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Festivity Anomaly in Indian Stock Market

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Abstract

This research is the first to investigate the holiday anomaly in the Indian stock market, one of the largest stock markets in the world, during the financial crisis. This paper examines the presence of holiday effects in the Indian stock market, before and during the financial crisis. Our results indicate very strong post-holiday effects for most of the indices from the Bombay Stock Exchange. Furthermore, while the pre-holiday effect was completely missing, the post-holiday effect became even stronger during the financial crisis.

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1. Introduction

The holiday effect is a prime anomaly against the Efficient Market Hypotheses (EMH), which states that the prices fully reflect all available information and no factor should have significant power in predicting future stock returns.

The holiday effect is associated with the significant difference between the stock returns of the day that precedes or follows the public holidays, and the rest of the trading days. Many previous studies suggest that the holiday effect can be explained by the fact that holidays affect a human trader's mood and attitude. Hirshleifer and Shumway (2003) studied investors' mood and found positive abnormal returns associated with sunny days or days typically associated with good moods. Yuan, Zheng, and Zhu (2006) showed that there is a decrease in return on a seven day window around a full moon which would supposedly affect investor's mood. Mehran, Meisami, and Busenbark (2012) also found a significantly positive relationship between joyful Jewish holidays and stock market returns. The holiday effects have two forms:

- the pre-holiday effect, shown by abnormal daily returns before the public holidays
- the post-holiday effect, shown by abnormal daily returns after the public holidays

The holiday effects were identified in many researches based on evidence from different countries. Lakonishok and Smidt (1988) and Ariel (1990) found significantly higher returns from the pre-holiday trading days. Fabozzi, Ma, and Briley (1994) found consistent higher post-holiday and pre-holiday returns in the U.S. stock market. Significant holiday effects have also been found outside the U.S. The existence of holiday effects in other developed countries, such as Japan, United Kingdom, Singapore, and Spain are documented in research studies by Kim and Park (1994), Tan and Wong (1996), Arsad and Coutts (1997), Menue and Pardo (2004), and Lucey (2005).

However, the significance and magnitude of holiday effects vary across different countries. Cadsby and Ratner (1992) found significant holiday effects in only five of ten industrialized countries. Hansen, Lunde, and Nason (2005) found significant abnormal post-holiday returns in only one out of ten countries in their research.

For investors intending to exploit the festivity anomaly in the stock price evolution, it is crucial to analyze its persistence in time. Many anomalies disappeared after their publications. For instance, Dimson and Marsh (1999) showed that the publication of an anomaly could cause its disappearance or reversal. Several studies, including Wong, et al (2006), Marquering, et al (2006), and Chong, et al (2005) also found changes in the holiday effects over time for many stock exchanges. The Bombay Stock Exchange is one of the largest stock market in the world, Asia's first stock exchange, and the world's fastest stock exchange. To our best knowledge, our study is the first in testing the holiday effect in the Indian stock market during the financial crisis.

In this paper, the prime focus is to investigate the presence of holiday effects in the Indian Stock Market. Our data sample, including 8 years ranging from 2005 to 2012, enables us to investigate the holiday effects before and during the crisis started in 2008. We intend to answer two questions in this paper:

Q1. Is holiday effect significant in the Indian stock market?

Q2. How would the financial crisis affect the holiday effect in the Indian stock market?

The remainder of the paper is organized as follows: Section II describes the data sample and methods. Section III presents and discusses the empirical results. We summarize our findings in the last section.

2. Data and Methodology

2.1. Indian Holidays

India follows both the Indian and International Calendars. The three national holidays that follow the International Calendar are:

a. Republic Day (26th January every year)
b. Independence Day (15th August every year)
c. Mahatma Gandhi's Birthday (2nd October every year)

Two other holidays with fixed dates are Christmas (25th December every year) and Maharashtra Day (1st May every year; state holiday).

The other ten trading holidays included in the study follow the traditional Indian calendar and therefore the dates vary each year.

2.2. Stock Indices

We use the daily closing values of six indices from the Bombay Stock Exchange:

1. BSE SENSEX: The S&P BSE Sensex Index is a cap-weighted index of 30 well established companies listed on BSE. The index members have been selected on the basis of liquidity, depth, and floating-stock-adjustment depth and industry representation.
2. BSE 100: A broad-based index, the S&P BSE-100 was formerly known as the BSE National index. It has 1983-84 as the base year and was launched in 1989.
3. BSE MIDCAP: The S&P BSE MIDCAP comprises the stocks representing 15% of total market capitalization after the large cap and is the subset of S&P BSE ALLCAP. The index is designed to represent the mid cap segment of India's stock market.
4. BSE 500: S&P BSE 500 index is a free-float weighted index that represents nearly 93% of the total market capitalization on BSE India exchange. This index represents all 20 major industries of the economy.
5. BSE Finance Sector: The S&P BSE Finance provides investors with a benchmark that reflects companies included in S&P BSE ALLCAP that are classified as members of Finance sector.
6. BSE Energy Sector: The S&P BSE Energy provides investors with a benchmark that reflects companies included in S&P BSE ALLCAP that are classified as members of Energy sector.

For all indices, our data sample begins from January 2005 to December 2012. Due to the data availability, we use the data starting from September 2005 to December 2012 for the BSE Finance Sector and BSE Energy Sector. The daily returns are calculated using the formula:

$$R_t = \ln (P_t) - \ln (P_{t-1})$$

Where:

- R_t is the return on the day t
- P_t is the closing market index price on the day t

We test pre- and post-holiday effects by forming the regression model with dummy variables:

$R_t = \alpha + \beta_1$ Pre_Holiday $+ \beta_2$ Post_Holiday
where

- Pre_Holiday is a dummy variable which equals one for the last trading day before a public holiday and zero otherwise;
- Post_Holiday is a dummy variable which equals one for the first trading day after a public holiday and zero otherwise.

3. Empirical Results

Table 1 shows the full sample regression results on the entire sample. We found the pre-holiday effect is barely significant (at 10% level) on only one of the six indices: BSE Midcap. At the meantime, our results show much stronger post-holiday effects on three indices, both statistically (at 5% level) and economically. The three indices that show the post-holiday effects, are BSE SENSEX, BSE 100, and BSE 500, considered the most representative indices of the Indian stock market.

Table 1. Full Sample Regression Results

We report the correlation coefficients with significance level (*** denotes significance at the 1% level, ** denotes significance at the 5% level, * denotes 10% level), t-test results (in parentheses), and p-values (in square brackets) for each index.

Index	Const.	Pre_Holiday	Post_Holiday
BSE SENSEX	.00073** (2.24) [.025]	.00002 (.01) [.990]	.00247** (1.98) [.048]
BSE100	.00096*** (3.00) [.003]	.00007 (.06) [.951]	.00243** (1.98) [.047]
BSE Mid cap	.00133*** (3.98) [.000]	.00215* (1.71) [.088]	.00153 (1.21) [.225]
BSE500	.00114*** (3.71) [.000]	.00015 (.12) [.902]	.00242** (2.05) [.040]
BES Financial Sector	.00071 (1.61) [.107]	.00126 (.76) [.446]	.00263 (1.59) [.113]
BSE Energy Sector	.00067 (1.64) (.101)	.00072 (.47) [.639]	.00224 (1.46) [.144]

We then divide our sample into two groups by Sept. 15th 2008, when the bankruptcy of Lehman Brothers was announced. This date is commonly used as the inception of financial crisis. Table 2 shows no pre-holiday or post-holiday effect before the global crisis for all indices. However, significant post-holiday effect emerges during the financial crisis in four of the six indices: BSE SENSEX, BSE 100, BSE 500, and BSE Energy Sector. It is very obvious that, in comparison to the full sample results, the post-holiday effect became stronger during the financial crisis.

Table 2. Before and During Financial Crisis

We report the correlation coefficients with significance level (*** denotes significance at the 1% level, ** denotes significance at the 5% level, * denotes 10% level), t-test results (in parentheses), and p-values (in square brackets) for each index.

Index Return	Before Financial Crisis			During Financial Crisis		
	Const.	Pre_Hol	Post_Hol	Const.	Pre_Hol	Post_Hol
BSE SENSEX	.00113** (2.19) [.029]	.00011 (.05) [.958]	.00086 (.42) [.672]	.00028 (.67) [.502]	-.00024 (-.15) [.877]	.00331** (2.11) [.035]
BSE100	.00145*** (2.92) [.004]	.00014 (.07) [.943]	.00137 (.69) [.488]	.00047 (1.13) [.258]	-.00016 (-.10) [.919]	.00308** (2.00) [.046]
BSE Mid cap	.00177*** (3.03) [.003]	.00175 (.77) [.439]	.00148 (.66) [.512]	.00091** (2.25) [.025]	.00146 (.98) [.329]	.00236 (1.58) [.116]
BSE500	.00171*** (3.63) [.000]	.00006 (.03) [.974]	.00161 (.86) [.391]	.00062 (1.54) [.124]	.00013 (.09) [.930]	.00298** (1.99) [.047]
BES Financial Sector	.00068 (.90) [.371]	.00122 (.42) [.677]	.00233 (.80) [.425]	.00067 (1.24) [.214]	.00118 (.59) [.554]	.00241 (1.21) [.227]
BSE Energy Sector	.00177** (2.54) [.011]	.00009 (.04) [.972]	-.00043 (-.16) [.872]	-.00016 (-.33) [.739]	.00116 (.64) [.524]	.00378** (2.08) [.038]

IV. Conclusion

In this research, we investigated the holiday effects in the Indian stock market and found strong evidence of post-holiday effect in most representative market indices. Our results show significantly higher returns on the trading day following a public holiday, relative to regular trading days. Furthermore, we found much more significant holiday effects, both statistically and economically, during the financial crisis. However, none of the indices shows any pre-holiday effect during the financial crisis.

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