A STUDY ON MARKET ANOMALIES IN INDIAN STOCK MARKET

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Abstract
*In financial markets, **anomalies** refer to situations when a security or group of securities performs contrary to the notion of efficient markets, where security prices are said to reflect all available information at any point in time. With the constant release and rapid dissemination of new information, sometimes efficient markets are hard to achieve and even more difficult to maintain. There are many market anomalies; some occur once and disappear, while others are continuously observed. The evidences provided therein become the foundation of our study which evokes a desire to investigate existence of such anomalies in Indian Capital Market This paper investigates the existence of the market anomalies in the Indian market by comparing averages of the mean of the index values of BSE index from the year Jan 2008 to Dec 2012 by analyzing weekend effect, Turn of the Month effect, Turn of the Year effect – both in terms of price and volume and stock split effect of five selected companies. The weekend effect was proved in Indian stock market. Turn of the month effect and Turn of the year effect are minimally visible but not statistically proven for the analyzed period. Stock split effect testing was proved negative except for Jindal steel. The study has important implications in understanding the market anomalies, its effect and the way it can influence investor decisions.*

Key words: Market anomalies, Efficient Market Hypothesis, Weekend effect, Turn of the month effect, Turn of the year effect, Stock split effect, Indian Stock Market.

1. 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 anomlies 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 world is in the second year of a financial meltdown. Volatility is high. Market timing has taken on a new importance. While it is generally best to long the strongest stocks and indexes in a rally and short the weakest in a break, there are circumstances when it may be profitable to run with a follower. When the stock market is volatile, stocks can rally or break unevenly. They can move at different speeds at different times. This unevenness creates opportunities for a market timer. In a rally or break, some stocks will lead their sector and the broad market. Generally, you should long the strongest stocks in a rally and short the weakest in a break. You should ignore followers. But, under certain circumstances, a follower may be a good choice. After a late start, an aggressive follower may run to catch up with or overtake a leader. This gives you at least two ways to profit: start by running with a leader, and then shift your money and run with an aggressive follower.

The divergences between leaders and aggressive followers are anomalies; market volatility will temporarily open a gap between the two then close the gap. Understanding how these gaps may occur and how they may close is key to taking advantage of them

2. Literature Review
Numerous empirical investigations, however, provide evidence of having seasonal anomalies in the capital market but the pattern and types of anomaly vary from one study to another. French (1980) testified that there was a tendency for returns to be negative on Mondays whereas they were positive on other days of the week.

Lakonishok and Levi (1982) found impact of settlement procedures on Weekend Effect i.e. settlement effect accounted for about 20% of the Weekend Effect, when market interest rates were used. Levi (1978) found evidence of settlement effect influencing the weekend returns. Jaffe and Westerfield (1985a and b) among others found evidence in favour of Weekend Effect in Japan, Hong Kong, Canada and Australia.

 Smirlock and Starks (1986) found evidence for non-trading negative Weekend Effect to be time period specific which was present during the period from 1974-1983 but not present during 1963-1973 and Monday seasonal disappeared during 1980s.

.Ariel (1987) in a study of semi-monthly and turn-of-the-month effects in the US stock returns provided evidence in favour of the same and documented that, on an average, positive rates of return occurred only in the first half of the month (beginning with the last trading day of the previous month) and they were zero and significantly lower during the second half. It was also found that monthly effect existed in the US and some other developed countries, return in December was generally lower and it was higher in January month in comparison to returns in other months,

Jeffrey Jaffe and Randolph Westerfield (1988) in a study of stock markets of Japan, Canada, Australia and the UK found that returns over the first half of the month were greater than returns over the second half for Canada, Australia and the UK

Miller (1988) and Lakonishok and Maberly (1990) reported that Monday's trading was a response to the low cost opportunity of the weekend and if, Monday was low cost day relative to the mid-week, incentive to trade on Monday would be greater still in the UK stock returns

 Groth et al., (1979), Stickel (1995), Womack (1996) and Ho and Harris (1998) among others provided evidence in favour of effect on Monday which was basically due to the investor selling activity

. Kim (1988) and Aggarwal and Rivoli (1989), Condoyanni et al., (1987), Bruno Solnik and Laurence Bousquet (1990) (on Paris Bourse), and Ho (1990) provided further evidence of stock return patterns related to the day of the week for a variety of countries.

Ziemba (1989) provided evidence of a turn-of-month effect in Japan that runs over the last five and first two trading days of the month. Also the turn-of-month effect was found to occur over a different sequence of days.

Abraham and Ikenberry (1994) found a relationship between Friday and Mondays return that for negative Friday returns Monday returns were negative for nearly 80% of the time and for positive Friday returns Monday returns was positive nearly 56% of the time

Kok Kim Lian (2002) in a study of turn of the month effect in Asia-Pacific stock market documented this effect to be the most prevalent phenomenon in all stock exchanges but half-month effect was found weak and unstable in this market.

 I. M. Pandey (2002) in a study of Indian Stock market found existence of monthly effect but the results were still contradictory.

Madhusudan Karmakar and Madhumita Chakraborty (2003) further found the presence of the turn-of-the month effect in Indian Stock Market.

Kiran Rothak, Rishikesh Patel, and Ashvin Patil (2007) in a study of Indian Stock Market using the data from January 1995 to December 1999 concluded that high stock returns on Wednesday and Monday and lowest returns on Friday due to t+5 rolling settlement effects. Another study of day-of-the week effect by Golaka C., Nath and Manoj Dalvi in the same market evidenced significantly higher returns on Mondays and Fridays than on other days of the week before rolling effect in January 2002 but after the introduction of rolling settlement, only Friday effect was seen in the market

Market Anomalies
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.

- **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.

Years	Monday	Tuesday	Wednesday	Thursday	Friday
1950-2004	-0.072%	0.032%	0.089%	0.041%	0.080%

  Source: Fundamentals of Investments, McGraw Hill, 2006

- **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.

Years	Turn of the Month	Rest of Days
1962-2004	0.138%	0.024%

  Source: Fundamentals of Investments, McGraw Hill, 2006

- **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.

Years	Turn of the Year	Rest of Days
1950-2004	0.144%	0.039%

  Source: Fundamentals of Investments, McGraw Hill, 2006

- **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.

Occasionally, the turn-of-the-year effect and the January effect may be addressed as the same trend, because much of the January effect can be attributed to the returns of small-company stocks.

- **Stock Split Effect**: Stock splits increase the number of shares outstanding and decrease the value of each outstanding share, with a net effect of zero on the company's market capitalization. However, before and after a company announces a stock split, the stock price normally rises. The increase in price is known as the stock split effect.

- **Why Do Anomalies Persist?**

As the efficient market hypothesis defines efficient market is that where all the investors are well informed about all the relevant information about the stocks and they take action accordingly. Due to their timely actions prices of stocks quickly adjust to the new information, and reflect all the available information. So no investor can beat the market by generating abnormal returns. In the weak form of efficient market technical analysis is useless, while in semi strong form, both the technical and fundamental analysis is of no use. And in strong form of efficient market even the insider trader cannot get abnormal return. But it is found in many stock exchanges of the world that these markets are not following the rules of EMH. The functioning of these stock markets deviate from the rules of EMH. These deviations are called anomalies

There is a lot of researches is done on the existence of various types of abnormalities or deviations of stocks returns from the normal pattern so called anomalies. Different authors segregated anomalies into different types. But there are three main types a) calendar anomalies b) fundamental anomalies c) technical anomalies. Calendar anomalies exist due to deviation in normal behaviors of stocks with respect to time periods. These include turn-of-year, turn-of week effect, weekend effect, Monday effect and January effect. There are different possible causes of theses anomalies like new information is not adjusted quickly, different tax treatments, cashflow adjustments and behavioral constraints of investors. Another type is fundamental anomalies which includes that prices of stocks are not fully reflecting their intrinsic values.These include value versus growth anomaly dividend yield anomaly, overreaction anomaly, price to earnings ratio anomaly and low price to sales anomaly. Value strategies outperform than growth stockbecause of overreaction of market and growth stocks are more affected by market down movement. Dividend yield anomaly is that high dividend yield stocks outperform the market. Stocks having low price to earnings ratio outperform. Technical anomalies are based upon the past prices and trends of stocks. It includes momentum effect in which investors can outperform by buying past winners and selling past losers.Techncial analysis also includes trading strategies like moving averages and trading breaks which includes resistance and support level. Based upon support and resistance level investors can buy and sell stocks. Yet a lot of research is needed about the causes of these anomalies because it is yet debatable.

No one knows exactly why anomalies happen. People have offered several different opinions, but many of the anomalies have no conclusive explanations. There seems to be a chicken-or-the-egg scenario with them too - which came first is highly debatable

These effects are called anomalies for a reason: they should not occur and they definitely should not persist. No one knows exactly why anomalies happen. People have offered several different opinions,

but many of the anomalies have no conclusive explanations. There seems to be a chicken-or-the-egg scenario with them too - which came first is highly debatable.

- **Profiting From Anomalies**

It is highly unlikely that anyone could consistently profit from exploiting anomalies. The first problem lies in the need for history to repeat itself. Second, even if the anomalies recurred like clockwork, once trading costs and taxes are taken into account, profits could dwindle or disappear. Finally, any returns will have to be risk-adjusted to determine whether trading on the anomaly allowed an investor to beat the market. Anomalies reflect inefficiency within markets. Some anomalies occur once and disappear, while others occur repeatedly. History is no predictor of future performance, so you should not expect every Monday to be disastrous and every January to be great, but there also will be days that will "prove" these anomalies true!

3. Objectives and Research Methodology
3.1 Objectives of the Study
In this study, an attempt is made to understand   some re-occurring trends happening in share market. The objectives of the study include:

- Understanding Market Anomalies and reason for its occurrence.
- To test the existence of Market Anomalies in Indian market.

3.2 Significance of the Study
The trading of securities had gained more popularity with increase in investment patterns and volume of trade. No market expert can predict exactly the timings for buying and selling of shares, though the technical softwares can provide support and resistance levels in the chart for the current term.The investment market exhibits high risk and volatility. Investors seek for predictions in the market. Market anomalies are some re-occurring predictions which may or may not occur.The study attempts to understand the existence of market anamalies in the Indian market. There are very few studies reported on market anomalies in Indian stock market and hence the findings from the study can be useful to investors and brokers for their selection and decision of transaction

3.3 Research Design
3.3.1Period of the Study
The study measures the existence of market anomalies with respect to BSE SENSEX Index from 2008 – 2012 Since BSE is the oldest stock exchange, the data is available for a longer period. And the period is significant as it includes the market fluctuations before, during and after the global financial crisis. The data for the period are tabulated and analysed on monthly basis.

3.3.2 Data Collection and Tabulation
The study is designed as to test the existence of market anomalies in Indian stock market. The closing price and turnover of BSE index for a period of 5years has been taken for the study. Daily return , average return per month , average return per day for all 5 years were tabulated for analysis. The closing price of the companies before and after stock split was taken to understand the impact of stock split on the market movements.

132

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3.3.3 Sample
For the study of calendar effects, 5 years BSE INDEX values are selected from the year 2008 to 2012
For the study of stock split of 5 companies from different industries are selected, say Bajaj Corporation,
HDFC Bank,Jindal steel, Oriental Hotels, Tata steel.

3.3.4 Tools of Data Analysis
For the analysis the tools used are:
Mean: it is the sum of the values divided by number which means the average of the values.
T-test: A t-test's statistical significance indicates whether or not the difference between two groups'
averages most likely reflects a "real" difference in the population from which the groups were sampled.

4.Empirical Analysis
4. I Calendar Effect
4.1.1 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. In fact, Monday is the
only weekday with a negative average rate of return.

Table 1 Calculation of Average Return of Weekends

2008-2012 DAY	AVERAGE RETURN BSE INDEX (crs)
MONDAY	1008.058
TUESDAY	1122.932
WEDNESDAY	1155.478
THURSDAY	1109.762
FRIDAY	1151.554

   (Source: BSE INDEX values)
By analyzing the 5 years closing price of BSE index, average returns on all week days are positive.
Average price of Monday is less when compared to others, though not negative. It shows the presence of
weekend effect in BSE Index to a minimal extent.

4.1.2 Turn of the Month Effect
Turn of the month effect =
   (closing price of last trading day + first 3 trading days of next month) –   closing price of rest of the
days

Calculation
Change = Average of the turn of the month – Average of the rest of the days
 Closing prices of the Turn of the month and rest of the days were calculated for each month and the
change caused hence for 5 years from 2008 to 2012 was estimated .Further t test was done to check the
turn of the month effect. The values of t test for the turn of the month effect is reproduced in the
following table.

Table 2 Probability Values of Independent Sample T Test to Check Turn Of the Month Effect

Year	Difference b/n turn of the month &rest of the days	t value	probability values
2008	-292.8	-0.23	0.8213
2009	352.16	0.27	0.7883
2010	65.82	0.11	0.9118
2011	392	1.04	0.308
2012	193	0.47	0.6408

(Source: BSE INDEX values)
It can be inferred that a positive difference in the mean closing prices of turn of the month and rest of days indicates the presence of turn of the month effect in 2009,2010,2011,2012 but not statistically significant as the probability values are greater than 0.05

4.1.3 Turn of the year effect
Theory says that Turn of the effect reflects in both Price and Volume. So both values of 5 years data (2008-2012) are taken for the study.
Table 3

TURN OF THE YEAR =

   REFLECTING DAYS (First week of January + last two weeks of December) – REST OF THE DAYS

Price analysis

Table 3 Price Analysis				
Year	Rest of months	Turn of the year	Change	%
2008	14073.99	16952.4	2878.41	20.45
2009	13800.14	12191.14	-1609	-11.66
2010	18168.58	18460.59	292.01	1.61
2011	17738.37	18387.11	648.74	3.66
2012	17652.12	17064.97	-587.15	-3.33

  (Source: BSE INDEX values)
It can be seen that there is no consistent pattern in the turn of the year effect. During 2008, 2010, and 2011, turn of the year values are greater; whereas in the other years, it is lesser.
H_0= There is no Turn of the Year effect H_1= There is Turn of the Year effect
Table 4 Hypothesis Test (using independent sample t-test)

	Difference b/n Turn of the year and rest of the months	t value	probability values
	-324.6013	-0.22	0.8341

The t-test indicates that there is no statistically significant turn of the year effect, as the prob. Value of the test test is more than 0.05. .

Table 5 Volume Analysis

Volume Analysis`				
Year	**Rest of year**	**Turn of the year**	**Change**	**%**
2008	1664.19	1610.046	-54.1443	-3.25349
2009	1622.384	1540.161	-82.2227	-5.06802
2010	923.7271	1082.042	158.3149	17.13871
2011	743.1015	883.8053	140.7038	18.93467
2012	600.262	511.7493	-88.513	-14.746

(Source: BSE INDEX values)

No consistent pattern in the turn of the year effect can be observed. In 2010 & 2011, turn of the year values are higher.

Hypothesis test

H_0= There is no Turn of the Year effect

H_1= There is Turn of the Year effect

Table 6 Hypothesis Test

	Difference b/n Turn of the year and rest of the months	**t value**	**probability values**
	-14.8278	-0.05	.9622

It shows there is a minimal presence of the turn of the year effect..Since P-value = .9622 > .05 it is not statistically significant. There is no Turn of the Year effect statistically proven.

4.2 Stock Split Effect

Before and after a company announces a stock split, the stock price normally fluctuates. The increase in price is known as the stock split effect. In order to check this effect group of companies which announced stock split is selected.

Calculation of Stock Split Effect

In order to find out the effect of stock split in stock price of Bajaj Corporation the index price had categorized into two:

Effect days' Close Price includes closing price of 1 week before stock split, after stock split and stock split day.

Rest of the days' closing price includes 15-20 days before stock split and after stock split (excluding the weeks taken).

135

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Closing prices of effect days and rest of the days were calculated and independent sample t test was undertaken to find out the impact of stock split

Table 7 Probability Values of Independent Sample T Test of Companies Declared Stock Split

Company	t value	p-value (two tailed)
Bajaj Corp Ltd	-0.12	0.9027
HDFC Bank Ltd	1.72	0.0909
JINDAL Steel & Power Ltd	-4.33	0.0001
ORIENTAL Hotels Ltd	0.32	0.7533
TATA steel Ltd	-0.3	0.7656

Generally it can be inferred that there is no significant impact of stock split in the share price of the selected companies except for Jindal steel, where there is significant impact of stock split effect in share price

I.   Inferences
From the analysis of data, the following inferences may be drawn.
1. The existence of Market Anomalies in Indian market is true.
2. Its effect is less compared to foreign market.
3. The presence of Monday Effect is reflected in Indian market conditions between the years of Jan 2008 to Dec 2012 BSE index values.
4. The effect of Turn of the Month is not significantly proved though the effect is minimally visible.
5. Though there is difference noted between the Turn of the Year and rest of the months indicating Turn of the Year effect, but not proven statistically.
6. Stock split effects for the 5 companies were analyzed, for which 4 companies results didn't substantiate the effect.
7. Jindal steel company exhibits an effect of stock split in their stock price movement.

II.   Implications & Conclusion
The study mainly tests the existence of the market anomalies in the Indian market by comparing averages of the mean of the index values of BSE index from the year Jan 2008 to Dec 2012. The weekend effect was proved in Indian stock market. Turn of the month effect and Turn of the year effect are minimally visible but not statistically proven for the analyzed period. Stock split effect testing was proved negative except for Jindal steel.

Experts say that there is a presence of some other effects like Monsoon effect which means increase in the volume and price of shares in monsoon season. Also March effect, festival effect and political changes effect exists in Indian market. However Indian market needs to be evaluated in depth to prove such effects as proven in foreign markets. Such studies will add value to the potential   investors in making right investment decisions and ensure accelerated growth in the security market.

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