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Month Related Anomalies in Indian Stock Market: An Empirical Study

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Abstract – Calendar anomalies in the stock market has been a topic of vital importance in India and as well as the rest of the world. Calendar anomalies refer to the significant variations in the returns of a specific day or time period and the rest of the days and other time periods. Most researched calendar anomalies are weekend effect (Monday effect), Friday effect, Wee-day effect (related to any other days of the week), Month related effects such as Monthly effect, turn of month effect and semi month effect etc. This paper examines the month related effects on the Bombay stock exchange. The prices of stock markets have been taken from BSE Sensex (a barometer of Indian stock markets) for the period from 1998 to 2012 (excluding the years 2008 and 2009 being the years of abnormal variations). The data has been divided in to three time periods viz. 1998 to 2001 (before rolling settlement), 2002 to 2007 (after rolling settlement but before the years of abnormal variations) and 2010 to 2012 (after the years of abnormal variations). The data has been analysed with the help of mean, standard deviations, t-test and ANOVA.

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INTRODUCTION

Calendar anomalies in the stock market has been a topic of vital importance in India and as well as the rest of the world. Calendar anomalies refer to the significant variations in the returns of a specific day or time period and the rest of the days and other time periods. Most researched calendar anomalies are weekend effect (Monday effect), Friday effect, Wee-day effect (related to any other days of the week), Month related effects such as Monthly effect, turn of month effect and semi month effect etc. There are mainly three types of month related effects such as – Month effect, Semi-month effect and Turn of Month effect. Month effect is related to the comparison of all the returns of all the months with each other to find out the variations. The effect establishes if the variations between two or more months are found significant. Semi month effect is the effect which is calculated with by comparing the returns of all months by dividing each month into two parts. Typically a month is divided into two parts viz. 1st to 15th of the month and 16th to 30th/ 31st of the month. The returns of two series of data (first half and second half) of all the months taken under study are compared with each other and the variations are found. The effect establishes if the variations between two or more months are found significant. For calculation of turn of month effect the return of last day of the previous month and first three days of the next month is compared with the return of the rest of the days of current month. The effect establishes if the variations between two or more months are found significant.

This paper examines the month related effects on the Bombay stock exchange. The prices of stock markets have been taken from BSE Sensex (a barometer of Indian stock markets). In the present study, the data of recent years has been used to explain the compare the various calendar effects in the Indian stock market. The information regarding the duration of data is given below:

a) BSE Sensex from 1998 to 2001

b) BSE Sensex from 2002 to 2007

c) BSE Sensex from 2010 to 2013

d) BSE Sensex from 1998 to 2007 (Combined Effects)*

e) BSE Sensex from 1998 to 2012 (Combined Effects)*

*Period from 2008 to 2009 has not been selected for the above purpose due to the extreme fluctuations.

LITERATURE REVIEW:

Rozeff and Kinney (1976) were the first to document evidence of higher mean returns in January as compared to other months. Banz (1981) analyzed monthly returns and noted that the fifty smallest stocks outperformed the fifty largest by an average of one percentage point per month, on a risk- adjusted basis. Ritter (1988) found that the ratio of stock purchases to sales of individual investors reaches an annual low at the end of December and an annual high at the beginning of January. Bhardwaj and Brooks (1992) and Eleswarapu and Reinganum (1993) further documented the January effect.

Pandey (2002) used monthly return data of the Bombay Stock Exchange's Sensitivity Index for the period from April 1991 to March 2002 for analysis. The results confirm the existence of seasonality in stock returns in India and the January effect. Maghyereh (2003) investigated the seasonality of monthly stock returns and January effect anomaly in an emerging stock market of a developing country namely Jordan. Evidence on return seasonality and January effect would have important implications for investment strategies to gain abnormal returns and it would invalidate the paradigm of the efficient markets hypothesis. The authors found no evidence of monthly seasonality as well as January effect in the ASE returns. Haug and Hirschey (2005) found that the January effect in small cap stock returns is remarkably consistent over time. Patel (2008) found two distinct calendar effects in returns for the Indian stock market - November-December and March-to-may effect. In November-December effect it was found that the mean returns for November and December are significantly greater than those of the other ten months. In March-to-May effect the mean returns for the months March to May were found significantly less than those during the other nine months. It was further demonstrated that these are two distinct effects that are independent of each other. Elango and Pandey (2008) examined whether the 'January anomaly' or 'seasonality of monthly returns' found in several advanced markets is also found in the fast developing Indian markets. The results indicated the presence of 'January anomaly' in S&P CNX Nifty.

Parikh (2009) confirms the presence of a significant 'December effect' in the Indian stock market even after taking time varying volatility into account. However, the 'Wednesday effect' detected by the Ordinary Least Squares model disappeared when time varying volatility was considered. The other findings of the study confirm that there are no information asymmetries in the Indian stock market. Dash and Dutta (2011) studied the interplay between the month-of-the-year effect and market crash effects on monthly returns in Indian stock markets. They used dummy variable multiple linear regression to assess the seasonality of stock market returns and the impact of market crashes on the same. The results of the study provide evidence for a month-of-the-year effect in Indian stock markets, particularly positive November, August, and December effects, and a negative March effect. Further, the study suggests that the incidence of market crashes reduces the seasonal effects. Tangjitprom (2011) found that the calendar anomalies exist in Thai stock market. The return is abnormally high during December and January. Friday, H. Swint and Hoang, Nhung (2011) examined the seasonality in the Vietnam Stock Market Index over 10 years, since the market's establishment on July 28th, 2000 until December 31st, 2010. The study found significant positive returns in April and significant negative returns in July for the VN-Index. Ray, (2012) conducted the study with the objective to investigate the existence of seasonality in stock returns in Bombay Stock Exchange (BSE) sensex. In this study the authors used monthly closing share price data of the Bombay Stock Exchange's share price index from January, 1991 to December, 2010 for this purpose. Combined regression – time series model was applied with dummy variables for months to test the existence of seasonality in stock returns. The results of the study provides evidence for a month-of-the-year effect in Indian stock markets confirming the seasonal effect in stock returns in India and also support the ' tax-loss selling' hypothesis and 'January effect'. Zhang and Jacobsen (2012) studied and found that over 300 years of UK stock returns reveal that well-known monthly seasonals are sample specific. For instance, the January effect only emerges around 1830. Most months have had their 50 years of fame, showing the importance of long time series to safeguard against sample selection bias, noise, and data snooping. The overall conclusion is that monthly seasonals might simply be in the eye of the beholder. Nageswari et. al. (2013) studied using logarithm data for S&P CNX Nifty and S&P CNX 500 sample indices and applied the Dummy Variable Regression Model from 1st April 2002 to 31st March 2011. It is found that the highest mean return was earned in December and the lowest/ negative mean return earned in January Month for S&P CNX Nifty index. The S&P CNX 500 Index recorded the Highest Mean Return in the Month of March and the Highest Negative Mean Returns in the Month of January. It is found that there was significant difference in the mean returns among the different months of the year. The analytical results of seasonality indicate the absence of January Anomaly during the study period.

Turn of the month effect refers that the returns on last few days of the previous month and first few days of the current month are significantly different from the returns for rest of the days in the current month. Lakonishok and Smidt (1988) showed that US stock returns are significantly higher at the turn of the month, defined as the last and first three trading days of the month. Cadsby and Ratner (1992) found similar turn of month effects in some countries and not in others. Ziemba (1991) found evidence of a turn of month effect for Japan when turn of month is defined as the last five and first two trading days of the month. Freund et. al. (1992) tested for the turn-of-the-month calendar anomaly in stocks that trade on the National

Stock Exchange of India, using the daily returns of the S&P CNX Nifty index for the period 1992 through 2004. The mean and the median daily returns are found to be significantly higher for trading days which occur during the turn-of-the-month period. Using regression models it was found that there is presence of a turn-of-the-month effect, even after controlling for potential January and weekend effects.

Tangjitprom (2011) examined the existence of turn of month effect. The stock return is computed from SET index during 1988 to 2009, and the SET50 index gathered since it was created in 1995. The return during the turn-of-month period, which can be defined as the last trading day and the first four trading days of the following months, were found abnormally high.

OBJECTIVES OF THE STUDY:

1. To find out the existence of Month effect in the Indian stock market

2. To find out the existence of Semi-Month effect in the Indian stock market

3. To find out the existence of Turn of Month effect in the Indian stock market

RESEARCH METHODOLOGY:

The present study is descriptive and quasi experimental in nature. It finds out the difference between returns of two periods to establish certain hypothesis. BSE is taken as the representative stock market and data has been taken from BSE Sensex (a barometer of Indian stock markets) for the period from 1998 to 2012 (excluding the years 2008 and 2009 being the years of abnormal variations). The data has been divided in to three time periods viz. 1998 to 2001 (before rolling settlement), 2002 to 2007 (after rolling settlement but before the years of abnormal variations) and 2010 to 2012 (after the years of abnormal variations). The data has been analysed with the help of mean, standard deviations, t-test and ANOVA.

DATA ANALYSIS AND INTERPRETATION:

Month Effect:

Month effect is calculated by comparing the mean returns of all months with each other. To compare the mean returns ANOVA has been used. It is found from the comparison (table 1) that there is no significant different among the as p value is .53 (>.05)

Table 1 ANOVA Moth Effect 1998 to 2007

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	27.372	11	2.488	.954	.487
Within Groups	6414.213	2460	2.607		
Total	6441.585	2471			

Table 2 One to One comparison/ Post hoc test from 1998 to 2012 (Excluding 2008 & 2009)

Month	January	February	March	April	May	June	July	August	September	October	November
January											
February	-.0480310 (1.000)										
March	.0855468 (1.000)	.1335778 (1.000)									
April	.1408719 (.999)	.1889029 (.992)	.0553251 (.999)								
May	.0852779 (1.000)	.1333089 (1.000)	-.0002690 (1.000)	-.0555940							
June	-.051021 (1.000)1	-.0029901 (1.000)	-.1365679 (1.000)	-.1918930 (.989)	-.1362990 (.999)						
July	-.0078158 (1.000)	.0402152 (1.000)	-.0933626 (1.000)	-.1486877 (.999)	-.0930937 (1.000)	.0432053 (1.000)					
August	-.0862796 (1.000)	-.0382486 (1.000)	-.1718264 (1.000)	-.2271515 (.962)	-.1715574 (.995)	-.0352585 (1.000)	-.0784638 (1.000)				
September	-.0220735 (1.000)	.0259575 (1.000)	-.1076204 (1.000)	-.1629454 (.998)	-.1073514 (1.000)	.0289476 (1.000)	-.0142577 (1.000)	.0642060 (1.000)			
October	.0526994 (1.000)	.1007304 (1.000)	-.0328474 (1.000)	-.0881725 (1.000)	-.0325785 (1.000)	.1037205 (1.000)	.0605152 (1.000)	.1389790 (.999)	.0747729 (1.000)		
November	-.2328712 (.954)	-.1848402 (.993)	-.3184180 (.699)	-.3737431 (.482)	-.3181491 (.691)	-.1818501 (.992)	-.2250554 (.958)	-.1465916 (.999)	-.2107977 (.976)	-.2855706 (.830)	
December	-.1921581 (.989)	-.1441272 (.999)	-.2777050 (.844)	-.3330301 (.651)	-.2774360 (.838)	-.1411371 (.991)	-.1843424 (.990)	-.1058786 (1.000)	-.1700846 (.996)	-.2448576 (.930)	-.0407130 (1.000)

In order to make the one-to-one comparison of returns in various months, the Post-hoc test has also been applied. The statistics relating to one-to-one comparison of monthly returns for the period 1998-2007 are given in **Table 2** The results of the test indicate that there is no significant difference between the returns even on the basis of one to one comparison.

Month effect from 1998 to 2012

It is found from the comparison (table 1) that there is no significant different among the as p value is .53 (>.05) which means that there is no significant difference among the returns of various months.

Table 3 ANOVA for Month effect from 1998 to 2012

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	22.873	11	2.079	.910	.530
Within Groups	7319.942	3203	2.285		
Total	7342.816	3214			

In order to make the one-to-one comparison of returns in various months during 1998 to 2012, the Post-hoc test has also been applied. The statistics relating to one-to-one comparison of monthly returns for the period 1998-2007 are given in **Table 4** The results of the test indicate that there is no significant difference between the returns even on the basis of one to one comparison.

Table 4 One to One comparison/ Post hoc test from 1998 to 2012 (Excluding 2008 & 2009)

Month	January	February	March	April	May	June	July	August	September	October	November
January											
February	-.0694634 (1.000)										
March	-.0126558 (1.000)	.0568076 (1.000)									
April	.0868663 (1.000)	.1563297 (.992)	.0995221 (1.000)								
May	.0848003 (1.000)	.1542636 (.991)	.0974560 (1.000)	-.0020661 (1.000)							
June	-.1164065 (.999)	-.0469431 (1.000)	-.1037507 (1.000)	-.2032728 (.929)	-.2012067 (.920)						
July	-.0224779 (1.000)	.0469855 (1.000)	-.0098221 (1.000)	-.1093442 (1.000)	-.1072781 (1.000)	.0939286 (1.000)					
August	-.0690393 (1.000)	.0004240 (1.000)	-.0563835 (1.000)	-.1559057 (.991)	-.1538396 (.989)	.0473671 (1.000)	-.0465615 (1.000)				
September	-.1108693 (1.000)	-.0414059 (1.000)	-.0982135 (1.000)	-.1977356 (.944)	-.1956695 (.937)	.0055372 (1.000)	-.0883914 (1.000)	-.0418299 (1.000)			
October	-.0107148 (1.000)	.0587485 (1.000)	.0019410 (1.000)	-.0975812 (1.000)	-.0955151 (1.000)	.1056916 (1.000)	.0117630 (1.000)	.0583245 (1.000)	.1001544 (1.000)		
November	-.1794969 (.971)	-.1100336 (1.000)	-.1668411 (.982)	-.2663633 (.700)	-.2642972 (.672)	-.0630905 (1.000)	-.1570191 (.988)	-.1104576 (1.000)	-.0686277 (1.000)	-.1687821 (.982)	
December	-.1818484 (.966)	-.1123851 (.999)	-.1691926 (.979)	-.2687147 (.678)	-.2666487 (.648)	-.0654420 (1.000)	-.1593706 (.986)	-.1128091 (.999)	-.0709791 (1.000)	-.1711336 (.978)	-.0023515 (1.000)

Semi Month Effect:

Semi Month Effect is defined as the difference between the mean returns of first half of the month and the second half of the month. In this study the first return of first 15 days and last 15 days is compared. During the period of 1998 – 2001 the man returns of first half are higher than the mean returns of the second half (Table 5). However as per t-test shown in table 6 the p value is .234 which is more than the critical value of p i.e. .05, hence it is concluded that there is no significant difference between the returns of first half of the months and the second half of the months.

Table 5 Semi Month Effect from 1998 to 2001

Semi Month	Mean	N	Std. Deviation	Variance
First Half	.058590	483	1.9930291	3.972
Second Half	-.087190	495	1.8307425	3.352

Table 6 Independent Samples Test Semi Month effect 1998 to 2001

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	.836	.361	1.192	976	.234	.1457803	.1223262	-.0942724	.3858330
Equal variances not assumed			1.190	964.498	.234	.1457803	.1224536	-.0945260	.3860865

During the period of 2002 to 2007 table 7 (showing the results of the semi-month effect) presents that the mean returns in the first half are slightly higher than the mean returns of the second half. However as per t-test the p value is .671 which is more than the critical value of p i.e. .05, hence it is concluded that there is no significant difference between the returns of first half of the months and the second half of the months (Table 8).

Table 7 Group Statistics of Semi Month 2002 to 2007

Semi Month	N	Mean	Std. Deviation	Std. Error Mean
First half	726	.13779826	1.321260342	.049036571
Second half	768	.10742596	1.439321890	.051937055

Table 8 Independent Samples Test Semi Month – 2002 to 2007

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	.643	.423	.424	1492	.671	.030372303	.071600349	-.110075736	.170820343
Equal variances not assumed			.425	1490.723	.671	.030372303	.071428586	-.109738912	.170483519

Table 9 shows the results of Semi-Month effect during the period of 2010 to 2012. It is observed from the results that the mean returns in the first half are slightly higher than the mean returns of the second half. However as per t-test the p value is .898 which is more than the critical value of p i.e. .05, hence it is concluded that there is no significant difference between the returns of first half of the months and the second half of the months (Table 10).

Table 9 Group Statistics Semi Month – 2010 to 2012

Semi Month	N	Mean	Std. Deviation	Std. Error Mean
First Half	364	.018874	1.0970500	.0575010
Second Half	379	.008548	1.1063236	.0568280

Table 10 Independent Samples Test Semi Month Effect 2010 to 2012

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	.044	.834	.128	741	.898	.0103266	.0808580	-.1484115	.1690647
Equal variances not assumed			.128	740.241	.898	.0103266	.0808443	-.1483848	.1690379

Table 11 shows the combined results of Semi-Month effect during the period of 1998 to 2007. It is observed from the results that the mean returns in the first half are higher than the mean returns of the second half. To check the significance of the difference, independent samples t-test has been applied and it is found that the p value is .248 which is more than the critical value of p i.e. .05, hence it is concluded that there is no significant difference between the returns of first half of the months and the second half of the months (Table 12).

Table 11 Group Statistics Semi Month from 1998 to 2007

Semi Month	N	Mean	Std. Deviation	Std. Error Mean
First half	1209	.106154	1.6230073	.0466775
Second half	1263	.031151	1.6062609	.0451975

Table 12 Independent Samples Test – Semi Month from 1998 to 2007

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	.010	.921	1.155	2470	.248	.0750031	.0649591	-.0523769	.2023830
Equal variances not assumed			1.154	2462.796	.248	.0750031	.0649738	-.0524059	.2024121

Semi Month effect is also calculated for the period of 1998 to 2012. The results are shown in the table 13. It is seen from the results that the mean returns are high in case of first half of the month as compare to the second half of the month. However the difference between the two types of returns is not significant as the p value is .260 which is more than .05 (table 14)

Table 13 Semi Month Effect 1998 to 2012

Returns

Semi Month	Mean	N	Std. Deviation	Variance
First half	.085957	1573	1.5177208	2.303
Second half	.025934	1642	1.5053947	2.266
Total	.055301	3215	1.5115008	2.285

Table 14 Independent Samples Test - Semi Month 1998 to 2012

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	.003	.956	1.126	3213	.260	.0600233	.0533249	-.0445309	.1645775
Equal variances not assumed			1.125	3204.633	.260	.0600233	.0533342	-.0445493	.1645959

Turn of Month Effect:

Turn of Month effect is one of the widely observed effects in the Indian stock market. Turn of month effect is calculated with the help of comparison between the return of few days during change of month and the returns of other days. Usually for calculation of turn of month effect the return of last day of the previous month and first three days of the next month is compared with the return of the rest of the days of current month. Before rolling settlement in BSE (1998 to 2001) the mean returns of turn of month days (4 days per month) is more than the mean return of the rest of the days (table 15). To check the significance of the difference't' test is applied. The value under Sig. (2 tailed) is .119 which is more than the critical value of p, i.e. .05. Hence it can be concluded that there is no significant difference between the mean return of turn of month days and the mean return of other days (Table 16).

Table 15 Group Statistics – Turn of Month Effect – 1998 to 2001

Days Type	VAR00002	N	Mean	Std. Deviation	Std. Error Mean
Days of turn	1.00	191	.178217	2.1587782	.1562037
Other Days	2.00	787	-.062134	1.8469209	.0658356

Table 16 Independent Samples Test – Turn of Month 1998 to 2001

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	2.555	.110	1.559	976	.119	.2403515	.1541941	-.0622386	.5429415
Equal variances not assumed			1.418	261.504	.157	.2403515	.1695108	-.0934284	.5741314

In the 2nd phase of the BSE Sensex prices (2002 to 2007) the mean returns of turn of month days (4 days per month) is more than the mean return of the rest of the days (table 17). To check the significance of the difference't' test is applied. The value under Sig. (2 tailed) is .001 which is less than the critical value of p, i.e. .05. Hence it can be concluded that there is a significant difference between the mean return of turn of month days and the mean return of other days (table 18).

Table 17 Group Statistics – Turn of Month 2002 – 2007

Days Type	N	Mean	Std. Deviation	Std. Error Mean
Days of turn	283	.36381283	1.313995320	.078108914
Other Days	1211	.06571894	1.392919196	.040027075

Table 18 Independent Samples Test – Turn of Month – 2002 to 2007

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	.419	.517	3.276	1492	.001	.298093891	.091005785	.119581016	.476606766
Equal variances not assumed			3.396	442.447	.001	.298093891	.087767700	.125600507	.470587275

The returns of turn of month days are higher than the returns of the other days of month even in the case of year 2010 to 2012 (Table 19) Referring table 20 (Independent Samples t-test) it is observed that the value under Sig. (2 tailed) is .017 which is less than the critical value of p, i.e. .05. Hence it can be concluded that there is a significant difference between the mean return of turn of month days and the mean return of other days in case of BSE Sensex (2010 to 2012)

Table 19 Group Statistics- Turn of Month Effect 2010 to 2012

Days Type	N	Mean	Std. Deviation	Std. Error Mean
Days of turn	143	.211078	1.0140811	.0848017
Other days	600	-.033457	1.1164414	.0455785

Table 20 Independent Samples Test- Turn of Month Effect 2010 to 2012

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	2.494	.115	2.394	741	.017	.2445354	.1021366	.0440239	.4450469
Equal variances not assumed			2.540	231.315	.012	.2445354	.0962743	.0548489	.4342220

The returns of turn of month days are higher than the returns of the other days of month even in the case of year a combined period from 1998 to 2007 (Table 21). Referring table 22 (Independent Samples t-test) it is observed that the value under Sig. (2 tailed) is .001 which is less than the critical value of p, i.e. .05. Hence it can be concluded that there is a significant difference between the mean return of turn of month days and the mean return of other days in case of BSE Sensex (1998 to 2007).

Table 21 Group Statistics turn of month – 1998 to 2007

	VAR00002	N	Mean	Std. Deviation	Std. Error Mean
VAR00001	1.00	474	.28902643	1.705783009	.078349208
	2.00	1998	.01535837	1.588107710	.035528937

Table 22 Independent Samples Test – Turn of Month effect total up to 2007

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	.678	.410	3.324	2470	.001	.273668063	.082321980	.112240845	.435095282
Equal variances not assumed			3.181	680.713	.002	.273668063	.086028506	.104754958	.442581168

In case of the combined total period from 1998 to 2013 (excluding the period of 2008 and 2009) the mean returns of the turn of month days are higher than the mean return of rest of the days of the month (Table 23). Referring table 24 (Independent Samples t-test) it is observed that the value under Sig. (2 tailed) is .000 which is less than the critical value of p, i.e. .05. Hence it can be concluded that there is a significant difference between the mean return of turn of month days and the mean return of other days in case of BSE Sensex (1998 to 2012).

Table 23 Group Statistics – Turn of Month Effect from 1998 to 2012

Days Type	N	Mean	Std. Deviation	Std. Error Mean
Days of turn	617	.270961	1.5723776	.0633015
Other Days	2598	.004085	1.4924175	.0292800

Table 24 Turn of Month Effect from 1998 to 2012 - Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower
Equal variances assumed	.083	.773	3.951	3213	.000	.2668761	.0675385	.1344531	.3992990
Equal variances not assumed			3.826	898.034	.000	.2668761	.0697453	.1299934	.4037588

FINDINGS AND CONCLUSION:

Month effect in the present study has been calculated for the combined periods viz. 1998 to 2007 and 1998 to 2012 (excluding 2008 and 2009). To find out the month effect ANOVA has been applied and it is found that there is no significant month effect in the Indian stock market. For both the periods post hoc analysis has been applied and it is found that there is no significant difference month effect in the given periods.

With respect to the semi month effect, it is found that no significant difference is found during the period of 1998 to 2001. Further, the results are also quite same with respect to the period of 2001 to 2007 and 2010 to 2012. Semi month effect was also calculated for the combined periods of 1998 to 2007 and 1998 to 2012. The mean returns in the first half are observed high but this difference is not statistically significant. Hence it can be concluded that there is no existence of semi month effect in the Indian stock market.

Turn of month effect in the Indian stock market has a bit different story. During the period of 1998 to 2001 the returns during the turn of month days are positive rather the returns on the other days are negative still this difference is not statistically significant. But during 2002 to 2007 the returns of turn of month days are quite high (though other days returns are not negative) and the difference is also statistically significant. Similarly for the period of 2010 to 2012 the turn of month days returns are positive and the other days

returns are negative as well as the difference is also statistically significant.

The turn of month has been found statistically significant for the combined periods of 1998 to 2007 and 1998 to 2012. This proves that there is an existence of turn of month effect in the Indian stock market.

REFERENCES:

Banz, R. (1981), "The Relationship between Return and Market Value of Common Stocks," *Journal of Financial Economics,* Vol. 9, pp.3-18.

Cadsby, B., & Ratner, M. (1992), "Turn-of-Month and Pre-Holiday Effects on Stock Returns: Some International Evidence," *Journal of Banking and Finance,* Vol. 16, pp. 497-509

Dash, M., & Dutta, A. (2011), "Seasonality and Market Crashes in Indian Stock Markets," *Asian Journal of Finance & Accounting,* Vol. 3, No. 1

.Elango, R., & Pandey, D. (2008), "An Empirical Study on January Anomaly and Return Predictability in an Emerging Market: Evidence from India," retrieved from http://ssrn.com/abstract=1150080 or http://dx.doi.org/10.2139/ssrn.1150080

Eleswarapu, V. R., & Reinganum, M. R. (1993), "The Seasonal Behavior of the Liquidity Premium in Asset Pricing," *Journal of Financial Economics,* Vol. 34, pp. 373-386.

Friday, H. S., & Hoang N. (2011, December). *Seasonality in the Vietnam Stock Index.* Paper presented at the International Conference on Management, Economics and Social Sciences (ICMESS'2011) Bangkok. Retrieved from http://psrcentre.org/images/extraimages/1211834.pdf

Lakonishok, J., & Smidt, S. (1988), "Are Seasonal Anomalies Real? A Ninety-Year Perspective," *Review of Financial Studies,* Vol. 1, pp. 403-425.

Maghyereh, A. I. (2003) Seasonality and January Effect Anomalies in the Jordanian Capital Market," retrieved from http://ssrn.com/abstract=441081 or http://dx.doi.org/10.2139/ssrn.441081

Nageswari, P., Selvam, M., Vanitha, S., & Babu, M. (2013) "An Empirical Analysis of January Anomaly in the Indian Stock Market," International *Journal of Accounting and Financial Management Research (IJAFMR)*, Vol. 3, Issue 1, pp. 177-186.

Patel, J. B. (2008), "Calendar Effects in the Indian Stock Market," *International Business & Economics Research Journal,* Vol. 7, No. 3, pp. 61-70

Parikh, A. (2009), Calendar Anomalies in the Indian Stock Market. Available at SSRN: http://ssrn.com/abstract=1352225 Rozeff, M. S., & Kinney, W. R. (1976), "Capital Market Seasonality: The Case of Stock Returns," *Journal of Financial Economics,* Vol. 3, pp. 379-402.

Ritter, J. (1988), "The Buying and Selling Behaviour of Individual Investors at the Turn of the Year," *Journal of Finance,* Vol. 43, pp.701-717.

Ray, S. (2012), "Investigating Seasonal Behavior in the Monthly Stock Returns: Evidence from BSE Sensex of India," *Advances in Asian Social Science (AASS)*, Vol. 2, No. 4., pp. 560-569

Tangjitprom, N. (2011), "The Calendar Anomalies of Stock Return in Thailand," *Journal of Modern Accounting and Auditing*", Vol. 7, No. 6, pp. 565-577.

Zhang, C. Y., & Jacobson, B. (2013), "Are Monthly Seasonals Real? A Three Century Perspective," *Review of Finance*, Vol. 17, No. 5, pp. 1743-1785.

Ziemba, W. T. (1991), "Japanese Security Market Regularities: Monthly, Turn-of-the-Month and Year, Holiday and Golden Week Effects," *Japan and the World Economy,* Vol. 3, pp.119-146.