FINANCIAL DEVELOPMENT AND ECONOMIC GROWTH IN MALAYSIA: THE STOCK MARKET PERSPECTIVE

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ABSTRACT

Understanding the causal relationship between financial development and economic growth is important in enhancing the economy of a nation. 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 based on vector error correction model (VECM) further reveals that stock market development Granger-causes economic growth. Hence, this study provides robust empirical evidence in favor of finance-led growth hypothesis for the Malaysian economy.

Key words: Financial development, economic growth, cointegration, causality, stock market

INTRODUCTION

The causality relationship between economic growth and financial development 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[1]. 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 financial development in stimulating economic growth, without taking into account of 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). Thus, domestic stock market development is expected to have significant relationship the economic growth. The principle objective of this study is thus 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.

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.

[1] Patrick (1966) provides further details.

RELATED THEORETICAL ISSUES

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 channeling 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. The work of Luintel and Khan (1999), among others, is supportive of this view.

Our review of the related literature reveals that empirical work done in the past three decades mostly focused on the role of financial development in stimulating economic growth, without taking into account of the stock market development. Evolution of stock market has impact on the operation of banking institutions and hence, on economic promotion. This means that stock market is becoming more crucial, especially in a number of emerging markets and their role should not be ignored (Khan and Senhadji, 2000). As explained in Levine and Zervos (1998), a well-established stock not only can mobilize capital and diversify risks between market agents, it also able to provide different types of financial services than banking sector and then stimulate economic growth. Particularly, a speed of economic growth is highly dependent on the size of banking system and the activeness of stock market. Levine and Zervos (1998) provide empirical evidence that "stock market liquidity and banking development are both positively and robustly correlated with contemporaneous and future rate of economic growth" (pg. 554). Accordingly, it is appropriate to re-examine the "financial development-economic growth puzzle" from the perspective of stock market development.

DATA AND METHODOLOGY

Data

This study is carried out in the context of Malaysia, for the period 1978-2000. In this study, economic growth is proxied by per capital 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 that have great 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 requirement 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. 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 stock market data were obtained from the World Bank database, whereas all others data were collected from *International Financial Statistics* published by International Monetary Fund (IMF). All variables are expressed in logarithmic form.

Bound Test (Unrestricted Error Correction Model)

This study utilises 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 with a total of 23 observations only, conducting bounds test will be appropriate. Secondly, the bounds 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*-statistic is non-standard under the null hypothesis of no cointegration relationship between the examined variables, irrespective whether the explanatory variables are purely *I*(0) or *I*(1), or mutually cointegrated. As such, the order of integration is no more a more a sensitive issue and thus one could bypass the unit root tests[2]. 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*):

$$?\overline{Y}_t = \mu_0 + \sum_{i=1}^{r} \mu_{1i} ?\overline{Y}_{t-i} + \sum_{i=0}^{s} \mu_{2i} ?DR_{t-i} + \sum_{i=0}^{v} \mu_{3i} ?OR_{t-i} + \sum_{i=0}^{w} \mu_{4i} ?FI_{m,t-i} + \mu_5 \overline{Y}_{t-1} + \mu_6 DR_{t-1} + \mu_7 OR_{t-1} + m_8 FI_{m,t-1} + x_t \quad (1)$$

where $?$ is first difference operator, FI_m ; (m = 1, 2) is financial development indicators with FI_1 and FI_2 denoting *TV/Y and TO/Y* respectively. x_t is white noise error term.

There are two steps in testing the cointegration relationship between economic growth and its explanatory variables. First, we estimate Equation 1 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 $m_5 = m_6 = m_7 = m_8 = 0$ against its alternative $m_5 \neq m_6 \neq m_7 \neq m_8 \neq 0$. If the computed F-statistic is less than lower bound critical value, then we do not reject the null hypothesis of no cointegration. Conversely, if the computed F-statistic is greater than upper bound critical

[2] 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 order.

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:

$$?Z_t = G_1 ?Z_{t-1} + ... + G_{k-1} ?Z_{t-k+1} + ? Z_{t-k} + ?_t \quad (2)$$

where $?Z = [?L\overline{Y}, ?DR, ?DO, ?FI_m]'$; $\Gamma_i = -(I - A_1 - A_i), (i = 1,...,k-1)$ and $\Pi = -(\mathrm{I} - A_1 - ... - A_k)$. Γ_i measures the short-run effect of the changes in the Z_t. Meanwhile, the (4 x 4) matrix of Π $(=ab')$ contains both speed of adjustment to disequilibrium (a) and the long-run information (b) such that the term $ß'Z_{t-k}$ represents the (n-1) cointegrating vector in the multivariate model.

A test statistic 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-statistic (Wald test) based on the null hypothesis that the set of coefficients (Γ_i) on the lagged values of independent variables are 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.

RESULTS AND INTERPRETATION

The results of the ARDL bounds test are shown in Table 1. According the computed F statistics, we have enough evidence to reject the null hypothesis of no cointegration at 5 percent significance level or better for both the market size (*TV/Y*) and 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 have a strong and positive significant impact on economic growth in the long- run.

TABLE 1
Bounds Test for Cointegration Analysis and Elasticities of Growth Function in Malaysia

Financial Indicator	Null hypothesis: No Cointegration		Estimated Coefficient of Financial Indicator	
	Computed F statictic		Long run	Short run
TV/Y	7.202**		0.153 *	0.031**
TO/Y	4.715*		0.266*	0.040**
Critical values[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 indicate the following levels of significance: *5% and **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 2 is estimated to examine the possible short- and long run causality between these variables.

The causality relationships between financial and economic development are summarised in Table 2. From the Wald test statistics that exceed the critical F values for both *TV/Y* and *TO/Y* indicators (column 3), implying the null hypotheses of these indicators do not Granger cause economic growth in the short run has been rejected in favor of finance-led growth hypothesis. On the other hand, there is no evidence in line with the growth-led finance hypothesis.

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 has a crucial impact on growth through the adjustment of error correction terms (ECTs), which are significant and have a correct sign. The ECTs in Table 2 indicated 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.

TABLE 2
Granger Causality Results based on Vector Error Correction Model

Financial Indicator	Lag	Finance-led growth		Growth-led finance	
		Short run[a]	ECT[b]	Short run[a]	ECT[b]
TV/Y	1	6.237*	-0.3712***	2.308	-3.8428***
			(-5.1881)		(-2.7867)
TO/Y	1	15.53**	-0.1408***	1.330	-2.6092***
			(-2.9024)		(-2.8852)

Notes: [a]The Wald statistic, which tests the joint significance of the lagged values of the independent variables is reported. This statistic is to be compared with F-statistics.
[b] The t-statistic reported in parantheses.
The asterisks indicate the following levels of significance: *5% and **1%.

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*) – implies that stock market can be viewed as an effective leading sector in channeling and transferring the financial resources between surplus and deficit units in the economy. In this regard, the success of utilizing stock market development to enhance economic growth as indicated by two 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 1st October 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 (Economic Report, 2000/2001).

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 in testing 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, improve the size and the regulations of the stock market and macroeconomic stability.

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