Day of The Week Effect in Indian Stock Market

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Abstract— The study tries to investigate the existence of the day of the week effect in Indian Stock Market. The study utilizes the Daily return data of the Bombay Stock Exchange’s Sensex Index and National Stock Exchange’s Nifty Index for the period ranging from April 2015 to March 2016 for analysis. The collected secondary data are analyzed by applying Descriptive statistics and Ordinary Least Square (OLS). The results of the study confirm the existence of seasonality in stock returns in India and prevalence of the day of the week effect in Indian Stock Market.

Keywords: Indian Stock Market, Day of the week effect, BSE Sensex Index, NSE NIFTY Index and Efficient Market Hypothesis

I. INTRODUCTION

Stock market plays a vital role for the economic development of a country, by properly channeling the funds for productive purpose. The proposition that a well-regulated stock market extends significant economic services is now widely accepted and recognized by various academicians. Stock market assists economy as well as individual investors by mobilizing the scarce resources and allocation in those sectors, which employ them optimally. Stock market assists individual investors by providing continuous market for securities. From economic point of view, a well-developed stock market has been considered requisite for economic growth as well as improvements in country’s productivity. The progress of a country can be judged by ascertaining the stock market indicators like liquidity, asset pricing and turnover. In addition, by ensuring a free and fair trading of stocks and performance of pricing mechanism, by ensuring a suitable return on investment will ensure viable investment opportunities, in the stock markets acts as a driving force for channeling savings into profitable investment and hence, ensures an optimal allocation of capital. In recent years, there has been greater distress in the midst of shareholders, portfolio managers and researchers concerning about the behavior of stock market prices. The investors are eager to earn a higher rate of return on their investments. Hence, in order to satisfy investor’s expectations, the portfolio managers have to look at the stock market conditions keenly and accordingly advise investors and to construct a sound portfolio. Our country is believed to be as one of the fastest up-and-coming markets in the world with a well-established stock market with a long history of organized trading in securities. Over the last few years, advanced technology and online based transactions have modernized the stock exchanges whereas, in terms of the number of companies listed and total market capitalization, the Indian capital market is considered large relative to the country’s stage of economic development.

The standard assumption in EMH theory is that the distribution of stock returns is indistinguishable for all weekdays, however, stock market closes down during Saturday and Sunday. This break affords the possibility of day-of-the-week effect; example some weekday is different from other weekdays in the stock market. If the day-of-the-week effect exists, some investors can take an abnormal profit from it to make arbitrage.

II. STATEMENT OF THE PROBLEM

If the market is not efficient, there will exists some market efficiency anomalies, then the investors can gain some abnormal returns by using well planned strategies within the market. A big boom has been witnessed in Stock Markets in recent times. A large number of new players have entered the market and trying to gain market share in this fast improving market. Study of Day of the week effect assist the investors in taking advantage of the irregularity of information in the market. Investors may have chances to make use of the calendar anomalies to earn abnormal return.

III. REVIEW OF LITERATURE

Ankur Singhal, Vikram Bahure (2009) in their study entitled “Week End Effect of Stock Returns in the Indian Market “found that delay between the trading and settlement period, complex effects of holidays on daily returns and effect of investor expectations leads to day of the week effect; Ash Narayan Sah (2009) in his study entitled “Stock Market Seasonality: A Study of the Indian Market “confirmed that the day of the week effect present in Nifty and Junior Nifty returns. Ashish Garg, B.S.Bodla and Sangheeta Chhabra (2010) in their study entitled “Seasonal Anomalies in Stock Returns: A Study Developed and Emerging Markets” found that day of the week effect exists in Indian stock market and not exists in US market. Allan Muchemi Kuria and Dr. George Kamau Riro (2013) in their study entitled “Stock Market Anomalies: A Study of Seasonal Effects on Average Returns of Nairobi Securities Exchange” found that the existence of day of the week effect in Nairobi Securities Exchange. Archana, S. Mohammed Safeerand Dr.S. Kevin (2014) in their study entitled “A Study on Market Anomalies in Indian Stock Market “proves that the day of the week effect does exists in Indian stock market (i.e.) stock prices tend to decrease on Monday, then closing stock prices on previous Friday. Catherine Kalayaan S. Almonte (2004) in his study entitled “The Day-of-the-week effect in the Philippine Stock Market” observed that the day-of-the-week effect exists in the Philippine stock market as confirmed by result of the Kruskal-Wallis H test. Therefore, the Philippine stock market showed some form of market inefficiency. Daniel Cohen and Robert Taylor (2012) in their study entitled “The Disappearance of the Day of the Week Effect: Evidence from the London Stock Exchange” confirmed there was a day of the week effect on the London Stock Exchange. Volatility has increased on Monday then the disappearance of the day of the week effect and volatility decreased on Thursday. The reason for the disappearance is not known but it may have been caused by more sophisticated trading practices, which
allowed investors to exploit opportunities caused by the day of the week effect leading to their disappearance. Dragan Tsvdovski, Martin Mihajlov and Igor Sazdovski (2012) in their study entitled “The Day of the Week Effect in South Eastern Europe Stock Markets” proves that the day of the week effect is found only in Croatian and Bulgarian Stock Market. The day of the week effect does not exist in Bosnia, Herzegovina, Macedonia and Serbia. Elena Valentina Ilica and Drago Oprea (2014) in their study entitled “Seasonality in the Romanian stock market: the-day-of-the-week effect” confirmed that the day of the week effect is present on the Romanian stock market due to the existence of seasonality in the risk-return relationship. Faryad Hussain, Kashif Hamid, Rana Shahid Imdad Akash and Majid Imdad Khan (2011) in their study entitled “Day of the Week Effect and Stock Returns: (Evidence from Karachi Stock Exchange-Pakistan)” proves that day of the week effect does exist in Karachi stock exchange – Pakistan. Returns on Tuesday are more volatile over other days. Empirical results of the study show that the assumption of the “EMH” is violated in different days’ domain.

A. Objectives Of The Study:
To identify the existence of the Day of the Week Effect in Indian stock market

B. Research Methodology:
Data required for the study is secondary in nature. Secondary data collected from BSE and NSE web portal for the period ranging between April 01st 2015 and March 31st 2016

C. Framework Of Analysis:
The collected data have been analysed by making use of Descriptive statistics like as Mean, Standard deviation, Variance, Skewness, Kurtosis and Shapiro-Wilk test and Ordinary Least Squares Regression (OLS)

D. Limitation:
Considering the continuity of data, only BSE Sensex and NSE Nifty Index have been selected for the study. Hence, utmost care is to be exercised while generalizing the result.

IV. ANALYSIS AND INTERPRETATION

<table>
<thead>
<tr>
<th>Source</th>
<th>Database collected from BSE web portal and computed.</th>
</tr>
</thead>
</table>

High mean returns were noticed during Friday (0.2316) and low mean returns were found during Monday (-1.218). While comparing to variance, high level of volatility was noticed on Monday (1.763) and low level of volatility was noticed on Friday (0.834).

Result of the Skewness test disclosed that positive value and it was noticed during Tuesday returns (0.521), which implies that most of the Tuesday returns were more than the average returns. The other day’s returns were found negative skewness, which implies that most of the other day’s returns were less than the average returns. The Kurtosis result of the BSE SENSEX index returns were found leptokurtic on Monday returns (6.280). Since, Kurtosis values are greater than 3, thus, it is inferred that the level of risk associated with the Monday returns of the BSE SENSEX index returns was high, which means investors may obtain either high level of profit or loss. The other day’s returns were found platykurtic. Since, Kurtosis values are less than 3, thus, it is inferred that the level of risk associated with the other day’s returns of the BSE SENSEX index returns was low, which means investors may obtain either low level of profit or loss.

As the calculated P value of the Shapiro-Wilk test is less than 0.01, it is clearly proved that the data are not normally distributed. Hence, anomaly exists in the BSE SENSEX index returns.

<table>
<thead>
<tr>
<th>Mean</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>-0.099</td>
<td>-0.0274</td>
<td>0.0025</td>
<td>-0.0045</td>
<td>0.232</td>
</tr>
<tr>
<td>Std. Deviation</td>
<td>1.334</td>
<td>1.043</td>
<td>1.044</td>
<td>0.990</td>
<td>0.927</td>
</tr>
<tr>
<td>Variance</td>
<td>0.18</td>
<td>0.111</td>
<td>0.11</td>
<td>0.10</td>
<td>0.009</td>
</tr>
<tr>
<td>Skewness</td>
<td>-1.446</td>
<td>0.414</td>
<td>-3.75</td>
<td>-6.94</td>
<td>-2.24</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>6.178</td>
<td>2.304</td>
<td>-3.70</td>
<td>1.685</td>
<td>-0.18</td>
</tr>
<tr>
<td>Minimum</td>
<td>-0.59</td>
<td>-0.24</td>
<td>-0.27</td>
<td>-0.33</td>
<td>-0.21</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.26</td>
<td>0.34</td>
<td>0.20</td>
<td>0.20</td>
<td>0.20</td>
</tr>
<tr>
<td>Shapiro-Wilk</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Table 2: NSE Nifty Index – Descriptive statistics
High mean returns were noticed during Friday (0.232) and low mean returns were found during Tuesday (-0.0274). While comparing to variance, high level of volatility was noticed on Monday (0.018) and low level of volatility was noticed on Friday (0.009).

Result of the Skewness test disclosed that positive value and it was noticed during Tuesday returns (0.414), which implies that most of the Tuesday returns were more than the average returns. The other day’s returns were found negative skewness, which implies that most of the other day’s returns were less than the average returns. The Kurtosis result of the NSE NIFTY index returns were found leptokurtic on Monday returns (6.178). Since, Kurtosis values are greater than 3, thus, it is inferred that the level of risk associated with the Monday returns of the NSE NIFTY index returns was high, which means investors may obtain either high level of profit or loss. The other day’s returns were found platykurtic. Since, Kurtosis values are less than 3, thus, it is inferred that allows investors to exploit opportunities caused by the day of the week effect leading to their disappearance.
the level of risk associated with the other day’s returns of the NSE NIFTY index returns was low, which means investors may obtain either low level of profit or loss.

As the calculated P value of the Shapiro-Wilk test is less than 0.01, it is clearly proved that the data are not normally distributed. Hence, anomaly exists in the NSE NIFTY index returns.

A. Determinants Of Day Of The Week Effect - Ordinary Least Squares Regression (OLS):

To measure day of the week effect, OLS is employed. Friday return is introducing as dependent variable and rest of the days namely Monday, Tuesday, Wednesday and Thursday are considered as independent variables.

<table>
<thead>
<tr>
<th>Determinants Of Day Of The Week Effect</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>const</td>
<td>0.231221</td>
<td>0.13985</td>
<td>9</td>
<td>1.653</td>
</tr>
<tr>
<td>Monday</td>
<td>0.178778</td>
<td>0.10141</td>
<td>9</td>
<td>1.762</td>
</tr>
<tr>
<td>Tuesday</td>
<td>-0.041215</td>
<td>0.14444</td>
<td>8</td>
<td>-0.285</td>
</tr>
<tr>
<td>Wednesday</td>
<td>0.045892</td>
<td>0.12899</td>
<td>3</td>
<td>0.355</td>
</tr>
<tr>
<td>Thursday</td>
<td>0.279651</td>
<td>0.13483</td>
<td>9</td>
<td>2.074</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.181343</td>
<td>Adjusted R-squared</td>
<td>0.0994</td>
<td></td>
</tr>
<tr>
<td>F(4, 40)</td>
<td>2.215123</td>
<td>P-value(F)</td>
<td>0.0845</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: Determinants of Day of the Week Effect BSE Sensex Index

The result of OLS disclose that Thursday return is found to be significant at 5 per cent level.

B. Thursday:

The regression coefficient indicates that Thursday returns positively influences Friday returns. The value of the regression coefficient indicates that a unit of increase in Thursday return shall increase Friday return by 0.273 units. Higher rate of return on Thursday leads to a higher rate of return on Friday.

The value of R2 is found to be significant at five per cent level. This shows that the regression equation framed is a good fit. Around 17.42 per cent of variation in Friday return is due to the select variable.

<table>
<thead>
<tr>
<th>Determinants Of Day Of The Week Effect</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-ratio</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>const</td>
<td>0.023425</td>
<td>0.01424</td>
<td>95</td>
<td>1.644</td>
</tr>
<tr>
<td>Monday</td>
<td>0.175955</td>
<td>0.10288</td>
<td>2</td>
<td>1.710</td>
</tr>
<tr>
<td>Tuesday</td>
<td>-0.028553</td>
<td>0.14394</td>
<td>2</td>
<td>-1.948</td>
</tr>
<tr>
<td>Wednesday</td>
<td>0.049670</td>
<td>0.13220</td>
<td>4</td>
<td>0.375</td>
</tr>
<tr>
<td>Thursday</td>
<td>0.273095</td>
<td>0.13448</td>
<td>3</td>
<td>2.030</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.174255</td>
<td>Adjusted R-squared</td>
<td>0.09168</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Determinants of Day of the Week Effect NSE Nifty Index

The result of OLS disclose that Thursday return is found to be significant at 5 per cent level.

C. Thursday:

The regression coefficient indicates that Thursday returns positively influences Friday returns. The value of the regression coefficient indicates that a unit of increase in Thursday return shall increase Friday return by 0.273 units. Higher rate of return on Thursday leads to a higher rate of return on Friday.

The value of R2 is found to be significant at five per cent level. This shows that the regression equation framed is a good fit. Around 17.42 per cent of variation in Friday return is due to the select variable.

V. FINDINGS

1) BSE Sensex and NSE Nifty index highest mean return was noticed in the Friday.
2) BSE Sensex index lowest mean return noticed in the Monday and NSE Nifty index lowest mean return noticed in the Tuesday.
3) BSE Sensex and NSE Nifty index high volatility was noticed on Monday and low level of volatility was noticed on Wednesday.
4) Skewness test discloses that BSE Sensex and NSE Nifty index returns were found positive in Tuesday, whereas negative returns are noticed in the rest of the days.
5) The Kurtosis of BSE Sensex and NSE Nifty index returns were found leptokurtic in Monday returns. The other day’s returns were found platykurtic.
6) Shapiro-Wilk test clearly proved the BSE Sensex and NSE Nifty index data are not normally distributed.
7) The value of R2 is found to be significant at one per cent level. This shows that the regression equation framed is a good fit. BSE Sensex 18.13 per cent and NSE Nifty of 17.42 per cent variation in Friday return is due to the select variables.
8) The result of OLS disclose that BSE Sensex and NSE Nifty index Thursday return is found to be significant at the 5 percent level and Tuesday return is found to be significant at the 1 percent level.

VI. SUGGESTIONS

It is necessary for the Indian Investors to cautiously study the publicly available information, because it plays a major role in analysing the Market Efficiency and variations in the market. From the analyses of the Day of the Week, it is suggested that investors may buy the BSE Sensex index shares on Monday and NSE Nifty index shares on Tuesday and sell them on Friday because they may get better returns than on other days. We recommend that the user of this report to do exercise before taking investment decision not based on this report. The above outcome is based on a statistical tool used for analysing the anomalies in the BSE Sensex and NSE Nifty index. There are various other factors to be considered before investing. We suggest that investors could experiment the above strategy, to start with, on small stocks.
and extend the same on blue-chips based on the risks and rewards.

VII. CONCLUSION
The research of the study raises questions on the efficient market hypothesis which states that stock prices are random, and that investors cannot make abnormal profits using historical prices. The day of the week effect patterns in return and volatility can enable investors to take advantage of relatively regular market shifts by designing and implementing trading strategies, which account for such predictable patterns. The existent theories are inadequate in modelling stock market. The stock market is full of anomalies. If the market is not efficient, then investors can make profit by analysing the historic data. By digging in to vast data you can unearth many inefficiencies which can be to make in to high returns. By finding these inefficiencies you can make the system more efficient.

REFERENCES