

CALENDAR ANOMALIES IN INDIAN STOCK INDICES:

A Literature Review

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ABSTRACT

India is one of the most emerging economies of the world hence a need arises to study whether there is any presence of anomaly in the Indian stock market and also a need arises to study at what level the Indian market is efficient.

An efficient stock market can instantaneously process the information which would be reflected on security prices. It is important to note that there are variations in Volatility of Stock Returns by the Day-of-the Week, Month of the Year and Semi-Month. Besides, a high (low) return is associated with a correspondingly high (low) volatility for a given day.

The effect of Calendar Anomalies may hike or depress the share price on a particular day/week or month as compared to the mean. The changes in the price cannot be explained by traditional asset pricing models and the changes also violate the Weak Form of Market Efficiency. If the investors can identify a certain pattern in volatility, then it would be easier to make investment decision based on both returns and risk. Some of the previous studies have not provided sufficient information to the Readers and Users in general and to the Market Participants in particular. Besides, the findings of these studies are not in agreement with each other. It is against this background that an attempt has been made in this study to examine Calendar Anomalies in the Indian Stock Market afresh so as to remove the ambiguity in results, if any.

Key words:

Calendar Anomalies, Investment, Volatility of Stock Return, Indian Stock Market, Day-of-the Week, Month of the Year and Semi-Month

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INTRODUCTION

Financial market anomalies are cross-sectional and time series patterns in security returns that are not predicted by a central paradigm or theory. The term anomaly can be traced to Kuhn (1970). The existence of anomalies in stock returns, however, violates an important hypothesis in finance called the Efficient Market Hypothesis (EMH). According to EMH, the security prices reflect fully all the information that is available in the market.

The day-of-the-week effect continues to be one of the more interesting stock market anomalies to study because the existence of significant day-of-the-week effects would be very useful for developing profitable trading strategies. Investors could buy stocks on days with abnormally low returns and sell stocks on days with abnormally high return.

Several empirical studies have studied the phenomena of calendar effects in stock markets, here returns tend to show higher (or lower) than average returns in specific calendar periods. Calendar effects are anomalies in stock returns that relate to the calendar, such as the day-of-the-week, the month-of-the-year, or holidays, and well-known examples are the Monday effect and the January effect. Such anomalies cast doubts to the “efficient market hypothesis” The existence of the calendar anomalies is a denial of the weak form of efficient market hypothesis which states that stock returns are time invariant which means that there is no short-term seasonal pattern in the stock returns. The subsistence of seasonal pattern in the stock return infers that a market is inefficient and investors should be able to earn abnormal return. That’s why finance researchers have been interested to find out the existence of the calendar anomalies or seasonality in the stock returns in different markets. Among the calendar anomalies day of the week effect is most widely documented anomaly and have been comprehensively investigated by the finance researchers in different markets of different countries considering different securities and indices and different institutional framework.

EFFICIENT MARKET HYPOTHESIS (EMH)

The phrase “Efficient Market” is used to describe the market price that fully reflects all available information. An Efficient Market is defined as a market where there are a large number of rational, profit maximizers, actively competing with each other, trying to predict future market values of individual securities and where important current information is almost freely available to all participants. An Efficient Market is one in which the market price of a security is an unbiased estimate of its intrinsic value.

Types of Efficient Market Hypothesis (EMH)

- a) Weak Form Market Efficiency
- b) Semi-Strong Form Market Efficiency
- c) Strong Form Market Efficiency

a) Weak-Form Market Efficiency

Under the Weak Form Efficiency, excess returns cannot be earned by using Investment Strategies based on Historical Share Prices.

b) Semi-Strong Form Market Efficiency

The second form of efficiency requires that the securities prices reflect both the past prices & all other published information. This form is known as the Semi Strong Form of Market Efficiency.

c) Strong-Form Market Efficiency

The third form of efficiency is called Strong Form of Efficiency. This means that the prices reflect both public and private information of a certain security.

MARKET ANOMALIES

A market anomaly is any event or time period that can be used to produce abnormal profits on stock markets. Stock market anomalies occur on multiple equities and Stock market indices across the world. They do not correspond with existing equilibrium models, where risk is the only factor which is likely to cause possible variations in stock market excess returns. The occurrence of patterns in time series of stock market returns, independent of time-varying risk, would indicate that not all relevant information is captured in stock prices, which is inconsistent with the EMH. Stock market anomalies exist in every form of the EMH and can be classified in different categories, like for example firm anomalies, accounting anomalies, event anomalies, weather anomalies and calendar anomalies. Market Anomalies are market patterns that do seem to lead to abnormal returns more often than not, and since some of these patterns are based on information in financial reports, market anomalies present a challenge to the semi-strong form of the EMH.

LITERATURE REVIEW

Selvarani M. & Leena Genefer(2009), in their paper entitled, “**Calendar Anomalies in National Stock Indices**”, with the purpose of to investigate the existence of a day of the week effect, financial year effect (April effect) in the NSE indices and frame the trading strategy. Seasonalities or calendar anomalies are well documented and are perhaps the best-known examples of inefficiencies in the financial markets. It may be in terms of seasonal effects over

the day-of-the-week, the months of the year, or over specific years. Evidence of such seasonalities is readily available for the well-established stock markets in the developed economies, as well as in some emerging market countries. There is day effect, January effect, April effect and a monthly effect in the NSE indices. There is strong evidence of a January effect and instead of week effect we have Tuesday effect due to the investor sentiment against buying on Tuesday. The study concludes that there is presence of seasonality across the month of the year from 2002 to 20007. The present of highest variance Mondays, month and effect, the regularity of returns across the indices. It also confirms that there is no continuing trend in the pattern. Every year it has different pattern except in the months of November and December. The findings of the mean returns in the NSE indices show that there is a strong evidence of April and January effect. After the introduction of the rolling settlement, Friday has become significant. As far as day effect is concerned, Tuesday effect is more prevalent than Monday effect.

Chandra. Abhijit (2015), in his study entitled, “**Stock Market Anomalies: A Calendar Effect in BSE Sensex**”, examined the effect of a calendar anomalies in BSE sensex. Calendar effect connotes the changes in security prices in stock market following certain trends based on seasonal effects. This study has been conducted to find out whether Turn of the Month Effect and Time of the Month Effect in BSE-SENSEX. Data pertaining to daily stock index of SENSEX, the capital weighted index of Bombay Stock Exchange (BSE) for the period April 1998 to March 2008 has been used in this study. Results from this study reveal that a very anomalous behaviour towards returns has been found in BSE 30. For both the effects, the Turn of the Month effect as well as the Time of the Month effect, significant values were found. Both the effects are found to be almost same. Returns during a month are analyzed by dividing that month into three parts separately. And it was found that early days of the month witness higher mean returns than later days of the same month.

Another study entitled, “**Day-of-the Week Effects on the Bombay Stock Exchange**”, by Ravi Anshuman V, Ranadev Goswami (2000), examined the Week- End Effects by using equally weighted portfolio constructed from 70 stocks listed on the BSE during the period (April 1991 – March 1996). The study evidenced the (heteroskedasticity adjusted) excess positive returns on Friday and excess negative returns on Tuesday.

Brooks, Persand (2001), in their paper entitled, “**Seasonality in South East Asian Stock Markets: Some New Evidence on Day-of-the-Week Effects**”, examined the evidence for the Day of the Week Effect in five Southeast Asian Stock Markets, including Taiwan, South Korea, the Philippines, Malaysia and Thailand. 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.

Arora Varun & Das (2007), in his paper entitled, “**Day of The Week Effect in NSE Stock Return**”, examine the day of the week effect and month of the year effect by using various phase: consolidation phase, Bearish phase, Bullis phase. The presence of the seasonal or monthly effect in stock returns has been reported in several developed and emerging stock markets. This study investigates the existence of seasonality in India’s stock market, primarily trying to detect the DAY OF THE WEEK EFFECT in the Stocks listed on the National Stock Exchange. The study analyzed the day of the week effect in three different phases of the market: consolidation phase, Bearish phase & Bullish phase. The result confirm the existence of seasonality (in the form of day of the week effect) stock return in India for 66 stocks spanning across the various sector that we analyzed. The results of the study imply that the stock market in India is inefficient, and hence, investors can time their share investment to improve returns and make abnormal profit. However the day of the week effect was found to be absent in the Bullish as well as the Bearish phase. Even though our findings show that Monday and Friday effects are not significant, as is the case with other stock markets around the world, seasonality does exist. As we have shown, a majority of significant positive returns are on Wednesday, while significant negative returns are on Tuesday. The reasons for this cannot be answered off the cuff, but investor sentiment and psychology has a lot to do with it.

A study by Lim Ye Shiok, Mum, and Dolley Brian (2007) entitled, “**Stock Market Calendar Anomalies: The Case of Malaysia**”, investigated the day of the week effect and twist of the Monday effect for Kuala Lumpur Composite Index (KLCI). In this study, it is found that Mondays are the days with the lowest stock returns. Monday was the only day with a negative return and Wednesday is the week day with the highest returns. By partitioning the result data on the basis of market direction, to reflect either a good news or bad news market environment,

negative returns on Monday and Friday are found to be significantly different. However in case of good news environment there is no pattern displayed across days of the week.

Nageshwari P. & Selvam M (2011), in his paper entitled, “**An Empirical study on Seasonal Analysis in the Indian stock market**”, examine whether the Day of the Week Pattern Still exists in Indian Stock market and identify the presence of monthly effect in Indian Stock Market. The presence of the Seasonal or Monthly Effect in stock returns has been reported in several developed and emerging stock markets in india. This study investigates the existence of seasonality in Indian stock market or not. The Efficient Market Hypothesis [EMH] suggest that all securities are priced efficiently to fully reflect all the information intrinsic in the asset. Examples of such patterns include e.g. the January Effect, the Day-of-the Week Effect and the Week of the Month Effect etc. Studies on the Seasonal Effects in the Indian Stock Market are limited. In an attempt to fill this gap, this study explores the Indian Stock Market’s Efficiency in the ‘weak form’ in the context of Seasonal Effects. The study found that there was a 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 but are the best months to buy the scrips (buy low) and November and December show significant positive high returns goading us to conclude that these two months are the best period to sell the securities (sell high).

Verma, Ashutosh; Vijaya Kumar, C. V. R. S. (2012), “Month Effect in The Bombay Stock Market” examine the month effect in Bombay stock market. The data consists of the monthly closing values of BSE sensx which is computed using free float market capitalisation methodology from January 1991 to December 2010 covering a period of twenty years. The month effect has been examined using the non-parametric Kruskal-Wallis test for equality of means and the ordinary least squares (OLS) regression using the dummy variables to study the January and April effect in the BSE sensx. The results of both the tests indicate absence of monthly effect in the Indian stock market and it is not possible for investors to improve their returns by timing their investments. The participants in the market will devise such strategies that the calendar anomalies are exploited and this in the long run will lead to disappearance of such anomalies from the market. Their presence or otherwise of other calendar anomalies in the Indian stock markets.

Keim B Donald (2008), “**Financial Market Anomalies**”, this paper examine that there is a calendar anomalies in BSE sensex. This study has been conducted to find out whether Turn of the Month Effect and Time of the Month Effect in BSE-SENSEX. Data pertaining to daily stock index of SENSEX, the capital weighted index of Bombay Stock Exchange (BSE) for the period April 1998 to March 2008 has been used in this study. The focus here is on equity market anomalies including the size effect, value effect, serial correlation in returns and calendar-related patterns in returns related to month of the year and day of the week. Results from this study reveal that a very anomalous behaviour towards returns has been found in BSE 30. For both the effects, the Turn of the Month effect as well as the Time of the Month effect, significant values were found. Both the effects are found to be almost same. Returns during a month are analyzed by dividing that month into three parts separately. And it was found that early days of the month witness higher mean returns than later days of the same month.

Kendirli Selçuk & Konak Fatih, (2014), “**Calendar Anomalies in The Shanghai Stock Exchanges**”, with the presence of the day of the week and pre-holiday effect as calendar anomalies evidences in the Shanghai Stock Exchange (SSE). This paper has indicated what the four main seasonality’s(the January effect, the pre- holiday effect, the day of the week effect, the turn of the quarter effect) are through the way to test the existence of the two seasonality’s in the SSE Composite index. The initial conclusion being that the pre-holiday effect and the day of the week effect exist for the whole testing period. Yet, the both don’t exist for all of the five 2-year sub periods. Meanwhile, the other three effects cannot be found in the index during the past 10 years. Although the text does not investigate the existence of all the four seasonality’s, the process of the text can clearly solve the most impotent question that what these seasonality’s are.

Dash Mihir, Dutta A. & Sabharwal M. (2011), “**Seasonality and Market Crashes in Indian Stock Markets**”, explore the interplay between the month-of-the-year effect and market crash effects on monthly returns in Indian stock markets. The data used for the study were the monthly closing Sensex values in the period April 1999 to March 2007, collected from the BSE website³. Monthly returns were calculated as the continuously compounded monthly percentage change in the closing Sensex values. The study uses dummy variable multiple linear regression to assess the seasonality of stock market returns and the impact of market crashes

on the same. The results of the study provide evidence for a month-of-the-year effect in Indian stock markets. In particular, there is clear indication of positive November, August, and December effects, and a negative March effect. These results are consistent with the literature, particularly Patel (2008). 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. Another possible contributing factor could be the Rabi harvest (also called the “winter crop”), which affects commodity prices and, in turn, stock market prices. Similarly, the Kharif harvest (also called the “monsoon crop”) could be a contributing factor for the August effect. The results of the study also indicate a highly significant negative impact of market crashes on stock market returns, as would be expected, and that the incidence of market crashes reduces the seasonal effects. There is scope for further investigation of the interplay between market crashes and seasonality, perhaps studying mediating/moderating effects.

Swami Ravikant (2011), “Calendar Anomalies in the Bourses of South Asia”, this paper help in investigate four calendar anomalies, viz., Day of the Week effect, Monthly effect, Turn of the month effect and Month of the year effect across five countries of South Asia. The data to be used in the present study are the major daily index of each country provided by the respective stock exchanges. In this study, we have investigated four calendar anomalies, viz., Day of the Week effect, Monthly effect, Turn of the month effect and Month of the year effect across five countries of South Asia. The day of the week effect, have been found to exist in Sri Lanka and Bangladesh. The Tuesday and Friday returns have been found to be negatively and positively different from zero respectively for Sri Lanka, while in case of Bangladesh, the returns on Monday is significantly negative and that on Thursday and Saturday are significantly positive. Thus, the anomalous behavior is not pervading across these five countries and there is little influence of one market over the other, so far as calendar anomalies are concerned. However, the regularities that have been observed could be exploited profitably by designing trading rules on the basis of the reported anomalies.

Discussion:

1. There is day effect, January effect, April effect and a monthly effect in the NSE indices. There is strong evidence of a January effect and instead of week effect we have Tuesday effect due to the investor sentiment against buying on Tuesday.
2. The day of the week effect was found to be absent in the Bullish as well as the Bearish phase.
3. Mondays are the days with the lowest stock returns. Monday was the only day with a negative return and Wednesday is the week day with the highest returns.
4. The study further reveal that January, February and March have negative returns but are the best months to buy the scrips (buy low) and November and December show significant positive high returns goading us to conclude that these two months are the best period to sell the securities (sell high).
5. The Month effect as well as the Time of the Month effect, significant values were found.
6. It was found that early days of the month witness higher mean returns than later days of the same month.
7. The festival calls for the old tradition of distributing gifts. Even the poorest people in the country save their earnings of all year to celebrate this festival. December produces abnormal returns compared to any other month in the Indian market. A number of festivals fall in the second quarter namely, 'Ganesh Chaturthi', 'Dussera' and 'Diwali'. However, of all the festivals Diwali is the one festival that is celebrated across the country in a significant way.
8. The results of the study provide 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.
9. The above literature survey confirms that the January effect stock returns are noticed in India.
10. The above literature survey confirms that the January effect stock returns are noticed in India.
11. Monday returns remained less than other days and Friday returns remained greater than other days.
12. Investors should be aware of the changing environment in the financial markets throughout the world.

13. The study further reveal that January, February and March have negative returns but are the best months to buy the scrips (buy low) and November and December show significant positive high returns goading us to conclude that these two months are the best period to sell the securities (sell high). The Stock Returns in Indian stock market were not entirely random and may not efficient. Investors usually sell more before the holiday and they buy more after the holidays. Monday returns remained less than other days and Friday returns remained greater than other days. Traders must be careful while exploiting Day-of-the Week anomaly where liquidity may be the major problem for the traders to exploit arbitrage opportunities. This behaviour increases on the pre-holiday returns more than the returns observed for the post holidays. SEBI as a regulator body of Indian Stock market should take necessary steps to increase efficiency of Indian stock market.

Further readings and research:

Thus, the most interesting question for investors and policy makers is what the knowledge obtained from this study can contribute for the future investment science and what policy decisions need to be taken in future

1. The study can be extended by collecting the primary data from institutional investors and retail investors on calendar anomalies especially with respect to announcement of any such events. This would give us more insight into the changing pattern of calendar anomalies over the period, successful frame the trading strategies and applied for new opportunities across the globe.
2. Anomalies in Indian Stock Market – Empirical Evidence from Seasonality Effect on other Index of BSE.
3. An event study methodology on the changing pattern of calendar anomalies can be studied over different time frames. The important regulatory measures taken by government and market regulators and their impact on markets for the study.
4. An Analytical Study on Seasonal Anomalies of Ten (10) Sensex (BSE) Listed Stocks from the Time Period. (For Example-2010 (Jan) to 2016 (Jan))
5. Further consideration institutional traders and other and their effect on trade. This area could be investigated with the reference to Indian Stock Market.

6. The strong form efficiency has not been examined in research because it seem to be more concerned with the disclosure efficiency of the information market than with the pricing efficiency of the security market.
7. The impact of transaction costs on the stock market returns could be a potential area for further research.
8. What will be the appropriate investment strategy for an international investor for investing in Indian Market.
9. Corporate Bond Market, Derivative Market and Treasure Bills market in India can be searched for the existence of these anomalies as well.

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