AN EMPIRICAL STUDY ON IMPACT OF FII AND OTHER STOCK EXCHANGES VOLATILITY ON BSE STOCK EXCHANGE VOLATILITY

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ABSTRACT

Purpose- Main purpose of this research paper is to measure impact of FII and other stock exchange volatility on the BSE stock Exchange volatility.

Design and Methodology- In this paper various factors are considered under scope of the study which are BSE Sensex, FII (Foreign Institutional Investment), Relationship among different foreign stock exchange which are from the UK, USA and Japan. For the purpose of analyzing the data a period of 3 months (i.e. from 1 April 2014 to 30 June 2014) has been taken into consideration. In order to analyze the factors this study is based on the Secondary data. The secondary data have been collected from Web site, BSE stock exchange index collected from - www.moneycontrol.com and www.bseindia.com, data on investment (FII), have been collected from ministry of finance, dipp.nic.in, sebi.gov.in and fipbindia.com, data of global indexes will be collected from NASDAQ, London stock exchange & NIKKEI Websites and other information collected from other sources of secondary data will be journals, books, newspapers, magazines and news. The appropriate statistical techniques as correlation model, multivariate regression model etc. have been used for analyzing the data.

Finding and Conclusion- This study have been found out that there is a close and direct relationship of the BSE Sensex with the FTSE and NASDAQ Stock Exchange as well as there is inverse relationship of the BSE Sensex with the FII and Nikkei.

Practical Implication- Through this study researcher can say that by analyzing these factors we can predict the movement of the BSE Sensex. This study will helpful to the investor to predict the BSE stock movement on the basis of other factors. And it will in the minimization of the risk and betterment of return for the investor who invest in the secondary capital market or trade in the equity share.

Key Words - BSE Sensex, FII, FDI, Nikkei, FTSE, NASDAQ.

Introduction:

This paper mainly based on the empirical study of such factors which affect the volatility of the different Indian Stock exchange. Volatility refers to fluctuation in the purchase and sale of shares in the stock market. When the stock market value increases and then decreases for the next moment, and this cycle goes continuously, it is called volatility in the market. In India there are various stock exchange indices. There are...
many factors which affect the companies who are listed in different Indian Stock Exchanges and by these factors there is a deviation in the share prices. The growth of any country depends on the different factors. Under this paper factors are as follows-

- FII,
- Global Sensex information NIKKEI, FTSE, NASDAQ etc.

In this study the BSE stock exchange of India selected as our main parameter on which the whole research report based on it.

BSE –Bombay Stock Exchange:
BSE is the Bombay Stock Exchange which is located on Dalal Street, Mumbai, Maharashtra India. It is considered as 10th largest Stock market in the world with Nifty as of May 2014. It was established in the year 1875, formerly known as Bombay Stock Exchange Ltd, it is the oldest as well as a leading stock exchange of India. It is also one of the Asia’s first stock exchanges. BSE provided the platform to the corporate sector for raising capital efficiently. It mainly deals in equity, debt instrument, derivatives and mutual funds. It calculates the amount in total market capitalization basis. BSE best popular equity index is S&P BSE SENSEX. More than 5000 companies are listed in the BSE making it world’s no.1 exchange. It is having the permanent recognition from Securities Contract Regulation Act, 1956 since 1875. The S&P BSE SENSEX is also known as BSE 30 and S&P Bombay Stock Exchange Sensitive Index. This is the free float market weighted stock index. There is 30 well established and financially sound companies are listed in BSE. These 30 major companies are the representative of the various industrial sectors of the Indian economy, from which some of them are largest and most actively traded stocks. The S&P BSE Sensex is the beat of the native Indian Stock Market, since 1 January 1986. On 1 April 1979, 100 are taken as the base value of the BSE Sensex and 1978-79 is taken as the base year. BSE launched Dollex 30 on July 2001, it deals in the Dollar. Due to Recessionary condition BSE market capitalization fell from 49% to 25% from 2008-2012.

- BSE linked with the Standards and Poor’s and it becomes S&P BSE Sensex on 19 February 2013.
- Sensex reached to the higher value than the Hang Seng index of Hong Kong for the first time on 13 March 2014.
- In the current position On 24 March 2014 it reaches to the 22000, On 9 May 2014 it crossed the level of 23000, On 13 May 2014 it reaches to the 24000 because of sustained capital inflows by FII and due to exit poll results that NDA (BJP) form the Government.
- On 16 May 2014 it crossed 25000 for the first time due to result of election have been declared and NDA wins with the great difference.
- Because of reformatory Budget on 7 July 2014 the value of Sensex goes to 26000.

FII (Foreign Institutional Investor):
Foreign Institutional investor refers to “those institutions that made the investment from a foreign country for the purpose of earning the highest profit , these institutions mainly deals in securities, real properties and various assets and these firms are established outside India.” After LPG (Liberalization privatization Globalization) policy 1991, it gives the opportunity for the investment in the form of FII on the September 1992. Foreign Institutional Investment has received the portfolio investment in equities since 1993. Securities and Exchange Board of India (SEBI) is the regulating authority for the FII investment, all Foreign Institutional Investor must register with the SEBI.

FTSE 100:
FTSE 100, FTSE or Footsie is the name of the FTSE 100 Index, which is executed by the high capitalization base London Stock Exchange. This FTSE 100 is regulated by the UK company law and it is widely tradable stock exchange in the world. FTSE denotes the Financial Times Stock Exchange. This index started in the 3
January 1984 with the base level of 1000. On 30 December 1999 it was reached at the highest level 6950.6 but due to the recessionary condition financial crisis was going on from 2007-2010 because of this it was reached at the lower level 3500 in 2009, From 2011 to nowadays it was still recovering and on 14 May 2014 it was reached at 6894 which was highest since 1999.

NIKKEI 225:
Nikkei, the Nikkei Index or the Nikkei Stock Average is the different names of the NIKKEI 225 (Nikkei Heikin Kabuki 225). Nikkei 225 governs by the Tokyo Stock Exchange. Since 1950, it is measured on a daily basis by the Nihon KeizaiShimbum (Nikkei) newspaper. Those factors which affected the Nikkei index are revised in once in a year and it is based on the price weighted index. From 1975 to 1985, it is also known as the Nikkei Dow Jones Stock Average because of recently Nikkei is the widely tradable average in the Japanese equity market.

NASDAQ 100:
NASDAQ 100 is the stock market comprises of the 102 stocks which are issued by the 100 largest listed non-financial companies. It is based on modified capitalization – weighted index. These stock weights are measured on the basis of market capitalization which included the certain rules that create the impact over largest components. This index determines on the basis of exchange and it not only included the U.S. based companies, means it also included the other than U.S. companies. Financial companies work as a separate index in U.S. means NASDAQ does not comprise these financial indices. Because of these situations this NASDAQ 100 criteria differ from the Dow Jones industrial average and S&P 500. On 31, January, 1985 the NASDAQ 100 is established by the NASDAQ, for the purpose of the improvement in the profit of the New York Stock Exchange.

Review of Literatures:

1) Roger D. Huang, Ronald W. Masulis, and Hans R. Stoll. “Energy shocks and financial Markets” {1996} - They examine the contemporaneous and lead-lag correlations between daily returns of oil future contracts and stock returns. There is a striking lack of Correlation between stock returns, other than oil company returns, and oil futures returns.

2) Valentina Corradi, Walter Distaso & Antonio Mele “Macroeconomic Determinants of Stock Market Volatility and Volatility Risk-Premiums” {Oct. 2010} - In this paper they analyze the , Which type of cyclical properties affected on stock volatility and risk premiums, for this purpose they develop the “no-arbitrage model” and market requires the risk bearing capabilities for the volatility. Business cycle factors are not creating the major impact over the level of stock market volatility.

3) Muhammad Irfan Javaid Attari, Luqman Safdar “The Relationship between Macroeconomic Volatility and the Stock Market Volatility: Empirical Evidence from Pakistan” {2013} - They used the time series analysis and (EGARCH) Exponential Generalized Autoregressive Conditional Heteroscedasticity analysis to identifying the macroeconomic variables and its impact over Pakistan Stock Exchange. They have taken the Interest rates, inflation rates and gross domestic product as macroeconomic variable. As a result, this study shows that there was a greater influence of the macroeconomic variables over Karachi stock market. Pakistan stock market is highly volatile, so the government must pay attention towards it to make it less volatile.

4) Puja Padhi “Stock Market Volatility in India: A Case of Select Scripts” {Jan. 2006} - In this paper she examines the relationship with the individual script with the combined indices and also identifies the volatility between them. She taken five aggregate indices as a sample and individual companies are determine by the GARCH model on (1, 1) basis. BSE 200 shows the highest ARCH coefficient and CNX Nifty Junior shows the lowest ARCH coefficient.
5) Pramod Kumar Saxena and Kirti Khanna “Impact of Quarterly Results on Sensex and Market Volatility - An Empirical Research” [Mar. 2012] - In this paper they analyze that BSE AUTO and BSE Teck have affected the Sensex widely as the coefficient of determination was .66 and .74 respectively. 66 % and 74% changes occurred in Sensex movements during the announcements of results was due to the changes in the BSE AUTO and BSE Teck. This study finds out that low and moderate positive degree of correlation as BSE FMCG, BSE Bankex and BSE IT.

6) Dr. Aurangzeb “Factors Affecting Performance of Stock Market: Evidence from South Asian Countries” [Sep. 2012] - This study identifies the factors affecting performance of stock market in South Asian Countries and he also tries to find out the long run relationship between the variables. Regression results indicate that foreign direct investment and exchange rate have significant positive impact on performance of stock market in south Asian countries while; interest rate has negative and significant impact on performance of stock market in south Asia. Results also indicate the negative but insignificant impact of inflation on stock market performance in south Asia.

7) Saurabh Singh, Dr. L. K. Tripathi And Anupama Pardesi “FII Flow and Indian Stock Market: A Causal Study” [Jan. 2014] - This paper tries to examine the relationship of FII with the performance of Indian stock market and its impact on the performance of Indian stock market after 2007. It finds out that there is by-directional causality between FII and Nifty as well as FII movement and SENSEX. P value is 0 which shows Nifty and Sensex returns do not cause FII purchase and FII sales. P value is .001 which is less than 0.05 suggest that FII movements cause changes in the values of Nifty and Sensex. They use the Granger – causality test & Dickey-Fuller test.

Need of the Study:

Stock market plays a vital role in the growth of any country and also it plays a significant role in the development of the industry. That person who wants to earn maximum profit from the stock market so for that stock market is the best place from where he invests his money and earns high profit in less duration. Stock market performance and industry growth and stability of the economy are related to each other. If stock market performance goes better than it's stronger and smoothen the industrial growth and it shows the stability in the economy. If the stock market prices are falling down than it shows the fluctuation in industrial growth and instability in the economy of the country.

- In the various reviews of literatures Number of studies conducted in USA, UK, and South Asian countries to find out the correlation between various variables and the fluctuations of stock prices.
- Previous studies mainly well-thought-out the only one factor like- FII, Interest rate. The findings of these studies show that with the minor variation different variables have the significant impact on stock prices. Therefore, these results helped investors to make better predictions about the movement of stock prices, whenever if these fundamentals change their position, then the value of shares will also change.
- The researcher mainly focuses on the Indian economic factor and stock exchange index of India. Furthermore, it considered the various factors like- FII, relationship with the different foreign indexes.

Objective of the Study:

The objective is:

- To measure the selected factors affected on the stock exchange index.

Research Design and Methodology:

Research design & methodology is the back bone of any research study. The researcher proposes the following research procedure for this study:
**Scope of the study:** In this study, those factors which affect the stock exchange index are considered in the scope of study. These factors are BSE Sensex, FII (Foreign Institutional Investment), Relationship among different foreign stock exchange which are from the UK, USA and Japan.

**Duration of the study:** For the purpose of analyzing the data a period of 3 months (i.e. from 1 April 2014 to 30 June 2014) has been taken into consideration.

**Data collection:** In order to identify the factors and analyze the factors this study is based on the *Secondary data.* The secondary data has been collected from Web portals i.e. data related to various stock exchange index collected from - www.moneycontrol.com and www.bseindia.com, data on investment (FII), has been collected from ministry of finance, dipp.nic.in, sebi.gov.in and fipbindia.com, data of global indexes has been collected from NASDAQ, London stock exchange & NIKKEI Websites and other information collected from other sources of secondary data will be journals, books, newspapers, magazines and news.

**Statistical Tools** The appropriate statistical techniques as *correlation model* and *multivariate regression model* have been used for analyzing the data.

**Analysis of Data:**

**Multivariate Regression**- Multiple Regression Analysis calculates the effect of two or more independent variables over one dependent variable. It finds out the nature of the relationship. A multivariable or multiple linear regression models would take the form

\[ y = \alpha + x_1\beta_1 + x_2\beta_2 + \ldots + x_k\beta_k \]

\[ y = \text{BSE Sensex} \]
\[ \alpha = \text{intercept} \]
\[ k = \text{No. of items} \]
\[ X_1 = \text{FII,} \beta_1 = \text{slope of FII (FOREIGN INSTITUTIONAL INVESTORS)} \]
\[ X_2 = \text{FTSE 100 return,} \beta_2 = \text{slope of FTSE 100} \]
\[ X_3 = \text{Nikkei 225,} \beta_3 = \text{slope of Nikkei 225} \]
\[ X_4 = \text{Nasdaq 100,} \beta_4 = \text{slope of Nasdaq 100} \]

Here, my study dependent variable is BSE Sensex Return and Independent Variables are FTSE, FII, NIKKEI, and NASDAQ.

**Output Summary** - *Table No. 1*

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.886&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.786</td>
<td>.769</td>
<td>575.189708</td>
</tr>
</tbody>
</table>

<sup>a</sup> Predictors: (Constant), NASQ, FII, FTSE, NIKK

<sup>b</sup> Dependent Variable: BSE

There is a high degree of coefficient correlation \( r = .88 \), which shows the positive and direct correlation, means dependent and independent variables moves in same direction. In this model we can say that BSE Sensex and FII, FTSE, NIKKEI, NASDAQ all are moving in the same direction. \( R \text{ square}= .78 \) is the coefficient of determination which gives explained variables out of total variables, means all these independent variables affect the dependent variable up to 78%. \( R^2 \) shows the explanatory power of the model. This shows the 78% of the variations in the BSE Sensex is explained by these four independent factors these
are NASDAQ, FII, FTSE, and NIKKIE. Adjusted $R^2$ shows the purified value i.e. .769. Adjusted $R^2$ ignored the error value in the model. Standard error indicates the extent of error in our estimation of the value of the dependent factor i.e. BSE SENSEX. Standard Error also defines the range in the series and also predict the accuracy in the given data series.

### Table No.2
#### ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>6.427E7</td>
<td>4</td>
<td>1.607E7</td>
<td>48.563</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>1.753E7</td>
<td>53</td>
<td>330843.201</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>8.180E7</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), NASQ, FII, FTSE, NIKK

b. Dependent Variable: BSE

In this table it can be seen that the significance level value= .00, at 5% level of significance, So here p < 0.05 which means our regression model is valid for analysis purpose. So, this multivariate regression model is applicable and gives reliable results. F ratio is used for the analysis of null hypothesis. In this model the F statistics is used to test the significance of $R^2$ as equals to 48.563 which is significant as indicated by the p value as given in the last column.

**Explained Variance**

$$F = \frac{\text{Explained Variance}}{\text{Unexplained Variance}}$$

The value of $R^2$ is significant as indicated by the p value (.000) of F statistics as given in ANOVA table. This table also shows the two variable linear model. Explained variance is also known as variance by regression and unexplained variance is also known as the residual variance. Degree of freedom of explained variance are (n-1), where n is equal to the no. of total variables, so, the (n-1) is the number of independent variables. Here, numerator is 4 and denominator is 53 in the F ratio. Based upon this test we can say that regression is significant and the dependent variables and the independent variables are correlated.

### Table No.3
#### Coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Zero-order</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>-40486.203</td>
<td>6268.352</td>
<td>-.017</td>
</tr>
<tr>
<td>FII</td>
<td>-.021</td>
<td>.078</td>
<td>-.017</td>
</tr>
<tr>
<td>FTSE</td>
<td>5.417</td>
<td>.987</td>
<td>.408</td>
</tr>
<tr>
<td>NIKK</td>
<td>-.941</td>
<td>.528</td>
<td>-.328</td>
</tr>
<tr>
<td>NASQ</td>
<td>9.914</td>
<td>2.033</td>
<td>.936</td>
</tr>
</tbody>
</table>

a. Dependent Variable: BSE
Unstandardized coefficient B= Beta value gives the slope value of the regression model and also defined how much the Dependent Factor (BSE Sensex) dependent upon the Independent factors. Here, intercept and slope values are -40486.203 and -.021,5.417, -.941, 9.914. Standardized B defined the volatility in itself series. The estimated regression equation are-

\[ Y = \alpha + X_1\beta_1 + X_2\beta_2 + X_3\beta_3 + X_4\beta_4 \]

\( Y = -40486.20 - .0213F + 5.417FT -.941N + 9.914NQ \)

P value = (.000) (.792) (.000) (.081) (.000)

F= FII, FT= FTSE, N= NIKKEI, NQ= NASDAQ

The above estimated regression equation indicates that the FII(Foreign Institutional Investor) and NIKKEI Japan stock Exchange is negatively related with BSE Sensex due to its negative value of coefficient (-.021&-.941). Similarly, the FTSE UK Stock Exchange and NASDAQ USA Stock Exchange are positively related to the BSE Sensex as their coefficient shows the value 5.417 & 9.914. The result indicates that if the FII goes by one unit than BSE Sensex goes down by .021 units while keeping the other factors constant. If the FTSE goes up by one unit than BSE Sensex also goes up by 5.417 units. If NIKKEI goes up by one unit than BSE Sensex goes down by .941 units. Similarly, if NASDAQ goes up by one unit than BSE Sensex also goes up by 9.914 units. The results indicate that the NASDAQ USA Stock Exchange and FTSE UK Stock Exchange significantly influence the BSE Sensex movement in positive manner. The result indicates that FII and NIKKEI gives insignificant and negative influence on the BSE Sensex. This level of significance examine by the p value of FII (.792), FTSE (.000), NIKKEI (.081), NASDAQ (.000) which should be less than or equal to alpha or level of significance which is assumed to be .05 in the present situation. The relative importance of the independent variables is obtained by the absolute value of the standardized beta, it shows that the NASDAQ relatively more important than the FTSE, NIKKIE, FII. This is useful for decision making and future planning purpose.

Diagrammatic Presentation:

![Histogram of BSE Sensex](image-url)
These graphs mainly show that the trend among the variables are in increasing trend and all factors movement goes in the same pattern.

**Findings:**

- By analyzing various factors, researcher found that FII, NASDAQ, NIKKEI, AND FTSE have major impact over BSE Sensex. There is an inverse relationship between Foreign Institutional Investor and Nikkei with BSE Sensex Return. Means if FII increases than it decreases the BSE Sensex Return.

- **FII and BSE Sensex:** Under Regression Model – The β (slope value) of FII over BSE Sensex is .021 means it creates inverse impact over BSE Sensex. Both data series are adverse in nature and they are negatively volatile in nature. Negative Volatility is defined, standardized coefficient of correlation. FII create impact over BSE through unstandardized coefficient which is .021.

- **FTSE 100 and BSE Sensex:** In the Regression model and Regression model shows that 54% data of FTSE impacted over the BSE Sensex. 40% is volatile in nature.

- **NIKKEI 225 and BSE Sensex:** In the Regression model and Regression model shows that it creates inverse effect to the BSE Sensex and 32% is volatile in nature.
NASDAQ 100 and BSE Sensex:- In the Regression model and Regression model shows that 99% data of NQ impacted over the BSE Sensex. 93% is volatile in nature. NASDAQ creates huge impact over BSE Sensex.

Recommendations:

- If we invest in FTSE AND NASDAQ it gives the positive return. So, we can suggest that create more investment on BSE Sensex.
- NIKKEI Japan stock exchange having the negative impact so, we can say that if we invest in BSE Sensex so, it also gives the negative return.
- FII also creates negative impact on the BSE market. Create investment on BSE Sensex when FII gives positive impact.
- Government should take the action for controlling the adverse situation.
- More Indian companies should be listed on NASDAQ and FTSE stock exchange for accessing the global capital.

Future prospects:

- Here, only one Stock exchange taken as a dependent factor, for further analysis, we also add NIFTY Stock Exchange with the BSE Sensex.
- Year wise analysis of all these factors is also done for the further research.
- Different stock markets are also taken as a sample for the further research or we can say that Block wise analysis is also possible. Like- relationship with the BRICS stock exchange with the Indian Scenario.
- It is further divided in the Short term analysis basis or long term analysis basis. Like for short term analysis daily basis FII inflow is taken and for long term yearly wise FDI data taken into consideration.
- Most of the investors must analyze these data to know the further movement of the Stock Market, which is helpful in further investment and for getting more returns.
- Through various statistical models further analysis also done, like- GARCH, ARIMA, ARMA, ARCH and Other steps in Multiple Regression should be used for the further analysis.

Conclusion:

At last, we can say that this study examine the impact of various factors through Multivariate Regression Analysis. This analysis defined the degree as well as relationships among the factors. Volatility of Stock market changed very rapidly, so except these others factors should also consider for research work. FII and Nikkei have an inverse relation whereas NASDAQ and FTSE have positive relations with the BSE SENSEX. When investors are trading in secondary capital market in this case they should consider these studied factors for the minimization of risk and increase the return.

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