

Empirical Evidence of Market Reaction to Stock Splits

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Abstract

The study has analyzed the Market's reaction to stock split announcements by Companies during the period of study. The period of study selected is 2014-2015. Using event study methodology, the study finds that there is no reaction of the market to stock split announcements. Average Abnormal Returns (AAR) and Cumulative Abnormal Returns (CAR) are negative on the split date and around the split date. To compare the AAR and CAR before and after the split date, paired t test was employed. It was found that AAR has increased considerably in the post-split period thereby indicating a slow momentum in the reaction to stock split announcements. Average Security Return Valuation (ASRV) shows that there is no association between the stock splits as a news and valuation of stocks. Liquidity and Trading Range Hypotheses holds good for the period of study.

Keywords- *Liquidity, Trading Range, Stock Splits, AAR, CAR, ASRV.*

Introduction

In the last decade, the Corporate World has witnessed one

of the tools, stock split, which is usually used by the managers to direct stock prices in the market. A stock split is the division of a share into two or more parts. Stock split adds no value but increases the number of shares in the ratio of the split. By splitting the share the value of the company will not increase, but the capital is only redistributed by the increased number of shares. According to Lamoureux et al., (1987) "Splits are only cosmetic change, slicing the same pie into smaller pieces but not changing the fractional ownership of the equity interest and votes in the company". The earnings per share will be diluted and the market price per share will fall proportionately with the share split. The total value of the holdings of the shareholder remains unaffected with the stock split. There are various reasons for companies to announce stock splits. Companies with stock price ranging higher in the market try to attract the investors by reducing the price of the stock and bring them to a popular trading range *McNichols et al., (1990)*. The common investors would not consider stocks with very high price, as they would get few numbers of shares for the given amount. New investors entering into the market always prefer those stocks, which are in the trading range or with lesser share price. This is referred as *trading range hypothesis*. The companies would always like to see their share prices soaring high and it is veridical that a stock split signals better prospects for the companies in future and can also be interpreted as a vote of confidence by the management *Grinblatt et al., (1984)*, referred to as *signaling hypothesis*. A stock split lowers the share price, which in turn makes stocks more

attractive to retail investors and culminates in driving the share price higher and in turn improve the market capitalization of the companies. Most of the CFOs' have opined that an exercise of splitting stocks could remove the psychological problem or block of paying a higher price for stocks *Baker (1993)*. This is termed as *liquidity hypothesis*. *Arbel et al., (1993)*, predominantly in the context of stock splits have proposed the *Neglected Firm Hypothesis*. According to them, if there is little information about a firm, its shares trade at a discount. Thus, a firm's manager use the split to draw attention of the investors to ensure that information about the company is recognized widely than before.

In India, SEBI (Securities Exchange Board of India) permitted stock splits in the year 1999 and this was followed by a majority of the companies splitting stock frequently in a short period of time. Companies that were already trading in a nominal price range were resorting to stock splits. This was evident during the period 2005-2009 and again in 2012-2014. Since companies announcing stock splits were on the rise, it has puzzled investors and academicians on what could be the probable factors which influence stock split decisions in India. A lot of studies have been done on stock splits and the studies were centered around the effect of stock splits on the price, returns, volatility and trading volume. *Reboredo Juan (2003)*, in the study has found that there is negative effect of stock splits on price and returns, positive effect on volatility and trading volume. *Mishra (2007)* has found that the cumulative abnormal returns after the split are negative.

Desai et al., (1997) have shown that there exists a positive abnormal return around the announcement date of the split. The objectives of the present study are to study the reaction of the market to stock split announcements for the period selected for the study. With this background the remaining part of the study is organized as follows- Review of Literature, Methodology, Analysis and Interpretation, Conclusion and Future Research.

Review of Literature

Jijo et al., (2002) investigated the effects of stock splits on market valuation and trading pattern around split announcement and ex -date of BSE30(Bombay Stock Exchange)stocks of India. It is found that there is abnormal return of 7.14 per cent around the stock splits announcements. The study also finds that there is no liquidity after stock splits. The abnormal returns are statistically significant around the ex -split date. *Budhraj et al., (2003)* undertook a study of BSE30(Bombay Stock Exchange) stocks of India and argued that the announcement of a split sets off the following chain of events like increase in the daily number of transactions which in turn increases the noise-ness of the security return process. The increase in noise raises the tax option value of the stock and it is this value that generates the announcement effect of stock splits. The effect of stock splits on stock price, return, volatility and trading volume around the split ex-dates for a sample of stock splits was undertaken in the Spanish market during 1998-1999. The evidence suggests that there is negative effect on price and

return of stock splits and the presence of a positive effect on volatility and trading volume. Finally, the paper concludes that signaling hypothesis and irrelevance hypothesis does not hold good during the period of study (*Juan, 2003*).

Ranjan et al., (2003) tried to study the reasons for firms offering equity subsequent to stock splits. They have found no difference in returns between firms issuing equity after stock splits and non-stock split firms during the issue period. Since investors react positively to stock split announcements, firms issuing stocks will sell their new issue at a higher price and raise more funds. The authors have also found that firms split stocks to make their subsequent equity offerings more marketable to the investors who are attracted by the low priced shares. *Savitri et al., (2005)* examined the impact of stock split and reverse split on stock return and trading volume on Jakarta Stock Exchange between 2001-2005. The study has analyzed abnormal returns and volume during the period around the split and has related stock returns to profitability, leverage and volume. It is concluded that there are significant abnormal returns on the date of split on the fifth day before split. Trading volume and return on asset have significant influence on market-adjusted returns. *Katerina et al., (2006)* indicated that the market reaction to stock split announcements is positive, which implies the managers and investors perceive the stock split as a good news event regarding the company. The results are consistent with trading range and liquidity hypothesis. *Farinos et al., (2006)* investigated the robustness of the results obtained for the possible motivation for listed firms in the Spanish Market

to execute a stock split using different methodologies. Surveys from executives emphasize the use of stock splits as a way to increase liquidity of shares; the empirical evidence is not conclusive. The authors have used models such as logit regression, Cox regression which all have supported signaling and optimum range hypotheses. *Gupta (2007)* provided evidence that there is no announcement effect associated with stock splits in India though there does exist a pronounced ex- day effect. Also found no evidence for the trading range hypothesis as a possible explanation for stock splits in India, as majority of shares that underwent split were trading at low market prices. It appears that reasons for a stock split by low priced companies could be the neglected firm hypothesis-, which appears to be valid for the Indian stock market.

Harish (2007), in his study the author has taken a close look at stock split as an event to study the efficiency of the Indian market. He has studied the cumulative abnormal returns of stocks, which have gone for stock splits for the period of study undertaken. The results have shown that the abnormal returns during pre and post stock splits are statistically not significant leading to the conclusion that semi strong form of efficiency do not exist in the Indian stock market. *Dhar et al., (2006)* have examined the effects of stock splits and bonus issue on the Indian stock market. Also, the study has also studied the nature of efficiency of Indian stock market. The results have shown that both the events are associated with significantly positive announcement effect. For the stock splits, the abnormal returns are 0.8 per cent and the paper has found semi-strong

form efficiency in the Indian stock market. *Joshiyura Mayank (2008)* has studied price and liquidity effect associated with stock split surrounding its announcement. The results have shown that there is significant positive abnormal return associated with stock split, but it reverses in just a few days after the event day and generates significant negative abnormal returns in a slightly longer post event days. In conclusion, a stock split does not have a positive impact on the wealth of the shareholders and only improves liquidity of the stocks. The authors have examined the factors, which influence stock split decisions in Indian context. The study has taken a sample of 50 companies listed in BSE (Bombay Stock Exchange) during the period 2007. Paired sample 't' test was used to study the change in the Profit after Tax (PAT), volume of trade and Foreign Institutional Investors (FII) holdings prior to and post stock split date. Results have shown that there is positively significant change in the profit after tax, volume of trade and FII holdings between pre and post-split date. A multiple regression model was constructed and the results have shown that Price of shares (5 days prior to stock split) and volume of trade are the factors influencing stock split decisions in Indian stock market, thereby indicating that companies with highly priced shares split stocks to increase volume of trade. Though, there is significant change in the PAT between the pre and post stock split period, this factor has had a negative influence on the stock split decision, thereby rejecting the hypothesis that stock splits signals improved future earnings of the companies. Liquidity hypothesis and trading range hypothesis are holding good for the Indian stock market (*Sriram et al, 2010*).

Methodology

The period of study is 2014. A total of 81 companies split stocks during the year. The closing price of the Companies shares 15 days prior and post stock split is taken for the study (*Sriram et al, 2009*). The pre-split share prices were adjusted for the split ratio before the analysis was done. The split date is referred as t_0 , the pre-split period is t_{-1} and post-split period is t_{+1} .

The daily returns of the sample shares are extracted from the CMIE (Prowess) database. The Index (to calculate returns from the market R_m) considered for the study is BSE 100 Index. The R_m for the period of study is also extracted from the database.

The daily returns of BSE 100 index is considered as the expected return for the sample under study. Average Abnormal returns (AAR) and Cumulative Average Abnormal Returns (CAR) were considered to evaluate whether the stock split decision has had any impact on the shareholders' wealth. (*Jaduda et al., 2010*) used paired 't' test to study the average abnormal returns prior and post stock split period. Abnormal Returns for company i , period t is calculated as follows:

i. $AR = R_{i,t} - R_{m,t}$

ii. Average abnormal returns (AAR) on a day $t =$

$$\frac{1}{n} \sum_{i=1}^n AR_{i,t}$$

iii. Cumulative Average Abnormal returns (CAR) =

$$\sum_{t-1}^{t+1} Aar$$

Security Return Variability (SRV) model is used to know the market reaction to stock splits. This tool is used to study whether stock split as an event contains information relevant for valuation of securities (*Raja et al., 2009*). The following is the calculation of the SRV:

$$SRV_{i,t} = \frac{AR_{i,t}^2}{V(AR)}$$

Where,

$SRV_{i,t}$ = Security Returns Variability of security i in time t

AR^2 = Abnormal Returns of security i on day t

$V(AR)$ = Variance of Abnormal Returns during the announcement period.

Average Security Returns Variability (ASRV)

ASRV = *

$SRV_{i,t}$ = Security Returns Variability of security i in time t

n = Number of stock splits

Analysis and Interpretation

Table I : The Daily Average Abnormal Returns (AAR) and Cumulative Abnormal Returns (CAR) of the stock split companies

Table flows to next page

Days	AAR	CAR	Sign Value
-15	(0.11)	(0.11)	0.62
-14	(0.33)	(0.44)	0.17
-13	(0.22)	(0.66)	0.33
-12	0.02	(0.64)	0.94
-11	(0.20)	(0.84)	0.38
-10	(0.55)	(1.39)	0.02*
-9	(0.26)	(1.65)	0.26
-8	(0.40)	(2.05)	0.06**
-7	(0.32)	(2.37)	0.17
-6	(0.31)	(2.68)	0.18
-5	(0.33)	(3.01)	0.16
-4	(0.62)	(3.63)	0.00*
-3	(0.73)	(4.36)	0.00*
-2	(0.46)	(4.82)	0.05*
-1	(1.13)	(5.95)	0.03*
0	(5.79)	(11.74)	0.07**
1	(1.74)	(13.48)	0.00*
2	(1.06)	(14.54)	0.00*
3	(0.50)	(15.04)	0.06**
4	(0.32)	(15.36)	0.26
5	(.20)	(15.56)	0.55
6	0.89	(14.67)	0.00*
7	1.92	(12.75)	0.00*
8	1.16	(11.59)	0.00*
9	0.59	(11.00)	0.02*
10	0.16	(10.84)	0.49
11	0.60	(10.24)	0.01*
12	0.36	(9.88)	0.12
13	0.28	(9.6)	0.15
14	0.56	(9.04)	0.02*
15	0.17	(8.87)	0.53

* Significant at 5%, ** Significant at 10%
 Figures in () parenthesis indicate negative returns.

Table I shows the AAR and CAR values on a daily basis. The AAR is negative during the days -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1 leading to a conclusion that the index (BSE 100) returns were more than the stock returns. The AAR is negative on the event day and continues to earn negative returns on days 1, 2, 3, 4, 5 and the AAR is positive from days 6 to 15. The returns on days -9, -8, -4, -3, -2, -1, 0 and 2, 3, 6, 7, 8, 9, 11 and 14 are statistically significant @5% and 1% respectively. It can be concluded that there is no information leakage around the stock split date regarding stock splits of companies. Also the market reaction to stock split is also very slow as the AAR is positive only from the 6th day onwards.

The CAR continues to be negative on all the days prior to and after the day of stock split. The negative CAR continues to decrease from -15th day (0.11) to (11) on the 9th day post stock split period. From the 10th day onwards, the negative CAR increases marginally from (10.84) to (8.87) till the 15th day of the period under study. Therefore, it can be concluded that the market reacts slowly to stock split announcements made by companies as the stock returns outperform the market returns only in the post stock split period.

Table II : Paired Sample Statistics of AAR and CAR prior to and post stock split

Variable Name	Pre-Split		Post-Split		t Value
	Mean	Std Deviation	Mean	Std Deviation	
Average abnormal returns(AAR)	(0.3967)	.279	.1913	.8940	(2.271)*
Cumulative Average abnormal returns(CAR)	(2.298)	1.76	(12.16)	2.44	9.297**

176 * Significant at 1%, ** Significant at 1%

The average AAR has increased from (39.67%) to 19.13% during the post stock split period. The mean difference is also statistically significant @ 5%. The average CAR has drastically come down from (2.298%) to (12.16%) during the post-split period. This may be due to the fact that AAR was positive only from the 6th day onwards through the 15th day during the post- split period. Though the CAR has improved in the post- split period, the returns are still negative. The mean difference is also statistically significant @1% and hence it can be concluded that there is a significant association between stock splits and share holders' earnings.

**Table III : The Average Security Returns Variability (ASRV)
Fifteen Days Prior to Post Stock Splits**

Days	ASRV	Sign Value
-15	8.84	0.00*
-14	3.57	0.58
-13	(2.89)	0.04**
-12	1.87	0.22
-11	4.04	0.04**
-10	0.96	0.69
-9	(0.62)	0.84
-8	(2.95)	0.11
-7	1.19	0.63
-6	6.25	0.47
-5	(0.39)	0.86
-4	2.07	0.31
-3	(3.07)	0.17
-2	(3.05)	0.06***

-1	2.4	0.37
0	(17.4)	0.30
1	0.03	0.99
2	1.04	0.31
3	5.88	0.19
4	2.36	0.71
5	(0.58)	0.89
6	(3.92)	0.39
7	2.64	0.74
8	0.61	0.13
9	(3.92)	0.39
10	1.51	0.75
11	(8.50)	0.13
12	1.82	0.04**
13	1.61	0.75
14	0.51	0.75
15	1.31	0.48

*significant @ 1%, **significant @ 5%, ***significant @ 10%

Figures in parenthesis () indicates negative returns

Table III shows the Average Security Returns Variance (ASRV) for fifteen days prior to and post stock split. Figure 4.11 shows the graphical representation of ASRV movements during the period of study. ASRV measures the returns for every one percent variation in the returns of the sample companies. A positive ASRV denotes that the stock split has certain information which the market will use to revalue the securities and vice versa. From the table it can be seen that ASRV was negative during the days -13, -9, -8, -3, -2 prior to stock split date and for the rest of the days ASRV

was positive. The ASRV was statistically significant only on days -13, -11 and -2 respectively. On the stock split day, the ASRV was negative and on the day -1, the ASRV was positive but not statistically significant. Therefore, it shows that the share prices of all the stocks have not reacted around the stock split date and on the stock split day.

During the post stock split period, the ASRV was positive on all the days except for 5th, 6th, 9th and 11th days. The positive ASRV on 8th day was statistically significant. The average ASRV also came down from 1.31 during the pre-split period to 0.65 in the post stock split period. Thus it can be concluded that the market has not reacted to stock split as an event and therefore, there is no significant association between the information content of stock splits and valuation of securities.

Conclusion and Future Research

The study has analysed the market reaction to stock split by studying the AAR and CAR on a daily basis. Table I shows the AAR and CAR on daily basis. The average AAR is negative during the days -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1 leading to a conclusion that the index (BSE 100) returns were more than the stock returns. The AAR is negative on the event day. In the present study AAR continues to earn negative returns on days 1, 2,3,4,5 and the AAR is positive from days 6,7,8,9,10,11,12,13,14,15. The market reaction to stock split is very slow as the AAR is positive only from the 6th day onwards. The CAR continues to be negative on all days prior to and after the stock split

day. Table III shows that the average AAR has increased from (39.67%) to 19.13% during the post stock split period. The mean difference is also statistically significant @ 5%. This shows that AAR has considerably improved in the post- split period. Using ASRV analysis, it is concluded that the market has not reacted to the stock split event and there is no significant difference between the information content and valuation of securities. The study concludes that there is no reaction of the market to stock split announcements. This is evident from the results discussed in the paper. The reaction of the market gathers momentum only after the stocks are split by Companies. From the investors' perspective, announcement of stock splits by companies is not a signal of improved future performance and hence the investors need not react to stock split announcements. Therefore, the paper supports liquidity and trading range hypotheses which states that companies undertake stock splits to increase trading volume of its shares in the market. Future research can focus on identifying factors which discriminates stock split companies from non-stock split Companies. Also, reverse split is a new phenomenon which is happening in Indian Markets, future studies can focus on markets reaction to reverse splits.

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