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A Study on Impact of Macro Economic Variables on Indian Stock Markets (NSE)

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ABSTRACT

Stock market is a vital part of the Indian economy. The stock market plays a crucial role in the growth of the industry and commerce of the country that ultimately affects the economy of the country. Stock market plays important role in mobilizing savings, providing finance to corporate world and so it provides liquidity to the corporate world as well as to investors. The various macro-economic variables such as GDP, Inflation, Exchange Rate, Gold Price, Unemployment, Interest, Monetary policy, Consumer Price Index, etc. affect to the Stock market. The present study investigated the impact of macro-economic variables on Indian Stock Market (NSE) to test that whether or not a growth in macro-economic variables lead to growth in stock market with respect to India. For the purpose of the study, six economic variables are chosen namely GDP, Inflation, Exchange Rate, Gold Price, Unemployment is taken as a measure for stock market performance. The study uses the data for 10 years starting from 2011 to 2020. The data is analyzed by using statistical technique such as descriptive statistics, correlation, regression analysis etc. For the purpose of study, the relationship between stock market price (NSE) as a dependent variable and all macro-economic factors as independent variables are selected. The study concluded that there is a positive relationship between the NSE and all macro-economic variables and there is an impact of GDP, Inflation Rate, Gold price and Exchange Rate on NSE, however, there is no impact of Unemployment Rate on NSE.

Keywords: Stock Market, Macro Economic Variables, GDP, Inflation, Correlation, Regression Analysis, NSE

1. INTRODUCTION

Stock market is a vital part of the financial system of any country because it discloses the factual position of health of economy and financial stability. It plays a crucial role in mobilizing funds from investors to the deprived sectors of the society. The stock market plays important role for industries as well as for investors. Stock market provides investors an alternative investment avenues to invest their surplus funds and creates a pool of these funds to so that it can meet the requirement of industries. The performance of stock markets can be easily judged by an investor with the help of its market index. The market index provides a standard to measure the performance of a particular stock. It also provides guidance to investors for forecasting future trends in market's movements. The movement of stock indices is extremely sensitive to the changes in macro-economic variables such as Inflation, GDP, Export and Import, Foreign exchange reserve, Employment rate, Gold price, Interest rate,etc. These variables play an important role in influencing the performance of the stock market.

2. REVIEW OF LITERATURE:

(Mohi-u-Din Sangmi, 2013) has collected the monthly time series data on various variables such as inflation, exchange rate, Industrial production, Money Supply, Gold price, interest rate from RBI handbook for the period from April 2008 to June 2012. The study reveals that significant relationship is occurred between macroeconomics variable's and stock price in India.(Gurloveleen K, 2015) has studied 10 macro-economic variables such as broad money, call money rate, crude oil price, exchange rate, foreign exchange reserve, foreign institutional investors, gross fiscal deficit, index of industrial production, inflation rate, trade balance and BSE 500The study concluded that no relationship was found amongst the variables during the study period on the basis of regression analysis and Granger Causality test.

(Anchal, 2017) has done the study on the basis of secondary data from 2004 to 2015 and data is analyzed using Augmented Dicky Fuller test. The study concluded that there is no cause and effect relationship between Indian Stock Market and variables.(Keshav Garg, 2018) has concluded that there is a positive relationship between the Sensex and macroeconomic factors except avg. inflation and unemployment rate as they indicate negative relationship.

(Ritu Gautam, 2019) have used various statistical tools like Augmented Dickey Fuller test and OLS. The study concluded that the macroeconomic variables bring about significant impact on the Indian stock market returns. (Mishra, 2018) has concluded that there exists a long-run causality between the macroeconomic variables of Index of Industrial Production (IIP), inflation, interest rates, gold prices, exchange rate, foreign institutional investment, money supply and BSE Sensex. It establishes that there does exist a short run causality between Inflation and BSE Sensex and Money Supply and BSE Sensex.

(Sarika Keswani, 2019) has revealed that there is a strong relationship exists between disposable income, govt policies, the exchange rate and share price. The study also concluded that change in interest and inflation rate will not have a strong impact on stock price. (Aditiya Prasad Sahoo, 2020) has found that Inflation rate and Interest rate are insignificantly affecting the BSE SENSEX but GDP and GDP per capita are statistically significant. (Aditiya Prasad Sahoo, 2020)

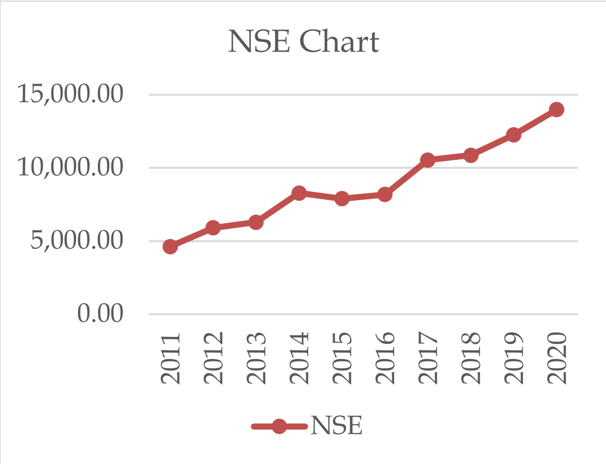
3. RESEARCH METHODOLOGY:

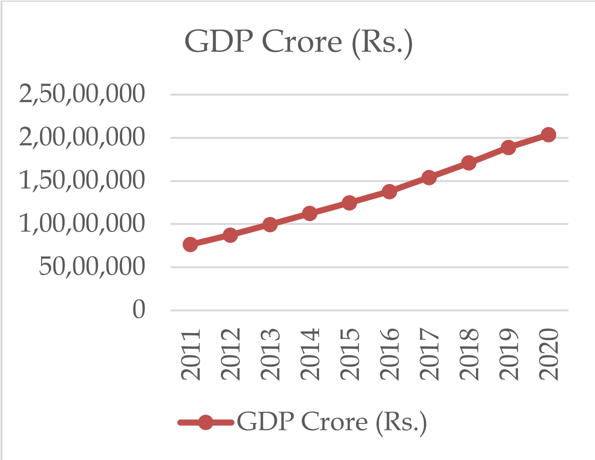
The primary objective of this study is to check the impact of macro-economic variables on Indian stock markets (NSE). This study tried to assess the effect on stock market returns at the national stock exchange of selected macroeconomic variables. Therefore, the study used an empirical research design. The study is based on secondary data to analyze the relation between the Sensex and selected macroeconomic factors over the period of 2011 to Dec 2020. The study is based on dependent variable (Sensex) and selected independent variables such as GDP, Unemployment Rate, Inflation Rate, Gold price and Exchange Rate. For achieving the above mentioned objectives, different set of techniques and tests are used such as descriptive statistical technique, Correlation as well as Regression analysis. The Graphical and tabular mode are used for presentation of information. The researchers have used the judgmental sampling technique.

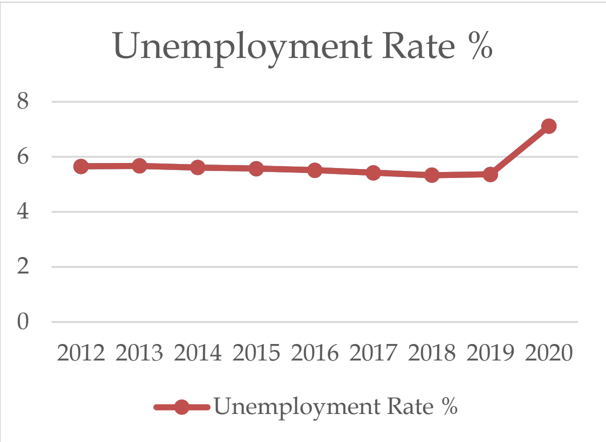
4. DATA ANALYSIS AND INTERPRETATION:

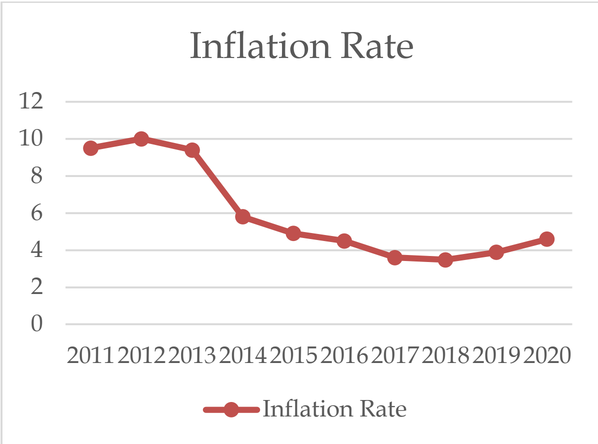
A stock market is affected by various factors. In the present study, attempt is made to analyze how the various macro-economic factors affect the stock market price (NSE). For the purpose of analyze, the relationship between stock market price (NSE) as a dependent variable and all macro-economic factors as independent variables are selected.

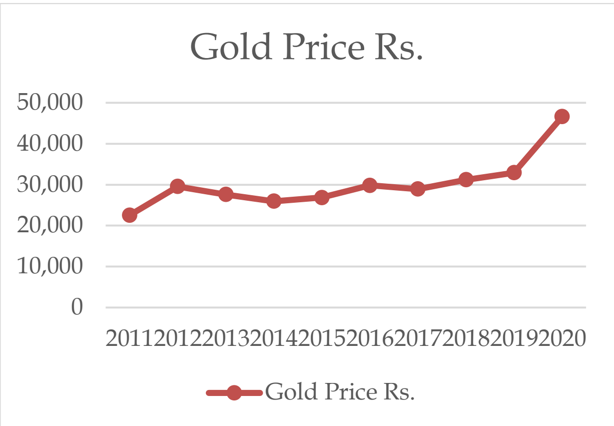
4.1 Comparative Analysis

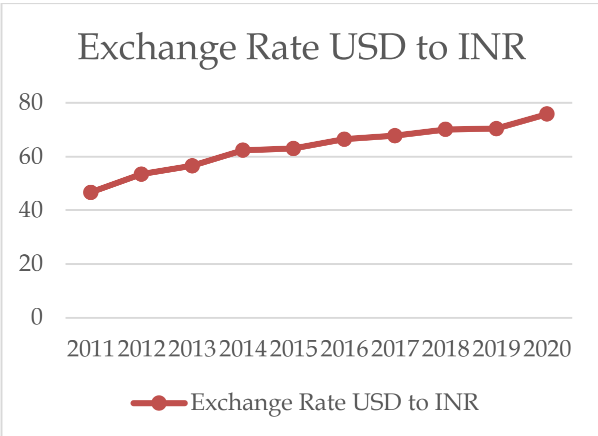












The above graph shows that there is a fluctuation in stock market price. It shows upward trend. In the year 2011, the stock market price was 4,624.30 which increase to 13,981.95 in the year 2020. There is a continuous increase in GDP from Rs. 7,634,472 in 2011 to Rs. 20,351,013 in 2020. The unemployment rate has remain almost around 5% from 2011 to 2019. However, in the year 2020, it has increased to 7.11%. There is a fluctuation in Inflation rate from year 2011 to 2020. In the year 2011, it was 9.5, which was reduced to 4.59 in the year 2020. As soon as Gold price is concerned, it is observed that there is a fluctuation in Gold price from year 2011 to 2020. In the year 2011, the price was Rs. 22,537, which was increased to Rs.45,623 in the year 2020. : From the above chart, it becomes clear that there is a continuous increase in Exchange Rate from 2011 (Rs.46.67) to 2020 (Rs.75.8)

4.2 Descriptive Analysis

	GDP Crore (Rs.)	Unemployment Rate%	Inflation Rate	Gold Price Rs.	Exchange Rate	NSE
Mean	13550785	5.69	5.97	30200.2	63.25	8881
Median	13119917	5.59	4.75	29247.5	64.72	8231.1
Standard Deviation	4325823	0.51	2.62	6458.47	8.84	2973.22
Kurtosis	-1.17	8.51	-1.30	5.29	-0.15	-0.76
Skewness	0.24	2.82	0.82	1.99	-0.61	0.32

Skewness is a measure of symmetry. In our Test, we have found that skewness of distribution is greater than 0.00. A normal distribution has skewness = 0. So we can say that our distribution is not symmetric. Kurtosis is a measure of peakeness and the fat-tails that associate with less density in the middle. A normal distribution has kurtosis = 3.0 or excess. Here the data on gold, inflation rate, exchange rate and NSE has Kurtosis of less than 3. So it can be said that the data are not normally distributed and further test can be applied.

4.3 Correlation Analysis:

Variables	Correlation Value
GDP Crore (Rs.)	0.98395
Unemployment Rate %	0.409899
Inflation Rate	0.80732
Gold Price Rs.	0.812447
Exchange Rate USD to INR	0.950639

The above table shows the relationship between the NSE and various macro-economic variables such as GDP, Unemployment Rate, Inflation Rate, Gold price and Exchange Rate. It is founded that there is a positive relationship between the NSE and all macro-economic variables. It means increase in the macro economic variables will also lead to increase in the NSE or the stock market and decrease in macro-economic variables leads to decrease in NSE or the stock market. The highest correlation is found between GDP and NSE (0.98395) and lowest is found between Unemployment Rate and NSE (0.409899).

4.4 Regression Analysis

Sr. No.	Hypothesis	R square	P value	Result
1	There is no impact of GDP on NSE	0.968158	0.00	Null hypothesis is rejected
2	There is no impact of Unemployment Rate on NSE	0.168017	0.23942	Null hypothesis is accepted
3	There is no impact of Inflation Rate on NSE	0.651758	0.004745	Null hypothesis is rejected
4	There is no impact of Gold price on NSE	0.66007	0.004288	Null hypothesis is rejected
5	There is no impact of Exchange Rate on NSE	0.903714	0.00	Null hypothesis is rejected

From above table we can concluded that there is an impact of GDP, Inflation Rate, Gold price and Exchange Rate on NSE because in all cases p value is less than 0.05. However, in case of Unemployment rate, there is no impact of Unemployment Rate on NSE as Null hypothesis is accepted because p value is more than 0.05.

5. CONCLUSIONS

The study concluded that that there is a positive relationship between the NSE and all macro-economic variables. It means increase in the macro economic variables will also lead to increase in the NSE or the stock market and decrease in macro-economic variables leads to decrease in NSE or the stock market. The study also revealed that there is an impact of GDP, Inflation Rate, Gold price and Exchange Rate on NSE, however, in case of Unemployment rate, there is no impact of Unemployment Rate on NSE.

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