Macroeconomic Factors Influence on Stock Exchange In India

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Abstract-*The study examines the case for India using monthly frequency of data and taking macro-economic variables namely, inflation rate, interest rate and exchange rate. Stock market is a market where the trading of company stock both listed and unlisted securities take place. It is different from stock exchange because it includes all the National Stock Exchanges of the country. A stock exchange market is the centre of a network of transactions where buyers and sellers of securities meet at a specified price. Stock market plays a key role in the mobilization of capital in emerging and developed countries, leading to the growth of industry and commerce of the country, as a consequence of liberalized and globalized policies adopted by most emerging and developed government. Many factors can be a signal to stock market participants to expect a higher or lower return when investing in stock and one of these factors are macroeconomic variables. The present study is deliberate to examine the impact of macroeconomic variables on Indian Stock Market by using data from BSE-Sensex, NSE and economy watch from the period 2013 to 2017.*

Keywords- Economic Growth, Indian Stock Market, Macroeconomic variables, Sensex

I. INTRODUCTION

Macroeconomics is a branch of economics dealing with the performance, structure, behavior, and decision-making of an economy whole. Macroeconomists study aggregated indicators such as GDP, unemployment, inflation etc. and the interrelations among the different sectors of the economy, to better understand how the whole economy functions. Based on the study macroeconomists develop models that can explain the relationship between different factors. While macroeconomics is a broad field of study, there are two areas of research that are emblematic of the discipline: The attempt to understand the causes and consequences of short-run fluctuations (business cycles) in national income, the attempt to understand the determinants of long-run economic growth. The development of macroeconomics was one of the breakthroughs of twentieth-century economics, leading to a much understanding of how to combat periodic economic crisis and how to stimulate long economic growth, in response to the Great Depression, John Maynard Keynes. Developed his revolutionary theory, which helped explain the forces producing economic fluctuations and suggested how governments can control the worst excesses of the business cycle. At the same time, economists have endeavoured to understand the mechanics of long –term economic growth.

II. NEED FOR THE STUDY

The importance of this research stems from the crucial role played by the Indian stock market in developing Indian economy. The utmost task done by this is a collection of money from investors and encourages them to invest. So, this work was conducted to check the influence of some macroeconomic variables on the performance of BSE manufacturing firms. Secondly, this work would be helpful to the investors at the time of their investment decisions because they can consider all those affecting variables and take suitable actions. Individual investors, institutional investors, portfolio managers and foreign investors may use this study as an assistant in their work. Thirdly, all the firms whether already listed or going to be listed on any stock exchange might refer to the affecting variables.

III. OBJECTIVES OF THE STUDY

This work was executed with the objective to check whether macroeconomic variables are actually putting an effect on the functioning of Indian Stock Market or not after the Global Financial Crisis. Thus, the objectives are:

- To analyze the impact of various macroeconomic variables on the functioning of Indian Stock Market after the Global Financial Crisis
- To analyze the relationship among macroeconomic variables and Indian stock market.
- To examine the causal relationship between macroeconomic variables and stock market

IV. DATA ANALYSIS AND INTERPRETATION

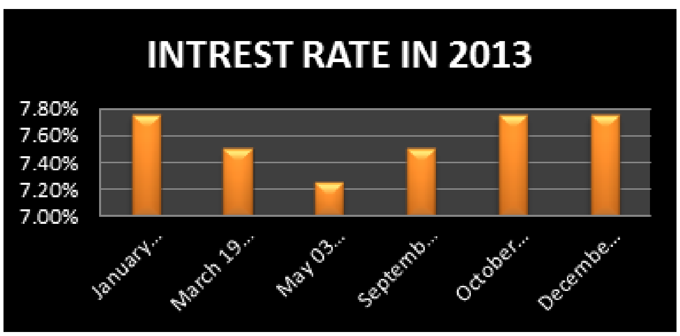
4.1 Interest Rate Change From 2013-2017

Table 1
Interest Rate Change From 2013-2017

Year	Date & Month					
2012	**17-Apr**					
Repo rate	**8%**					
2013	**Jan-29**	**Mar-19**	**May-03**	**Sep-20**	**Oct-29**	**Dec-18**
Repo rate	**8%**	**7.50%**	**7.25%**	**7.50%**	**7.75%**	**7.75%**
2014	**Jan-28**					
Repo rate	**8.00%**					
2015	**Jan-15**	**Mar-04**	**Jun-02**	**Sep-29**		
Repo rate	**7.75%**	**7.50%**	**7.25%**	**6.75%**		
2016	**Apr-05**	**Oct-04**				
Repo rate	**6.50%**	**6.25%**				
2017	**Aug-02**					
Repo rate	**6.00%**					

Interpretation: The above table shows the interest rate change in the last 5 years. From the above table, it is evident that the interest rate has been increased gradually by 6.25 to 6.50 basis points to curb the inflation. Even though there is a decrease in the interest rate in the year 2016 & 2017, it does not make any difference since it has not come down much. There is no change in the interest in the years 2012 & 2014

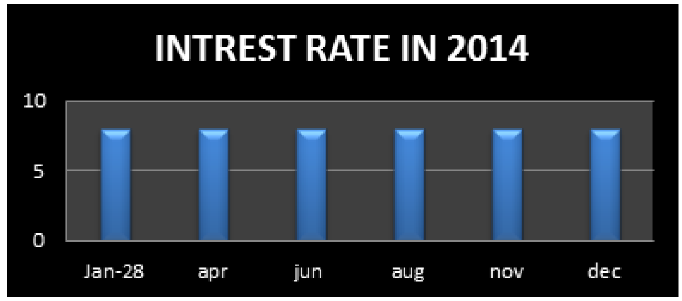
4.2 Interest Rate in the Last 5 Years



Graph 1
INTEREST RATE IN 2013

Interpretation: Though the interest rate was reduced by 25 to 50 basis points in the beginning of 2013, Reserve Bank of India Governor Raghuram Rajan surprised markets in his maiden policy review by raising interest rates to ward off rising inflation. Mr Rajan, who took office early this month amid India's worst economic crisis since 1991, increased the repo rate by 25 basis points (bps), or 0.25 per cent, to 7.50 per cent, defying most forecast

4.2.1 INTEREST RATE IN 2014



Graph 2

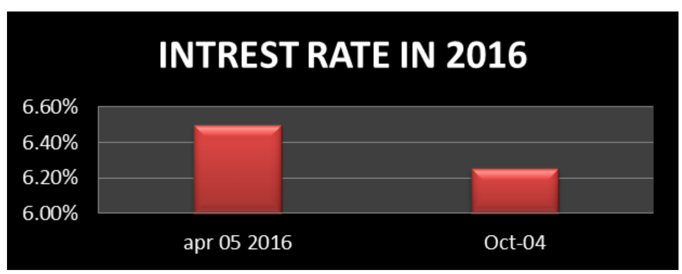
Interpretation: Interest rate was increased by 25 basis points from 7.25% to 8% and remained untouched at 8%. This decision comes in the wake of increasing inflation rate in the last quarter (Q4). Inflation rate came down to 5.86 % as against the previous year‘s 9.13 %. There were many favourable factors in the year 2014, which led to growth in the economy and a strong rupee value and increased production.

4.2.2 INTEREST RATE IN 2015

Graph 3

Interpretation: In this year the interest rates have come down. At the beginning of the year the interest rates were high. The repo rate was decreasing from 0.50 to 0.25bps which is a good thing to the investors

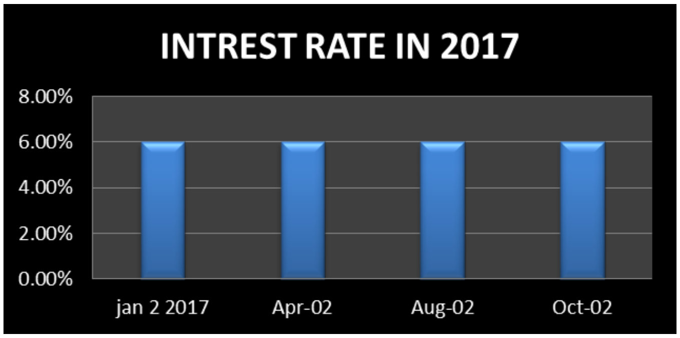
4.2.3 INTEREST RATE IN 2016



Graph 4

Interpretation: The RBI reduced the country's repo rate by 0.25 bps on April 5 2016, to 6.5%. A change in repo rate is the signal to the commercial banks. This repo rate impacts the movement of the rupee and which affects the revenue of the exporters.

4.2.4 INTEREST RATE IN 2017



Graph 5

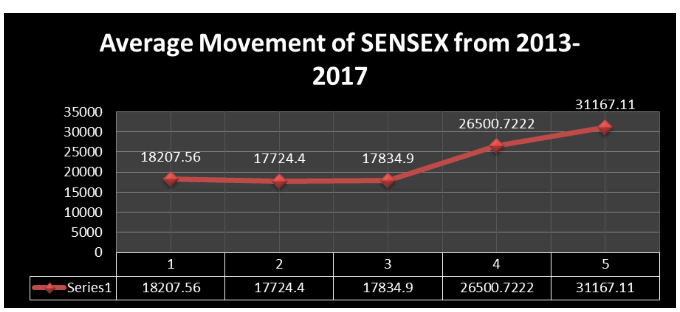
Interpretation: Falling inflation had sparked pressure on the RBI from the govt to cut monetary rates on the Wednesday and signal further easing later this year.

4.3 AVERAGE OF THE SENSEX FROM 2013-2017

Table 2

Month	2013	2014	2015	2016	2017
January	16357.96	18327.8	17193.6	24870.86	27656
February	16429.55	17823.4	17752.7	23002.00	28743
March	17527.77	19445.2	17404.2	25338.58	29621
April	17558.71	19136	17318.8	25606.62	29918
May	16944.63	18503.3	16218.5	26725.60	31146
June	17700.9	18845.9	17430	26999.72	30922
July	17868.29	18197.2	17236.2	28051.86	32514.94
August	17971.12	16676.8	17429.6	28343.01	31730.49
September	20069.12	16453.8	18762.7	27856.96	31289.72
October	20032.34	17705	18505.4	27930.21	33266.16
November	19521.25	16123.5	19339.9	26656.81	33149.35
December	20509.09	15454.9	19426.7	26626.46	34056.38
Average	**18207.56**	**17724.4**	**17834.9**	**26500.7222**	**31167.11**

Interpretation: The above table shows the average of SENSEX from the year 2013 to 2017. There is sharp decline in the movement of SENSEX in the years 2014 and 2015 due to decrease in production activity, high inflation rate, weakening rupee and slower growth of the economy. In the year 2016, there is an upward movement and it continued to be in that trend due to favourable conditions inside and outside of the country.



Graph 6

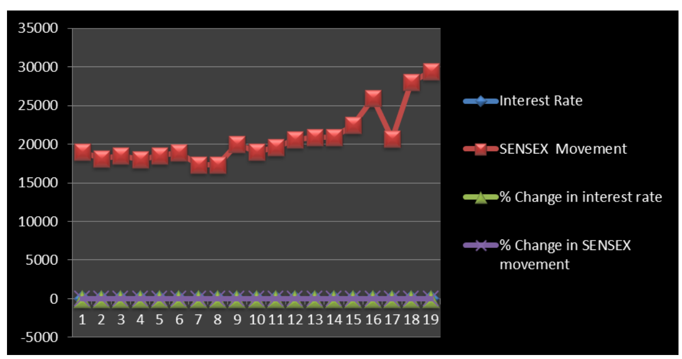
Interpretation: There is an upward trend in the movement of the Sensex in the above plotted graph. Weak global cues, decrease in production, slow economic growth had their impact on the stock markets in the years 2013, 2014, 2015. Though there is a slight improvement in the movement of the Sensex in the year 2016, it hasn‘t done much to the Indian economy due to unfavourable political environment, stock markets were trading in profits in the anticipation of regime shift at centre.

4.4PER CENTAGE (%) CHANGE IN INTEREST RATE AND SENSEX

Table 3

Interest Rate	SENSEX Movement	% Change in interest rate	% Change in SENSEX movement
6.5	18969.45	0.038461538	-0.043205259
6.75	18149.87	0.074074074	0.021202356
7.25	18534.69	0.034482759	-0.029609883
7.5	17985.88	0.066666667	0.029597662
8	18518.22	0.03125	0.019066087
8.25	18871.29	0.03030303	-0.083855423
8.5	17288.83	-0.058823529	0.003997379
8	17357.94	-0.03125	0.151686202
7.75	19990.9	-0.032258065	-0.049162369
7.5	19008.1	-0.033333333	0.029857797
7.25	19575.64	0.034482759	0.054710855
7.5	20646.64	0.033333333	0.013676317
7.75	20929.01	0	-0.003304026
7.75	20859.86	0.032258065	0.076058996
8	22446.44	0	0.154214655
8	25908.01	0	-0.201655781
8	20683.51	-0.03125	0.357388084
7.75	28075.55	-0.032258065	0.046488136
7.5	29380.73	-0.033333333	-0.074618636

Interpretation: The above table shows the % change in the interest rate and stock index is not consistent and it is clear that the movement of stock index relies on many other factors.



Graph 7

Interpretation: As it is evident that whenever there is a hike in the interest rate, stock market trades at loss. But, there are some sectors which benefit out of this decision and it adds to the upward movement of stock market index. From the above table it is observed that there is no much impact on interest rate decision on the movement of stock exchange.

4.5 INFLATION RATE FROM 2013-2017

Table 4

YEAR	INFLATION RATE
2013	9.13
2014	5.86
2015	6.32
2016	2.23
2017	4.00

Interpretation: As compared to 2013, 2014 & 2015 the inflation rates in 2016 have been reduced to a greater extent and a small rise in 2017 rate.

4.6 PER CENTAGE CHANGE IN INFLATION RATE FROM 2013-2017

Table 5

Year	Inflation Rate	% Change in Inflation
2013	9.13	-0.464079273
2014	5.16	0.721109399
2015	6.32	-0.18263205
2016	2.32	-0.358159912
2017	4.00	0.078498294

Interpretation: Inflation remained a persistent problem in double-digits in the year 2013 & 2014. No wonder that interest rates have been increased on a continuous basis to curb the inflation.

4.7 PER CENTAGE CHANGE IN INFLATION AND SENSEX

Table 6

Year	Inflation Rate	SENSEX	% Change in Inflation	% Change in Sensex
2013	9.13	18207.56	-0.46408	0.067975
2014	5.86	17724.4	0.721109	-0.20521
2015	6.32	17834.9	-0.18263	0.256992
2016	2.23	26500.7222	-0.35816	0.152345
2017	4.00	31167.11	0.078498	0.248868

Interpretation: The above table shows that inflation rate has some impact on stock market. Whenever the inflation rate has gone up, the stock market movement is disrupted, experiencing a downward movement. Inflation is a serious problem sometimes affecting the production process which in turn results in less profit to many companies. As a result, investors lose their confidence in the economy and the performance of a company, which creates turbulence in the stock market.

4.8 GDP GROWTH RATE FROM 2013-2017

Table 7

YEAR	GDP RATE
2013	6.4%
2014	7.5%
2015	8.0%
2016	7.1%
2017	6.7%

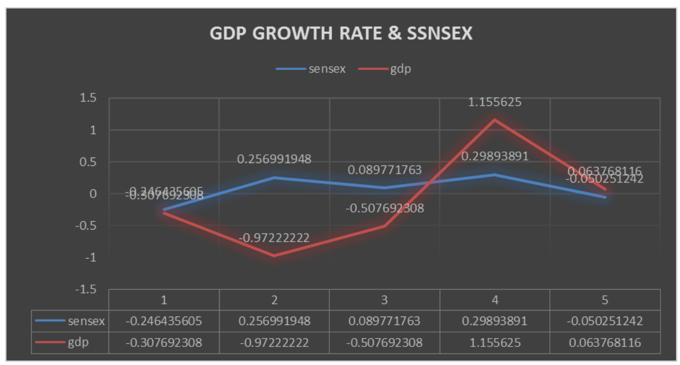
Interpretation: The growth has been changing by year to year due to various factors.2015 has been a good year to the country with a good rate. But later it has come down.

4.9 % CHANGE IN GDP GROWTH RATE AND SENSEX

Table 8

Year	GDP Growth Rate	Sensex	% Change in SENSEX	% Change in GDP
2013	6.40%	20509.09	-0.246435605	-0.307692308
2014	7.50%	15454.92	0.256991948	-0.97222222
2015	8.00%	19426.71	0.089771763	-0.507692308
2016	7.10%	21170.68	0.29893891	1.155625
2017	6.70%	27499.42	-0.050251242	0.063768116

Interpretation: From the above table and the graph it is evident that, GDP growth rate doesn‘t have much impact on the movement of SENSEX



Graph 8

% change in GDP Growth Rate and SENSEX

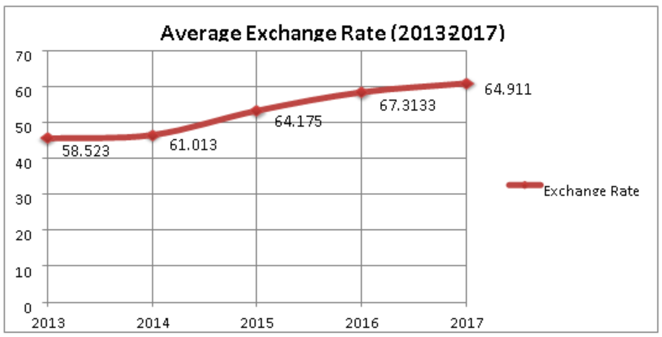
Interpretation: As institutions influence behaviour and incentives in real life, they forge the success or failure of nations.”Indian government has taken some positive policy actions in terms of inflation targeting, subsidies, land and labour market reforms which propelled the growth rate in the FY 2016. The previous year’s witnessed some serious problems, which in turn affected the growth rate in a negative way.

FOREIGN EXCHANGE RATE FROM 2013-2017

Table 9

Month	2013	2014	2015	2016	2017
JAN	54.244736	62.069572	62.01	67.84	67.44
FEB	53.84735	62.141571	61.07	68.25	66.67
MAR	54.405311	60.96425	62.43	66.25	64.86
APR	54.366327	60.342199	63.60	66.34	64.3
MAY	54.955194	59.262457	63.71	67.11	64.51
JUN	58.271258	59.705548	63.57	67.53	64.63
JUL	59.751616	60.082778	63.87	67.53	64.2
AUG	62.695764	60.830074	66.14	66.73	63.93
SEP	63.796821	60.881988	65.50	66.96	65.31
OCT	61.511045	61.360457	65.40	66.73	64.75
NOV	62.592274	61.680926	66.46	68.52	64.47
DEC	61.837937	62.834842	66.16	67.97	63.87
AVG	**58.523**	**61.013**	**64.175**	**67.3133**	**64.911**

Interpretation: From the above table it is evident that the exchange rate escalated every year. Depreciation in the Rupee value was an outcome of adverse global headwinds, shrinking exports, slower growth rate.



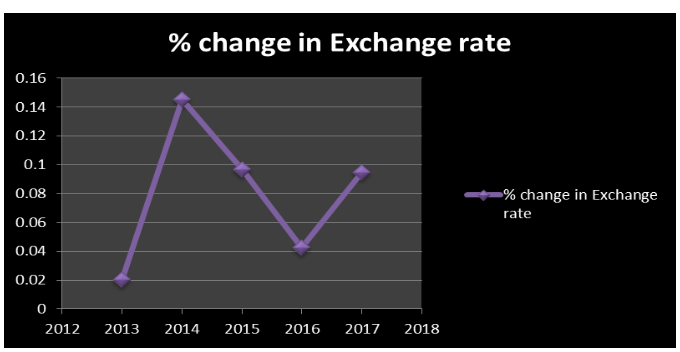
Graph 9

FOREIGN EXCHANGE RATE FROM 2013-2017

4.11 % change in Foreign Exchange rate from 2013-2017

Table 10

YEAR	% change in Exchange rate
2013	0.020249766
2014	0.145272509
2015	0.096378865
2016	0.042548862
2017	0.094323171



Graph 10

4.12 CORRELATION BETWEEN INTEREST RATE, INFLATION, GDP AND SENSEX

Table 11

SL. No	Variable	Correlation
1	Interest Rate	-0.175416311
2	Inflation	-0.669743229
3	GDP Growth Rate	0.558882863

V. FINDINGS

- It is found that interest rate change and its impact on stock exchange is purely an acute reaction to the decision taken. Besides, it has a negative correlation and covariance when compared with the stock market‘s movement.
- Inflation rate too has a negative correlation and covariance with SENSEX. Since this variable is not frequently announced, it‘s impact on the stock market is minimal.
- GDP Growth Rate is positively correlated with the movement of the stock market though it has a negative covariance. As a growing economy is a good sign and sends ripples across the economy, it touches the stock market too and the vice-versa happens if growth rate is less.
- From the study, it is evident that relationship between some macroeconomic variables like inflation, interest rate, economic growth and stock exchange is not in tandem. In the short run, they might have an impact on the stock market‘s movement but, in the long run there are other factors that impact a stock market‘s performance.
- This study shows that there is a direct relation between macroeconomic variables and stock market and sometimes indirect as there are many factors which affects a stock exchange.

VI. SUGGESTIONS

- From this study, it is to be understood that macroeconomic variables have an impact on the stock market and the investors before making a decision need to consider all these variables and proceed accordingly.
- It is wise to take other market factors like fiscal policy, unemployment etc. into consideration which might affect the stock market directly or indirectly.
- Relying on only one factor doesn‘t help investors at any point of time.
- In volatile times, it is better to go for other investment options like gold, bonds, currency derivatives rather than investing in stock market.

- Being patient is a key and it will help in fetching more returns, because the market factors change from time to time.

VII. CONCLUSION

Indian stock market is associated with the macroeconomic factors during the phase of study. The empirical results exhibit significant impact of macroeconomic determinants on Indian stock market. There has been significant impact of gold, money supply, exchange rates and foreign institutional investors on the stock market.The whole objective of the study is to analyse, compare and find out the relationship between macroeconomic variables and the stock exchange. This study is targeted towards the investors who rely on market factors before making an investment. The true purpose is to serve the interest and to aid them in decision making. All the findings are tabulated and portrayed in the form of graphs so that it will be easy to understand and figure out what this study is actually intended to say. The fast enlargement of Indian financial system during the last two decades raises experimental questions regarding the fundamental connection between stock price and key macroeconomic indicators.

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