis of no cointegration is rejected which indicates that long-run relationship exists among the variables. On the other hand, if the F-statistic is less than the lower critical value of the Narayan critical

Table 1: Principal component analysis for financial depth index

Component	Eigen values	Difference	Proportion	Cumulative
Component 1	3.896977	3.799046	0.9742	0.9742
Component 2	0.097931	0.092840	0.0245	0.9987
Component 3	0.005091	0.005091	0.0013	1.0000
Component 4	−4.440116	-	0.0000	1.0000

Number of observed=53, Number of component=4 bounds table the null hypothesis cannot be rejected, implying no cointegration among the variables. However, if the F-statistic lies between lower and upper critical values, the test is inconclusive. After testing the relationship among the variables, the long-run coefficients of the ARDL model can be estimated:

$$\Delta LY_i = \beta_0 + \sum_{i=1}^{k} \varphi \Delta LY_{t-1} + \sum_{t=1}^{k} \varphi \Delta LFDI_{t-1} + \sum_{t=1}^{k} \psi \Delta LFD_{t-1} + \sum_{t=1}^{k} \gamma \Delta LINV_{t-1} + \sum_{t=1}^{k} \phi \Delta LGE_{t-1} + \sum_{i=1}^{k} \psi \Delta LPOP_{t-1} + \varepsilon_t \quad (5)$$

The long run model is followed by the error correction model presented in equation 6.

$$\Delta LY_t = \beta_0 + \sum_{i=1}^{k} \varphi \Delta LY_{t-1} + \sum_{t=1}^{k} \varphi \Delta LFDI_{t-1} + \sum_{t=1}^{k} \psi \Delta LFD_{t-1} + \sum_{t=1}^{k} \gamma \Delta LINV_{t-1} + \sum_{t=1}^{k} \phi \Delta LGE_{t-1} + \sum_{t=1}^{k} \gamma \Delta LPOP_{t-1} \eta ECM_{t-1} + \mu_t \quad (6)$$

We first showed a unit root test on economic growth, FDI and financial development indicators to avoid spurious result. The unit root test was conducted and presented in the Table 2.

4. RESULTS AND EMPIRICAL FINDINGS

We conduct a test of the order of integration for each variable using the Augmented Dickey-Fuller and Phillips Perron (PP). The result suggests that the variables are stationary at I(1). Even though the ARDL framework does not require the pretesting of variables, the unit-root test could indicate whether or not the ARDL model should be used. The result of the unit root test is presented in Table 2 and we can then safely proceed to test the cointegration relationship among our variables.

We estimated the F-statistic through the OLS variable addition test in equation 4 by using ARDL approach to cointegration test. The calculated F-statistics for the cointegration test are displayed in Tables 3 and 4. The F-statistic for the first model (6.6886, Table 3) is greater than the upper bounds value (5.898) of the Narayan (2005) table at 1% level of significance. Through the interaction between FDI and financial development in the second model we found there is cointegration at 5% level (Table 4). This indicates a strong cointegration relationship between our dependent and independent variables. On this ground, we accepted our alternative hypothesis of the existence of cointegration and reject the null hypothesis that assumes absence of cointegration.

Table 5 present the long run relationship of the ARDL without an interaction term between FDI and financial development. The estimated long run variables of FDI, financial development, investment, population are positively related to economic growth in Malaysia. The results indicate that higher values of FDI, domestic investment, labour, and financial development are associated with faster growth in GDP. Furthermore, the estimate of FDI is positively related to economic growth in Malaysia and significant at 5% level, meaning that an increase in FDI by 1% will lead to more than proportionate increase in economic growth. The finding supports recent literature of Iamsiraroj (2016) for 124 cross-country, Fadhil and Almsafir (2015) for a study in Malaysia. It is worth noting that 1% increase of financial development will spurs economic growth by 0.0775%. This result is consistent with the earlier findings of Ang and MCkibbin, (2007) in Malaysia. In contrast, the estimated coefficient for government expenditure (GE) is negative, which is also parallel with the growth theory due to more attention on consumption spending that does not raise marginal productivity and may lower both public goods and services. However, it is in line with the findings of Choong and Lim (2009) that investigated similar study for Malaysia.

On the other hand, in Table 6, we repeat the long run relationship of the ARDL with an additional interaction term between FDI and financial development indicator (FDI*FD). All the coefficients have the expected signs, and the interaction term is positively as well as statistically significant at 5% level. Increase 1% in the interaction term FDI*FD will brings up LY about 0.4423%. This result suggests that the effect of FDI inflows on growth

Table 2: ADF and PP unit root test

Variables	ADF		PP	
	Level	First difference	Level	First difference
InY_t	−1.546 (0.795)	−5.845 (0.001)***	−1.617 (0.767)	−5.845 (0.001)***
$InFDI_t$	−2.980 (0.150)	−6.786583 (0.000)***	−3.026 (0.138)	−6.967 (0.000)***
$InINV_t$	−2.759 (0.220)	−4.470 (0.0053)***	−1.817 (0.677)	−4.434 (0.005)**
$InGE_t$	−2.368 (0.389)	−6.806 (0.000)***	−2.317 (0.415)	−10.33 (0.000)***
$InPOP_t$	−5.563 (0.000)***	−2.790 (0.211)	−3.768 (0.029)**	−1.027 (0.927)
$InFD_t$	−1.452 (0.828)	−5.104 (0.001)***	−1.639 (0.758)	−5.088 (0.001)***

The asterisks ***.** and *indicate 1%, 5% and 10% significance level, ADF: Augmented Dickey-Fuller, PP: Phillips-Perron

Table 3: Result of ARDL cointegration (model 1)

RY_t=f (FDI_t, FD_t, INV_t, GE_t, POP_t)	Significant level	Critical values for bound test: Case III	
F-statistics		Lower bounds	Upper bounds
(6.6886)***	1% level	4.045	5.898
Lag length	5% level	2.962	4.338
(1, 0, 0, 0, 2, 2)	10% level	2.483	3.708

***.** and *denotes significant at 1%, 5% and 10% significance level, respectively, ARDL: Autoregressive distributed lag

Table 4: Result of ARDL cointegration (model 2)

RY_t=f (FDI_t, FD_t, INV_t, GE_t, POP_t, $FD*FDI_t$)	Significant level	Critical values for bound test: Case III	
F-statistics		Lower bounds	Upper bounds
(4.8598)**	1% level	3.800	5.643
Lag length	5% level	2.797	4.211
(2, 0, 0, 1, 0, 1, 0)	10% level	2.353	3.599

ARDL: Autoregressive distributed lag, ***,** and *denotes significant at 1%, 5% and 10% significance level, respectively

Table 5: Estimated long run and short run coefficients (model 1)

Dependent variable=$lnLY_t$		
Variables	Coefficient	T-ratio (P values)
Long run results		
$InFDI_t$	0.0133	2.0970 (0.045)**
$InINV_t$	0.2157	7.5523 (0.000)***
$InGE_t$	−0.1729	−4.5140 (0.000)***
$InPOP_t$	1.3480	18.9559 (0.000)***
$InFD_t$	0.0775	2.5008 (0.019)**
Constant	−6.2293	−12.1970 (0.000)***
Short run results		
$\Delta InFDI_t$	0.0102	1.7240 (0.011)**
$\Delta InINV_t$	0.2158	8.5062 (0.000)***
$\Delta InGE_t$	−0.1323	−3.6888 (0.001)***
$\Delta InPOP_t$	1.1403	2.1205 (0.043)**
$\Delta InFD_t$	−0.0652	−1.5907 (0.122)
Constant	−4.7679	−5.6565 (0.000)***
ECM (−1)	−0.7653	−5.6246 (0.000)***
R^2=0.99, adjusted R^2=0.98		
Diagnostic tests	F-statistics	P values
Serial correlation χ^2	0.6517	(0.427)
Heteroscedasticity χ^2	0.1784	(0.675)
Functional form χ^2	1.6858	(0.207)
Normality χ^2	Not applicable	Not applicable
CUSUM and CUSUMSQ	Stable	Stable

***,** and *denotes significant at 1%, 5% and 10% significance level, respectively

Table 6: Estimated long run and short run coefficients (model 2)

Dependent variable=$lnLY_t$		
Variables	Coefficient	T-ratio (P values)
Long run results		
$InFDI_t$	0.0257	1.9499 (0.062)*
$InINV_t$	0.2853	4.9856 (0.000)***
$InGE_t$	−0.1578	−2.1724 (0.039)**
$InPOP_t$	1.4131	10.4974 (0.000)***
$InFD_t$	0.0529	0.7588 (0.054)*
$InFDI*FD_t$	0.4423	2.5621 (0.016)**
Constant	−6.7087	−7.0360 (0.000)***
Short run results		
$\Delta InFDI_t$	0.0109	2.8779 (0.007)***
$\Delta InINV_t$	0.2267	7.9011 (0.000)***
$\Delta InGE_t$	−0.0670	−0.21505 (0.040)**
$\Delta InPOP_t$	−5.3797	−2.0773 (0.047)**
$\Delta InFD_t$	−0.0224	−0.83932 (0.408)
$\Delta InFDI*FD_t$	0.1878	3.6360 (0.001)***
Constant	−2.8487	−4.1584 (0.000)***
ECM (−1)	−0.4246	−3.7887 (0.001)***
R^2= 0.98, adjusted R^2= 0.97		
Diagnostic tests	F-statistics	P values
Serial correlation χ^2	0.0097	(0.922)
Heteroscedasticity χ^2	0.4779	(0.494)
Functional form χ^2	1.9653	(0.173)
Normality χ^2	Not applicable	Not applicable
CUSUM and CUSUMSQ	Stable	Stable

***,** and * denotes significant at 1%, 5% and 10% significance level, respectively

increases heavily with FD. Our finding is reliable with recent studies which also found that an improvement in the level of financial development is needed to attract more FDI inflow to the recipient country (Alfaro et al., 2004; Choong and Lim, 2009; Azman-Saini et al., 2010). According to Hermes and Lensink (2003) well-developed financial system can positively contributes to the process of technological diffusion related with FDI. Finally, all variables are significant in terms of probability value at 1%, 5% and 10% level.

We proceed to short run model (ECMs) was estimated from equation 6. The signs for all of the independent variables remain the same with the long run test Tables 5 and 6 listed above except for financial development coefficient is statistically insignificance in the short run. Which is clarifying the negative impact on economic growth in the short run. The negative symbol of the ECM term indicates the anticipated convergence process in long run dynamics, as well as less than one and significant. The ECM coefficient for both model (with interaction and without interaction term) were 0.7653 and 0.4246 respectively, indicating a high speed of adjustment and the value for ECM is highly significant at 1% level.

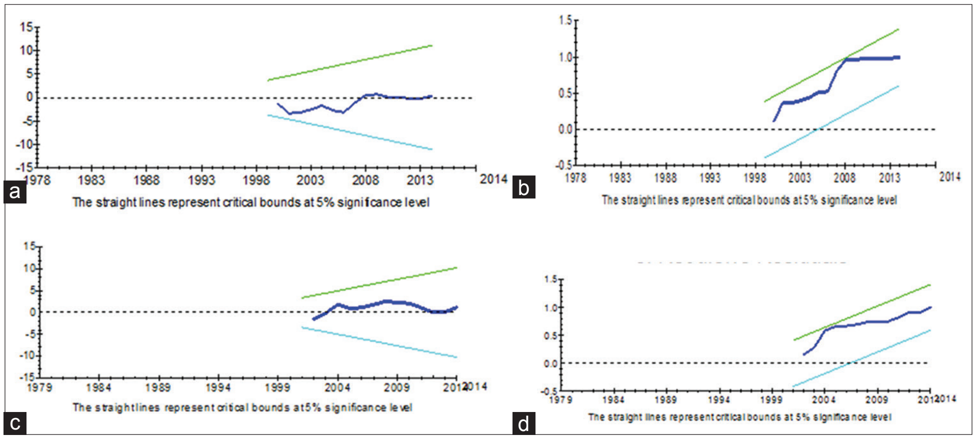
The overall goodness of fit of the estimated models shown in Tables 5 and 6 is quite high, with R^2 values of 99% and 98% for the first and second model, respectively. We applied a number of diagnostic tests to the ARDL model which were also presented in Tables 5 and 6. Fortunately, we found no evidence of serial correlation and heteroscedasticity. Moreover, the stochastic error term is white noise and normally distributed with zero mean and constant variance. We therefore fail to reject the null hypothesis.

Structural stability of the models is examined using the CUSUM and CUSUM of squares tests on the recursive residuals. The results are within the critical bounds at 5% level of significant indicating that the model is stable, consistent and reliable (Figure 1a-d). The plots of the CUSUM and CUSUMSQ statistics confirm that the long-run coefficients and all short-run coefficients in ECM are stable and affect growth over the sample period 1975-2014.

5. CONCLUSION

The main objective of this paper is to assess whether the impact of FDI on growth depends on the role of financial sector development.

Figure 1: (a) Plot of cumulative sum of recursive residuals, (b) plot of cumulative sum of squares of recursive residuals, (c) plot of cumulative sum of recursive residuals, (d) plot cumulative sum of squares of recursive residuals



Using ARDL approach over the period 1975-2014, our results can be interpreted from three angles. First, FDI has a significant positive impact on economic growth in Malaysia for the short and long run. Second, possibly the most significant finding of this study, financial development indictor as well as the interaction term between FDI and financial development are highly significant with the expected positive signs. As both results of financial development indicators as well as the interaction term between FDI and financial development are highly significant with the expected positive signs; this show that better domestic financial intermediaries may channel the inflows of FDI to productive sectors, and hence to further stimulate economic growth. Finally, it is worth notable that we used principal component analysis to reduce the dimension of the measures of financial development from four to one while retaining approximately 97% of the total variance in the data. The results indicate that the growth effect of financial development is sensitive to the choice of proxy has been used. This outcome aids in understanding the contradictory results in the literature as numerous studies depend on one single indicators therefore unable to distinguish which financial sector variables have positive growth enhancing effects and which does not.

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