Impact of Macroeconomic Variables on Stock Market Volatility in Emerging Economies: A case of India & China

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ABSTRACT

India and China, both are emerging super economic powers having 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. This contrast in their political and economic structure put them apart in their approach doing business. The aim of the present research is to investigate the impact of macroeconomic variables on stock market volatility of these two emerging economies giants. The current study examines the annual historical data of macroeconomic variables of India and China comprises a significant 22 years of time span from 1994 to 2015. In context of China, the statistics depicts that GDP, Inflation and Business trade shows have significant association with stock market and further affect its volatility whereas. Domestic credit growth has been emerged as single influential macroeconomic variable in India. The results of the present study report that Shenghai Stock Exchange is more sensitive to macro economic variables as compared to Bombay Stock Exchange. 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, China

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 observe 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) observe the significance of stock market in developing financial sector in the economy. Frequently changing business scenario affect the cash flow of firms and systematic risk factors that further changes the macro economic variables. With globalisation, the stock markets of developed and developing economies become integrated. A significant gradual impact can be noticed on the stock market with change in global macro economic variables. Numerous domestic and global economic variables affects the stock market performance. Under the dark clouds of highly fragile business market, uncertain global political environment and volatile global economic environment makes the stock market very unpredictable. 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 2008 global financial crisis, the volatility of stock market touches a new high. With rise in volatility in stock market, investors show their hesitation from investing their surplus funds in uncertain market. This further adversely hit the flow of investment within the economy and from outside the domestic economy. It has become crucial for the policy makers to limit the stock market volatility and enhance the stability in economy. The uncertain macroeconomic variables like inflation rate, exchange rate , GDP etc. The need of investigation of inter relationship between macroeconomic variables and stock market return has been intensified. The integration of macroeconomic variables with stock market and global financial market has been strengthening. Wongbangpo and Sharma (2002) explored the effect of macroeconomic variables on stock market return of 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 interrelationship between stock market returns and macroeconomic variables is crucial for financial analysts and policy developers but the extent of the relationship is not clear for emerging economies. This paper makes an attempt to examine the impact of macroeconomic variables upon the volatility of stock market across two emerging economies: India and China. India and China are considered as most powerful emerging economies by 2020. These emerging economies do not remain galvanized from unpredictable global macroeconomic variables. To gain a deeper insight of this phenomenon.

REVIEW OF LITERATURE

Numerous researchers has examines the relationship between macro economic variables and stock prices but very confined researchers investigates the inter-relationshjp between macro economic variables and stock market volatility. Giri and Joshi (2017) examine the relationship between stock price and macroeconomic variables. The study use annual data from 1979 to 2014 from Indian stock market. The results of study confirm the positive influence of economic growth, inflation and exchange rate on the stock prices. Kirui et al (2014) analyze 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) examine the causal relationship between macroeconomic variables and stock returns in Ghana. The results finds the existence of significant long run relationship 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) investigates the relationships between the Indian stock market index (BSE Sensex) and five macroeconomic variables (industrial production index, wholesale price index, money supply, treasury bills rates and exchange rates) for the period 1994:04–2011:06. Their results indicates that stock prices have positive correlation with money supply and industrial production but is negatively correlated with inflation. John and Owusu-Nantwi (2011) find a positive effect of inflation and negative influence of T-bills and exchange rate on Ghana Stock Exchange. Pal and Mittal (2011) examine the empirical relationship between the Indian stock markets and macroeconomic variables. The study use quarterly data for the period January 1995 to December

2008. The finding of study indicates that inflation and exchange rate have significant impact on BSE Sensex whereas interest rate and gross domestic saving (GDS) have non-significant impact on Stock market. Gan et al (2006) analyze the New Zealand stock market and observe a long run relationship between stock market and macroeconomic variables: money supply, inflation and interest rate. Brahmasrene and Jiranyakul (2007) demonstrate the positive influence of money supply and negative influence of exchange rate and oil price on stock market in the finding of their study. Pethe and Karnik (2000) examine the relationship between the stock price and macro economic variables. The results of study find a non significant relationship between economic growth and stock market prices.

Research Gap

The growing research interest in and increase in impact of macroeconomic variables on stock market performance has engendered a plethora of contributions on this topic. After reviewing the previous research studies, a significant void has been observed as majority of the studies are confined to only single stock market. Mostly are considered only the stock market return. There are only a few studies that focussed upon impact of macroeconomic variables the stock market volatility. A big void exists while examining the relationship between macroeconomic variable and stock market return in emerging economies as no study analyze their relationship for global emerging economies. The present study makes a sincere attempt in filling the existing gap. The present study aims at investigating the relationship between macro economic variables and stock market volatility of two emerging global economies India and China.

OBJECTIVES OF STUDY

The main purpose of the paper is to compare the effect of macroeconomic variables on stock market volatility of emerging markets: India and China.

Specific Objectives of Study

The specific objectives of study are

a) To determine the major macroeconomic variable that may have probable impact of stock market volatility
b) To compare the effect of macroeconomic variables across the stock markets of emerging economies: India and China

Research Methodology

Time Frame

The study has been conducted for a time period of 22 years from 1994 to 2015

Dependent Variable

Stock Market volatility has been taken as the dependent variable. The stock market volatility on annual basis from the period of 1994 to 2015 has been calculated with Standard Deviation in Ms - Excel. The historical data of Sensex and Shenghai Stock exchange has been extracted from their official website

Independent Variables

To measure the impact of macroeconomic variables on stock market volatility in India and China, the following macro economic variables are taken under study.

a) GDP Growth

GDP growth is the backbone of any economy. Engle and Rangel (2007) find that the increase in volatility in macroeconomic variables like GDP increases the uncertainty in the economic growth.

b) **Lending Interest Rate**

Joseph and Vezos (2006) support the significance of lending Interest rate in the financial economics of any country. The fluctuation in lending interest rate affects the investment growth in the economy.

c) Broad Money Growth

Flannery and Propakandis (2002) explored that Broad money Growth plays a pivotal role in the development of any economy. It has been emerged as major factor in emerging global economies.

d) Domestic Credit Growth

The economic growth of any country is directly linked with domestic credit growth as it propel the investment in the country. Levine and Zervos (1998) empirically prove that domestic credit growth has significant positive impact on stock market growth.

e) Inflation Rate

Pearce and Roley (1985) examined inflation as an important macroeconomic variable that have significant impact on the economic growth of any country.

f) Trade Openness

Chang et al (2009) report a positive relationship between trade openness and economic growth. Dufrent et. al. (2010) indicate a high impact of trade openness on economic growth in fast emerging economies as compared to low growth countries.

Data Collection

The requisite data of the above macro economic variables of India and China has been taken from the official website of world bank for a period of 1994 to 2015.

Statistical Technique

Multiple Regression technique has been applied to analyze the stated objective of the paper. SPSS has been devised to execute the regression on the statistical data.

VIF Criteria

Multi – Collinearity has been considered as a critical factor while execution of Multiple regression analysis. Correlation among independent variables is considered as the main reason behind existence of Multi – Collinearity. Results of the analysis would be biased if we ignore the multi collinearity in the research data. 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^2 - (R Square)

Andy Field (2013)[8] states that R^2 represent the percentage of variance in the outcome that are explained by the independent variables or predictors.

F- Test

Richard I. Levin and David S. Rubin (2005) states that in multiple regression, 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		China	
Variables	Tolerance	VIF	Tolerance	VIF
GDP_G	.848	1.180	.199	5.016
LIR	.350	2.857	.144	6.939
BMG	.387	2.586	.359	2.783
DCG	.383	2.609	.921	1.086
INFLATION	.783	1.277	.263	3.804
TRADE	.379	2.640	.225	4.438

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 and China 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	China
Model Summary	R	0.776	0.855
	R-Square	0.603	0.732
	Durbin Watson	1.791	1.356
ANOVA	F	3.795	6.822
	Sig. F	0.017	0.001

Source: SPSS Regression Output

The statistics depicted in the above table examine the model fit for both India and China. The statistics shows that R – square for India is 0.603 and for China it is 0.732 that indicates the good model fit.

Regression Equation

The following two regression equations have been formulated for the emerging economies India and China;

India

A_Volatility = -4.851-1.151*GDP_G +1.610*LIR+0.237*BMG+0.932*DCG-0.445*Inflation +0.027*Trade

China

A_Volatility = 24.151 + 8.552*GDP_G -3.699*LIR-0.658*BMG-0.288*DCG +2.005*Inflation -1.149*Trade

Regression Coefficient

Regression coefficients have been depicted in the following table:

Table 3 - Regression Statistics

	India		China	
	t	Sig.	t	Sig.
GDP_G	-1.623	.125	2.994	.009*
LIR	1.446	.169	-1.138	.273
BMG	.407	.690	-.924	.370
DCG	2.115	.050*	-1.094	.291
INFLATION	-.938	.363	2.501	.024*
TRADE	.172	.866	-2.308	.036*
Constant	-.232	.819	.806	.433

Source: SPSS Regression Output

*Significant variables at 5% significant level

The above regression statistics shows that for China, GDP_G (0.009), Inflation (0.024) and Trade (0.036), the significant values are less than 0.05 that shows significance of these variables on dependent variable (Stock market annual volatility). The other variables (Lending Interest Rate, Broad Money Growth, Domestic Credit Growth) have no significant effect on the stock market volatility as their significant values are higher than 0.05. Under Indian Scenario, Only domestic credit growth has significant effect on stock market volatility as its statistical significant value falls at 0.05. Whereas no other variable has significant effect on volatility as their sig. value are higher than 0.05.

FINDINGS AND CONCLUSION

Macroeconomic variables have been emerged as important investment parameters in emerging markets. Investors keep their sharp 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 and China. 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 whereas for China, GDP, Inflation and Trade are emerged as influential variable that effect stock market volatility. The results indicate that stock market of china is more affected to macro economic variables as compared to Indian stock exchange. It indicates that volatility in Bombay Stock Exchange is less volatile as compared with Shenghai Stock Exchange.

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 inflation rate by putting strict measures on the Repo rate and Reverse repo rate as these are

influential tools to inject investment in the economy. The proper implementation of Goods and Service Tax (GST) in India definitely put some measurable control on the volatility in economic growth.

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