International Journal of Multidisciplinary Research and Modern Education (IJMRME)
ISSN (Online): 2454 - 6119
(www.rdmodernresearch.org) Volume I, Issue I, 2015

RELATIVE ASSESSMENT OF STOCK INDICES

G. D. V. Kusuma* & C. Shalini**
* Research Scholar, Rayalaseema University, Kurnool, Andhra Pradesh
** Assistant Professor, Jaya Institute of Business Management, Old Paloncha, Telangana

Abstract:
A financial market is a market in which people and entities can trade financial securities, commodities, and other fungible items of value at low transaction costs and at prices that reflect supply and demand. Securities include stocks and bonds, and commodities include precious metals or agricultural goods. The present study has been undertaken to analyze the association flanked by the stock of NSE & NASDAQ.

Key Words: Assessment, Correlation, NSE, NASDAQ & Stock

Introduction:

Many factors, such as enterprise performance, dividends, stock prices of other countries, gross domestic product, exchange rates, interest rates, current account, money supply, employment, their information etc. have an impact on daily stock prices (Kurihara, 2006: p.376).The issue of inter temporal relation between stock returns and exchange rates has recently preoccupied the minds of economists, for theoretical and empirical reasons, since they both play important roles in influencing the development of a country's economy. In addition, the relationship between stock returns and foreign exchange rates has frequently been utilized in predicting the future trends for each other by investors. Moreover, the continuing increases in the world trade and capital movements have made the exchange rates as one of the main determinants of business profitability and equity prices (Kim, 2003). Exchange rate changes directly influence the international competitiveness of firms, given their impact on input and output price (Joseph, 2002). Basically, foreign exchange rate volatility influences the value of the firm since the future cash flows of the firm change with the fluctuations in the foreign exchange rates. Exchange rates can affect stock prices not only for multinational and export-oriented firms but also for domestic firms. For a multinational company, changes in exchange rates will result in an immediate change in value of its foreign operations as well as a continuing change in the profitability of its foreign operations reflected in successive income statements. Therefore, the changes in economic value of firm's foreign operations may influence stock prices. Domestic firms can also be influenced by changes in exchange rates since they may import a part of their inputs and export their outputs.

Rationale and Scope of the Study:

The Indian stock market though one of the oldest in Asia being in operation since 1875, remained largely outside the global integration process until the late 1980s. A number of developing countries in concert with the International Finance Corporation and the World Bank took steps in the 1980s to establish and revitalize their stock markets as an effective way of mobilizing and allocation of finance. In line with the global trend, reform of the Indian stock market began with the establishment of Securities and Exchange Board of India in 1988. However the reform process gained momentum only in the aftermath of the external payments crisis of 1991 followed by the securities scam of 1992. Among the significant measures of integration, portfolio investment by FIIs allowed since September 1992, has been the turning point for the Indian stock market. As of now FIIs are allowed to invest in all categories of securities

traded in the primary and secondary segments and also in the derivatives segment. The ceiling on aggregate equity of FIIS including NRIs (non-resident Indians) and OCBs (overseas corporate bodies) in a company engaged in activities other than agriculture and plantation has been enhanced in phases from 24 percent to 49 per cent in February 2001.

Following the commissioning of the NSE in June 1994, National Securities Clearing Corporation in April 1996 and National Securities Depository in November 1996, a screen-based, anonymous, order-driven online dematerialized trading has been the order of the day coupled with improved risk management practices for clearing and settlement. Thus, the Indian stock market, which was in isolation until recently, turns out to have been sensitive to developments in the rest of the world by the end of the 1990s. Pursuit of a novel set of policy initiatives with FII portfolio investment and Indian ADR issues at its centre-stage seems to have contributed significantly to the emerging stock market integration. Besides, India's cautious experiment with openness appears to have facilitated the steady pursuit of a policy milieu for stock market integration. In this study, symptomatic analysis will be made on the relation between domestic and foreign equity indices.

Objectives of the Study:

The following are the objectives of the study;

- ✓ To explore co-movement in terms of long run relationship among the Indian and American stock markets
- ✓ To study the pattern of risk and return of the selected stock markets
- ✓ To study the volatility of markets under study and volatility of their correlations

Review of Literature:

The nature of the international transmission of stock returns and volatility has been focus of extensive studies. Earlier studies (e.g., Ripley 1973, Lessard 1976, and Hilliard 1979, among many others) generally find low correlations between national stock markets, supporting the benefits of international diversification. The links between national markets have been of heightened interest in the wake of the October 1987 international market crash that saw large, correlated price movements across most stock markets: Eun & Shim (1989), Von Furstenberg and Jeon (1989); King and Wadhwani (1990); Schwert (1990); King et.al. (1994); Longin & Solnik (1995), to name a few. The literature review is summarized in the following table;

S.No	Study	Markets Under Study	Period of Study	Methodology Used	Results Found
1	Eun and Shim (1989)	Australia, Canada, France, Germany, Hong-Kong, Japan, Switzerland, Britain, USA	1980-1985	VAR model, Impulse, Responses	Market Interdependency USA exerts dominant influence
2	Malliaris and Urrutia (1992)	USA, Japan, Britain, Hong Kong, Singapore, Australia	1987-1988	Granger causality test	No Granger causality among markets before and after the crash of October 1987. The dominant role of USA is not confirmed.
3	Bayers and Peel (1993)	USA, Britain, Germany, Japan and Holland	1979-1989	Co-Integration Test	There is no interdependency among the 5 markets and as a result there is

					no long run relationship among them.
4	Richards (1995)	Australia, Austria, Canada, France, Germany, Denmark, Hong Kong, Italy, USA, Japan, Britain,Sweden,Switzerland,Holland, Norway, Spain	1970-1994	Co-integration Test	There is no interdependency among the markets under investigation
5	Choudhry (1997)	Argentina, Brazil, Chile, Colombia, Mexico, Venezuela, USA	1989-1993	Co-integration Test	The markets are co-integrated with or without the presence of the USA which appears to exert domineering influence.
6	Martikainen and Ken (1997)	Denmark, Norway, Sweden, Finland	1988-1994	Multivariate VARFGARCH Model	Independency of markets despite tile trade relations among them. There is an asymmetry in me transmission mechanism of the error variance.
7	Moschos and Xanthakis (1998)	Britain, USA, Greece	1990-1992	Autoregressive Model	The changes of S&P 500 of New-York contribute to improved predictions in the movement of the Athens Stock Exchange. The changes in the Athens Stock Index are attributed mainly on domestic factors.
8	Elyasiasi, Perera and Puri-1998	Sri Lanka,Taiwan, Singapore,Japan,S.Korea, Hong-Kong, India, USA	1989-1994	Multivariate, VAR model	The market of Sri Lanka is not influenced by any other market.
9	Huang, Yang and Hu (2000)	USA, Japan, China, Hong Kong, Taiwan, South China	1992-1997	Co integration test, Granger causality test	There is no co-integration among the countries of the SCGT and also no long –run relationship is found among tile countries of the SCGT and Japan or tile USA. In tile shortrun tile USA market leads tile rest.
10	Gulser	Israeli, Jordanian, and	1996-	Correlation,	The co-Movements of

	Meric, Mitchell Ratner and Ilhan Meric	Turkish, USA and UK	2006	Rolling Correlation and Principal Components Analysis	the Middle East stock markets have not received sufficient attention. The correlation analysis results reveal that there is very low correlation between the Egypt, Israeli, Jordanian, and Turkish stock markets.

These Analysis, Simple Regression, ARCH models etc. and report several empirical features:

- ✓ The correlations across the stock markets are time-varying
- ✓ when volatility is high, the price changes in major markets tend to become highly correlated
- ✓ Correlations in volatility and prices appear to be causal from the US market which is the most influential market and none of the other market explains US stock market movements.

The literature concentrated mostly on well-developed equity markets in the U.S., Japan, and Europe, and do not pay much attention to other stock markets. To capture the dynamic inter-linkages between the markets, which have non-overlapping trading hours, the literature largely applied a Two Stage GARCH model with intra-daily data that define overnight and daytime returns.

Time Zone Considerations:

In order to understand the international transmission mechanism between the two markets under consideration, first it is important to recognize that the NSE and NASDAQ markets do not have any overlapping trading hours. There is a time lag of twelve-and-half hours between US Eastern Standard Time and Indian Standard Time. The trading hours of both the markets are shown in below. In Indian Standard Time (IST), NSE opens at 10.00 AM and closes at 3.30 PM.

Nifty Daily Returns (NIFTYt) = Log (Nifty close on day t / Nifty close on day t-1)*100

NASDAQ Daily Returns (NASDAQt) = Log (NASDAQ close on day t / NASDAQ close on day t-1)*100

S&P 500 Daily Returns (S&P 500t) = = Log (S&P 500 close on day t /S&P 500 close on day t-1)*100

Common time interval in which both markets remain open. Following Hamao et al (1990), Lin et al (1994) and Kee-Hong Bae & Karolyi (1994) to study the synchronization of stock price movements, a daily (close-to-close) return is divided into a day time (open-to-close) and an overnight (close (t-1)-to-open) return for both NSE Nifty and NASDAQ Composite indices. Since there is no overlap between the trading hours of the two markets, it is possible to study the influence of daytime return in one market on the overnight return of the other. Intuitively, traders in India use any relevant information revealed overnight in NASDAQ in pricing their stocks as soon as the opening bell rings. So, the decomposition of daily price changes (returns) into daytime [Close (t)–to-Open (t)] and overnight [Open (t)-to-Close (t-1)] returns is crucial in modeling and understanding how information is transmitted from one market to the other.

Data Sources:

In most major stock markets, there are problems in calculating opening prices for these market indices due to delayed opening of individual stocks. Stoll& Whaley (1990) report that after the market opens for the first transaction to occur on an average it takes 5 minutes for large stocks and 67 minutes for small stocks in NYSE for the first transaction to occur after the market opens. When delays occur, the prior day closing prices are used for the unavailable current price in calculating the high-frequency index of stock market. This creates artificial serial correlations in close-to-open and open-to-close returns, which biases intra day return and volatility estimates. In order to minimize the effects of these stale prices, the literature suggests one to use the index quotes 15 minutes after the first open quote, so that the artificial correlation between the intra-day returns are minimized.

For NSE Nifty, the first open quote of the index is available at around 9.55 AM. At this first open quote, since all the 50 constituent scrips of Nifty have not been traded, taking this value as the open quote would be inappropriate. But usually by the official opening time of 10.00 AM, around 10,000 trades take place on a typical day in NSE. So we take the open quote of Nifty in the analysis as its value at 10.00 0'clock. The 10.00 0'clock data of NSE Nifty is provided by National Stock Exchange Research Initiative. Daily official open(9.30AM, EST) and close (4.00PM, EST)quotes of NASDAQ Composite Index have been downloaded from www.nasdaq.comand that of S& P 500 index are downloaded from www.finance.yahoo.com. For S & P 500 index on most of the days the open quote of most of is exactly same as that of previous day's close quote having serious stale quote problems. For NASDAQ Composite index the close quote on day t-1is different from open quote on day t, the stale price effect will be minimal as compared to S&P 500 index. We unable to get the intra-day data of S & P 500, so as to minimize the stale quote problem. Hence we unable to use S & P 500 index in our further intra day similar to that of NASDAQ. Specifically, in this study, we calculate the returns as follows:

$$\text{Nifty overnight Returns (NIFONt)} = \log\left(\frac{Nifty\ open\ on\ day\ t}{Nifty\ close\ on\ day\ t-1}\right) \times 100$$

$$\text{Nifty Daytime Returns (NIFDt)} = \log\left(\frac{Nifty\ close\ on\ day\ t}{Nifty\ open\ on\ day\ t}\right) \times 100$$

$$\text{NASDAQ Overnight Returns (NASONt)} = \log\left(\frac{NASDAQ\ open\ on\ day\ t}{NASDAQ\ close\ on\ day\ t-1}\right) \times 100$$

$$\text{NASDAQ Daytime Returns (NASDt)} = \log\left(\frac{NASDAQ\ close\ on\ day\ t}{NASDAQ\ open\ on\ day\ t}\right) \times 100$$

Data Analysis and Interpretation:

As outlined in the methodology, the analysis of the data was conducted in four steps. First, correlation has been calculated between the returns of NSE and NASDAQ. In the month of June and March the correlation between BSE SENSEX and NASDAQ is 0.49 and 0.04 respectively. So there exist slight positive relationship and all data points are form as non linear structure and tilts upwards towards right. Remaining all the months there exist low correlation, and in the months of January and April there exists negative correlation i.e. -0.16 and -0.33, so there exists strong negative relationship and all data points tilts downward towards right. Second, Normality test was applied on both the series to determine the nature of their distributions. For this purpose, Jarque-Bera statistics were computed, along with Descriptive Statistics for the two series. Skewness value 0 and kurtosis value 3 indicate that the variables are normally distributed. The skewness coefficient, in excess of unity is taken to be fairly extreme [Chou 1969]. High or low kurtosis value indicates extreme leptokurtic or extreme platykurtic [Parkinson 1987]. From the obtained statistics, it is evident that both the variables are non-

normally distributed, as the skewness values for Nifty returns and NASDAQ returns are--0.295287 and 0.297429 respectively and the kurtosis values are 4.712687 and 9.096539 respectively.

Third**,** having affirmed the non-normal distribution of the two variables, the question of stationarity of the two time series posed concerns. Simplest way to check for stationarity is to plot time series graph and observe the trends in mean, variance and autocorrelation. A time series is said to be stationary if its mean and variance are constant over time. The line plots for the two series (log normal value of relatives) are shown in Fig 1.1 and Fig1.2 respectively. As seen in the plots, for both the series, the mean and variance appear to be constant as the plot rends neither upward nor downward. At the same time, the vertical fluctuations also indicate that the variance, too, is not changing. This hints that stationarity in both the series in their level forms.

Since in addition to visual inspection, formal econometric tests are also needed to unambiguously decide the actual nature of time series, ADF test was performed to check the stationarity of the time series. Comparing the obtained ADF statistics for the two variables with the critical values for rejection of hypothesis of existence of unit root, it becomes evident that the obtained statistics for NSE returns and NASDAQ returns, fall above the critical values at 1%, 5%, and 10% significance levels except in the month of April and may for NASDAQ and January and July for NSE; thereby, leading to the rejection of the hypothesis of unit root for both the series. Hence, it can be safely concluded on the basis of ADF test statistics that returns of both NSE and NASDAQ for the period of January 2012 to July 2012 found to be non-stationary at level form.

Conclusion:

We investigate the short run dynamic inter linkages between the US and Indian stock markets, using daytime and overnight returns of NSE Nifty and NASDAQ Composite from 1st January2012 to 31stJuly 2012. This approach provides an explicit, empirically based; quantitative description of the way information propagates from NASDAQ and is being incorporated by NSE overnight returns. The main findings are as follows:

The coefficient of correlation between the two variables was computed, which indicated slight negative correlation between them. There is an overall negative as well as positive correlation of returns between the NSE and NASDAQ, because out of (7) month data collected (5) months have negative correlation and (2) months have positive correlation on returns. Application of Jarque-Bera test yielded statistics that affirmed non-normal distribution of both the variables. This posed questions on the stationarity of the two series. Hence subsequently, stationarity of the two series was checked with ADF test and the results showed non stationarity at level forms for both the series. This made way for determining the direction of influence between the two variables. The previous day's daytime returns of both NASDAQ Composite and NSE Nifty have significant impact on the NSE Nifty overnight return of the following day. However, the volatility spillover effects are significant only from NASDAQ Composite implying that the conditional volatility of Nifty overnight returns is imported from US. We found that the effect of NASDAQ daytime return volatility shocks, on average, is 9.51% and that of Nifty daytime return volatility is a mere 0.5%. Turning to out of sample forecasts however, we found that by including the information revealed by NASDAQ day trading provides better forecasts of mean levels of Nifty overnight returns but does not significantly improve the prediction of volatility. At foremost interest in much of the empirical international financial literature is to study the extent to which markets have become internationally integrated. Insights into information flows in markets will

increase the understanding of the relevant mechanisms at work during extreme situations such as market crashes, which in turn can provide guidelines for intervention and tax policies. This study contributes in a modest manner with reference to Indian stock market integration with the US stock market. The results reported are in tune with the previous studies, which have examined the co-movement of Indian markets with other markets and suggested a very low degree of correlation. Since the correlations across the stock markets are time-varying it can be concluded that NSE is not correlated with NASDAQ for the study period between January 2012 to July 2012.

However in the long run there is strong evidence that NSE Nifty is in tune with NASDAQ Composite over the sample period. Various explanations can be offered for this phenomenon and these range from

- ✓ Deregulation of Indian financial market since 1992, including increased efforts to implement liberalization measures.
- ✓ Increase in macroeconomic policy coordination,
- ✓ Expanding influence of multinational corporations,
- ✓ Increased participation of FIIs in Indian stock market.
- ✓ Increasing international cross-listing of Indian firms in US markets and
- ✓ Transmitted from one market to the other.

Scope for Further Research:

First, we have limited our study to only the returns of National Stock Exchange in India and NASDAQ in USA. Needless to say, we must exercise caution in generalizing to other exchange rate and stock returns. Second, the same can be said regarding the performance measures used. We have restricted our attention to only four performance measures. The findings may change if other performance measures are used. Third, we have also considered only one-step-ahead forecasting. Multi-step-ahead forecasting could yield different results. Fourth, we have not used any other exogenous variable and have used only past returns as inputs. Finally, we have been limited by the software we have used. We have had to use fairly primitive software i.e. Eviews7. We hope to bring all this into our further. The other fruitful areas for further research are the following.

- ✓ First, is to combine methodology of linear models. It is suspected that most time series contain a linear trend and a nonlinear component. Hence, a combination approach in which linear model captures linear patterns and nonlinear patterns is expected to produce even better results than linear model used singly.
- ✓ Second the study can be further carried from normality test to Granger causality and then to application of GARCH models to examine the co-movement and volatility transmission between US and Indian stock markets. It is found that the simple ARMAGARCH model performs better than the more complex Two-stage GARCH model. Two- stage GARCH model and a simple univariate ARMA-GARCH model can be applied to capture the mechanism by which NASDAQ Composite daytime returns and volatility have an impact on not only the conditional returns but also on the conditional volatility of Nifty overnight returns. This we hope to do in our further research.
- ✓ Third, the robustness of networks to the changing structures, or turning points typically associated with exchange rates and stock prices can be investigated in further research by using multiple training and test samples systematically chosen from the original series. Fourth and finally, we have only used past returns as inputs to the network. However, technical trading rules can be profitably used in the set of inputs to the network to make more accurate forecast of exchange rate and stock returns.

References:

1. Angela Ng (2000), "Volatility spillover effects from Japan and the US to the Pacific-Basin," Journal of International Money and Finance, 19, pp 207-233.
2. Becker, K. G., Finnerty, J. E. & Manoj Gupta (1990), "The Intertemporal Relation Between the US &Japanese Stock Markets," Journal of Finance, 45, pp1297-1306
3. Engle, R.F. and V. Ng. (1993), "Measuring and Testing the Impact of News on Volatility," The Journal of Finance, 48, 1749-1778.
4. Engle R. F. and Andrew J. Patton (2000), "What Good is A Volatility Model?," Quantitative
5. Finance, Volume 1 (2001) 237–245.
6. Eun, C. & Shim, S. (1989), "International Transmission of Stock Market Movements,"
7. JFQA, 24, pp241-256.
8. Cheung & Lilian K. Ng (1992), "Interactions Between the U. S. and Japan Stock Market Indices," Jl. Of International Financial Markets, Institutions & Money, Vol 2(2), pp51-70
9. Granger, Clive W.J. (1969), "Investigating Causal Relations by Econometric Models and Cross Spectral Methods," Econometrica, 37 pp 424-438.
10. Hamao, Y., Masulis, R., and Ng, V. (1990) "Correlations in Price Changes and Volatility across International Stock Markets," Review of Financial Studies, 3, 281-307.
11. Hilliard, J. (1979), "The Relationship between Equity Indices on World Exchanges", Journal of Finance, 34(1), pp 103-117.
12. John Wei, K.C., Yu-Jane Liu, Yang & Chaung (1995), "Volatility and price change spillover effects across the developed and emerging markets," Pacific-Basin Finance Journal, Vol 3, pp 113-136.
13. Kee-Hong Bae, Karolyi (1994), "Good news, bad news and international spillovers of stock return volatility between Japan and the US," Pacific-Basin Finance Jl.,2, 405-438.
14. King, M. A. and S. Wadhwani (1990), "Transmission of Volatility between Stock Markets," Review of Financial Studies, 3, pp 5-33.
15. King, M., Sentana, E. & Wadhwani, S. (1994),"Volatility and Links between national markets," Econometrica, 62(4), pp901-933.
16. Koch, P. & Koch, R.(1991), "Evolution in Dynamic Linkages Across Daily National Stock Indexes," Journal of International Money and Finance, 10, pp231-251.
17. Koutmos, G. (1999), "Asymmetric price & volatility adjustments in emerging Asian stock markets," Journal of Business Finance & Accounting, 26, (1)&(2), pp83-101.
18. Lin, Engle & Ito (1994), "Do Bulls or Bears Move Across Borders? International Transmissions of Stock Returns and Volatility," Review of Financial Studies,7,pp507-538
19. Wikipedia: www.wikipedia.org
20. NSE india: www.nseindia.com
21. NASDAQ: www.nasdaq.com

Annexure – Figures and Tables

Returns for the Period January 2012 to July 2012:

Figure 1.1: Monthly Returns of NASDAQ

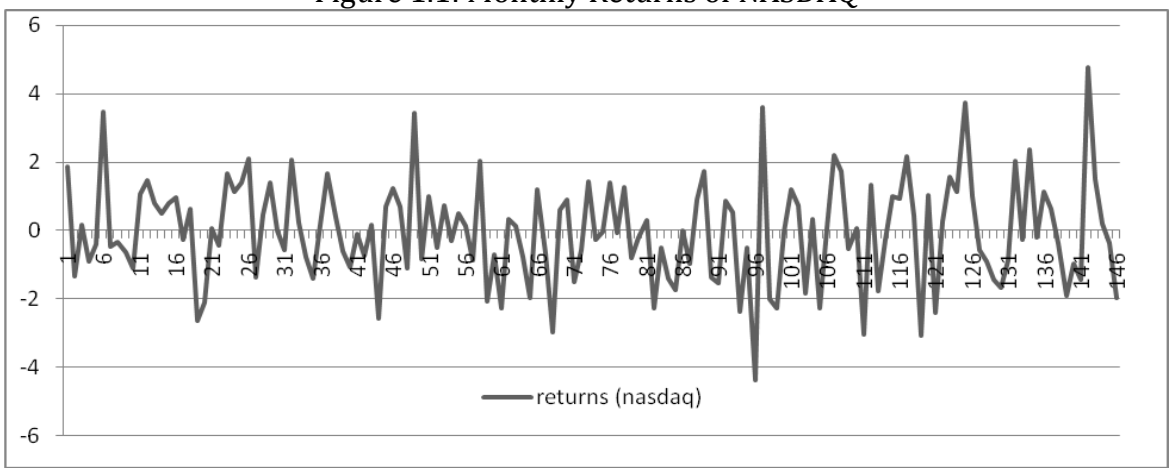

Figure 1.2: Monthly Returns of NSE Nifty

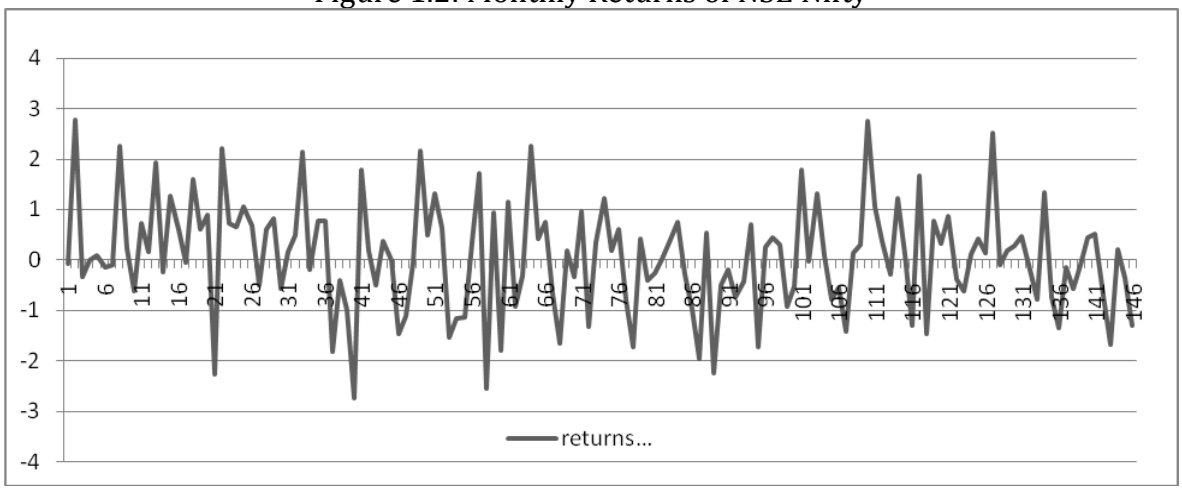

Figure 2: Market Trading Hours

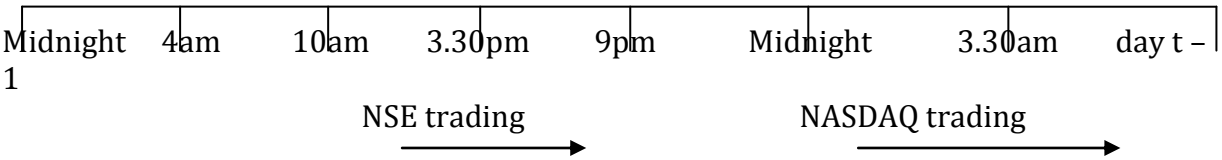

Table 1: Descriptive Statistics of NASDAQ for the Period January 2012 to July 2012

Statistic	January	February	March	April	May	June	July
No. of observations	20	20	22	20	22	21	21
Minimum	-2.655	-1.429	-2.600	-2.998	-4.391	-3.103	-1.986
Maximum	3.453	2.101	3.406	1.433	3.593	3.705	4.764
Range	6.107	3.530	6.006	4.431	7.984	6.808	6.750
Median	-0.054	0.188	-0.001	-0.139	-0.513	0.406	-0.387
Mean	0.060	0.316	-0.067	-0.256	-0.511	0.185	0.019
Variance (n)	1.891	1.211	1.836	1.468	2.844	3.227	2.627
Standard deviation (n)	1.375	1.100	1.355	1.211	1.686	1.796	1.621
Skewness (Pearson)	0.254	0.095	0.322	-0.522	0.129	-0.346	1.160
Kurtosis (Pearson)	0.263	-1.187	0.425	-0.412	0.322	-0.588	1.215
Mean absolute deviation	1.097	0.934	1.046	0.959	1.355	1.439	1.272

Table 2: Jarque-Bera Test Results of NASDAQ for the period January 2012 to July 2012

Statistic	January	February	March	April	May	June	July
JB (Observed Value)	0.272	1.204	0.546	1.049	0.156	0.721	6.005

JB (critical value)	5.991	5.991	5.991	5.991	5.991	5.991	5.991
DF	2	2	2	2	2	2	2
p-value	0.873	0.548	0.761	0.592	0.925	0.697	0.05
Alpha	0.05	0.05	0.05	0.05	0.05	0.05	0.05

Table 3: Augmented Dickey – Fuller (ADF) Test Results of NASDAQ for the period January 2012 to July 2012

Statistic	January	February	March	April	May	June	July
ADF test statistic	-1.8072	-3.7652	-2.6546	-4.3394	-4.3308	-2.2883	-2.4490
Critical values : 1% level	-3.9203	-3.8574	-3.8085	-3.8574	-3.8085	-3.8315	-3.8315
5% level	-3.0656	-3.0404	-3.0207	-3.0404	-3.0207	-3.0299	-3.0299
10% level	-2.6735	-2.6606	-2.6564	-2.6606	-2.6504	-2.6552	-2.6552

Table 4: Descriptive Statistics of NSE for the period January 2012 to July 2012

Statistic	January	February	March	April	May	June	July
No. of observations	22	20	22	20	22	21	22
Minimum	-2.256	-2.728	-2.544	-1.706	-2.233	-1.456	-1.674
Maximum	2.772	2.140	2.253	1.215	1.773	2.751	1.960
Range	5.028	4.868	4.798	2.921	4.006	4.207	3.634
Median	0.199	0.549	-0.018	0.185	-0.358	0.312	-0.092
Mean	0.525	0.183	-0.052	-0.042	-0.290	0.351	-0.044
Variance (n)	1.236	1.231	1.665	0.666	0.910	1.193	0.749
Standard deviation (n)	1.112	1.110	1.290	0.816	0.954	1.092	0.866
Skewness (Pearson)	0.013	-0.797	0.065	-0.644	-0.014	0.370	0.225
Kurtosis (Pearson)	0.294	0.720	-0.869	-0.488	-0.063	-0.045	-0.153
Mean absolute deviation	0.872	0.848	1.085	0.675	0.738	0.809	0.681

Table 5: Jarque-Bera Test Results of NSE for the period January 2012 to July 2012

Statistic	January	February	March	April	May	June	July
JB (observed value)	0.08	2.552	0.707	1.582	0.004	0.481	0.207
JB (critical value)	5.991	5.991	5.991	5.991	5.991	5.991	5.991
DF	2	2	2	2	2	2	2
p-value	0.961	0.279	0.702	0.453	0.998	0.786	0.902
Alpha	0.05	0.05	0.05	0.05	0.05	0.05	0.05

Table 6: Augmented Dickey – Fuller (ADF) Test Results of NSE for the period January 2012 to July 2012

Statistic	January	February	March	April	May	June	July
ADF test statistic	-4.4517	-2.6472	-2.8083	-3.4294	-2.7380	-2.9062	-3.6977
Critical values : 1% level	-3.8085	-3.8574	-3.8085	-3.3574	-3.8085	-3.8315	-3.6085
5% level	-3.0206	-3.0404	-3.0207	-3.0404	-3.0206	-3.0299	-3.0206
10% level	-2.6504	-2.6605	-2.8504	-2.6606	-2.7504	-2.9552	-2.6504

Table 7: Summary of Correlation between NSE Nifty and NASDAQ for the period January 2012 to July 2012

Statistic	January	February	March	April	May	June	July
No. Observations	20	20	22	20	22	21	21
correlation	-0.159	-0.115	0.041	-0.334	-0.029	0.487	-0.107
p-value	0.503	0.63	0.857	0.15	0.898	0.025	0.643
coefficient of determination R^2	0.025	0.013	0.002	0.112	0.001	0.237	0.012