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Nexus between Stock Price Volatility and Selected Macroeconomic Variables: Evidence from Nifty 50

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Abstract: India is taken into account a high potential investment destination all-over the world even though it has some challenges like political, social, cultural complexities.Wide literature survey is available on the macroeconomic factors affecting the Indian stock market volatility. There is a general belief on macroeconomic variable affects the functioning of stock market and its volatility (PallaviKudal 2010). In developing countries like India stock markets are sensitive to change in the macroeconomic variable. It is presumed that domestic economic fundamentals affect performance of the stock market but the changes in domestic variables may occur due to the changes in the global environment. This stimulates the researcher to find out whether the macroeconomic variable changes create any volatility in the Indian stock market. This study used the average monthly closing price of Nifty 50 from June 2000 to December 2016 and the average monthly data of 12 macroeconomic variables for analyzing, which factors influence the performance of Nifty 50 in India. In this study the selected variables are grouped into three factors by using factor analysis and named as macro environment factors, industrial performance factor and policy rates. The empirical result shows that macro environments and industrial performance factors are used to predict the variance in Nifty 50.

Keywords: Factor Analysis, Nifty 50, Macroeconomic Variables and Principal Component Analysis.

1. Introduction

The US recession took place in December 2007 and ruined in June 2009 and another crisis came in the form of The European debt crisis commenced at the end of 2009. During that time, the world was in deep trouble and affected critically by the global economic slowdown and India also no exception. In the year 2008 India faced cascading effects of world economic recession. The retail inflation is double digit at 10.45 per cent and the economic growth significantly slowed to 6.8 per cent in 2008-09. In March 2009 INR/$ is 51 which is unsurpassed low compare to the previous years and the oil prices continuously increased. All these economic factors have impacted Indian stock markets during the recession. Volatility may harm the smooth functioning of the financial market and negatively impact the economic performance of the country. Increased volatility can give the worry to the investor and they behave irrationally. However, a fall in stock market will weaken investor confidence and make their investment down (Poterba 2000). Stock market volatility may also affect firms' investment and economic growth directly. The increased stock market volatility can be perceived as an increased risk of equity investment and thus investor shift their investment into less risky asset. This activity leads to increased cost of equity capital to the company. The speculators, arbitrator and hedger know more techniques to trade in the volatile situation and make profit. However, the average person may not succeed in money making opportunity in the volatile market. The share price fluctuation will affect the investor's wealth generation. In this context, this study tries to analyze the impact macroeconomic variables on the volatility of Nifty 50.

2. Review of Literature

Raman et al. (2008) examined the causal relationships between the share price index and Industrial Production Index by applying the Multivariate Vector Error Correction model. The macroeconomic variables used for the study were namely, Share Price Index, Exchange Rate, Industrial Production, Money Supply, credit to the private sector, Wholesale Price Index and Money Market Rate. The monthly data for the period November 1965 to October 2000 were collected. The study shows causality running from economic growth proxies (Industrial Production) to Share Price Index and not the other way round. Bull Run or rising prices in the stock market cannot be taken to be a leading indicator of the renewal of the economy in India.

AmanSrivastava (2010) made an effort to inspect the influence of macroeconomic factors on the Indian stock market. Logged values of the Sensex, Industrial Production Index, Wholesale Price Index, Interest Rate, Foreign Exchange Rate and Morgan Stanley Capital International (MSCI) index were used in this study from the period of April 1996 to January 2009. This paper applied the Johansen Multivariate Co-integration test and the Vector Error correction mechanism. The study concluded that developing economies like India is mostly affected by domestic macroeconomic factors than global factors in long term. Mainly home macroeconomic factors are affecting the stock market in long run such as Industrial Production, Wholesale Price Index and Interest Rate.

Mansor Ibrahim &Hassanuddeen Aziz (2003) examines the dynamic relationship and causal linkage between the Malaysian stock market and the macroeconomic variables. The Exchange Rate (Ringgit vs USD), Money Supply and Industrial Production were selected as macroeconomic variables. Monthly data of the Kuala Lumpur Composite Index (KLCI) was considered as measure of the stock prices. The 22 years data from January 1977 to august 1988 was analysed by co-integration and VAR model to identify the long run relationship and short run interactions. The result denotes the presence of long-run relationship between these variables and the stock prices. Substantial short-run interaction among the variables was identified.

Joseph AtoForson&JakkaphongJanrattanagul (2014) investigated the long-run relationship between the Thai stock Exchange Index (SETI) and selected macroeconomic variables. The period of the study was from January 1990 to December 2009. The Toda and Yamamoto's augmented Granger causality test was employed for analysing the causality. The study mentioned that the significant long term relationship exists between Money Supply, Consumer Price index, Industrial Production Index and Thai stock index. The study indicates that there was bidirectional relationship between Industrial Index Production and Money Supply; the unidirectional relationship exists between the following fairs CPI-IR, IP-CPI, MS-CPI, and CPI-SETI.

3. Methodology

3.1. Objectives of the Study

Considering the existing literature reviews and the problem statement, the following objective is framed for the study

- To analyse the impact of Macroeconomic variables on the volatility of S&P CNX Nifty Index

3.2. Research methodology

This study tries to analyses the impact of the macroeconomic variable into the Nifty 50 price movement. The selected macro-economic variables areExchange Rate (ER),Industrial Growth Rate (IGR), Foreign Institutional Investment (FII), Call Money Rate (CMR), Repo Rate (Repo), Balance of Trade (BOT), Gold Price (GP), Crude Oil Price (COP), Money Supply (M_3), Foreign Direct Investment (FDI), Foreign Exchange Reserve (FER), Consumer Price Index (CPI). The data reduction technique of factor analysis is used to derive the factor influences the price movement of the Nifty 50 among the 12 selected macroeconomic variables. The factor analysis approach adopted in this section based on the previous research which analysed the effect of Gold Price, FDI, FPI, Dollar Price, Crude oil Price, Forex Reserve, Call Money and CRR etc on stock market (PallaviKudal 2014; Fifield et al. 2002). The factor analyses are applied to the time series data since the contribution by Stock & Watson (2002). This study applied the principal component analysis to extract the factor from the data set.

4. Results and Discussion

4.1. Factor Analysis

The factor analysis was first introduced by Thurstone in the year 1931. The factor analysis technique is used to find a factor among the interrelated variables. The factors are the number of variables correlated with each other because they have one or more common property. The factor analysis also called as the data reduction technique because large number of interrelated variables is grouped into small no of factors. The observed variables are ER, IFR, FII, GMR, Repo, BOT, GP, COP, M3, FDI, EFR and CPI are may be expressed as liner function of factor:

$$ER = \lambda_1 F + e_j \quad (1)$$
$$IFR = \lambda_2 F + e_k$$
$$....$$
$$CPI = \lambda_{12} F + e_t$$

Where variable (e_j) ≠ variable (e_k), j ≠ k

F is latent variable / unobserved variable; e_j is measurement of error and λ is the factor loading of observed variable. The assumption of the factor analysis is error terms of the observed variables are not correlated with other variables error terms. There are two types of factor analysis; Exploratory Factor Analysis (EFA) and Conformity Factor Analysis (CFA). The Exploratory Factor Analysis is applied when there is no prior idea about the relation among variable and no of factor to be grouped. The conformity factor analysis is used when prior theory or idea that the variables are associated with specific factors. This study is adopted EFA.

Kaiser-Meyer - Olkin (KMO) and Barlett Test of Sphericity

The KMO and Barlett test is used to check the applicability of factor analysis. The KMO statistic is an estimator of sample adequacy, both overall and for each variable (Cerny& Kaiser 1977). The value of the KMO test is lies between zeros to one. If the partial correlation among the variables is large compare to the original correlation that variables are not fitted for factor analysis. The KMO test value is equal to 0.5 indicates the correlation is equal to partial correlation. If the KMO value is close to 1 indicating that partial correlation should be small and the variables share common factors. The universally accepted KMO test value is 0.6.

Bartlett's test is hypothesis test used to check whether the samples are taken from populations has equal variances or not. The Bartlett test statistic is calculated to test for quality of variance among group against another that variances are unequal for at least two groups.

$$T = \frac{(n-k)\ln(s_p^2) - \sum_{i=1}^{k}(n_i - 1)\ln(s_i^2)}{1 + \frac{1}{3(k-1)}\left(\sum_{i=1}^{k}\left(\frac{1}{n_{i-1}}\right) - \frac{1}{N-K}\right)} \quad (2)$$

Where s_i^2 is the variance of the i^th group; N is the total sample size; k is the no of groups; s_p^2 is the collective variance. The hypothesis for the test is

H_0: $\sigma_1^2 = \sigma_2^2 = \ldots = \sigma_k^2$

H_a: $\sigma i^2 \neq \sigma_j^2$ for at least one pair (i, j)

The variables are assumed to be unequal when the P value is significant and it is confirmed that the samples are fitted for factor analysis.

Principal Component Analysis (PCA)

Principal Component Analysis was invented by Karl Pearson in the year 1901. PCA is the factor extraction method used under the Exploratory Factor Analysis**.** PCA is a statistical method uses an orthogonal rotation to convert a set of correlated observed variable into set of linearly uncorrelated variables / factors called principal component. The First step in the PCA analysis is calculation of mean value for individual variables and the mean value is subtracted from the each variables. The second step is calculation of covariance matrix and Eigen values of the covariance matrix. The principal component/ factor are selected based on highest Eigen value. The basic equation of PCA is

$$F_{ij} = W_{1i}X_{1i} + W_{2j}X_{2j} + \text{------} + W_{pi}X_{pj} \quad (3)$$

Where W is a matrix of coefficients that is determined by PCA and X is the observed variables. F is the principal component or derived factor.

Communalities

Communalities are the squared summation of factor loading of the extracted factors which indicate the amount of total variance in each variable that is accounted for. The factor loading is the correlation between the observed variables and extracted factors. The Small communalities values indicates variables that do not fit well with the factor analysis, and should possibly be dropped from the analysis. The communalities of variable x may expressed as

$$\hat{x} = (\text{FL of } F_1)^2 + (\text{FL of } F_2)^2 \ldots\ldots + (\text{FL of } F_n)^2 \quad (4)$$

Where F_1 is the extracted factor and FL is the factor loading. The communality for a given variable account the proportion of variation in that variable explained by the factors

Rotated Component Matrix

Rotation involves redistributing of commonalities so that a clear pattern of loading comes out. A rotation procedure is used to better prediction of the factor. There are two types of rotation methods orthogonal and oblique; in the first methods factors are kept at right angles to each other i.e uncorrelated; in the second method factors are allowed to become correlated. In this study orthogonal rotation is applied. The rotation changed the factor loading of the each subset but its communality and factors Eigen vales are unchanged.

4.2. Multiple Regression Analysis

In the Multiple regression models, the dependent variable is said to be a linear function of one or more independent variables plus an error term. Regression Analysis is used to investigate the relationship between the variables. Generally, the researcher seeks to determine the casual effect of one variable on another variable. The dependent variables of Nifty 50 analysed in terms of multiple independent factors generated by the software such as macro environment, industrial performance, and policy rates. The regression equation is expressed like

$$S_t = \alpha+\beta_1F_{1t}+ \beta_2F_{2t+} \beta_3F_{3t}+ e \qquad (5)$$

Where α is constant; S_t is the CNX Nifty monthly average closing price; F_{1t}, F_{2t} and F_{3t} are the average factor scores in the month t for the respective factors. $\beta_{1,}$ β_2 and β_3 are the factor coefficient denoting the strength of the factors for explains the volatility of the Nifty 50. The multiple regression model appropriateness is checked by the significant of F-test value. After the multiple regressions equation is estimated it will be checked how it is fitted for analysis in terms of predictive ability by examining the coefficient of determination. R^2 value always must lies between 0 and 1.

Data Analysis

This part of the study tries to analyze the impact of the macroeconomic variable into the Nifty 50 price movement. The monthly data of all variables are considered because historical data of some macroeconomic variables available in the monthly basis like Industrial Growth Rate, Money Supply, and Consumer Price Index etc. In addition, the econometric analysis gives better result under the condition of equal sample frequency so all the selected variables historical data is converted into average monthly data.

4.3. Correlation Analysis

The correlation analysis is used to identify the interdependence of the selected macroeconomic variables. The Table 1 shows that many explanatory variables are highly correlated with others variables. The Exchange Rate (ER) is positively correlated with Gold Price (GP), Money Supply (M3) and Consumer Price Index (CPI). The Exchange Rate (ER) is negatively correlated with Industrial Growth Rate (IGR). Balance of Trade (BOT) is negatively correlated with Gold Price (GP), Money Supply (M3), Crude Oil Price (COP), Foreign Exchange Reserves (FER) and Consumer Price Index (CPI). Gold Price (GP) is positively correlated with Money Supply (M3), Crude Oil Price (COP), Foreign Direct Investment (FDI), Foreign Exchange Reserves (FER) and Consumer Price Index (CPI). Money Supply (M3) is positively correlated with Foreign Direct Investment (FDI), Foreign Exchange Reserves (FER) and Consumer Price Index (CPI). Foreign Direct Investment (FDI) is positively correlated with Foreign Exchange Reserves (FER) and Consumer Price Index (CPI). Foreign Exchange Reserves (FER) is highly correlated with Consumer Price Index (CPI).

The explanatory variables are highly correlated with other variables which lead to multicollinearity problem. If the selected macroeconomic variables are interdependence, the individual variable impact on Nifty 50 price movement cannot be analysed by linear models. To rectify the multicollinearity problem and get effective results, factor analysis technique is used.

4.4. Factor Analysis

Factor analysis is used to explain the variability among the observed, correlated variables in terms of possibility less number of unobserved variables called factors. It seeks underling latent variables (unobserved variable) that are reflected in the manifest variables (observed variables). Before starting the factor analyse the correlation matrix is constructed. The common factor is called as latent variables. Before applying the factor analysis, first it has to be checked that the data set is fitted for the factor analysis by applying, the Kaiser-Meyer-Olkin (KMO) and Barlett Test of Sphercity.

Table 1 Correlation Matrix

	ER	**IGR**	**FII**	**CMR**	**Repo**	**BOT**	**GP**	**COP**	**M_3**	**FDI**	**FER**	**CPI**
ER	1.00											
IGR	**-0.66***	1.00										
FII	0.21	-0.05	1.00									
CMR	0.37	-0.32	-0.07	1.00								
Repo	0.26	-0.13	-0.15	0.45	1.00							
BOT	-0.38	0.15	-0.24	-0.19	-0.15	1.00						
GP	**0.52***	-0.32	0.32	0.17	0.06	**-0.63***	1.00					
COP	0.33	-0.11	0.35	0.06	0.00	**-0.52***	**0.87***	1.00				
M_3	**0.73***	-0.39	0.33	0.26	0.13	**-0.65***	**0.93***	**0.78***	1.00			
FDI	0.17	-0.03	0.10	0.21	0.00	-0.40	**0.53***	**0.45***	**0.53***	1.00		

FER	0.34	-0.12	0.27	0.12	-0.03	**-0.63***	**0.91***	**0.81***	**0.87***	**0.67***	1.00	
CPI	**0.75***	-0.40	0.35	0.26	0.14	**-0.64***	**0.92***	**0.77***	**1.00***	**0.51***	**0.84***	1.00

*** Correlation is significant at the 0.05 level (2-tailed)**
ER- Exchange Rate, IGR - Industrial Growth Rate, FII - Foreign Institutional Investment, CMR - Call Money Rate, Repo - Repo Rate, BOT - Balance of Trade, GP - Gold Price, COP -Crude Oil Price, M_{3-} Money Supply, FDI - Foreign Direct Investment, FER - Foreign Exchange Reserves, CPI - Consumer Price Index.

Kaiser-Meyer-Olkin (KMO) and Barlett Test of Sphericity

The KMO and Bartlett's Test of Sphericity is a measure of sampling adequacy test for factor analysis. The universally accepted KMO test value is 0.6. Table 2 indicate the KMO value is .815 which exceeds 0.6. The Barlett Test is the hypothesis test for identity matrix appeared in the correlation matrix. The value of the Bartlett's Test of Sphericity is too large and the P value is significant. Hence both the test are indicating sample adequacy for factor analysis of the study and conforms correlation among the independent variables which is presented in the Table 1.

Table 2 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.815
Bartlett's Test of Sphericity	Approx. Chi-Square	2.801E3*
	Degree of Freedom	66
	Sig.	.000

*Significant at 0.05 % level.

Hypothesis of Bartlett's Test.
H_0: There is no statistically significant interrelationship among the variables
H_1: There is a statistically significant interrelationship among the variables

Principal Component Analysis (PCA)

There are two types of factor analysis: Conformity Factor Analysis (CFA) and Exploratory Factor Analysis (EFA). If the number of factor is identified initially has to be used CFA but it is really very difficult, so that EFA has been used. The principal component analysis is used to factor extraction under the EFA method.

Table 3 Factors Derived by the Principal Component Analysis

	Initial Eigen values			**Extraction Sums of Squared Loadings**			**Rotation Sums of Squared Loadings**		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	6.008	50.066	50.066	6.008	50.066	50.066	5.198	43.317	43.317
2	1.870	15.582	65.649	1.870	15.582	65.649	2.311	19.256	62.572
3	1.183	9.859	75.508	1.183	9.859	75.508	1.552	12.935	75.508
4	.806	6.713	82.221						
5	.665	5.545	87.765						
6	.510	4.252	92.017						
7	.418	3.480	95.497						
8	.332	2.768	98.265						
9	.149	1.242	99.507						
10	.043	.359	99.866						
11	.015	.124	99.990						
12	.001	.010	100.000						

Extraction Method: Principal Component Analysis.

From the Table 3, the components are denoted the numbers of the observed variables used in the Factor Analysis. However, not all the 12 variables will be retained. In the present study only the 3 factors have been extracted by combining the relevant 12 variables. The 3 extracted factors have the capable of explaining the 75.5 per cent of the variance among the variables.

The Eigen values are the variance of the factor. The total column holds the Eigen value. The first factor explains the 50 per cent variance and has the highest Eigen values. The next factor accounts for 15 per cent of the left over variance and third factor account 9 % respectively. Initial Eigen values show the factors (components), Eigen values (Total), percentage of variance explained and cumulative percentage corresponding to the Eigen value. The Eigen value represents a partitioning of the total variation explained by each principal component. The 3 factors are extracted because it has Eigen values greater than 1. The second column from the Table 3 named as Extraction Sums of Squared Loadings is corresponding to the number of factors retained in the Initial Eigen values panel. The Rotation Sums of Squared Loadings values in the table denote the distribution of the variance after the varimax rotation is applied. Varimax rotation with Kaiser Normalisationis attempts to maximize the variance of each of the extracted factors, so that the total amount of variance accounted for is redistributed over the 3 extracted factors.

Communalities

The communalities is the proportion of each variable's variance that can be explained by the factors (latent variables) and which is denoted as the sum of squared factor loadings for the variables. From the Table 4, the initial value denotes the diagonal value of the correlation matrix and extraction indicates the proportion of each variable's variance that can be explained by the retained 3 factors together.

Table 4 Communalities

	Initial	Extraction
ER	1.000	.864
IGR	1.000	.739
FII	1.000	.467
CMR	1.000	.653
Repo	1.000	.627
BOI	1.000	.538
GP	1.000	.923
COP	1.000	.777
M3	1.000	.967
FDI	1.000	.618
FER	1.000	.925
CPI	1.000	.962

Extraction Method: Principal Component Analysis.

Rotated Component Matrix

Factor analysis technique provides the factor rotation facility to generate the factors. There are two types of rotation techniques; orthogonal rotation and oblique rotation. The orthogonal varimax rotation that produces factor that are uncorrelated, oblique rotation technique produces factors that are correlated.

The varimax technique of orthogonal rotation with Kaiser Normalization has been used in this study. The Rotated Component Matrix presented in the Table 5 clearly shows the orthogonal rotation and the values of the factor loadings denote the each variable is associated with only one factor. The Table 5describes the correlation value of the macroeconomic variables with each of the extracted factors. To identify the variables, included in each factor, the variable with the absolute maximum value in each row is selected to be part of the respective factor.

Table 5 Rotated Component Matrix[a]

Variables	Component		
	1	2	3
FER	.958		
GP	.906	.315	
M_3	.861	.475	
COP	.854	.136	-.172
CPI	.845	.499	
FDI	.742	-.190	.177
FII	.535	.311	.289

BOI	-.709	-.159	-.103
IGR		-.849	-.129
ER	.337	.848	.176
Repo		.163	.774
CMR	.155	.299	.735

Rotation Method: Varimax with Kaiser Normalization
a. Rotation converged in 5 iterations.

Identification of Macro Economic Variables Grouped by Factor analysis

The data reduction technique is used to analyse the selected variables in the study and the technique has been reduced to 3 factors from the 12 variables with 75.5 per cent explanation of variance among themselves. After the variables are grouped under the 3 factors, the SPSS generate the value of the 3 extracted factors.

Table 6 Name of the core factors

Factor	Variables	Name assigned to the Factor
1	FER, GP, $M_{3,}$ COP, CPI, FDI, FII, BOT	Macro Environment
2	ER & IGR	Industrial Performance
3	CMR & repo	Policy Rates

The 12 macroeconomic variables included in the study converted into 3 factors due to their inter-related nature. The Multicollinearity issue is solved and the assumption of no multicollinearity of classical linear regression model has been satisfied. Factor 1 is labeled as Macro environment; factor 2 is labeled as Industrial performance; and factor 3 is labeled as policy rates.

4.5. Multiple Regression Analysis

The regression analysis is done between the Nifty 50 index closing price and 3 extracted factors values.

Table 7 Impact of Extracted Factor on the Nifty 50 Index

Name of the Factors	Co-efficient	T-value	Probability
Macro Environment	.931	37.360	.000*
Industrial performance	.165	6.635	.000*
Policy Rates	-.005	-.192	.848
R^2	0.794		
Adjusted R^2	0.793		
F-Statistics	479.948*		
N	175		
Durban Watson	1.85		

***Significant at 0.05 % level

The value of F-statistics is the significant which denotes overall regression model is good fit for the data. The Durban Watson test value is close to 2 denotes the model is free from auto correlation problem. R^2 is the coefficient of determinant which denotes 79% of variance in the Nifty 50 price movement can be explained by the three factors. The coefficient of macro environments factor is positive and significant indicate that variance in Nifty 50 is highly predicted by it. The industrial performance is significant and has positive impact on the Nifty 50 Movement. The policy rate is negative and also not significant indicate that fail to explain the performance of the Nifty 50. The analysis indicates that the macro environment factors are well associated with the Nifty 50 movement in India.

5. Findings and Conclusion

The major findings pertaining to the macroeconomic variables and its impact into the Nifty 50 price movement are summarized here. The 12 macroeconomic variables considered for this study are ER, IGR, FII, GMR, Repo Rate, BOT, GP, COP, $M_{3,}$ FDI, FER and CPI.

The correlation analysis shows that selected explanatory variables are highly correlated with other variables which lead to multicollinearity problem. If the selected macroeconomic variables are interdependence, the individual variable impact on Nifty 50 price movement cannot be analysed by linear models. To rectify the multicollinearity problem and get effective results, factor analysis technique is used. The KMO and Bartlett's Test of Sphericity indicates the data sets are fitted for factor analysis and conforms correlation among the independent variables.

The result of the Principal Component Analysis indicates 3 factors extracted by combining the relevant 12 variables. The 3 extracted factors have the capable of explaining the 75.5 per cent of the variance among the variables. The first factor explains the 50 per cent variance and has the highest Eigen values. The next factor accounts for 15 per cent of the left over variance and third factor account 9 % respectively. Factor 1 is labelled as Macro environment; Factor 2 is labelled as Industrial performance; and factor 3 is labelled as policy rates. The SPSS generate the value of the 3 extracted factors.

The regression analysis shows that the value of F-statistics is significant which denotes overall regression model is good fit for the data. The Durban Watson test value is close to 2 denotes the model is free from autocorrelation problem. R^2 is the coefficient of determinant which denotes 79% of variance in the Nifty 50 price movement can be explained by the three factors. The coefficient of macro environments is positive and significant indicates that variance in Nifty 50 is highly predicted by it. The industrial performance is significant and has positive impact on the Nifty 50 movement. The coefficient of policy rate is negative and also not significant indicates that fail to explain the performance of the Nifty 50. The macro environment factors are well associated with the Nifty 50 movement in India. Macroeconomic variables as exchange rate, industrial growth rate, balance of trade, inflation, foreign institutional investors, gold price, crude oil price, money supply, and foreign direct investment can be used by many investors, financial analysts and fund managers to predict or estimate the future direction of equity market for allocating the resources. Indian equity market is highly responsible to the macro environment variables**.** Industrial performance in relations with growth pattern is passively related with the performance of the equity market. So it is important to make these variables become stable to achieve efficient market performance and best resource utilization. The policy makers should be thoughtful in revision of these variables which affect the Indian equity market investment. Likewise, Reserve Bank of India should consider these features in designing the good monetary policy. It will aid to strengthen the financial system.

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