



Impact of Stock Split on Stock Returns on and around its Announcement Date: Evidence from Indian Stock Market

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Abstract

Stock split is one of the newly introduced devices in Indian Stock Market during the post-liberalisation era. Theoretically stock split is merely a cosmetic transaction which neither creates nor destroys any value to the splitting firm or to its shareholders in post-split period. But, a large number of empirical studies on this phenomenon conducted in the context of stock markets of developed countries abroad document that market reacts significantly on announcement of a split. Empirical findings on market reaction to stock split in India are mixed with some studies reported positive market reaction while some others documented negative or no effect of split on stock returns surrounding its announcement date. In the present study, market reaction to stock split announcement in Indian stock market has been examined by analyzing behaviour of abnormal stock returns on and around the announcement dates of stock splits using a more refined methodology than the earlier studies and using a sample of splits covering a larger period. The empirical findings of the study indicate that split is not associated with any type of abnormalities in stock returns on and around the announcement date of stock splits and hence provide evidence on efficiency of Indian stock market in semi-strong form.

Key Words: Stock split, Abnormal return, event study, market efficiency.

The stock market in India has witnessed significant and profound developments during the post-1991-reform era in conjunction with overall financial sector and economic developments. The government and market regulators have implemented a series of reform measures to enhance efficiency of Indian stock market and as a part of the continuous endeavour of the government and market regulators towards that direction, stock split was introduced in Indian bourses in the year 1999. Stock split is nothing but dividing an existing equity share into a number of shares by reducing its face value to a lower denomination. As a result of such split, the face value of each share decreases by the split ratio and the number of outstanding shares increases by the same split ratio. For instance, in a 'one for one' split, the face value of each existing equity share will be halved and number of outstanding shares of the company will be doubled. On the other hand, in case of reverse-split of

stock, just opposite situation is happened. This means, in this case, face value is increased and number of outstanding shares is decreased in proportion to reverse-split ratio.

Thus, theoretically stock split does not have any real significance either from the view point of the splitting firm or to its shareholders. The only thing that is required for the splitting firm no recognise this event is to make necessary accounting entries in the books of account converting the face value of shares into smaller and desired denomination. On the other hand, though the shareholders get additional shares of the splitted firm without paying anything, the value of their holdings in the splitted firm remain the same in the post-split period as the par value of shares held by them also reduces proportionately as a result of split. Thus, split can be regarded as a cosmetic transaction having no economic consequence. In spite of this, split is a very popular corporate action worldwide and even in our country where it was first introduced in the post-reforms period, a large number of companies go for split every year.

In the present study market reaction to stock split announcement has been examined by analysing behaviour of abnormal stock returns surrounding the announcement date of splits. For this, the paper has been organised into six sections including the present one. The next section reviews in brief, the pertinent literature on announcement day effect of stock split. The objectives of the study have been listed out in Section III. The data base used and methodology employed in this study have been described in Section IV. Section V reports empirical findings on behaviour of abnormal stock returns around the announcement dates of stock split and the last section has been devoted for summary and conclusions of the study.

Section II: Review of Literature

There exists a large number of empirical studies which analysed the announcement effects of stock split in the context of various stock markets abroad [Fama et al. (1969), Bar-Yosef and Brown (1977), Ross (1977), Charest (1978), Foster and Vickrey (1978), Woolridge (1983), Grinblatt et al. (1984), Christopher et al. (1987), Lakonishok and Lev (1987), Lamoureux and Poon (1987), Brennan and Copeland (1988), Asquith et al. (1989), McNichols and Dravid (1990), Conrad and Conroy (1994), Ikenberry et al. (1996), Muscarella and Vetsuypens (1996), Pilotte and Manuel (1996), Desai and Jain (1997), Conroy and Harris (1999), Kadiyala and Vetsuypens (2002), Goyenko et al. (2005), and many others] and reported mixed evidences. In India, literature on market reaction to stock split begun with the study of Lukose PJ and Rao (2002) and thereafter a number of studies [Gupta and Gupta (2007), Mishra (2007), Dhar and Chhaochharia (2008), Choudhary and Choudhary (2009), Joshipura (2009), Banerjee et al. (2010), Alex et al. (2011), Chavali and Zahid (2011), Ghatak (2011), Joshipura (2013), Pooja (2013), Rajesh (2013), Singh and Sapna (2013), Bhuvaneshwari and Ramya (2014), Thirunellai (2014), etc.] have been carried out to examine announcement effects associated with stock splits in India. In those studies, the researchers have documented mixed results comprising positive, negative and insignificant impact of stock splits on stock returns surrounding the announcement dates of splits.

Section III: Objectives of the Study

The major objective of the present study is to examine empirically the impact of stock split on stock returns on and around the announcement date of stock split by analysing behaviour of abnormal stock returns surrounding the announcement date of splits. The study also examines the efficiency of Indian stock market in semi-strong form using split announcement information.

Section IV: Data Base and Methodology

The initial sample of the study comprises of all the Bombay Stock Exchange listed companies those undertaken splits during the period from 14th June, 1999 (being the date from which stock split became permitted in Indian stock market) to 31st March, 2016. Thereafter, the sample firms for which (i) daily share prices are not available for at least three and a half years preceding the split announcement month (which are required for fitting market lines of the sample firms) and (ii) daily share prices are not available for sixty one trading days (being the event window for the study) as well as firms which announced or distributed any cash or stock dividend or right issue within the event window have been excluded from the initial sample (with the objective to minimize the impact of other firm-specific factors on sample firms' stock prices) resulting number of splits to 316 from 1029 initially identified. From these 316 splits, a sample of 30 splits have been selected for the study by applying the technique of simple random sampling without replacement as a sample of size 30 is considered as a large sample in statistical sense. We have collected the announcement dates and all the stock price data primarily from 'Capitaline' and 'Prowess' data base packages. The ex-date stock prices of sample firms have been adjusted properly for any bonus issue, right issue, direct split and reverse stock split in order to make them comparable with the cum-date price quotations

The behaviour of stock returns around the event dates of stock split have been analysed by employing standard event study methodology with market model originally used by Ball and Brown (1968). For conducting event study, the normal returns of each security for each day within the event window (day -30 to day 30, where event day is denoted as day 0) have been estimated first using market model as follows:

$$\ln R_{it} = \alpha_i + \beta_i \ln R_{mt} + \varepsilon_{it}$$

Where R_{it} is the price relative of security i for the period t ; R_{mt} is the market index (as a proxy for the market portfolio) relative for the period t ; \ln implies natural logarithm; α_i and β_i are the parameters and ε_{it} is a random disturbance term.

The values of α and β for each splitted firm have been estimated using daily closing stock prices and daily closing values of BSE-sensex for a period of three years ending six months preceding the split proposal date. Then the estimated market lines have been used to compute normal returns of the sample securities around the split announcement. A period of 31 days centered on the event date (day 0) has been chosen as the event window for analyzing behaviour of stock returns around each of the event dates. For each split the event day is defied as 'day 0', the day immediately following the

event date as ‘day 1’, the day immediately preceding the event date as ‘day -1’ and so on. Thus, the event window for the study spreads from day -15 to day 15. Since our objective is to investigate the unexpected or unusual firm-specific behaviour of stock returns of the sample firms, we have computed ‘Abnormal Return’(AR) of each sample firm for each day within the event window as follows:

$$AR_{it} = R_{it} - \hat{R}_{it}$$

Where AR_{it} is the abnormal return of security i on date t ; R_{it} is the actual or realised return of security i on date t and \hat{R}_{it} is the estimated normal return of the security i on date t (calculated by using fitted market line). The R_{it} has been computed as:

$$R_{it} = \ln \left(\frac{P_{it}}{P_{i,t-1}} \right)$$

Where P_{it} is the closing price of the security i on date t and $P_{i,t-1}$ is that on date $t-1$; \ln implies natural logarithm.

Thereafter, the abnormal return figures of the sample firms have been averaged cross-sectionally (using simple mean) for each day within the event windows and the behaviour of cross-sectional average abnormal returns surrounding the split announcement dates has been analysed in order to draw overall inference on the abnormal return observations associated with splits. The average abnormal return for day t (AAR_t) and cumulative average abnormal return for day t ($CAAR_t$) have been computed as:

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{it} ; \text{ and } CAAR_t = \frac{1}{N} \sum_{k=-30}^t AAR_k$$

Where N is the number of firms included in computing AAR .

A cross-sectional t-test has been performed to determine the significance of AAR_t for each day within each of the event windows. Here the test statistic is as follows:

$$t = \sqrt{N} * \frac{AAR_t}{s'} : t_{n-1}$$

Where N is the number of sample firms; s' is the unbiased standard deviation of AR_{it} .

In order to test the statistical significance of average abnormal returns ($AARs$) before the event date (day -30 to -1), after the event date (day 1 to 30), around the event date (day -30 to 30) and for

different holding periods within the event window, we have applied t -test separately for these periods as:

$$t = \sqrt{n} * \frac{\overline{AAR}_t}{s'} : t_{n-1}$$

Where n is the number of AAR_t ; \overline{AAR}_t is the mean of $AAR_t = 1/n \sum AAR_t$; s' is the unbiased standard deviation of AAR_t .

Section V: Empirical findings

In this study the behaviour of stock returns surrounding the announcement dates of stock split have been analysed using standard event study methodology with the market model. A summary of the estimated parameters of the security market lines along with values of adjusted R square of both sample and control firms is given in Table-1.

Table-1

Summary of Estimated Parameters of Security Market Lines of Sample Firms

Statistic	Mean	Median	Mean Abs. Deviation	Standard Deviation	Extreme Values	Skewness
α	.002293	.001926	.004060	.007349	.037630 & -0.016300	2.073
β	.665851	.510000	.489082	.890503	5.870000 & -1.273000	3.859
\bar{R}^2	.077230	.052500	.065609	.085557	.300000 & -0.007000	1.309

Table-2 presents the Average abnormal returns (AARs) and Cumulative average abnormal returns (CAARs) of the sample firms around 31 trading days centered on stock split announcement date (day 0) along with corresponding values of t -statistics and others.

It is observed from Table-2 that the AARs around the stock split announcement date do not follow any systematic pattern in their movement. Out of total 31 days AAR for 15 days are positive (48.39%) while AAR for 16 days are negative (51.61%) but none of the AARs including the announcement day itself (Day 0) is statistically insignificant. Moreover, 66.67% of the sample firms observed negative AARs on the announcement date of split. From Table-2, it is also seen that Cumulative Average Abnormal Return (CAAR) for most of the days is negative yielding a negative CAAR of 0.85% over the 31 days period. However, none of them is statistically significant at any acceptable level. It is also evident from Table-2 that for the all days within the event window the observed AARs are not due to

presence of outliers as the percentage of firms those observed positive AARs on different days within the event window ranges for 43.33% to 70% (except the announcement date in which the figure is 33.33%). So, no significant impact of stock split announcement is observed on stock returns on and around such announcement which is in line with what is expected to be as the proposal for split is taken in the board meeting well before its formal announcement. The findings of the study, thus, contradict the findings of most of the earlier studies carried out in the context of Indian stock market where researchers observed significantly positive abnormal returns on announcement of split.

In order to investigate the behavior of observed abnormal returns observations for the pre-announcement period (Day -15 to Day -1), post-announcement period (Day 1 to Day 15), around announcement day (Day -15 to Day 15) and different holding periods within the event window, we have computed mean AARs and CAARs for those periods and statistical significances of those computed values have been tested using t-test [Table-3]. It is observed from Table-3 that, mean AARs for the holding periods 'Day 1 to Day 7' and 'Day 1 to Day 15' in the post-announcement period are negatives (viz. -0.35% and -0.15% respectively) while those for the holding periods 'Day -7 to Day -1' and 'Day -15 to Day -1' in the pre-announcement period are positive (viz. -0.34% and -0.08% respectively) and mean AAR for the entire event window (Day -15 to Day 15) is negative viz.. -0.03%. However, the mean AARs for holding periods closer to the event day (viz. 'Day -1 to Day 1', 'Day -2 to Day 2', 'Day -5 to Day 5' and 'Day -7 to Day 7') are all positive. But, none of the observed AARs is significant statistically. Thus, no abnormal return in a systematic manner can be earned by trading on splitted stocks either in pre-announcement or post-announcement period as mean AARs for all the holding periods in pre and post-announcement periods are all statistically insignificant. The findings, thus, provide evidence on semi-strong form of market efficiency of Indian stock market

Section V: Summary and Conclusions

The study examines the impact of stock split on stock returns on and around the announcement dates of stock split for a sample of thirty stock splits occurred in Indian stock market during the period of the study conducting event study using thirty one day event window. For the sample, no significant price reaction has been observed on stock split announcement and none of the mean average abnormal returns for the pre-announcement, post-announcement day differs significantly from zero. The results also documents the efficiency of Indian stock market in semi-strong form as abnormal returns observations behave in a random fashion before, after and around the announcement date of split and mean average abnormal returns for all those periods are statistically insignificant.

Table- 2: Average Abnormal Returns [AARs] and Cumulative Average Abnormal Returns [CAARs] surrounding Stock Split Announcement Date

Day relative to Split Announcement Date	AAR	t-value	CAAR	Percentage of firms having AR>0
Day -15	-0.0027	-0.258	-0.0027	70.00
Day -14	-0.0064	-0.502	-0.0091	46.67
Day -13	0.0025	0.262	-0.0066	66.67
Day -12	-0.0075	-0.882	-0.0141	60.00
Day -11	-0.0088	-0.955	-0.0229	53.33
Day -10	-0.0028	-0.270	-0.0257	56.67
Day -9	0.0094	1.008	-0.0163	60.00
Day -8	0.0040	0.539	-0.0123	70.00
Day -7	-0.0074	-0.997	-0.0197	50.00
Day -6	0.0130	1.305	-0.0067	56.67
Day -5	-0.0055	-0.515	-0.0122	50.00
Day -4	0.0060	0.536	-0.0062	60.00
Day -3	0.0088	0.695	0.0026	60.00
Day -2	0.0056	0.599	0.0082	56.67
Day -1	0.0034	0.325	0.0116	50.00
Day 0	0.0019	0.160	0.0135	33.33
Day 1	0.0111	0.084	0.0246	50.00
Day 2	-0.0117	-0.823	0.0129	46.67
Day 3	0.0122	1.050	0.0251	43.33
Day 4	-0.0105	-0.818	0.0146	50.00
Day 5	-0.0048	-0.460	0.0098	53.33
Day 6	-0.0134	-1.522	-0.0036	43.33
Day 7	-0.0073	-1.199	-0.0109	53.33
Day 8	0.0047	0.410	-0.0062	53.33
Day 9	0.0025	0.265	-0.0037	53.33
Day 10	-0.0033	-0.299	-0.0070	43.33
Day 11	-0.0055	-0.475	-0.0125	46.67
Day 12	0.0100	1.026	-0.0025	56.67
Day 13	-0.0009	-0.098	-0.0034	43.33
Day 14	-0.0060	-0.780	-0.0094	50.00
Day 15	0.0009	0.105	-0.0085	66.67

Table- 3: Mean and Cumulative Average Abnormal Returns for Different Holding Periods within the Announcement Day Event Window

Holding Periods	No. of Days	Mean AARs	Standard Deviations of AARs	Standard Errors (S.E.) of Mean	t-values	CAARs
Day -15 to Day -1	15	0.0008	0.0071	0.0018	0.423	0.0116
Day 1 to Day 15	15	-0.0015	0.0082	0.0021	-.690	-0.022
Day -15 to Day 15	31	-0.0003	0.0075	0.0013	-0.203	-0.0085
Day -7 to Day -1	7	0.0034	0.0074	0.0028	1.220	0.0239
Day 1 to Day 7	7	-0.0035	0.0107	0.0041	-.860	-0.0244
Day -7 to Day 7	15	0.0001	0.0092	0.0024	0.039	0.0014
Day -5 to Day 5	11	0.0015	0.0084	0.0025	0.591	0.0165
Day -2 to Day 2	5	0.0021	0.0084	0.0038	0.545	0.0103
Day -1 to Day 1	3	0.0055	0.0049	0.0028	1.918	0.0164

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