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Impact of Monetary Policy on Performance of Dhaka Stock Exchange

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Abstract:
This paper investigates the effect of monetary variables on the performance of stock market of Bangladesh using yearly data over the period of year 2008 to 2019. The objective of the study is to consider the effectiveness and consequences of different monetary variables on stock market of Bangladesh. As a dependent variable DSEX index has been used as a proxy variable for stock market performance and three independent variables repo rate, inflation rate, money market rate has been used as proxy of monetary variables. An ordinary least square method shows that 1% increase in money market rate, repo rate, and inflation rate the index value is decreased by 3.30%,1.20% and increased by 1.90% respectively. So this is suggested that investor should consider the above variables to make strategic decisions about portfolio and investment management.

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Keywords: Monetary variables, DSEX, Stock market, Inflation, Repo rate.

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1. Introduction:

Stock market is a source of long-term capital in the developed economy but in a developing country like Bangladesh structured stock market performance is a far cry. Stock market performance is susceptible to different factors like investors sentiment, interest rates, economic outlook, inflation, economic and political shock, changes in economic policy, any relevant news regarding industry and so on. But in a developing country like Bangladesh, stock market has some other unquantifiable determinants like political risk, law and order, money laundering, and bureaucratic quality that can shape up the performance. It has always been a puzzle to the investor actually what factors are the main determinants of stock market performance, especially in the developing countries. In developed countries economies are far more stable so there are some certain factors that can shape the stock market performance, but in case of developing countries these determinants are yet to be decided with certainty. Among these variables monetary shock is one of the factors that can affect stock market performance. Several studies have concluded that money supply and interest rate have significant effects on the stock market in the short and the long run (Isaac Chii Nwaogwugwu, 2018).

Each year Bangladesh Bank declares monetary policy twice to address important issues of the economy. The target of the monetary policy is to meet up government growth target, and simultaneously ensure price and financial stability by setting up the guideline for money market of the country. According to recent monetary policy (January-June 2019) the DSE market capitalization remained around 20% of GDP at the end of December 2018. And BB expects that relatively high national savings can support capital market development with the company shifting their long-term financing away from the banking sector toward the capital market. On the basis of the monetary policy, investors adjust their portfolio which ultimately adjusts the stock market index. However, monetary policy influences stock market returns through five possible channels, namely (i) the credit channel (ii) the interest rate channel, (iii) the exchange rate channel, (iv) the wealth effect, and (v) the monetary channel (Isaac Chii Nwaogwugwu, 2018).

1.1 Rational of the study:

As already mentioned in the above introduction country like Bangladesh's stock market is being influenced by so many variables monetary policy is one of them. Among monetary variables interest rate is the leading variables which includes repo rate, SLR, CRR, Call Money Rates, and Inflation Rate etc. For example, the monetary variables that mentioned above if increases the cost of fund for the banks substantially will increase. But businesses are affected directly as well because they also borrow money from banks to run and expand their operations. When the banks make borrowing more expensive, companies may not borrow as much and will pay higher rates of interest on their loans. Less business spending can slow the growth of a company and it may curtail expansion plans or new ventures, or even induce cutbacks. There may be a decrease in earnings as well, which, for a public company, usually affects its stock price negatively. if a company is seen as cutting back on its growth through higher debt expenses the estimated amount of future cash flows will drop. All else being equal, this will lower the price of the company's stock as well as lower the investors expectation about the growth and future cash flows of the company.

If enough companies experience declines in their stock prices, the whole market, or the key indexes will fall. As in that case stock price will be not up to mark of the investors and equity investment will be less desirable. One could have argued that companies whose find debt

financing is costly can go for equity financing further. This plan is not feasible because we know equity financing is costlier and would be illogical without any conspicuous cause.

The purpose of the study is to empirically find out the impact of monetary policy variables like repo rate, money market rate, inflation rate on performance of Dhaka Stock Exchange. Our study focuses on the following three research questions (i) Does Repo Rate have any impact on Return of DSEX? (ii) Does Money Market Rate have any impact on Return of DSEX? and (iii) Does Inflation Rate have any impact on Return of DSEX?

2. Review of Literature

Ahmed et. al. (2007) contributed to this topic taking economic variables as independent variables and share price from Dhaka Stock Exchange as dependent variable using VAR model. The result indicates that there's a significant impact of economic variables on stock price in Bangladesh. To explore the impact of monetary policy on stock market Aziza (2010) took the initiative to figure out whether different countries' monetary policy affects their stock market. She incorporated data from 1998 to 2008 in the study. 10 countries have been used to represent 5 regions and employed vector error correction model (VECM) on these data. Finally, the result shows that the relationship between monetary policy and stock market varies from country to country. Saidjada et al. (2014) intended to investigate the impact of monetary policy on stock market by observing inflation, exchange rate and stock market of Bangladesh from 1999 to 2012. They didn't find any significant relationship between shift in monetary policy and stock market.

The impact of monetary policy on stock price has been observed by Mukit (2013) by taking data over the period of January 2006 to July 2012. To analyze the impact of monetary policy on stock price, he used four independent variables and one dependent variable for the analysis. He used DSE General (DGEN) index as a proxy for dependent variable, stock price. Rifat (2015) took initiative to discover the correlation between stances of monetary policy and stock return with the evidence from a third world country named Bangladesh. Using co-integration test in the long run and Vector Autoregressive model in the long run, she found that there's no significant correlation between monetary policy and stock return in Bangladesh as the stock market doesn't react to the new information immediately. Hossain et. al (2016) put an effort to explore the empirical relationship between monetary policy stances and stock market return in Bangladesh. They employed autoregressive distribution lag on data from January 2001 to December 2013 to investigate the correlation. Using 5 measures of economic variables- 91 days T-bill rate, call money rate, deposit rate, reserve money, broad money and DSE index for stock return measure, they concluded that monetary policy affects stock market. Alam & Uddin tested if there is any linearity between monetary policy and stock price. For this they collected the data from DSE and they found a negative correlation between changes in monetary policy and stock price. Fama & Schwert (1977) contributed to this topic through their analysis. Their motive was to find out whether there is any relationship between stock price and shifts in monetary policy. They found a negative relationship between inflation and stock price based on the data from 1951 to 1971. They also found that T bill and T-bond are the perfect hedge for inflation.

Mishkin (1997) had attempted to show the impact of monetary policy on variables other than the typical economic variables and he took stock price data to see how this reacts to the changes in monetary policy. So, the empirical data showed that there's a link between

monetary policy and stock valuation. Patelist (1997) tested if there's any observed predictability in stock return by the change of monetary policy. Following the same long horizon regression as Fama and French (1989) did, he alternatively used short horizon vector auto regression (VAR) by examining the long term behavior of expected stock return. Through this analysis he found that monetary policy has significant anticipation for the stock return. The association of monetary policy with stock return has been studied by Booth and Booth (1997). Two variables used to examine this relationship between monetary policy and return of stock and bond include the federal fund rate and discount rate. They came up with the conclusion that restrictive monetary policy has negative effect on stock portfolio return in some cases and expansive monetary policy has positive influence on stock portfolio return.
Bissoon et. al. (2016) examined the relationship between monetary policy and stock market based on 5 countries' data from 2004 to 2014. To evaluate the short term and long term relationship, they used random effect model, panel vector error correlation model etc. and found that monetary policy stances explain the stock market in the short term as well as long term.

Research Gap:

SL	Authors	Variable Used	Gap
1	Saidjada et al. (2013)	They have used M2, Reserve money, T-Bill Rate, CPI, Nominal exchange rate of TK against USD as independent variables and DGEN return as dependent variables.	I have used Repo Rate, Money Market Rate, Inflation Rate independent variables, and DSEX as dependent variables.
2	MOHAMMADPOUR et al. (2012)	They have used M1,M2, M3 as independent variables and return of Kuala Lumpur Composite Index as dependent variables.	I have used Repo Rate, Money Market Rate, Inflation Rate independent variables, and DSEX as dependent variables.
3	Kumari et al. (2019 January)	They have used CRR, Reverse Repo Rate as independent variables and return of National Stock Exchange index NIFTY 50 (India) as independent variables.	I have used Repo Rate, Money Market Rate, Inflation Rate independent variables, and DSEX as dependent variables.
4	Aliyu et al. (2011)	They have used M1, M2, and MPR as independent variables and return of Nigerian Stock Exchange as dependent variables.	I have used Repo Rate, Money Market Rate, Inflation Rate independent variables, and DSEX as dependent variables.

3. Methodology:

To understand the role of a stock exchange, Alam and Uddin (2009) took monthly data from 1988 to 2003 for fifteen developed and developing countries including Bangladesh, and found that interest rate had significant negative relationship with stock market. That is, if interest rate could be controlled, it could be used as a medium to increase the participation in the stock market and could push more investable fund to the companies for further expansion. In our paper we have used last 12 years' yearly data. Most of the data will be taken from the website of DSE, BB and from any other secondary sources if needed. Last twelve years' data from BB & DSE index (DGEN & DSEX) will be taken for further analysis. For inflation rate CPI index will be used in the current study. At first, a set of descriptive statistics will be carried out to get an overview of all the variables. Then a pairwise correlation matrix will be built up to see the relationship among the variables and if there is any significant relationship between stock return and monetary variables. An Ordinary Least Square (OLS) regression model will be used to see the impact of monetary policy on the point of DSEX. Dependent variable of this study will be the performance of DSE Broad Index (DSEX) and our independent variables are repurchase rate, money market rate, and inflation rate

2.1 Model Specification:

Based on the above dependent and independent variables I will use the following model:

RDSEX = α1 + β1(RR)+ β2(MMR)+ β3(IR

Where, α = Intercept, RDSEX= Return on DSEX, RR = Repo Rate, MMR= Money Market Rate IR= Inflation Rate, & €t= Error Term

3 Analysis & Findings:

3.1 Test of Multicollinearity

To check the existence of multicollinearity among the independent variables, a correlation analysis has been conducted. The result of the correlation analysis is reported in Table-1. As none of the correlation coefficient between independent variable is greater than 0.80; so, no multicollinearity problem amongst independent variables exists.

Table-1 Test of Multicollinearity

	Money Market Rate	*Repo Rate*	*Inflation Rate*
Money Market Rate	1		
Repo Rate	0.602267051	1	
Inflation Rate	0.693845934	0.419916232	1

Source: Excel Output

3.2 The Ordinary Least Square (OLS) Regression Models

The Return of DGEN and DSEX and other factors that can affect market index have been used in developing the OLS models. The OLS result has been presented in the Table-2
The estimation of equation by direct OLS gives the following equation:

Table-2 : Ordinary Least Square Method

	Coefficient	**Std.Err**	**t-Statistic**	**P-Value**
C	5.6381	0.660565	1.865151286	7.918E-07
Money Market Rate	-.03361	0.187191	-0.4482629	0.1956492
Repo Rate	-.01221882	0.03433	-0.48747162	0.1598251
Inflation Rate	.01906272	0.148903	0.907873418	0.010086
R-squared	0.590785009			
Adjusted R-squared	0.570785009			
S.E. of regression	0.806626			
Sum squared resid	3.158772			
F-statistic	109.8994			
Significance of P	.031830			

Source: Excel Output

RDEX= 5.64-0.03361 Money Market Rate-.01221882 Repo Rate+.01906272 Inflation Rate. The slope coefficient of all the independent variables are statistically significant at 1% level. It is found that the relationship of return of DSEX with inflation rate is positive and with repo rate and money market rate is negative. Moreover, F= 109.8994 and P=.031830 indicates that regression model significantly fits the data. Finally, R^2 indicates that about 59% of the variation of dependent variables can be explained by independent variables.

4. Conclusion

This study attempts to analyze the impact of different monetary variables on the DSEX performance for the last few years by using multiple regression model. The result of the analysis shows that money market rate and repo rate have negative impact and inflation rate has positive impact on the market index. Our study result conforms with the findings of Dewan (2013). Besides the monetary variables stock market is also affected by investors psychology which we did not incorporate in our study. However, the study could be more

complete if longer horizon is used, so the study can be further stretched by using longer horizon and can be compared with other developed countries which is left for the future research. This paper attempts to contribute empirically to minimize the ongoing debate on the effect of monetary variables on stock market performance. And the findings of the study will help to make people take strategic decisions regarding investment in the stock market and will help finance enthusiasts to broader their aspect.

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Appendix :

Table 1: Multicollinearity Table

	Money Market Rate	*Repo Rate*	*Inflation Rate*
Money Market Rate	1		
Repo Rate	0.602267051	1	
Inflation Rate	0.693845934	0.419916232	1

Table 2: Regression Analysis
SUMMARY
OUTPUT

Regression Statistics	
Multiple R	0.607541378
R Square	0.590785009
Adjusted R Square	0.570785009
Standard Error	0.806626
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	3	3.15877	5.463024324	109.8994	0.031830795
Residual	8	3.158772	1.491236.24110042		
Total	11	13568797.23			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	5.6381	0.660565	1.865151286	7.91841E-07	-1155.472265
Money Market Rate	-0.03361	0.187191	-0.448262901	0.195649242	-50617.2304
Repo Rate	-0.01221882	0.03433	-0.487471621	0.159825094	-115240.8013
Inflation Rate	0.01906272	0.112382	0.907873418	0.010085961	-39423.66062

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