Journal of Positive School Psychology http://journalppw.com
2022, Vol. 6, No. 2, 6385-6402

A Study Of Selected Calendar Anomalies In India And Other Selected Asian Countries

Prof. (Dr.) Hardik Shah

Assistant Professor, Centre for Management Studies, Dharmsinh Desai University, NADIAD. – 387 001, Dist. Kheda – Gujarat – India.
Email: shah.hardik0701@gmail.com

Abstract:

Stock market anomalies can be widely classified as calendar, fundamental and technical anomalies. Calendar anomalies but are a few of the maximum mentioned problems with inside the financial literature. In this article, we provide a detailed review on the behavior of calendar anomalies to understand their evolution. The objective of this study is to explore the January effect, Friday the 13th effect, Weekend Effect and Wednesday effect on the Indian stock exchange, Jakarta stock exchange and Tokyo Stock Exchange. Until the late 1990s, empirical research provided ample evidence of information efficiency in capital markets, arguing that information uselessness consistently produced abnormal returns. However, subsequent studies identified certain anomalies in the efficient market assumption. Daily returns generated by SENSEX, Nifty, Nikkei, and Jakarta from 1 April 2003 to 31 March 2014, with a total of approximately 2850 observations for each index, are considered to test seasonality increase. While most studies have looked at the return of one major index based on closing prices, this study looks at the potential seasonality of multiple indices. This study employed the daily mean index value for generating the daily returns to relax the implied assumption of the earlier studies by considering the closing values of the indices that trading is done at the closing values. A non-parametric test Kruskall-Wallis test using for testing the seasonality in the Indian stock market returns. 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 weekend effect.

Key Words: Anomalies, Calendar Effects , Stock Market, Weekend Effect.

Introduction

In his 1936 historic The General Theory, John Maynard Keynes described the stock market as a kind of spirit animal, a casino of control. According to Keynes, investors are far from estimating the present value of dividends because they only try to guess the short-term movement of stock prices. Such a profile can be seen today, but it is not economically viable, as published in the prestigious EF Fame Journal of Finance article, the first detailed formulation of the Efficient Markets Hypothesis (EMH) in the 1970s. The idea that there is a need for a broader stock market is very embarrassing.

The Efficient Market Hypothesis (EMH) suggests that all securities are efficiently priced to fully reflect all information about the intrinsic value of the stock. An efficient market is one in which all untapped revenue is eliminated by arbitrage. However, we have identified some seasonal effects related to financial markets, especially stock returns, with higher and lower returns depending on the time of day.

This begins with a distinction between three different forms of the theory: the weak form, semi-strong form and strong form. In particular, empirical research has focused on testing the semi-strong form. The strong form asserts that stock prices reflect all available information, including the private one. But as you can imagine it did not take much because it proves that the private information to be incorporated in

the price comes only after you have already given some opportunity to profit insiders.

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.

Researchers noted that the normal tendency of other researchers is to focus on unusual findings. This could lead to the over-discovery of "anomalies." For example, if a process results in a random sample particular that looks unusual, thereby attracting the attention of researchers, this "sample selection bias" could lead to the model underlying the perception that was not random. Of course, the key test is repetition.

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.

- *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 30^{th}& 31^{st} calendar days of previous month and 1^{st} to 14^{th} calendar days of the month, while the second half comprises the rest of the calendar days that are from 15^{th} to 29^{th}.

- 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.

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. In particular, nearly fifty percent of the average magnitude of the size effect. Over the period 1963-1979 is due to January abnormal returns.

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. It is shown that the return generating process during non-trading periods differs from the return generating process during trading periods.

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. This tendency was observed annually for the 1971-1983 sample, as well as for the 1984 holdout sample. Similar results were obtained with or without risk adjustment.

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.

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.

Amanulla and Thiripal (2001) proposed to find out whether the carry - forward transactions in different periods have any impact on Week-End Effect in Indian Stock Market. This study used the daily stock returns of 82 company's trade-in the BSE with respect to indices viz, BSE Sensex, BSE National index and S&P CNX Nifty Index to identify Week-End Effects. The results from the sub-sample period strongly supported the existence of week-end effect during the period of ban on carry forward (badla) transactions. This study also evidenced a reversal in Week-End Effects, i.e., positive Monday return and negative Friday return in modified and revised modified carry forward transactions.

Garg et al (2010) found that the day effect and month effect don't exist in the US market. However, the turn of the month effect and the semi month effect, both exist in the US market as the stock returns during the first half of the month and turn of the month are significantly higher than the return for the rest of the days in the month. Turn of the month effect and semi month effect are prevalent in the Indian stock market. In Indian market the stock return on Friday has been seen lower than that for the rest of days. Monday effect has disappeared in Indian stock market. No significant variation is found amongst the return across various months in case of both the markets.

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.

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.

Research Methodology:

Objectives:

- To discover whether the Friday the 13th Effect exist in the Indian and other selected countries' stock market.
- To investigate the existence of Weekend Effect in the Indian and other selected countries' 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). The other two Asian Stock exchanges operating in Indonesia and Japan i.e. Jakarta Stock Exchange and Tokyo Stock Exchange respectively. 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, Nikkei in Tokyo Stock Exchange and Jakarta Stock exchange were considered as sample for this study. I studied Weekend Effect and Friday the 13th Effects in two Indian Stock market and international markets for period of April 2003 to March 2014. Also Indian market is of semi strong form of market efficiency and to compare it with other selected countries market of the world.

Research tools:

The following tools were used for the analysis of the returns and volatility for the sample indices taken for this study.

i) Returns

To compute the daily returns for each of the index series, the following formula was used:

$$R_t = \frac{P_1 - P_0}{P_0}$$

Where,

Rt = Daily return on the Index ,

P_1= Closing value of a given index on a specific trading day, and

P_0= Closing value of the given index on preceding trading.

ii) Descriptive Statistics

Under Descriptive Statistics, the Average Daily Returns (mean), Standard Deviation were used. The details are as follows.

a) Mean

Mean is the average value of the series, obtained by adding up the series and dividing by the number of observations. It is the most common Measure of Central Tendency.

$$\text{Mean } (x) = \frac{\Sigma xi}{n}$$

Where,

x = represents the mean, Σ = Symbol of Summation

Xi =Value of the ith item x, i= 1, 2, 3 ….n, n= total Number of items

b) Standard Deviation

Standard Deviation is known as the root mean square deviation for the reason that it is the square root of the mean of the squared deviation from the arithmetic mean

$$\sigma = \sqrt{E((X - E(X))2)}$$

$$= \sqrt{E(X2) - (E(X))2}$$

$$= \sqrt{Var(X)}$$

Where,

E(*X*) is the expected value of *X*, and *Var*(*X*) is the variance of *X*.

c) Skewness

Skewness is a measure of symmetry, or more precisely, the lack of symmetry. A distribution of a data set is symmetric if it looks the same to the left and right of the center point. skewness, the third standardized moment, is written as γ1 and defined as

$$\gamma = \frac{\mu 3}{\sigma 3}$$

Where,

μ3 = is the third movement about the mean, and σ is the standard deviation Skewness can be defined as the ratio of the third cumulate κ3 and the third power of the square root of the second cumulate κ2:

$$\gamma = \frac{k_3}{k_2^{3-2}}$$

The Skewness for a normal distribution is zero, and any symmetric data should have skewness near zero. Negative values for the skewness indicate that data that are skewed left and positive values for the skewness indicate that data that are skewed right. By skewed left, we mean that the left tail is long relative to the right tail. Similarly, skewed right means that the right tail is long relative to the left tail. Some measurements have a lower bound and are skewed right. For example, in reliability studies, failure times cannot be negative.

d) Kurtosis

The fourth standardized moment is defined as

$$\gamma_{1=\frac{\mu_4}{\sigma^4}}$$

Where,

μ4 = is the fourth movement about the mean, and σ is the standard deviation Kurtosis is more commonly defined as the fourth cumulative divided by the square of the variance of the probability distribution.

Test of Normality

Sensex

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
BSE	.064	2726	.000	.956	2726	.000

CNX Nifty

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
NSE	.077	2914	.000	.918	2914	.000

Jakarta

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Jakarta	.065	2836	.000	.943	2836	.000

Nikkei

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Return	.082	2861	.000	.885	2861	.000

For all the above indices the sample size is more than 2000 so Kolomogorov-Smirnov test is considered. The P-value is coming 0.000 for all the above indices which indicates that data are not parametric. Hence it was decided to use Kruskal Wallis test to check the above mentioned anomalies.

iii) Kruskall-Wallis Test

The Kruskall-Wallis Test is a non-parametric test alternative to one-way (between group) ANOVA. The Kruskall-Wallis Test is employed for testing the equality of mean returns for different days of the week. It ranks the entire set of observations(i.e higher the value, higher the rank and vice-versa) and then arranges them into *nj* x 5 matrix where *nj* represent the rank of the return and columns represent the day-of-the-week — Monday through Friday.

Data Analysis and Interpretation

Friday the 13th effect:

Friday the 13th, also known as Black Friday in some countries, is considered an unlucky day in Western superstition. It occurs when the 13th day of the month in the Gregorian calendar falls on a Friday. There is no written evidence for a "Friday the 13th" superstition before the 19th century, and the superstition only gained widespread distribution in the 20th century. 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.

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

	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 (**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 CNX Nifty Index Returns in all years.

Indonesia Stock Exchange (IDX)

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

	Jakarta	
	Friday the 13th	**Other Friday**
Mean	0.4373	0.1858
Standard Error	0.1407	0.0499
Median	0.5317	0.1972
Standard Deviation	0.6294	1.1559
Kurtosis	-0.0714	3.7170
Skewness	-0.6755	-0.2955
Minimum	-0.9215	-4.8118
Maximum	1.3360	5.9148
Sum	8.7458	99.7902
Count	20	537
Confidence Level (95.0%)	0.2946	0.0980

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, and Kurtosis for Jakarta during the study period from April 2003 to March 2014. It is clearly understood that the Jakarta Index received positive returns for all the sample years. During the study period, the Friday the 13th mean return (0.4373) for the period and for the rest of the Friday the mean return (0.1858) for the period.

The value of Standard Deviation (0.6294) was recorded in Friday the 13th for the research period and (1.1559) 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 negatively skewed for Friday the 13th and for the rest of the Friday. The Kurtosis measure of returns distribution was Leptokurtic for the rest of the Friday and Platykurtic for the Friday the 13th for the sample years, showing the more value (3.7170) in rest of the Friday and showing less value (-0.0714) in Friday the 13th for the sample years.

Kruskall-Wallis Test

Test Statistics[a,b]

	Jakarta Friday 13th
Chi-Square	1.955
Df	1
Asymp. Sig.	.162

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 0.162 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 Jakarta Index Returns in all years.

Nikkei (Japan)

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

	Nikkei	
	Friday the 13th	**Other Friday**
Mean	0.2075	-0.0536
Standard Error	0.2469	0.0467
Median	0.2580	-0.0154
Standard Deviation	1.0761	1.1088
Kurtosis	5.7918	12.8649
Skewness	1.5833	-1.7180
Minimum	-1.5036	-8.8423
Maximum	3.6729	4.0845
Sum	3.9433	-30.2025
Count	19	563
Confidence Level (95.0%)	0.5186	0.0918

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, Kurtosis for Nikkei during the study period from April 2003 to March 2014. It is clearly understood that the Nikkei Index received positive returns in Friday the 13th for all the sample years. During the study period, the Friday the 13th mean return (0.2075) for the period and for the rest of the Friday the mean return (-0.0536) for the period.

The value of Standard Deviation (1.0761) was recorded in Friday the 13th for the research period and (1.1088) 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 negatively skewed for Friday the 13th and for the rest of the Friday. The Kurtosis measure of returns distribution was Leptokurtic for the sample years, showing the more value (12.8649) in rest of the Friday and showing less value (5.7918) in Friday the 13th for the sample years.

- **Kruskall-Wallis Test**

Test Statistics[a,b]

	Nikkei Friday
Chi-Square	.802
df	1
Asymp. Sig.	.371

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 0.371 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 Nikkei Index Returns in all years.

Weekend 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.

A phenomenon in financial markets in which stock returns on Mondays are often significantly lower than those of the immediately preceding Friday. Some theories that explain the effect attribute the tendency for companies to release bad news on Friday after the markets close to depressed stock prices on Monday. Others state that the weekend effect might be linked to short selling, which would affect stocks with high short interest positions. Alternatively, the effect could simply be a result of traders' fading optimism between Friday and Monday.

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**
	Mean	**SD**	**Mean**	**SD**	**Found**
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 (**H_0**), "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

According to the results as given in the above Table, the Kruskall-Wallis Statistics Value for the January effect is 0.936 which is more than 0.05. Hence the Null Hypothesis (**H_0**), "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 Nifty Index Returns in all years.

Indonesia Stock Exchange (IDX)

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

	Jakarta	
	Friday	**Monday**
Mean	0.1949	-0.0425
Standard Error	0.0484	0.0590
Median	0.2136	-0.0008
Standard Deviation	1.1419	1.4010
Kurtosis	3.8164	5.4908
Skewness	-0.3155	-0.1640
Minimum	-4.8118	-6.9721
Maximum	5.9148	7.3626
Sum	108.5360	-23.9479
Count	557	564

Confidence Level (95.0%)	0.0950	0.1159

Year	Monday		Friday		Effect Found
	Mean	SD	Mean	SD	
2003-04	0.30614	1.28656	0.51018	1.11695	Yes
2004-05	-0.2479	1.3127	0.3696	1.09164	Yes
2005-06	-0.0122	1.16769	0.23019	0.91602	Yes
2006-07	-0.0884	1.39182	0.27301	0.71091	Yes
2007-08	0.02499	1.11404	0.34459	1.19509	Yes
2008-09	0.05262	2.46606	0.12404	1.95251	Yes
2009-10	0.17108	1.63893	0.23661	0.95381	Yes
2010-11	0.13546	1.31385	0.02898	1.20411	No
2011-12	-0.3322	1.40665	0.01839	1.25486	Yes
2012-13	-0.1467	0.73424	0.17563	0.66678	Yes
2013-14	-0.3373	1.31409	0.0326	1.11425	Yes
2003-14	**-0.0425**	**1.40105**	**0.19486**	**1.14187**	**Yes**

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, and Kurtosis for Jakarta during the study period from April 2003 to March 2014. It is clearly understood that the Jakarta Index received positive returns for all the sample years. During the study period, the Friday mean return (0.1949) for the period and for the Monday the mean return (-0.0425) for the period. During the study period, the Friday registered the highest mean return (0.51018) for the year 2003-04 and on Monday mean return (0.30614) for same year.

The highest value of Standard Deviation (1.95251) of Standard Deviation (0.12404) was recorded in 2008-09. 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 (5.4908) in Monday and showing less value (3.8164) in Friday for the sample years.

- **Kruskall-Wallis Test**

Test Statistics[a,b]

	Jakarta Weekend
Chi-Square	15.543
Df	1
Asymp. Sig.	.000

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 0.000 which is less than 0.05. Hence the Null Hypothesis (**H_0**), "There is

no significance difference between mean return of Friday and mean return of next Monday for the research period" can be rejected. Hence the Weekend effect exists for Jakarta Index Returns in all years.

Nikkei (Japan):

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

	Nikkei	
	Friday	**Monday**
Mean	-0.0420	-0.0518
Standard Error	0.0460	0.0483
Median	-0.0017	-0.0207
Standard Deviation	1.1095	1.1128
Kurtosis	12.5902	3.4448
Skewness	-1.6182	-0.2474
Minimum	-8.8423	-5.3573
Maximum	4.0845	4.4960
Sum	-24.4600	-27.4935
Count	583	531
Confidence Level(95.0%)	0.0902	0.0949

	Monday		Friday		Effect Found
Year	Mean	SD	Mean	SD	
2003-04	0.21071	1.3594	0.16107	0.91434	No
2004-05	0.04336	1.07051	0.10492	0.76177	Yes
2005-06	0.06098	0.86174	0.07129	0.84639	Yes
2006-07	-0.0515	1.11084	0.10812	0.63229	Yes
2007-08	-0.31	1.18499	-0.2245	1.286	Yes
2008-09	0.17942	2.01737	-0.5358	2.34015	No
2009-10	-0.0546	0.93739	-0.0316	0.85354	Yes
2010-11	-0.0305	0.91129	-0.1845	0.79298	No
2011-12	-0.264	0.52188	-0.0733	0.59879	Yes
2012-13	-0.2718	0.70671	0.00648	0.89393	Yes
2013-14	-0.1404	1.18756	0.04489	1.16649	Yes
2003-14	-0.057	1.13779	-0.0503	1.11552	Yes

Table presents the Results of Descriptive Statistics of Standard Deviation, Skewness, and Kurtosis for Nikkei during the study period from April 2003 to March 2014. It is clearly understood that the Nikkei Index received positive returns for all the sample years. During the study period, the Friday mean return (-0.0503) for the period and for the Monday the mean return (-0.057) for the period. During the study period, the Friday registered the highest mean return (0.16107) for the year 2003-04 and on Monday mean return (0.21071) for same year.

The highest value of Standard Deviation (2.34015) of Standard Deviation (-0.5358) was recorded in 2008-09. 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 (12.5902) in Friday and showing less value (3.4448) in Monday for the sample years.

- **Kruskall-Wallis Test**

Test Statistics[a,b]

	Nikkei Weekend
Chi-Square	.280
Df	1
Asymp. Sig.	.597

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 0.597 which is more than 0.05. Hence the Null Hypothesis (**H_0**), "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 Nikkei Index Returns in all years.

Conclusions & Findings

	Sensex	**Nifty**	**Jakarta**	**Nikkei**
Friday the 13th Effect	×	×	×	×
Weekend Effect	×	×	✓	×

Analysis of Friday the 13th Effect

- The analysis of Friday the 13th Effect reveals that during the whole study period, the Highest Mean Returns CNX Nifty.
- The Standard Deviations of the return series were highest CNX Nifty and lowest in Jakarta.
- Friday the 13th effect does not found in any of the indices for the research period.

Analysis of the Weekend effect:

- There were Positive Mean Returns recorded on weekend in CNX Nifty and negative for Nikkei.
- It clearly indicates that the market was more volatile on Monday and least volatile on Friday during the study period.
- Weekend effect found in Jakarta stock Market. In Indian market weekend effect not found in both Sensex and Nifty.

Conclusions

The present study investigated the existence of a daily pattern of Seasonality (Calendar Anomalies) Effect on Index Returns for Sensex, Nifty, Jakarta and Nikkei. 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 and developed countries market. These findings have important implications for Financial Managers, Financial Analysts and Investors. The understanding of Seasonality should help them to develop appropriate investment strategies.

References

[1] Fama, E.F. and MacBeth, J.D. (1973) "Risk, Return and Equilibrium: Empirical Tests", Journal of Political Economy, Vol. 81, 607-36.

[2] Keim, Donald B. (1983) Size-Related Anomalies and Stock Return Seasonality: Further Empirical Evidence, Journal of Financial Economics., Vol. 12 Issue 1, p13-32.

[3] Lee K. Y. and Chang C. S. (1988), "Anomalies in the Stock Returns over Trading and Non trading Periods: Further Evidence in the Korean Stock Market",Quarterly Journal of Business and Economics, Vol. 27, No. 2, pp. 139-161

[4] Ajayi R A, Mehdian S, and Perry M J (2004), "The Day-of-the-Week Effect in Stock Returns: Further Evidence from Eastern European Emerging Markets", Emerging Markets Finance & Trade, Vol. 40, No. 4, pp. 53-62.

[5] Branch B and Chang K (1990), "Low Price Stocks and the January Effect", Quarterly Journal of Business and Economics, Vol. 29, No. 3, pp. 90-118.

[6] Bing Zhang, Xindan li (2006). Do Calendar Effects Still Exist in the Chinese Stock Markets? J. of Chinese Economic and Business Studies. 4(2): 151-163.

[7] Gultekin, M.N., and N.B. Gultekin (1983) "Stock Market Seasonality: International Evidence," Journal of Financial Economics, Vol.12, pp. 469-481.

[8] Syed A. Basher, Perry Sadorsky (2006). Day-of-the Week Effects in Emerging Stock Markets. Applied Economics letters. 13: 621-628.

[9] Brooks C, Persand G (2001). Seasonality in Southeast Asian Stock Markets: Some new Evidence on Day-of-the-Week Effects. Applied Economics Letters. 8: 155-158

[10] PM Silva (2010), "Calendar "anomalies" in the Portuguese stock market" Investment Analysts Journal – No. 71,p.p.37-50

[11] Sarma, S.N. (2004) "Stock Market Seasonality in an Emerging Market", Vikalpa: The Journal for Decision Makers., Vol. 29 Issue 3, p35-41.

[12] Bodla, B. S.; Jindal, Kiran. (2006) "Seasonal Anomalies in Stock Returns: Evidence from Indiaand the US Decision" (0304-0941), Vol. 33 Issue 1, p163-178.

[13] Singhal A, and Bahure V (2009), "Weekend Effect of Stock Returns in the Indian Market", Great Lakes Herald, Vol 3, No 1, pp. 12–22.

[14] Nageswari P, Babu M (2011), "Analysis of Week End Effect in Indian Stock Market." SMART J. of Business Management Studies. 7(1): 78-87.

[15] Amanulla S, Thiripalraiu M (2001), "Week End Effect: New Evidence from the Indian Stock Market", Vikalpa. 26(2): 33-50.

[16] Ashish Garg, B.S. Bodla and Sangeeta Chhabra (2010), "Seasonal Anomalies in Stock Returns: A Study of Developed and Emerging Markets" IIMS Journal of Management Science Vol.1, No.2, pp. 165-179

[17] P. Nageswari, Dr.M.Selvam(2011), An Empirical Study on Seasonal Analysis in the Indian Stock Market, International Journal of Management & Business Studies, Vol. 1, Issue 4,p.p.90-95