Abstract
The paper address the effect of stock splits on the share price and the stock’s liquidity in the post event and pre-event window. A stock split is merely a cosmetic event as there is no impact on the overall market capitalization of the company. The criteria used to decide the quantum of change is “abnormal returns”. According to the findings, there exists some abnormal returns in the pre-event window however volumes did not show abnormality. In the post event window, there exist no excess returns thus indicating that the stock split did not increase shareholder wealth. It was observed that after the execution of the stock split there exist excess volumes thus validating the reason of the stock split i.e. to increase tradability. So, the analysis suggests that stock split does not have any positive impact on wealth of the share holder at all but it improves liquidity of the stock very significantly.

I. INTRODUCTION
A stock split is defined as a corporate action that increases the number of outstanding shares of a company by dividing each share, which leads to a reduction in the stock’s price. In perfect capital markets, splits would neither create nor destroy value. But in the real world, splits have an impact. The overall market capitalization of the company is not impacted and remains the same. The shareholding pattern is not impacted by a stock split and the percentage of holding remains the same. However, a stock split is connected to increased liquidity of a stock. After a stock split, new investors are able to trade in the share as its share price decreases and it becomes more affordable from an investor's (especially retail) perspective, also as the number of outstanding shares increases, the people subscribing to the shares also increases, thereby boosting the
liquidity of a stock. The companies covered in our study are the companies which are a part of the NIFTY 50 Index. Through our study we have tried to analyse the impact of a stock split on:

→ The firm’s liquidity and the Trading Range Hypothesis
→ Neglected firm hypothesis or the Market Maker Hypothesis

The rest of the paper includes the literature review, research methodology and design, data analysis and findings and conclusions

II. LITERATURE REVIEW

➢ According to Jain and Robbani (2014) the effect of stock split announcements on abnormal returns was positive reactions during the financial crisis. However, post the crisis, the positive abnormal returns diminished at a rate faster than that in the pre-crisis window. [1]

➢ Parmar (2016) focused at understanding the impact of share splits on the trading volume. The conclusions were of the opinion that share splits tend to have no immediate effect on stockholder’s equity. Thereby stating that there is no significant difference in trading volumes before the spilt, however there is seen a huge spurt in volumes on the day of split and in the window succeeding that. [2]

➢ Grinblatt, Masulis and Titman (1984), indicate that share prices on an average positively reacted to stock dividend and split announcements, unaffected by other firm announcements. Significant positive excess returns were noticed around the ex-dates of both announcements. [3]

➢ The research by Bhuvaneshwari and Ramya (2014) contributed to the understanding of behaviour of Indian stock prices in relation to stock splits. From testing the data, it was inferred that share prices had a positive trend near the announcement dates. [4]

➢ According to Ikenberry, Rankine, and Stice (1996), evidence suggests that splits realign prices to enable lower trading range for shares. The post-split excess returns were approximately 7.93% in the first year of the split and 12.15% in the following 3 years of the sample tested. Post the announcement the excess returns were around 3.38% indicating that markets under-react to split announcements. [5]

➢ According to Lakonishok and Lev (1987), stock splits are empirically proven to restore stock prices to “normal range”. The market reaction to these distributions are favourable, however they appear to be a decreasing phenomenon. The authors analyse the impact of oft-mentioned signalling motive of stock splits and the reasons for the same. [6]

➢ As per research conducted by Gopal, K., Choudhary, K., & Mehta, S. (2016), the corporate action of stock split bearing a positive abnormal return around the AD and ED coupled with increase in variance following the ex-day. The results of the signalling hypothesis proved abnormal returns to be significantly correlated with split factors, whereas the liquidity hypothesis reported significant improvement in liquidity surrounding the announcement and execution date. [7]
Liquidity hypothesis states that stock splits lead to increased liquidity (i.e. trading volumes) and reduce costs involved in trading. The positive valuation effects of split announcements that have been reported in the literature can be explained using the liquidity hypothesis (Fama, E. F., L. Fisher, M. C. Jensen, and R. Roll (1969) [8]; Asquith, P., Healy, P. and K. Palepu, (1989) [9]; Grinblatt, Masulis and Titman., (1984) [3]. The resultant change of a stock split is that is causes share price to shift to a more optimal trading range which is considered as an affordable price by investors. This causes demand for the stock to increase and thereby generating higher liquidity for the stock. This leads to positive abnormal returns. [Lekonishok and Lev (1987)] [6]. To support this hypothesis, the literature on the model of Amihud and Mendelson (1986) [10] is considered, which forecasts a positive relation between equity value and liquidity. The model states that, rational investors discount illiquid securities with a higher discounting rate in comparison to liquid ones, since the restrictions on trading are greater and the transaction costs involved are higher in case of the former as compared to the latter.

Neglected Firm hypothesis states that, stock split is a tool used by firms which feel that their shares are undervalued by the market at large. The market participants are not actively engaged in trading of a firm’s stock and therefore, the shares are traded at a discount. Therefore, a company may go in for a stock split to gather market attention by spreading more information about a company’s stock and thereby encouraging more market participation. Market maker hypothesis: Stock split leads to a reduction in the bid-ask spread and will make market maker (firm) more active in promoting stock and hence leads to positive stock market effect, as the information available about a firm’s stock will be more widely recognized. {Joshipura, M. (2009)} [11]

### III. OBJECTIVES OF THE STUDY

The major objectives decided for the purpose of our study are:

1st. To detect any abnormal returns on the day of, or surrounding the announcement and execution day.

2nd. To detect any changes in the trading volumes (liquidity) surrounding the announcement window and execution window.

### IV. RESEARCH METHODOLOGY

#### 4.1 Sample Design

List of companies constituting of the sample.

- Bharti Airtel
- Bharat Heavy Electricals Limited
- Bosch Limited
- Cipla
- Dr. Reddy
• HDFC Bank
• Hindustan Unilever Limited
• Lupin
• Mahindra & Mahindra
• Sun Pharmaceutical Industries Limited
• Tata Motors
• Tata Power
• HCL

4.2 Justification of Sample
The stock split data on the paper were obtained from the Capitaline Database. Specific emphasis was laid on firms on the NSE’s NIFTY 50 Index that reported stock splits in the period between January 1, 2000 and December 31, 2015. Auxiliary criteria were also considered before a stock split event could qualify for inclusion in this study.
1. The company stock must trade on the National Stock Exchange.
2. The stock split announcement data must appear on the Capitaline Database.

4.3 Data Collection
The sample universe used was NIFTY 50 index. The NIFTY 50 is a diversified 51 stock index accounting for 22 sectors of the Indian Economy. The NIFTY 50 was used for analysis because it us used as a barometer of the Indian Capital markets by investors worldwide. A total of 14 companies announced a stock split between the period of January 1, 2000 and December 31, 2015 and the sample is composed of these 14 firms.

V. DATA NALYSIS & INTERPRETAION
- In order to isolate the stocks from affects of corporate actions other than stock splits, companies having corporate actions other than stock split in the 200-day preceding window and corresponding window around the announcement of the stock split were excluded from the scope of the study.
- To examine the price and liquidity effects on the firm that announced a stock split, we used the following window duration preceding and following the split. (AD refers to the date of announcement and ED stands for the execution date of the split)
- Pre- Announcement Window: Price and volumes over a trading window of 14 days (AD – 14) before the split was announced. This sample data was compared with the price and liquidity increase or decrease in the post announcement window to study whether the stock split event contributed to increase in trading of the stock.
- Window Between Announcement Date and Execution Date: The days between the AD and ED dissimilar in each occurrence of a stock split; therefore, the duration of this window differs for each firm. If the stock split is expected to send the market signals and led to reduction in information asymmetries, the price following the AD of the stock split and before/on AD should exhibitive of the results captured by the market.
Post-Announcement Window – The window is used not only to capture the duration between the AD and ED but also include a sufficient period post execution date. The window is of 14 days (AD + 14).

The Shapiro-Wilk test has been used to check the normality of the data because the Shapiro–Wilk test utilizes the null hypothesis principle to check whether a sample came from a normally distributed population. Since the Shapiro – Wilk test concluded the data to be not normal therefore be have used the Mann – Whitney U Test, which is the most reliable of non-parametric test to perform, to test the hypothesis.

Table 1: Mean Cumulative Abnormal Returns between the period AD/ED – 14 and AD/ED +14.

<table>
<thead>
<tr>
<th>AD</th>
<th>MCAR</th>
<th>AD Volume</th>
<th>ED</th>
<th>MCAR</th>
<th>ED Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
<td>Day</td>
<td>Day</td>
<td>Day</td>
<td>Day</td>
<td>Day</td>
</tr>
<tr>
<td>-14</td>
<td>2.338%</td>
<td>-14 3.66%</td>
<td>-14</td>
<td>0.78%</td>
<td>-14 30.61%</td>
</tr>
<tr>
<td>-13</td>
<td>2.795%</td>
<td>-13 3.15%</td>
<td>-13</td>
<td>1.80%</td>
<td>-13 181.00%</td>
</tr>
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<td>-12</td>
<td>2.824%</td>
<td>-12 33.22%</td>
<td>-12</td>
<td>1.23%</td>
<td>-12 13.27%</td>
</tr>
<tr>
<td>-11</td>
<td>4.326%</td>
<td>-11 81.86%</td>
<td>-11</td>
<td>2.38%</td>
<td>-11 0.94%</td>
</tr>
<tr>
<td>-10</td>
<td>5.421%</td>
<td>-10 10.10%</td>
<td>-10</td>
<td>2.67%</td>
<td>-10 0.98%</td>
</tr>
<tr>
<td>-9</td>
<td>5.072%</td>
<td>-9  51.26%</td>
<td>-9</td>
<td>3.18%</td>
<td>-9  14.20%</td>
</tr>
<tr>
<td>-8</td>
<td>6.269%</td>
<td>-8  88.64%</td>
<td>-8</td>
<td>3.73%</td>
<td>-8  14.96%</td>
</tr>
<tr>
<td>-7</td>
<td>6.248%</td>
<td>-7  91.90%</td>
<td>-7</td>
<td>3.80%</td>
<td>-7  14.20%</td>
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<tr>
<td>-6</td>
<td>7.248%</td>
<td>-6  18.02%</td>
<td>-6</td>
<td>4.58%</td>
<td>-6  15.66%</td>
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<td>-5</td>
<td>6.699%</td>
<td>-5  38.14%</td>
<td>-5</td>
<td>10.75%</td>
<td>-5   3.88%</td>
</tr>
<tr>
<td>-4</td>
<td>6.224%</td>
<td>-4  15.34%</td>
<td>-4</td>
<td>10.76%</td>
<td>-4   5.96%</td>
</tr>
<tr>
<td>-3</td>
<td>5.919%</td>
<td>-3  16.41%</td>
<td>-3</td>
<td>25.55%</td>
<td>-3   76.19%</td>
</tr>
<tr>
<td>-2</td>
<td>5.471%</td>
<td>-2  36.96%</td>
<td>-2</td>
<td>26.34%</td>
<td>-2   40.97%</td>
</tr>
<tr>
<td>-1</td>
<td>6.265%</td>
<td>-1  19.76%</td>
<td>-1</td>
<td>26.14%</td>
<td>-1   41.76%</td>
</tr>
<tr>
<td>AD</td>
<td>6.662%</td>
<td>AD 116.04%</td>
<td>ED</td>
<td>4.89%</td>
<td>ED  19.54%</td>
</tr>
<tr>
<td>1</td>
<td>6.915%</td>
<td>1 135.87%</td>
<td>1</td>
<td>5.56%</td>
<td>1  37.04%</td>
</tr>
<tr>
<td>2</td>
<td>7.153%</td>
<td>2  36.18%</td>
<td>2</td>
<td>6.53%</td>
<td>2  82.92%</td>
</tr>
<tr>
<td>3</td>
<td>7.385%</td>
<td>3  74.18%</td>
<td>3</td>
<td>6.16%</td>
<td>3  231.79%</td>
</tr>
<tr>
<td>4</td>
<td>7.976%</td>
<td>4  20.59%</td>
<td>4</td>
<td>6.74%</td>
<td>4  38.58%</td>
</tr>
<tr>
<td>5</td>
<td>9.452%</td>
<td>5  11.77%</td>
<td>5</td>
<td>5.99%</td>
<td>5  46.62%</td>
</tr>
<tr>
<td>6</td>
<td>9.613%</td>
<td>6  29.63%</td>
<td>6</td>
<td>6.87%</td>
<td>6  16.86%</td>
</tr>
<tr>
<td>7</td>
<td>9.666%</td>
<td>7  37.03%</td>
<td>7</td>
<td>7.97%</td>
<td>7  34.95%</td>
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<tr>
<td>8</td>
<td>9.426%</td>
<td>8  20.55%</td>
<td>8</td>
<td>9.33%</td>
<td>8  62.51%</td>
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<tr>
<td>9</td>
<td>8.884%</td>
<td>9  52.40%</td>
<td>9</td>
<td>8.07%</td>
<td>9  68.19%</td>
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<tr>
<td>10</td>
<td>9.585%</td>
<td>10 67.52%</td>
<td>10</td>
<td>7.75%</td>
<td>10 55.39%</td>
</tr>
<tr>
<td>11</td>
<td>9.317%</td>
<td>11 94.52%</td>
<td>11</td>
<td>6.35%</td>
<td>11 84.99%</td>
</tr>
<tr>
<td>12</td>
<td>8.260%</td>
<td>12 37.36%</td>
<td>12</td>
<td>7.05%</td>
<td>12 6.45%</td>
</tr>
<tr>
<td>13</td>
<td>9.659%</td>
<td>13 33.03%</td>
<td>13</td>
<td>6.22%</td>
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</tr>
<tr>
<td>14</td>
<td>9.643%</td>
<td>14 13.04%</td>
<td>14</td>
<td>5.59%</td>
<td>14  7.12%</td>
</tr>
</tbody>
</table>
Key Findings:

Liquidity Hypothesis
The liquidity and optimal range hypothesis supports that a firm undergoing a stock split are able to bring their respective share into an affordable trading bracket for investors, leading to better liquidity of the stock and reduced trading costs for investors. The stock split initiates the share to be available for trading in an “optimal ticket size”, leading to increased trading volumes and liquidity of the stock in the market.

Hypothesis A: Stock splits lead to increased liquidity post the event window.
The characteristics shown by the splits in the pre-and post-announcement window were analysed to see the impact created by splits on the trading volume vis a wiz all other factors. The percentage change (abnormal returns) in the volumes was compared against how the Nifty 50 Index performed during the period of our study. The analysis was done in 3 parts:
→ Pre-Financial Crisis Period: 2000-2007
→ Post Financial Crisis Period: 2008-2015
→ Full Coverage Period: 2000-2015
For the purpose of the study, the hypothesis has been stated in the following manner:

Hypothesis A.1:
Null Hypothesis: There is no excess liquidity in the post announcement window
Alternative Hypothesis: There exists excess liquidity in the post announcement window.

i) Pre-Financial Crisis Period:
We accept the Null Hypothesis of Hypothesis A.1
There does not exist excess liquidity post the announcement window, indicating that the announcement of a stock split has a no significant positive impact on the trading volume of a share.

ii) Post Financial Crisis Period:
We accept the Null Hypothesis of Hypothesis A.1
There does not exist excess liquidity post the announcement window, thus validating the market does not regard the announcement of a stock split to have a significant positive impact on the stock’s liquidity

iii) Full Coverage Period:
We accept the Null Hypothesis of Hypothesis A.1
There does not exist excess liquidity post the announcement window, indicating that there is no significant impact whatsoever on the trading volumes due the company's announcement to undergo a split. The market does not reward the stock with excess liquidity after the AD.

| Table 2: Shapiro-Wilk Test (P-Value) |
|-----------------|----------------|
| AD - 14         | 0.028699539    |
| AD + 14         | 0.029320492    |

| Table 3: Mann - Whitney Test (P-Value) |
|-----------------|----------------|
| AD - 14         | 0.145302204    |
| AD + 14         | 0.290604400    |
Therefore, on comparing the pre-and post-financial crisis periods to the full coverage period, we find that in the post AD window, a stock split doesn’t really change market participation in the trading activity of a stock. The findings of our study remain the same in all the 3 periods tested for.

**Hypothesis A.2:**

*Null Hypothesis:* There is no excess liquidity in the post execution window.
*Alternative Hypothesis:* There exists excess liquidity in the post execution window.

**i) Pre-Financial Crisis:**
We reject Null Hypothesis of Hypothesis A.2
There exists excess liquidity post the ED, indicating that the event of a stock split has an observable positive impact on the trading volume of a share, leading to increased liquidity.

**ii) Post Financial Crisis Period:**
We reject Null Hypothesis of Hypothesis A.2
There exists excess liquidity post the ED, thus validating that the market regards the event of a stock split to have a significant definite impact on a stock’s liquidity.

**iii) Full Coverage Period:**
We reject Null Hypothesis of Hypothesis A.2
There exists excess liquidity post the ED, indicating that there is a significant impact on the trading volumes due the company’s decision to undergo a split. The company’s rationale to use stock split as a tool to bring down the share price to an optimal ticket size to increase a share’s trading volume thus holds to be true.

<table>
<thead>
<tr>
<th>Table 4: Shapiro-Wilk Test (P - Value)</th>
<th>Table 5: Mann - Whitney Test (P-Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED - 14</td>
<td>0.000105369</td>
</tr>
<tr>
<td>ED + 14</td>
<td>0.00069057</td>
</tr>
<tr>
<td>ED - 14</td>
<td>0.017275010</td>
</tr>
<tr>
<td>ED + 14</td>
<td>0.034550020</td>
</tr>
</tbody>
</table>

Therefore, on comparing the pre-and post-financial crisis periods to the full coverage period, we find that in the post ED window, a stock split notably changes market participation in the trading activity of a stock. The findings of our study remain the same in all the 3 periods tested for.

**Neglected Firm Hypothesis**
The hypothesis is used to find out if stock splits help firms to change investor perception about their shares being undervalued, leading to subsequent trading of the former at a discount. With the stock split significantly reducing the bid ask spread, trading in the company’s stock witnesses is more activity. This allows a firm to actively promote its stock by generating more information on share price.

**Hypothesis B: Stock split leads to excess abnormal returns for shareholders.**
The findings of our study are compared with the Nifty 50 index to find if the stock gave more returns than the benchmark index, for the period of our study. The analysis was done in 3 parts:

→ Pre-Financial Crisis Period: 2000-2007
→ Post Financial Crisis Period: 2008-2015
→ Full Coverage Period: 2000-2015

For the purpose of the study, the hypothesis has been stated in the following manner:

**Hypothesis B.1:**

*Null Hypothesis:* There are no excess returns in the post announcement window

*Alternative Hypothesis:* There exist excess returns in the post announcement window.

**i) Pre-Financial Crisis:**

We reject Null Hypothesis of Hypothesis B.1

There exist excess abnormal returns post the AD, clearly validating that the announcement of stock splits is seen to have a favourable impact on shareholder wealth.

**ii) Post Financial Crisis Period:**

We reject Null Hypothesis of Hypothesis B.1

There exist excess abnormal returns even in the post financial crisis period. The firms using stock split to garner more market participation by declaring splits are able to generate more information about their stock, therefore leading to active promotion of the stock.

**iii) Full Coverage Period:**

We reject Null Hypothesis of Hypothesis B.1

There exist excess abnormal returns. The market at large regards the board’s decision to declare stock splits as a beneficial move. Therefore, market sentiments around the AD are reflected in the form of excess positive abnormal returns.

<table>
<thead>
<tr>
<th>Table 6: Shapiro-Wilk Test (P - Value)</th>
<th>Table 7: Mann - Whitney Test (P- Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AD - 14 0.050283814</td>
<td>AD - 14 0.000005145</td>
</tr>
<tr>
<td>AD + 14 0.005868363</td>
<td>AD + 14 0.000010291</td>
</tr>
</tbody>
</table>

Therefore, on comparing all 3 periods of our study we conclude that the results of our findings, testing the Neglected Firm Hypothesis remain to hold the same throughout the periods of our study.

**Hypothesis B.2:**

*Null Hypothesis:* There are no excess returns in the post execution window.

*Alternative Hypothesis:* There exist excess returns in the post execution window.

**i) Pre-Financial Crisis:**

We accept Null Hypothesis of Hypothesis B.2

There are no signs of excess abnormal returns post the ED. Thus, stock splits are observed to have no impact on the shareholder wealth. Therefore, stock splits are merely an accounting change and end up doing very little or no benefit to the investors.

**ii) Post Financial Crisis Period:**

We accept Null Hypothesis of Hypothesis B.2

There does not exists excess abnormal returns post the ED. This is noticed to be a complete reversal of how the market at large reacted to the announcement of a split, however in the execution, there are no such sentiments found.

**iii) Full Coverage Period:**
We accept Null Hypothesis of Hypothesis B.2

There are no excess abnormal returns in the post ED window. The firms seeking to create more active market participation via stock splits fail to do so, as it is reflected in the returns generated after stock splits. Thus, stock splits are not a very effective measure to help a neglected firm change its market perception.

<table>
<thead>
<tr>
<th>Table 8: Shapiro-Wilk Test (P-Value)</th>
<th>Table 9: Mann - Whitney Test (P-Value)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED - 14 0.000750822</td>
<td>ED - 14 0.099128199</td>
</tr>
<tr>
<td>ED + 14 0.259268938</td>
<td>ED + 14 0.198256397</td>
</tr>
</tbody>
</table>

Therefore, on comparing all 3 periods of our study we find that the results remain constant throughout our analysis. Stock splits are proved to merely be a cosmetic accounting change and have no impact on shareholder wealth whatsoever. The firms looking to generate information based on their stock’s price fail to do so and are unable to change market sentiments about their stock.

VI. CONCLUSION

The findings of our study validate the fact that there are positive sentiments surrounding the announcement of stock splits, as can be seen by the excess abnormal returns in the post AD window. However by and large, splits seem to have no direct impact on shareholder wealth as there exist no abnormal return to shareholders post the stock split, i.e. in the post ED window.

Nonetheless, stock splits are proven to be a handy tool to disseminate vital information about the firm’s stock and grab the attention of the market at large, looking to create liquidity in the trading of the stock. Although, it’s a short-term measure, as there is no significant impact noticed on the liquidity in the post ED window.

VII. REFERENCES


