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Financial Development and Economic Growth in Malaysia: The Perspective of Stock Market

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Abstract

Understanding the causal relationship between financial development and economic growth is a prerequisite to implement an effective financial programme in enhancing the economy of a nation. Using the *bounds test* approach, this study finds that both stock market and economic growth are cointegrated in the long run with a significant, positive effect in the context of Malaysia. Granger-causality test within vector error correction model (VECM) further reveals that stock market development Granger-causes economic growth. Although stock market is expected to promote economic growth, it is demonstrated that the extent to which stock market is growth enhancing appears to depend on the monetary policy such as adjustment of discount rate.

Key words: Financial development, economic growth, stock market, bound test.

1. Introduction

The years after the Asian financial crisis were challenging years for the banking industry not only in Malaysia, but also for other crisis-hit East Asian countries. This is because Malaysia had to cope with the rapid and sharp fall in equity prices and the value of currency as well as the contagion effects of the regional financial crisis. Although the banking system in Malaysia was in a strong position at the beginning of the crisis, weaknesses begun to emerge as the crisis worsened particularly towards the end of 1997. In particular, inefficiencies exist in the liquidity distribution within the system began to surface and jeopardize the smooth functioning of the lending and borrowing processes. Although the banking system as a whole remained strong and resilient, some individual banking institutions were facing with severe liquidity problems and that subsequently led to a stiff competition between the banking institutions in bidding interest rates (Bank Negara Malaysia, 1999). The fragmented finance company industry in particular, became a potential source of fragility, which could have a systemic threat to the overall banking system if allowed to deteriorate further.

Indeed, significant changes are taking place in the global economy brought about by the liberalisation and globalisation of finance, trade, technology and information flows. Although the presence of globalisation has raised the risk of systemic contagion, in this connection, various countries in East Asia and Latin America have strongly supported the efforts to foster global financial stability. For example, the Group of Seven Industrialized Countries (G7) and the Group of Ten Advanced Countries (G10) have developed measures to enhance the fundamental of their financial systems. In achieving the goal, the G10 and a number of emerging market economies – Argentina, Hong Kong, China, Indonesia, Korea, Mexico, Poland, Singapore and Thailand – set up a Working Party to develop and outline the main elements of robust financial systems and thereby promoting economic growth. It is obvious, therefore, the soundness of the banking sector of a country would promise a stable and persistent economic performance as well as to rationalize businesses towards higher productivity.

The early literature, nevertheless, has neglected the role of financial development in stimulating the growth rate of economics. For instance, the essays collection, "The Pioneers of Development Economics" by three Nobel laureates has totally excluded the discussion of financial development in growth process (Meier and Seers, 1984). Moreover, Stern (1989) does not discuss

the contribution of financial development on growth in his review[1]. The significant role of financial development, however, has begun to receive considerable attention in the growth process. In his work, Schumpeter (1912) contends that the well-functioning financial system will spur technological innovations through the efficiency of resource allocation from unproductive sector to productive sector. This idea was viewed as the first framework in analyzing the finance-led growth hypothesis[2].

In contrast, Robison (1952) argues that the relationship should be started from growth to finance. According to this thought, a high rate of economic growth leads to a high demand for particular financial agreement or arrangement, and the well-developed financial sector will automatically respond to these types of demand. This view was defined recently as growth-led finance hypothesis[3]. Goldsmith (1969), McKinnon (1973) and Shaw (1973) have significantly contributed to the literature of financial development and economic growth relationship in more formalized frameworks.

Although the original contribution to this literature have different channels of transmission in explaining the link between financial development and growth, the studies all coincide in suggesting that there is a significant and positive relationship between these two variables. Goldsmith (1969), for example, focuses on the relationship between financial development and the efficiency of investment. On the other hand, McKinnon (1973) and Shaw (1973) demonstrate the importance of financial liberalisation in promoting domestic savings and hence investment. According to the Goldsmith's (1969) framework, the evolution of domestic financial markets may enhance and lead to a high level of capital accumulation efficiency. In other words, he argues that the positive correlation between financial development and growth (the level of real per capita GNP) is mainly due to the efficient use of the capital stock.

The causality relationship between economic growth and financial development, nevertheless, is a controversial issue. Basically, the debate has been centered on whether it is the financial development that leads the economic growth or vice versa[4]. This "financial development-economic growth puzzle" is complicated by another view that the relationship is dynamic in nature. To date, there is no clear-cut solution in which policy-makers could rely upon. We find that related researches done in the past three decades mostly focused on the role of banking development in stimulating economic growth, focusing less on the stock market development. It is particularly true that in the emerging economies, the evolution of stock market has great impact on the operation of banking institutions (Levine and Zervos, 1998; Khan and Senhadji, 2000).

Evolution of stock market has impact on the operation of banking institutions and hence, on economic promotion. This means that the role of stock market is becoming more crucial, especially in a number of emerging markets and their role should not be ignored (Khan and Senhadji, 2000). In this line of research, Levine (1991) includes stock market measures as the explanatory variables in his endogenous growth model. He provides two possible reasons in explaining the positive relationship between stock markets and growth. First, ownership of firms can be traded without disrupting the production process. Second, market participants are allowed to diversify their investment combinations or portfolios. The model argues that, in the absence of stock markets, market participants are discouraged to make investments, as they are risk-averse. The importance of the stock markets can be viewed through Levine's argument "*they [stock markets] accelerate growth directly by eliminating premature capital liquidation which increases firm productivity and indirectly by reducing liquidity risk which encourages firm investment*" (pp. 1459).

Singh (1991), nonetheless, disagrees with the Levine's (1991) statement. The author argues that financial development (measured as stock market development) may not contribute to positive economic growth resulting from few reasons. Firstly, the unpredicted and unprecedented volatility and arbitrariness of the stock market pricing process in developing countries lead to a

[1] The insignificant role of financial development on growth (output) is clearly indicated by Lucas (1988, pp. 6) "*the importance of financial matters is very badly overstressed*" and Chandavarkar (1992, pp. 134) "*none of the pioneers of development economics . . . even list finance as a factor of development*".
[2] Recently, this hypothesis is also defined as supply-leading hypothesis by Patrick (1966).
[3] Patrick (1966) defines this hypothesis as demand-following hypothesis.
[4] Patrick (1966) provides further details.

high level of difficulty to market participants in making investment decisions. Secondly, the interaction between stock and foreign exchange markets in the wake of unexpected negative economic shocks may incur macroeconomic instability and thereby reduce the long-run economic growth rate. Thirdly, stock market development is more likely to jeopardise the existing group-banking systems in developing countries.

Although Singh (1991) provides few possible reasons to explain the link among stock market, financial intermediation (or banking system) and economic growth may not strongly tighten, there are few studies have proven that the link between financial development and growth is influenced significantly by stock market development. Atje and Jovanovic (1993), for example, investigate the role of stock markets on banking systems and conclude that there exists a positive impact on the development as well as on the growth. Besides, Levine and Zervos (1996) construct various stock market measures to test the relationship. Again, they provide supportive evidence to indicate the significant relationship between stock market indicator and growth exists. However, when they included the financial development indicator, the relationship turned out to be statistically insignificant. Arestis and Demetriades (1997), on the other hand, use Johansen cointegration test to examine the existence of the relationship for the US and Germany. They provide strong evidence to support the positive relationship between banking system development on growth in Germany, but not for the US. However, they conclude that the relationship runs from growth to financial development and stock market (that is, they provide evidence on the growth-driven finance hypothesis).

Indeed, as explained in Levine and Zervos (1998), a well-established stock not only can mobilize capital and diversify risks between market agents, it also provides different types of financial services than banking sector and then stimulates economic growth. Particularly, a speed of economic growth is highly dependent on the size of banking system and the activeness of stock market. They provide empirical evidence that "stock market liquidity and banking development are both positively and robustly correlated with contemporaneous and future rate of economic growth" (p. 554). Accordingly, it is appropriate to re-examine the "financial development-economic growth puzzle" from the perspective of stock market development.

Domestic stock market development, therefore, is expected to have significant relationship with the economic growth. The principle objective of this study is to re-examine the "financial development-economic growth puzzle" from the perspective of stock market development. The newly developed autoregressive distributed lag (ARDL) bounds test and the Granger-Causality (GC) test based on vector error correction model (VECM) are employed to investigate the cointegration and causality relationships between stock market development and economic growth in Malaysia – a small and open emerging economy.

The main contribution of this paper is twofold. First, apart from using the conventional VECM approach, we employ newly developed ARDL bound test, which has been shown more robust, in examining the cointegration relationship between financial development and economic growth. Second, we examine the financial development and economic growth in Malaysia based on the stock market indicators, which has not been attempted in related studies. The results of this study provide robust empirical evidence in favor of finance-led growth hypothesis for the Malaysian economy. Our findings suggest that the evolution of financial sector, in particular the stock market, tends to be more likely to stimulate and promote economic growth when monetary authorities adopt liberalised investment and openness policies, and improve the size and the regulations of the stock market and macroeconomic stability.

This paper is organized as follows. The next part of this paper gives a brief account regarding the three competing hypotheses on the financial and economic developments. This is followed by a discussion on the methodology of this study. Results and interpretations are presented just before we conclude this paper in the final part.

2. Finance and Growth Relationship: Theoretical Consideration and Empirical Evidences

The "finance-led growth" hypothesis postulates the "supply-leading" relationship between financial and economic developments. It is argued that the existence of financial sector, as well-functioning financial intermediations in channelling the limited resources from surplus units to deficit units, would provide efficient allocation resources thereby leading the other economic sectors in their growth process. Indeed, a number of studies have argued that the development of financial sector has significantly promoted economic development (Schumpeter, 1912; Levine, 1997).

In contrast, the "growth-led finance" hypothesis states that a high economic growth may create demand for certain financial instruments and arrangements and the financial markets are effectively response to these demands and changes. In other words, this hypothesis suggests a "demand following" relationship between financial and economic developments. The impact of economic growth on the financial development has been documented in Robinson (1952) and Romer (1990), among others.

Finally, the "feedback" hypothesis suggests a two-way causal relationship between financial development and economic performance. In this hypothesis, it is asserted that a country with a well-developed financial system could promote high economic expansion through technological changes, product and services innovation (Schumpeter, 1912). This in turn, will create high demand on the financial arrangements and services (Levine, 1997). As the banking institutions effectively response to these demands, then these changes will stimulate a higher economic performance. Therefore, both financial development and economic growth are positively interdependent and their relationship could lead to feedback causality.

Over the past three decades, the question of whether financial development preceded economic growth or vice versa has been empirically tested in the literature (for example, Jung, 1986; Spears, 1992; Murinde and Eng, 1994; Demetriades and Hussein, 1996; Thornton, 1996; Luintel and Khan, 1999; Darrat, 1999; Ghali, 1999; Wachtel, 2001; Chang, 2002). The findings, nonetheless, are mixed. Among others, King and Levine (1993a,b), Neusser and Kugler (1998), and Levine *et al*. (2000) provide supporting evidence for the finance-led growth hypothesis. In contrast, Demetriades and Hussein (1996) find little evidence supporting the hypothesis of finance-led growth, while growth-led finance hypothesis is confirmed in some cases. In addition, they conclude that the bi-directional causality relationship is found in majority of the countries under concerned. Besides, the works of Greenwood and Jovanovic (1990) and Luintel and Khan (1999) provide supportive evidence on the bi-directional causality.

Recently, Calderon and Liu (2003) provide additional evidence on the causality of finance-growth by applying innovative econometric technique and new data set. They carry out a panel data analysis on data pooled from 109 industrial and developing countries for the 1960-1994 period and apply the tests of linear dependence and feedback developed by Geweke (1982). Few important results have been reported. First, the validity of finance-led growth hypothesis has been confirmed in 109 developing and industrial countries. Second, they provide strong evidence to support feedback causality in 87 developing countries and 22 industrial countries when they split the sample into developing and industrial countries. This demonstrates that financial deepening promotes economic growth, and simultaneously, economic growth propels financial development. Third, financial deepening contributes more to the causal relationship in the developing countries than in the industrial countries.

The link between financial and economic growth has important policy implications for development strategies. If there is unidirectional causality running from financial development to growth, this would mean that financial sector not only facilitates the allocation of financial resources between deficit and surplus units, but also promotes economic growth through capital augmentation and technological innovations (Levine, 1997). On the other hand, if the causal process occurs in the opposite direction, it would mean that economic growth is a prerequisite for a country to reform its financial sector because the evolution of a financial sector is highly dependent on the demands created by market agents (Romer, 1990). Moreover, the process of the finan-

cial sector development depends on the nation's absorptive capacity such as human capital development, investment policy and effective macroeconomic policies. If the causal process is bidirectional, financial sector and economic growth have a reinforcing causal relationship.

3. Data and Methodology

3.1. Data

This study is carried out in the context of Malaysia, for the period of 1978-2000. In this study, economic growth is proxied by per capita nominal GDP ($\overline{Y}$). Meanwhile, the stock market development is measured by the size and the liquidity level of stock market. The former is in turn quantified by the ratio of total market value to nominal GDP (*TV/Y*) and the latter is quantified by the stock market turnover ratio (*TO/Y*).

It is believed that other than stock market development indicators, other variables also have impact on economic growth. We include two control variables, namely the discount rate and openness ratio to avoid the simultaneity bias (Gujarati, 1995) in our regression. Some economists agreed that the intervention of government or monetary authority could affect the relationship between financial and economic development. Government through central bank can adjust the liquidity level in the equity market and then influence the ability of banking institutions in supplying their funds. Three instruments, namely required reserve ratio (*RRR*), open market operation (*OMO*) and discount rate (*DR*), can be used to control the market liquidity and economic performance. In this study, we choose discount rate as monetary authority's tool in adjusting the banking and economic activities[1]. An increase in the discount rate will reduce the level of market liquidity and then slow down the economic activity. On the other hand, we include the total imports and exports to nominal GDP ratio to reflect the openness ratio (*OR*). The openness ratio is included in order to measure the impact of the financial liberalization since the early 1990s on the aggregated growth of the economy[2].

The stock market data were obtained from the World Bank database, whereas all other data were collected from various issues of *International Financial Statistics* published by International Monetary Fund (IMF). All variables are expressed in logarithmic form.

3.2. Bound Test (Unrestricted Error Correction Model)

This study utilizes the newly proposed autoregressive distributed (ARDL) bounds test proposed by Pesaran *et al*. (2001) to examine the cointegration relationship between financial development and economic growth. The choice of this test is based on the following considerations. Firstly, unlike most of the conventional multivariate cointegration procedures, which are valid for large sample size, the bound test is suitable for a small sample size study (Pesaran *et al*., 2001). Given that our sample size is limited to a total of 23 observations only, conducting bounds test will be appropriate. Secondly, the bound test does not impose restrictive assumption that all the variables under study must be integrated of the same order. Its asymptotic distribution of the F-statistics is non-standard under the null hypothesis of no cointegration relationship between the examined variables, irrespective of whether the explanatory variables are purely *I*(0) or *I*(1), or mutually cointegrated. As such, the order of integration is no more a sensitive issue and thus one could bypass the unit root tests[3]. As a consequence, the following autoregressive distributed lag, ARDL [*r, s, v, w*] model will be estimated in order to test the cointegration relationship between economic growth and financial development indicators as well as two control variables, namely: discount rate (*DR*) and openness ratio (*OR*):

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[1] In the context of Malaysia, discount rate as well as required reserve ratio are viewed as effective and frequently used monetary tools in stabilizing the economic growth. Open market operation, on the other hand, is seldom used extensively in controlling the market liquidity level due to the very high cost of operation. Moreover, the data for the proxy of open market operation are limited.

[2] Actually, the financial liberalization program has been implemented since 1970s, particularly in terms of interest rate. Nonetheless, the Government has fully liberalized the Malaysian financial sector only in the early 1990s.

[3] In order to avoid spurious regression (Gujarati, 1995), prior to conventional cointegration test such as the Engle-Granger (1987) bivariate test, one needs to conduct unit root tests to make sure that all system's variables are integrated of the same order.

$$\Delta Y_t = \mu_0 + \sum_{i=1}^{r} \mu_{1i} \Delta Y_{t-i} + \sum_{i=0}^{s} \mu_{2i} \Delta DR_{t-i} + \sum_{i=0}^{v} \mu_{3i} \Delta OR_{t-i} + \sum_{i=0}^{w} \mu_{4i} \Delta TV / Y_{t-i} + \mu_5 Y_{t-1} + \mu_6 DR_{t-1} + \mu_7 OR_{t-1} + \mu_8 TV / Y_{t-1} + \xi_t \quad (1)$$

and

$$\Delta Y_t = \mu_0 + \sum_{i=1}^{r} \mu_{1i} \Delta Y_{t-i} + \sum_{i=0}^{s} \mu_{2i} \Delta DR_{t-i} + \sum_{i=0}^{v} \mu_{3i} \Delta OR_{t-i} + \sum_{i=0}^{w} \mu_{4i} \Delta TO / Y_{t-i} + \mu_5 Y_{t-1} + \mu_6 DR_{t-1} + \mu_7 OR_{t-1} + \mu_8 TO / Y_{t-1} + \xi_t , \quad (2)$$

where Δ is the first difference operator, *TV/Y* and *TO/Y* are two different financial development indicators. ξ_t is white noise error term. Meanwhile *r*, *s*, *v* and *w* denote the autoregressive lag orders of the variables ΔY_t, ΔDR, ΔOR and $\Delta TV / Y$ or $\Delta TO / Y$, respectively.

There are two steps in testing the cointegration relationship between economic growth and its explanatory variables. First, we estimate Equation 1 and Equation 2 by ordinary least square (OLS) technique. Second, the presence of cointegration can be traced by restricting all estimated coefficients of lagged level variables equal to zero. That is, the null hypothesis is $\mu_5 = \mu_6 = \mu_7 = \mu_8 = 0$ against its alternative $\mu_5 \neq \mu_6 \neq \mu_7 \neq \mu_8 \neq 0$. If the computed F-statistics is less than lower bound critical value, then we do not reject the null hypothesis of no cointegration. Conversely, if the computed F-statistics is greater than upper bound critical value, then we reject the null hypothesis and conclude that there exists steady state equilibrium between the variables under study. However, if the computed value falls within lower and upper bound critical values, then the result is inconclusive.

This study also conducts the Granger-causality test in the vector error correction model (VECM) framework to examine the causality relationship between the stock market development and economic growth. The VECM regresses the change in the variables (both dependent and independent variables) on lagged deviations and can be expressed as:

$$\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + ... + \Gamma_{k-1} \Delta Z_{t-k+1} + \Pi Z_{t-k} + v_t , \quad (3)$$

where $\Delta Z = [\Delta Y, \Delta DR, \Delta DO, \Delta FI_m]'$; $\Gamma_i = -(I - A_1 - A_i), (i = 1,...,k-1)$;

FI_m = *TV/Y* or *TO/Y;* and $\Pi = -(I - A_1 - ... - A_k)$. Γ_i measures the short-run effect of the changes in the Z_t. Meanwhile, the (4 x 4) matrix of Π (=$\alpha\beta'$) contains both speed of adjustment to disequilibrium (α) and the long-run information (β) such that the term $\beta' Z_{t-k}$ represents the (*n* – 1) cointegrating vector in the multivariate model.

A test statistics is calculated by taking the sum of the squared F-statistics of Γ_i and t-statistics of Π. The Granger-causality test is implemented by calculating the F-statistics (Wald test) based on the null hypothesis that the set of coefficients (Γ_i) on the lagged values of independent variables is not statistically different from zero. If the null hypothesis is not rejected, then it can be concluded that the independent variables do not cause the dependent variable. On the other hand, if Π is significant (that is, different from zero) based on the t-statistics, then both the independent and dependent variables have a stable relationship in the long run.

4. Results and Interpretation

The results of the ARDL bounds test are shown in Table 1 and Table 2. According to the computed F-statistics, we have enough evidence to reject the null hypothesis of no cointegration at 1% significance level for the market size (*TV/Y*) indicators and at 5% significance level for market liquidity level (*TO/Y*) indicators. That is, the computed F-statistics for these models are above the upper bound critical value. Besides, both financial indicators as well as discount rate have a strong

and positive significant impact on economic growth in the long-run. However, it seems that the openness ratio has less influence on the economic growth.

Table 1

Bounds Test for Cointegration Analysis and Elasticities of Growth Function in Malaysia based on Equation 1

Variable	Long-run coefficient	
TV/Y	0.153*	
DR	0.301*	
OR	0.316	
Intercept	1.416***	
Computed F-statistics: 7.202**		
Critical values of F-statistic[a]	Lower bound	Upper bound
10%	2.72	3.77
5%	3.23	4.35
1%	4.29	5.61

Notes: [a] Source: Pesaran *et al*. (2001, p. 300), Table CI(iii) Case III: Unrestricted intercept and no trend. The asterisks *, ** and *** indicate the significant 10, 5 and 1 percent respectively.

Table 2

Bounds Test for Cointegration Analysis and Elasticities of Growth Function in Malaysia based on Equation 2

Variable	Long-run coefficient
TO/Y	0.266**
DR	0.533**
OR	0.373
Intercept	1.103***
Computed F-statistic: 4.715*	

Note: See Table 1.

As there exists a long run relationship between these variables, causality relationship must exist by definition in at least one direction (Engle and Granger, 1987). Accordingly, Equation 3 is estimated to examine the possible short run causality between these variables. The causality relationships between financial and economic development are summarized in Table 3 and Table 4. The marginal significance value of 0.0014 for the Wald test statistics for *TV/Y* in the short-run growth model (first row, Table 3) indicates the null hypothesis of stock market indicator do not Granger cause economic growth may be strongly rejected in favor of finance-led growth hypothesis. Similar finding is obtained when *TO/Y* (first row, Table 4) is used as stock market development indicator. On the other hand, this study fails to provide any evidence in line with the growth-led finance hypothesis, see the second row of Table 3 and Table 4.

Table 3

Granger Causality Test within Vector Error Correction Model based on Equation 3

	Independent Variables				
Dependent Variable	ΔY	ΔTV/Y	ΔDR	ΔOR	ECT
	Marginal Significance Value of F-statistic of Wald Test				t-statistic
ΔY	0.0009***	0.0014***	0.6759	0.0193**	-5.1881***
ΔTV/Y	0.2669	0.0799*	0.8153	0.1713	-3.3589***
ΔDR	0.4516	0.6786	0.7348	0.3736	0.9427
ΔOR	0.7274	0.3183	0.2852	0.2551	-2.7867***

Notes: The F-statistic tests the joint significance of the lagged values of the independent variables, while t-statistic tests the significance of the error correction term (ECT).

The asterisks indicate the following levels of significance: *10%, **5% and ***1%.

Table 4

Granger Causality Test within Vector Error Correction Model based on Equation 2

	Independent Variables				
Dependent Variable	ΔY	ΔTO/Y	ΔDR	ΔOR	ECT
	Marginal Significance Value of F-statistic of Wald Test				t-statistic
ΔY	0.0386**	0.0255**	0.9881	0.2600	-2.9024***
ΔTO/Y	0.1495	0.2872	0.7234	0.1931	-2.7600***
ΔDR	0.5665	0.6115	0.8217	0.3100	0.5096
ΔOR	0.6954	0.2886	0.2940	0.3676	-2.8852***

Note: See Table 3.

The findings have two implications. First, from the lagged dynamic terms, the short run changes in the financial development indicators are in part responsible for future changes in the growth rate. That is, a faster rate of financial sector evolution promotes a higher growth rate. Second, each variable under study has a crucial impact on economic growth through the adjustment of error correction terms (ECTs), which are significant and have a correct sign. Moreover, the significant ECTs by the t-statistics in Table 3 and Table 4 indicate that there exists a mechanism in correcting the disequilibrium between financial development variable and economic performance. This finding, therefore, reconfirms the positive long run stable economic growth-financial development relationship.

4.1. Further Analysis of the Causality Between Financial Development and Economic Growth

The analysis of the causality relationship between financial sector and growth may be further examined in terms of the transaction cost of financial institutions in transferring and channelling the financial resources between market agents. In order to perform this objective, we proxy transaction cost by the difference between the lending rate and deposit rate (defined as SPREAD). Ideally, under perfect operation of banking sector, it is assumed that both the lending and deposit rates are identical, which implies zero transaction cost. One of the functions of financial intermediaries is to efficiently mobilize savings and allocate resources between market agents. If banking institutions wish to increase their profit margin by imposing a high level of lending rate or fixing a low level of deposit rate, this definitely will jeopardise their role as financial intermediaries. As a result, the successfulness of banking institutions in managing both lending and deposit rates would affect the overall sector performance and hence the economic growth.

We re-estimated Equation 2 by substituting the alternative financial development indicator (SPREAD) as follows.

$$\Delta Y_t = \mu_0 + \sum_{i=1}^{r} \mu_{1i} \Delta Y_{t-i} + \sum_{i=0}^{s} \mu_{2i} \Delta DR_{t-i} + \sum_{i=0}^{v} \mu_{3i} \Delta OR_{t-i} + \sum_{i=0}^{w} \mu_{4i} \Delta SPREAD_{t-i}$$
$$+ \mu_5 Y_{t-1} + \mu_6 DR_{t-1} + \mu_7 OR_{t-1} + \mu_8 SPREAD_{t-1} + \xi_t . \quad (4)$$

Again, our results as summarised in Tables 5 and 6 confirm the findings reported in the previous section. That is, we provide strong evidence to support the hypothesis of "finance-led growth" hypothesis.

Table 5

Bounds Test for Cointegration Analysis and Elasticities of Growth Function in Malaysia based on Equation 4

Variable	Long-run coefficient
SPREAD	0.0339***
DR	0.0782*
OR	1.0359***
Intercept	4.0434***
Computed F-statistics: 85.5600***	

Note: See Table 1.

Table 6

Granger Causality Test within Vector Error Correction Model based on Equation 4

	Independent Variables				
Dependent Variable	ΔY	ΔSPREAD	ΔDR	ΔOR	ECT
	Marginal Significance Value of F-statistics of Wald Test				t-statistics
ΔY	0.0090***	0.0439**	0.0184**	0.0126**	-0.2924
ΔSPREAD	0.5995	0.1103	0.9237	0.5585	3.8984
ΔDR	0.1720	0.0203**	0.0121**	0.0003***	-0.2646
ΔOR	0.6915	0.8216	0.8597	0.3739	-0.0948

Note: See Table 3.

The implication of the finance-driven growth causality as indicated by the two stock market ratios – total stock market value to nominal GDP ratio (*TV/Y*) and stock market turnover ratio (*TO/Y*) – as well as SPREAD implies that stock market and financial intermediaries can be viewed as effective leading sectors in channelling and transferring the financial resources between surplus and deficit units in the economy. In this regard, the successfulness of utilizing stock market development and operational efficiency in controlling the transaction cost to enhance economic growth as indicated by three financial development indicators may be attributed to the Malaysian monetary authority's policy and strategy.

Among others, in an effort to promote and strengthen the contribution of financial sector to the economic performance the Federal Territory of Labuan has been inaugurated as an International Offshore Financial Centre (IOFC) on October, 1st, 1990. Besides, we regard our finding as verifying the claim that the implementation of Capital Market Master Plan (CMP) has been improving the role of stock market (as well as security markets) as a mechanism in mobilizing and allocating financial funds among economic agents (Malaysia, Economic Report, 2000/2001).

5. Conclusion

The study provides evidence on the finance-led growth hypothesis in the case of Malaysia, a small, open emerging economy. Using the autoregressive distributed lag (ARDL) bounds test approach, this study finds that stock market development is cointegrated with economic growth in the context of Malaysia. Moreover, this test also suggests that stock market development has a significant positive long-run impact on economic growth. Granger causality test within VECM framework reveals the dynamic short run causality between the variables whereby the stock market is viewed as a leading sector in stimulating domestic growth. Our findings suggest that the evolution of financial sector in particular the stock market tends to be more likely to stimulate and promote economic growth when monetary authorities adopt liberalised investment and openness policies, and improve the size and the regulations of the stock market and macroeconomic stability.

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