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# Macroeconomic and Institutional Determinants of Capital Market Performance in Bangladesh: A Case of Dhaka Stock Exchange

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## Abstract

Capital market has been playing a vital role by managing fund and capital of corporation through its operations. There are many factors within capital market and outside of it, which are influencing the performance and development for functioning properly a business domain. It helps the corporations to source their capital and perform based on their business operation. In this way, capital market performance highly related to the macroeconomic factors along with its internal factors. This paper examines the institutional and macroeconomic determinants of stock market performance using data in the last 20 years starting from 1995 to 2015. In this paper, Gross Domestic Product (GDP), Consumer Price Index (CPI), inflation rate and Foreign Direct Investment (FDI) inflows were used as the proxy of macroeconomic determinants, whereas market capitalization, total issued capital and market turnover of Dhaka Stock Exchange were the proxy of institutional determinants of capital market performance. To identify the determinants and their significance in capital market development, both descriptive and inferential statistics are used. Descriptive statistics shows the trends and characteristics of the variables, while inferential statistics reveals the strengths of independent variable to influence the dependent variable. In the findings, both institutional and macroeconomic variable significantly influence the capital market performance. Categorically, CPI and GDP as macroeconomic determinants and Total Market Capitalization as institutional determinant found significant based on their coefficient value in the ordinary least square multiple regression analysis. These findings may become a useful input to design policies and strategies for stabilizing and stimulating the capital market in Bangladesh, especially, Dhaka Stock Exchange (DSE).

## Key words

Capital markets, Dhaka Stock Exchange, market performance, macroeconomic variables

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## 1. Introduction

Capital market, a key element of any economy for an emerging economy in the world. Capital market can be defined as a market where both lender and borrower of fund meet together for fulfilling their purposes related to business capital formation and strengthening business operation also. Capital market is mostly known as equity market, and it is a crucial part of an economy to provide access to capital and ownership of a company for investors (Osoro 2013). The investors can realize gains based on future performance of companies by investing in the secondary market. The gain or return can be influence by various factors which are responsible for the movement of share prices. These factors can be categorized into two types, namely, internal and external factors. Internal factors are related to a firm, such as earnings per share, dividend, book value, net income etc. external factors are more related to economy and industry, such as Gross Domestic product (GDP), Interest rate, Inflation etc.

## 2. Literature review

There are a number of studies, where it was proved that a stock market plays significant role for developing an economy (Hearn and Piesse, 2010; Adjasi and Biekpe, 2006; Levine and Zervos, 1998). To find out the determinants of capital market in Malaysia, it is found that Malaysian stock market index is significantly influenced by interest rate, exchange rate and price of palm oil in the long run and in the short

run also (Shahain, 2014). Apiyeva (2007) studied ten emerging economies for identifying the major determinants of stock market performance, he founds that investor's country rating and financial risk premiums determine the performance significant compare to other factors including, interest rate, inflation, foreign exchange rate etc. Maku and Atanda (2010) found that the Nigeria Stock Exchange is significantly influenced by economic variables, namely, inflation rate, amount of money supply in the economy, and the real output. They also added that the variables found to have crucial impact on the stimulation of capital market performance in the long-run.

Estonia and Hungary	Stock market index positively related with debt/GDP ratio and GDP	Hsing, 2011
Germany	Stock market index has negative relationship with interest rate, exchange rate and inflation rate	Hsing, 2015
Namibia	Positive relationship between stock market price and money supply	Eita, 2012
Jordon	Stock market has positive relationship with money supply, gross capital formation, inflation, while income and net remittance have negative relationship.	El-Nadar and Alraimony, 2013
Malaysia	Stock index has co-integrating relationship with interest rate, exchange rate, money supply etc.	Rehman <i>et al.</i> , 2009
India	Stock index has positive relationship with money supply but negative relationship with inflation. Gold price, industrial output, exchange rate also found influential for the variability of stock market index	Jauhari and Yadav, 2014; Naik and Padhi, 2012
Pakistan	Long run relationship found between stock market index and macroeconomic variables such as exchange rate, interest rate, industrial index and GDP growth.	Rashid, 2008
Nigeria	Foreign Direct Investment (FDI) impact on market capitalization, as an indicator of capital market performance, was found positive and significant.	Olugbenga and Grace, 2015

In the capital market of Nepal, it was found that the performance of stock market respond positively to changes in inflation rate and broad money growth, though influenced negatively by the interest rate (Shrestha and Subedi, 2015). Apart from the internal characteristics of a capital market, economic conditions can have strong influence on the development of the capital market through accelerating the performance of stock exchanges. There are a number of economic variables found very influential for determining the capital market performance, such as real economic activity (Eita, 2012; Rashid, 2008; Rehman *et al.*, 2009), debt/GDP ratio (Hsing, 2014), foreign reserves (Rehman *et al.*, 2009), capital formation and gold price (Jauhari and Yadav 2014), federal fund (Yusof and Majid, 2007), net remittance (El-Nadar and Alraimony, 2013) etc.

### 3. Objective of the study

In the introductory section, the necessity of the study has discussed and in the previous section, numerous literatures give the basic idea of determination factors of capital market performance. To shed more lights on the capital market researcher, the objective of the study is settled to find out the determinants of capital market performance in Bangladesh based on some economic and DSE based development indicators.

### 4. Methodology of research

This study has used two models for analyzing the data collected from different sources. Apart from the research models, there are some specific characteristics of the study including the time frame and data analysis methods are discussed in the following sections:

*Research model:* It is assumed that there is a relationship between internal factors and the capital market development. And the capital market development can be influenced by the external factors as well. Here the model of relationship is twofold.

*Model: 1*

DSE General Index = f (Total Market Capitalization, Market Turnover, Total issued capital)

Then the regression equation will be:

$$\text{DSE General Index} = \beta_0 + \beta_1 \times \text{Total Market Capitalization} + \beta_2 \times \text{Market Turnover} + \beta_3 \times \text{Total issued capital} + \mu_t \quad (1)$$

*Model: 2*

As reviewed in the literature review section, there are some common economic indicators which were found repeatedly used to analyze the macroeconomic determinants of capital market performance. Among these indicators, four were selected as an independent variable while DSE general index was the dependent variable and the representative of capital market performance in Bangladesh.

DSE General Index = f (GDP at Current Market Prices, Inflation, CPI General, FDI inflows)

Then the regression equation will be:

$$\text{DSE General Index} = \beta_0 + \beta_1 \times \text{GDP} + \beta_2 \times \text{Inflation} + \beta_3 \times \text{CPI General} + \beta_4 \times \text{FDI inflows} + \mu_t \quad (2)$$

In the two models,  $\beta_0$  denotes the constant;  $\beta_i$  denotes the parameters to be identified and  $\mu_t$  is the error term.

*Sample size:* The test the two models, showed earlier, eight types of data are collected from different sources, including both primary and secondary sources. 19 years of data were used in this study where the time range was 1996 to 2015. The data of internal factors were collected from DSE library and the data of external factors were collected from Bangladesh Bank statistics department.

*Data analysis methods:* Both descriptive and inferential statistics were used to find out the determinants of capital market development. In descriptive analysis, mean, variance etc were used, while regression analysis was used for inferential statistical result. SPSS version 16 was used for analyzing the data.

## 5. Empirical findings and analysis

The analysis of the collected data has divided into three consecutive phases. Firstly the data are analyzed using descriptive statistics, where a measure of central tendency is used. In the second phase, the internal determinants of capital market performance is discussed and analyzed using Ordinary Least Square (OLS) multiple regression analysis. In the final phase, the external determinants were analyzed and interpreted using OLS regression analysis.

*Table 1.* Glimpse of the internal and external determinants of Dhaka Stock Exchange performance

End of Period	General Index	Turn Over (Tk. In crore)	Total Market Capitalization	Total Issued Capital (Tk. In crore)	FDI inflows in Bangladesh	CPI General	inflation (12 month avg)	GDP at current market prices
1996-97	1111.55	3541.35	10576.34	2479.26	366.85	103.96	3.96	180701
1997-98	676.48	1261.69	5784.28	2666.94	603.30	112.96	8.66	200177
1998-99	546.79	5189.38	4968.40	2731.49	394.10	120.94	7.06	219697
1999-00	561.00	2485.91	5625.79	2947.70	383.22	124.31	2.79	237086
2000-01	716.06	4909.00	7136.50	3134.00	563.92	126.72	1.94	253546
2001-02	792.56	3493.60	6466.80	3426.10	393.76	130.26	2.79	273201
2002-03	830.46	3060.00	7216.30	3553.70	379.18	135.97	4.38	300580
2003-04	1318.92	2477.00	14185.10	4871.80	284.16	143.90	5.83	332973
2004-05	1713.17	7526.00	21217.57	5266.52	803.78	153.24	6.48	370707
2005-06	1339.52	4599.36	20350.20	6455.00	744.61	164.21	7.16	415728
2006-07	2149.32	16467.09	41154.70	8358.60	792.74	176.04	7.20	472477

End of Period	General Index	Turn Over (Tk. In crore)	Total Market Capitalization	Total Issued Capital (Tk. In crore)	FDI inflows in Bangladesh	CPI General	inflation (12 month avg)	GDP at current market prices
2007-08	3000.50	54323.95	78882.20	10883.60	768.69	193.54	9.94	545822
2008-09	3010.26	89378.94	100143.30	14704.00	960.59	206.43	6.66	614795
2009-10	6153.68	256353.55	227640.80	21744.60	913.02	221.53	7.31	694324
2010-11	6117.23	325879.77	232701.60	30104.50	779.04	241.02	8.80	796704
2011-12	4572.88	117145.07	193244.08	38410.90	1194.88	266.61	10.62	918141
2012-13	4385.77	85716.56	197743.01	43407.30	1730.63	287.14	7.70	1198923
2013-14	4480.52	112539.86	238626.30	48255.50	1438.49	195.08	7.35	1343674
2014-15	4583.11	112351.91	270187.56	54300.80	1508.56	207.58	6.40	1513600
<b>Mean</b>	<b>2529.46</b>	<b>63615.78</b>	<b>88623.73</b>	<b>16194.85</b>	<b>789.65</b>	<b>174.28</b>	<b>6.48</b>	<b>572781.89</b>
<b>Standard Deviation</b>	<b>1947.07</b>	<b>92125.67</b>	<b>100688.58</b>	<b>17628.79</b>	<b>421.73</b>	<b>53.78</b>	<b>2.39</b>	<b>407355.33</b>

**Source:** Dhaka Stock Exchange, 2016 and Bangladesh Bank Statistics Department, 2016

### 5.1. Institutional determinants of capital market performance

As stated earlier, the internal determinants are the firm specific factors which may include various things related to a firm and influential to firm. In this study, the regression model developed for analyzing internal determinants of capital market performance has DSE general index as dependent variable and there were three independent variables, namely total market capitalization, Market Turnover, Total Issued Capital. The result of the analysis is shown in the following table.

*Table 2. Regression results of institutional determinants of capital market performance*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.983 <sup>a</sup>	.966	.960	390.97461

a. Predictors: (Constant), Total Market Capitalization, Market Turn Over, Total Issued Capital

Based on the regression analysis to find out the determination factors for capital market development, the result shows very strong relationship between General index of Dhaka Stock Exchange and three independent variables, namely, Total Market Capitalization, Market Turn Over, Total Issued Capital. In the model, General Index explains 98.30 percent variation in the independent variables.

*Table 3. Coefficient values of the variable in the internal determinants of capital market performance*

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	987.304	127.791			7.726	.000
Market Turn Over	.003	.004	.139		.771	.453
Total Issued Capital	-.052	.032	-.470		-1.600	.130
Total Market Capitalization	.025	.008	1.282		3.080	.008

a. Dependent Variable: General Index

Total market capitalization has the most significant influence on the capital market development in Bangladesh (Table 2). It is surprising that the total issued capital showing negative influence on the development of the market. It may result from the insignificant variance of issued capital over the last few years in the market.

### 5.2. Economic determinants of capital market performance

As stated earlier, the internal determinants are the firm specific factors which may include various things related to a firm and influential to firm. In this study, the regression model developed for analyzing internal determinants of capital market performance has DSE general index as dependent variable and

there were three independent variables, namely total market capitalization, Market Turnover, Total Issued Capital. The result of the analysis is shown in the following table.

Table 4. Regression results of External determinants of capital market performance

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
2	.920 <sup>a</sup>	.846	.802	865.52817

a. Predictors: (Constant), GDP at current market prices, inflation, CPI General, FDI inflows

Based on the regression analysis to find out the determination factors for capital market development, the result shows very strong relationship between General index of Dhaka Stock Exchange and three independent variables, namely, Total Market Capitalization, Market Turn Over, Total Issued Capital. In the model, General Index explains 98.30 percent variation in the independent variables.

Table 5. Coefficient values of the variable in the external determinants of capital market performance

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-2367.741	794.789		-2.979	.010
FDI inflows	-2.732	1.396	-.592	-1.957	.071
CPI General	25.852	7.537	.714	3.430	.004
inflation	78.585	112.163	.096	.701	.495
GDP at current market prices	.004	.001	.745	2.628	.020

a. Dependent Variable: General Index

Here, the FDI inflows showing negative coefficient value (table 4). It results from the absence of foreign companies in the capital market of Bangladesh. The other variable of economic determinants, inflation shows the highest contribution in the capital market performance.

## 6. Conclusions

Bangladesh is the emerging country in Asia. GDP growth is increasing over the years even world financial crisis in 2008. That leads to increase in consumer price index (CPI) and GDP have most significant contribution to the development of the capital market in Bangladesh. As shown in the research findings, both institutional and macroeconomic variable significantly influence the capital market performance. Categorically, CPI and GDP as macroeconomic determinant, and Total Market Capitalization as institutional determinants found significant based on their coefficient value. To maintain the sustainable development, the policy makers should need to focus on policy implementation and attaining the confidence of the investors. People in the world live in risk and dangers but they do not want to choose to live a life governed by fear. Macroeconomic determinants along with institutional determinants, will give a clear picture of the capital market, so that investors can take a better investment decision.

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