
A Study of Holiday Effect on Sensex Returns in the Indian Market

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Abstract

The purpose of this study is to investigate the existence of the holiday effect in Indian BSE Sensex Indices. This study expands the literature on the developing and developed financial markets and the holiday effect in their respective stock indices. This study examines the holiday effect in Indian BSE Sensex returns from 31 December 2009 to 28 December 2015. This study considered the preholiday sensex return and the post holiday sensex return and the influence of National holiday on the sensex return. The six National holidays considered for the study are New Years Day, Republic Day, May Day, Independence Day, Gandhi Jayanthi and Christmas Day. The Wilcoxon signed-rank test of non-parametric statistical hypothesis test is used to compare the two related samples to assess whether their population means ranks differ. From the results it is found that there is a significant change in the post holiday sensex returns for the above mentioned period.

Keywords : *calendar holiday effects, market anomalies, market efficiency, Sensex.*

Introduction

The efficient market hypothesis (EMH) postulates that stock prices fully incorporate all publicly available information. One of the implications of the EMH is that the stock market displays no predictable patterns that can be explored reliably for abnormal returns. Basically, the EMH argues that share prices are inherently unpredictable. Despite its theoretical appeal, the EMH has long been contested by academics as well as practitioners. Among the various financial anomalies that have been documented in the literature are the abnormal returns around public holidays. This phenomenon, known as the holiday effect, has been uncovered in both developed markets and emerging markets.

Behavioural finance, feelings and pre-holiday returns

Behavioural finance is a more recent branch of finance. **Thaler (1999)** believes that behavioural finance importance will grow and eventually integrate with conventional finance. Behavioural finance attempts to better understand investor behaviour and explain how it affects stock market returns. Investor behaviour can be governed by mood which can determine stock market returns and liquidity. It is possible that investors get a positive mood before long weekends and holidays which leads to change in trading patterns and in turn leads to change in returns.

Hong and Yu (2009) study seasonality in stock markets in 51 countries and find a gone fishin" effect. According to their study, the equity turnover falls during the summer period (July to September). The effect is the most pronounced for the countries further away from the equator. Since some investors go for holidays during summer they do not trade, consequently reducing liquidity. Similar situation can take place before holidays. The pre-holiday effect has proven itself as a real anomaly which still exists in some financial markets. Certain public holidays show significantly higher pre-holiday returns than the others. Therefore, it seems that the pre-holiday effect is driven by culture and religion.

According to **Ariel (1990)** post-holiday returns should correct markets for any anomalies seen before holidays. Studies on U.S., U.K., Korea, Singapore and Slovakia show that there is some market correction after holidays.

One possible explanation for the abnormal positive returns around public holidays is the behavior of investors. **Kavanagh and Bower (1985)** study the effect of happiness and sadness on human behavior. One of their findings shows that happier people tend to believe that positive outcome is more likely than a negative one and vice versa. Public holidays can influence investor's mood, giving them happiness and joy. A mood change can lead to altered perception of given information which in turn leads to decision making with more positive outlook. This can influence stock market returns on a day prior to stock market closure.

Lakonishok and Smidt (1988) A number of studies document the pre-holiday anomaly. In their seminal work they studied the returns one day before and one day after holidays. Analysis of the study shows significantly abnormal returns before holidays for eight out of ten studied sub-periods. Post-holiday returns were negative but insignificant until 1952. From 1952 to 1986 the post-holiday returns become positive and significant.

Alex Gakhovich (2011) in his study the holiday effect in the Central and Eastern European financial markets investigate the existence of the holiday effect in fourteen developing Central

and Eastern European (CEE) financial markets. They found that the holiday effect is present in the CEE region, with a number of countries showing abnormal pre- and post- holiday returns. Contrary to the previous evidence, abnormal post-holiday returns which were documented. The holiday effect is most significant during the earlier years of financial market operations

Ankur Singhal Vikram Bahure(2009), have argued that the measured daily returns should depend on the day of the week by taking the context of the Indian stock market. More specifically, they believed that the expected returns on Monday should be lower and returns on Friday should be higher than on other days by evidencing the existence of this 'weekend effect'. They have also offered a partial explanation to this anomalous behavior by considering a model for adjusted stock returns based on the delay between the trading and settlement period, complex effects of holidays on daily returns and effect of investor expectations.

Hypothesis

H₀ = Stock market indices before public holidays are not significantly different from stock market indices after public holidays

H_A= Stock market indices before public holidays are significantly different from stock market indices after public holidays

Research methodology:

1. The method of data collection for this study is secondary data.
2. The model used for the study is Wilcoxon signed-rank test of non-parametric statistical hypothesis test under SPSS.
3. The study has proposed a null hypothesis that Stock market indices before public holidays are not significantly different from stock market indices after public holidays
4. The same has been tested using Wilcoxon signed-rank test.
5. Further to prove the hypothesis test statistics is used.

Data Analysis and Interpretation

Table 1 showing sensdex price before and after selected holidays

Year	1-Jan		26-Jan		1-May	
	Before	After	Before	After	Before	After
2015	27,499.42	27,887.90	29,278.84	29,571.04	27011.31	27490.59
2014	21,170.68	20,888.33	21,133.56	20,707.45	22417.8	22403.89
2013	19426.71	19714.24	20103.53	20103.35	19504.18	19735.77
2012	15454.92	15517.92	17077.18	17233.98	17318.81	17301.91
2011	20509.09	20561.05	18969.45	18684.43	19135.96	18998.02
2010	17464.81	17558.73	16780.46	16289.82	17558.71	17386.08

Source (BSE)

Table 2 showing sensex price before and after selected holidays

Year	15-Aug		2-Oct		25-Dec	
	Before	After	Before	After	Before	After
2015	28067.31	27878.27	26220.95	26785.55	25838.71	26034.13
2014	26103.23	26390.96	26567.99	26271.97	27208.61	27241.78
2013	19367.59	18598.18	19517.15	19902.07	21032.71	21074.59
2012	17728.2	17657.21	18823.91	18869.69	19255.09	19417.46
2011	16839.63	16730.94	16453.76	16151.45	15738.7	15970.75
2010	18167.03	18050.78	20445.04	20475.73	20073.66	20028.93

Source (BSE)

Analysis and Interpretation

		1-Jan			26- Jan			1-May		
		N	Mean Rank	Sum of Ranks	N	Mean Rank	Sum of Ranks	N	Mean Rank	Sum of Ranks
After - Before	Negative Ranks	1 ^a	4	4	4 ^a	3.75	15.00	4 ^a	2.50	10.00
	Positive Ranks	5 ^b	3.4	17	2 ^b	3.00	6.00	2 ^b	5.50	11.00
	Ties	0 ^c			0 ^c			0 ^c		
	Total	6			6			6		

- a. After < Before
- b. After > Before
- c. After = Before

Test Statistics ^a		Test Statistics ^a		Test Statistics ^a	
	After - Before		After - Before		After - Before
Z	-1.363 ^b	Z	-.943 ^b	Z	-.105 ^b
Asymp. Sig. (2-tailed)	0.173	Asymp. Sig. (2-tailed)	.345	Asymp. Sig. (2-tailed)	.917
a. Wilcoxon Signed Ranks Test		a. Wilcoxon Signed Ranks Test		a. Wilcoxon Signed Ranks Test	
b. Based on negative ranks.		b. Based on positive ranks.		b. Based on negative ranks.	

Interpretation

A Wilcoxon matched pairs signed rank test was conducted to determine whether there is a difference in the preholiday sensex returns and post holiday sensex returns. Results of that

analysis indicated that there is a significant difference in the sensex returns

1. $z = -1.363, p < .05$. The results indicate that preholiday sensex returns are significantly different from post holiday return. The mean rank of preholiday is 4 and post holiday mean rank is 3.4.
2. $z = -0.943, p < .05$. The results indicate that preholiday sensex returns are significantly different from post holiday return. The mean rank of preholiday is 3.75 and post holiday mean rank is 3.
3. $z = -0.105, p < .05$. The results indicate that preholiday sensex returns are significantly different from post holiday return. The mean rank of preholiday is 2.5 and post holiday mean rank is 5.5.

		15-Aug			2-Oct			25-Dec		
		N	Mean Rank	Sum of Ranks	N	Mean Rank	Sum of Ranks	N	Mean Rank	Sum of Ranks
After - Before	Negative Ranks	5 ^a	3.20	16.00	2 ^a	3.50	7.00	1 ^a	3.00	3.00
	Positive Ranks	1 ^b	5.00	5.00	4 ^b	3.50	14.00	5 ^b	3.60	18.00
	Ties	0 ^c			0 ^c			0 ^c		
	Total	6			6			6		

a. After < Before

b. After > Before

c. After = Before

Test Statistics ^a		Test Statistics ^a		Test Statistics ^a	
	After - Before		After - Before		After - Before
Z	-1.153 ^b	Z	-.734 ^b	Z	-1.572 ^b
Asymp. Sig. (2-tailed)	.249	Asymp. Sig. (2-tailed)	.463	Asymp. Sig. (2-tailed)	.116
a. Wilcoxon Signed Ranks Test		a. Wilcoxon Signed Ranks Test		a. Wilcoxon Signed Ranks Test	
b. Based on positive ranks.		b. Based on negative ranks.		b. Based on negative ranks.	

Interpretation

A Wilcoxon matched pairs signed rank test was conducted to determine whether there is a difference in the preholiday sensex returns and post holiday sensex returns. Results of that analysis indicated that there is a significant difference in the sensex returns

1. $z = -1.153$, $p < .05$. The results indicate that preholiday sensex returns are significantly different from post holiday return. The mean rank of preholiday is 3.2 and post holiday mean rank is 5.
2. $z = -0.734$, $p < .05$. The results indicate that preholiday sensex returns are significantly different from post holiday return. The mean rank of preholiday is 3.5 and post holiday mean rank is 3.5.
3. $z = -1.572$, $p < .05$. The results indicate that preholiday sensex returns are significantly different from post holiday return. The mean rank of preholiday is 3 and post holiday mean rank is 3.6.

Conclusion

From the above study it is proved that there is a significant change in the post holiday returns and so null hypothesis is rejected and alternate hypothesis is accepted. It is also found that on January 1, 26 and May 1 the preholiday returns are more compare to August 15, October 2 and December 25. Another interesting thing is that the mean rank as not changed for October 2. Many studies on stock market prices and indices have been based on the belief that returns are not influenced by the holiday. However, in this study it is believed that the holiday influences the stock and the indices return because of the effects of market sentiments and the results suggest that such influence do exist for the period from 31 December 2009 to 28 December 2015. This could potentially influence for further study by including more time period and thus it goes against market efficiency theory.

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