Abstract: Stock market influences economic activity through the creation of liquidity of capital investment. Liquid stock markets make investment less risky and more investment. Stock market in Bangladesh is characterized by frequent changes in regulations, low market sizes-market capital & turnover, lowest number of financial products, low contribution to national exchequer, influx of large number investors without relevant knowledge, and expertise. Besides, Bangladesh stock market experienced different problems-regulatory failure, unethical and ill objective oriented behavior of market participants, lack of due diligence, and manipulation. So, market cannot perform well. In view of this, the present study has been undertaken aiming at identifying determinants of stock market in Bangladesh. The study has collected data from the secondary sources and analyzed the data collected by applying some descriptive measures, and linear regression model. The study has found that the stock market of the country is characterized by different features such as low size, low liquidity, low depth, acute fund crisis and so on. The study has also found from linear regression analysis that all macro-economic variables such as CPI, Interest Rate, IR, and ER have significant impact on the stock market performance. Finally, the paper concludes with some pragmatic policy measures such as sound macro-economic policy for monitoring interest rate and exchange rate movement.

Keywords: Stock Market, Liquidity, Performance, Macro-economy, and investment
1. **Introduction**

The primary function of any stock market is to play the role of supporting the growth of industry and economy of a country (Aurangzeb, 2012). Stock markets may affect economic activity through the creation of liquidity. It contributes to economic development by enhancing the liquidity of capital investments. Many profitable investments require a long-term commitment of capital, but investors are often reluctant to relinquish control of their savings for long periods (Adenuga, 2010). Liquid stock markets make investment less risky and more attractive. This is because, they allow savers to acquire an asset-equity, and to liquidate it at reasonable price if they need access to their savings or want to alter their portfolios. At the same time, companies enjoy permanent access to capital raised through equity issues. The Bangladesh capital market needs to play the role of an enabler for the transformation of the Bangladesh economy, by becoming the first port of call for domestic savings and for international investors.

Until recently, the literature has focused mainly on the role of financial intermediation in the process of economic growth and capital accumulation. Indeed, many studies have analyzed the channels through which banks and other financial intermediaries may help to increase, for example, the saving rate or the average productivity of capital and, in turn, growth. However, a new wave of interest on the role played by stock market development in the process of economic growth has occupied economists’ investigative activity (Yartey and Adjasi, 2007). Since the seminal contributions by Goldsmith (1969) and McKinnon (1973), economists have devoted considerable attention to the study of the role played by financial intermediation in the process of real resource allocation and capital accumulation. Only very recently have economists specifically focused their attention on the role of stock markets in the process of economic development. Demirgüç-Kunt, and Levine (1996), Singh (1997) and Levine and Zervos (1998) find that stock market growth plays an important role in predicating future economic growth in situations where the stock markets are active. The arguments of Demirgüç-Kunt, and Levine (1996) indicate that economies without well-functioning stock markets may suffer from three types of imperfections: First, opportunities for risk diversification are limited for investors and entrepreneurs, Second, firms are unable to optimally structure their financing packages and Third, countries without well functioning markets lack information about the prospects of firms whose shares are traded, thereby restricting the promotion of investment and its' efficiency.

Interestingly, these recent studies have not only revealed novel theoretical and empirical aspects of the channels of interaction between real and
financial variables, they have also been able to shed light on individual firms' optimal financial choice in connection with economic development. Recent studies (Pal and Mittal, 2011; Agye-Tetty and Kyereboah-Coleman, 2008; Chen, Richard, and Stephen, 1986; Humpe and Macmillan, 2007) suggest that, over the past two decades, stock market liquidity has been a catalyst for long-run growth in developing countries. Without a liquid stock market, many profitable long-term investments would not be undertaken because savers would be reluctant to tie up their investments for long periods of time. In contrast, a liquid equity market allows savers to sell their shares easily, thereby permitting firms to raise equity capital on favorable terms. The empirical evidence, however, strongly supports the belief that greater stock market liquidity boosts—or at least precedes—economic growth. Recognizing the importance of stock market on economic growth, prudential authorities such as World Bank, IMF and ADB undertook stock market development programs for emerging markets in developing countries during 80s and 90s and the emerging stock markets have experienced considerable development since the early 1990s (Yartey and Adjasi, 2007).

Bangladesh stock market experienced a paradigm shifts since 1997 with respect to changes in regulation, technology, size of market and market participants, products (Uddin, Rahman, and Hossain, 2013). This market also experienced unprecedented collapse in 1996 and 2011. This caused serious and significant damages to the interest of stock market investors and listed firms. Khalid Committee (2011) identified many causes for stock market scam such as poor stock market performance and stock market development in Bangladesh, regulatory failure, irresponsible behavior, lack of due diligence, market manipulation, and unethical activities. The stock market of Bangladesh is characterized by frequent changes in regulations, low market sizes, market capital and turnover, lowest number of financial products, low contribution to national exchequer, influx of large number investors without relevant knowledge and expertise. Under this situation, the present study has been undertaken aiming at identifying the determinants of stock market performance of Bangladesh.

2. Objectives and Hypotheses
The principal objective of the study is to identify the determinants of stock market performance in Bangladesh. To accomplish this objective, following specific objectives have been covered:

a) To analyze the macro-economic related characteristics of stock market and economic development of Bangladesh.
b) To find out the relationship between these key macro-economic factors and the performance of stock markets.
c) To suggest some important and pragmatic policy measures for policy makers and investors.

In order to achieve these objectives set for the above, the following hypotheses have been tested.

\[ H_0: \text{There is no significant impact of macro-economic variables on the stock market performance.} \]
\[ H_1: \text{There is a significant impact of macro-economic variables on the stock market performance.} \]

3. Methodology
The study has been an empirical one, and the inferences of the study are applicable only in Bangladesh. It study was based only on secondary data which has covered stock market and macro-economic variables for seven years ranging from 2006 to 2012. The data mostly derived from Dhaka Stock Exchange, the market leader.

3.1. Collection of Secondary Data
Researchers have studied different published literatures relating to present study at home and outside. The review of literatures has enabled us to identify different variables relating to stock market performance and development. Accordingly, the study has collected secondary data required from different sources such as BBS, publications of both DSE & CSE, Bangladesh Economic Survey, related websites, etc.

3.2. Analysis of Data
The Study has used linear Regression Model for examining the impact of different macro-economic variables on stock market performance. It is specified that stock market performance is a function of interest rate (IR), inflation rate (CPI), exchange rate (ER), and foreign direct investment (FDI). So, stock market performance function is a linear regression form with stochastic error term (\(U_i\)) as follows:

\[ SMI = \alpha + \beta_1 IR + \beta_2 CPI + \beta_3 ER + \beta_4 FDIR + U_i \]
Where,
- SMI represents stock market index.
- $\alpha$ is the unobserved country specific
- $B_1, \ldots, B_4$ measure the sensitivity of different macro-economic variables on stock market performances.

This research is based on the following hypotheses that clearly define the research criterion.

$H_0$: Interest rate has no significant impact on Stock Market Performance.
$H_1$: Inflation has no significant impact on Stock Market Performance.
$H_2$: Exchange Rate has no significant impact on Stock Market Performance.
$H_3$: Foreign Direct Investment to GDP Ratio has no significant impact on Stock Market performance.

4. Findings and Data Analyses
The present study has examined three aspects of stock market in this section of findings and data analysis. They are analysis of stock market growth and development related characteristics, impact of macro-economic variables on the stock market performance, and determinants of stock market development in Bangladesh. These have been discussed in the following subsections;

4.1. Analysis of Characteristics of Stock Market and Economic Development in Bangladesh
The economy of Bangladesh is now being propelled by both private and public sectors. The country is experiencing a paradigm shift in the development of private sector and its significantly increased contribution to the economy over the passage of time. This shift has resulted in developing stock market with respect to size, depth, market participants, products, technological use, and dissemination of information. The stock market is experiencing influx of both investment and investors from home and abroad.
Table 1: Characteristic of stock market development in Bangladesh

<table>
<thead>
<tr>
<th>Year</th>
<th>No of listed securities</th>
<th>Market Index</th>
<th>Market capital (in mil)</th>
<th>Market turnover (in mil)</th>
<th>Market capitalization ratio</th>
<th>Stock market turnover ratio</th>
<th>Investment to GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>310</td>
<td>1609.51</td>
<td>315,440</td>
<td>65,079</td>
<td>7.59</td>
<td>21</td>
<td>25.08</td>
</tr>
<tr>
<td>2007</td>
<td>350</td>
<td>2017.20</td>
<td>742,196</td>
<td>322,867</td>
<td>15.71</td>
<td>44</td>
<td>24.46</td>
</tr>
<tr>
<td>2008</td>
<td>412</td>
<td>2795.40</td>
<td>1,043,799</td>
<td>667,965</td>
<td>19.12</td>
<td>64</td>
<td>24.21</td>
</tr>
<tr>
<td>2009</td>
<td>415</td>
<td>4533.53</td>
<td>1,903,228</td>
<td>1,475,301</td>
<td>30.93</td>
<td>78</td>
<td>24.37</td>
</tr>
<tr>
<td>2010</td>
<td>445</td>
<td>3290.41</td>
<td>3,508,005</td>
<td>4,009,931</td>
<td>50.67</td>
<td>114</td>
<td>24.96</td>
</tr>
<tr>
<td>2011</td>
<td>501</td>
<td>5258.00</td>
<td>2,216,350</td>
<td>3,259,140</td>
<td>27.84</td>
<td>147</td>
<td>25.15</td>
</tr>
<tr>
<td>2012</td>
<td>515</td>
<td>4219.00</td>
<td>2,904,998</td>
<td>1,171,451</td>
<td>31.64</td>
<td>40</td>
<td>26.64</td>
</tr>
<tr>
<td>Mean</td>
<td>421</td>
<td>4246.44</td>
<td>1,805,145</td>
<td>1,567,990</td>
<td>26.22</td>
<td>72.57</td>
<td>24.97</td>
</tr>
<tr>
<td>Minimum</td>
<td>515</td>
<td>3290.41</td>
<td>3,508,005</td>
<td>400,9931</td>
<td>50.67</td>
<td>147.00</td>
<td>26.24</td>
</tr>
<tr>
<td>Minimum</td>
<td>301</td>
<td>1609.51</td>
<td>315,440</td>
<td>65079</td>
<td>7.59</td>
<td>21.00</td>
<td>24.21</td>
</tr>
</tbody>
</table>

Note: Data have been compiled by the researchers
Source: Monthly Review, DSE, (2005-2013), and Web sites

4.1.1. Growth of Stock Market in Bangladesh

Bangladesh stock market has been found growing with respect to all growth parameters. It has been found from Table-1 that the constant growth rates of number of listed securities, market index, market capital, market turnover, market capitalization, market turnover ratio, and domestic investment ratio are 8.80%, 17.42%, 44.78%, 61.90%, 26.92%, 11.34%, and 1.01% respectively. The noticeable result is that the growth rates in number of listed securities and domestic investment ratios are the lowest. This implies that the stock market is still at infant stage and is expected to grow at substantial rate in the future.

4.1.2. Market Liquidity

Market liquidity is the ease and speed with which economic agents can buy and sell securities. More liquid markets could ease investment in long term, potentially more profitable projects, thereby improving the allocation of capital and enhancing prospects for long term growth (Beck and Levine, 2004). It is observed from Table 1 that the coefficient of variation in market turnover is 96.08%, indicating higher volatility in stock turnover. On the other hand, the growth in stock turnover ratio is 11.34 with 61.36% variation in stock turnover ratio across study periods. This implies that Bangladesh stock market has liquidity with higher rate of variation in turnover. So, investors in stock market have to assume high liquidity risk. This really reflects the true market liquidity scenario of Bangladesh stock market.

4.1.3. Market Size

The study has measured stock market size by employing number of listed securities and market capitalization ratio. It has been observed that the stock
market has been experiencing a positive growth in both the parameters-number of listed securities and market capitalization with coefficient of variation of 17.81% and 53.05% respectively. The table-1 also shows that number of listed securities has increased to 515 in 2012 with 8.80% growth; and market capitalization ratio has increased to 50.67 in 2010 from 7.59% in 2006 with average growth rate of 26.92%. These rates appear to be lowest as compared to Malaysia 9156.90%, and India (68.60%) (www.worldbank.org). This data indicate that the stock market of the country has growth opportunities.

4.1.4 Market Depth
Market depth refers to liquidity or the ability to buy and sell shares. The study has measured the activity of the stock market using total value traded as a share of GDP, which gives the value of stock transactions relative to the size of the economy. It is evident from the examination of Table-1 that the market value of shares to GDP has increased to 57.92% in 2010 from 1.57% in 2006 with a 20.33% rate of deviation across the periods under study. The coefficient of variation in market value of shares to GDP is 91.67%. All these indicate that the investors experienced illiquid market environment on and off during trading days of the periods under study. This situation can be attributed to the poor confidence level of investors in the stock market.

4.1.5. Market Variability
Stock market variability brings about both positive and negative changes in the expectations of market participants. The paper has measured stock market variability by employing market index. The stock market index has increased to 8290.41 in 2010 from 1609.51 in 2006 with an average growth rate of 17.42%. The stock market has also experienced variation at a rate of 50.90% across periods under study. The market performance across investment periods has been found most volatile. This result is substantiated by market liquidity and market depth.

4.1.6. Funding Environment
The stock market can be said to be a source of low cost equity financing with least liquidity and financial risk. This market performs very important function of transferring funds from surplus sectors to deficit sectors through issue of equity securities. This paper has assessed stock market funding environment by employing capitalization ratio and domestic investing ratio. From the perusal of Table 1, it has been found that the minimum domestic investment to GDP is 24.2% and the maximum domestic investment to GDP ratio is 26.54% during
study period. The market capital to GDP ratio has been found minimum 7.59% and maximum 50.67% with a 13.91% variation on an average. The increased ratio of market capitalization can be attributed to abnormal market price of share; and decreased ratio of domestic investment to GDP indicates the poor credit and funds flow to different economic sectors during the periods under study. This poor funding situation has far reaching impact on the stock market funding environment.

4.2. Relationship between Macro-economic Variables and Stock Market Performance

The study has examined the impact of macro-economic variables/factors on the stock market performance by employing linear regression model. The result of the model has been shown in Table 2 as follows:

Table 2: Linear Regression Result - Stock Market Index as Dependent Variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficients</th>
<th>t value</th>
<th>Level of Significance</th>
<th>Expected Impact on Stock Market Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-2529.683</td>
<td>-0.486</td>
<td>0.675</td>
<td></td>
</tr>
<tr>
<td>CPI</td>
<td>-864.063</td>
<td>-3.692</td>
<td>0.066</td>
<td>-ve</td>
</tr>
<tr>
<td>ER</td>
<td>466.328</td>
<td>3.773</td>
<td>0.064</td>
<td>+ve</td>
</tr>
<tr>
<td>IR</td>
<td>-1072.327</td>
<td>-2.987</td>
<td>0.096</td>
<td>+ve</td>
</tr>
<tr>
<td>FDI/GDP</td>
<td>-3.088</td>
<td>-0.166</td>
<td>0.015</td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td>0.978</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.933</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D-W Statistics</td>
<td></td>
<td>2.295</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Value</td>
<td>21.976</td>
<td>0.044</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Data have been compiled by researchers

The output of linear regression model shows that adjusted R square is 0.933. This implies that the variables considered as independent variables has accounted for 93.30% variation in dependent variable - Stock Market Index. This indicates that the regression model used to examine the impact of macro-economic variables on the stock market performance is fit. Besides, the study has used LM test to calculate the value of Durbin Watson which suggests the value of (2.295) as the DW value. This means there is no auto correlation exists in this model and this model is good for analysis. From the perusal of Table 2, it has been observed that the critical value of F (21.976) is significant at 5% significance level. This implies that all dependent variables such as CPI, ER, IR, and FDI/GD taken have different degrees of impact on the stock market performance. In other words, at least one of the regression coefficients is not zero. So, the null hypothesis “There exists no significant impact of dependent variables on the independent variables - stock market index” is rejected. This has enabled us to draw inference that the dependent macro-economic variables have
significant impact on the stock market performance. The study has taken hypothesis for individual test as follows:

\[ H_0: \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 = 0 \]
\[ H_a: \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 \neq 0 \]

4.2.1. Interest Rate (IR)

It is known fact that interest rates have the significant negative impact on stock market. This is because interest rate is the alternative source of investment. The above results strengthen the theory by showing the negative coefficient which means that every time interest rate increase by 1 percent the stock market will decrease by 1072.327 percent. So whenever the interest rates in the economy increases the negative trend in the stock market will be observed because interest rates gives the opportunity to the investors to move their investment from stock market to bank deposits and gain the maximized returns. As interest rates which offered on deposit decreases investors find it more worthwhile to invest their money into other avenues such as the stock exchanges and real estate.

The Table-2 also shows that the critical value of t in the case of interest rate is found significant at 10 per cent level. This means that beta coefficient in the case of interest rate is not zero. This indicates that interest rate has a significant and negative association with the stock market index. So, the null hypothesis “beta coefficient of interest rate is zero” is rejected at 10 significance level; but is accepted at 5% significance level. This derives an inference that interest rate has significant and negative association with stock market performance. The finding is in line with the prevailing wisdom.

4.2.2 Inflation Rate (CPI)

This variable is expected to have significant and negative association with the stock market index. This is because, higher inflation reduces the real income of investors, so is the purchasing power. This discourages investors to invest in interest bearing securities of both money and bond market. Rather, investors get attracted to invest in the stock market. From the perusal of Table-2, it has been observed that the beta coefficient of CPI is -864.063 which is expected. Besides, the critical value of t in the case of inflation rate is found significant at 10% significance level; but insignificant at 5% significance level. The reason for significant association is that both FDI and Local Investment play very significant role in the stock market. So, inflation influences both types of investment significantly and negatively. Therefore, the result has led us to draw
an inference that interest rate has significant impact on the stock market performance. That is, beta coefficient of inflation rate is not zero at 10% level; but is zero at 5% level of significance.

4.2.3. Exchange Rate (ER)
Exchange rate has both positive and negative impact on the stock price depending on investment point of time. Foreign investors like to invest in the country whose currency is weak during investment; and is expected to be strong during harvesting period (Malhotra and Tandon, 2013; Sen and Ray, 2003). Besides, higher exchange rate benefits exporters and causes a loss for the importer. The result shown in the Table-2 indicates that the exchange rate has positive and significant impact on the stock price. That the prevailing exchange rate environment in the country encourages investors investing in the stock market more and more. The critical value of t in the case of ER is significant at 10% level of significance; but insignificant at 5% level of significance. This has led us to draw an inference that beta coefficient of ER is not zero at 5% level of significance. So, the null hypothesis is rejected at 10% level of significance. Therefore, ER has significant and positive impact on the stock prices.

4.2.4. Foreign Direct Investment Ratio (FDI/GDP)
This variable is expected to have a significant and positive impact on the stock prices. This is because, FDI plays pivotal role in emerging economies like Bangladesh. Besides, foreign investors are willing to invest in the stock market of developing countries if economy grows at an expected rate and economic conditions are good (Malhotra and Tandon, 2013; Sen and Ray, 2003). FDI also gives the confidence to the local industries by investing their money into their stocks. From the perusal of Table-2, it has been found that the beta coefficient of FDI/GDP is -3.088. This result is not in line with the expectation. This result implies that stock prices will decline by 3.088% with the 1 percent increase in FDI/GDP. This negative association can be attributed to the unexpected political economy of the country. It is also found that the critical value of t in the case of FDI/GDP is found significant at 5 percent level. This indicates that this variable has significant and negative impact on the stock prices. This has led researcher to reject the null hypothesis i.e. the beta coefficient of FDI.GDP is not zero.

5. Findings
The present study has tried to accomplish the principal objective of the study—identification of determinants of stock market performance. For this, the study has collected secondary data from relevant sources for seven years and used
both descriptive and linear regression for analysis of the data. The study has found the findings from analysis of data as follows:

a) The stock market of Bangladesh is characterized by the followings:
   1. The stock market is facing liquidity crisis. This is causing a serious damage to the stock market performance.
   2. The market size of Bangladesh stock market is low as compared to stock markets in India and Malaysia. This indicates huge growth potential of Bangladesh Stock Market.
   3. The Bangladesh Stock Market is affected by the poor domestic investment performance.
   4. The volatile stock market can be attributed to the lack of investor’s confidence in stock market machineries.

b) The stock market performance is influenced by macro-economic variables such as inflation rate, interest rate, exchange rate, and FDI ratio. The study has rejected null hypotheses on global F test and individual t test bases. These results are substantiated by the result of descriptive statistical measures.

6. Policy Implication
   1. The government should promulgate both fiscal and monetary policies in order to manage political economy of the country.
   2. There should be an independent policy with different fiscal and non-fiscal incentives for FDI so as to boost level of investor’s confidence in the stock market.
   3. The market should be well-managed in order to protect investors and other market participants from the exposition to liquidity risk and other operational risk.
   4. The government should maintain an indirect controlling mechanism for monitoring interest rate movement as well as exchange rate most perfectly.

7. Conclusions
   Stock market works as buffer of economic development. So, a well organized and managed stock market is essential for the development of economy. Bangladesh stock market being an important integral part of economy can play its due role allocation of funds, transfer of funds from surplus sector to deficit sector, diversification of funds, attraction of more investors from home and abroad through promulgation of macro-economic policies if economy does perform well. In this case, suggested policy measures can be instrumentals for the development of economy of Bangladesh.
References


