

Stock Market Development and Economic Growth in Bangladesh: An Empirical Appraisal

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Abstract

This article seeks to examine the impact of the Bangladesh's stock market development on its economic growth from the period of 1989-2012. We have used Johansen Cointegration test to estimate the long-run equilibrium relationship between the variables and the Granger causality test was conducted in order to establish causal relationship, while the model was estimated using the error correction model (ECM). Johansen co-integration test results show that the Bangladesh's stock market development and economic growth are co-integrated. This indicates that a long run relationship exists between stock market development and economic growth in Bangladesh. The causality test results suggest a unidirectional causality from stock market development to the economic growth. On the other hand, there is no "reverse causation" from economic growth to stock market development. The evidence from this study reveals that the activities in the stock market tend to impact positively on the economy. It is recommended therefore that stock market regulatory authority should therefore address policy issues that are capable of boosting the investors' confidence through improved policy formulation and creation of awareness.

Keywords: Market capitalization; Economic growth; Bangladesh; Cointegration; Causality test.



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1. Introduction

Economic growth and development is the ultimate goal of every country of the world and to bring the desired growth, continuous and sustained mobilisation of resources is required. On the other hand, a safe and sound financial system is a must for resource mobilization.

The financial system of a country is the framework within which capital formation takes place, and the stock market is one of the media through which capital can be accumulated for effective economic growth. In this case, stock markets do this by promoting efficient capital formation and allocation, as a tool in the mobilisation and allocation of savings from the savers to the entrepreneurs which is critical for economic growth.

The stock market is significant from both the investors' point of view as well as the industry's point of view. There are different factors that can be used as a measurement of stock markets' performance and as such, they have direct relation with the economic growth of the country as well. Some of these factors include stock market capitalization as well as the turnover of stocks in the market.

This paper investigates the long-run impact of stock market development on economic growth and examines whether such stock market development can influence economic growth negatively or positively. In this paper, market capitalization is used as a proxy variable of stock market development. This paper also investigates the causal relationship between market capitalization and economic growth.

Although Bangladesh capital market came into existence in early 1950, for the next 40 years it failed to generate much activity. All key market indicators like the number of companies traded in the capital market, market turnover and market capitalization in relations to GDP remained very low relative to its regional comparators. Market regulations and its governing structure were not up-to-date and the regulatory environment was very weak.

The stock market of Bangladesh comprises of two stock exchange companies--Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). These two stock exchanges are regulated by the Securities and Exchange Commission (SEC).

2. Literature Review

An extensive literature survey we have done to review the theoretical and empirical literature on stock market development and economic growth. Idea we have gathered about the relationship between stock market development and economic growth will facilitate to instinct this relationship for Bangladesh in this empirical analysis.

[Schumpeter \(1911\)](#), drew attention to the significance of financial sector development in promoting economic growth in his study. His study alluded that a well functioning financial system advances technological innovations by providing sufficient funds to the entrepreneurs that eventually turn to enhance economic growth. [Debreu \(1959\)](#), [Arrow \(1964\)](#), [Patrick \(1966\)](#), and [Goldsmith \(1969\)](#) reviewed this association between financial sector development and economic growth.

According to Patrick (1966), in the 'supply leading' role financial sector development, the causality occurs from financial development to economic growth and in case of 'demand following' role it is from economic growth to financial development.

Levine (1991) contented that both liquidity shock and productivity shock of businesses can be reduced through a developed stock market which increases the access of businessmen to investment as well as boosting the production capacity of the economy, thereby directing to higher economic growth. This view was corroborated by King and Levine (1993) that financial development stimulates economic growth.

Levine and Zervos (1996), scrutinized whether there is a strong empirical association between stock market development and long-run economic growth. The study used pooled cross-country time-series regression of forty-one countries from 1976 to 1993 on real per capita average growth and stock index to evaluate this association. The finding was that a strong correlation between overall stock market development and long-run economic growth exist. This implies a positive relationship between stock market development and economic growth.

Pearce (1983), study demonstrated that stock prices could lead the direction of the economy. His study was carried out for the time span of 1956 to 1983 for the U.S. and discovered that stock market is as an indicator of economic growth.

Empirical studies of Atje and Jovanovic (1993); Demirguc-Kunt and Levine (1996); Korajczyk (1996); Levine and Zervos (1996), Levine and Zervos (1998) elucidated that there exists a strong positive association between stock market development and economic growth.

Agarwal (2001), inspected the relationship between stock market development and economic growth for nine African countries with cross sectioned data for the period of 1992 to 1997. His study explored a positive relationship between several indicators of the stock market performance and economic growth.

Tharnton (1995), Rousseau and Sylla (2001), Calderon and Liu (2002) argued that financial development stimulates economic growth. In the same vein, Bekaert *et al.* (2005) demonstrated that capital market development increases economic growth. Similarly, Bolbol *et al.* (2005) indicated that capital market development has contributed to the economic growth of Egypt. Likewise, Filer *et al.* (1999) showed that an active equity market plays a significant role in promoting economic growth in developing countries.

World Bank (1994), found that stock market development provides the means to increased growth rates in capital, productivity and per capital GDP.

Hamid and Sumit (1998) scrutinized the relationship between stock market development and economic growth for 21 emerging markets over 21 years, using a dynamic panel method and pointed out a positive relationship between several indicators of stock market performance and economic.

Jefferis and Okeahalam (2000), Shirai (2004), Adajaski and Biekpe (2006), and Mun *et al.* (2008), asserted that future economic growth is reflected through the larger increase in stock prices, and large decrease in stock prices is an indication of future economic recession.

Dailami and Atkin (1990), suggested that a well developed stock market offers financial instruments to savers to diversify their portfolios that can enhance savings and provide investment capital at lower costs. Hence, efficient allocation of capital resources to productive investment through these markets would foster economic growth.

Pagano (1993), study explained that the marginal productivity of capital could be raised by a sound performing and liquid stock market that ultimately allows investors to diversify away unsystematic risk.

Obstfeld (1994), has stated that the allocation of resources and the process of economic development could be expedited by way of internationally integrated stock markets to share international risk. In the same way, Korajczyk (1996) study showed that capital accumulation can be magnified through internationally integrated stock markets and has positive correlation between stock markets integration and economic growth.

By using quarterly data from five developed economies France, Germany, Japan, United Kingdom and United States for duration of 1968 to 1998, Arestis *et al.* (2001) have inspected the link between stock market development and economic growth. The study indicates that in France, Germany and Japan both stock markets and banks have an important role in promotion of economic growth but the association between financial development and growth found to be statistically poor in case of United Kingdom and United States.

Chee Keon *et al.* (2003), indicated that there is a positive impact of stock market development on economic growth in Malaysia. The authors used Granger-Causality model and also reported that stock market development Granger-causes economic growth.

Nieuwerburgh *et al.* (2005), in his study used a new set of stock market development indicators for the period between (1973) and (1993) validated that financial market development significantly influences economic growth in Belgium.

By employing Granger-causality test and regression analysis Adam and Sanni (2005) discovered a one-way causality between GDP growth and market capitalization and a two-way causality between GDP growth and market turnover and found a positive relationship between GDP growth turnover ratios.

Obamiro (2005), outlined that there is a positive effect of stock market on economic growth in Nigeria. For this, he advocated favourable environment extended by the government to enhance the efficiency of the stock market to achieve higher economic growth.

Tharavani (2007) observed that the risk of severe business cycle output contraction and chances of an economic downturn is less for countries with deeper capital market compared to those with less developed capital market.

The work of Francis Xavier and Raja (2007) showed that a well devolved stock market provides protection for shareholders and bring confidence in the stock market which ultimately causes economic growth.

Muhammed *et al.* (2008), suggested that there is a long-run association between stock market development and economic growth.

The study conducted by Vazakidis and Adamopoulos (2009) for the period of 1965 to 2007 for France by applying co-integration, Granger causality test and Vector error correction model indicate that there is a positive relation running from economic growth to stock market development and simultaneously interest rate has a negative effect on stock market development.

Robinson (1952), Kuznets (1955), and Friedman and Schwartz (1963) asserted that economic growth lead to financial sector development. Causality runs in both the directions i.e., financial development causes economic growth and vice versa contended by Demetriades and Hussein (1996); Luintel and Khan (1999), Arestis *et al.* (2001) in their empirical studies.

Discordant Shleifer and Summers (1988); Morck *et al.* (1990a) appraised that the economic growth would be deterred due to the stock market development by relieving counterproductive corporate takeovers. Similarly, Devereux and Smith (1994) study also indicated that internationally integrated stock markets can minimize saving rates and eventually slowing down the economic growth.

Few other empirical studies done by Bencivenga and Smith (1991), Naceur and Ghazouani (2007), Adajaski and Biekpe (2006), concluded that there is no significant relationship between stock market development and economic growth, specifically in developing countries. Likewise, the study of Barro (1989) reported that stock market development doesn't represent as a dominant indicator of economy.

3. Data Description and Sources

We actually ascertained the association between stock market development and economic growth. Thus, Economic growth was proxied by the growth rate of gross domestic product (GDP) and the market capitalization (MCAP) is used as a proxy for stock market development. The time series data covers the period from 1989 to 2012. All the variables are transformed in their natural logarithms (ln) in order to avoid the problems of heteroscedasticity. All the variables are taken on annual basis from World Development Indicators (World Data Bank Online Version).

The figure below shows the trend of market capitalization as percentage of its GDP and GDP growth rate over a 24 years period.

Figure-3.1. Trend of GDP Growth Rate and Market Capitalization

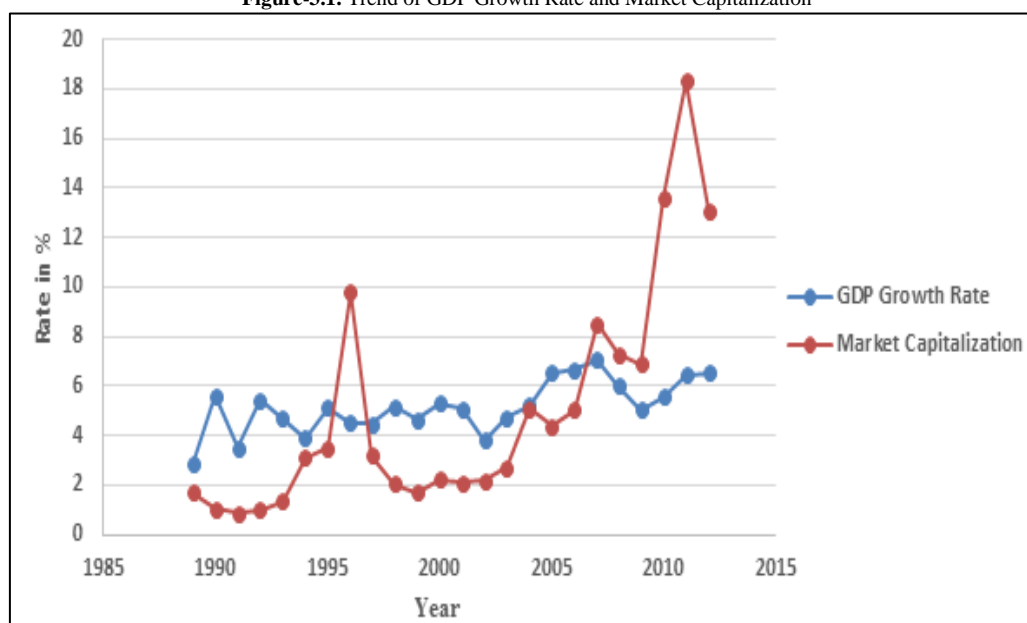


Figure-3.1 plots an indicator of stock market development over the study period, that is, market capitalization as a percentage of GDP and GDP growth rate. In the graph, it is obvious that for the period of 1989 to 2012, the rate of market capitalization was below 20% and in 1996 and in 2011, a sharp increase was seen. However, in 2011, it had the highest value. In the graph, the GDP growth rate for the period 1989 to 2012 is shown along vertical axis and it can be interpreted that during the study period GDP growth is increasing slowly. In 1989 it was 3% and after 23 years in 2012 it was about 7%.

From the above figure it is clear that both the variables under consideration are showing an upward trend over the 24 years period, that is, there is a positive relationship between them.

4. Methodology

We have employed Johansen Cointegration Test, the Error-Correction Model (ECM) and the Granger Causality Test (GCT) to analyze the quantitative effects of stock market development on economic growth.

To examine the relationship between stock market development and economic growth we have specified the following econometric model:

$$\ln(GDP)_t = \beta_0 + \beta_1 \ln(MCAP)_t + u_t \dots \dots \dots (1)$$

Where, GDP = Gross Domestic Product (proxy for economic growth) MCAP = Market Capitalization, β_0 = intercept of relationship in the model or Constant, β_1 = Coefficient of the independent variable and u = stochastic or error terms.

By stating the error correction model (ECM) from equation (1), the model becomes;

$$\Delta \ln GDP_t = \beta_0 + \beta_1 \Delta \ln MCAP_t + \beta_2 u_{t-1} + \varepsilon_t \dots \dots \dots (2)$$

Where, u_{t-1} is Error Correction term, $t-1$ meaning the variables were lagged by one period and ε_t is White Noise Residual.

To examine the existence of long run equilibrium relationship, the error correction model i.e. equation no. (2) can be conducted. To ascertain whether there is a uni-directional or bi-directional relationship exists between stock market development and economic growth we have employed the granger-causality test.

5. Empirical Results

5.1. Stationarity Test Result

In order to avoid the occurrence of spurious results, this study adopted the Augmented Dicky–Fuller (ADF) test and Phillips–Perron (PP) test the check Stationarity of the variables. The ADF and PP test statistic outcomes of the variables for the period, 1989 – 2012 show that all the variables are stationary at first difference at 1% and 5% level of significance. See table below;

Table-5.1.1. ADF Stationarity test at First Difference

Variable	ADF			Stationarity Status
	Intercept	Intercept & Trend	None	
<i>lnGDP</i>	-10.5451 (-3.7695)* (-3.0048)**	-10.218 (-4.4407)* (-3.6328) **	-10.6775 (-2.6742)* (-1.9572)**	Stationary
<i>lnMCAP</i>	-4.7861 (-3.7695)* (-3.0048)**	-4.5970 (-4.4407)* (-3.6328) **	-4.6111 (-2.6742)* (-1.9572)**	Stationary

Note: * and ** denotes Significance at 1% & 5% level, respectively. Figures within parenthesis indicate critical values. Mackinnon (1996) critical value for rejection of hypothesis of unit root applied

Source: Author’s Estimation using Eviews 7

Table-5.1.2. PP Stationarity test at First Difference

Variable	PP			Stationarity Status
	Intercept	Intercept & Trend	None	
<i>lnGDP</i>	-17.793 (-3.7695)* (-3.0048)**	-17.4030 (-4.4407)* (-3.6328) **	-13.53111 (-2.6742)* (-1.9572)**	Stationary
<i>lnMCAP</i>	-4.7919 (-3.7695)* (-3.0048)**	-4.5964 (-4.4407)* (-3.6328) **	-4.6111 (-2.6742)* (-1.9572)**	Stationary

Note: * and ** denotes Significance at 1% & 5% level, respectively. Figures within parenthesis indicate critical values. Mackinnon (1996) critical value for rejection of hypothesis of unit root applied

Source: Author’s Estimation using Eviews 7

5.2. Cointegration Test Result

We seek to determine whether there exists long-run equilibrium relationship among the variables of study. In doing so, the Johansen cointegration test was used. This test identifies the number of long-run relationship that exists among the sets of integrated variables. The trace statistic tests the null hypothesis that there is no cointegrated equation. Therefore, a rejection of the null hypothesis means that there are cointegrating equations.

Table-5.2.1. Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.844941	37.73217	15.49471	0.0000
At most 1	0.022401	0.453121	3.841466	0.5009

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

From the table above the trace statistic of 37.73217 clearly exceed the critical value of 15.49471 at 95 percent confidence interval, hence, we are rejecting the null hypothesis and conclude that there is at least one cointegrating relationship and therefore, a long run equilibrium relationship exists between the variables.

Table-5.2.2. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.844941	37.27905	14.26460	0.0000
At most 1	0.022401	0.453121	3.841466	0.5009

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

The eigenvalue test also supported this claim of long run equilibrium relationship between the variables. The maximum eigenvalue statistics of 37.27905 exceed the critical value of 14.26460 at 95 percent confidence level, thus, we are rejecting the null hypothesis of no cointegrating relationships between the variables.

5.3. Error-Correction Modelling

We have employed error correction model to know at what extent the variables are co-integrated in the short-run and also to find out the rate at which the variables would be corrected in the long-run.

$$\Delta \ln GDP_t = 0.028 + 0.051 \Delta \ln MCAP_t - 0.650 \hat{u}_{t-1}$$

$R^2 = 0.6263$	Adjusted R-squared = 0.5889	$d = 1.598666$
F-statistic = 16.7622	Prob.(F-statistic) = 0.000053	

Note: All coefficients are significant at 5%.

Source: Author's Estimation using Eviews 7

The result of the Error Correction Model estimation above revealed that the coefficient of market capitalisation (MCAP) is significant at 5% level. A 1 percentage increase in the market capitalization raises economic growth by 0.051 percentages. The coefficient of error correction term was rightly signed (i.e. negative) with the economy recovery rate of 65 percent and significant at 5% level. The Adjusted R-squared indicated that 59 percent variation in Bangladesh's economic growth is explained by the explanatory variable. In this model value of R^2 is 0.6263 which is less than the Durbin-Watson statistic ($d=1.598666$) indicating the model is significant. Again the probability of F-statistic is 0.000053 which is less than 5% meaning that the model is significant globally.

5.4. Granger Causality Tests Result

The Granger Causality tests whether MCAP causes GDP is to see how much of the current GDP can be explained by past values of MCAP and then to see whether adding lagged values of MCAP can improve the explanation. A variable granger causes another if the F-statistic is significant at p-value of 5 percent or less.

Table-5.4.1. Pairwise Granger Causality Tests (lag 1)

Null Hypothesis:	Obs.	F-Statistic	Prob.
lnMCAP does not Granger Cause lnGDP	23	7.55282	0.0124
lnGDP does not Granger Cause lnMCAP		1.68799	0.2086

Source: Author's Estimation using Eviews 7

Above table authenticates the evidence obtained from the Error Correction Model estimation technique. Following the result in table 5.4.1, the null hypothesis that MCAP does not Granger cause GDP is rejected. The result revealed that there is unidirectional causal relationship between Market Capitalization (MCAP) and Gross Domestic Product (GDP) and it runs from Market Capitalization (MCAP) to Gross Domestic Product (GDP).

6. Conclusion

Our study examined the short-run and long-run relationship as well as causality between stock market development and economic growth. The empirical results revealed that stock market development and economic growth is positively related both in short-run and in the long-run. The result of Granger Causality test confirms that there is unidirectional causal relationship between stock market development and economic growth and it runs from stock market development to economic growth. Stock market regulatory authority should therefore address policy issues that are capable of boosting the investors' confidence through improved policy formulation and creation of awareness. When confidence is restored the total value traded will increase significantly thus raising stock market capitalisation which ultimately will increase the economic growth.

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