CAPITAL MARKET REACTION AROUND THE STOCK SPLITS AND BONUS ISSUES: EVIDENCE FROM SOME INDIAN IT STOCKS

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Abstract:

Over the years relationship between bonus issues or stock splits & stock prices has been the subject of much empirical discussion within the finance literature. According to theory, bonus issues increase the number of equity stocks outstanding but have no effect on stockholder’s proportional ownership of stocks. The bonus issue or stock splits date is known well in advance and therefore should contain no new information. As such, one would not expect any significant price reaction on bonus issue or stock splits announcement. Contrary to this theoretical prediction, however empirical studies of bonus issues and stock splits have documented a statistically significant market price reaction. It is therefore a matter of concern that firms announcing bonus issues & stock splits experience rise in their stock prices on an average supporting semi-strong form Efficient Market Hypothesis (EMH).

Generally the investigation of semi-strong form market efficiency has been limited to the study of well developed stock markets. The aim of this paper is to examine the stock price reaction to information release of bonus issues or stock splits with a view of examining whether the Indian stock market is semi-strong efficient or not. The event study methodology (Dolley 1993, Fama et al. 1969 and Brown & Warner 1980, 1985) has been used to contribute further evidence on the efficiency characteristics of the Indian stock market.

Key Words: Stock Split, Bonus Issues, Efficient Market Hypothesis (EMH)
Introduction:

In an efficient market, the market value of a firm’s equity should be independent of the number of shares it has outstanding. Therefore one should expect to see no change in the distribution of stock returns around the announcement date of stock splits or bonus issues. The ex-date for a stock split or bonus issue should simply involve a change in the number of shares outstanding along with a change in the level of the stock price. There should be no change in the distribution of stock returns around announcement dates of stock splits or bonus issues.

Stock splits and bonus issues (stock dividends) continue to generate interest as none of them have any direct valuation implications. As such these events are sometimes described as ‘cosmetic’ events as they simply represent a change in the number of outstanding shares. The reason for the interest is therefore to understand why managers would undertake such (potentially costly) cosmetic decisions.

Previous research has documented changes in stock return distributions. Researchers have proved abnormal returns around announcement days and ex-dates of splits or bonus issues. Several researches have also proved the occurrence of short-term excess returns following stock splits. In addition to changes in the distribution of stock returns around ex-dates of stock splits, some experts through their research have showed that stock return volatilities jump significantly after stock splits as well and that these volatility changes hold for more than a year subsequent to the split ex date.

While these facts stand, there is no convincing theory that affirmatively explains why companies continue to bonus issue or split their stocks, and furthermore the cause and effect of the increase in stock return volatility following the split or bonus issue ex-date remains uncertain. In recent years, several Indian companies, too, have resorted to stock splits. As the subject has not received much attention amongst researchers in India, there is very little understanding on the effects of stock splits in the Indian context.

Empirical research has shown that the market generally react positively to the announcement of a stock split / bonus issue (Foster and Vickrey (1978), Woolridge (1983), Grinblatt et al (1984), McNichols and Dravid (1990), Masse et al (1997), Lijleblom (1989), Bar-Yosef and Brown (1977)). Numerous studies in India have dealt with the information content of various types of announcements (Ramachandran (1985), Obaidullah (1992), Rao (1994), Rao and Geetha (1996), Srinivasan (2002), Budhraja I, Parekh P and Singh T (2004), and Mishra (2005). However, no contemporary study has investigated the comparative information content of the stock split and stock dividend (bonus issue) announcements in Indian context. This deficiency provided the primary impetus for this study.

Therefore, this research dissertation has been conducted to analyze and interpret whether there are any abnormal return during stock split or bonus issues in the context of IT stocks of NSE listed companies.
Reviews of Literature:

Lifan Wu and Bob Y. Chan (1997) in their paper titled “On Existence of An Optimal Stock Price: Evidence from Stock Splits and Reverse Stock Splits” analyzes a sample of stock splits and reverse stock splits on the Stock Exchange of Hong Kong (SEHK) over the period 1986 through 1992. Consistent with studies on stock splits and reverse stock splits made in the U.S. capital markets, the analysis shows that stock splits are associated with a positive and significant stock market response while reverse stock splits are associated with a negative but statistically insignificant price effect. The researchers also investigated the “optimal price range” hypothesis, which states that firms choose the split factor (SF) as a device to return the stock price to a “preferred price range.”

Patrick Dennis & Deon Strickland (1998) in their paper titled “The effect of stock splits on liquidity: Evidence from shareholder ownership composition” states that the traditional view of stock splits as cosmetic transactions that simply divide the same pie into more slices is inconsistent with the significant wealth effect associated with the announcement of a stock split.

M. L. Barnes and S. Ma (2001), in their paper titled as “Market Efficiency or Not? The Behaviour of China’s Stock Prices in Response to the Announcement of Bonus Issues” shows that issues with a high bonus ratio (number of bonus shares in the issue/number of existing shares) usually attract positive returns and the issues with a low bonus ratio are rewarded with negative returns. The A-shares’ and B-shares’ prices exhibit some similarities in their reactions to bonus issues’ approvals. The hypothesis of semi-strong form market efficiency is rejected only partly for China’s stock markets.

Nickolaos Travlos,. & Nikos Vafeas, (2001) in their paper titled “Shareholder Wealth Effects of Dividend Policy Changes in an Emerging Stock Market: The Case of Cyprus” examines the stock market reaction to announcements of cash dividend increases and bonus issues (stock dividends) in the emerging stock market of Cyprus. Both events elicit significantly positive abnormal returns, in line with evidence from developed stock markets. The study contends that special characteristics of the Cyprus stock market delimit applicability of most traditional explanations for cash and stock dividends in favour of an information signaling explanation. The empirical results are generally inconsistent with these contentions (JEL G34).

Yılmaz, Işıl Sevilay & Seza Danışoğlu Rhoades (2003), in their paper titled “An analysis of stock splits in the Istanbul Stock Exchange” tested the validity of the trading range hypothesis as a basis for stock split decisions of Turkish companies. In the first part, the liquidity effects of stock splits on Turkish stocks are examined. Second, the optimal trading ranges for different-sized firms and firms with different investor bases are determined. Finally, the main empirical question of the study is analyzed by testing whether or not Turkish firms whose share prices rise above their optimal trading ranges are more likely to split their stock compared to firms whose share prices are at or below their optimal trading ranges.

latundun Janet Adelegen (2004) in their paper titled “Capital Market Efficiency and the Effects of Dividend Announcements on Share Prices in Nigeria” states that an efficient market is one in which prices fully reflect available information. An implication of an
efficient market is that no excess returns can be made from this information because current prices already reflect the information.

Yoon Chung Sin, Mohd Ariff\(^7\) (2005) in the paper “Corporate Spin-offs and the Determinants of Stock Price Changes in Malaysia”, the study appraises the impact of Spin off decisions in addition to the determinants of share price movement for Malaysian listed companies between 1986 to 2002. The empirical evidence from a sample of 85 Spin-offs shows positive and affirmative announcement effects on stock prices. The parent of the Spin-off companies encounters positive abnormal returns for the two days before and after the announcement day while the Spin-off companies experience comparable effect after the listing date. The analysis is done over a period of 100 days prior and 50 days subsequent to the announcement day. The findings reveal that only Market Capitalization and Age factors are significant to the market price variation. The Cumulative Abnormal Returns surrounding the spin-off announcement day is positively correlated to the Market Capitalization but negatively correlated to the Age. In conclusion, this study validates that the impact of the returns is determined by the size and conventional age of the companies.

Jorge Farinha & Nuno Filipe Basílio, Universidade do Porto\(^8\) (2006) in their research paper titled “Stock Splits: Real Effects or Just a Question of Maths? An Empirical Analysis of the Portuguese Case” states that Stock splits are conceptually a very simple corporate event that consists in the division of each share into a higher number of shares of smaller par value.

Mark Norton\(^9\) (2008), in the paper “Market Reaction to Announcements of Dividend Increases: Is it Weakening With Time?”, tried to examine the market’s reaction to announcements of dividend increases. The objective is to find whether the market reaction to dividend increases has weakened with the passage of time and whether market conditions affect the reaction. Eventually, this study is expected to reveal whether dividends continue to be important to investors. In addition, this study explores the theoretical factors that may affect dividend valuation.

Cahit Adaoglu & M. Ameziane Lasfer,\(^10\) (2008) in the paper titled “The Market Valuation of Bonus Issues in an Inflationary Environment” shows that assesses the market valuation of an unusual form of free stock distributions called bonus issues which are mainly financed by the revaluations of assets equity reserve in an inflationary economic setting.

The paper “The Impact of Stock Splits on Price and Liquidity on the Stock Exchange of Thailand” by Pantisa Pavabutr, & Kulpatra Sirodom,\(^11\) (2008) explores the impact of stock splits on stock price and various aspects of liquidity using daily and intraday data from the Stock Exchange of Thailand between 2002-2004. We provide evidence that reductions in trade frictions and increases in split-adjusted price levels are associated with the size of split factors and post-split trading range. Stocks with high split factors have better post-split adjusted price performance and lower trade bid-ask spreads and price impact. The empirical findings lend support to the trading range hypothesis of stock splits.

Man Ana-Maria in the paper titled “Stock Dividend Impact on Stock Prices An Event Study on the Romanian Capital Market”\(^12\) (2009) states that at a first glance, it is usually asserted that stock dividends, just like stock splits are only cosmetic events. This paper examines the effects of stock dividend announcements on the Romanian stock market using evidence on
listed companies on the RSE during 1998 – 2008 and the results obtained are consistent with previous studies conducted on emerging markets and not only, stating that there is significant non-zero cumulated abnormal return clustered closely around the event day.


Humera Shahid, Xia Xinping, Faiq Mahmood, Muhammad Usman 14 (2010), in the paper titled “Announcement Effects of Seasoned Equity Offerings in China” states that by taking a longer period (1998-2008) this study examines the stock price reaction to the announcement of different equity issues in China. Initially, the study documents the announcement effects of Right issues and Public Offerings (SEOs).

Dr. Josiah Omollo Aduda & Chemarum Caroline S.C 15 (2010) in the paper “Market Reactions to Stock Splits: Empirical Evidence from the Nairobi Stock Exchange” states that there are several theories that have been advanced to explain why companies split their stock. The most common ones are to achieve an optimal price range for liquidity, to achieve an optimal tick size and to signal managements’ confidence in the future stock price.

Mohamed Ariff and Frank J. Finn 16 (2010) in the paper “Announcement effects and market efficiency in a thin market: An empirical application to the Singapore equity market” states that studies of share price responses to public announcements have assumed that there is no serious thinness in trading. The paper reports the findings of a study of price responses of thinly-traded shares in the Singapore equity market.

**Studies conducted India:**

Vijaya B. Marisetty, Alastair Marsden & Madhu Veeraraghavan 17 (2007) undertook a study titled “Price reaction to rights issues in the Indian capital market”, to examine securities price reaction to announcements of rights issues by listed Indian firms during the period 1997–2005. The result shows a positive but statistically insignificant price reaction to such announcements. The price reaction is significantly more negative for firms with a family group affiliation compared to firms with no family group affiliation. The notable differential price reaction between firms with and without a family group affiliation can be explained by the “tunneling hypothesis.” For firms affiliated with a family group, we surmise that investors perceive that the proceeds of the rights issue may be misused for the benefit of the controlling shareholder.

Madhuri Malhotra, M. Thenmozhi, G Arun Kumar 18 (2007), in their paper titled “Stock Market Reaction and Liquidity Changes Around Bonus Issue Announcement: Evidence from India” by (2007), examines share price reaction to the announcement of bonus issue for a sample of Indian companies. Standard event study methodology has been used for the purpose of studying the Bonus issue announcement reaction. Bonus issue announcement yields negative abnormal returns around the announcement date. There is a negative reaction after the bonus issue announcement conveying that the market under reacts after the announcement. It is also observed that there is no information leakage prior to the announcement.
The paper “Dilemma of Corporate Action: Empirical Evidences of Bonus Issue vs. Stock Split” by Srinivas Shirur, 19 (2008), analyses the reasons for the issue of bonus shares and stock splits. An effort is made to find distinguishing conditions under which a company has to decide whether to issue bonus shares or to go for stock splits. Five variables have been considered for the study, viz., rate of growth of sales, profit and share price, and beta and promoter stake. Effort has been made to explore whether there is any significant difference in these variables as applicable to stock split and bonus shares. The study was initiated with the hope that a predictive model could be developed for predicting corporate actions likely to be initiated by the companies. The study reveals that top management of the companies decide to issue bonus shares when the investors undervalue the company while they go for stock split when the investors overvalue the company for a long time and promoters have to step in to correct these anomalies.

Mihi Dash & Amaresh Gouda 20 (2008) in the paper titled “A Study on the liquidity effects of stock splits in India Stock Market” states that Stock splits are a relatively new phenomenon in Indian markets, especially since early 2005 with the bull phase in Indian stock markets, with many companies’ stock prices shooting far beyond the normal trading range. The objective of the study is to analyze the overall impact of stock splits on returns. To do so, the returns in the period prior to the announcement are compared with the returns after the execution of the split, in terms of mean returns and variance of returns. The results of the study indicate strong evidence for an increase in the liquidity of the stock after the split.

The paper titled “Market Reaction Around the Stock Splits and Bonus Issues: Some Indian Evidence” by Dr. Satyajit Dhar, & Ms. Sweta Chhaochharia, 21 (2009), states that it is often argued that stock splits and bonus issues are purely cosmetic events. This paper examines the effects of these two types of events for the Indian stock market. The abnormal returns are calculated using the Capital Asset Pricing Model and then t-tests are conducted to test the significance. Consistent with the existence literatures, the two events are associated with significantly positive announcement effect. For bonus issues, the abnormal returns were about 1.8% and for stock splits, it was about 0.8%. On a whole, the paper finds evidence of semi-strong form efficiency in the Indian stock market.

In the paper “Testing the Semi-Strong form Efficiency of Indian Stock Market with Respect to Information Content of Stock Split Announcement – A study in IT Industry” by M.Raja, J.Clement Sudhahar & M.Selvam 22 (2009) states that An efficient market as a market in which price fully reflect all information. This means that no possibility exists of making sustainable excess returns and the prices follow a random walk.

The paper titled “Testing Semi-Strong Form of Efficient Market Hypothesis in Relation to the Impact of Foreign Institutional Investors’ (FII’s) Investments on Indian Capital Market” by Prof. A.Q Khan and Sana Ikram 23 (2010) tests the efficiency of the Indian Capital Market in its semi-strong form of Efficient Market Hypothesis (EMH). The efficiency is tested in relation to the impact of Foreign Institutional Investors (FII’s) largely on the Indian Capital Market. The results suggest that the FII’s do have significant impact on Indian Capital Market, which leads to the conclusion that Indian Capital Market is semi-strong form efficient.
The paper “Effect of Stock Splits on Price and Return of the Stock” by Sumit Kumar Singh (2010) states that Stock Splits essentially serve the purpose of rationalizing the share price and fundamentally have no relation with company’s performance. Stock splits reduce the share price by split factor and increase the outstanding shares by the same. Hence, the performance of the stock in terms of price, liquidity and volume should have no relation with stock split.

**Research Methodology:**

**Statement of the problem**

In a perfect market, the market value of a firm's equity is independent of the number of shares outstanding. Therefore the stock split or bonus issue should simply involve a change in the number of shares outstanding along with a change in the level of the stock price. There should be no change in the distribution of stock returns around announcement date, ex-dates of bonus issue (stock dividends) and stock splits.

Previous few researches had found that there are no abnormal stock returns around announcement date & few researches had found that there are abnormal stock returns around announcement date of stock splits or bonus issues.

**Objectives of the study**

The present study has been undertaken with the following objectives:

- The prime concern of this paper is to analyse the information impact of the announcement of stock split and bonus issue for IT stocks listed on National Stock Exchange (NSE).
- To examine the effects of bonus issue or stock splits on equity (stock) prices & returns of the companies of Indian IT sector companies.
- To investigate whether there is any abnormal returns around the announcement date of bonus issues or stock splits.
- To investigate the changes in implied volatility of returns around, i.e. before the bonus issue/stock splits & after the bonus issue/stock splits.

**Operational definition**

- **2-for-1 split**: If the number of pre-split outstanding shares is N, after a 2-for-1 split the number of outstanding shares rises to 2*N.
- **Split Ratio**: If split ratio is x% and the number of total outstanding shares before the split is N, then the number of total outstanding shares post-split is (1+x%)*N.
- **Announcement date**: The day on which the board of directors of the company decides and announces to split the common stock of the company on a certain future date is called the announcement day. The announcement of a split is an unanticipated event in which the firm announces the size and date of the split.
- **Ex-date**: It is the date on which the stock is split. In other words the day on which the stock split is brought into effect and the price of the stock is decreased by the ratio pre-determined is termed as Ex-dates. On the split date (or split ex-date), the stock begins trading at the new, split-adjusted price.
- **Reverse Split**: A reverse split occurs when a company reduces the number of its shares
outstanding by a pre-determined value. For example, if a firm has 100 shares outstanding pre-reverse split and its reverse-split factor is 1-for-1 then the total number of shares outstanding post-event is 50. (100 / (1+1) = 50)

- **Abnormal Returns:** They are used in the context of stock returns; Abnormal Returns means the return to a portfolio in excess of the return to a market portfolio. Note that abnormal returns can be negative.
- **Bonus issues:** They are born out of an accounting quirk. When a company has retained profits, these appear on its balance sheet as 'Profit and Loss Account Reserves'. If the company has been trading profitably for some time, the reserves can far outweigh the Ordinary Share Capital of the company as a proportion of total Shareholders' Funds.

- **CAAR:** Cumulative abnormal returns
- **Efficient market hypothesis:** This is the theory that claims that the current price of a share reflects everything that is known about the company and its future earnings potential, and that is it impossible to beat the market consistently.
- **Event:** It is something that takes place - an occurrence and arbitrary point in time. The term also refers to a significant occurrence or happening, or a social gathering or activity.
- **Semi Strong Form Efficient:** It suggests that only information that is not publicly available can benefit investors seeking to earn abnormal returns on investments. All other information is accounted for in the stocks price and, regardless of the amount of fundamental and technical analysis one performs, above normal returns will not be had.

**Variables of the study**

To conduct the study of capital market reaction during bonus issue or stock splits announcements we have taken few variables. Those variables are:

- **Stock’s closing price:** The closing price of sample IT companies stock has taken from Prowess database for the entire event window i.e. t-20 day to t+20 day. We have taken the adjusted closing price. To build the market model we have also taken adjusted closing price 30days prior to event window start date i.e. t-20.
- **Nifty Closing Index:** Nifty closing index value has also been taken for the event window as well as to build the market model.
- **Abnormal Return:** They are used in the context of stock returns; Abnormal Returns means the return to a portfolio in excess of the return to a market portfolio. Note that abnormal returns can be negative.
- **Average Abnormal Return (AAR):** Daily AAR has been calculated by averaging the AR of the sample companies for each days of the event window.
- **CAAR:** Cumulative Average Abnormal Returns has been calculated by cumulating the daily AAR for the entire event window.

**Hypothesis**

**Hypothesis 1:**

- **H₀ (Null hypothesis):** There is no significant difference in abnormal returns of NSE listed IT stocks post-bonus announcement, when compared with pre-bonus announcement
- **H₁ (Alternative Hypothesis):** There is significant difference in abnormal returns of NSE listed IT stocks post-bonus announcement, when compared with pre-bonus announcement
Hypothesis 2:

$H_0$ (Null hypothesis): There is no significant difference in abnormal returns of NSE listed IT stocks post-stock split announcement, when compared with pre-stock split announcement

$H_1$ (Alternative Hypothesis): There is significant difference in abnormal returns of NSE listed IT stocks post-stock split announcement, when compared with pre-stock split announcement

**Design of the study**

The research conducted in this case is of a quantitative type of research wherein the data collected is basically of quantitative type in the form of share prices of the stocks before and after the announcement date. The share prices thus collected have been used to calculate price relatives and daily returns. The results will be presented in terms of quantitative data and interpretation of the data analysis will be done using the quantitative parameters. Thus, this research is a quantitative research.

**Sampling procedure**

The sampling technique used in this research is convenience sampling technique. NSE listed IT company has an equal opportunity of making it to the final sample. The population size is finite as the companies qualifying for the research are the companies that have resorted to stock splits or bonus issues during 2000 to 2010. I have taken those IT companies for which I got the exact announcement date from the “Ventura 1” website.

**Data and Sample**

The sample consisted of 12 stock splits and 15 bonus issues announced by companies listed on the NSE during the period of 2000 to 2010. The information on stock splits and bonus issues is collected mainly from www.ventura1.com. Additional information is taken from NSE Website. The daily security adjusted closing prices are taken from CMIE data base and Nifty index closing prices are taken from NSE Website. The event date is defined as the announcement date of the board meeting considering stock splits or bonus issues. This approach assumes that the information was first known to the market on the event date itself. In order to identify the announcement date as exactly as possible, the event dates are cross checked with the Prowess Data base maintained by CMIE.

**Explanation about the input**

**Announcement Effects**

The study used the event study methodology to examine the market reaction to bonus issues and stock splits on share prices. For this purpose, the study used daily adjusted prices for sample stocks for 20 days before and 20 days after the event date. In order to carry out an event study, we determine the event window as $t = -20$ to $t = +20$ relative to the event day $t = 0$ (date of announcement of bonus/stock split). The return on the market portfolio is proxied by the Nifty Fifty. The event window is taken as $t = -20$ to $t = -20$ relative to the event day $t = 0$. Our aim is to find whether the events have any signaling impact on the share prices. In the signaling hypothesis, it has been stated that managers often resort to bonus issues/stock splits...
in order to signal positive information about the firm. This results in a price increase after the announcement of the event. The procedure for using event study is discussed below.

**Estimation Procedure**

The purpose of our study is to determine whether there is any abnormal return around the event dates and how fast the new information is absorbed in the security prices.

For the purpose of the study, we constructed a null hypothesis ($H_0$) as follows: “There is no significant Average Abnormal Return (AAR) post announcements compare to pre-announcements for bonus issues or stock splits for NSE listed IT stocks”,

\[ \frac{1}{n} \sum AR = 0 \]

Where \( n \) is the number of sample companies.

The focus on the abnormal returns of our sample in the period over 20 days prior and 20 days after the event date. Brown and Warner (1980) reported that ‘a simple methodology based on the market model is well-specified and relatively powerful under a wide variety of conditions.’ Following Brown and Warner, we employ the market model to compute the abnormal returns that are derived from the following equation:

\[ R_{jt} = \hat{\alpha}_j + \hat{\beta}_j R_{mt} \]

Where, \( R_{jt} \) = the daily return security \( j \) at day \( t \)

\( R_{mt} \) = the daily return on Indian stock market at day \( t \)

\( \hat{\alpha}_j, \hat{\beta}_j \) = OLS intercept and slope coefficient estimators, respectively

The researcher use the Nifty fifty closing index as a proxy for computing market return. To compute daily market return, we use logarithm of daily return to avoid serial correlation.

\[ R_{mt} = \log \left( \frac{I_t}{I_{t-1}} \right) \]

The daily return for security \( j \) is:

\[ R_{jt} = \log \left( \frac{R_t}{R_{t-1}} \right) \]

\( \hat{\alpha}_j, \hat{\beta}_j \) are derived from the market model over one month prior to the event window. The expected returns for security \( j \) at day \( t \) are defined as,

\[ E_R_{jt} = \hat{\alpha}_j + \hat{\beta}_j R_{mt} \]

Where \( \hat{\alpha}_j, \hat{\beta}_j \) are OLS estimators of \((\hat{\alpha}_j, \hat{\beta}_j)\).

The researcher measured the daily abnormal return as \( AR_{jt} = R_{jt} - E_R_{jt} \).

For each event date \( t \), the cross sectional average abnormal returns for all firms are defined as:

\[ \frac{1}{n} \sum_{j=1}^{n} AR_{jt} \]

\( t = -20 \) to \( +20 \)

\( n = 15 \) for bonus issues &

\( n = 12 \) for stock splits

To analyse the price effects, we compute the Cumulative Average Abnormal Returns (CAAR) for the 41 days centered in the announcement dates. The use of CAAR is a common methodology. CAAR for event days \( t_1 \) to \( t_2 \) were obtained as follows:

\[ CAAR = \sum_{t=t_1}^{t_2} AAR_t \]
Limitations of the Study

The limitations of the study as follows:

- We have considered the announcements of NSE listed IT companies for which the announcement dates are available on www.ventural.com website.
- We did not consider the announcements of other NSE listed companies of different sectors. This may not lead to good prediction of the announcement effects of the Indian Capital market fully.
- The event window has been constructed for t-20 day to t+20 day.
- The OLS estimation of α & β of market model has been constructed for 30 trading days prior to the t-20 day of the event window.

Data Analysis:

The research conducted in this case is of a quantitative type of research wherein the data collected is basically of quantitative type in the form of share prices of the stocks before and after the announcement date. The share prices thus collected have been used to calculate price relatives and daily returns.

The results will be presented in terms of quantitative data and interpretation of the data analysis will be done using the quantitative parameters. Thus, this research is a quantitative research.

The sample is consisted of 15 bonus issue announcements & 12 stock split announcements. The stocks are chosen from NSE listed IT companies which have announced the stock splits or bonus issues during the period of 2000 to 2010. The adjusted closing price has been collected from CMIE database. The closing index value of Nifty Fifty has been collected from NSE website.

Hypothesis Testing:

In the study we considered the event window of 41 days consisting of t-20 to t+20 relative to event day t0. Event date is date of announcement of bonus or stock split. The aim of the study being exploring efficiency characteristics of the Indian stock market, it is tried to explore, whether the Average Daily Abnormal Returns are indicating any pattern or not. Further whether any sample company delivers abnormal returns on and around announcement date is also investigated.

The results of our study concerning the daily AAR of bonus issues are presented in Table 5. On the announcement date, there is positive average abnormal return of 2.08% which is having confidence level of 90%. The results of the event study concerning the daily AAR of stock split announcements are presented in Table 6. On the announcement date, there is positive abnormal return of 2.62% which is having confidence level of 95%.

Table 1 summarises the impact of bonus issues or stock splits on share price performance. We found that 75% of sample companies have positive mean return in respect of stock split whereas that for bonus issues is 53%. Hence stock splits may give an investor more return than that from bonus issues, considering entire event window. But on announcement date of bonus & stock splits the percentage of sample companies’ experienced positive return are same which is 67%. Thus on the announcement date, reaction of market participants to bonus issues & stock splits are found to be same.
Table 1: Share price performance on stock splits or bonus issues

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Bonus Issues</th>
<th></th>
<th>Stock Splits</th>
<th></th>
</tr>
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<tbody>
<tr>
<td></td>
<td>No. of</td>
<td>Percentage</td>
<td>No. of</td>
<td>Percentage</td>
</tr>
<tr>
<td>Companies having positive mean return during</td>
<td>8</td>
<td>53%</td>
<td>9</td>
<td>75%</td>
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<tr>
<td>event window</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Companies having negative mean return during</td>
<td>7</td>
<td>47%</td>
<td>3</td>
<td>25%</td>
</tr>
<tr>
<td>event window</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Companies having positive return on announcement</td>
<td>10</td>
<td>67%</td>
<td>8</td>
<td>67%</td>
</tr>
<tr>
<td>date</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Companies having negative return on announcement</td>
<td>5</td>
<td>33%</td>
<td>4</td>
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</tr>
<tr>
<td>date</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>100%</td>
<td>12</td>
<td>100%</td>
</tr>
</tbody>
</table>

(Source: Self-made)

To track abnormal returns over a number of trading days, cumulative abnormal return (CAAR) is computed throughout the event period for bonus issue and stock split separately.

Table 2 presents mean CAAR across different event windows.

<table>
<thead>
<tr>
<th>Days</th>
<th>Bonus Issue</th>
<th></th>
<th>Split Issue</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean CAAR</td>
<td>Variance</td>
<td>Mean CAAR</td>
<td>Variance</td>
</tr>
<tr>
<td>t-20 to</td>
<td>0.000577932</td>
<td>2.65062E-05</td>
<td>0.0003701207</td>
<td>0.000117418</td>
</tr>
<tr>
<td>t-1 to t+1</td>
<td>0.007178887</td>
<td>0.000371563</td>
<td>0.01650285</td>
<td>0.000188338</td>
</tr>
<tr>
<td>t+2 to t+20</td>
<td>0.00552177</td>
<td>0.00019402</td>
<td>0.015131428</td>
<td>9.98113E-05</td>
</tr>
</tbody>
</table>

(Source: Self-made)

Fig. 1 & 2 gives line graph showing CAAR over the event window. For both events we find the typical price movement. On the announcement date, there are big upward jumps and after the run up is over, there is no further drift in stock price. The pattern of CAAR of bonus issue is typical and there is significant AR around announcement date. It is found that on an average, sample stocks having bonus announcements, start showing positive AR around 13 to 14th days before the announcement date. On the other hand, CAAR of stock splits for sample stocks are positive during entire event window. It appears that companies experiencing Bull Run are resorting to stock splits. AARs far before the announcement dates are not generally significant. Post announcement AARs for bonus issues are mixed and is minutely significant from 2nd day onwards but again showing downward trends from 12th day onwards. For the
stock splits post announcement there is mixed behaviour in AAR, in few days it shows positive return & in few days it shows negative AAR. But the CAAR was in increasing trend.

**Fig 1: CAAR for Bonus Issues**

(Source: Self-made)

**Fig 2: CAAR for Stock Splits**

(Source: Self-made)

**Hypothesis Testing:**

**Hypothesis 1:**
- H₀ (Null hypothesis): There is no significant difference in abnormal returns of NSE listed IT stocks post-bonus announcement, when compared with pre-bonus announcement
- H₁ (Alternative Hypothesis): There is significant difference in abnormal returns of NSE listed IT stocks post-bonus announcement, when compared with pre-bonus announcement

To conduct this hypothesis testing AAR for the sample companies has been segregated in two parts i.e. Pre & Post bonus announcement AAR. Then paired t-Test has been done to the data series.

The result of Paired t-Test is shown below.
Table 3: Paired t-Test for Pre & Post Bonus Announcement AAR

<table>
<thead>
<tr>
<th>Variable 1</th>
<th>Variable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>-0.0005779</td>
</tr>
<tr>
<td>Variance</td>
<td>2.6506E-05</td>
</tr>
<tr>
<td>Observations</td>
<td>20</td>
</tr>
<tr>
<td>Pearson Correlation</td>
<td>-0.2839424</td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
</tr>
<tr>
<td>Df</td>
<td>19</td>
</tr>
<tr>
<td>t Stat</td>
<td>-0.3274533</td>
</tr>
<tr>
<td>P(T&lt;=t) one-tail</td>
<td>0.37345276</td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>1.72913279</td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.74690553</td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>2.09302405</td>
</tr>
</tbody>
</table>

(Source: Self-made)

**T-Statistics:** -0.3274533  
**P value (one-tail):** 0.37345276  
**Tabular T-value:** 1.729 (For 5% significance level)

**Interpretation:**
As the observed T-statistics is smaller than the Tabular T-value, we are failed to reject the null hypothesis.
The value of α (significance level) is 5%. P-value (one-tail) is 37.34% which is greater than value of α. So we are failed to reject the null hypothesis.
So we can conclude that there is no significant difference in abnormal returns of NSE listed IT stocks post-bonus announcement, when compared with pre-bonus announcement i.e. pre & post bonus announcement of NSE listed IT companies, investors would not be able to gain abnormal returns on stock prices.

**Hypothesis 2:**
- H₀ (Null hypothesis): There is no significant difference in abnormal returns of NSE listed IT stocks post-stock split announcement, when compared with pre-stock split announcement
- H₁ (Alternative Hypothesis): There is significant difference in abnormal returns of NSE listed IT stocks post-stock split announcement, when compared with pre-stock split announcement

To conduct this hypothesis testing AAR for the sample companies has been segregated in two parts i.e. Pre & Post stock splits announcement AAR. Then paired T-Test has been done to the data series.
The result of Paired t-Test is shown below.

Table 4: Paired t-Test for Pre & Post Stock Splits Announcement AAR

<table>
<thead>
<tr>
<th>Variable 1</th>
<th>Variable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.003701</td>
</tr>
<tr>
<td>Variance</td>
<td>0.000117</td>
</tr>
</tbody>
</table>
Pearson Correlation: 0.303924
Hypothesized Mean Difference: 0
Df: 19
T Stat: 0.086212
P(T<=t) one-tail: 0.4661
T Critical one-tail: 1.729133
P(T<=t) two-tail: 0.9322
T Critical two-tail: 2.093024

(Source: Self-made)

**T-Statistics:** 0.086212
**P value (one –tail):** 0.4661
**Tabular T-value:** 1.729 (For 5% significance level)

**Interpretation:**
As the observed T-statistics is smaller than the Tabular T-value, we are failed to reject the null hypothesis.
The value of α (significance level) is 5%. P-value (one-tail) is 46.61% which is greater than value of α. So we failed to reject the null hypothesis.
So we can conclude that there is no significant difference in abnormal returns of NSE listed IT stocks post-stock splits announcement, when compared with pre-stock splits announcement i.e. pre & post stock splits announcement of NSE listed IT companies, investors would not be able to gain abnormal returns on stock prices.

**Table 5:** t-value for Cross sectional AR for Event Window (Bonus Issue)

<table>
<thead>
<tr>
<th>DAY</th>
<th>AAR</th>
<th>CAAR</th>
<th>t-value</th>
<th>Sig. (2-failed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20</td>
<td>-0.00294</td>
<td>-0.00294</td>
<td>-1.009</td>
<td>.330</td>
</tr>
<tr>
<td>-19</td>
<td>-0.00188</td>
<td>-0.00482</td>
<td>-.430</td>
<td>.674</td>
</tr>
<tr>
<td>-18</td>
<td>-0.00071</td>
<td>-0.00553</td>
<td>-.189</td>
<td>.853</td>
</tr>
<tr>
<td>-17</td>
<td>0.004063</td>
<td>-0.00146</td>
<td>.638</td>
<td>.533</td>
</tr>
<tr>
<td>-16</td>
<td>-0.00541</td>
<td>-0.00687</td>
<td>-1.471</td>
<td>.163</td>
</tr>
<tr>
<td>-15</td>
<td>0.004141</td>
<td>-0.00273</td>
<td>.938</td>
<td>.364</td>
</tr>
<tr>
<td>-14</td>
<td>0.004284</td>
<td>0.001553</td>
<td>1.052</td>
<td>.310</td>
</tr>
<tr>
<td>-13</td>
<td>0.000715</td>
<td>0.002268</td>
<td>.182</td>
<td>.858</td>
</tr>
<tr>
<td>-12</td>
<td>-0.00324</td>
<td>-0.00097</td>
<td>-.397</td>
<td>.697</td>
</tr>
<tr>
<td>-11</td>
<td>-0.00553</td>
<td>-0.00651</td>
<td>-1.254</td>
<td>.230</td>
</tr>
<tr>
<td>-10</td>
<td>0.004618</td>
<td>-0.00189</td>
<td>1.178</td>
<td>.259</td>
</tr>
<tr>
<td>-9</td>
<td>0.000729</td>
<td>-0.00116</td>
<td>.148</td>
<td>.885</td>
</tr>
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<td>-8</td>
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<td>-0.0043</td>
<td>-.566</td>
<td>.580</td>
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<tr>
<td>-7</td>
<td>0.008651</td>
<td>0.004349</td>
<td>1.695</td>
<td>.112</td>
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<tr>
<td>-6</td>
<td>-0.00183</td>
<td>0.002521</td>
<td>-.409</td>
<td>.689</td>
</tr>
<tr>
<td>-5</td>
<td>-0.01011</td>
<td>-0.00759</td>
<td>-2.821</td>
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<td>-4</td>
<td>-0.01036</td>
<td>-0.01795</td>
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<td>.148</td>
</tr>
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<td>-3</td>
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<td>1.395</td>
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<td>-1</td>
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<td>.662</td>
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<tr>
<td>1</td>
<td>-0.00645</td>
<td>0.002799</td>
<td>-.969</td>
<td>.349</td>
</tr>
</tbody>
</table>
### Table 6: t-value for Cross sectional AR for Event Window (Stock Splits)

<table>
<thead>
<tr>
<th>DAY</th>
<th>AAR</th>
<th>CAAR</th>
<th>t-value</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-20</td>
<td>0.008698</td>
<td>0.008698</td>
<td>1.715</td>
<td>.114</td>
</tr>
<tr>
<td>-19</td>
<td>0.009717</td>
<td>0.018415</td>
<td>.949</td>
<td>.363</td>
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<tr>
<td>-18</td>
<td>0.018716</td>
<td>0.037131</td>
<td>1.475</td>
<td>.168</td>
</tr>
<tr>
<td>-17</td>
<td>-0.001694</td>
<td>0.035444</td>
<td>-1.239</td>
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<td>-16</td>
<td>0.000776</td>
<td>0.036221</td>
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<td>.315</td>
</tr>
<tr>
<td>-15</td>
<td>0.022918</td>
<td>0.059138</td>
<td>1.673</td>
<td>.123</td>
</tr>
<tr>
<td>-14</td>
<td>-0.00322</td>
<td>0.055915</td>
<td>-2.21</td>
<td>.037</td>
</tr>
<tr>
<td>-13</td>
<td>-0.01076</td>
<td>0.045154</td>
<td>-1.861</td>
<td>.068</td>
</tr>
<tr>
<td>-12</td>
<td>-0.01503</td>
<td>0.03012</td>
<td>-3.17</td>
<td>.002</td>
</tr>
<tr>
<td>-11</td>
<td>0.004918</td>
<td>0.035039</td>
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<td>.198</td>
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<tr>
<td>-10</td>
<td>0.007114</td>
<td>0.042153</td>
<td>.992</td>
<td>.342</td>
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<tr>
<td>-9</td>
<td>-0.01547</td>
<td>0.026681</td>
<td>-1.321</td>
<td>.216</td>
</tr>
<tr>
<td>-8</td>
<td>0.010066</td>
<td>0.034747</td>
<td>.984</td>
<td>.346</td>
</tr>
<tr>
<td>-7</td>
<td>0.007502</td>
<td>0.042489</td>
<td>1.011</td>
<td>.334</td>
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<tr>
<td>-6</td>
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<td>0.035824</td>
<td>-1.76</td>
<td>.080</td>
</tr>
<tr>
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<td>.428</td>
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<td>.341</td>
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<td>0.100231</td>
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<td>.045</td>
</tr>
<tr>
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<td>0.006799</td>
<td>0.10703</td>
<td>.776</td>
<td>.454</td>
</tr>
</tbody>
</table>

(Source: Self-made)
The above two tables show the AAR & CAAR for the event window. It also shows the T-value & significance level (2-tail) for the dates t-20 to t+20 considering t=0 as the event date for bonus or split announcements.

From Table 5 we can see that there is positive abnormal return of 2.08% with confidence level of 90% on t=0 date which is the bonus announcements date.

Previous few dates to announcement date i.e. t= -1,-2 etc. there is negative abnormal returns which are not so significant & the value of abnormal returns are small in quantum. So we can find that there are no insider information leakages in the Indian capital market before any announcements. Market reacts positively on the announcement date & after that there is mixed reaction in the market when we go forward from announcement date.

This evidence strongly confirms that the Indian Capital market is semi-strong type Efficient Market Hypothesis (EMH).

From Table 6 we can see that on the announcement date of stock splits there is positive AAR of 2.62% with 95% confidence level.

Previous few days to announcements there is positive AAR but the quantum is less as well as they are not so significant. So we can see from the above that there are no insider information leakages prior to announcements of stock splits & market reacts positively on the announcements date & there after it follows mixed trend.

This evidence also confirms that Indian Capital Market is semi-strong in nature for Efficient Market Hypothesis (EMH) point of view.
References


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