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ORIGINAL ARTICLE

A Study of Exchange Rates Movement and Stock Market Volatility

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ABSTRACT

In this research we have analyzed the relationship behavior of Indian stock exchange andNiftyreturn.This research is based on dynamic behavior between stock markets movement and volatility of stock market for this purpose; we have applied several statistical tests. .we have taken the data from period of October 2008, tomarch, 2010.It study has proved that exchange rate and Nifty returns are non-normally disturbed. Unit root tests have proved that Nifty returns and exchange rate are stationary and they are stationary at level form. It has seen that relationship between stock market movements and stock volatility is negative. For checking the level causal relationship between these variables we have used Granger causality test.This test has shown that there is unidirectional relationship exist. This study is trying to attempt that stock market is crucial for the economy.Different researchers have proved from their research that exchange rate is known as the crucial determinates of business profitability.This study has provided such type of information, which would favorable for the gaudiness of management decision about the risk and investment. This information will beneficial for government policies.The maintained of foreign exchange would motive the foreign investors.

Key words: *unit root, Grangercausality, Niftyreturns, unidirectional*

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INTRODUCTION

Stock market has a crucial role for the development of country. This thing is seen that stock market has main role in the improvement of economy; we can say stock market is channel between surplus funds and lender. Many economists have been proving that volatility has also impact on the economy of any country. Now a day to understand the origin of volatility of stock market is very interesting topic for financial analysts. Policy makers are doing working about the determining factor of stock volatility. Stock market volatility is a tool to assess the risk. The financial position of any developing and under developing country can assess from its foreign exchange volatility.Accoring to Benita and Lauterbach (2004) have shown that real economy of country is affected by exchange rate volatility. However, they have been conducted different surveys related to stock market efficiency; according to that survey it has seen that volatility has impact on stock exchange. However, different empirical evidence related to influence of stock exchange volatility on stock market development has shown that stock market is inconsistence condition. Therefore, it is interesting to study that Indian exchangerate volatility on her stock exchange. According to (kurihara, 2008:p.378) different factors like exchange rate, interest rate, domestic product, have impact of daily stock exchange prices. The relationship between stock exchange and stock returns are hugeissues now a days, this

issues has preoccupied the minds of the researchers. Different researchers have proved from their research that exchange rate is the main determinates of business profitability. According to (Joseph 2002) the linkage between of exchange rate volatility and firm competitiveness is negative. In the case of appreciates the exchange rate ,the exporters are losing their competitiveness in all over the world international market .on the second side , in the domestic markets there is chances to increase competitiveness .it has seen in different studies that importers and exporters have been affected due to deprecation of exchange rate. .According to nieh, 2007 currency worth have both negative and positive impact on different stock market, it has also studied that changes in money value of firm then also changes the foreign operations.

VALUE OF THE STUDY

This study hasprovided such type of information for the gaudiness of management decision about the risk and investment. This information will beneficial for government policies. According to this study stable exchange rate promotes a strong economy.

LITERATURE REVIEW

According to Mishra et al., 2007 it is seen that devaluation of currency have influenced on both importers and exporters'. These results are also supportive for prediction of future trends. Globalization has vital role for the progress of any country s development. In the present of contemporary scenarioit has proved that there is positive linkage between financial market and real sector. In 1990s various reform measures have come into existence for the development of economy 1991, floating exchange rate developed. There is positive linkage between stock returns and exchanger rate in 1997, financialcrisis is caused of fall stock prices. According to Joseph, up and down in exchange rate related to expect stock returns. The basic purpose of this study is to endeavor the relationship between stock prices volatility and exchange rate. The results are showing thatstock market is more sensitive segment. This study explored that how stock market and exchange rate have interrelationship with each other's.

Aggarwal, R. (2003) has investigated about the stock exchange and stock market performance. He has viewed interaction of these variables in the economy of Bangladesh. He has taken the monthly data of different currienices.His empirical results has shown that exchange rate and stock prices series are both found non-stationary. The used Johansen procedure for checking that possibility of the integration relationship. After applying the test he concluded that there is no cointegation relationship between the variables. Finally granger causality test has shown stock price granger has reason of exchange rate of dollar and yen and there is no any relationship between exchange rate of euro and pond. Babu and Prabheesh (2007) inverse relationship between foreign investment and stock returns in china. In this study they have viewed the causal linkage between FLLs and Indian stock market. For this purpose they have used cross correlation function, granger causality test and VAR .The CCF test has given the results that there is bi directional causality between FLLs and Nifty returns, on other side Granger causality and VAR analysis shown that there is un-directional causality between Nifty returns and Flls.

Ajayi, R.A Frideman, J. (1989) they have investigated the interaction between three emerging countries. For checking the cointegration they have applied the Johansen procedure. Their results have shown that there is not cointegration between stock prices and exchange rate. For checking the causal relationship between variables we have used the Granger causality, outcomes has shown that there is no causal relationship between exchange rate and stock prices.

Joseph (2002) has analyzed that volatility of stock returns in India. For this purpose GARCH model had been used to check the analyzed the linkage between exchange rate and stock market return. Their results have shown that there is very puny relationship between both variables.

Doong,s-c,yang(2005) examined that causal relationship of exchange rate and stock returns of Colombo stock exchange .ADF was used to find out the stationary of the data series and for checking the causality a regression was used. The regression results have shown that there is positive relationshipbetween both variables. It is seen that there a contradictory result between regression and granger causality. YAH, H,Y and Niehc(2006) investigated about the behavior of the stock exchange of Kenya. The economic theory has determined that stock market and exchange rate have no proper direction. They have used Pearson product moment correlation co efficient method. They used this method for this purpose of determine the degree of correlation between them. Thismethod shows the results that there is positive relationship between exchange rate and stock prices. Wu,y. (2000) in this paper he used the error correction model to analysis the impact of the stock exchange on the four countries.

Takeshi,I.(2008) he examined behavior the of macroeconomic parameters and stock returns in India. For this purpose he has used Engle Granger cointegration test.According to his results it has seen that no longer equilibrium between stock returns and exchange rate and there is no causality relationship between stock returns and exchange rate. Parkinson,J>M(1987) in his paper he showed that stock market of the south Arian is feeble. For this analyzed he has used the unit root test ,which have proved that stock market has both negative and positive relationship with the stock exchange.

Naeem,m,aabdul(2002) explained in his paper that after financial crisis the exchange rate has affeted.Due to this reason the relationship between exchange rate on the stock market is different. For this purpose he has used the unit root test and examined that exchange rate and stock market are integrated at level (1). C.M.Ma and Kao, G.W.T (1990) in their paper they examined the exchange rate on the stock prices in Iran. For this purpose they have used the GARCH and this model has given the superior results. GARCH model has shown the positive relationship between exchange rate and stock prices.

Chakrabarti,R.(2001) in his paper he viewed there is a dynamic behavior between stock market return and exchange rate of India .he has used VAR model. He concluded the results that stock market and exchange rate have negative relationship.

Chouy, Y.C (1996) in his paper he examined the relationship between time varyingmacroecomic variables on the stock prices in India. For this purpose he used GARCH model and taken the results that time varying has been affected the conditional volatiles of the macroeconomicfactors. Najang and Seifert (1992) analyzed that dynamic relationship between stock returns and exchange rate volatility of Kenya. For this purpose they have used the GARCH model. TheJohnson cointegration and Granger causality has been proving that there is no relationship between them.

DATA AND METHODOLOGY

The basic reason of this study is to see that which type of relationship between stock rate movements and stock returns volatility. We study is focusing towardsIndianrupees dollar and exchange rate movement. The daily data is more useful to find out the relationship between exchange rate and Nifty index. We havealso lined plots of two series 1) nifty returns 2) exchange rate.

We have calculated daily returns by the using of natural logarithm of the daily closing price relatives, i.e.

$r = \ln P(t)/P(t-1)$

HYPOTHESIS

After viewing the different study we have obtained some hypothesis

Hypothesis 1: it is shown that no normally disturbing between exchange rate and stock returns.

Hypothesis 2: unit root exists between both series.

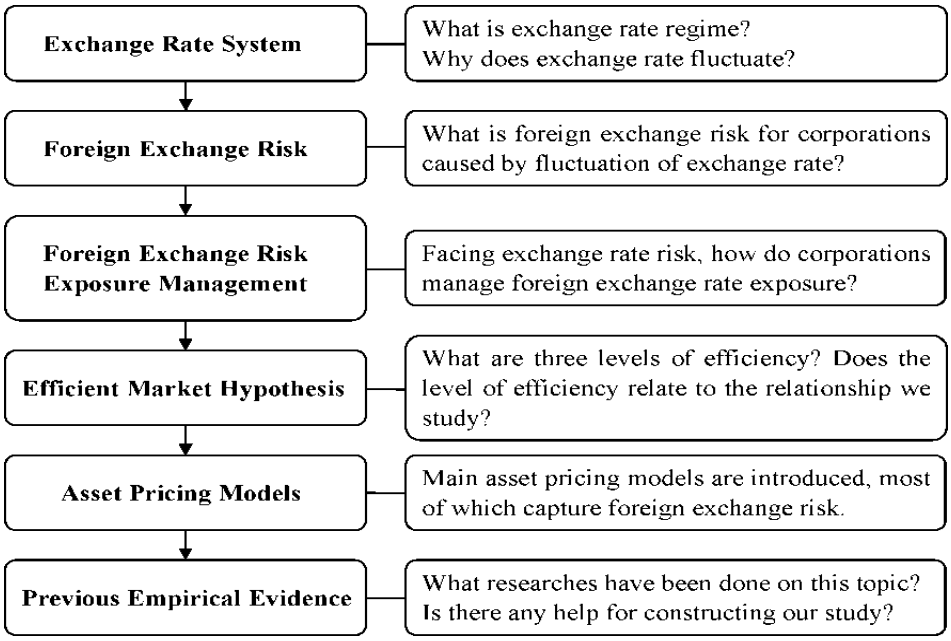
Hypothesis 3: there is shown that correlation between two variables.

Hypothesis 4: there is no causality between stock exchange and stock returns.

NORMALITY TEST

In Gujarati (2003) the JB test used to stock returns and exchange rate individually. The JB test is known as large sample test.this is used to caputes the Sleekness and Kurtosis.
JB = n [S2 /6 + (K-3)2 /24]

Fig. 1: Theoretical framework



UNIT ROOT TEST

According to Guajarati (2003) Unit root test is used to review that at which level data is stationary. Stationary condition can be tested by using the Augmented Dickey fuller test. ADF is the well-known test which is used for large sample. According to empirical study a data series is consider time series if its mean is constant .when the data is non-stationary then we used the autoregressive model.

Table 1: Results of Augmented Dickey Fuller Test

	Stock Returns	Exchange Rates
Observations	347	347
Mean	-0.002167	0.000826
Median	-0.000717	0.000217
Maximum	0.067575	0.037869
Minimum	-0.130133	-0.031867
Std. Deviation	0.026267	0.007347
Skewness	-0.295288	0.297428
Kurtosis	4.712688	9.096538
Jarque-Bera	47.31657	540.9371
Probability	0.000000	0.000000
Sum	-0.749534	0.285488
Sum Sq Dev.	0.238026	0.018618
Result	Not Normal	Not Normal

ADF Test Statistic -9.522366
1% Critical Value* -3.9889
5% Critical Value -3.4247 20% Critical Value -3.1353
*MacKinnon critical values for rejection of hypothesis of a unit root.
Augmented Dickey- Fuller Test Equation Dependent Variable: D (RETURN)
Method: Least Squares Date: 09/01/09 Time: 13:299
Sample (adjusted): 6 348

Table 2: Showing t-statistic and Prob.

	Coefficie	Std. Error	t-Statistic	Prob.
RETURN(-1)	-1.151235	0.120898	-9.522363	0.0000
D(RETURN(-1))	0.203933	0.104897	1.944132	0.0527
D(RETURN(-2))	0.187599	0.090458	2.073898	0.0389
D(RETURN(-3))	0.158127	0.074294	2.128408	0.0340
D(RETURN(-4))	0.040234	0.054396	0.739638	0.4600
C	0.000114	0.002891	0.039038	0.9689
@TREND(1)	-1.45E-06	1.44E-06	-1.003109	0.3165
R-squared	0.479672	Mean dependent var		5.87E-06
Adjusted R-squared	0.470325	S.D. dependent var		0.0359
S.E. of regression	0.026157	Akaike info criterion		
Sum squared resid	0.228498	Schwarz criterion		4.350511
Log likelihood	762.1738	F-statistic		51.31694
5Durbin-Watson stat	2.009119	Prob(F-statistic)		0.0000

Table 3: Showing Nifty Returns and Exchange Rates

	Nifty Returns	Exchange Rates
Nifty Returns	1.000000	-0.087787
Exchange Rates	-0.087787	1.000000

EMPIRICAL ANALYSIS

In methodology data was collected from four different stages. In the first step the normality test was applied to find out the nature of data. For this purpose we have used Jarque-Bera statistics test for the purpose of view the disturbing in table 4 with two series.Sweweness and Kurtosis value have shown that variables are normally disturbed. The low and high kurtosis value indicates the extreme platykurtic.after this test it has shown that both variables are non-normally distributed.skewness values of variables are as fellow -0.295288 and 0.297429 respectively and kurtosis values are as fellow 4.7126888 and 9.096538 respectively. Second stage is to check that data is stationary or not, for this analyses the simple way to plot time series graph and observe the trend in mean, variance and autocorrelation. A series are time series if it mean and variance constant over time. And results have shown that data are in series in their level form. We have also used ADF for checking the statorinatry of the data. The results of ADF are -9.522363 and -8.078592 respectively, which are showing that both at stationary at level

form. If varaiablare are stationary at level form then we applied Johansen conintegration test for checking that long run relationship between them or not.

Fig. 2: Line Plot of Nifty Indices Data

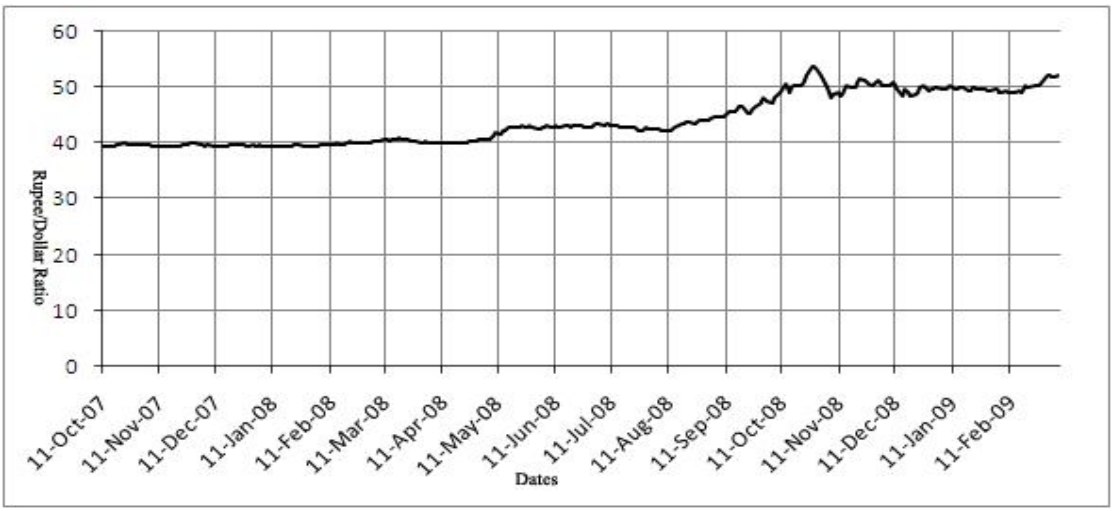


Fig. 3: Line Plot of Exchange Rates Data

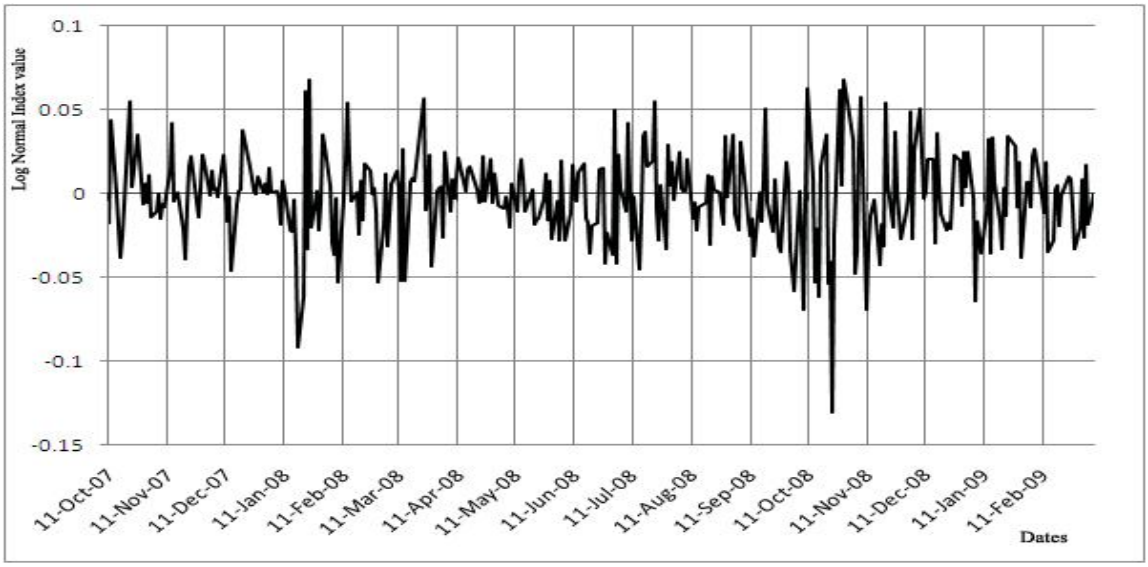
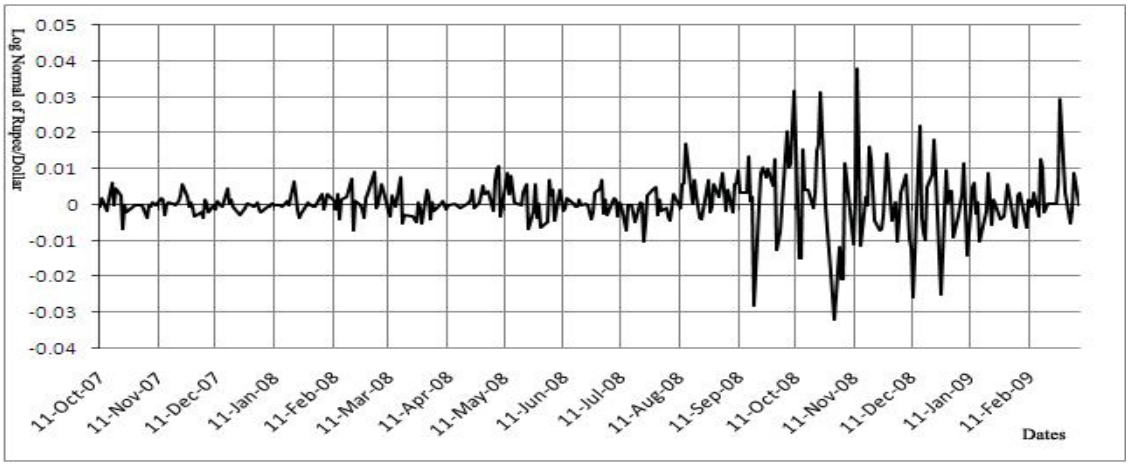


Fig. 4: Line Plot of Nifty Returns



CONCLUSION

This research is based on dynamic relationship between stock markets movement and volatility of stock market .we have started from absolute value of data for checking the normality which was converted to log. Statistics was yielded the application of Jarque-Bera test, and our next step was stationary of both series for this purpose we have used ADF test and results have shown that stationary is at level form in both data series. Then, we observed the coefficient of correlation between these variables and taken the results that there is negative correlation. This is the way to make direction of influence between these variables. Hence, Granger causality test was used which has proved that there is unidirectional causality between stock returns and exchange rate. If there we increase the returns of Nifty then there will decline the exchange rate.

POLICY RECOMMENDATION

1. Movement of stock market and its influence on development of economy.
2. The monetary committee should maintain the foreign exchange. Themaintained of foreign exchange rate would motive the foreign investors.

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