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Impact of Stock Split Announcements on Stock Prices and Liquidity: Empirical Evidence from India

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A B S T R A C T

A stock split announcement is a corporate decision that splits the existing share into a number of shares by reducing its current face value. Basically stock splits are announced either to improve marketability of the share or to convey future profitability of the firm or to make trading in the shares attractive. The present study aims at investigating whether stock split is done in order to maintain the share prices within a normal price range and whether it improves the stock liquidity and also whether it signals any future prospects of the company. The study evaluates 20 splits announced by Nifty 200 companies between January 2012 and December 2015. Based on the results obtained through Event Study Methodology it was concluded that the companies split their shares to reduce the share price in order to make them more affordable and attractive for trading. Whereas the study neither shows any evidence for improvement of stock liquidity nor it indicates any signaling power of the split in the post-split announcement period.

Introduction

Stock split is a corporate action in which the existing shares are divided into multiple numbers of shares by reducing their par value. In case of stock splits the total number of outstanding shares of a company increases and thereby results in decrease in earnings per share. Also the total net worth and market capitalization of the company remains the same. The stocks are split in an agreed ratio that will determine exactly how many shares the firm will give to its existing shareholders.

Normally holding multiple number of shares with a lower par value is beneficial than holding a single share of a higher

par value. This is so because at any time the holder wants to liquidate his stock of a higher par value on account of a sudden downtrend in the market he may find it difficult to liquidate it easily due to absence of a potential buyer. Also the shareholder having a single share may not be able to wait and bear the risk until the downtrend gets corrected. By raising the number of outstanding shares stock split gives additional shares to the existing shareholders that can be used for further trading and also makes it affordable and attractive to those who are keen to hold such stocks at a lower price. Thus it can be said that splits improve liquidity of the shares.

Splits are announced by blue-chip companies who have seen a huge growth in their share prices in the past and have estimated huge business growth in the upcoming years that will further drive the share prices beyond normal trading range. Therefore they decide to split their shares in order to ensure that their shares trade within a normal price range. In case the market participants are aware about such a strategy of the company and believe that the past performance will be continued even in the future than the demand for such stocks

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will rise on and around the announcement day. Thus it can be said that stock splits may also be used by the companies in order to communicate information regarding their future profitability.

The present study aims to investigate as to why a company splits their shares whether it is done to make trading in its shares more attractive or whether to raise the liquidity of their shares or whether it is executed in order to convey any information about their future profitability.

Literature Review

Fama, Fisher, Jensen, & Roll (1969) studied the impact on stock prices of the companies listed on the NYSE as a result of stock split announcements. A sample of 940 splits announced during a period of thirty three years has been studied. It was concluded that stock splits results into a positive impact on stock prices mainly in the anticipation of higher dividend announcements after the stock splits.

Lakonishok & Lev (1987) conducted study for a period of twenty years i.e from 1963 to 1982 in order to find out whether announcement of stock splits and stock dividends have any impact on the stock prices and trading volume. The study revealed that both split and dividend announcements do have a positive impact on the stock prices whereas there is a nominal impact on the trading volume.

Masse, Hanrahan, & Kushner (1997) analyzed the response of 186 firms trading on Toronto Stock Exchange towards stock splits, reverse splits, and stock dividends. They found that the announcements of stock splits and stock dividend have a positive impact on the market whereas reverse split announcement showed a positive response on the market.

Wulff (1999) conducted a study on German firms to find the impact of stock split announcements on stock prices and stock liquidity. The study analysed 78 stock split events for a period from 1993-1996. The study found that splits result in fall in stock prices and also improve liquidity in the post announcement period.

Chen & Wu (2009) examined the trading activity and return volatility pattern before and after splits. The study considered 31 splits announced during 1997-1998 and found that small trades increase significantly after stock splits and the increase in return volatility is strongly related to the increase in small trades after stock splits.

Bechmann & Raaballe (2005) have done comparative study on stock dividends and stock splits in Denmark for the period from 1995 to 2002. Study suggests that firm declares the stock split in order to improve liquidity, whereas stock dividend is declared to improve equity capital.

Gueyié, Sedrine, & Atindehou (2007) conducted a study to find out the impact of stock split announcements on Canadian market. The study was conducted using a sample of 119 split events for the period of 16 years i.e. from 1985-2000. The study concludes that Canadian market shows positive response to the split announcements.

Kalay & Kronlund (2014) investigated the market reaction to stock split announcements of 1,203 firms traded on the NYSE. The study was conducted for the period from 1988 to 2007 resulting into a sample of 2,097 split events. The study concludes that market reacts positively to the announcements believing that splits incorporate information regarding firm's earnings.

Chen, Nguyen, & Singal (2011) evaluated the information content of 10,507 stock splits. The sample period covers splits that are announced between January 1981 and December 2007 by the companies listed on NYSE. The results suggest that splits occur because firms want to signal positive information, and also occur for other reasons, presumably to make the stock more marketable.

Huang, Liano, & Pan (2009) examined whether stock splits contain information content about future operating performance or whether splits are undertaken by firms to realign their share prices. The results suggest that the stock splits do improve the liquidity and bring the stock prices in normal range but no evidence was found regarding improvement of operating performance of the companies after split.

Research Methodology

To meet the objectives of the study Event Study Methodology was used. The Event Study gives an adequate picture of the impact of any corporate announcements and macro announcements. The methodology consists of various methods that can be used in order to evaluate the impact of any event. One of the most prominent methods used in the previous studies was The Market Model method which is used in the present study.

The following steps were followed under Event Study Methodology

1. Define the event

The day of share split announcement was taken as the event day. In case the event was announced on a non-trading day, the day before announcement is taken as the event day.

2. Define the sample

20 share split announcements made for a period of four years (2012 to 2015) by a total of 19 Nifty 200 index companies listed on National Stock Exchange were selected.

3. Determine the estimation and event window

- Estimation window of 109 days prior to the event window has been taken in order to calculate the regression coefficients Alpha and Beta.
- An event window of 41 days has been selected i.e. 20 days before and 20 days after the event day.

4. Calculate daily stock return, market return, stock volume and market volume

Daily Stock return was calculated as:

$$R_{it} = P_{it} - (P_{it-1}) / P_{it-1}$$

Daily Market return was calculated as:

$$R_{mt} = I_t - (I_{t-1}) / I_{t-1}$$

Daily Stock volume was calculated as:

$$V_{it} = V_{it} - (V_{it-1}) / V_{it-1}$$

Daily Market returns were calculated as:

$$V_{mt} = V_{mt} - (V_{mt-1}) / V_{mt-1}$$

Where:

P_{it} is the price of share i on day t and P_{it-1} is the price of share i on day $t-1$

I_t is the Nifty 200 index price day t and I_{t-1} is the Nifty 200 index price on day $t-1$

V_{it} is the volume of share i on day t and V_{it-1} is the volume of share i on day $t-1$

V_{mt} is the Nifty 200 index volume on day t and V_{mt-1} is the Nifty 200 index volume on day $t-1$

5. Computation of Expected Return (ER) and Expected Volume (EV)

Expected Return (ER) and Expected Volume (EV) were calculated over the 41 day event window

$$E(R_{it}) = \alpha_i + \beta_i \cdot R_{mt}$$

$$E(V_{it}) = \alpha_i + \beta_i \cdot V_{mt}$$

Where, α_i = Alpha coefficient of 'i'th security

β_i = Beta coefficient of 'i'th security

R_{mt} = Daily return on Nifty 200 Index during period 't'

V_{mt} = Daily trading volume of Nifty 200 index during period 't'

6. Computation of Abnormal Return (AR) and Abnormal Volume (AV)

Abnormal Return (AR) and Abnormal Volume (AV) were calculated over the entire 41 day event window using the following equations:

$$AR_{it} = R_{it} - E(R_{it})$$

$$AV_{it} = V_{it} - E(V_{it})$$

7. Computation of Average Abnormal Return (AAR) and Average Abnormal Volume (AAV)

The Abnormal Returns and Abnormal Volume computed in the event window across all 19 event announcements were averaged on daily basis.

8. Computation of Cumulative Average Abnormal Return (CAAR) and Cumulative Average Abnormal Volume (CAAV)

In order to draw overall inferences caused by the event on the stock returns and trading volume the daily AAR and AAV were cumulated.

9. Analyzing the significant impact

In order to analyze the pre and post event impact on the stock returns and trading volume t-test has been used.

a. t value for AAR: $t(AAR) = \frac{AAR}{\sigma/\sqrt{N}}$

b. b. t value for CAAR: $t(CAAR) = \frac{CAAR}{\sigma/\sqrt{N}}$

c. t value for AAV: $t(AAV) = \frac{AAV}{\sigma/\sqrt{N}}$

d. t value of CAAV: $t(CAAV) = \frac{CAAV}{\sigma/\sqrt{N}}$

Empirical Results

Table-1: Selected Nifty 200 companies with their split announcement dates and the changed face value per share

S. No	Company Name	Split Date	Old Face Value (Rs./Share)	New Face Value (Rs./Share)
1	Ajanta Pharma Limited	28-01-15	5	2
		26-04-12	10	5
2	Asian Paints Limited	05-09-13	10	1
3	Axis Bank Limited	25-04-14	10	2
4	Bank of Baroda	27-09-14	10	2
5	Bata India Limited	27-05-15	10	5
6	Berger Paints Limited	04-11-14	2	1
7	Cadila Healthcare Limited	12-08-15	5	1
8	Canara Bank	26-08-14	10	2
9	The Federal Bank Limited	04-06-13	10	2
10	Havells India Limited	30-06-14	5	1
11	ICICI Bank Limited	09-09-14	10	2
12	The Jammu & Kashmir Bank Limited	12-06-14	10	1
13	Kaveri Seed Company Limited	14-11-13	10	2
14	Mahindra And Mahindra Financial Services Limited	21-12-12	10	2
15	Natco Pharma Limited	12-08-15	10	2

16	Pi Industries Limited	12-02-13	5	1
17	Punjab National Bank	19-09-14	10	2
18	State Bank Of India	24-09-14	10	1
19	Tech Mahindra Limited	30-01-15	10	5

Source: www.moneycontrol.com

Analysis

A. Stock Splits and Stock Returns

Table 2: Average Abnormal Return (AAR) and Cumulative Average Abnormal Return (CAAR) and their t-statistic values

Pre Announcement					Post Announcement				
Window	AAR	T Test	CAAR	T Test	Window	AAR	T Test	CAAR	T Test
-20	-0.0030	-0.6391	-0.0030	-0.2026	0	0.0049	1.0596	-0.0154	-1.0459
-19	0.0048	1.0304	0.0018	0.1241	1	-0.0071	-1.5105	-0.0225	-1.5247
-18	0.0025	0.5261	0.0043	0.2909	2	-0.0058	-1.2447	-0.0283	-1.9193**
-17	0.0018	0.3759	0.0060	0.4100	3	-0.0090	-1.9253**	-0.0373	-2.5297**
-16	-0.0066	-1.4111	-0.0005	-0.0373	4	-0.0051	-1.0953	-0.0424	-2.8770**
-15	0.0040	0.8579	0.0035	0.2346	5	0.0052	1.1035	-0.0372	-2.5271**
-14	-0.0045	-0.9554	-0.0010	-0.0683	6	-0.0056	-1.1922	-0.0428	-2.9051**
-13	-0.0001	-0.0142	-0.0011	-0.0728	7	0.0042	0.9060	-0.0386	-2.6179**
-12	-0.0008	-0.1688	-0.0019	-0.1263	8	-0.0020	-0.4286	-0.0406	-2.7537**
-11	0.0008	0.1646	-0.0011	-0.0741	9	0.0037	0.7902	-0.0369	-2.5032**
-10	-0.0044	-0.9498	-0.0055	-0.3752	10	0.0053	1.1364	-0.0316	-2.1429**
-9	-0.0086	-1.8463**	-0.0141	-0.9606	11	0.0039	0.8380	-0.0276	-1.8772**
-8	-0.0105	-2.2553**	-0.0247	-1.6755**	12	-0.0038	-0.8237	-0.0315	-2.1384**
-7	-0.0025	-0.5365	-0.0272	-1.8456**	13	0.0041	0.8799	-0.0274	-1.8594**
-6	-0.0003	-0.0591	-0.0275	-1.8644**	14	-0.0017	-0.3605	-0.0291	-1.9737**
-5	-0.0026	-0.5656	-0.0301	-2.0437**	15	0.0011	0.2287	-0.0280	-1.9012**
-4	0.0069	1.4836	-0.0232	-1.5733	16	-0.0039	-0.8337	-0.0319	-2.1655**
-3	0.0010	0.2160	-0.0222	-1.5048	17	0.0021	0.4420	-0.0298	-2.0254**
-2	0.0005	0.1114	-0.0216	-1.4695	18	0.0056	1.1941	-0.0243	-1.6469
-1	0.0013	0.2767	-0.0204	-1.3818	19	-0.0051	-1.0851	-0.0293	-1.9909
0	0.0049	1.0596	-0.0154	-1.0459	20	-0.0071	-1.5177	-0.0364	-2.4720

** Significant at 5% level

It can be seen from table 1 on day -9 and -8 there has been a significant negative impact of the event on daily Average Abnormal Return. It is also observed that the daily Average Abnormal Return increased few days before the event and also on the event day but no significant impact was found. After the event there was a decline in daily Average Abnormal Return for almost 3 days and showed a significant negative impact on day

+3. Later the daily Average Abnormal Return increased for very few days but no significant impact was observed. But when daily Average Abnormal Return were cumulated in the entire window period it was found that the Cumulative Average Abnormal Return has decreased in the post event window and showed a major post event negative impact.

B. Stock Splits and Trading Volume

Table-3: Average Abnormal Volume (AAV) and Cumulative Average Abnormal Volume (CAAV) and their t-statistic values

Pre Announcement					Post Announcement				
Window	AAV	T Test	CAAV	T Test	Window	AAV	T Test	CAAV	T Test
-20	-1.0243	-0.5297	-1.0243	-0.3125	0	0.6240	0.3227	3.5017	1.0683
-19	0.1957	0.1012	-0.8286	-0.2528	1	1.1438	0.5915	4.6455	1.4173
-18	-0.8604	-0.4449	-1.6890	-0.5153	2	-0.3635	-0.1880	4.2820	1.3064
-17	-0.1281	-0.0662	-1.8171	-0.5544	3	-0.5414	-0.2800	3.7406	1.1412
-16	-0.0298	-0.0154	-1.8469	-0.5634	4	-0.2220	-0.1148	3.5186	1.0735
-15	-0.2723	-0.1408	-2.1192	-0.6465	5	-0.6666	-0.3447	2.8520	0.8701

-14	-0.4445	-0.2298	-2.5637	-0.7821	6	0.0272	0.0141	2.8792	0.8784
-13	-0.4225	-0.2185	-2.9862	-0.9110	7	-0.5971	-0.3088	2.2821	0.6962
-12	-0.6322	-0.3269	-3.6184	-1.1039	8	-0.5540	-0.2865	1.7281	0.5272
-11	-0.3429	-0.1773	-3.9613	-1.2085	9	-0.5996	-0.3101	1.1285	0.3443
-10	-0.8015	-0.4145	-4.7628	-1.4530	10	-0.0720	-0.0372	1.0566	0.3223
-9	11.7275	6.0645**	6.9648	2.1248**	11	-0.7419	-0.3836	0.3147	0.0960
-8	-0.4985	-0.2578	6.4663	1.9727**	12	-0.4849	-0.2508	-0.1703	-0.0519
-7	-1.0391	-0.5373	5.4272	1.6557	13	-0.5245	-0.2712	-0.6947	-0.2119
-6	-0.6044	-0.3125	4.8229	1.4714	14	-0.3402	-0.1759	-1.0349	-0.3157
-5	-0.4114	-0.2128	4.4114	1.3458	15	-0.4817	-0.2491	-1.5166	-0.4627
-4	0.0585	0.0302	4.4699	1.3637	16	-0.5101	-0.2638	-2.0267	-0.6183
-3	-0.6756	-0.3494	3.7943	1.1576	17	-0.3106	-0.1606	-2.3373	-0.7131
-2	-0.4434	-0.2293	3.3510	1.0223	18	-0.3914	-0.2024	-2.7287	-0.8325
-1	-0.4732	-0.2447	2.8777	0.8779	19	-0.5270	-0.2725	-3.2558	-0.9933
0	0.6240	0.3227	3.5017	1.0683	20	-0.6099	-0.3154	-3.8657	-1.1793

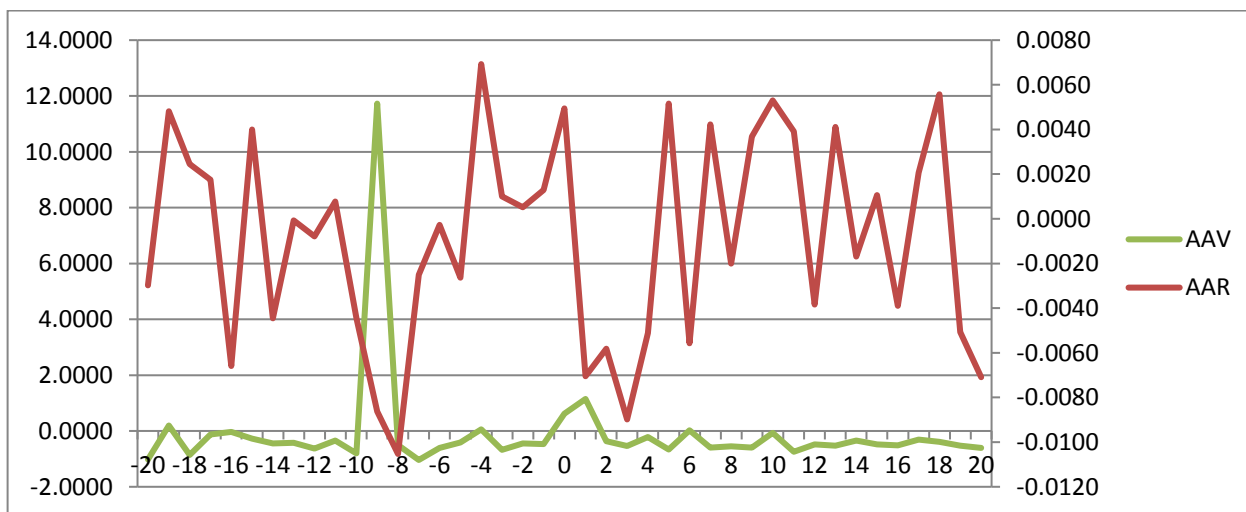
** Significant at 5% level

The daily Average Abnormal Volume reached the highest point on day -9 where the increase in the volume was extraordinary and showed a significant positive impact. On the event day the daily Average Abnormal Volume had increased and doubled on day +1 and later it went on decreasing. But on none of these days it showed a significant impact. In case of Cumulative Average Abnormal Volume, it has been positive in

the window from day -9 to +11 and showed a significant positive impact only on days -9 and -8. It can also be seen that though on many days Cumulative Average Abnormal Volume stood positive but it was constantly declining and no impact was found for such decline.

C. Relationship between Stock Prices and Trading Volume

Figure-1: Stock Price and Trading Volume over a Window Period of 41 Days



As it can be seen in Figure 1 there was high volatility found in the trading volume during the event window. It was found that initially whenever the prices decreased there was a huge volume in the market but as the event date came closer both stock prices and volume started increasing. Thus the relationship turned out to be positive. The reason for such relationship was due to huge amount of supply on day -9 that led to a sharp fall in stock prices which was later corrected. Such a situation occurred due to the shareholders of Jammu & Kashmir Bank who sold off their stakes in bulk on a single day on account of a report published that highlighted that the bank had undisclosed Non Performing Assets of Rs. 2,500 crores.

Such an act led to 18% fall in the stock prices of Jammu & Kashmir Bank and thereby affected the overall performance of

Nifty 200 Index. This downtrend in the market was soon corrected by other investors who purchased these stocks as well as other company's stocks and led to a positive relationship between stock prices and volume till the event day. But from the subsequent day of the event an inverse relationship was found between stock returns and trading volume. It was also found that the shares started trading within a normal price range than after the event.

Conclusion

The study evaluates whether the splits are done to bring the prices in normal trading range and also to understand whether split announcements signal future prospects of the company and whether it affects stock liquidity. To fulfill the objectives event study technique was used.

The study finds that the daily Average Abnormal Returns had been negative for most of the days in the event window and when cumulated there was a major significant negative impact observed after the split announcements. Hence it can be concluded that the stock splits have resulted into trading of the stocks within the normal price range. This also suggests that the market has not perceived that the split announcements indicate higher profitability of the firm in the future and thus no increase in demand for the stocks were found around the event. It was also found that there was no significant impact of the event on the trading volume of the stocks.

The study reveals that though the demand for stocks before and on the date of splits increased and also an increase was found in terms of volume but still after the announcement the same trend was not observed in the market. The sellers and buyers did not find a favorable price to effect trade in the market. Thus the study finds no evidence regarding improvement of market liquidity as a result of split announcements. The conclusions of the study are in conformity with the conclusions drawn by (Huang, Liano, & Pan, 2002).

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