

Macroeconomic Variables and Stock Market Volatility: Evidence from India

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Abstract

India as a developing economy have positive sentiments of the global investors about their economic fundamentals. India is one of the largest participatory and democratic countries whereas China is Monopolistic Authoritarian regime. The difference in the constitution, political and economic structure put India apart from other developing economies. The aim of the present research is to investigate the impact of macroeconomic variables on stock market volatility of India as developing economy. The present research investigates the annual data of macroeconomic variables of India from 2000 to 2019. The study finds that GDP, Inflation and Business trade shows have significant association with stock market and further affect its volatility whereas. The result implies that Government should take strict measures to boost Investors' confidence that will further boosting the economic growth.

Key Words: [Macro Economic Variables, Stock Market Volatility, India]

Introduction

Stock market has been emerged as an influential financial institution that plays a pivotal role in an economy. Stock market acts as barometer for economic growth. The role of stock market in developing and effective allocation of capital can't be understated. The efficient stock market enhances the opportunities for the corporates and governments to invest in future projects in various economic sectors. Ashaolu & Ogunmuyiwa (2010) investigate empirically and observed the influential role of stock market in economic growth. Stock market assists the industries and investors in availing long-term funds for their rapid business growth that eventually inject the growth in the economy. Rajni and Mahindra (2007) found the importance of stock market in financial sector of the emerging countries. Rapidly changing business environment impacts the cash flow of firms and systematic risk factors that further changes the macro economic variables. A important slowly increasing effect can be observed on the performance of stock market with frequency change in macro-economic factors on world level. Various variables at international and domestic level has significant impact on the stock market performance. Under the uncertainties of largely volatile business market, fast changing political environment and fragile global economic environment global level increase the random nature of stock market performance. The instability in macroeconomic variables further enhances the volatility in stock market. Stock return

volatility has been emerged as a major concern in global financial market. After the global impact of 2008 global financial crisis, the uncertainty of stock market spikes to new level. With increase in volatility in stock market, investors indicate their reluctance from doing investment in their surplus funds in fragile market. This has further negative impact on the flow of investment within the economy and from outside the domestic economy. It has become important for the policy makers to restrict the stock market volatility and enhance the stability in economy. The uncertain macroeconomic variables like inflation rate, exchange rate, GDP etc. The dire need of examination of association among the economic variables at macro level and stock market return has been increased. The amalgamation of macroeconomic variables with behaviour of stock market and global financial market has been rejuvenated. Wongbangpo and Sharma (2002) observed the impact of macroeconomic factors on the return of stock market ASEAN-5 countries: (Indonesia, Malaysia, the Philippines, Singapore and Thailand) Establishment of stable and sustainable stock market has become a tough challenge for the emerging economies. The association between stock market returns and macroeconomic variables is very important for financial analysts and policy makers but the degree of the relationship is not crystal clear for emerging nations. The present paper is a sincere endeavour to investigate the effect of macroeconomic factors on the volatility of stock market in emerging economy i.e. India

Review of Literature

Various research scholars had investigated the association between macro-economic variables and stock prices but very few studies examined the

association between macro-economic variables and stock market volatility. Giri and Joshi (2017) evaluated the relationship between stock price and macroeconomic variables. Their work used annual historical data from 1979 to 2014 from Indian stock market. The findings confirmed the positive influence of economic growth, inflation and exchange rate on the stock prices. Kirui et al (2014) investigated the relationship between Gross Domestic Product, Treasury bill rate, exchange rate, inflation and stock market return in Nairobi Securities Exchange Limited. The statistical results of study revealed a significant relationship between exchange rate and stock returns, whereas Gross Domestic Product, Inflation and the Treasury bill rate indicated insignificant relationships with stock market returns. Hsing et al (2013) find that stock market index in Mexico is positively associated with real GDP, the peso/USD exchange rate, the M3/GDP ratio and the U.S. stock market index and negatively affected by the interest rate, the ratio of the government deficit to GDP and the expected inflation rate. Isaahaku et al (2013) tested the cause and effect association between macroeconomic variables and stock returns in Ghana. The results find the existence of significant long term association between stock returns and inflation, money supply and Foreign Direct Investment (FDI). Whereas in the short-run, a significant relationship exists between stock returns and macroeconomic variables such as interest rate, inflation and money supply. Naik and Padhi (2012) enquired the association between the Bombay Stock Exchange and five macroeconomic variables during the period 1994:04–2011:06. Their findings show that stock prices have positive correlation with money supply and industrial production but is negatively correlated with inflation. John and Owusu-Nantwi (2011) identified a positive impact of inflation and negative influence of T-bills and exchange rate on Ghana Stock Exchange. Pal and Mittal (2011) tested the empirical relationship between the stock markets and macroeconomic variables. The study devised quarterly historical data from January 1995 to December 2008. The results show that inflation and exchange rate depict significant influence on BSE Sensex whereas interest rate and gross domestic saving have non-significant impact on Stock market

Research Objective

The main purpose of the paper is

To determine the major macroeconomic variables that may have probable impact of Indian stock market volatility

Hypothesis

- H_{01} – GDP growth has no significant impact on the stock market volatility.
- H_{02} – Lending Interest Rate has no significant impact on the stock market volatility.
- H_{03} – Inflation rate has no significant impact on the stock market volatility.
- H_{04} – Trader Openness has no significant impact on the stock market volatility.
- H_{05} – Broad Money Growth has no significant impact on stock market volatility.
- H_{06} – Domestic Credit Growth has no significant impact on stock market volatility.

Research Methodology

To achieve the above objectives, the data has been extracted from 2000 to 2019. Stock Market volatility has been taken as the dependent variable. To measure the impact of macroeconomic variables on stock market volatility in India, the macro economic variables i.e. GDP Growth, Lending Interest Rate, Inflation Rate, Trader Openness, Broad Money Growth and Domestic Credit Growth are considered as independent variable. Multiple Regression technique has been applied to investigate the impact of independent variables on dependent variable. SPSS has been devised to execute the regression on the statistical data. The statistical techniques like VIF criteria was used to check the multicollinearity among the variables.

VIF Criteria

VIF (Variance Inflation Factor) has been used as a Multi –Collinearity diagnostic technique. VIF indicates whether independent variables have any correlation among themselves or not. If the value of VIF is more than 10 then it indicates the existence of Multi collinearity in the data and if the value of VIF is less than 10 then it indicates that data is free from multi collinearity.

R Square - R^2 represent the percentage of variance in the outcome that are explained by the independent variables or predictors.

F- Test F-test explains the level of influence of independent variable on dependent variable. If the value of significance is higher the Significance F then it indicates that Independent variable has influence on dependent variable and vice versa

Data Analysis

The secondary data has been analyzed by devising various statistical tools in SPSS. The following part of paper depicts the statistic results of the SPSS.

Multi Collinearity Analysis

Table 1 - Multi Collinearity Statistics

	India	
Variables	Tolerance	VIF
GDP_G	.848	1.180
LIR	.350	2.857
BMG	.387	2.586
DCG	.383	2.609
INFLATION	.783	1.277
TRADE	.379	2.640

Source: SPSS Regression Output

The above statistics examine the existence of multi – collinearity among independent variables. As the values under VIF, depict in the above table, are less than 10 for India that indicates the non existence of multi – collinearity in the variables. The same is further supported by the Tolerance values in the table as all the values are higher than 0.1.

Regression Model

The following table depicts the regression model statistics of the data

Table 2 - Regression Model

Regression Statistics	India	
Model Summary	R	0.723
	R-Square	0.646
	Durbin Watson	1.489
ANOVA	F	4.567
	Sig. F	0.00

Source: SPSS Regression Output

The statistics depicted in the above table examine the

model fit for both India. The statistics shows that R – square for India is 0.646 that indicates the good model fit.

Regression Equation

The following two regression equations have been formulated for the emerging economies i.e. India
India

$$\text{Volatility} = -4.851 - 1.151 * \text{GDP_G} + 1.610 * \text{LIR} + 0.237 * \text{BMG} + 0.932 * \text{DCG} - 0.445 * \text{Inflation} + 0.027 * \text{Trade}$$

Regression Coefficient

Regression coefficients have been depicted in the following table:

Table 3 - Regression Statistics

	India	
	t	Sig.
GDP_G	-1.623	.125
LIR	1.446	.169
BMG	.407	.690
DCG	2.115	.048*
INFLATION	-.938	.363
TRADE	.172	.866
Constant	-.232	.819

*Significant variables at 5% significant level

The above regression statistics shows that for Indian Scenario, Null hypothesis is rejected at 5% level of significance for the domestic credit growth as its significance value falls below 5% level of significance. It signifies that domestic credit growth has significant effect on stock market volatility. In case of other variables under study, Null hypothesis is accepted at 5% level of significance. That confirms the non- significant effect of independent variables on volatility of stock markets as their sig. value is higher than 0.05.

Findings and Conclusions

Macroeconomic variables have been emerged as important investment parameters in emerging markets. Investors keep their vigilant eye on the global economic parameters before injecting their surplus funds in any investment avenue. Macroeconomic variables put an influential effect on the industrial growth that further effect the stock market performance. The present paper explores the impact of macroeconomic variables on stock market volatility in two global emerging markets

India. The results of empirical study confirms that domestic credit growth is the most influential macroeconomic variable that have significant impact on the stock market volatility in India. It shows that as the government takes more borrow the confidence of investors become unstable. The loose confidence in the policies of government and withdraw their money from the stock markets that cause to increase the volatility in the stock markets.

Implications

The finding of the study put forward some significant policy implications. The Government should take necessary actions to boost Investors' confidence that will further boosting the economic growth of country and limit the volatility in stock market. The central banks of the emerging economies should take strict steps to limit the volatility in GDP growth rate. The governments must control the domestic credit activities as high increase in domestic credit leads to the shackle the confidence of investors. By controlling the Domestic credit, the government can maintain the faith of investors in its activities that can help in maintaining the stability in stock markets.

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