



# Stock Market Development and Economic Growth in Malaysia: A Revisit from 1982 to 2014

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**Abstract:** The study examines the relationship between the development of the stock market and economic growth in Malaysia using annual data from 1982 to 2014. The development of the stock market represented three indicators, namely the turnover ratio, the shares value traded ratio and the market capitalization ratio. Augmented Dickey-Fuller stationarity test was carried out prior to the use of a bound test approach for co-integration and causality testing. The findings of the co-integration analysis showed that there is evidence of a long-run relationship between economic growth and the development of the stock market. Further examination of the causal relationship showed proof of the short-run interaction between economic growth and the development of the stock market. These findings may be of importance to policymakers in formulating growth policy and financial decision-making by investors.

**Keywords:** Economic growth, stock market development, cointegration, causality, Malaysia

## 1. Introduction

The stock market is a place in which the stocks of the companies reflecting the portion of the ownership of the corporation, and the profit claims of the companies (share of stock) are exchanged. This is the most studied financial market in virtually any nation that has one, which is why this is also named literally 'the market' (Mishkin, 2013). Although some analysts view the stock market in developing countries as 'casinos' that have a slightly positive impact on economic growth, recent evidence suggests that stock markets can give a major boost to economic development (Levine, 1996). According to Regmi (2012), when the stock price is growing, people feel wealthier and continue to spend more. However, when the stock market falls, they feel poorer and crippled by debt running up in good times, leading to a reduction in their spending.

The Malaysian Stock Exchange was officially founded in 1964, when Singapore split from Malaysia. In addition, the general stock exchange continued to operate under the Stock Exchange of Malaysia and Singapore (SEMS). In 1973, SEMS was split into the Kuala Lumpur Stock Exchange Berhad (KLSEB) and the Singapore Stock Exchange (SES) with the end of currency interchangeability between Malaysia and Singapore (Bursa Malaysia, 2015). Nevertheless, Malaysian companies continued to be included on the SES and vice versa. Kuala Lumpur Stock Exchange (KLSE) took over the business of KLSEB as the stock exchange in 1994. The KLSE was a demutualized platform and in 2004 it was called Bursa Malaysia.

According to Levine and Zervos (1998), market capitalization is the total value of a company that may be used to calculate the size of the stock market. In fact, the volume exchanged, and the turnover are measured for market liquidity. Without a liquid equity market, several successful long-term assets that entail a long-term capital commitment may not have been made, because savers may not have been willing to give up management of their wealth for a lengthy period of time (Holmstrom & Tirole, 1993; Bencivenga, Smith & Starr, 1996; Neusser & Kugler, 1998; Regmi, 2012). The liquid equity

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market enables savers to sell their shares freely, efficiently and effectively, enabling companies to gain lasting accessibility to capital on advantageous terms. By supporting longer-term and more productive investment, the liquid market strengthens the distribution of capital and improves the potential for long-term economic growth. Liquidity reduces the cost of foreign capital that is necessary for development, improves the opportunity for investors to access information of companies or firms, and enhances corporate governance, thus promoting growth.

The development of stock market is very critical for economic growth. According to Regmi (2012), the development of stock market is a powerful mechanism that promotes the allocation of resources and stimulates economic growth through several channels. In fact, the equity market acts as a legitimate instrument for the mobilization and redistribution of savings by competing uses that are vital to economic development and productivity (Regmi, 2012). In addition, the equity market further leads to the mobilization of domestic savings by expanding the collection of financial tools accessible to savers to diversify their holdings and portfolios, offering a substantial source of investment capital at a reasonable cost. A well-functioning and liquid equity market that permit investors to diversify non-systematic risk can improve the capital efficiency (Pagano, 1993; Antonios, 2010).

Therefore, considering the importance of stock market development in the growth process, despite critics on the role of stock market in developing countries as mentioned above, the current study reinvestigate the impact of the stock market development on economic growth in Malaysia by employing ARDL bounds test to cointegration and causality analysis.

The structure of the paper is as follows. The following section addresses the review of the literature. Section 3 explains the data usage and the methodology. The final section leads to an end and conclusion.

## 2. Literature Review

Several empirical papers (e.g., Levine & Zervos, 1996; Mohtadi & Argarwal, 1998; Nurudeen, 2009; Antonios, 2010; Abdalla & Dafaalla, 2011; Wang & Ajit, 2013; Adusei, 2014; Hoque & Yakob, 2017; Pradhan, 2018) touched upon the nexus or relationship between the development of stock market and economic growth using different methods with varying findings. In a related study, Levine and Zervos (1996) examined the empirical link between the development of the stock market and economic growth in the long run. By using the pooled cross-country and time-series regression on 41 countries, they found that there has a strong correlation between growth and the development of stock market development, an indicating a positive link. In the different studies, Levine and Zervos (1998) examined the empirical connection between growth, banks and stock market through the cross-country regression of 47 countries and found that there is a significant, positive linkage between economic growth and financial development. The findings show that financial factors are an important part of the growth process itself. Even after controlling several factors related to growth, they found that the banking development and stock market liquidity, both are positively correlated with capital accumulation, productivity growth and future rates of economic growth.

Mohtadi and Argarwal (1998) analyzed the connection between economic growth and the development of the stock market in 21 emerging markets using a panel approach. The study indicated a positive association between economic growth and several indicators of stock market development, both explicitly and indirectly, by improving the activities of private investment. As a result, they aid both financial intermediation literature and conventional growth literature. Nieuwerburgh, Buelens and Cuyvers (2006) studied the long-term association between economic development and the development of the stock market. They found strong evidence to support the fact that the development of the stock market caused economic growth in Belgium, particularly in the period between 1873 and 1935. Nurudeen (2009) studied the connection between economic growth and the development of the stock market in Nigeria by utilizing the error-correction approach and noticed that the development of the stock market ( market capitalization ratio) leads positively to economic growth in Nigeria.

Antonios (2010) investigated the causal relationship between stock market development and economic growth for Germany by using a Vector Error Correction model. He found that there is a unidirectional causality between stock market development and economic growth with direction from stock market development to economic growth. Hossain and Kamal (2010) investigated the causal relationship between stock market development and economic growth in Bangladesh using Engle-granger causality. They found that stock market development strongly influences the economic growth in Bangladesh's economy, but there has no causation from economic growth to stock market development. Adenuga (2010) examined the stock market development and economic growth in Nigeria using the co-integration and vector error correction approach. He found that stock market development promotes economic growth in Nigeria during the period of analysis even though the balance of evidence is in favor of a positive relationship between the stock market and economic growth.

Zivengwa, Mashika, Bokosi and Makova (2011) examined the causal link between stock market development and economic growth in Zimbabwe. The study used Unit Root Tests, Vector Autoregressive (VAR), and Granger Causality Tests to explore the relationships. The results of the granger causality tests showed that stock market size had no direct effect on real GDP per capita. Nonetheless, the empirical results showed a unidirectional causal link that runs from stock market development to economic growth and there is evidence of an indirect transmission mechanism through the effect of stock market development on investment. Bernard and Austin (2011) investigated the role of stock market development on the economic growth of Nigeria using Ordinary Least Square (OLS) techniques and the results showed that market capitalization and value traded ratios have a very weak negative correlation with economic growth while turnover ratio has a very strong positive correlation with economic growth. Aside from this, the stock market capitalization has a strong positive correlation with the stock turnover ratio. The result implied that liquidity has the propensity to spur economic growth in Nigeria and that market capitalization influences market liquidity.

Ahmad, Khan and Tariq (2011) examined the relationship between stock market development and economic growth of two Asian developing countries, which is Pakistan and Bangladesh. The econometric results of the study by employing the regression analysis showed that Pakistan stock markets contribute to the economic growth in terms of the large size of its stock market whereas the market. The study showed that both stock market development and economic growth in each country has a positive relationship and it shows the stock market development leads to economic growth. Abdalla and Dafaalla (2011) examined the causal relationship between stock market development and economic growth for the Sudanese economy using the Granger causality approach based on the traditional unit root tests. The empirical results of the study showed that the causal relationship between stock market development and economic growth is sensitive to the proxy used for describing the stock market development. When stock market capitalization is used as a proxy to stock market development, the result showed a bidirectional causal relationship between economic growth and stock market development. However, when stock market liquidity is used, the result showed a unidirectional causal relationship from economic growth to stock market development. Granger causality test results suggested that stock market development in Sudan led to economic growth at least for the period under study, which was in line with the “supply leading” hypotheses.

Regmi (2012) examined the causal relationship between the stock market development and economic growth in Nepal using the Johansen co-integration and vector error correction model found that stock market development has significantly contributed to economic growth in Nepal. Hossain, Hossain and Sadi (2013) examined the co-integration relationship and causality direction between the stock market and economic growth of Malaysia. They found that there existed a long and short-run correlation between the stock market and economic growth. However, the Granger causality test suggested a unidirectional causality relationship. Hailemariam and Guotai (2014) examined the relationship between stock market development and economic growth in 17 emerging markets and 10 developed market economies by using the generalized method of moment (GMM) for dynamic panel data. The study revealed that there exists a statistically significant relationship between stock market development and economic growth both directly, as well as indirectly by boosting investment behavior.

Osuala, Okereke and Nwansi (2013) investigated the existence of causality between the stock market development and economic growth in Nigeria and found the existence of unidirectional causality from one of the stock market performance indicators to economic growth in the short run, which is a total number of deals ratio. In the long run, there was no causality from all the stock market development indicators to economic growth. The reason for the development may be because of the various anomalies experienced within the Nigerian financial system and the downturn in the capital market in recent times. Wang and Ajit (2013) investigated the impact of stock market development on economic growth in China using unit root tests and co-integration. The study showed that stock market development generally does not contribute positively to economic growth and the results consistent with the previous study's result.

Bayar, Kaya and Yildirim (2014) examined the relationship between stock market development and economic growth in Turkey using the Johansen-Juselius co-integration test and Granger causality test. They found that there is a long-run relationship between the economic growth and stock market capitalization, the total value of stocks traded, turnover ratio of stocks traded. Also, there was a unidirectional causality from stock market capitalization, the total value of stocks traded, and the turnover ratio of stocks traded to economic growth. Adusei (2014) investigated whether stock market development promotes economic growth in Ghana. The study showed that there was a long run co-integration relationship between stock market development and economic growth. The results of the causality analysis demonstrated that there is a unidirectional causality running from stock market development to economic growth. However, the long-run regression analysis showed a negative relationship between stock market development and economic growth, the study concluded that stock market development does not promote economic growth in Ghana.

However, there are some studies showed that less significant or no relationship between the stock market development and economic growth. Naceur and Ghazouani (2006) examined the relationship between banks, stock markets development, and economic growth, by using an unbalanced panel data with GMM estimators from 11 MENA region countries over a varying period, which are Bahrain, Egypt, Iran, Jordan, Kuwait, Lebanon, Morocco, Oman, Saudi Arabia, Tunisia, and Turkey. The empirical results reinforced the idea of no significant relationship between banking, stock market development, and growth. The association between bank development and economic growth is even negative after controlling for stock market development. The lack of relationship must be linked to the underdeveloped financial system in the MENA region that hampers economic growth.

Matadeen and Seetanah (2015) examine the relationship between banking performance, stock market development, and economic growth utilizing Vector Error Correction Model (VECM). The findings imply that stock market development plays an essential role in generating long-term economic growth in Mauritius. However, in the short run, the stock market development has not significantly boosted economic growth. Moreover, stock market development is also viewed to indirectly promote economic growth in the short term, via banking development. Pradhan, Arvin and Bahmani (2015) looked at the connections between economic growth, inflation, and stock market development for a group of 34 OECD countries and found that the argument that stock market development promotes economic growth is not supported in our study, at least not in the long run. The latter outcome may not be shocking given that the countries considered in this study are fairly developed. Further stock market development, therefore, does not play a statistically significant role in stimulating further economic growth. The findings could be specific for emerging countries that do not have well-developed stock markets.

Lazarov, Miteva-Kacarski and Nikoloski (2016) studied the influence of stock market development on economic growth in 14 transition economies from Central and South-Eastern Europe (CSEE) using panel regression models (fixed

and random effects) and a dynamic panel model (Generalized Model of Moments). The finding shows that stock market development is favorable and significantly associated with economic growth. Hoque and Yakob (2017) reassess the economic growth and stock market development nexus incorporated the moderating role of the exchange rate and foreign capital inflows in Malaysia. The study used the Granger test, the ARDL approach, and the multivariate regression approach to analyze the direction of links between variables. The Granger causality test indicates that there are unidirectional impacts of stock market developments on Malaysia's economic growth. The bound test revealed that there is a long-run relationship between economic growth and stock market development. However, in the short- and long-run, the stock market fosters Malaysia's economic growth.

Pradhan (2018) analyzed the long-run association between the stock market development and economic growth in the G-20 countries using a vector autoregressive model for Granger causality. The study spotted the existence of both unidirectional and bidirectional causality between stock market development and per capita economic growth. Qamruzzaman and Wei (2018) examined the partnership between financial innovation, stock market development, and in Bangladesh. The study found that there was a long-run relationship between stock market development, financial innovation, and economic growth. In addition, the analysis identified a bi-directional causality between economic growth, stock market development and financial innovation both in the long- and short-run and endorsed the hypothesis that financial innovation and market-based financial development can boost economic growth. Cave, Chaudhuri and Kumbhakar (2019) used the multiple indicators multiple causes (MIMIC) model to offer a more detailed indicator of financial growth. Their research showed a clear negative association between economic growth and banking sector development, whereas the impact of stock market development on economic growth is favorable to the extent to which the influence is negative.

### 3. Data and Methodology

The annual dataset of this study consists of gross domestic product growth rate (GDPG) and several different measures of stock market development such as market capitalization ratio (MCR), total shares value traded ratio (VTR) and turnover ratio (TR). For this research, secondary data were collected for 33 years from 1982 to 2014 on Malaysia from the World Bank (2016) and Trading Economics (2016a, 2016b, 2016c). All the data were expressed in logarithmic form over the 33 years to smoothen the process of analysis.

The prior expectation on the relationship between economic growth and stock market development showed that the MCR, VTR and TR are expected to correlate positively to economic growth. Thus, an increase in MCR, VTR and TR lead an increase in economic growth.

The general function of the dependent variable towards the independent variables is written as follows:

$$GDPG = f(MCR, VTR, TR) \tag{1}$$

where GDPG = gross domestic product growth rate, MCR = market capitalization ratio, VTR = total shares value traded ratio and TR = turnover ratio. For econometric analysis, the functional equation will be transformed into a log-linear function as follows:

$$LGDPG_t = \alpha + \beta_1 LMCR_t + \beta_2 LVTR_t + \beta_3 LTR_t + u_t \tag{2}$$

where,

LGDPG = log of gross domestic product growth rate

LMCR = log of market capitalization ratio

LVTR = log of shares value traded ratio

LTR = log of turnover ratio

$\alpha$  = constant

$\beta_1, \beta_2, \beta_3$  = unknown parameter or coefficient

u = error term

Prior to cointegration and causality tests, the unit root test is vital to check for stationarity of the series variables. If the series variables have stationary system, the effect of extreme event or shock will disappear slowly and inferences on the hypothesis testing and parameter estimates can be drawn. However, if the series variables have non-stationary system, the effect of extreme event or shock will be permanent, leading to spurious regression. Despite various types of unit root test, this study applies the traditional Augmented Dickey-Fuller (ADF) unit root test (Dickey & Fuller, 1979; Said & Dickey, 1984).

If the series variables are found to be stationary in different order of integration, the autoregressive distributed lag (ARDL) or bounds testing approach should be implemented (Pesaran, Shin & Smith, 2001). ARDL approach can be used in the situation of a mixture of I(0) and I(1). By using the ARDL testing approach to cointegration, the long-run and short-run relationship between economic growth and stock market development indicators can be determined. This method can

be used to test the existence of a long-run relationship between variables irrespective of whether the series variables are mixed or completely I(0) or I(1). The optimal lag length is chosen based on Akaike Information criterion or Schwarz Bayesian criterion. According to Narayan (2004), the estimates obtained from the ARDL method of cointegration analysis are unbiased and efficient given that the fact: (1) it can be applied to studies that have a small sample size, (2) it estimates the long run and short-run components of the model at the same time, removing problems associated with omitted variables and autocorrelation and (3) the ARDL model can differentiate between the dependent variable and independent variables.

The ARDL framework for cointegration involves estimating the conditional error correction version of the ARDL model for economic growth and independent variables. With respect to equation (1), the theory predicts that there is a long-run relationship among LGDPG, LMCR, LVTR, and LTR. Without any prior information about the direction of the long-run relationship among the variables, the following unrestricted error correction independent variables are estimated, considering each of the variables in turn as the dependent variable:

$$\Delta LGDPG_t = \alpha + \sum_{i=1}^p \beta_i \Delta LGDPG_{t-i} + \sum_{j=0}^p \beta_j \Delta LMCR_{t-j} + \sum_{m=0}^p \beta_m \Delta LVTR_{t-m} + \sum_{k=0}^p \beta_k \Delta LTR_{t-k} + \theta_1 LGDPG_{t-1} + \theta_2 LMCR_{t-1} + \theta_3 LVTR_{t-1} + \theta_4 LTR_{t-1} + \varepsilon_t \quad (2)$$

$$\Delta LMCR_t = \alpha + \sum_{j=1}^p \beta_j \Delta LMCR_{t-j} + \sum_{i=0}^p \beta_i \Delta LGDPG_{t-i} + \sum_{m=0}^p \beta_m \Delta LVTR_{t-m} + \sum_{k=0}^p \beta_k \Delta LTR_{t-k} + \theta_1 LGDPG_{t-1} + \theta_2 LMCR_{t-1} + \theta_3 LVTR_{t-1} + \theta_4 LTR_{t-1} + \varepsilon_t \quad (3)$$

$$\Delta LVTR_t = \alpha + \sum_{m=1}^p \beta_m \Delta LVTR_{t-m} + \sum_{j=0}^p \beta_j \Delta LMCR_{t-j} + \sum_{i=0}^p \beta_i \Delta LGDPG_{t-i} + \sum_{k=0}^p \beta_k \Delta LTR_{t-k} + \theta_1 LGDPG_{t-1} + \theta_2 LMCR_{t-1} + \theta_3 LVTR_{t-1} + \theta_4 LTR_{t-1} + \varepsilon_t \quad (4)$$

$$\Delta LTR_t = \alpha + \sum_{k=1}^p \beta_k \Delta LTR_{t-k} + \sum_{j=0}^p \beta_j \Delta LMCR_{t-j} + \sum_{m=0}^p \beta_m \Delta LVTR_{t-m} + \sum_{i=0}^p \beta_i \Delta LGDPG_{t-i} + \theta_1 LGDPG_{t-1} + \theta_2 LMCR_{t-1} + \theta_3 LVTR_{t-1} + \theta_4 LTR_{t-1} + \varepsilon_t \quad (5)$$

where GDPG = gross domestic product growth rate, MCR = market capitalization ratio, VTR = total value traded ratio, TR = turnover ratio,  $\Delta$  = first differencing operator,  $p$  = optimal lag length and  $\varepsilon$  = error term.

The  $F$  bounds test statistic is used for testing the existence of long-run relationship. The null hypothesis for no cointegration among variables in each equation is  $H_0: \theta_1 = \theta_2 = \theta_3 = \theta_4 = 0$  against the alternative hypothesis  $H_1: \theta_1 \neq \theta_2 \neq \theta_3 \neq \theta_4 \neq 0$  (Duasa, 2006). Other than that, the coefficients  $\beta_i, \beta_j, \beta_m$  and  $\beta_k$  are short run coefficients and coefficients  $\theta_1, \theta_2, \theta_3$  and  $\theta_4$  are long run coefficients. When the  $F$ -statistic exceeds the respective upper critical values, it can be concluded that there is an evidence of a long run relationship between the variables regardless of the order of integration of the variables. However, when the test statistic is below the lower critical value, the null hypothesis cannot be rejected no cointegration, and if it lies between the bounds, a conclusive inference cannot be made without knowing the order of integration of the underlying independent variables. In this study, equation (2) will be the focus in investigating the relationship between economic growth and stock market development.

If there is evidence of cointegration, the general long-run regression model can be written as follows:

$$LGDPG_t = \alpha + \sum_{i=1}^p \beta_i LGDPG_{t-i} + \sum_{j=0}^p \beta_j LMCR_{t-j} + \sum_{m=0}^p \beta_m LVTR_{t-m} + \sum_{k=0}^p \beta_k LTR_{t-k} + u_t \quad (6)$$

The optimal lag length in the ARDL model is selected using the Schwarz Information Criterion (SIC) or the Akaike Information Criterion (AIC). Moreover, in the presence of cointegration, the short-run dynamic can also be constructed as an error correction model (ECM) and the causality test can be carried out to test the causal relationship between economic growth and stock market development. The ECM is written as follows:

$$\Delta LGDPG_t = \alpha + \sum_{i=1}^p \beta_i \Delta LGDPG_{t-i} + \sum_{j=0}^p \beta_j \Delta LMCR_{t-j} + \sum_{m=0}^p \beta_m \Delta LVTR_{t-m} + \sum_{k=0}^p \beta_k \Delta LTR_{t-k} + \delta ECT_{t-1} + \varepsilon_t \quad (7)$$

where,

ECT = error correction term

$\Delta$  = first difference operator

$\alpha$  = constant

$\beta$  = coefficients relating to the short run dynamics of the model's convergence to equilibrium

$\delta$  = measures the speed of adjustment

Hypothesis testing on Granger causality:

(i).  $\Delta$ MCR and  $\Delta$ GDPG

$H_0: \sum \beta_j = 0$  ( $\Delta$ MCR does Granger cause  $\Delta$ GDPG)  
 $H_1: \sum \beta_j \neq 0$  ( $\Delta$ MCR does not Granger cause  $\Delta$ GDPG)

(ii).  $\Delta$ VTR and  $\Delta$ GDPG

$H_0: \sum \beta_m = 0$  ( $\Delta$ VTR does Granger cause  $\Delta$ GDPG)  
 $H_1: \sum \beta_m \neq 0$  ( $\Delta$ VTR does not Granger cause  $\Delta$ GDPG)

(iii).  $\Delta$ TR and  $\Delta$ GDPG

$H_0: \sum \beta_k = 0$  ( $\Delta$ TR does Granger cause  $\Delta$ GDPG)  
 $H_1: \sum \beta_k \neq 0$  ( $\Delta$ TR does not Granger cause  $\Delta$ GDPG)

#### 4. Empirical Results

The summary of descriptive statistics for the variables: GDP growth rate, market capitalization ratio, turnover ratio and total value shares traded ratio are shown in Table 1. The mean for GDP growth rate, MCR, TR and VTR are 5.87, 151.57, 29.44, and 44.83, respectively. This indicates that the variables exhibit significant variation in terms of magnitude. The kurtosis for all the variables is more than 3, where the distribution is peak or leptokurtosis relative to the normal and exhibits structural change in the series data. The Jarque-Bera statistics for all the variables are significant where the probability values are significant. Therefore, this leads to a rejection of null hypothesis of a normal distribution.

**Table 1 - Descriptive statistics summary**

Variable	Mean	Median	SD	Skewness	Kurtosis	JB
GDPG	5.867333	6.138000	3.835068	-1.594043	5.817055	24.88708***
MCR	151.5673	132.7800	98.41075	2.592355	11.15939	128.5033***
TR	29.43576	29.00300	18.04998	1.428762	6.481392	27.89261***
VTR	44.82788	37.22000	44.30353	8.870536	8.870536	78.22845***

Notes: \*\*\* denotes significant at the 1% level. SD = Standard Deviation and JB = Jarque-Bera Statistic.

Table 2 shows the results of the ADF unit root test. ADF test suggests that if the test statistics are greater than the critical values at all levels of significance, it will lead to a rejection of the null hypothesis and causing a further investigation until the test statistics is smaller than the critical values of the variable. The table shows the economic growth and indicators of stock market development are stationary at difference forms. The results of trend and intercept suggest that GDPG and MCR are stationary at level, whereas TR and VTR are stationary in the first difference at 1% level of significance, due to the TR and VTR are stationary at 5% level of significance at the level.

The long run relationship between the indicators of stock market development and economic growth is investigated by testing a joint significance of *F*-test. From the results in Table 3, the *F*-statistic suggests that there exist cointegration between the indicators of stock market development and economic growth in Malaysia. From Table 4, MCR and TR are associated with long run coefficient with negative sign, which are -0.003 and -0.3993 respectively. Meanwhile, VTR indicated a 0.0973 long run coefficient. The results show that the TR is significant at 1% level. The negative relationship indicates that 1% increase in TR will decrease the gross domestic product growth rate by 0.3993%. The results recommend that the stock turnover ratio increase 1 percent in long run will lead to economic growth in Malaysia decrease 0.39 percent. The empirical analysis is consistent with the Levine's (1991) hypothesis where the TR has a direct influence on economic growth. The result of negative relationship of turnover ratio is consistent with Nurudeen (2009), who found the similar result for Nigeria.

**Table 2 - Augmented Dickey Fuller (ADF) unit root test**

Variable	Level		
	None	Intercept	Trend and Intercept
LGDPG	-1.013628(2)	-4.542183(0)***	-4.566654(0)***

LMCR	-2.193015(0)**	-5.438462(0)***	-5.391572(0)***
LTR	-1.529536(0)	-3.699028(0)***	-3.811682(0)**
LVTR	-1.994401(0)**	-3.223550(0)**	-3.165955(0)**
First Difference			
Variable	None	Intercept	Trend and intercept
LGDPG	-7.030964(1)***	-6.906719(1)***	-6.777373(1)***
LMCR	-8.681303(0)***	-8.539598(0)***	-8.416008(0)***
LTR	-7.362143(0)***	-7.242739(0)***	-7.131155(0)***
LVTR	-6.524854(0)***	-6.499401(0)***	-6.327240(0)***

Note: \*\*\*, \*\* denote significant at 1% and 5% levels, respectively. Figures in () are optimal lag structure-based Schwarz Info Criterion (SIC). The numbers in parentheses are the lags used for the ADF test, which are augmented up to a maximum of 8 lags.

**Table 3 - ARDL bound test**

Dependent Variables	GDPG	MCR	TR	VTR
Optimum-lags	(1, 3, 2, 4)	(1, 0, 3, 0)	(1, 0, 0, 1)	(3, 3, 4, 2)
F-statistics	43.8886***	30.1207***	3.5781*	3.7666*
<b>Critical values</b>		1%	5%	10%
Upper bound		4.66	3.67	3.20
Lower bound		3.65	2.79	2.37
<b>Diagnostic Test</b>				
Serial Correlation	0.4101[0.6719]	5.0767[0.0165]	0.3712[0.6938]	0.2659[0.7713]
Normality	0.5844[0.7466]	15.5452[0.0004]	0.6464[0.7238]	7.8102[0.0201]
Heteroskedasticity	5.1326[0.0320]	1.8829[0.1813]	0.1107[0.7418]	0.0635[0.8030]

Notes: \*\*\*, \*\* and \* denote significant and rejected at 1%, 5% and 10% levels, respectively. Figures in () and [] indicate number of lag structures selected based on lowest SIC and probability value.

However, the results show that the VTR is significant at 10% level. The positive relationship indicates that 1% increase in shares value traded ratio will lead the gross domestic product growth rate to increase by 0.0973%. The result of positive and direct relationship of total value shares traded ratio is consistent with Adenuga (2010), who found the similar result for Nigeria. Results of this study also detected that the stock market total value traded ratio has a positive long run and short run relationship towards the economic growth in Malaysia. The results indicate that the stock market total value traded ratio increase 1% in long run and short run will induce the economic growth in Malaysia rise 0.09 % and 0.047%, respectively. The empirical results of the stock market total value traded ratio contributes significantly to economic growth is similar with the results of Ovat (2012), where the total value traded ratio creates a feedback effect as growth in economic activity also stimulates the economic growth in Nigeria. Other than that, Adenuga (2010) also came out with the results that the total value of shares traded ratio promotes the economic growth in Nigeria.

**Table 4 - ARDL long-run regression**

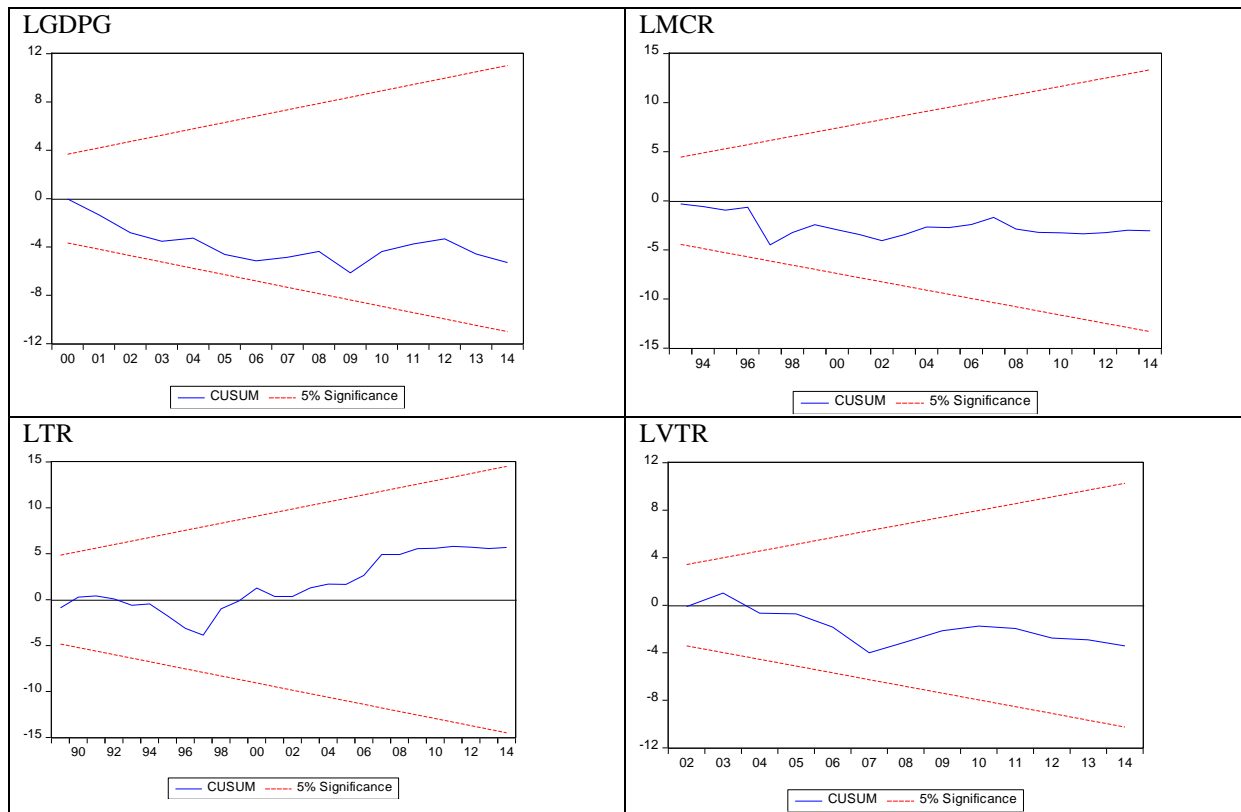
Regressor	Coefficient	Standard Error	T-Ratio [Prob]
MCR	-0.0030	0.02019	-0.1497[0.8830]
TR	-0.3993***	0.07596	-5.2566[0.0001]
VTR	0.0973*	0.04735	2.0557[0.0576]
Constant	14.5677***	2.45889	5.92451[0.000]

Notes: \*\*\*, \*\* and \* denote significant and rejected at 1%, 5% and 10% levels, respectively.

**Table 5 - Causality test**

Model	Null hypothesis	F-Statistic	ECT
ARDL (1, 3, 2, 4)	$\Delta MCR \Rightarrow \Delta GDPG$	2.752*	
	$\Delta TR \Rightarrow \Delta GDPG$	0.761	-0.896
	$\Delta VTR \Rightarrow \Delta GDPG$	2.720*	

Notes: \*\*\*, \*\*, and \* denote significant and rejected at the 1%, 5%, and 10% levels, respectively.  $\Rightarrow$  indicates “does not Granger cause” and ECT is error correction coefficient.



**Fig. 1 - Plot of CUSUM for coefficients stability**

The results of causality analysis are presented in Table 5. From 3 indicators of stock market development, there are 2 indicators that causal economic growth in the short run, which are MCR and VTR. Results of this study have discovered that the MCR has a causal effect on economic growth in Malaysia in short run only. Hailemariam and Guotai (2014) and Levine (1991) have the same result and it was suggested that the stock market development leads to higher economic growth due to it reduces the liquidity and productivity shocks. However, TR does not causal economic growth. The negative sign of the adjustment speed is in accordance with convergence toward the long run equilibrium. The imbalance between GDPG and indicators of stock market development is corrected or adjusted at a fast pace of 0.896 or 89.6 % each year. The negative error correction coefficient value shows that GDPG will decrease by 0.89 % as a reaction to the imbalance caused by shock or extreme event occurring in long run.

Figure 1 shows the cumulative sum control charts (CUSUM) for all variables. The CUSUM indicates the stability in the coefficients over the sample period. The statistics are confined within the 5% critical bounds of parameter stability. All the points lie between the *V-Mask* of 5% significance indicating the process is in the control.

## 5. Conclusion

The current study attempted to identify the relationship between the stock market development and economic growth in Malaysia by employing ARDL bounds test to cointegration. The results showed that the turnover ratio and total shares value traded ratio have long run relationship towards the economic growth. In addition, only the total shares value traded ratio has short run relationship with the economic growth in Malaysia. The overall results suggest that the indicators of stock market development weakly boost the economic growth in Malaysia.

Finally, the future research can study for more countries and compare it with each other. This will help to determine the causality and relationship of the indicators of stock market development towards economic growth. Different country can come out with different results. Thus, the most significant of the indicators of the stock market development that influence the economic growth can be determined. Furthermore, data collection for future study or research is suggested to use a higher frequency data such as weekly, monthly, or quarterly for a longer time series data. By doing this, it helps to



confirm the trend or relationship among the variables that are under study. The more the observations use, the clearer and more precise the trend or relationship is.

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## References

- [1] Abdalla, S.Z.S. and Dafaalla, H.A. (2011). Stock market development and economic growth in Sudan (1995-2009): evidence from Granger causality test. *Journal of Business Studies Quarterly*, 3(2), 93-105.
- [2] Adenuga, A.O. (2010). Stock Market Development Indicators and Economic Growth in Nigeria (1990-2009): Empirical Investigations. *Economic and Financial Review*, 48(1), 33-70.
- [3] Adusei, M. (2014). Does Stock Market Development Promote Economic Growth in Ghana? *International Journal of Economics and Finance*, 6(6), 119-126.
- [4] Ahmad, Z., Khan, A.A. & Tariq, A. (2011). Stock Market Development and Economic Growth: A Comparative Study of Pakistan and Bangladesh. *African Journal of Business Management*, 6(8), 2958-2989.
- [5] Antonios, A. (2010). Stock Market and Economic Growth: An Empirical Analysis for Germany. *Business and Economics Journal*, (35), 143-149.
- [6] Bayar, Y., Kaya, A. & Yildirim, M. (2014). Effects of Stock Market Development on Economic Growth: Evidence from Turkey. *International Journal of Financial Research*, 5(1), 93-100.
- [7] Bencivenga, V.R., Smith, B. & Starr, R.M. (1996). Equity Markets, Transaction Costs, and Capital Accumulation: An Illustration. *World Bank Economic Review*, 10, 241-265.
- [8] Bernard, A.U. & Austin, A. (2011). The Role of Stock Market Development on Economic Growth in Nigeria: A Time Series Analysis. *An International Multidisciplinary Journal*, 5(6), 213-230.
- [9] Bursa Malaysia. (2015). *Corporate History*. Retrieved August 15, 2015, from <http://www.bursamalaysia.com/corporate/about-us/corporate-history/>.
- [10] Cave, J., Chaudhuri, K. & Kumbhakar, S.C. (2019). Do banking sector and stock market development matter for economic growth? *Empirical Economics*, 1-23. <https://doi.org/10.1007/s00181-019-01692-7>
- [11] Dickey, D.A. & Fuller, W.A. (1979). Distributions of the Estimators for Autoregressive Time Series with a Unit Root. *Journal of American Statistical Association*, 74(366), 427-481.
- [12] Duasa, J. (2006). Determinants of Malaysian Trade Balance: An ARDL Bound Testing Approach. *Global Economic Review*, 36(1), 89-102.
- [13] Hoque, M.E. & Yakob, N.A. (2017). Revisiting stock market development and economic growth nexus: The moderating role of foreign capital inflows and exchange rates. *Cogent Economics & Finance*, 5(1), 1329975. <https://doi.org/10.1080/23322039.2017.1329975>
- [14] Hailemariam, A. & Guotai, C. (2014). Stock Market Development and Economic Growth: Empirical Evidence for Emerging Market Economics. *International Journal of Economics, Finance and Management Sciences*, 2(2), 171-181.
- [15] Holmstrom, B. & Tirole, J. (1993). Market Liquidity and Performance Monitoring. *Journal of Political Economy*, 101(4), 678-709.
- [16] Hossain, M.K., Hossain, A. & Sadi, R. (2013). An Examination of the Relationship between Stock Market and Economic Growth: A Study in Malaysia. *Journal of Transformative Entrepreneurship*, 1(2), 124-133.
- [17] Hossain, S. & Kamal, M. (2010). Does Stock Market Development Cause Economic Growth? A Time Series Analysis for Bangladesh Economy. *Journal of International Finance and Economics*, 10(2), 229-305.
- [18] Lazarov, D., Miteva-Kacarski, E. & Nikoloski, K. (2016). An empirical analysis of stock market development and economic growth: the case of Macedonia. *South East European Journal of Economics and Business*, 11(2), 71-81.
- [19] Levine, R. (1991). Stock Markets, Growth and Tax Policy. *Journal of Finance*, 46(4), 1445-1465.
- [20] Levine, R. (1996). A Spur to Economic Growth. *Finance and Development*, 33(1), 7-10.
- [21] Levine, R. & Zervos, S. (1996). Stock Market Development and Long-Run Growth. *The World Bank Economic Review*, 10(2), 323-339.
- [22] Levine, R. & Zervos, S. (1998). Stock Markets, banks, and economic growth. *American Economic Review*, 88(3), 537-558.
- [23] Matadeen, J. & Seetanah, B. (2015). Stock market development and economic growth: Evidence from Mauritius. *The Journal of Developing Areas*, 49(6), 25-36.
- [24] Mishkin, F.S. (2013). *The Economics of Money, Banking, and Financial Markets* (10<sup>th</sup> ed.). US: Pearson Education International.
- [25] Mohtadi, H. & Agarwal, S. (1998). Stock Market Development and Economic Growth: Evidence from Developing Countries. *Working Paper*, University of Wisconsin-Milwaukee, 1-19.

- [26] Naceur, S.B. & Ghazouani, S. (2006). Stock Markets, Banks, and Economic Growth: Empirical Evidence from MENA Region. *Research in International Business and Finance*, 21, 297-315.
- [27] Narayan, P.K. (2004). Reformulating Critical Values for the Bounds F-statistics Approach to Cointegration: An Application to the Tourism Demand Model for Fiji. *Discussion Papers*. Department of Economics, Monash University, Australia.
- [28] Neusser, K. & Kugler, M. (1998). Manufacturing Growth and Financial Development: Evidence from OECD Countries. *Review of Economics and Statistics*, 80, 638-646.
- [29] Nieuwerburgh, S.V., Buelens, F. & Cuyvers, L. (2006). Stock Market Development and Economic Growth in Belgium. *Explorations in Economic History*, 43(1), 13-38.
- [30] Nurudeen, A. (2009). Does Stock Market Development Raise Economic Growth? Evidence from Nigeria. *The Review of Finance and Banking*, 1(1), 15-26.
- [31] Osuala, A.E., Okereke, J.E. & Nwansi, G.U. (2013). Does Stock Market Development Promote Economic Growth in Emerging Markets? A Causality Evidence from Nigeria. *World Review of Business Research*, 3(4), 1-13.
- [32] Ovat, O.O. (2012). Stock Market Development and Economic Growth in Nigeria: Market Size Versus Liquidity. *Canadian Social Science*, 8(5), 1-10.
- [33] Pagano, M. (1993). Financial Markets and growth: An Overview. *European Economic Review*, 88(3), 537-558.
- [34] Pesaran, M.H., Shin, Y. & Smith, R.J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, 16(3), 289-326.
- [35] Pradhan, R.P. (2018). Development of stock market and economic growth: The G-20 evidence. *Eurasian Economic Review*, <https://doi.org/10.1007/s40822-018-0094-4>.
- [36] Pradhan, R.P., Arvin, M.B. & Bahmani, S. (2015). Causal nexus between economic growth, inflation, and stock market development: The case of OECD countries. *Global Finance Journal*, 27, 98-111.
- [37] Qamruzzaman, M., Karim, S. & Wei, J. (2019). Does Asymmetric Relation Exist between Exchange Rate and Foreign Direct Investment in Bangladesh? Evidence from Nonlinear ARDL Analysis. *Journal of Asian Finance, Economics and Business*, 6(4), 115-128.
- [38] Regmi, U.R. (2012). Stock Market Development and Economic Growth: Empirical Evidence from Nepal. *Administration and Management Review*, 24(1), 1-28.
- [39] Said, S.E. & Dickey, D. (1984). Testing for Unit Roots in Autoregressive Moving-Average Models with Unknown Order. *Biometrika*, 71, 599-607.
- [40] The World Bank Group. (2016). *World Development Indicators*. [Online] Retrieved from: <http://databank.worldbank.org/data/reports.aspx?source=2&country=MYS&series=&period=> [Accessed 26 Jan. 2016].
- [41] Trading Economics (2016a). *Market capitalization of listed companies (% of GDP) in Malaysia*. [Online] Retrieved from: <http://www.tradingeconomics.com/malaysia/market-capitalization-of-listed-companies-percent-of-gdp-wb-data.html>. [Accessed 26 Jan. 2016].
- [42] Trading Economics (2016b). *Stocks traded – total value (% of GDP) in Malaysia*. [Online] Retrieved from: <http://www.tradingeconomics.com/malaysia/stocks-traded-total-value-percent-of-gdp-wb-data.html>. [Accessed 26 Jan. 2016].
- [43] Trading Economics (2016c). *Stocks traded – turnover ratio (%) in Malaysia*. [Online] Retrieved from: <http://www.tradingeconomics.com/malaysia/stocks-traded-turnover-ratio-percent-wb-data.html>. [Accessed 26 Jan. 2016].
- [44] Wang, B. & Ajit, D. (2013). Stock Market and Economic Growth in China. *Economics Bulletin*, 33(1), 95-103.
- [45] Zivengwa, T., Mashika, J., Bokosi, F.K., & Makova, T. (2011). Stock Market Development and Economic Growth in Zimbabwe. *International Journal of Economics and Finance*, 3(5), 140-150.