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REVISITED 'THE IRREGULARITY OF INDIAN STOCK MARKET: AN OCTOBER EFFECT ANALYSIS'

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ABSTRACT

In the today's emerging market it will be interested to deal and investigate the behavior of risk and return characteristics of stock prices in every month, especially in the month of October, as October has traditionally been a scary month for Stock Markets. The objective of the study is to assess the October effect in the Indian Stock Market i.e. BSE and NSE and to observe how the market behaved during the month of October for the last Six years i.e., 2003 to 2011. The present study hypothesized that there is no significant effect of the October month over the Indian stock market. When we keen observe the deviation with the help of statistical relevance by applying some of the statistical tools (Cardiovascular Signals Runs Test). At last we concluded that our statistics go against the theory.

KEYWORDS

BSE, NSE, October, Run Test.

INTRODUCTION

India becomes an interesting case study because since the early 1990's some very fundamental changes took place in the Indian Capital Market. These include the birth of the Securities and Exchange Board of India (SEBI) as a regulator of the Indian Capital Market, the birth of National Stock Exchange (NSE) as a competitor of the Bombay Stock Exchange (BSE), introductions of computerized screen based trading at both the exchanges and dematerialization of shares¹. These changes have led to substantial improvement in Market Capitalization, liquidity and efficiency of the Capital Market, especially during the second half of the 1990's.

In the today's emerging market it will be interested to deal and investigate the behavior of risk and return characteristics of stock prices in every month, especially in the month of October, as October has traditionally been a scary month for Stock Markets. The decline in stock market has been observed during the last many years in the month of October. In the past 18 Octobers between 1991 and 2008 the market has gone up just six times, it has been flat once and fallen on 11 occasions. Both sensx and nifty declined during the month of October 2005 from 8821, 2669 (5th October) to 7656, 2307 (28th October) i.e., 13.2 per cent, 15.7 per cent respectively.² Based on above exploration it seems that the month of October may have deserved bad reputation in the stock market.

A collection of theories shows us that certain days, months or times of year are subject to above-average price changes in market indexes and can, therefore, represent good or bad times to invest.³ Some theories that fall under the calendar effect include the Monday effect, the October effect, the Halloween effect, Vallan (settlement period) effect and the January effect etc.

Some people believe that stock prices generally increase during the month of January, because people are buying back stocks after end of the year sell-off by investors harvesting tax losses, this is known as January effect. This effect is often seen in the US, but in India this effect is observed in the month of April and in October, so it is known as October effect.⁴

SURVEY OF LITERATURE

Seasonality in security market returns has been extensively documented. Among the different seasonal effect observed in stock markets, an interesting one is the seasonality in month of the year effect. Major seasonality effect in the literature of this field are day of the week effects, month of the year effects, turn of the month effects, turn of the year effects, holiday effects and January effect. A major finding in most of the empirical research on monthly seasonality in the stock markets is the so-called January effect concerning abnormal returns during this month compared to the rest of the year. Relevant surveys were made on stock market to see the day of the week effect on BSE during 1988-1990. Wachtel (1942) described January effect on Stock prices Wachtel who first described January Effect in financial markets, found that the Dow-Jones industrial Average from 1927-1942 showed frequent bullish tendencies from December to January. Rozeff and Kinney (1976) found that average return on equal-weighted index of New York Stock Exchange prices 1905 through 1974 was 3.5% during January and only 0.5% during other months.

Banz (1981) showed that small firms had higher expected returns and Keim (1983) found that nearly half of the excess returns of small firms occurred during January. Moreover, half of the January returns came during the first five days of the month, specially the first day of trading. Gultekin and Gultekin (1983) documented evidence of seasonality, mainly January effect, in stock returns in 13 of 17 countries study. Their studies are particularly strong given that they used value weighted indices that give less weight to small firms, which drive the January Effect in the US data. Ariel Robert, A. (1987) found that although there is no tax on Capital gains for investors in Japan nor a tax benefits for losses, there is a strong January Effect in the country. According to Aggarwal, A. and K. Tondon, (1994), October: this is one of the peculiarly dangerous months to speculate in stocks in. the others are July, January, September, April, November, May, March, June December, August and February. Balban E. (1995) found evidence of low returns in October for the Athens and Turkish stock exchange respectively. Poshakwale (1996) studied the returns on BSE between 1987-1994 and found that mean returns expect for Monday and Wednesday are positive and that week end effect on returns support the presence of first order auto correlation and provide indication of non random nature of stock price on BSE. Likewise monthly effect has played a significant role in the Indian Stock Market.

A recent study by Nath and Dalvi (2005) found that before the introduction of rolling settlement, this effect was significant. But after the introduction, this type of effect shows market inefficiencies.

¹ Misra (1997) provides a brief survey of the historical transition of the Indian Capital Market from 1947, the year of India's independence, to the first half of the 1990's.

² Gupta, L, C (1992), stock Exchange Trading in India: Agenda for Reform, Delhi: Society for Capital Market Research and Development.

³ Bodie, Zvi, Alex Kane and Alan J Marcus (1989), Investments, Homewood, 11: Irwin, pp 363-365.

⁴ Dutta A, (2008), "The October effect on the BSE index" Portfolio Organizer, pp. 41-48

The above studies show that there is a January effect in the western countries which shows that there is a tendency of the stock market to rise between December 31 and the end of the first week in January. The January effect occurs because many investors choose to sell some of their stock right before the end of the year in order to claim a capital loss for tax purposes.⁵

But in India the October effect as this time is considered as the time of festivals for the Indians. October effect is a theory that postulated that the stocks will tend to decline in the month of October.⁶ Although historically there has been a slight underperformance in serious market crashes in October have kept the perception alive. Some investors may be nervous during October since the dates of some large historical market crashes occurred during this month. Black Monday, Tuesday and Thursday all occurred in October 1929, after which came the Great Depression.⁷ In addition, the great crash of 1987 occurred on October 19, and saw the Dow plummet 22.6% in a single day.

Dutta A. and Mahapatra A. (2008) examined the October Effect in their research paper "The October Effect on BSE Index".

According to them October month is well-known for fluctuation in Indian Capital markets. The author studied the October anomaly on BSE index. They said that October's bad reputation may be well deserved in the Indian market. In the past 17 Octobers between 1991 and 2007 the market has gone up just six times, it has been flat once and fallen on 10 occasions, they added. They observed that deviations, calculated October seems to be having a major influence on the stock Index and month of October is emotionally, religiously and fiscally the strongest month for Indian because people at large are on a buying spree but statistically found that their Null Hypothesis which was stated to be having 'No October Effect' seems to be significance.⁸ They took a period of five years from 2003 to 2007 for BSE only.

METHODOLOGY FOR THE STUDY

OBJECTIVES

The objective of the study is to assess the October effect in the Indian Stock Market i.e. BSE and NSE and to observe how the market behaved during the month of October for the last Nine years i.e., 2003 to 2011.

HYPOTHESIS

The present study hypothesized that there is no significant effect of the October month over the Indian stock market.

SCOPE OF THE STUDY

The study has been conducted on BSE and NSE, taking the opening index of each month. The study has been conducted for the period of Nine years i.e., 2003 to 2011.

RESEARCH METHODOLOGY

The BSE and NSE index at the opening of each month has arranged from January to December, for the Nine years. The data has divided into four quarters and Quartile Deviation calculated. Index has divided into two equal halves i.e., from January to June and July to December for the purpose of calculated Mean Deviation for each half. Standard Deviation of each year is calculated. t-distribution for each quarter is calculated and Last of all Run test is applied.

SOURCES OF DATA

The nature of study dictates the requirement of the secondary sources of information. Accordingly, all the required data has been obtained from various authentic sources

The secondary data has been taken from Internet and computed data is derived from the historical data. Data has all been taken for research purpose adhering to ethical norms and regulations.

LIMITATION OF THE STUDY

The study which has been for a period of Nine years i.e., 2003 to 2011 is a limitation for the study. If the period would have been more, the results could have Higher Degree of reliability.

ANALYSIS AND INTERPRETATION

By grouping the BSE & NSE Indexes into four quarters, it is easier to study the October effect. By comparing the quartile deviation, mean deviation and standard deviation and thereafter by applying t-test helps study the October effect more effectively.

Graph 1 represented the Index movement of BSE sensex for the last 9 years i.e. 2003-2011. Graph 2 represented the Index movement of NSE index for the above said time. By applying the techniques of measure of dispersion the figures in the Table 1 could be derived. The graphic representation of Table 1 and Table 2 can be seen on the Graph 3 and Graph 4 which represents the dispersion statistics. Here in Table 1 quartile deviation is calculated to know the Average amount by which the each quarter will differ from the median.

TABLE 1: DISPERSION STATISTICS FOR THE PERIOD 2003-11 (BSE)

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10
	2003	2004	2005	2006	2007	2008	2009	2010	2011
QD (Q ₁)	117.47	52.535	110.52	680.035	576.415	1002.135	408.45	584.91	810.91
QD (Q ₂)	323.67	447.735	519.705	726.66	389.07	1912.855	1611	378.14	316.34
QD (Q ₃)	330.315	206.645	499.53	855.27	986.25	852.05	730.1	1100.42	871.72
QD (Q ₃)	466.045	465.21	752.805	412.505	461.9	347.67	784.27	493.92	1125.05
MD ₁	158.65	388.75	248.21	551.75	570.87	1190.91	2090.06	509.21	462.1
MD ₂	550.01	450.63	581.34	924.62	1902.72	2208.77	714.11	939.22	788.39
SD	928.3005	531.4195	1038.343	1328.131	2640.503	3137.13	3195.1	1455.59	1273.56

Note: QD Quartile Deviation, MD₁ Mean Deviation of Jan to June, MD₂ Mean Deviation of July to Dec., SD Standard Deviation.

TABLE 2: DISPERSION STATISTICS FOR THE PERIOD 2003-11 (NSE)

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10
	2003	2004	2005	2006	2007	2008	2009	2010	2011
QD (Q ₁)	42.6	18.925	33.8	200.725	168.7	244.5	179.425	166.25	370.2
QD (Q ₂)	100.05	156.25	159.05	189.95	115.2	562.675	734.775	160.15	117.03
QD (Q ₃)	115.625	56.875	144.55	222.6	278.675	219.4	185.25	110.225	293.6
QD (Q ₃)	161.925	140.2	232.8	111.15	187.925	102.025	279.05	91.25	204.23
MD ₁	53.39167	133.2943	69.275	159.111	183.4443	316.3167	536.97222	143.09167	192.72
MD ₂	181.9	140.9943	170.3833	253.25	631.3	669.05	231.10833	344.49167	262.71
SD	287.0823	163.9557	272.6189	321.0518	794.3683	870.6108	878.31292	414.32824	364.73

Note: QD Quartile Deviation, MD₁ Mean Deviation of Jan to June, MD₂ Mean Deviation of July to Dec., SD Standard Deviation.

⁵ Connolly, Robert A. (1989), "An Examination of the Robustness of the Weekend Effect". Journal of Financial and Quantitative Analysis, vol.24, no.2, pp.133-169.

⁶ An interesting study is the so called **Mark Twain Effect** which concerns that average returns during the month October are significantly lower than those in the rest of the year.

⁷ Gibbons, Michael R and Patrick Hess (1981), "Day of the Week Effect and Asset Returns". Journal of Business, vol.54, no.4 (October), pp.579-596.

⁸ Dutta A. (2008), "The October effect on the BSE index" Portfolio Organizer, pp. 41-48

As index is divided into two halves i.e. 1 January to 30 June and 1 July to 31 December From Table 1 and Table 2 it can be observed that the mean deviation of 2nd half of each year is greater than the mean deviation of 1st half (both in BSE & NSE), which indicates that average difference between the index and the mean increases. The standard deviation is calculated to measure the absolute dispersion.

In 2003 the Quartile Deviation of fourth quarter in BSE and NSE is 466.04 and 161.925 respectively which is more than rest of three quarters. In 2004 and in 2005 the same trend can be seen. It is worth while to note here that the fourth quarter contains the month of October. Hence to naked eye it looks as if the month of October has a significant trading volume.

To ensure that whether our eye verification be true or not it is necessary to check the statistical relevance on eye verification, a t-test was conducted in order to check the significance of the quartile deviation (as calculated in Table3 and in Table 4 in BSE & NSE respectively), so that the effect of fourth quartile (which contain the month of October) can be felt on BSE & NSE Indexes.

TABLE 3: YEAR-WISE T-SIGNIFICANCE TEST FOR MEAN FOR ALL QUARTILES (BSE)

t-value	2003	2004	2005	2006	2007	2008	2009	2010	2011
Q1	0.833119	0.187534	0.877193	0.846553	0.959819	0.933505	1.439715	0.986404	0.634242
Q2	0.773904	0.906147	0.780636	0.522865	0.585367	0.539579	0.135844	0.553828	0.866852
Q3	0.211018	0.444591	0.507292	0.011479	0.057611	0.032469	0.692659	0.294462	0.483013
Q4	1.396005	1.163204	1.150538	1.380896	1.487576	1.440616	0.8829	1.24577	1.018081

TABLE 4: YEAR-WISE T-SIGNIFICANCE TEST FOR MEAN FOR ALL QUARTILES (NSE)

t-value	2003	2004	2005	2006	2007	2008	2009	2010	2011
Q1	0.822949	0.26003	0.849553	0.829838	1.003895	0.95678	1.353646	0.887682	0.672565
Q2	0.832761	0.953001	0.832251	0.473457	0.562265	0.566671	0.302559	0.618531	0.692899
Q3	0.194239	0.497085	0.497688	0.137166	0.011639	0.006758	0.620954	0.07834	0.161935
Q4	1.461471	1.190057	1.184116	1.440461	1.5778	1.530209	1.035252	1.584553	1.203529

The Index data of BSE & NSE is not normally distributed so it arise the requirement of a non-parametric test. Accordingly to check the hypothesis of the study Run test is applied here, the values of which are given in Table 5 for BSE & NSE.

TABLE 5: RUN TEST VALUES (BSE & NSE)

Market	N	r	N ₁	N ₂	μr	σr
BSE	36	17	13	22	17.34	7.38
NSE	36	28	13	22	17.34	7.38

Test at 1% Significant Level ($\alpha = 0.01$, $z = 2.58$)

Upper Limit = 36.37

Lower Limit = 1.68

Since Lower Limit < r < Upper Limit, the Null Hypothesis is accepted.

Test at 5% Significant Level ($\alpha = 0.05$, $z = 1.96$)

Upper Limit = 31.8

Lower Limit = 2.89

Since Lower Limit < r < Upper Limit, the Null Hypothesis is accepted.

FINDINGS AND CONCLUSION

The above observation which has focused on finding the October effect on BSE & NSE which is inspired by earlier studies which shows that there is a January effect in the western countries and day of week effect in Indian stock market reached on two broad Results:

Firstly, we observed on the basis of various deviations, it seems to be true that October is having a major influence on the BSE & NSE Indexes. Due to a festive month October is emotionally, religiously and fiscally the strongest month for Indians because people at large number on a buying trend. This is a period in which most of the festivals in India are celebrated. This means that the money in pocket is deviated to buying consumables rather than stock. The effect of the October could also be seen from the third quarter where a lot of deviation can be seen in both the Indexes i.e. in the month of September which is the last month of third quarter.

Secondly when we keen observe the deviation with the help of statistical relevance by applying some of the statistical tools we found that our Null Hypothesis which was stated that there is not any October effect seems to be statistically significant. From the above discussion, we came to a major result that whether a visible effect can be seen on the movement of quartile but it has not significantly given any change in statistical view point. That is why, we can say that there is not any statistical relevance on eye verification and hence there is not any significant October effect on the Indian Stock Market.

From the above discussion we concluded that there is nothing special about October though it being a month of festivals in India. It is just an expectation that the Indian Stock Market tends to be poor performance in October due to some major down fall previously, but it is proved worthless. It was just a matter of chance rather than an actual phenomenon. It is just a psychological expectation. At last we concluded that our statistics go against the theory.

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