VOLATILITY IN THE INDIAN STOCK MARKET: A CASE OF INDIVIDUAL SECURITIES

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Abstract

The present paper is an attempt to examine the volatility in the individual stocks listed at NSE using daily closing prices of 29 selected companies. The companies have been selected from the list of S&P CNX Nifty covering the period from 1996-97 to 2006-07. The data have been analyzed by working out standard deviation of daily returns. The study reveals that ACC, HDFC, ITC, MTNL, SBIN and SIEMENS have been comparatively less volatile than other securities. On the other hand, the securities viz. BAJAJAUTO, DRREDDY, GLAXO, GRASIM, HDFCBANK, INFOSYSTCH, M&M, ONGC, TATAPOWER and VSNL were highly volatile during the period of study. Further, the study finds that the period after 2000-01 has registered comparatively less volatility than preceding period.

Key words*: Volatility, Daily Return, Inflationary Pressure, Investors, Fluctuation, Risk, Indices, Trade Sizes, Standard Deviation, Securities*

1. BACKDROP

Volatility is a measure of variability in the price of an asset. Volatility is associated with unpredictability and uncertainty about the price. It is often used as synonymous of risk which means higher the volatility, higher the risk in the market. In other words, we can say that in case of high volatility, the market does not function properly and it leads to disruption of market. As a concept, volatility is simple and intuitive. It measures variability or dispersion about a central tendency. To be more meaningful, it is a measure of how far the current price of an asset deviates from its average past prices. Greater the deviation, greater is the volatility.

At a more fundamental level, volatility can indicate the strength or conviction behind a price move (Raju 2004). It is difficult to estimate about the future trend of volatility in market because it is affected by a large number of factors including political stability, economic fundamentals, government budget, policies of the government, corporate performance etc. However, by calculating historical volatility a prediction can be assumed about the future trend in the volatility.

A few research works has been done in regard to volatility at the industry level or company level. This paper is an attempt towards analyzing volatility pattern in the stock prices of some selected securities listed at NSE. The rest of paper has been organized as follows – the next section reviews the existing literatures in regard to the volatility. Section three explains the data and methodology used in the study. Section four presents empirical results of the study whereas the last section provides concluding remarks of the study.

2. REVIEW OF LITERATURE

Mohan, G. et al (2002) investigated the change in volatility in the Indian stock market due to the introduction of future trading using daily closing prices of Nifty and weekly closing prices of Satyam Computers Ltd. The individual stocks seem to be slightly more volatile and their volatility have become less and less dependent on past volatility and more dependent upon news in the current period. The average long-term volatility has decreased at an index level.

Agrawal, D. et al (2003) investigated the impact of changes in firms' technological environment on their stock return volatility and dictated a significant and corresponding increase in the idiosyncratic and total stock return volatility when a firm initiates eCommerce. Increase in volatility was due to the changes in the firms' product markets, specifically increased demand uncertainty, resulting from the adoption of a new technology-driven channel. Relevant controls rule out firm-specific characteristics as well as market microstructural factors as possible explanatory variables. They also found that this surge in volatility was accompanied by a positive abnormal return of stock prices. The study provides strong evidence of the impact of real activity within a firm on its stock return volatility.

Batra, A. (2004) analyzed the time variation in volatility in the Indian stock market during 1979-2003 using monthly stock returns and concluded that the period around the BOP crisis and the initiation of economic reforms in India is the most volatile period in the stock market. Structural shifts in volatility are more likely to be a consequence of major policy changes and any further incremental policy changes may have only a benign influence on stock return volatility. Stock return volatility in India seems to be influenced more by the domestic political and economic events rather than global events. In particular there appears to be no coincidence between volatility of portfolio capital flows in and out of the stock market and the volatility shifts in stock returns in India. The analysis also shows

that stock market cycles in India have not intensified after financial liberalization. There is a generalized reduction in market instability in the post reform period in India. In general, in the post liberalization period in India, the bull phases are longer, the amplitude of bull phases is higher and the volatility in bull phases is also higher than in the bear phases. In comparison with its pre liberalization character, however, the bull phases are more stable in the post liberalization period.

Raju, M. T. et al (2004) concluded that the mature markets/ developed markets continue to provide over long period of time high return with low volatility. Amongst emerging markets except India and China, all other countries exhibited low returns (sometimes negative returns with higher volatility). India with long history and China with short history, both provide as high a return as the US and the UK market could provide but the volatility in both countries is higher. They also found large asymmetry in some of the developed countries. Comparatively, Indian markets show less of skewness and kurtosis. Indian markets have started becoming informationaly more efficient. Volatility has not gone up. Intra day volatility is also very much under control and has came down compared to past years.

Kohers, N. et al (2005) examined the changes in stock price fluctuations in the world's emerging stock markets over the period from 1988 through June 2004. They concluded that the emerging stock markets exhibit some common notable trends over time. Given the diverse nature of emerging stock markets, the common risk/return relationships found for many of these markets overtime is notable. Specifically, volatility for most country indices remained relatively steady from 1988 through 1996. In contrast, from 1997 through June 30, 2004, market variances have increased noticeably for the majority of emerging markets. Furthermore, the mean percentage daily returns for more emerging market indices were consistently lower during the 1997 through June 2004 time frame.

Mavuluri, P. et al (2006) examined the role of transactions frequency over and above volume in explaining the volatility considering component stocks of Indian barometer indices, NSE Nifty and Nifty Junior, for the period 2005. In addition, study also measures volatility by five minute intra day volatility apart from traditional absolute and squared price changes. They concluded that the transaction counts have better explanatory power in explaining the uncertainty of prices rather than trade sizes (i.e. volumes). Therefore, transactions frequency driving the volatility than trade sizes holds up for Nifty and Nifty Junior. Further, by employing intra-day (5 minutes) as a measure of volatility provide more statistically significant results for transaction counts and volatility relationship than others measures viz. absolute and squared value daily close prices.

Padhi, P. (2006) explained the stock market volatility at the individual script level and at the aggregate indices level using ARCH, GARCH and ARCH in Mean model and it was based on daily data for the time period from January 1990 to November 2004. The analysis reveals the same trend of volatility in the case of aggregate indices and five different sectors such as electrical, machinery, mining, non-metallic and power plant sector. The GARCH (1, 1) model is persistent for all the five aggregate indices and individual company.

3. METHODOLOGY

The present paper examines volatility in the securities of S&P CNX Nifty using daily closing prices of the 29 securities which have been selected on the basis of availability of data from 1996-97 to 2006-07. The rationale behind choosing the period starting from 1996-97 as this is the first complete financial year after launching of Nifty. All the data have been taken from the website of NSE (www.nseindia.com). Daily volatility has been computed by calculating standard deviation of daily return.

Daily return has been calculating by using the following formula -

$$R_t = \log(P_t / P_{t-1}) * 100$$

Where R_t indicates daily return, P_t is the price of security on day *t* and P_{t-1} is the price of security on day *t-1*. This measure of return takes into account only appreciation/ depreciation in the share price and neglects the dividend yield.

Daily volatility in the security prices has been calculated by computing standard deviation of daily return-

$$\sigma = \sqrt{\sum (R_t - \overline{R})^2 / (n-1)}$$

Where *R* is the average return over the period, R_t is return on day *t* and *n* is number of observation. We have calculated the rolling standard deviation for one year.

4. EMPIRICAL RESULTS

The exhibit shows daily returns and daily standard deviations of the 29 securities of S&P CNX Nifty. It depicts that except the three consecutive years since 1997-98 to 1999-00, the returns of ABB has been positive and around the average return i.e. 0.06 per cent. It was highly volatile during 1998-99, 1999-00 and 2000-01 in comparison to its average volatility because of uncertainty in India arising out of various restrictions imposed by the developed countries after nuclear test. In case of ACC, Out of 11 years, 5 years witnessed negative return, almost around its average return -0.05 per cent. The return of this security was highly volatile in 1999-00 with 12.81 per cent which is much more than 5.02, the average volatility. This was the year when Tata Group sold its full stake in ACC which result into negative return in the security and ultimately highly volatile. The remaining years were relatively calm years as volatility of these years has been below average volatility.

Bajaj Auto also provided low returns like above two securities which was utmost below 0.04 per cent, the average return, except the four years 1997-98,

1999-00, 2000-01 and 2006-07 when it was negative. The return was slightly high in 2004-05. The volatility in this security was high during 1997-98 followed by 1999-00 and 1998-99 with 3.44, 3.03 and 2.70 per cent respectively. It should also be noted that the returns during these years were either very low or negative which was due to the selling pressure by security holders. The average daily return of BHEL was 0.10 per cent and three years are such which experienced much high return compared to the average return. The highest return was during 2005-06 followed by 2003-04 and 1996-97 with 0.43, 0.39 and 0.35 per cent respectively. The highest negative return was -0.22 per cent in 1999-00. It was highly volatile during three consecutive years since 1998-99 with the highest volatility during 1999-00 i.e. 3.88 per cent. It became relatively stable after 2001-02. The major reason behind high variations in returns and volatility in all the securities since 1998-99 to two consecutive years was the same as it was in the case of ABB.

Out of eleven years, BPCL witnessed highly positive return during five years compared to the average return which is almost zero. On the other hand, it also experienced negative return during five years. Only 1997-98 was the year when return was equal to the average return. The highest return was during 2003-04 i.e. 0.30 per cent which was due to the more and more purchase of security by the investors. The volatility in BPCL has utmost been below 3.23 per cent except the years 1999-00 and 2000-01 when it was as high as 4.17 and 6.06 per cent respectively. It may say that volatility in this security has often been stable. The return in the CIPLA has been highly fluctuating. It ranges between 0.38 per cent and -0.60 per cent over the years. It often reacted just opposite as it was in the preceding year. The average return was -0.02 per cent. This security has been highly volatile during 1999-00 and 2004-05. In the remaining years, it has been below average volatility 7.08 per cent.

The return of DRREDDY has been highly volatile. Out of eleven years, it has been negative during six years and the highest negative return was during 2006-07 i.e. -0.27 per cent followed by 1996-97 with -0.13 per cent. The corresponding positive return was during 1997-98 with 0.30 per cent which is much high compared to the average return 0.04 per cent. The volatility in this security was at top in 2001-02 when it was 0.20 per cent followed by 2006-07, 1999-00 and 1998-99 with 4.99, 4.04 and 3.49 per cent respectively which are much high than 3.31 per cent, the average volatility. The high volatility during 2006-07 was due frequent selling of securities by investors. GLAXO also experienced high fluctuation in daily return. There were only two years in which its return was around average return 0.06 per cent and in the remaining years it fluctuated heavily either positively or negatively. The highest positive return was 0.29 per cent during 2003-04 followed by 0.28 per cent in 2005-06. This was due to the buying tendency of investors and good performance of the economy. The volatility has often been high up to 2000-01 but after that it has been comparatively stable.

Exhibit: 5 Return and Volatility in securities of S&P CNX Nifty

	1996-07		1996-97		1997-98		1998-99		1999-00		2000-01	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
ABB	0.06	2.46	0.00	2.28	-0.02	2.17	-0.06	2.80	-0.29	3.80	0.04	2.64
ACC	-0.05	5.02	-0.41	3.72	0.01	2.68	0.00	3.07	-0.65	12.81	-0.03	3.43
BAJAJAUTO	0.04	2.40	0.04	2.13	-0.18	3.44	0.02	2.70	-0.17	3.03	-0.16	2.41
BHEL	0.10	2.92	0.35	2.48	0.08	2.63	-0.15	3.45	-0.22	3.88	0.05	3.77
BPCL	0.00	3.23	0.09	2.19	0.00	1.88	-0.22	3.11	0.10	4.17	-0.12	6.06
CIPLA	-0.02	7.08	0.15	2.03	0.05	3.13	-0.06	6.27	0.21	16.64	-0.05	3.21
DRREDDY	0.04	3.31	-0.13	2.52	0.30	2.37	0.26	3.49	0.23	4.04	-0.11	3.01
GLAXO	0.06	2.32	0.06	1.97	0.18	2.46	0.22	2.96	-0.27	3.02	-0.02	2.50
GRASIM	0.05	2.72	-0.18	1.72	-0.05	1.83	-0.20	3.57	0.24	4.16	-0.08	3.72
HDFC	-0.03	5.17	-0.07	2.20	0.05	2.26	-0.10	3.22	-0.54	13.39	0.13	2.76
HDFCBANK	0.12	2.60	0.13	2.32	0.17	2.48	-0.00	3.55	0.50	3.75	-0.05	2.92
HERO HONDA	0.03	5.48	0.00	2.72	0.44	2.65	0.00	11.24	0.04	3.11	-0.76	10.28
HINDPETRO	-0.01	3.03	0.06	1.62	0.08	1.95	-0.23	2.93	-0.14	5.17	0.08	3.81
INFOSYSTCH	0.04	4.65	0.29	1.93	0.21	5.08	0.16	5.49	0.32	5.06	-0.19	3.96
IPCL	0.02	17.14	-0.05	28.42	-0.20	37.51	0.10	10.03	-0.18	21.97	-0.04	3.74
ITC	-0.01	5.24	0.20	2.68	0.26	2.73	0.07	2.30	-0.07	3.11	0.03	2.79
M&M	0.04	3.18	0.08	2.22	-0.06	2.52	-0.06	3.40	0.13	4.08	-0.38	3.87
MTNL	-0.01	2.97	0.11	2.58	0.03	2.63	-0.10	3.39	0.08	3.69	-0.20	3.52
ONGC	0.05	2.87	-0.01	2.85	0.12	2.74	-0.32	3.02	0.04	4.09	-0.01	2.70
RANBAXY	-0.02	41.77	-0.30	97.60	0.38	75.41	-0.01	12.83	0.01	3.44	-0.07	3.17
RELIANCE	0.05	47.58	0.13	70.06	-0.04	76.62	-0.06	29.40	0.28	23.47	0.06	2.30
SAIL	0.05	4.99	-0.14	3.09	-0.29	3.78	-0.14	6.48	0.10	6.92	-0.14	8.44
SATYAMCOMP	0.07	5.17	-0.02	2.86	0.64	3.61	0.62	4.32	0.23	6.81	-0.65	8.61
SBIN	0.04	4.14	0.06	2.69	-0.00	2.20	-0.05	2.40	-0.01	3.07	-0.01	2.44
SIEMENS	0.02	4.30	-0.22	3.56	-0.09	3.32	0.06	4.27	0.01	3.98	-0.05	2.66
SUNPHARMA	0.05	50.69	-0.01	2.00	-0.04	2.38	0.32	3.73	0.06	7.70	-0.06	3.91
TATAPOWER	0.04	2.73	-0.06	3.01	-0.02	2.14	-0.17	2.78	-0.03	3.31	0.15	3.96
VSNL	-0.05	4.30	-0.24	4.72	-0.16	3.67	-0.08	3.84	0.36	4.40	-0.71	8.39
WIPRO	0.01	5.48	-0.09	3.42	0.28	7.03	0.67	3.69	0.12	9.98	-0.39	4.61

Continued…..

	2001-02		2002-03		2003-04		2004-05		2005-06		2006-07	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
ABB	0.04	2.25	0.03	1.93	0.40	2.22	0.15	1.96	0.37	1.75	0.08	2.45
ACC	0.07	3.12	-0.04	1.71	0.24	2.49	0.14	1.84	0.31	1.66	-0.02	2.60
BAJAJAUTO	0.24	2.27	0.01	1.81	0.25	2.08	0.07	1.63	0.37	1.75	-0.05	2.39
BHEL	0.07	3.35	0.11	1.82	0.39	2.43	0.09	2.78	0.43	1.92	0.00	2.47
BPCL	0.22	3.20	-0.16	2.95	0.30	2.58	-0.12	2.64	0.07	1.77	-0.14	2.48
CIPLA	0.01	2.22	-0.14	1.39	0.20	2.12	-0.60	10.22	0.38	1.86	-0.41	6.31
DRREDDY	-0.05	5.20	-0.07	1.89	0.02	2.63	-0.11	2.02	0.26	1.95	-0.27	4.99
GLAXO	-0.09	2.27	-0.06	1.71	0.29	1.93	0.07	1.66	0.28	1.71	-0.10	2.36
GRASIM	0.05	2.49	0.06	1.38	0.46	2.37	0.05	2.01	0.21	1.64	0.01	2.80
HDFC	0.09	2.05	-0.29	4.64	0.26	2.24	0.05	2.31	0.24	1.90	0.05	2.43
HDFCBANK	0.01	1.92	-0.00	1.43	0.19	1.92	0.14	2.63	0.14	1.72	0.08	2.34
HERO HONDA	0.35	3.19	-0.23	2.40	0.38	2.66	0.04	2.19	0.19	1.86	-0.10	2.16
HINDPETRO	0.24	2.90	0.01	3.44	0.21	2.46	-0.20	2.48	0.02	1.56	-0.10	2.89
INFOSYSTCH	-0.03	4.24	0.03	2.15	0.08	3.31	-0.31	8.81	0.11	1.65	-0.16	4.88
IPCL	0.17	2.70	0.00	3.30	0.31	3.03	-0.05	3.19	0.19	1.91	0.01	2.84
ITC	-0.06	2.10	-0.04	1.58	0.20	1.68	0.10	1.94	-0.77	16.65	-0.10	2.23
M&M	-0.02	3.18	-0.06	2.23	0.61	2.69	0.03	2.14	0.09	4.71	0.09	2.57
MTNL	0.04	2.69	-0.17	2.66	0.11	2.45	-0.05	2.86	0.19	2.13	-0.09	3.04
ONGC	0.29	2.80	0.10	2.45	0.34	2.70	0.02	2.25	0.16	1.64	-0.16	3.26
RANBAXY	0.17	2.62	-0.14	3.50	0.16	1.68	0.03	1.66	-0.34	5.11	-0.08	2.35
RELIANCE	-0.10	2.73	-0.03	2.73	0.26	1.85	0.01	2.13	0.14	2.33	0.22	2.18
SAIL	-0.07	2.45	0.24	3.79	0.51	4.46	0.27	3.59	0.11	2.73	0.13	3.61
SATYAMCOMP	0.05	5.26	-0.16	2.62	0.20	3.41	0.13	2.14	0.29	1.99	-0.24	5.06
SBIN	0.04	2.55	0.08	1.46	0.32	2.13	0.03	2.63	0.15	4.02	0.01	10.88
SIEMENS	0.10	2.32	0.04	1.82	0.36	2.17	0.22	2.16	0.48	2.08	-0.66	10.97
SUNPHARMA	0.08	2.40	-0.34	137.51	0.34	80.13	-0.13	4.73	0.24	1.77	0.08	53.63
TATAPOWER	0.05	2.79	-0.00	1.57	0.47	2.56	-0.02	3.04	0.19	1.87	-0.05	2.03
VSNL	-0.18	4.37	-0.38	2.17	0.41	2.74	-0.04	2.92	0.37	2.98	-0.06	3.44
WIPRO	0.10	4.91	-0.13	2.66	0.04	3.00	-0.28	7.41	-0.07	4.75	-0.00	2.58

The average daily return of GRASIM was 0.05 per cent. Up to 2000-01, the daily return has been negative except the year 1999-00 when it registered second highest positive return. It was due to the better performance of the company in the environment of weak demand. After 2000-01, the return has often been stable and around the average return. This security was highly volatile during the three consecutive years since 1998-99. After 2000-01, it was comparatively stable. HDFC also provided returns with high fluctuations over the years. The highest return was during 2003-04 followed by 2005-06 with 0.26 and 0.24 per cent respectively which was backed by better performance of the company and introduction of new housing policy. So far as the volatility is concerned, it was high during 1999-00 i.e. 13.39 per cent which is much more compared to the average volatility 5.17 per cent. The average return of HDFC BANK was the highest among the any other company taken in the study i.e. 0.13 per cent. Whereas, the highest return was during 1999-00 i.e. 0.50 per cent followed by 2003-04 with 0.19 per cent. This security experienced frequent trading during 1999-00 because of amalgamation of Times Bank with the HDFC Bank and all-around growth of the company. As a result volatility was also high during this year.

The return of HEROHONDA ranged between 0.44 per cent and -0.76 per cent. The return of this security has been comparatively stable after 2000-01. This security was highly volatile during 1998-99 followed by 2000-01 with 11.24 and 10.28 per cent respectively. The daily return of HINDPETRO has always been fluctuating over the years. The highest positive and negative return was 0.24 and -0.23 per cent respectively. 1999-00 and 2000-01 have been highly volatile years for HINDPETRO. In the remaining years, it has been relatively stable.

INFOSYSTCH provided high return up to 1999-00 compared to the average return 0.04 per cent. After that, it has been highly fluctuating over the remaining years. The highest positive and negative returns were 0.32 during 1999-00 and -0.31 per cent during 2004-05. The volatility in this security was the highest during 2004-05 with 8.81 per cent followed by 5.49, 5.08 and 5.06 per cent during 1998-99, 1997-98 and 1999-00 respectively. Negative return and high volatility during 2004-05 was due to the political uncertainty and adverse investor sentiments. Thus, five years have highly volatile for INFOSYSTCH. The return in IPCL also fluctuated highly over the study period. The return of this security ranged from 0.31 to -0.20 per cent. Up to 1999-00, the average volatility in this security has been comparatively much higher than other securities discussed above. The highest volatility was 37.51 per cent during 1997-98 followed by 1996-97 and 1999-00 with 28.42 and 21.97 per cent respectively. The weak interest of FIIs in the secondary market in the wake of South-East Asian currency crisis was the main reason behind negative return and high volatility during these years. After 2000-01, it has been comparatively stable.

ITC has also provided highly fluctuating return over the years. Its average return was -0.01 per cent. The return of this security ranged between 0.26 per cent and -0.77 per cent. Five years are such which experienced negative returns. So far as the volatility is concerned, it was high in only one year i.e. 2005-06 with 16.65 per cent which is much more than 5.24 per cent, the average volatility which may

be attributed to the huge selling of securities by investors because of increase in oil prices.

The average daily return of M&M was 0.04 per cent while the highest positive and negative return was 0.61 and -0.38 per cent respectively. Like a few securities mentioned above, the volatility was comparatively higher during the three consecutive years since 1998-99. After 2000-01, it has been stable except one year 2005-06 when it was 4.71 per cent which is higher than average volatility 3.18 per cent. The reason is the same as it was in the case of ITC. The average return of MTNL was negative i.e. -0.01 per cent. Five years are such which witnessed negative returns. The highest positive and the negative return were -0.19 per cent during 2005-06 and -0.20 per cent during 2000-01. So far as the volatility is concerned, like M&M it was also high during the three consecutive years since 1998-99 and after that it was comparatively stable up to 2005-06. In 2006-07, it was slightly above than average volatility.

ONGC also provided fluctuating returns over the years. During 1996-97, 1998-99, 2000-01 and 2006-07, it has been negative. The highest return was 0.34 per cent followed by 0.29 and 0.16 per cent during 2003-04, 2001-02 and 2005-06 respectively. This security was highly volatile during 1998-99, 1999-00 and 2006-07. High volatility during 2006-07 was due to inflationary pressure. The daily return of RANBAXY was negative during six years. The average return was -0.02 per cent. The return of this security ranged between 0.38 per cent -0.34 per cent. The volatility in RANBAXY was tremendously high during 1996-97 and 1997-98 with 97.60 and 75.41 per cent respectively. It should also be noted that the average volatility was quite high i.e. 41.77 per cent than that of any security discussed above which might be due to the more interest of investors in the security because of good performance.

RELIANCE has also been one of the companies providing highly fluctuating returns over the years. The highest return was 0.28 per cent during 1999-00 followed by 2003-04 and 2006-07 with 0.26 and 0.22 per cent respectively which are many times of average return 0.05 per cent. The average volatility was 47.58 per cent which is highest among all the securities taken in the study. The highest volatility in this security was 76.62 per cent during 1997-98 followed by 1996-97 with 70.06 per cent. It is notable that the reliance has been one of the companies providing high liquidity and high return many times. Since 2000-01 it has often been stable. The daily return of SAIL has also been fluctuating in nature. The highest return was 0.51 per cent during 2003-04 followed by 0.27 and 0.24 per cent during 2004-05 and 2002-03 respectively. This was the result of strong come back of investors in the market after Asian crisis. During the six years ended 2001-02, the return has been negative. After that it has always been positive. SAIL also was highly volatile during the three consecutive years since 1998-99 with 6.48, 6.92 and 8.44 per cent respectively. After that, the remaining years have relatively been calm.

SATYAMCOMP also provided fluctuating return over the years. Many times the return was very high. The highest positive and negative return was 0.64 per cent and -0.65 per cent during 1997-98 and 2000-01 respectively which have

tremendous margin from the average return 0.07 per cent. This security was highly volatile during three consecutive years since 1999-00 with 6.81, 8.61 and 5.26 per cent respectively. SBIN experienced negative return during the four years among five years ended 2000-01. After that it has always been positive. The highest return was during 2003-04 with 0.32 per cent followed by 0.15 and 0.08 per cent during 2005-06 and 2002-03 respectively. So far as the volatility is concerned, this security has utmost been calm except the year 2006-07 when it was more than twice of the average volatility which was due to the uncertainty in the market because of increase in crude oil prices.

SIEMENS also provided return with high fluctuations over the years. The highest positive and negative return was 0.48 per cent and -0.66 per cent during 2005-06 and 2006-07 respectively. During the three consecutive years ended 2005-06, it provided much high return compared to the average return 0.02 per cent. This can be attributed to the huge investment made by FIIs in the Indian market during these years. The volatility in this security has been comparatively stable over the years except the year 2006-07 when it was more than twice of the average volatility. The reason is the same as it was in the case of SBIN. During six years the return of SUNPHARMA has been negative as well as highly fluctuating. The highest return was during 2003-04 with 0.34 per cent followed by 0.32 and 0.24 per cent during 1998-99 and 2005-06 respectively. On the other hand, the highest negative return was during 2002-03 with -0.34 per cent followed by -0.13 per cent during 2004-05. This security has been highly volatile during 2002-03, 2003-04 and 2006-07 with 137.51, 80.13 and 53.63 per cent respectively compared to the average volatility 50.69 per cent which might be due to the huge trading by investors to make profits. In the remaining years it has comparatively been stable.

The daily return of TATAPOWER has utmost been alternatively negative every year. During the seven years, it provided negative returns. The highest return was 0.47 per cent during 2003-04 followed by 0.19 and 0.15 per cent during 2005-06 and 2000-01 respectively. The average return was 0.04 per cent. So far as the volatility is concerned, it has been very high during the six years. The highest volatility was 3.96 per cent during 2000-01 followed by 3.31, 3.04 and 3.01 per cent during 1999-00, 2005-06 and 1996-97 respectively which was due to the uncertainty in the market. VSNL provided negative returns during the eight years among the study period which might be due to the poor performance of the company. The highest return was 0.41 per cent during 2003-04 followed by 0.37 and 0.36 per cent during 2005-06 and 1999-00 respectively. On the other hand, the highest negative return was -0.71 per cent during 2000-01 followed by -0.38 and -0.24 per cent during 2002-03 and 1996-97 respectively. 2000-01 with 8.39 per cent has been the highest volatile year for VSNL followed by 1996-97, 1999-00 and 2001-02 with 4.72, 4.40 and 4.37 per cent respectively. It is notable that there was uncertainty in the economy during these years.

The return of WIPRO also has often been alternatively negative over the years. During six years, it provided negative returns. The highest positive and negative return was 0.67 per cent during 1998-99 and -0.39 per cent during 2000-

01. The average return was 0.01 per cent. This security was highly volatile during 1997-98, 1999-00 and 2004-05 compared to the average volatility 5.48 per cent.

It is clear that during 2000-01, the return of most of the securities was negative followed by 2002-03, 2006-07 and 1998-99. So far as the volatility is concerned, 1999-00 has been highly volatile year for 20 securities followed by 1998-99, 2000-01 and 1997-98 for 14, 14 and 12 securities respectively. ACC, HDFC, ITC, MTNL, SBIN and SIEMENS have been comparatively stable over the years than other securities taken in the study. On the other hand, BAJAJAUTO, DRREDDY, GLAXO, GRASIM, HDFCBANK, INFOSYSTCH, M&M, ONGC, TATAPOWER and VSNL are such securities which were highly volatile during four years or more. It is also notable that the period after 2000-01 has comparatively been stable than preceding period. Thus, most of the companies were highly volatile with low or even negative return. It should also be noted that we have found high volatility during the period from 1998-99 to 2000-01. High volatility during 1998-99 was due to various unfavourable happenings comprising imposing restrictions on India by international community because of nuclear test, chaos in the international stocks and currency market. Exchange rate also badly affected the market which fell down sharply. There was also effect of East Asian crisis. Financial status of US 64 scheme and Unit Trust of India badly affected the market sentiments. UTI was acknowledging as the counter force against FIIs. The failure of UTI made FIIs dominant player in the market. All these happenings compelled FIIs to start selling their holdings and ultimately FIIs made huge negative investment during the year. Till date this is only year in which investment by FIIs was negative. The market was affected to some extent with these happenings till 2000-01 due to which volatility was high during these years. High volatility during 2006-07 was due to the rising international oil prices and a strong economic growth rate which increased the inflationary pressure in the global scenario.

5. CONCLUSION

The study concludes that the return of most of the securities was negative during 2000-01 followed by 2002-03, 2006-07 and 1998-99. So far as the volatility is concerned, 1999-00 has been highly volatile year for 20 securities followed by 1998-99, 2000-01 and 1997-98 for 14, 14 and 12 securities respectively. ACC, HDFC, ITC, MTNL, SBIN and SIEMENS have been comparatively stable over the years than other securities taken in the study. On the other hand, BAJAJAUTO, DRREDDY, GLAXO, GRASIM, HDFCBANK, INFOSYSTCH, M&M, ONGC, TATAPOWER and VSNL are such securities which were highly volatile. It is also notable that the period after 2000-01 has comparatively been stable than preceding period. Thus, most of the companies were highly volatile with low or even negative return.

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