

## **The Impact of Macroeconomic determinants on the Performance of the Indian Stock Market**

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**ABSTRACT:** This article is based on a single objective that is to analyse the trend in the Indian Stock Market and to analyse the impact of different macroeconomic variables taken into the study. The study takes ten variables into consideration, i.e., gold prices, silver prices, oil prices, interest rates, industrial production, exchange rate, inflation, money supply, forex reserve and trade balance. The study investigates effect of macroeconomic factors on the performance of the Indian Stock Market using monthly data over the period April 2008 to March 2018 for ten variables taken into study, and one stock market index namely CNX Nifty. Various statistical techniques are used in the study to analyse the input data like the ADF unit root test, Co-relation analysis, Multivariate Regression analysis, and Granger Causality test. All the independent variables used in the study were stationary at first level difference; and only Forex Reserve and Exchange Rate were found to have a significant relationship with the Nifty Index. On analysing, there was significant relationship found between the independent variables used in the study. There was a causality found from Gold to Nifty 50, Silver to Nifty 50, Inflation to Interest rate, Interest rate to Money Supply, Gold to Forex Reserve, Gold to Trade Balance, Gold to Exchange rate, Silver to Exchange rate, Exchange rate to Trade Balance.

**KEYWORD:** Indian Stock Market, Macroeconomic Variables, CNX Nifty

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### **I. INTRODUCTION**

According to the Economic Survey 2017-18, India's growth rate is forecasted to be between 7-7.5 percent for the FY19 as compared to 6.75 percent for FY18. The government has planned on achieving a fiscal target of 3.2 percent of GDP and the inflation for the FY18 is seen at 3.33 percent. Over the years, India has attracted many investments by different economies and a large consumption base. With this growth rate, India also became the fastest growing economy in FY18. India has attracted equity inflows of US\$ 389.60 billion through FDI and FIIs have invested approximately US\$ 171.81 billion between FY02-18.

Stock markets play a very crucial role in determining growth of any particular sector of the economy, or the economy as a whole. Over the years, there has been a trend observed in the prices of stocks which are mostly affected by three factors, i.e., firm related factors, industry related factors and economic factors. Macroeconomic factors such as oil prices, gold prices and many other investment alternatives can affect the investment decision of any investor towards equities and can shift the inflow from equities to any other investment. These factors thus, decides the movement of stock market as a whole. Many companies listed on stock exchange are internationally concerned and so capital market of India is exposed to global macroeconomic volatility.

The Indian Stock Market serves as a benchmark for the overall status of the Indian Economy and macroeconomic variables, do have a significant influence, positive and negative, on the performance of the capital market of India. Variables like inflation, exchange rate, GDP, industrial production may affect the capital markets, both positively and negatively and it is important to study these factors to determine the trend in the Stock Market of India.

### **II. LITERATURE REVIEW**

A Literature Review reviews academic articles, books and other resources which are similar to the researcher's zone of A Literature Review reviews academic articles, books and other resources which are similar to the researcher's zone of research or hypothesis and provide guidelines by analysing past research. It provides a basis and gaps which could be possibly covered in the current study by setting a background which limits the limitations that were faced in the past research.

Gurloveleen & Bhatia, (2015) used Augmented Dickey Fuller Test (ADF), Multi regression and Granger Causality test for analysing the effects of macroeconomic variables on the prices of stocks. Using the ADF test, the data was tested for stationarity and then multiple regression models were used to find the

correlation between the independent variable and the stock market. It was found that only exchange rate and FIIs was found to have a significant effect on the volatility of the Indian Stock Market but they had no unidirectional and bidirectional effect on the closing prices of the stock selected for research.

Alam, Miah, & Karim, (2016) explains the effect of the some major variables like the EPS, Dividend, inflation, etc. on the stock market of Bangladesh. The researcher has used the stock prices of cement industry as the dependent variable with stocks of 7 companies in its sample. The Pearson's correlation coefficient is used as the research technique and the final analysis has been analyzed by the use of Pooled OLS regression technique. It was found out using the random effect model that under fundamental factors, only EPS was insignificant and other two factors (NAVPS and P/E) were significant to prove the volatility. Fundamental factor i.e. CPI is only significant leaving the other two variable as insignificant. As a emerging economy, DSE's investors should take into consideration, these factors before adding stocks into their portfolio. Apart from these factors, other variables like sentiments also have a significant effect on the stock prices.

Kotha&Sahu, (2016) tries to investigate the effect of macroeconomic variables like inflation rate, interest rate, money supply and exchange rate on the Indian Stock Market. The study tries to explain the long run relationship between these variables by employing technique known as Co-integration analysis to find linear relationship of variables. Johansen test suggests that there exists linear relationships among the variables used in the study and along with the results derived from the Granger causality test, the conclusion was derived. It can be said by the help of research that variables like inflation rate, money supply and interest rate are relatively more significant in long run. In the short term, Inflation and money supply showed positive and significant relationship with the market, while there was bi-directional causality reported between the market and the exchange rate.

Mishra, (2018) explains the effects of macroeconomic variables such as IIP, Inflation, interest rates, Gold Prices, Exchange rate, FIIs and money supply; on the Indian Stock Market. It was concluded with the help of Johanssen Cointegration and VECM that there is a strong long-run relationship between the independent variables of interest rate, IIP, inflation, gold, exchange rate , money supply, FIIs and stock market. According to the research, the short-run association was found only between inflation, money supply and stock market. Other variables like crude oil prices have been excluded from this research.

Singh, (2014) has used independent variables like Industrial Production, Wholesale Price Index, Money Supply, Interest rates, Trade deficit, Foreign Institutional Investment, Gold Price, Crude Oil Prices, Exchange rates to study the effect of macroeconomic variables on the Indian Stock Market. Using the Pearson's correlation technique, it was found out that there was a strong positive correlation for Wholesale price index, Money Supply, Foreign Institutional Investments, and Exchange rate with the stock market. Using the stepwise regression model, it was analyzed that macroeconomic variables that are significant, affects the BSE and NSE indices. The Granger test was used to signify that there was unidirectional causal relationship found from exchange rate and money supply to stock market and also there was causal relationship running from index to trade deficit and FIIs. It was concluded that gold investment is the best alternative investment other than stock market that affects the performance of Indian Stock Market.

Gay Jr., (2016) has used two macroeconomic variable in his research i.e. the exchange rate and oil prices to study the relationship between the independent variables and the stock market index. For this, the Box-Jenkins ARIMA technique was used which analysed that there was a positive relation found between the exchange rate and the stock market. Also there was a negative relation found between the oil prices and the stock market. The effect of these two variables was not found to be having a significant relationship as other macroeconomic variables also affects the stock market and have a role in determination of stock prices.

Benaković & Posedel, (2010) analyses the strength of association of independent variables like inflation, industrial production, interest rates, oil prices with the dependent variable which is the stock prices of fourteen stocks chosen. It was based on Arbitrage Pricing Theory (APT). It was analysed that the market index was proved to be the most significant followed by interest rates, oil prices and industrial production which had a positive impact. Inflation had a negative impact on the stock prices as proves in the research. Using the sensitivity analysis, the market index was again proved to be the most sensitive affecting stock prices, having a positive risk premium. Inflation had a positive risk premium in 2008 but was negative in 2004 as analysed by the research. Apart from these variables, stock prices are affected significantly by investor's expectations as expectations about the futures of macroeconomic variables, affects investor's decision.

Aanchal, (2017) tried to test the stock market of India through this study. For this study; GDP, Inflation, Export, Import and Investments are was taken as performance indicator of the economy of India. It was found that all the independent variables were non-stationary in nature and the market data was also non-stationary. It was also found that none of the variables i.e. both the independent and the dependent variable, had any relationship. Although it was analysed that exports was affected due to GDP and GDP was affected due to inflation. It was found out that only inflation had a negative correlation with GDP, exports and imports, and all other variables were positively correlated. It can also be said that the stock market of India was positively

correlated to all macroeconomic variables used in the research. It can be concluded from the research that, Indian stock market is not all dependent on the variables used in the study and vice versa as there are many other factors which explains the volatility in the Indian stock market.

Pilinkus, (2010) tries to emphasize on the dependence of stock market on the macroeconomic indicators of the economy. For the analysis, the researcher has used various techniques i.e. Granger causality test, Vector auto-regression test and the Johansen Co-integration test. On analysing, it was found that Granger causality existed between the stock market and some macroeconomic variables. Johansen Co-integration test signified that the stock market and the factors had a long term relationship and the stock market is somewhat dependent on the macroeconomic variables of the economy. Different states showed different results in case of short term relationship as explained by the Vector auto-regression test. Test showed that the macroeconomic variables had a multi effect on the stock market index which differed in different states.

Zelga, (2017) explained macroeconomic variables as the major drivers of the stock market irrespective of the country. The researcher took six macroeconomic indicators to find out the relation between the macroeconomic factors and the stock market of the country. It was concluded that the macroeconomic factors had a significant effect, not only on the capital market but also on the businesses, as the factors affects the investment risk in a given country. The research concluded that the effect of these six macroeconomic variables had a different effect depending on the country.

Giri& Joshi, (2017) tried to ascertain the long and short run relationship between the macroeconomic factors and the stock market of India. It was analysed that there was a long term relationship existing between the macroeconomic variables and the stock market. Factors like inflation, exchange rate and the economic growth of India, had a positive effect on the stock market while factors like oil prices had a negative effect on the stock prices as increase in oil price affects the investor's expectations regarding the inflation and hence the capital markets are affected. The Vector Error Correction Model also signified that there was both short term and long term directional relation found from Foreign Direct Investment and growth to stock market.

Ahuja, Makan, & Chauhan, (2012) tries to find a relation between the macroeconomic variables like Industrial production, inflation, Call rate, exchange rate, Gold price, Oil prices, FIIs and the stock market of India. Various sectoral indices were also taken into account for the purpose of studying the relation between the macroeconomic variables and the capital markets. Using the regression and correlation technique, it was found out that exchange rate, call rate and FIIs were more significant to the Indian Stock Market than the other macroeconomic variables taken in the study. Except the exchange rate, both FIIs and the call rate affected the stock market positively. It can be concluded by the study that the stock market is significantly affected by some macroeconomic variables and should be taken into account by the investors for revenue generation.

Megaravalli&Sampagnaro, (2018) examines the relationship between the macroeconomic factors such as inflation and exchange rates and the stock market of three countries, which are India, China and Japan. Using the Johansen test, it was found that Indian and China's stock market had a long term association with the inflation of respective countries. Using the Granger causality test, it was found that there lies bidirectional causality from Indian Stock Market to exchange rate. No relation was found between the inflation and the Indian Stock prices and Inflation of Japan and the Japan Stock market. Using the Vector Error Correction Model showed that there exists a positive long run relation between the Indian Stock Market and the exchange rate and also between China's stock market and inflation .

Melicher, (1974) examines various firms focused in a specific industry to analyse a link between various risk factors and data of these firms. The author introduced various techniques i.e. the CAPM model used to ascertain the expected returns on any asset with the given sensitivity of the asset and the returns of the market. The sensitivity of any stock is found by dividing the covariance of the asset with the market return; by the variance on market returns. It was concluded using the sensitivity analysis that a asset's returns are affected by other asset for whom the beta is the more significant. The beta of any asset affects the stability of the returns provided by that asset, especially in the capital markets.

Ramanujam& Leela, (2011) examines the effect of various macroeconomic variables like GDP, exchange rate and Industrial Production; on the stock market. For the dependent variables, CNXNIFTY was taken into study and summary statistics was derived. It was found out that IIP and exchange rate had a significantly negative effect on the stock market while on the other side, GDP had a significantly positive effect on the capital market. As the GDP of a country increases, the demand increases which effects the stock prices. Using the Wald test, the results were proved that theses variables have a long term effect on the stock market.

According to the past researches, it can be concluded that many macroeconomic factors combinedly affect the Stock Market and almost every Indian research was done on the two major indices of Indian Stock Market, i.e., CNX Nifty and BSE Sensex. Therefore, it is viable to use CNX Nifty for analysing the effect of macroeconomic determinants on the Stock Market of India.

Based on the Literature Review one of the major gaps observed from the studies was the time period of which the stocks were analysed. The study conducted before by various scholars and researchers was limited on

the ground of shorter time span which could have been studied for a longer time period in order to have a clear picture and to obtain more precise results to know the impact of the determinants on the stock prices. Another problem identified from previous research studies was the selection of sample stocks for the research, which can be rectified in further research and carefully selected according to the parameters taken for the study. Previous research work was limited on the ground that the number of the macroeconomic variables used to study the impact of variables on the stock prices only considered variables like Gold prices, Exchange rate, Money supply and FII. Therefore, the research study undertaken considered several other variables like IIP, Exchange Rate, Inflation etc to know the impact of the variables on the stock prices. Another aspect that was noticed from previous research studies which might have put a limitation to more precise results could be the selection of independent variables which may not completely represent the macroeconomic variables.

### **III. OBJECTIVES**

The objectives for the research study are:

1. To measure the movement of macroeconomic variables.
2. The prime objective of this study is to identify the impact of macroeconomic variables (Gold, Silver, Crude Oil, 10-Yr Bond, Industrial Production, Money Supply, Inflation, Exchange Rate, Trade Balance, Forex Reserve) which affect Nifty 50.
3. To analyse the relationship between the macroeconomic variables and the Stock market.
4. Studying the pattern of the impact made by the macroeconomic variables on the stock market of India.

### **IV. HYPOTHESIS**

1.  $H_0$ =There is no significant impact of macroeconomic variables (Gold, Silver, Crude Oil, 10-Yr Bond, Industrial Production, Money Supply, Inflation, Exchange Rate, Trade Balance, Forex Reserve) on Indian Stock Price (Nifty 50).

$H_1$ =There is an impact of macroeconomic variables (Gold, Silver, Crude Oil, 10-Yr Bond, Industrial Production, Money Supply, Inflation, Exchange Rate, Trade Balance, Forex Reserve) on Indian Stock Price (Nifty 50).

2.  $H_0$ =There is no relationship between the Macroeconomic variables (Gold, Silver, Crude Oil, 10-Yr Bond, Industrial Production, Money Supply, Inflation, Exchange Rate, Trade Balance, Forex Reserve) and the Indian Stock Price (Nifty 50).

$H_1$ = There is a relationship between the Macroeconomic variables (Gold, Silver, Crude Oil, 10-Yr Bond, Industrial Production, Money Supply, Inflation, Exchange Rate, Trade Balance, Forex Reserve) and the Indian Stock Price (Nifty 50).

### **V. RESEARCH METHODOLOGY**

For the purpose of the research study, secondary data has been used to analyse the effect and the influence of macroeconomic determinants on the stock prices of India. The closing prices of the Macroeconomic determinants and Nifty 50 has been gathered on a monthly basis from Bloomberg terminal for the study. The Macroeconomic variables being Gold, Silver, Crude Oil, 10-Yr Bond, Industrial Production, Exchange rate, Inflation, Money Supply, Forex Reserve and Trade Balance. The study was conducted for a time period ranging from April 2008 to March 2018.

Various tests like ADF unit root test, Correlation analysis, Granger Causality and Regression analysis were performed with the use of the software E-Views in order to derive the results and to know the impact of macroeconomic variables on the Stock prices of NSE i.e. CNX Nifty50. ADF test is a Unit Root test which was applied in the study to test the stationarity of the data and to find the stationarity of the time series in the long run. Another test used in the study was Pearson's Correlation analysis which tells about the extent to which two variables are correlated. Multivariate Regression analysis was used to analyse the impact of the macroeconomic variables on the Stock Market. Granger Causality test has been used in the research study to examine the direction of the causation that exists between the macroeconomic variables and the stock index.

### **VI. ANALYSIS AND INTERPRETATION**

#### **1. Augmented Dickey Fuller Test Statistic**

##### **Hypothesis:**

$H_0$ : The data is non-stationary.

$H_1$ : The data is stationary.

**Table 1: Augmented Dickey Fuller Test**

Index	t-Statistic	Probability
Nifty 50	-9.819775	0.0000
Gold	-13.29210	0.0000
Silver	-10.71354	0.0000
Crude Oil	-6.437653	0.0000
USD	-10.28067	0.0000
Inflation (CPI)	-8.024207	0.0000
Forex Reserve	-8.686038	0.0000
Money Supply (M3)	-12.17874	0.0000
IIPs	-9.595955	0.0000
Trade Balance	-6.436394	0.0000
10 Year Bond	-12.36745	0.0000
Test critical values: 1% level	-3.486551	
5% level	-2.886074	
10% level	-2.579931	
**Mackinnon (1996) one sided p-values		

Source: Authors own calculation

### Interpretation

The purpose of Augmented Dickey Fuller test is to examine the stationarity of the time series data in the long run. For the study purpose ten variables namely Gold, Silver, Crude Oil, 10-Yr Bond, Industrial Production, Money Supply, Inflation, Exchange Rate, Trade Balance, Forex Reserve were used to examine the impact of the macroeconomic variables on the Stock market index i.e. CNX NIFTY50. The stationarity check was done and the data was stationary at the 1<sup>st</sup> level difference. It can be seen in the table that the Probability values are less than 0.05 ( $p < 0.05$ ) for all the variables, therefore we reject the Null Hypothesis and accept the Alternate Hypothesis which states that the data is stationary and can be used for the study.

## 2. Regression Analysis

### Hypothesis:

H<sub>0</sub>: There is no significant impact of independent variables on dependent variable.

H<sub>1</sub>: There is an impact of independent variables on dependent variable.

**Table 2: Regression Analysis**

Dependent Variable: NIFTY50_RETURN				
Method: Least Squares				
Included observations: 119 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.007733	0.004454	1.736273	0.0854
GOLD_RETURN	-0.116955	0.141193	-0.828330	0.4093
SILVER_RETURN	0.039076	0.087295	0.447634	0.6553
CRUDE_OIL_RETURNS	0.050217	0.54450	0.922268	0.3584
_10_YR BOND RETURNS	-0.077674	0.104937	-0.740192	0.4608
IIP_RETURNS	0.106581	0.073702	1.446120	0.1510
M3_RETURNS	-0.062580	0.054902	-1.139845	0.2569
CPI_RETURNS	0.017179	0.027033	0.635478	0.5265
USD_RETURNS	-1.104213	0.213507	-5.171782	0.0000
TRADE_BALANCE_RETURN	-0.109180	0.121095	-0.901605	0.3693
FOREX_RESERVE_RETURN	0.987579	0.261127	3.781992	0.0003
R-Squared	0.546661	Mean dependent var		0.005645
Adjusted R-Square	0.504686	S.D. dependent var		0.063635
S.E. of Regression	0.044785	Akaike info criterion		-3.285988

Sum squared resid.	0.216619	Schwarz criterion	-3.029094
Log likelihood	206.5163	Hannan-Quinn criter.	-3.181671
F-Statistic	13.02326	Durbin-Watson Stat	1.836284
Prob (F-Statistic)	0.000000		

Source: Authors own calculation

### Interpretation

Multivariate regression analysis is used for the purpose to analyse the relationship that exists between two or more variables. For the purpose of the research study ten independent variables i.e. Gold, Silver, Crude Oil, 10-Yr Bond, Industrial Production, Money Supply, Inflation, Exchange Rate, Trade Balance and Forex Reserve were used to study its impact on the dependent variable i.e. CNX NIFTY50. Using the regression analysis, it can be interpreted that only the Forex Reserve and Exchange rate had a significant impact on Nifty50 Index as the probability was less than 0.05, so the null hypothesis can be rejected and the other macroeconomic variables were found to have no significant impact on the dependent variable, i.e., CNX Nifty.

### 3. Correlation Analysis

**Table 3: Correlation Matrix**

	CNXNIFTY	GOLD	SILVER	CRUDE OIL	USDINR	INFLATION	MONEY SUPPLY	FOREX RESERVE	IIP	TRADE BALANCE	10-Yr BOND
CNXNIFTY	1.000	-0.130	0.209	0.115	-0.663	0.022	-0.024	0.586	0.150	-0.243	0.028
GOLD	-0.130	1.000	0.671	0.159	0.215	0.080	0.008	0.107	-0.186	0.004	0.160
SILVER	0.209	0.671	1.000	0.306	-0.189	0.041	0.016	0.352	-0.091	-0.236	0.152
CRUDE OIL	0.115	0.159	0.306	1.000	0.028	-0.042	-0.093	0.224	-0.054	-0.155	0.537
USDINR	-0.663	0.215	-0.189	0.028	1.000	0.024	-0.052	-0.528	-0.102	0.174	0.017
INFLATION	0.022	0.080	0.041	-0.042	0.024	1.000	0.113	0.035	-0.003	-0.031	0.093
MONEY SUPPLY	-0.024	0.008	0.016	-0.093	-0.052	0.113	1.000	0.064	0.017	-0.066	-0.071
FOREX RESERVE	0.586	0.107	0.352	0.224	-0.528	0.035	0.064	1.000	0.008	-0.274	0.153
IIP	0.150	-0.186	-0.091	-0.054	-0.102	-0.003	0.017	0.008	1.000	0.034	-0.017
TRADE BALANCE	-0.243	0.004	-0.236	-0.155	0.174	-0.031	-0.066	-0.274	0.034	1.000	-0.047
10-Yr BOND	0.028	0.160	0.152	0.537	0.017	0.093	-0.071	0.153	-0.017	-0.047	1.000

Source: Authors own calculation

### Interpretation

It is found that Nifty had a positive relation with all independent variables except for Gold, Exchange rate, Money Supply and Trade Balance. According to the correlation matrix obtained above in the table, it can be seen that various independent variables are inter-correlated to each other but some are very significant and can be used in further analysis. It was found that Gold has a positive relation with all other independent variables like Silver, Crude Oil, exchange rate, inflation, money supply, forex reserve, trade balance and interest rates; except with Industrial Production. Also, Silver had a positive correlation with all other variables except with exchange rate, industrial production and trade balance. Crude Oil is seen to have a negative correlation with inflation, money supply, industrial production and trade balance, and it has a positive relation with Gold, Silver, exchange rate, forex reserve and interest rates. Exchange rate had a negative relation with all other independent variables except Gold, Crude Oil, inflation, trade balance and interest rates. Also, positive correlation is found between inflation and all other macroeconomic variables except crude oil and trade balance. Money Supply is seen to have a positive impact with all other variables except crude oil, exchange rate, trade balance and interest rates. Forex Reserve had a negative correlation with exchange rate and trade balance only. Industrial Production had a positive relation with money supply, forex reserve and trade balance only. Trade Balance is seen to be positively correlated with Gold, exchange rate, and IIP only. There was a positive correlation between interest rates and all other variables except money supply, IIP and Trade Balance.

#### 4. Granger Causality Test

**Table 4: Granger Causality Test**

Pairwise Granger Causality Tests			
Null Hypothesis	Obs.	F-Statistic	Prob.
GOLD_RETURN does not Granger Cause NIFTY50_RETURN	74	3.23479	0.0454
SILVER_RETURN does not Granger Cause NIFTY50_RETURN	74	3.97944	0.0231
CPI_RETURN does not Granger Cause _10_YR_BOND_RETURN	74	3.37805	0.0398
_10_YR_BOND_RETURN does not Granger Cause M3_RETURN	74	4.43563	0.0154
GOLD_RETURN does not Granger Cause FOREX_RESERVE_RETURN	74	3.13429	0.0498
GOLD_RETURN does not Granger Cause TRADE_BALANCE_RETURN	74	3.42968	0.0380
GOLD_RETURN does not Granger Cause USD_RETURN	74	5.89992	0.0043
SILVER_RETURN does not Granger Cause USD_RETURN	74	4.86770	0.0105
USD_RETURN does not Granger Cause TRADE_BALANCE_RETURN	74	3.55184	0.0340

Source: Authors own calculation

#### Interpretation

Granger test for causality is a test that is used for the purpose to examine and analyse if one variable helps to predict another. It is a concept that is related to causality. For the purpose of the research study ten independent variables namely Gold, Silver, Industrial Production, Crude Oil, 10-Yr Bond, Inflation, Exchange Rate, Money Supply, Trade Balance and Forex Reserve were taken. Along with that one dependent variable i.e. CNX NIFTY50 was used to find out the causality between them.

As per the results obtained by Granger Causality Test, since the probability values are less than 0.05 so we reject the null hypothesis in all the cases above hence, it can be analysed that there was a causality found from Gold to Nifty 50, Silver to Nifty 50, inflation to interest rates, Interest rate to Money Supply, Gold to Forex Reserve, Gold to Trade Balance, Gold to Exchange rate, Silver to Exchange rate, Exchange rate to Trade Balance.

### VII. CONCLUSION

The study examined the effect of various macroeconomic factors on the Stock Market of India. Variables like Gold prices, Silver prices, Exchange rate, Interest rate, Oil prices, Industrial Production, Inflation, Money Supply, Forex Reserve and Trade Balance were taken into study. Using the ADF test, variables were found to be stationary. The results of various other tests were analysed and various trends were interpreted. The regression analysis showed that Forex Reserve and Exchange rate is having an impact on the Nifty Index. Correlation test provided some useful results like, inter-variable relationship between different independent variables used. Nifty Index was found to have a positive relation with Silver Prices, Oil prices, Inflation, Forex Reserve, Index of Industrial Production and Interest rates and also it had a negative relation with Gold prices, Exchange rate, Money Supply and Trade Balance. Grange Causality test was performed on the input data and it was found that there was a causality found from Gold to Nifty 50, Silver to Nifty 50, Inflation to Interest rate, Interest rate to Money Supply, Gold to Forex Reserve, Gold to Trade Balance, Gold to Exchange rate, Silver to Exchange rate, Exchange rate to Trade Balance.

### VIII. LIMITATIONS

These are the various limitations that are recorded during the study:

1. In the study variables which are of vital importance such as economic performance of a country (GDP) has not been analysed which could be analysed in further studies.
2. Also, since the period of 2008 was a period of crisis hence, the data for the year 2008 can be analysed separately.
3. As the stock market is influenced by various other factors so it would be inappropriate to relate the stock movement to Macroeconomic variables only.
4. Tests such as ADF, Regression analysis and Granger test for causality were used to draw the findings and the results. So, various other tools could be used to do the same study.

### IX. RECOMMENDATIONS

Through this study, various conclusions can be extracted which can provide investors, immense knowledge before making any investment decision:

1. Other than company's fundamental and technical trend, various other factors affect the prices of any stock or the market.

2. Exchange rate and Forex reserve are the two most important factor, based on this research, that significantly affects the stock market prices.
3. Investors should take into various other determinants into consideration before investing or divesting in the Indian Stock Market.

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