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A Study on Selected Calendar Anomalies in Indian Stock Market

Abstract :

The stock market is having very important place in any Country's growth and development. When we talk about the workforce of the market, it is generally observed that it will affect by many factors and it is also depends on the few foreign markets also. A calendar effect is any market anomaly or economic effect which appears to be related to the calendar. Such effects include the apparently different behavior of stock markets on different days of the week, different times of the month, and different times of year (seasonal tendencies). Stock market prices are often changes subject to the seasonal effect because of the availability and demand for an item. Anomalies that are link to a particular time are called calendar effect. Some of the most popular calendar effect includes the weekend effect, the January effect, the turn-of-the-month effect, the turn-of-the-year effect. The objective of this study is to explore the January effect, Friday the 13th effect, Wednesday effect, and weekend effect on the Indian stock exchange. Till the late nineties, empirical studies provided ample evidence as to the informational efficiency of the capital markets advocating futility of information in consistently generating abnormal returns. However, later studies identified certain anomalies in the efficient market postulate. Anomalies reflect inefficiency within market. Some anomalies occur once and some occurs repeatedly. One major anomaly brought forth was the calendar-related abnormal rates of return. Various studies in this domain empirically demonstrated, through non-parametric tests on the stock returns, that January, Wednesday, Friday the 13th and Weekend have consistently generated abnormal equity returns in both the developed and emerging markets unrelated to the attendant risks. Studies on the Indian stock markets' and other selected Asian markets' calendar anomalies, are very few. In an attempt to fill this gap, this study explores the Indian stock market's efficiency in the 'Semi strong form' in the context of calendar anomalies, especially in respect of the seasonal effects.

Key words: Calendar Anomalies, Indian Stock Market, Market Efficiency

Introduction

Stock Market Efficiency is an important concept because it helps us to understand the working of the Capital Markets. The term, Market Efficiency, explains the Relationship between Information and Share Prices in the Capital Market. The efficiency of the emerging markets assumes greater importance as the trend of investments is accelerating in these markets as a result of regulatory reforms and removal of other barriers for the International Equity Investments. Efficient Market Hypothesis (EMH) suggests that all securities are priced efficiently to fully reflect all the information of the intrinsic value of the stocks. However, in the context of financial markets, especially in the case of equity returns, several Seasonal Effects, that create higher or lower returns depending on the time, have been noted.

Anomalies are empirical results that seem to be inconsistent with maintained theories of asset-pricing behavior. They indicated either market inefficiency (profit opportunities) or inadequacies in the underlying asset-pricing model. After They Are Documented and Analyzed in the academic literature, anomalies Often Seem to disappear, reverse, or attenuated. This raises the question of profit opportunities whether existed in the past, but have been since arbitraged away, or whether the anomalies were simply statistical aberrations that attracted the attention of academics and practitioners.

Investment strategies have received lot of attention in the academic world. Researchers worldwide are persistently trying to explore newer methods of improving upon the investment yields. Traditional investment theory has established a direct correlation between the risk and returns. It is on this maxim that William Sharpe, John Lintner and Jan Mossin designed the phenomenal Capital Asset Pricing Model. However the researchers and investors all over the world are always looking for maximizing their yields while trying to keep the investment risk at minimum. The objective of the research work undertaken is to examine the Risk Anomaly on the scrip traded in National Stock Exchange. It is an approach which attempts to build a portfolio which maximizes returns for scrip while keeping volatility at minimum. The volatility in the research undertaken is determined by the standard deviation of the stock returns

Calendar Effects:

Anomalies that are linked to a particular time are called calendar effects. Some of the most popular calendar effects include the weekend effect, the turn-of-the-month effect, the turn-of-the-year effect and the January effect.

The weekend effect describes the tendency of stock prices to decrease on Mondays, meaning that closing prices on Monday are lower than closing prices on the previous Friday. For some unknown reason, returns on Mondays have been consistently lower than every other day of the week. In fact, Monday is the only weekday with a negative average rate of return.

- *Turn-of-the-Month Effect:* The turn-of-the-month effect refers to the tendency of stock prices to rise on the last trading day of the month and the first three trading days of the next month.
- *Turn-of-the-Year Effect:* The turn-of-the-year effect describes a pattern of increased trading volume and higher stock prices in the last week of December and the first two weeks of January.
- *January Effect:* Amid the turn-of-the-year market optimism, there is one class of securities that consistently outperforms the rest. Small-company stocks outperform the market and other asset classes during the first two to three weeks of January. This phenomenon is referred to as the January effect.
- *Day of the Week Effect:* The day of the week is calculated by taking average of return of each day of the week separately.
- *Friday – The 13th Effect:* Superstition is deep-rooted in Indian society, where irrational fear still influences the mass mind. In this context, it is pertinent to investigate whether the Indian securities market is also affected by superstitions or has it been able to immunize itself against its force.
- *Monthly Effect:* In testing the monthly effect, the first half of the each month is defined as the period which includes 30th& 31st calendar days of previous month and 1st to 14th calendar days of the month, while the second half comprises the rest of the calendar days that are from 15th to 29th.

Literature Review:

Keim and Donald B (1983) examined month-by-month, the empirical relation between abnormal returns and market value of NYSE and AMEX common stocks. Evidence is provided that daily abnormal return distributions in January have large means relative to the remaining eleven months, and that the relation between abnormal returns and size is always negative and more pronounced in January than in any other month – even in years when, on average, large firms earn larger risk adjusted returns than small firms. Lee and Chang (1988) studied on three anomalous phenomena in stock returns --the firm size effect, the January effect, and the day -of -the -week effect --are examined in Korea. It is shown that the anomalies exist in the Korean data even after adjusting for biases suggested by various hypotheses. Further evidence of the anomalies is provided by decomposing daily close -to -close returns into non trading period returns and trading period returns. Branch and Chang (1990) found that the role of per share price in identifying stocks particularly likely to outperform the market in January. It is found that low price stocks that exhibited poor December performance were likely to rebound in January. Zhang and Li (2006) investigated time – varying Calendar Effect in the Chinese Stock Market, using the GARCH (1,1) – GED(General Error Distribution) Model. The study found that the Friday Effect exists with low volatility at the early stage, but since 1997, the Positive Tuesday Effect has been noticed. Besides, there was a Small Firm January Effect with high volatility. The Turn-of-the Month Effect has also disappeared in the Chinese Stock Market since 1997. Basher and Sadorsky (2006) investigated the Day-of-the-Week Effect in 21 Emerging Stock Markets. The results of this study showed that while the Day-of-the-Week Effect was

not present in the majority of Emerging Stock Markets studied, some Emerging Stock Markets did exhibit strong Day-of-the-Week Effect even after accounting for conditional market risk. Brooks and Persand (2001) examined the evidence for the Day of the Week Effect in five Southeast Asian Stock Markets. The Authors found that neither South Korea nor the Philippines recorded significant Calendar Effects. But both Thailand and Malaysia registered significant positive average returns on Monday and significant negative average returns on Tuesday. In addition, the study also documented a significant negative Wednesday Effect in Taiwan. Silva (2010) found that the Monday effect could not be found in the Portuguese stock market. Bodla and Jindal (2006) found that that none of anomalies exist in the US market and thus this market can be considered as informationally efficient. On the other hand, the Indian stock market reveals turn of the month effect as well as semi-monthly effect but the day effect is not found. Singhaland Bahure (2009) carried out an interesting study on weekend effect. Their results suggest that future examinations of the stock market of the period from April 2003-April 2008 will have residual daily effects, even after the adjustments that are the unexplained part of the weekend effect. This could potentially influence conclusions and raise questions about market efficiency. Whatever these tests show, they cannot ignore the institutional necessity of making adjustments for settlement lags and other effects when using data on daily returns, since it would be difficult to accept that investors would ignore two days of interest. Nageswari and Babu (2011) examined the Week End Effect in the Indian Stock Market. The study found that the mean returns were positive for all days of the week, highest on Friday and lowest on Monday. It was inferred that the Day of the Week Pattern did not exist in the Indian Stock Market during the study period. Nath and Dalvi (2004) examined the day of the week effect anomaly in the Indian equity market for the period from 1999 to 2003 using S&P CNX NIFTY. Their study indicates that before introduction of rolling settlement in January 2002, Monday and Friday were insignificant days. However, after the introduction of the rolling settlement, Friday, being the last day of the week has become significant. Monday seems to have higher standard deviation followed by Friday. Dash et al (2011) provided evidence for a month-of-the-year effect in Indian stock markets. In particular, there is clear indication of positive November, August, and December effects, and a negative March effect. The end-of-the-year effect (i.e. positive November and December effects) could be a Diwali effect, with a huge surge in the purchase of household goods, electronic equipments, and gold in India, usually in November. The results of the study also provide evidence for a March effect for stock returns in India. This could be because the Indian tax year ends in March, in contrast with the US tax year which ends in December. Kaur (2004) examined Sensex and Nifty returns, it is shown that 'day-of the- week effect' or the 'week end effect' and the 'January effect' are not present while the return and volatility do show intra-week and intra-year seasonality. The return and volatility on various weekdays have somewhat changed after the introduction of rolling settlements. Nageswari, Selvam (2011) found that there was maximum return earned on Wednesday and negative returns recorded on Monday during the study period. The regression results confirmed the seasonal effect does not exist in stock returns in India. The study further reveal that January, February and March have negative returns and November and December show significant positive high returns. The Study found out that the day of the week effect and monthly effect pattern did not appear to exist in Indian Stock Market.

Research Methodology

Rational Study Research:

As per the study of literature review of efficient market hypothesis in developed foreign exchanges though there is semi strong form available still the literature proves some of the anomalies prevalent in market, and in developing countries market like India sometimes weak form and sometimes semi strong form prevails in the market and here also the researchers found some anomalies and trends in the market. So due to this confusion I am conducting my research of some specific anomalies with same time period in developing Indian market. Friday the 13th effect is found in global research paper that it exist in market but in Indian market context no conclusion of it still not found, so I would like to study it in Indian market situation. Weekend effect was experienced in many papers which I studied but still there is lack of evidence in concluding it so I have taken this anomaly in my study.

Objectives:

- To investigate the existence of Weekend Effect in the Indian Stock Market.

- To identify the Wednesday effect in the Indian stock market.
- To discover whether the Friday the 13thEffect exist in the Indian stock market.
- To investigate the existence of January Effect in the Indian Stock Market.

Sample Selection

Indian Stock Market is one of the most dynamic and efficient markets in Asia. The two national level exchanges operating in India are the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE) . These exchanges are well equipped with Electronic Trading Platforms and handle large volume of transactions on a daily basis. For the purpose of this study, S&P CNX Nifty in NSE, BSE Sensex, were considered as sample for this study. I studied Weekend Effect, January effect, Wednesday effect price earning effect, Friday the 13thEffects in two Indian Stock markets for period of April 2003 to March 2014. Also to find out Indian market is of semi strong form of market efficiency.

Source of Data:

The present study mainly depended upon Secondary Data and used daily index closing values. The required information of every day's closing values was collected from www.yahoofinance.com and national stock exchanges sites www.nseindia.com and www.bseindia.com. The other relevant information for this study was collected from different Websites, Journals, and Books.

Data Analysis and Interpretation

January Effect:

The January Effect suggests that abnormal returns in January are due to the new information provided by the firms at the end of the fiscal year because the financial earning announcement is made normally in January. It is to be noted that there may be several reasons, why the January Effect happens, but no one can fully explain the January Effect.

H_0: There is no significance difference between mean return of January and mean return of rest of the month for the research period.

H_A: There is significance difference between mean return of January and mean return of rest of the month for the research period.

- **Sensex**

The Results of Descriptive Statistics for Sensex Index Daily Returns from January 2004 to December 2014

	BSE	
	January	Rest of the Month
Mean	-0.2495	-0.0459
Standard Error	0.0951	0.0296
Median	-0.1832	-0.0322
Standard Deviation	1.4270	1.4097
Kurtosis	5.8425	4.1412
Skewness	-0.9603	-0.3743
Minimum	-8.0392	-10.2717
Maximum	4.8998	7.2415
Sum	-56.1270	-104.3413
Count	225	2272
Confidence Level (95.0%)	0.1875	0.0580

Year	Month	Mean	SD	Effect Found
2004	January	-0.6606	1.98135	No
	Rest of the year	-0.0276	1.4848	
2005	January	-0.2436	1.4506	No
	Rest of the year	0.03618	0.98382	

2006	January	0.16464	0.88676	Yes
	Rest of the year	-0.0694	1.57854	
2007	January	-0.0068	1.08463	Yes
	Rest of the year	-0.0254	1.37101	
2008	January	-0.8213	2.26503	No
	Rest of the year	-0.2356	2.36659	
2009	January	-0.1004	2.44461	No
	Rest of the year	0.11631	1.72985	
2010	January	-0.3407	0.94006	No
	Rest of the year	0.05433	0.96185	
2011	January	-0.7271	1.06546	No
	Rest of the year	-0.1808	1.12294	
2012	January	0.27942	0.83166	Yes
	Rest of the year	-0.048	0.80239	
2013	January	-0.1092	0.49407	No
	Rest of the year	-0.0816	0.9898	
2014	January	-0.1754	0.62297	No
	Rest of the year	-0.0274	0.71729	

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, Kurtosis for Sensex during the study period from January 2004 to December 2014. It is clearly understood that the Sensex Index received negative returns for all the sample years. During the study period, the January registered the highest mean return (0.27942) for the year 2012. There was low and negative returns recorded for the year 2008 because of the impact of the Financial Crisis.

The highest value of Standard Deviation (2.44461) was recorded in January with negative mean return (-0.1004) in the year 2009 and the Least Value of Standard Deviation (0.49407) was recorded in 2013. This clearly indicates that the stock market was more volatile for the year 2008-09 and least volatile in 2013 and 2014 during the study period. Hence it is suggested that the Market Regulator may take appropriate steps to stabilize the market. The return distribution was negatively skewed for all the sample years. The Kurtosis measure of returns distribution was Leptokurtic for the sample years, showing the highest value (5.8425) in January for the sample years and showing less value (4.1412) in rest of the year.

- **Kruskall-Wallis Test**

Test Statistics[a,b]

	BSE January eff.
Chi-Square	5.006
Df	1
Asymp. Sig.	.025

a.Kruskal Wallis Test
b.Grouping Variable: VAR00002

According to the results as given in the above Table, the Kruskall-Wallis Statistics Value for the January effect is 0.025 which is less than 0.05. Hence the Null Hypothesis **(H0)**, "There is no significance difference between mean return of January and mean return of rest of the month for the research period." can be rejected. Hence the January effect existed for Sensex Index Returns in all years.

CNX Nifty:

The Results of Descriptive Statistics for CNX Nifty Index Daily Returns from January 2004 to December 2014

	NSE	
	January	Rest of the Month
Mean	-0.1549	0.0372

Standard Error	0.1098	0.0307
Median	-0.1081	0.0525
Standard Deviation	1.6651	1.5369
Kurtosis	5.4023	12.2468
Skewness	-0.3288	0.1185
Minimum	-8.6976	-12.2433
Maximum	6.9175	17.6960
Sum	-35.6195	93.2767
Count	230	2505
Confidence Level (95.0%)	0.2163	0.0602

Year	Month	Mean	SD	Effect Found
2004	January	-0.2188	2.15229	No
	Rest of the year	0.04725	1.69479	
2005	January	-0.0887	1.64976	No
	Rest of the year	0.12954	1.06844	
2006	January	0.31837	0.89291	Yes
	Rest of the year	0.12696	1.70208	
2007	January	0.09757	1.16028	No
	Rest of the year	0.17714	1.63573	
2008	January	-0.7572	3.24523	No
	Rest of the year	-0.2361	2.7189	
2009	January	-0.1117	2.59725	No
	Rest of the year	0.27929	2.12657	
2010	January	-0.406	0.96522	No
	Rest of the year	0.03916	1.0056	
2011	January	-0.6204	1.12881	No
	Rest of the year	-0.1207	1.13074	
2012	January	0.30298	0.8033	Yes
	Rest of the year	-0.0047	0.82946	
2013	January	-0.0864	0.51083	No
	Rest of the year	-0.0536	1.00931	
2014	January	-0.1115	0.59461	No
	Rest of the year	0.0167	0.71177	

The table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, and Kurtosis for CNX Nifty during the study period from January 2004 to December 2014. It is clearly understood that the CNX Nifty Index received negative returns for all the sample years for month January and positive return for rest of the month. During the study period, the January registered the highest mean return (0.30298) for the year 2012. There was low and negative returns recorded for the year 2008 because of the impact of the Financial Crisis.

The highest value of Standard Deviation (3.24523) was recorded in January with negative mean return -0.7572) in the year 2008 and the Least Value of Standard Deviation (0.51083) was recorded in 2013. This clearly indicates that the stock market was more volatile for the year 2008-09 and least volatile in 2013 and 2014 during the study period. The return distribution was negatively skewed for all the sample years. The Kurtosis measure of returns distribution was Leptokurtic for the sample years, showing the highest value (12.2468) in rest of the year for the sample years and showing less value (5.4023) in January.

Kruskall-Wallis Test

Test Statistics,[a,b]

	NSE January Eff.
Chi-Square	5.268
Df	1
Asymp. Sig.	.022

a.Kruskal Wallis Test
b.Grouping Variable: VAR00002

According to the results as given in the above Table, the Kruskall-Wallis Statistics Value for the January effect is 0.022 which is less than 0.05. Hence the Null Hypothesis (H_0), "There is no significance difference between mean return of January and mean return of the rest of the month for the research period." can be rejected. Hence the January effect existed for CNX Nifty Index Returns in all year.

Friday the 13th effect:

H_0: There is no significance difference between mean return of 13th Friday and mean return of ordinary Friday for the research period.

H_A: There is significance difference between mean return of 13th Friday and mean return of ordinary Friday for the research period.

Sensex:

The Results of Descriptive Statistics for Sensex Index Daily Returns from April 2003 to March 2014

	BSE	
	Friday the 13th	Other Friday
Mean	0.3871	0.0022
Standard Error	0.2332	0.0664
Median	0.3437	-0.0109
Standard Deviation	1.0164	1.5189
Kurtosis	2.1708	3.7539
Skewness	1.1747	-0.4914
Minimum	-0.8970	-8.3855
Maximum	3.2529	5.8213
Sum	7.3552	1.1442
Count	19	523
Confidence Level (95.0%)	0.4899	0.1305

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, and Kurtosis for Sensex during the study period from April 2003 to March 2014. It is clearly understood that the Sensex Index received positive returns for all the sample years. During the study period, the Friday the 13th mean return (0.3871) for the period and for the rest of the Friday the mean return (0.0022) for the period.

The value of Standard Deviation (1.0164) was recorded in Friday the 13th for the research period and (1.5189) was recorded in rest of the Friday. Hence it is suggested that the Market Regulator may take appropriate steps to stabilize the market. The return distribution was positively skewed for Friday the 13th and negatively skewed for rest of the Friday. The Kurtosis measure of returns distribution was Leptokurtic for the sample years, showing the more value (3.7539) in rest of the Friday and showing less value (2.1708) in Friday the 13th for the sample years.

Kruskall-Wallis Test

Test Statistics,[a,b]

	Other Friday
Chi-Square	1.203
Df	1
Asymp. Sig.	.273

a.Kruskal Wallis Test
b.Grouping Variable: VAR00001

According to the results as given in the above Table, the Kruskall-Wallis Statistics Value for the January effect is 0.273 which is more than 0.05. Hence the Null Hypothesis **(H_0)**, "There is no

significance difference between mean return of 13th Friday and mean return of ordinary Friday for the research period." fail to be rejected. Hence the Friday the 13th effect does not exist for Sensex Index Returns in all years.

CNX Nifty:

The Results of Descriptive Statistics for CNX Nifty Index Daily Returns from April 2003 to March 2014

d>

	NSE	
	Friday the 13th	**Other Friday**
Mean	0.6064	0.0529
Standard Error	0.2863	0.0688
Median	0.4437	0.0751
Standard Deviation	1.2806	1.6178
Kurtosis	1.0597	8.0765
Skewness	0.7528	-0.7606
Minimum	-1.6445	-11.9966
Maximum	3.9230	7.0207
Sum	12.1276	29.2689
Count	20	553
Confidence Level(95.0%)	0.5993	0.1351

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, Kurtosis for CNX Nifty during the study period from April 2003 to March 2014. It is clearly understood that the CNX Nifty Index received positive returns for all the sample years. During the study period, the Friday the 13th mean return (0.6064) for the period and for the rest of the Friday the mean return (0.0529) for the period.

The value of Standard Deviation (1.2806) was recorded in Friday the 13th for the research period and (1.6178) was recorded in rest of the Friday. Hence it is suggested that the Market Regulator may take appropriate steps to stabilize the market. The return distribution was positively skewed for Friday the 13th and negatively skewed for rest of the Friday. The Kurtosis measure of returns distribution was Leptokurtic for the sample years, showing the more value (8.0765) in rest of the Friday and showing less value (1.0597) in Friday the 13th for the sample years.

- **Kruskall-Wallis Test**

Test Statistics[a,b]

	Thirteen Friday
Chi-Square	2.346
Df	1
Asymp. Sig.	.126

a.Kruskal Wallis Test
b.Grouping Variable: VAR00001

According to the results as given in the above Table, the Kruskall-Wallis Statistics Value for the January effect is 0.126 which is more than 0.05. Hence the Null Hypothesis (H0), "There is no significance difference between mean return of 13th Friday and mean return of ordinary Friday for the research period." fail to be rejected. Hence the Friday the 13th effect does not exist for CNX Nifty Index Returns in all years.

Wednesday Effect

H_0**:** There is no significance difference between mean return of Wednesday and mean return of rest of the days of the week for the research period.

H_A**:** There is significance difference between mean return of Wednesday and mean return of rest of the days of the week for the research period.

Sensex:

The Results of Descriptive Statistics for Sensex Index Daily Returns from April 2003 to March 2014

	BSE	
	Wednesday	**Other Weekdays**
Mean	-0.0214	-0.0550
Standard Error	0.0534	0.0287
Median	-0.0477	-0.0348
Standard Deviation	1.2866	1.3788
Kurtosis	5.0837	4.3292
Skewness	-0.4711	-0.4319
Minimum	-8.0392	-10.2717
Maximum	5.5342	7.2415
Sum	-12.4300	-127.3566
Count	580	2316
Confidence Level (95.0%)	0.1049	0.0562

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, and Kurtosis for Sensex during the study period from April 2003 to March 2014. It is clearly understood that the Sensex Index received negative returns for all the sample years. During the study period, the Wednesday mean return (-0.0214) for the period and for the rest of the days of the week the mean return (-0.055) for the period. During the study period, the Wednesday registered the highest mean return (0.30138) for the year 2009-10. There was low and negative returns recorded for the year 2004-05.

Year	Remaining Days		Wednesday		Effect Found
	Mean	**SD**	**Mean**	**SD**	
2003-04	0.0198	1.39264	0.0498	1.11293	Yes
2004-05	-0.0054	1.47801	-0.208	0.97006	No
2005-06	0.06029	0.98989	0.20875	0.89261	Yes
2006-07	-0.1637	1.63848	0.01368	1.45001	Yes
2007-08	-0.1223	1.6434	-0.0715	1.47978	Yes
2008-09	-0.1181	2.30627	-0.3041	2.49721	No
2009-10	0.04367	1.52579	0.30138	1.62449	Yes
2010-11	-0.0508	1.0682	0.02024	0.93685	Yes
2011-12	-0.2041	1.10072	-0.0649	0.98344	Yes
2012-13	-0.0475	0.75379	-0.0679	0.51273	No
2013-14	-0.0254	0.97628	-0.0484	0.8528	No
2003-14	-0.055	1.37878	-0.0214	1.2866	Yes

The highest value of Standard Deviation (2.49721) was recorded in Wednesday with mean return (-0.3041) in the year 2008-09 and the Least Value of Standard Deviation (0.51273) was recorded in 2012-13. This clearly indicates that the stock market was more volatile for the year 2008-09 and least volatile in 2012-13 during the study period. The return distribution was negatively skewed for Wednesday and rest of the weekdays for all the sample years. The Kurtosis measure of returns distribution was Leptokurtic for the sample years, showing the more value (5.0837) in Wednesday and showing less value (4.3292) in rest of the days of the week for the sample years.

Kruskall-Wallis Test

Test Statistics^{a,b}

	BSE Wed. Effect
Chi-Square	.001
Df	1
Asymp. Sig.	.974

a.Kruskal Wallis Test

b.Grouping Variable: VAR00001

According to the results as given in the above Table, the Kruskall-Wallis Statistics Value for the January effect is 0.974 which is more than 0.05. Hence the Null Hypothesis (H0), "There is no significance difference between mean return of Wednesday and mean return of rest of the days of the week for the research period" fail to be rejected. Hence the Wednesday effect does not exist for Sensex Index Returns in all years.

CNX Nifty:

The Results of Descriptive Statistics for CNX Nifty Index Daily Returns from April 2003 to March 2014

	NSE	
	Wednesday	**Other Weekdays**
Mean	0.0680	0.0327
Standard Error	0.0580	0.0327
Median	0.0271	0.0717
Standard Deviation	1.3959	1.5758
Kurtosis	3.1357	12.1567
Skewness	-0.0201	0.0499
Minimum	-6.1809	-12.2433
Maximum	6.1258	17.6960
Sum	39.4282	75.7302
Count	580	2316
Confidence Level(95.0%)	0.1138	0.0642

Year	Remaining Days		Wednesday		Effect Found
	Mean	**SD**	**Mean**	**SD**	
2003-04	0.23106	1.48	0.13081	1.29151	No
2004-05	0.05243	1.70162	-0.0531	1.17967	No
2005-06	0.2055	1.06709	0.21054	0.93355	Yes
2006-07	0.04242	1.82872	0.01874	1.63844	Yes
2007-08	0.05781	2.04014	0.22396	1.87742	Yes
2008-09	-0.2113	2.64105	0.01001	2.59718	Yes
2009-10	0.19511	1.99946	0.33146	1.63717	Yes
2010-11	-0.0492	1.09822	0.02976	1.00518	Yes
2011-12	-0.1507	1.11715	-0.0185	0.9817	Yes
2012-13	-0.0029	0.7833	-0.0348	0.5224	No
2013-14	0.00636	0.98805	-0.011	0.88849	No
2003-14	0.0327	1.57582	0.06798	1.39592	Yes

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, and Kurtosis for Nifty during the study period from April 2003 to March 2014. It is clearly understood that the Nifty Index received positive returns for all the sample years. During the study period, the Wednesday mean return (0.06798) for the period and for the rest of the days of the week the mean return (0.0327) for the period. During the study period, the Wednesday registered the highest mean return (0.33146) for the year 2009-10. There was low and negative returns recorded for the year 2003-04.

The highest value of Standard Deviation (2.59718) was recorded in Wednesday with mean return (0.01001) in the year 2008 and the Least Value of Standard Deviation (0.5224) was recorded in 2012-13. This clearly indicates that the stock market was more volatile for the year 2008-09 and least volatile in 2013 and 2014 during the study period. The return distribution was negatively skewed for Wednesday and positively skewed for rest of the weekdays for all the sample years. The Kurtosis measure of returns distribution was Leptokurtic for the sample years, showing the more value (12.1567) in rest of the days of the week and showing less value (3.1357) in Wednesday for the sample years.

- **Kruskall–Wallis Test**

Test Statistics[a,b]

	NSE Wed. Eff.
Chi-Square	.005
Df	1
Asymp. Sig.	.941

a. Kruskal Wallis Test
b. Grouping Variable: VAR00002

According to the results as given in the above Table, the Kruskall-Wallis Statistics Value for the January effect is 0.941 which is more than 0.05. Hence the Null Hypothesis (H_0), "There is no significance difference between mean return of Wednesday and mean return of rest of the days of the week for the research period" fail to be rejected. Hence the Wednesday effect does not exist for CNX Nifty Index Returns in all years.

Weekend Effect

H_0: There is no significance difference between mean return of Friday and mean return of next Monday for the research period.

H_A: There is significance difference between mean return of Friday and mean return of next Monday for the research period.

Sensex

The Results of Descriptive Statistics for Sensex Index Daily Returns from April 2003 to March 2014

	BSE	
	Friday	Monday
Mean	0.0107	-0.0994
Standard Error	0.0617	0.0605
Median	-0.0233	-0.0182
Standard Deviation	1.4780	1.4599
Kurtosis	3.9498	6.0128
Skewness	-0.4741	-1.0300
Minimum	-8.3855	-10.2717
Maximum	5.8213	5.9707
Sum	6.1437	-57.8430
Count	574	582
Confidence Level(95.0%)	0.1212	0.1189

Year	Monday		Friday		Effect Found
	Mean	SD	Mean	SD	
2003-04	0.03722	1.54131	0.4107	1.29331	Yes
2004-05	-0.1749	1.77036	-0.1173	1.5496	Yes
2005-06	0.22931	1.02774	0.07025	1.02506	No
2006-07	-0.4433	1.79599	-0.0508	1.76982	Yes
2007-08	-0.3104	1.88757	0.29159	1.58842	Yes
2008-09	-0.348	2.02327	-0.1691	2.90943	Yes
2009-10	-0.0053	1.90976	0.26487	1.31866	Yes
2010-11	0.3217	1.02168	-0.2474	1.12804	No
2011-12	-0.3975	1.15397	-0.2228	1.04542	Yes
2012-13	-0.1411	0.7074	-0.0196	0.77427	Yes
2013-14	-0.0355	0.82836	-0.0154	0.98988	Yes
2003-14	-0.0994	1.45987	0.0107	1.47797	Yes

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, and Kurtosis for Sensex during the study period from April 2003 to March 2014. It is clearly understood that the Sensex Index received positive returns for all the sample years. During the study period, the Friday mean return (0.0107) for the period and for the Monday the mean return (-0.0994) for the period. During the study period, the Friday registered the highest mean return (0.26487) for the year 2009-10 and on Monday mean return (-0.0053) for same year. There was low and negative returns recorded for the year 2008-09 because of the impact of the Financial Crisis.

The highest value of Standard Deviation (2.90943) was recorded in Friday with mean return (-0.1691) in the year 2008-09 and the Least Value of Standard Deviation (0.77427) was recorded in 2012-13. This clearly indicates that the stock market was more volatile for the year 2008-09 and least volatile in 2012-13 during the study period. The return distribution was negatively skewed for Friday and Monday for all the sample years. The Kurtosis measure of returns distribution was Leptokurtic for the sample years, showing the more value (6.0128) in Friday and showing less value (3.9498) in Monday for the sample years.

- **Kruskall-Wallis Test**

Test Statistics[a,b]

	Weekend effect
Chi-Square	.441
Df	1
Asymp. Sig.	.507

a.Kruskal Wallis Test
b.Grouping Variable: VAR00001

According to the results as given in the above Table, the Kruskall-Wallis Statistics Value for the January effect is 0.507 which is more than 0.05. Hence the Null Hypothesis (H0), "There is no significance difference between mean return of Friday and mean return of next Monday for the research period" fails to be rejected. Hence the Weekend effect does not exist for Sensex Index Returns in all years.

CNX Nifty

The Results of Descriptive Statistics for Nifty Index Daily Returns from April 2003 to March 2014

	NSE	
	Friday	Monday
Mean	0.0722	0.0300
Standard Error	0.0672	0.0761
Median	0.0833	0.0868
Standard Deviation	1.6095	1.8336
Kurtosis	8.0186	19.2378
Skewness	-0.7469	0.6424
Minimum	-11.9966	-12.2433
Maximum	7.0207	17.6960
Sum	41.3965	17.4152
Count	573	581
Confidence Level (95.0%)	0.1321	0.1494

Year	Monday		Friday		Effect Found
	Mean	SD	Mean	SD	
2003-04	0.30311	1.60281	0.63811	1.35743	Yes
2004-05	-0.1257	2.11363	-0.1072	1.75062	Yes
2005-06	0.33725	1.06689	0.14844	1.09875	No
2006-07	-0.3695	1.84504	0.17241	1.82423	Yes
2007-08	-0.1531	2.51794	0.30224	1.90513	Yes
2008-09	-0.0192	2.77496	-0.267	3.24275	No

2009-10	0.39046	3.19752	0.28622	1.32017	No
2010-11	0.32758	1.07289	-0.2435	1.13061	No
2011-12	-0.3231	1.15832	-0.1991	1.05227	Yes
2012-13	-0.0902	0.74669	0.01896	0.79598	Yes
2013-14	-0.0115	0.86021	0.04237	0.98342	Yes
2003-14	0.02997	1.83362	0.07225	1.60955	Yes

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, and Kurtosis for Nifty during the study period from April 2003 to March 2014. It is clearly understood that the Nifty Index received positive returns for all the sample years. During the study period, the Friday mean return (0.0722) for the period and for the Monday the mean return (0.0300) for the period. During the study period, the Friday registered the highest mean return (0.63811) for the year 2003-04 and on Monday mean return (0.30311) for same year. There was low and negative returns recorded for the year 2008-09 because of the impact of the Financial Crisis.

The highest value of Standard Deviation (3.24275) of Standard Deviation (-0.267) was recorded in 2008-09. This clearly indicates that the stock market was more volatile for the year 2008-09 and least volatile in 2012-13 during the study period. The return distribution was negatively skewed for Friday and positively skewed for Monday for all the sample years. The Kurtosis measure of returns distribution was Leptokurtic for the sample years, showing the more value (19.2378) in Monday and showing less value (8.0186) in Friday for the sample years.

Kruskall-Wallis Test

Test Statistics[a,b]

	NSE Weekend
Chi-Square	.006
Df	1
Asymp. Sig.	.936

a.Kruskal Wallis Test
b.Grouping Variable: VAR00002

Key Findings

The major findings of the study are as follows:

- During the research period January effect found in Indian Market only.
- Friday the 13th effect does not found in any of the indices which are considered for the research period.
- The Monday-Friday set for all the indices has the highest positive deviation thereby indicating the presence of opportunity to make consistent abnormal returns through a trading strategy of buying on Mondays and selling on Fridays.
- In Indian stock market, only January effect was found during research period. It shows that Indian market moves from semi strong to strong market.

Suggestions and Recommendations

- It is necessary for the Indian Investors to carefully study the publically available information, because it plays a major role in analysing the Market Efficiency and changes in the market.
- The present study would be useful to the native and foreign investors, traders and arbitrageurs who formulate profitable trading strategies in the stock market.
- From the analyses of the weekend effect, it is suggested that investors may buy the shares on Monday and sell them on Friday because they may get better returns than on other days.
- From the study it is clear that there was no superstition in the Indian securities market.
- The analysis of January Effect found that there were Highest Mean Returns in the month of December sample indices. Hence logically speaking, if the investors want to buy new shares the shares may be bought in the month of January which is the best period.
- From this anomaly the investors got the idea that it is more beneficial to invest on Monday as the price of the stock is less compared to previous Friday and if investors who want to exit from the

market Friday is good as the price of the stock is high so they earn money from the market.

- The study found that the Mean Returns in early days of a month were higher than other days of the month. Therefore it is suggested that the Salaried People, who get their salary at the end of the month, may invest the same in the early days of next month. It may give good returns to the Salaried Group of Investors.
- The Market Regulators should closely observe the investors' response regarding information transmission and its reliability or the trustworthiness of the information released by the Indian Companies.
- The study found that there was non-linearity between the risk and return (Low/Negative Returns with High Risk) for all the sample indices. Hence the Regulators may take necessary steps to reduce it.

Conclusions

The present study investigated the existence of a daily pattern of Seasonality (Calendar Anomalies) Effect on Index Returns for Sensex, Nifty. The study found that after the Introduction of Compulsory Rolling Settlement, there were Positive Mean Returns recorded for all days of the week and Highest Mean Return was recorded on Friday, and Lowest Mean Return recorded on Monday for all the sample indices. The returns in the Stock Market are not independent across different trading days of the Week, Month etc. The study also provides evidence that the market was not able to price the risk appropriately as Higher Returns were possible by taking Less Risk and this indicates Market Inefficiency. The findings of this study would possibly help in understanding and explaining such seasonality for the Indian stock markets. During the research period January effect found in Indian Market only. Friday the 13th effect does not find in any of the indices which are considered for the research period. In Indian stock market, the only January effect was found during the research period. It shows that Indian market moves from semi strong to strong market. The Monday-Friday set for all the indices has the highest positive deviation thereby indicating the presence of opportunity to make consistent abnormal returns through a trading strategy of buying on Mondays and selling on Fridays. These findings have important implications for Financial Managers, Financial Analysts and Investors. The understanding of Seasonality should help them to develop appropriate investment strategies.

Limitations of the Study

The following are the limitations of the present study covering two major stock exchanges, namely, NSE, BSE.

- The present study was restricted to Indian Capital Market.
- This study was based mainly on secondary data.
- This study used certain limited statistical tools which have certain inherent limitations.
- The study did not analyze the relationship between Week of the Month Effect and Monthly Effect.
- The study did not analyze the Quarterly Effect, Week of the Month Effect, Turn-of the Year Effect etc, due to time constraints.

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