Differences in Impact of Stock Splits with Difference in Size of the Companies (Announcement Day)

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Abstract:
In theory, stock splits should not have any effect on share prices and there should not be any value creation as a result of it. In spite of theoretical simplicity, this corporate event has induced different reactions in variety of capital markets all over the world. The empirical results indicate that stock splits have significant impact on Ars in announcement window irrespective of differences in size of sample companies. The significant impact on AARs is visible in announcement window for small size companies in irregular manner but for longest duration till t+20.The duration of effect is lesser for medium size companies and it is least for large size companies.

1. Introduction

Stock splits also termed as stock sub-division, occur when equity shares are split into a specific number of new equity shares at a reduced face value though total equity share capital remains unchanged and there is no change in paid up capital. In a perfect capital market in theory stock splits should not have any impact on share prices since it does not contain any information. But impact on share prices, returns and liquidity has been observed in past empirical studies.

In India, it is the limited companies which are permitted to announce stock splits and reduce face value, after making an amendment in MOA as per section 61(1) (d)[1] of the Companies Act 2013.According to sec 61(1) (d) of Companies Act 2013 every limited company having share capital if authorised by its articles is permitted to subdivide its shares, or any of them, into shares of smaller amount than is fixed by the MOA by alteration in MOA. However, after split proportion between the amount paid and amount, if any, unpaid on each reduced share shall be same as it was in case of the share from which reduced share is derived.

Dolley (1933) used event study for first time and suggested that primary reason for splits was wider distribution of shares which was accomplished by reducing market value per share and facilitating trading. It was concluded that officials employed splits to safeguard their wellbeing from acquisitions risks.

Baker and Gallagher (1980), Lakonishov and Lev (1987), and Lamoureux and Poon (1987) were of opinion that executives utilized stock split as an instrument to increase their shareholder base which makes it tougher for probableacquirers to control.

Dennis and Strickland (1998) studied ownership structures, returns and volume traded of companies which announced stock splits[2].They pointed that magnitude of liquidity after split depends on ownership structure of the company. Investment institutions which are biggest liquidity source in the market increase their stake when split is announced.The study revealed that more the institutional investors invested in a company pre-split, the less the liquidity gains were likely to be. They concluded that liquidity gain is related to ownership structures rather than

split announcements. Pre-split companies with low institutional investors see gains because of coming of these investors.

Thus studies in past have noted that ownership structure of a company plays an important role in amount of liquidity gains associated with stock splits.
The research objective set for the study restricted to India is as follows:

1. To investigate differences in effect of stock splits on share prices with differences
2. in split ratios and size of company.
3. In order to attain the research objective following research hypothesis is framed:

HYP:1- Different size companies have different impact on share prices.

2. Research Methodology

The research papers and studies in the past are primarily used as basis to decide appropriate methodology used for analysing the impact of stock splits on share prices. The use of event study methods for analysis is well documented and evaluated in previous work. It helps in determining whether an event generates abnormal returns after a company makes a financial decision in relation to an asset or whether an event affects value of that asset.

The sample comprises of stock splits announced by companies listed on Bombay Stock Exchange (BSE) which became effective during period starting from 1st January 1999 and till 30th June 2013. The closing share prices data for the sample along with values of BSE Sensitive Index[3] is collected from Prowess 19.1, a database of Centre for Monitoring Indian Economy (CMIE)[4].

The stock split announcement dates are not directly published in any of the leading business dailies. The dates of announcement day are taken from Prowess database, Capital line and press reports of Economic Times. Additional information is obtained from bseindia.com (official website of BSE).

All sample companies are put in three different groups of companies- small-size, medium-size and large-size on the basis of their market capitalization on ex-split day. The group of companies termed as small size companies (79 Companies) have market capitalization up to Rs.2,000 million. The group of companies categorized as medium size companies (54 Companies) have market capitalization up to Rs.10,000 million and group of companies termed as large size companies (81 Companies) have market capitalization above Rs.10,000 million.
Impact of stock splits on share prices is analysed through stock returns. The study tries to find effect around announcement day and same is discussed below.

Impact of stock splits around ex-split day is studied through abnormal returns (ARs) calculated using market model as a part of Event Study. Abnormal return is defined as actual return (R_{it}) minus normal return (NR_{it}).

$$AR_{it} = R_{it} - NR_{it} \quad (1)$$

Normal Return is calculated using Market model which is –

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$$

And,

$$NR_{it} = \hat{\alpha}_i + \hat{\beta}_i R_{mt} \quad (2)$$

R_{mt} is return on market index for day t.α_i measures mean returns not explained by market. $\hat{a}_i$ measures sensitivity of return (company i) to market return and ϵ_{it} is the statistical error whose expectation is assumed to be zero.

Using Eq.(5.1) and Eq.(5.2), abnormal returns are defined as residuals or prediction errors of model which is as under:

$$AR_{it} = R_{it} - NR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) \quad (3)$$

Where, $\hat{\alpha}$ and $\hat{\beta}$ are OLS estimators of regression coefficientestimated over estimation window.
Impact on Average abnormal returns (AARs) – ex-splitday
The un-weighted cross-sectional average abnormal returnsin period t are calculated using:

$$AAR_{it} = \frac{\sum_{i=1}^{N} AR_{it}}{N} \quad (4)$$

Where, N is number of shares for which ARs are presenton an event day in the event window. The event window is from t_{-20} to t_{+20}.The null hypothesis tested is:

$$H_o : E(AAR_{it}) = 0$$

Z-test is used to test statistical significance of AARs on an event day. It assumes that AARs are independently and identically distributed, have same mean and variances and are cross-sectionally uncorrelated. is unknown and estimator of can be constructed from cross-sectional variance of ARs in period t_i. The Z-statistics is calculatedas under:

$$Z = \sqrt{N}\left(\frac{AAR_{it}}{s_t}\right) \approx N(0,1) \quad \sigma \quad (5)$$

If AARs are not zero and statistically significant it indicates that share prices behave positively or negatively to stock splits and affect wealth of shareholders.

The assumption that variance of all ARs is equal for all companies may not be true. Some shares may be more volatile than others lowering power of Z-test. So, weighted average of abnormal returns can be taken which puts lower weight on ARs with high variance. Reciprocal of estimated standard deviation of ARs of estimation window is used as weights to calculate SARs of individualcompany in following way:

$$SAR_{it} = \sum_{i=1}^{N} \frac{AR_{it}}{s_i} \quad (6)$$

And

$$ASAR_{it} = \frac{1}{N}\sum_{i=1}^{N} SAR_{it} = \frac{1}{N} \sum_{i=1}^{N} \frac{AR_{it}}{s_i} \quad (7)$$

The $ASAR_{ti}$ is cross sectional average of SARs. The ASARs are assumed to be uncorrelated across companies and used to test null hypothesis:

$$H_o : E(ASAR_{it}) = 0$$

For which following Z-statistic is constructed:

$$Z_s = \sqrt{N}\ (ASAR_{it}) = \frac{1}{\sqrt{N}} \left(\sum_{i=1}^{N} SAR_{it}\right) \quad (8)$$

The significant positive impact of stock splits is found to be present on AARs on announcement day in section 5.1.1.The study tries to analyse cumulative effect of AARs using Cumulative average abnormal returns (CAARs).CAAR is obtained by aggregating AARs for event day t_1 through t_2 using:

$$CAAR_{it} = \sum_{t=t1}^{t2} AAR_{it} \quad (9)$$

The null hypothesis tested is that CAAR at the end of period over which AARs are aggregated is zero. If CAAR is greater than zero; with significant Z-values it implies that there is significant impact of stock splits on ARs.

For testing statistical significance of CAARs for N number of companies over t days

(t_1 through t_2), Z_{CS} -statistic is calculated at 5% level of significance using following:

$$Z_{cs} = \frac{1}{\sqrt{N*T}} \left(\sum_{i=t_{1i}}^{t_{2i}} SAR_{it} \right) \qquad (10)$$

The sample companies are grouped on the basis of market capitalization as small size, medium size and large size companies.
The changes in share prices are studied through ARs which are calculated using equation (1), (2) and (3).

4. Impact on AARs - announcement day (different sizecompanies)
The AARs are calculated using equation (4). **Table 1** showsresponse of 79 small size companies to stock splits. The Z-test is used to find statistical significance of AARs using equation (5).The null hypothesis tested is that AAR on an event day in announcement window is equal to zero.

Tables 1 show that AARs increase and are positive on 8 days starting from t_{-5} and till t_{+2} day after which AARs are negative for 18 days in the announcement window. Positive AAR with significant Z-value is noted on 3 days - t_{-19}, t_{-4} and t_{-3}. Negative AAR with significant Z-value is noted on day- t_{+19} and t_{+20}.

The proportion test is used which tests the null hypothesis that number of positive and negative ARs is equal. The null hypothesis is rejected at 5% level of significance and significant increase in number of negative ARs is observed on 3 days - t_{-12}, t_{+6} and t_{+19}.The null hypothesis is rejected and significant increase in number of positive
ARs is on 2 days - t_{-4} and t_{-3} day.

Table 1: AARs and Z-values - announcement day(small size companies)

Event day	AARs (%)	Standard deviation (%)	Z-values*	Number of positive ARs	Number of negative ARs	p-values for Test of Proportion*
-20	0.25%	4.03%	0.54	37	42	.653
-19	1.56%	5.51%	**2.51**	42	37	.653
-18	0.58%	5.10%	1.01	39	40	1.00
-17	0.02%	4.82%	0.03	40	39	1.00
-16	-0.04%	3.87%	-0.10	34	45	.260
-15	0.17%	4.12%	0.37	37	42	.653
-14	-0.26%	5.08%	-0.46	38	41	.822
-13	0.70%	5.20%	1.19	36	43	.500
-12	-0.53%	4.23%	-1.12	27	52	**.007**
-11	0.02%	4.56%	0.04	31	48	.071
-10	0.58%	3.79%	1.36	47	32	.115
-9	0.04%	5.01%	0.07	40	39	1.00
-8	0.30%	3.86%	0.69	45	34	.260
-7	0.31%	4.37%	0.64	38	41	.822

-6	-0.32%	3.85%	-0.74	43	36	.500
-5	0.26%	5.30%	0.43	44	35	.368
-4	2.05%	4.99%	**3.65**	51	28	**.013**
-3	1.55%	5.19%	**2.65**	49	30	**.042**
-2	0.43%	4.83%	0.79	37	42	.653
-1	0.15%	4.51%	0.31	44	35	.368
0	0.75%	4.77%	1.39	47	32	.115
+1	0.52%	4.63%	1.00	37	42	.653
+2	0.11%	3.64%	0.26	35	44	.368
+3	-0.64%	3.84%	-1.49	33	46	.177
+4	-0.57%	4.59%	-1.11	37	42	.653
+5	-0.69%	3.60%	-1.69	32	47	.115
+6	-0.44%	3.87%	-1.01	29	50	.024
+7	-0.35%	3.45%	-0.90	31	48	.071
+8	-0.80%	3.99%	-1.79	31	48	.071
+9	-0.28%	3.85%	-0.66	37	42	.653
+10	-0.21%	3.93%	-0.49	37	42	.653
+11	-0.15%	4.22%	-0.31	40	39	1.00
+12	0.07%	3.89%	0.17	38	41	.822
+13	0.37%	3.59%	0.92	37	42	.653
+14	0.53%	3.87%	1.22	45	34	.260
+15	-0.13%	4.92%	-0.23	45	34	.260
+16	-0.03%	4.38%	-0.06	37	42	.653
+17	-0.79%	4.16%	-1.70	35	44	.368
+18	0.11%	3.88%	0.25	40	39	1.00
+19	-0.99%	3.65%	**-2.42**	27	52	**.007**
+20	-1.09%	3.89%	**-2.50**	32	47	.115

***Values in bold are significant at 5% level of significance.

Table 2 reports response to splits of 54 medium-size companies and shows that AARs increase and are positive on 6 days starting from t_{-3} and till t_{+2} day in announcement window. Positive AAR with significant Z-value is noted on 3 days - t_{-7}, t_{-5} and t_{-1}.Negative AAR with significant Z-value is noted on 3 days- t_{+6}, t_{+10} and t_{+12}.

The equality proportion test is used to test the null hypothesis that number of positive and negative ARs is equal. The null hypothesis is rejected at 5% level of significance and significant increase in number of negative. ARs is observed on 2 days - t_{+6} and t_{+9}.The null hypothesis is rejected and significant increase in number of positive ARs is on 2 days - t_{-1} and t_{-16} day.

Table 2: AARs and Z-values - announcement day (medium size companies)

Event day	AARs(%)	Standard deviation (%)	Z-values*	Number of positive ARs	Number of negative ARs	p-values for Test of Proportion*
-20	0.98%	3.98%	1.80	28	26	.892
-19	0.47%	3.31%	1.04	31	23	.341
-18	0.01%	2.98%	0.01	24	30	.497
-17	0.39%	3.54%	0.80	26	28	.892
-16	-0.57%	3.01%	-1.39	18	36	**.020**
-15	0.03%	2.98%	0.08	23	31	.341
-14	0.60%	3.32%	1.33	27	27	1.00

-13	-0.15%	2.68%	-0.41	23	31	.341
-12	0.10%	3.03%	0.24	27	27	1.00
-11	-0.09%	2.55%	-0.27	23	31	.341
-10	0.69%	4.07%	1.25	26	28	.892
-9	0.65%	2.76%	1.73	28	26	.892
-8	0.69%	3.70%	1.37	31	23	.341
-7	0.76%	2.73%	**2.03**	32	22	.220
-6	0.31%	3.31%	0.70	24	30	.497
-5	1.24%	3.71%	**2.46**	34	20	.076
-4	0.25%	3.28%	0.56	25	29	.683
-3	-0.50%	3.10%	-1.18	26	28	.892
-2	0.29%	2.76%	0.78	29	25	.683
-1	1.16%	2.79%	**3.05**	35	19	**.040**
0	1.01%	4.06%	1.83	33	21	.134
+1	0.83%	3.63%	1.68	33	21	.134
+2	-0.03%	3.60%	-0.06	28	26	.892
+3	0.14%	3.21%	0.32	25	29	.683
+4	0.07%	3.97%	0.13	22	32	.220
+5	-0.10%	3.56%	-0.21	24	30	.497
+6	-0.98%	2.83%	**-2.54**	19	35	**.040**
+7	-0.25%	2.63%	-0.71	26	28	.892
+8	-0.24%	2.43%	-0.73	20	34	.076
+9	-0.36%	2.56%	-1.03	19	35	**.040**
+10	-0.75%	2.33%	**-2.37**	21	33	.134
+11	-0.39%	3.78%	-0.76	22	32	.220
+12	-0.84%	2.92%	**-2.13**	27	27	1.00
+13	-0.33%	2.37%	-1.02	25	29	.683
+14	0.16%	2.83%	0.42	25	29	.683
+15	0.49%	2.46%	1.47	32	22	.220
+16	-0.37%	2.58%	-1.05	21	33	.134
+17	-0.05%	2.59%	-0.14	27	27	1.00
+18	0.18%	3.40%	0.39	29	25	.683
+19	0.12%	2.97%	0.31	25	29	.683
+20	0.13%	4.05%	0.24	24	30	.497

*****Values in bold are significant at 5% level of significance.

Table 3 reports response of 81 large size and shows that AARs increase and are positive on 15 days from t_{-14} and t_{+1} day in announcement window except on day t_{-1}.Positive AAR with significant Z-value is noted on day - t_{-5}.Negative AAR with significant Z-value is noted on day- t_{+4}.

The proportion of positive ARs is more on days - t_0 and t_{+1}.The equality proportion test, tests null hypothesis that number of positive and negative ARs is equal. The null hypothesis is rejected at 5% level of significance and significant increase in number of positive ARs is observed on 2 days - t_{-10} and t_{-5}.The null hypothesis is rejected and significant increase in number of negative ARs is on 4 days - t_{+8}, t_{+11}, t_{+13} and t_{+20}.

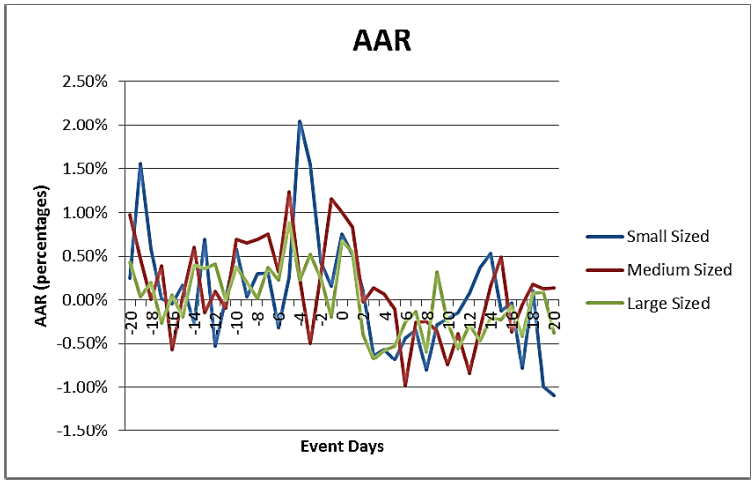
Table 3: AARs and Z-values - announcement day (large size companies)

Event day	AARs (%)	Standard deviation (%)	Z-values*	Number of positive ARs	Number of negative ARs	p-values for Test of Proportion**
-20	0.43%	2.88%	1.36	41	40	1.00
-19	0.03%	2.25%	0.14	40	41	1.00
-18	0.20%	3.34%	0.53	33	48	.119
-17	-0.27%	3.09%	-0.78	33	48	.119
-16	0.06%	2.82%	0.18	36	45	.374
-15	-0.19%	2.18%	-0.81	34	47	.182
-14	0.40%	2.09%	1.72	45	36	.374
-13	0.36%	2.30%	1.42	39	42	.824
-12	0.41%	3.58%	1.02	43	38	.657
-11	0.00%	2.62%	-0.01	33	48	.119
-10	0.38%	2.30%	1.50	52	29	**.014**
-9	0.20%	3.02%	0.60	42	39	.824
-8	0.02%	2.58%	0.07	35	46	.266
-7	0.37%	2.48%	1.34	46	35	.266
-6	0.23%	3.00%	0.69	39	42	.824
-5	0.89%	3.10%	**2.57**	51	30	**.026**
-4	0.23%	3.16%	0.65	35	46	.266
-3	0.52%	3.57%	1.31	43	38	.657
-2	0.24%	2.93%	0.75	39	42	.824
-1	-0.20%	3.55%	-0.50	37	44	.505
0	0.67%	3.38%	1.78	45	36	.374
+1	0.55%	4.08%	1.21	42	39	.824
+2	-0.40%	2.98%	-1.21	33	48	.119
+3	-0.68%	3.18%	-1.93	33	48	.119
+4	-0.58%	2.41%	**-2.14**	33	48	.119
+5	-0.53%	2.53%	-1.88	33	48	.119
+6	-0.25%	2.38%	-0.96	36	45	.374
+7	-0.13%	2.51%	-0.48	36	45	.374
+8	-0.60%	2.80%	-1.94	31	50	**.045**
+9	0.32%	2.74%	1.06	39	42	.824
+10	-0.26%	2.21%	-1.05	35	46	.266
+11	-0.55%	2.63%	-1.89	26	55	**.002**
+12	-0.28%	2.21%	-1.14	33	48	.119
+13	-0.47%	2.13%	-1.98	27	54	**.004**
+14	-0.21%	2.14%	-0.88	37	44	.505
+15	-0.22%	2.64%	-0.76	34	47	.182
+16	-0.08%	3.02%	-0.23	38	43	.657
+17	-0.42%	2.30%	-1.63	32	49	.075
+18	0.08%	2.33%	0.29	40	41	1.00
+19	0.09%	2.12%	0.37	42	39	.824
+20	-0.37%	2.07%	-1.62	29	52	**.014**

*Values in bold are significant at 5% level of significance.

The AARs for three groups based on size when plotted on a graph is shown in **Figure 1**.

Figure 1: AARs - announcement day (different sizecompanies)



To further analyse AARs, ASARs are calculated using equation (6) and (7).To test statistical significance of ASARs Z_S-test is done using equation (8). The null hypothesis tested is that ASARs on an event day is equal to zero.It can be observed in **Table 4** that ASARs with significant Z_S-values at 5% level of significance are present on 11 days (small size companies), 5 days (medium size companies) and 8 days (large size companies).

Table 4: AARs and Z_S-values - announcement day(different size companies)

Event day	AAR (%) small-size	Zs – values*	AAR (%) medium-size	Zs – values*	AAR (%) large-size	Zs – values*
-20	0.25%	0.79	0.98%	2.33	0.43%	1.65
-19	1.56%	**2.37**	0.47%	1.35	0.03%	0.35
-18	0.58%	0.82	0.01%	-0.28	0.20%	0.76
-17	0.02%	0.85	0.39%	1.24	-0.27%	-0.67
-16	-0.04%	0.11	-0.57%	-1.51	0.06%	-0.13
-15	0.17%	-0.61	0.03%	-0.18	-0.19%	-0.72
-14	-0.26%	-0.79	0.60%	1.42	0.40%	1.72
-13	0.70%	1.05	-0.15%	-0.39	0.36%	1.24
-12	-0.53%	-1.67	0.10%	0.92	0.41%	1.71
-11	0.02%	-0.12	-0.09%	-0.20	0.00%	-0.06
-10	0.58%	0.37	0.69%	1.69	0.38%	1.41
-9	0.04%	-0.50	0.65%	1.34	0.20%	0.74
-8	0.30%	0.39	0.69%	1.15	0.02%	0.34
-7	0.31%	-0.28	0.76%	1.38	0.37%	1.76
-6	-0.32%	-0.54	0.31%	1.00	0.23%	1.72
-5	0.26%	1.45	1.24%	**3.42**	0.89%	**3.90**
-4	2.05%	**3.93**	0.25%	0.95	0.23%	1.10
-3	1.55%	**3.49**	-0.50%	-1.40	0.52%	**2.42**
-2	0.43%	0.42	0.29%	0.84	0.24%	1.10
-1	0.15%	1.24	1.16%	**2.06**	-0.20%	-0.82
0	0.75%	**2.52**	1.01%	**2.06**	0.67%	**2.63**
+1	0.52%	0.50	0.83%	**2.54**	0.55%	**2.26**
+2	0.11%	0.02	-0.03%	-0.42	-0.40%	-1.44
+3	-0.64%	-1.70	0.14%	0.09	-0.68%	**-2.25**
+4	-0.57%	-1.44	0.07%	0.44	-0.58%	-1.53

+5	-0.69%	-0.86	-0.10%	0.44	-0.53%	**-2.05**
+6	-0.44%	**-2.06**	-0.98%	**-2.09**	-0.25%	-0.76
+7	-0.35%	-1.49	-0.25%	-0.60	-0.13%	-0.55
+8	-0.80%	**-2.32**	-0.24%	-0.69	-0.60%	**-2.26**
+9	-0.28%	-1.01	-0.36%	-0.42	0.32%	0.76
+10	-0.21%	-0.31	-0.75%	-1.15	-0.26%	-0.46
+11	-0.15%	-0.17	-0.39%	-0.97	-0.55%	**-2.07**
+12	0.07%	-0.25	-0.84%	-1.54	-0.28%	-1.05
+13	0.37%	0.38	-0.33%	-0.75	-0.47%	-1.62
+14	0.53%	0.77	0.16%	0.30	-0.21%	-0.96
+15	-0.13%	**-2.10**	0.49%	0.77	-0.22%	-0.35
+16	-0.03%	**-2.70**	-0.37%	-0.94	-0.08%	0.00
+17	-0.79%	**-2.82**	-0.05%	-0.20	-0.42%	-1.50
+18	0.11%	-0.98	0.18%	0.76	0.08%	-0.15
+19	-0.99%	**-2.81**	0.12%	0.40	0.09%	-0.05
+20	-1.09%	**-2.03**	0.13%	0.32	-0.37%	-1.52

*****Values in bold are significant at 5% level of significance.

Impact on CAAR - announcement day (different size companies)

To study cumulative effect of stock splits on AARs cumulative average abnormal returns (CAARs) are calculated using equation (9).

In **Table 5** it is reported that CAARs are increasing and positive for all three group of companies with different size.

To test statistical significance of CAARs, Z_{CS}-test is done at 5% level of significance, taking SCAARs and using equation (10).The null hypothesis tested is that SCAARs on an event day in the announcement window is equal to zero.

Table 5 shows that CAARs are having significant Z_{CS}- values on 6 days from t_{-1} and till t_{+4} (small size companies).The CAARs are having significant Z_{CS}-values on 26 days from t_{-5} and till t_{+20} (medium size companies).The CAARs are having significant Z_{CS}-values on 16 days from t_{-5} and till t_{+10} (large size companies).

Table 5: CAARs and Z_{CS} values - announcement day(different size companies)

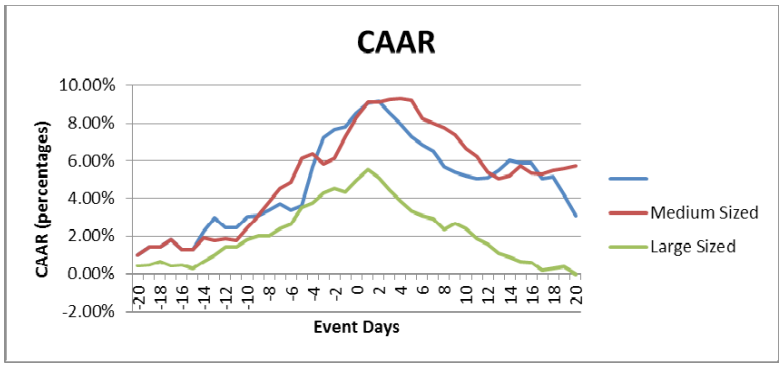
Event day	CAARs (%) small size	Z_{CS} – values*	CAARs (%) medium size	Z_{CS} – values*	CAARs (%) large size	Z_{CS} – values*
-20	0.98%	0.12	0.98%	0.36	0.43%	0.26
-19	1.44%	0.49	1.44%	0.57	0.47%	0.31
-18	1.45%	0.62	1.45%	0.53	0.66%	0.43
-17	1.84%	0.76	1.84%	0.72	0.40%	0.33
-16	1.27%	0.77	1.27%	0.49	0.45%	0.31
-15	1.30%	0.68	1.30%	0.46	0.26%	0.19
-14	2.27%	0.55	1.90%	0.68	0.66%	0.46
-13	2.96%	0.72	1.75%	0.62	1.02%	0.65
-12	2.43%	0.46	1.85%	0.77	1.43%	0.92
-11	2.45%	0.44	1.75%	0.73	1.42%	0.91
-10	3.03%	0.50	2.44%	1.00	1.81%	1.13
-9	3.07%	0.42	3.09%	1.21	2.01%	1.25

-8	3.37%	0.48	3.78%	1.39	2.03%	1.30
-7	3.68%	0.44	4.54%	1.60	2.40%	1.58
-6	3.36%	0.35	4.86%	1.76	2.63%	1.84
-5	3.62%	0.58	6.10%	**2.29**	3.51%	**2.45**
-4	5.67%	1.19	6.34%	**2.44**	3.74%	**2.62**
-3	7.22%	1.74	5.84%	**2.22**	4.26%	**3.00**
-2	7.65%	1.80	6.14%	**2.35**	4.51%	**3.17**
-1	7.80%	**2.00**	7.30%	**2.68**	4.31%	**3.05**
0	8.55%	**2.39**	8.31%	**3.00**	4.97%	**3.46**
+1	9.07%	**2.47**	9.14%	**3.40**	5.52%	**3.81**
+2	9.18%	**2.47**	9.11%	**3.33**	5.12%	**3.59**
+3	8.54%	**2.21**	9.25%	**3.34**	4.44%	**3.23**
+4	7.97%	**1.98**	9.32%	**3.41**	3.86%	**2.99**
+5	7.28%	1.85	9.21%	**3.48**	3.34%	**2.68**
+6	6.84%	1.53	8.24%	**3.16**	3.08%	**2.56**
+7	6.49%	1.29	7.98%	**3.06**	2.95%	**2.47**
+8	5.69%	0.93	7.74%	**2.95**	2.35%	**2.12**
+9	5.40%	0.77	7.38%	**2.89**	2.67%	**2.24**
+10	5.19%	0.72	6.63%	**2.71**	2.41%	**2.16**
+11	5.04%	0.70	6.24%	**2.56**	1.86%	1.84
+12	5.11%	0.66	5.39%	**2.32**	1.58%	1.68
+13	5.48%	0.72	5.06%	**2.20**	1.11%	1.42
+14	6.01%	0.84	5.22%	**2.25**	0.90%	1.27
+15	5.89%	0.51	5.72%	**2.37**	0.68%	1.22
+16	5.86%	0.09	5.35%	**2.22**	0.60%	1.22
+17	5.06%	-0.35	5.30%	**2.19**	0.18%	0.98
+18	5.17%	-0.51	5.48%	**2.31**	0.26%	0.96
+19	4.18%	-0.95	5.60%	**2.37**	0.35%	0.95
+20	3.09%	-1.26	5.74%	**2.42**	-0.03%	0.71

*****Values in bold are significant at 5% level of significance.

In order to have a visual idea of comparative CAARs of the three groups **Figure 2** can be seen which shows almost same response to all companies of different sizes.

Figure 2: CAAR - announcement day (different sizecompanies)



The CAARs are aggregated for different time periods in event window of 41 days. The null hypothesis tested using Z_{CS}-test is that CAAR is zero at end of period over which cumulated**.**

Table 6 shows that null hypothesis is rejected and significant Z_{CS}-values are present for small size

companies for event windows which extend to t_{-5} to t_{+5} days. The null hypothesis is rejected and significant

Z_{CS}-values are present for all event windows of different days in 41 days period for medium size companies. For large size companies' null hypothesis is rejected only for periods from t_{-1} to t_{+1} days in the announcement window.

Table 6 CAAR and Z_{cs} values - announcement day (inevent window of 41 days -different size companies)

Event Days	No. of days	CAAR(%) small size	Zcs - values*	CAAR(%) medium size	Zcs - values*	CAAR(%) large size	Zcs - values*
-20 to +20	41	3.09%	-1.26	5.74%	**2.42**	-0.03%	0.71
-10 to +10	21	2.74%	0.40	4.87%	**2.76**	0.99%	1.75
-5 to +5	11	3.92%	**2.88**	4.36%	**3.33**	0.71%	1.60
-2 to +2	5	1.96%	**2.10**	3.26%	**3.17**	0.86%	1.67
-2 to 0	3	1.33%	**2.41**	2.46%	**2.86**	0.71%	1.68
0 to +2	3	1.38%	1.75	1.81%	**2.42**	0.81%	**1.99**
-1 to +1	3	1.43%	**2.45**	3.00%	**3.85**	1.02%	**2.35**

*Values in bold are significant at 5% level of significance.

5. Conclusions

The empirical results indicate that stock splits have significant impact on ARs in announcement window irrespective of differences in size of sample companies. The significant impact on AARs is visible in announcement window for small size companies in irregular manner but for longest duration till t_{+20}.The duration of effect is lesser for medium size companies and it is least for large size companies. From the above discussion after analyzing Z-values and Z_S-values, it can also be inferred that impact on AARs is stronger for medium size companies in announcement window. The results are in line with conclusions drawn by Ikenberry et al.[5](1996), Atiase (1985), and Lev and Penman (1990)[6]. The above discussion points out that CAARs are significant continuously for medium size companies for maximum number of days, than for large size companies and at last for small size companies. Cumulative changes in AARs are found to be highest for medium size companies then for small size and at last for large size companies. This observation is in line with result reported by Ikenberry et al. (1996)[7]. It can be inferred that an almost same immediate positive effect on share prices and value of firm is present for large size and small size companies in the announcement window.

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Footnotes

The section replaces sec 94(1) (d) of the Companies Act 1956. According to sec 94(1) (d) of the Companies Act 1956 every limited company is permitted to subdivide its shares, or any of them, into shares of smaller amount than is fixed by the memorandum. However in sub-division proportion between amount paid and amount, if any, unpaid on each reduced share shall be same as it was in case of the share from which reduced share is derived.The powers conferred by this section shall be exercised by company in gene ral meeting and need not be confirmed by the Court.Cancellation of shares in pursuance of this section shall not be deemed to be reduction of share capital within the meaning of this Act.

1. Splits by companies for period 1990-93 and listed on NYSE, NASDAQ and AMEX exchanges.
2. BSE Sensitive index is a robust representative of Indian stock market and used as proxy for market portfolio because it is value weighted index which uses free float market capital as value weights and appropriate for such type of analysis same is suggested by Womack et al. (1996) and Fama (1998).

3. CMIE is an independent private sector economic research organi zation. It has built largest database on Indian economy and companies in form of databases and research reports. It is widely used by academics and industries in India.
4. Ikenberry et al.(1996) reported that ARs were higher for small size companies as compared to large size companies.This was because large size companies are less vulnerable to market turmoil because of their volume, turnover and self monitoring capacity.
5. Atiase (1985), and Lev and Penman (1990) reported that large size companies report more earning forecasts than small size companies.
6. Ikenberry et al.(1996) used market adjusted model to show that small size companies experienced more ARs than larger size companies.