Analysis of Stock Price Behaviour around Bonus Issue:
A Test of Semi-Strong Efficiency of Indian Capital Market

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Abstract

Stock price behaviour around bonus issue have been examined for 134 bonus issues of NSE listed companies in India. Two null hypotheses have been tested for similarity between mean and distribution pattern of bonuses by employing "t" and Kolmogorov-Smirnov tests. The results lead to rejection of both hypotheses. As such it is concluded that Indian stock market is semi strong efficient.

Keywords/Phrases: *Bonus Issues, AAR, CAAR*

1. Introduction

The premise on which the theory of efficient markets rests is that in a free and competitive capital market, the prices of the securities should reflect all available information and that these prices should adjust very quickly to new information. The new information can come in the form of announcement of quarterly results, announcement of new business deal entered into by the firm, announcements regarding dividends, bonus and such other firm specific events. In an efficient market, the reaction of the market to new information can be studied under a) the type of information that the market is reacting to and b) the speed with which the market responds to that information.

In this study, stock price movement around bonus announcements is taken for examination.

2. Review of Literature

The study with regard to testing for semi-strong form of efficiency of the market was pioneered by the work of Fama, Fisher, Jensen and Roll (1968). They applied cumulative average residual error (CARE) methodology to examine the NYSE's reaction to stock splits and found evidence in support of the proposition that the NYSE was semi-strong efficient. Firth (1977) repeated this study with UK data on scrip issues and arrived at a similar conclusion. Using the methodology of Fama et al (1969), Ball and Brown (1968) developed an abnormal performance index (API) methodology and examined the market reaction to earnings announcements. They divided their sample into those firms which announced earnings above expectations and those which announced earnings below expectations. Their conclusions supported semi-strong form of efficiency of the market.

In the Indian environment Chaturvedi (2000) studied the behaviour of stock prices around half yearly financial announcements. His study documented that the abnormal returns were not only statistically but also economically significant. The findings suggest that the

earnings information is not assimilated rapidly. In his further study, Chaturvedi (2001) found in an examination of the stock price reaction in relation to the earnings that abnormal returns occur both in the pre and post announcement periods. Thus both his studies document that Indian markets are far from being efficient.

Srinivasan (2002) documents the existence of extremely large positive abnormal returns on ex-bonus and ex-rights dates for equity in Indian capital market. He argues that tax regime can motivate trading strategies around the ex-dates. He concludes that the tax regime can lead to significant positive abnormal performance if long-term investors are the equilibrium price determining investors.

Katati (2001) examined the behaviour of stock price around bonus announcement date and ex bonus date of 115 bonus issues made between January 1995 and March 1999. The study establishes that stock prices rise before the announcement and fall after the announcement. The author is of the opinion that a profitable strategy could be evolved by buying shares cum-bonus and selling them ex-bonus.

Lukose and Rao (2005) investigated the relevance of signalling hypothesis by examining market reaction and operating performance around bonus issues for a large sample of 464 companies listed on the BSE. Their study documents a cumulative abnormal return of 12.73% for an 11 day period surrounding bonus announcements. They also found that the abnormal returns are positively related to bonus ratio and negatively related to the size of the firm, which is consistent with the signalling hypothesis.

A study done by Mishra (2005) on 46 bonus issues (made between June 1988 and August 2004) on companies listed on the NSE, found that in line with the developed markets, Indian capital market exhibited significant abnormal returns for a five day period prior to bonus announcement. The behaviour of the Average Abnormal Returns (AAR) and Cumulative Average Abnormal Returns (CAAR) is found to be in accordance with the expectations, thereby lending support to the hypothesis that Indian stock market is semi-strong efficient.

The uniqueness of the present study consists in application of the event study methodology on the daily share price return surrounding 60 days of the 'announcement' of these price sensitive events as well as the 'record dates' of application of these events. A parametric test (t test) and a non-parametric test (Kolmogorov –Smirnov test) to see the equality in means of the returns before and after the event and distribution patterns of returns before and after the event, respectively, are employed.

3. Research Problem

It is generally perceived that the declaration of bonus shares is the signal by the company of its future growth and earnings potential. From the investors' point of view it is a trigger for an upward revision of the company's future earnings capacity. Hence announcement of bonus issue is highly price sensitive.

The present study on 134 bonus issues intends to examine whether the stock market is so efficient that it incorporates the effect of impending bonus announcements in its share prices in advance, making the actual announcement insignificant or whether the bonus announcements take the market by surprise allowing a few information mongers to take advantage of the situation and earn abnormal profits.

4. Objectives of the Study

1. To study the reaction of the stock prices around the bonus announcement date.

2. To examine the equality of means for the returns before and after announcement of bonus issue.

3. To test whether there is significant difference in the distribution pattern of returns before and after the announcement of bonus issue.

5. Methodology

This study primarily based on event study methodology (Brown and Warner, 1985). The event study methodology enables to compute Cumulative Average Abnormal Returns (CAAR) of the respective share prices during the days surrounding the announcement of price sensitive information. If there is scope to gain abnormal returns or if a trading strategy could be evolved to

earn abnormal returns on the announcement of price sensitive information, then the market is said to be inefficient. The t test to measure the equality of mean returns around the bonus announcement as well as the Kolmogorov – Smirnov test to determine whether there is significant difference in the distribution pattern in the abnormal returns before and after the announcement of bonus issue, are used to supplement the findings of the event study methodology.

5.1 Choice of 'events' for the Study

The announcement dates as well as the record dates of Bonus Issues of the companies listed on the NSE and belonging to S&P CNX 500 companies have been procured from three sources - Prowess, Capitaline data base and NSE website. The sample of 134 Bonus Issues is short-listed for analysis applying the following criteria:

a. The company issuing the bonus shares should belong to S&P CNX 500 companies list.

b. Daily closing stock price data over a period of 280 days before the announcement date and 30 days after the record dates are available from the databases.

c. The bonus issue has to be an issue of new ordinary fully paid securities and not issued as rights issue or bonus option issue.

d. The bonus announcement date is reported in any of the leading financial dailies viz., Financial Express, Economic Times, Business Standard or Business Line.

e. 134 events of bonus announcements were further broken up into 4 categories.

   a. companies that issued bonus at the ratio of 2:1 or more

   b. companies that issued bonus at the ratio of 1:1

   c. companies that issued bonus at the ratio of 1:2

   d. companies that issued bonus in the ratio other than the above three categories.

There were 9, 77, 20 and 28 companies respectively in the above four categories of bonus issues under study.

5.2. The Application of the Event Study Methodology: Definition of Variables

The dates of the respective board of directors' announcements regarding the issue of bonus shares and record dates of bonus issue were denoted as the 'event day'. 60 days surrounding the event day (30 days before and 30 days after the event) have been denoted as 'event window'. 250 days prior to the last day of the event window (i.e. -280 to -31 days from the event day) has been considered the 'estimation window'. The Nifty index returns were taken as proxy for market index. 250 days of returns during the 'estimation window' of the respective shares were regressed against the Nifty returns to determine the 'constant' and the 'regression coefficient' to calculate the expected returns during the 'event window'. The difference between the actual return and expected return during the event window is considered the abnormal returns. Cumulative Average Abnormal Returns (CAAR) are then calculated and analysed.

Event Study Methodology has been used to test the hypothesis. To measure the abnormal returns, the first order regression is run

$$\overline{R}_{it} = \alpha_i + \beta_i \overline{R}_{mt} + \varepsilon_{it}$$

where

$\overline{R}_{it}$ = expected return on security 'i' on day 't'

$\overline{R}_{mt}$ = return on the market portfolio on day 't' i.e., return on Nifty on day 't'

β_i = systematic risk component of security 'i'

α_i = intercept term for security 'i'

ε_{it} = white noise error term to security 'i' on day 't' having zero mean and constant variance

The deviation of actual return from the expected return is regarded as the abnormal return and is defined as follows

$$AR_{it} = R_{it} - (\alpha_i + \beta_i \overline{R}_{mt})$$

where

AR_{it} = abnormal return on security 'i' on day 't'

R_{it} = actual return on security 'i' on day 't'

The average abnormal returns of the securities for each relative day 't' were calculated as

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it}$$

where, N = number of securities for day 't'

Cumulative Average of Abnormal Returns (CAAR) are the sums of daily average of cumulative abnormal returns over the event time.

The CAAR for period t = a until t = b is defined as follows

$$CAAR_{ab} = \sum_{i=a}^{b} AAR_t$$

Day '0' is defined as the 'event day' i.e., trading day on which the price sensitive announcement is made.

The α_i and β_i were estimated from day -280 to day -31 days from the event day to calculate abnormal returns from day -30 to day +30 around the event day. The t statistic that tests whether the average excess return of the portfolio for the day is significantly different from 0 was calculated by

$$^t AAR_t = \frac{AAR_t}{\sqrt{\text{var} ianceof\ AAR_t}}$$

Assuming independence across days, the t statistic for CAAR for a period of T days from day 'a' to 'b' was calculated by

$$^t CAAR_t = \frac{CAAR_t}{\sqrt{\text{var} ianceof\ AAR_t\ X\ T}}$$

6. Findings of the Study

6.1 Cumulative Average Abnormal Returns (CAAR) Around Bonus Issue Announcement Date

From 30 trading days prior to the announcement of bonus issue, till the actual date of announcement of the bonus issue, the average abnormal returns grow at 0.04% per day. For the five days preceding the announcement, the abnormal returns are .08%, 1.2%, 1.2%, 1.6% and 1% respectively. It is also observed that on the announcement day there is an abnormal return of 1.5%. Thus for the 30 trading days leading to the bonus announcement date there is a cumulative abnormal return of 11.5%.

For the 30 days after the announcement of bonus issue, the CAAR is statistically equivalent to zero. This only shows that the market does expect the announcement and adjusts the prices of the shares accordingly. The informational content in the announcement is gradually impounded in the share prices before the actual event of announcement. There is absolutely no possibility of making use of the announcement of the event to form a trading strategy and earn abnormal returns. Thus the CAAR surrounding the 134 bonus announcements support the proposition that the NSE is semi-strong form efficient.

Table No 1 gives the CAAR values around of the entire 134 bonus announcement under study. Table Nos 2, 3, 4 and 5 give the CAAR values of the four sub-groups of the bonus announcements. The figure nos 1 to 5 depict the respective CAAR.

6.2 The t Test

The parametric t test for the equality of means for the returns before and after announcement of bonus issue is tested with

H_0 : There is no difference in mean of returns

H_1 : There is difference in mean of returns

6.2.1 Equality in the mean returns around bonus announcement

The t test for the equality of means at 95% level of confidence, for the abnormal returns during 30 days prior and 30 days after announcement of bonus issue, the t value being 3.690 suggests that the null hypothesis is not accepted when the entire 134 bonus announcements are tested. This leads us to conclude that there is a difference in the mean of the abnormal returns prior to and after the announcement of the bonus issue. This is consistent with the findings of the CAAR (Table 6).

When the test is applied for the sub-groups of the bonus issues under study, it is very clear that when the bonus issue is at the ratio 1:1 the t value is 3.691 which again suggests the non acceptance of the null hypothesis. But in other sub-groups i.e. when the bonus issue is at the ratio of 2:1, 1:2 and 'other' fractional categories, the t values are 1.053, 1.444 and 1.905 respectively which statistically fall within the range of acceptance of the null hypothesis at 95% level of confidence. The differences in the t values of the sub-groups could be ascribed to the size of the sub-groups.

6.3 The Kolmogorov – Smirnov test

The Kolmogorov – Smirnov test to determine whether there is significant difference in the distribution pattern of returns before and after the announcement of bonus issue is applied:

H_0 : There is no difference in the distribution pattern of the returns

H_1 : There is difference in the distribution pattern of returns

6.3.1 Distribution pattern in the abnormal returns surrounding the date of bonus announcement

The Kolmogorov-Smirnov test statistic suggests non-acceptance of the null hypothesis that 'there is no difference in the distribution pattern of the returns between before and after the bonus announcements'. In other words the alternative hypothesis that 'there is difference in the distribution pattern of returns' is accepted. The result is consistent both when all the abnormal returns pattern surrounding the entire 134 bonus issues is taken as well as when the sub-groups based on the ratio of bonus issue are studied.

7. Conclusion

Announcement of bonus issue which theoretically surprise news for the stock market does not appear to be so in reality. The stock market tend to predict the announcement of the news and the prices of the respective shares start moving upwards about 30 days before the actual announcement. The t test for the equality of mean returns before and after the bonus announcement in table 7 shows that there is significant difference. The Kolmogorov – Smirnov test confirms that the patterns in the distribution of returns before and after the bonus announcement date are also dissimilar. Hence the study supports the hypothesis that the NSE is efficient at semi-strong form.

When a market is efficient at semi-strong form, it reinforces the fact that the fundamental analysis may hold good for a long-term investor. The technical analysis may not be useful to an investor if merely on the basis of announcement of bonus issues he seeks to pocket abnormal returns. Prices of the shares incorporate the information content of the impending bonus announcements a few days prior to the actual announcement. Post announcement returns are not attractive enough for an investor to invest.
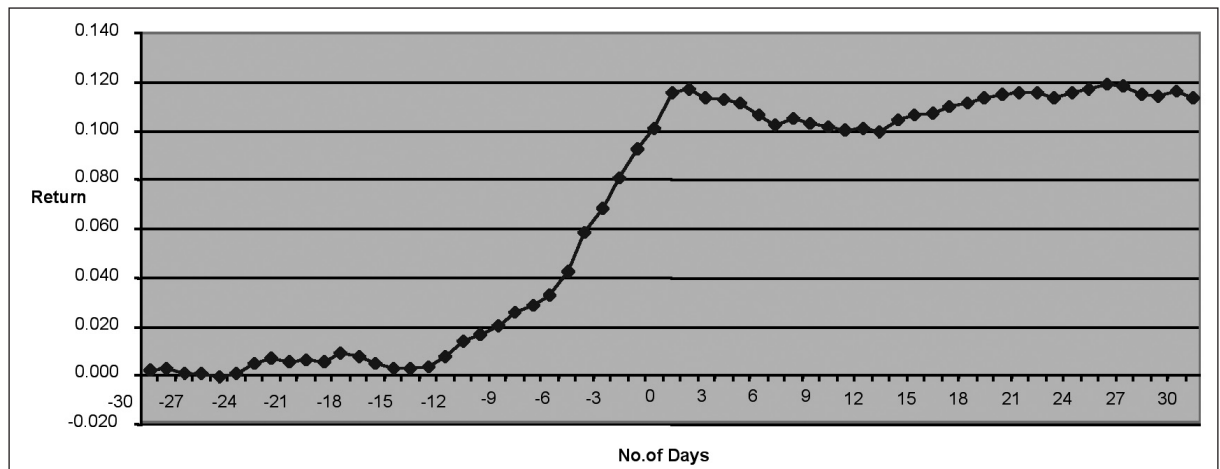

Figure 1 CAAR around Bonus Announcements (All)
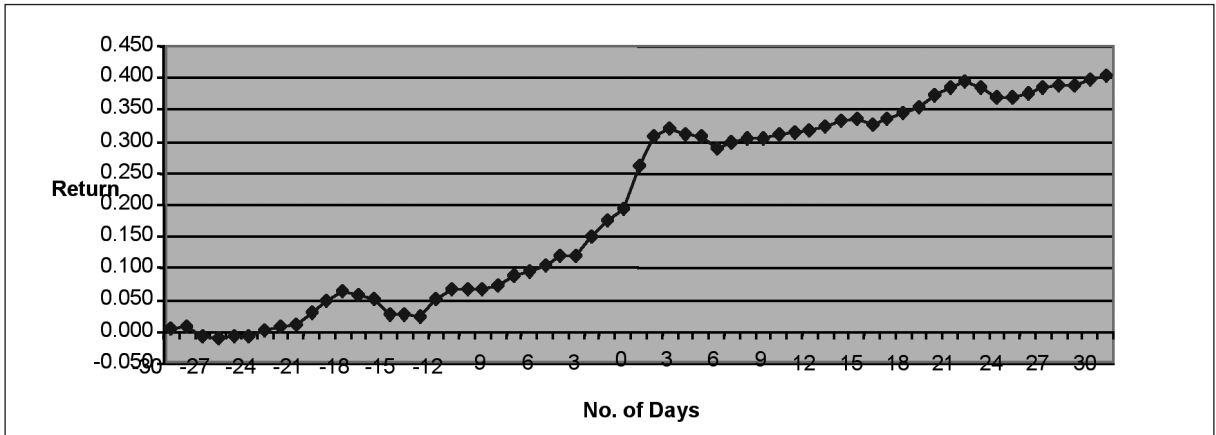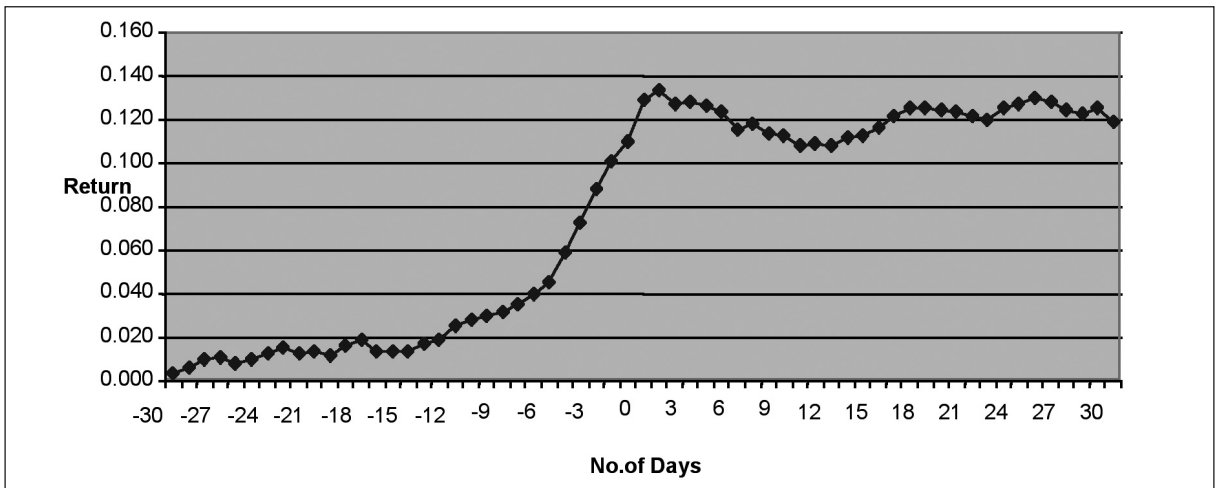
Figure 2 CAAR around Bonus Announcements (ratio 2:1 or more)
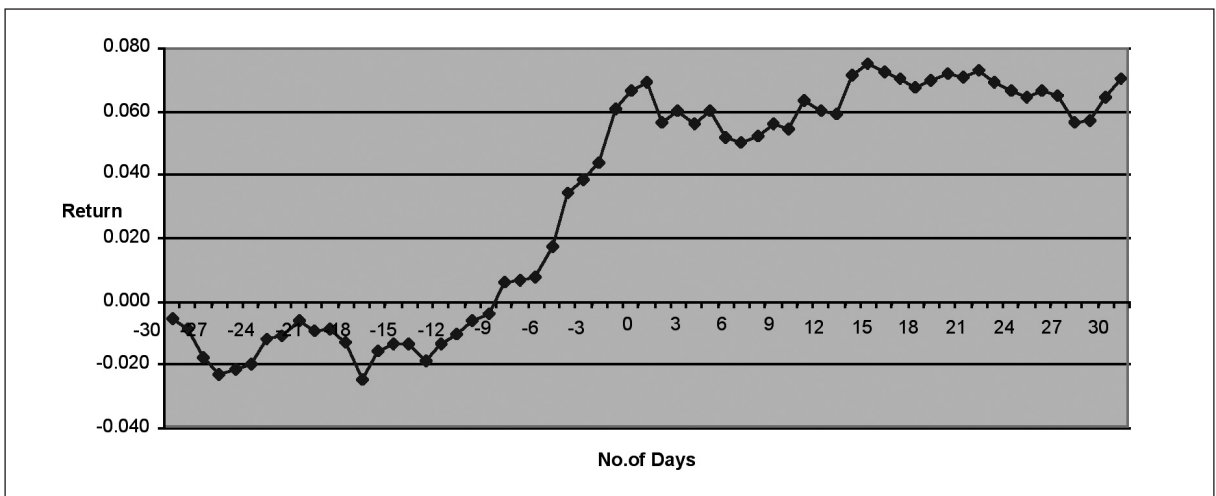

Figure 3 CAAR around Bonus Announcements (ratio 1:1)
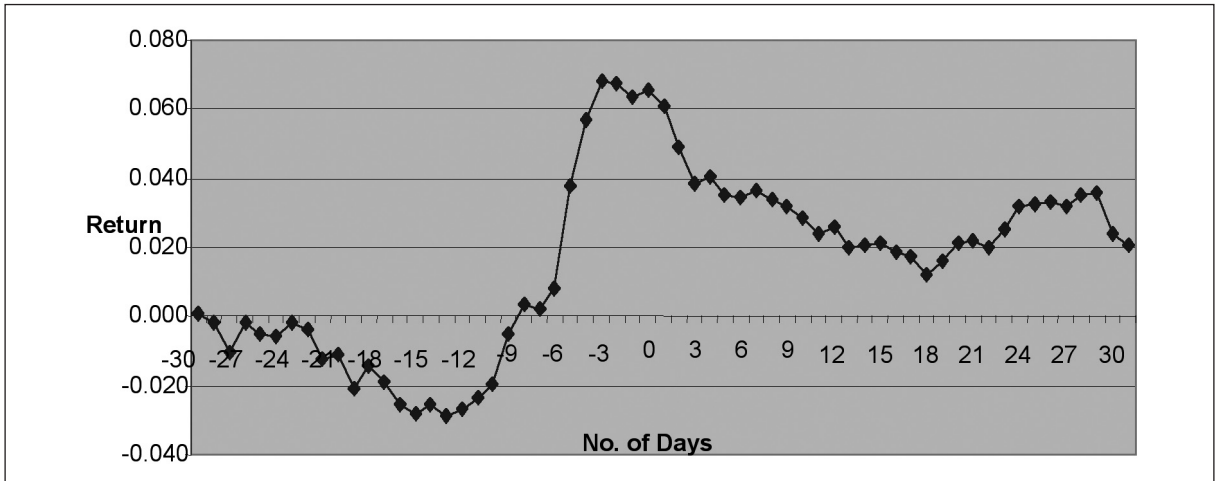

Figure 4 CAAR around Bonus Announcements (ratio 1:2)

Figure 5 CAAR around Bonus Announcements (ratio-others)

Days	AAR	t AAR	CAAR	t CAAR	Days	AAR	t AAR	CAAR	t CAAR
-30	0.0022	0.0609	0.0022	0.0768	1	0.0013	0.0177	0.1168	0.4175
-29	0.0007	0.0186	0.0027	0.0715	2	-0.0029	-0.1004	0.1133	0.5665
-28	-0.0023	-0.0657	0.0006	0.0108	3	-0.0005	-0.0219	0.1126	0.6165
-27	0.0001	0.0015	0.0007	0.0107	4	-0.0012	-0.0435	0.1115	0.7214
-26	-0.0004	-0.0357	-0.0003	-0.0047	5	-0.0047	-0.1357	0.1068	0.5217
-25	0.0104	0.0327	0.0007	0.0094	6	-0.0044	-0.1348	0.1027	0.547
-24	0.0041	0.1661	0.005	0.0722	7	0.0024	0.0839	0.1051	0.5878
-23	0.0023	0.0707	0.0072	0.0811	8	-0.0021	-0.0833	0.103	0.6386
-22	-0.0017	-0.0673	0.0054	0.0657	9	-0.0012	-0.0495	0.1015	0.5546
-21	0.0012	0.0458	0.0066	0.0795	10	-0.001	-0.0371	0.1006	0.5937
-20	-0.0005	-0.0255	0.0058	0.0538	11	0.0002	0.0097	0.1008	0.6769
-19	0.0041	0.1114	0.0092	0.0862	12	-0.001	-0.0457	0.0995	0.5633
-18	-0.0009	-0.0558	0.0076	0.074	13	0.0053	0.1934	0.1048	0.5766
-17	-0.003	-0.0915	0.0047	0.0397	14	0.0021	0.0824	0.1069	0.6372
-16	-0.0013	-0.0525	0.0031	0.0252	15	0.0002	0.0089	0.1071	0.6476
-15	0.0003	0.0075	0.0033	0.0266	16	0.003	0.1259	0.1101	0.6717
-14	0.0006	0.016	0.0038	0.0273	17	0.0011	0.0464	0.1115	0.5607
-13	0.0043	0.1205	0.008	0.0543	18	0.0019	0.0662	0.1132	0.6081
-12	0.0055	0.1835	0.0139	0.0998	19	0.0021	0.0756	0.1152	0.6314
-11	0.0036	0.0927	0.0168	0.1216	20	0.0009	0.0136	0.1157	0.4556
-10	0.0037	0.1233	0.0205	0.1474	21	0.0002	-0.0051	0.1155	0.5882
-9	0.005	0.1588	0.0256	0.1704	22	-0.0016	-0.0726	0.1135	0.5704
-8	0.0027	0.0974	0.0286	0.1938	23	0.0026	0.0764	0.116	0.4966
-7	0.0042	0.1126	0.0328	0.1786	24	0.0011	0.0344	0.117	0.5324
-6	0.0103	0.2261	0.0425	0.1985	25	0.0024	0.0807	0.1192	0.579
-5	0.0164	0.3591	0.0583	0.2594	26	-0.0011	-0.0291	0.1184	0.5585
-4	0.0103	0.2669	0.0684	0.3489	27	-0.003	-0.1116	0.1153	0.5486
-3	0.0123	0.3048	0.0805	0.3808	28	-0.0009	-0.0368	0.1143	0.5841
-2	0.0117	0.2999	0.0924	0.4343	29	0.0023	0.0803	0.1165	0.5611
-1	0.0085	0.2388	0.1008	0.5238	30	-0.0023	-0.0901	0.1137	0.4814
0	0.0149	0.2946	0.1159	0.4051					

Table 1 t-values of Cumulative Average Abnormal Returns Around Bonus Announcement Date (All Companies)

Days	AAR	t AAR	CAAR	t CAAR	Days	AAR	t AAR	CAAR	t CAAR
-30	0.0067	0.4715	0.0039	0.4715	1	0.0434	0.6655	0.3039	0.8305
-29	0.0022	0.0752	0.0062	0.2133	2	0.0142	0.2707	0.3181	1.0643
-28	-0.0158	-0.7425	-0.0096	-0.1859	3	-0.011	-0.2707	0.3071	1.309
-27	-0.0038	-0.15	-0.0134	-0.2105	4	-0.0017	-0.0457	0.3055	1.4155
-26	0.003	0.1508	-0.0104	-0.1752	5	-0.0181	-0.6374	0.2874	1.7037
-25	0.0014	0.0566	-0.009	-0.0998	6	0.0097	0.2672	0.297	1.364
-24	0.0073	0.3906	-0.0016	0.0226	7	0.0063	0.1848	0.3033	1.4541
-23	0.0088	0.2859	0.0072	0.1139	8	0.0001	0.0027	0.3034	*2.0759
-22	0.0027	0.123	0.0099	0.1937	9	0.0038	0.2279	0.3072	**2.9337
-21	0.0182	0.7741	0.028	0.4151	10	0.0034	0.2034	0.3107	**2.8862
-20	0.0185	0.4135	0.0465	0.3323	11	0.0024	0.0924	0.3131	1.8801
-19	0.0134	0.3387	0.0599	0.4569	12	0.0073	0.2305	0.3203	1.5662
-18	-0.004	-0.101	0.0559	0.411	13	0.0092	0.3043	0.3295	1.657
-17	-0.0076	-0.1271	0.0484	0.2302	14	0.005	0.2679	0.3345	**2.6711
-16	-0.0245	-0.5021	0.0239	0.1409	15	-0.0106	-0.7146	0.324	**3.2534
-15	-0.0008	-0.0226	0.0231	0.1882	16	0.0084	0.3886	0.3323	*2.2729
-14	-0.0016	-0.031	0.0215	0.1122	17	0.0089	0.1942	0.3412	1.0876
-13	0.0272	0.7181	0.0486	0.3203	18	0.0099	0.2694	0.3511	1.372
-12	0.0153	0.4376	0.064	0.4373	19	0.0205	0.4972	0.3716	1.2845
-11	-0.0003	-0.0054	0.0637	0.284	20	0.0117	0.1868	0.3833	0.8641
-10	0.0011	0.0409	0.0648	0.5314	21	0.0099	0.2468	0.3932	1.3657
-9	0.0059	0.1878	0.0707	0.4994	22	-0.0097	-0.203	0.3836	1.116
-8	0.0157	0.5372	0.0864	0.6367	23	-0.016	-0.3206	0.3676	1.0092
-7	0.0054	0.1123	0.0918	0.4015	24	0.0002	0.0046	0.3677	1.1833
-6	0.0084	0.2473	0.1002	0.6031	25	0.004	0.1307	0.3718	1.6179
-5	0.0168	0.4331	0.117	0.6069	26	0.0116	0.37	0.3834	1.6301
-4	-0.0004	-0.0091	0.1166	0.566	27	0.0013	0.0801	0.3847	**3.1994
-3	0.0314	0.6823	0.148	0.6198	28	-0.0003	-0.0141	0.3843	*2.2390
-2	0.0241	0.8212	0.1721	1.1049	29	0.0098	0.2306	0.3941	1.2097
-1	0.0201	0.5506	0.1922	0.9769	30	0.0062	0.1758	0.4004	1.4517
0	0.0683	0.9265	0.2605	0.6413					

Table 2 t-values of Cumulative Average Abnormal Returns
Around Bonus Announcement Date (Companies that issued more than 2:1 Bonus)
* Significant at 5% level
** Significant at 1 % level

Days	AAR	t AAR	CAAR	t CAAR	Days	AAR	t AAR	CAAR	t CAAR
-30	0.0039	0.1286	0.0039	0.1286	1	0.0043	0.0852	0.1334	0.4708
-29	0.0025	0.091	0.0064	0.166	2	-0.0065	-0.1858	0.1269	0.6329
-28	0.0037	0.115	0.0101	0.182	3	0.0011	0.0353	0.128	0.675
-27	0.0004	0.0154	0.0105	0.1991	4	-0.0018	-0.0651	0.1262	0.7567
-26	-0.0019	-0.0751	0.0086	0.1532	5	-0.0027	-0.0704	0.1235	0.543
-25	0.0011	0.0385	0.0097	0.1401	6	-0.0084	-0.2516	0.1151	0.5653
-24	0.0027	0.1	0.0124	0.1753	7	0.0035	0.1022	0.1186	0.5653
-23	0.003	0.0905	0.0154	0.1658	8	-0.0046	-0.1615	0.114	0.6351
-22	-0.0029	-0.1044	0.0125	0.1499	9	-0.0015	-0.045	0.1125	0.5389
-21	0.0009	0.033	0.0134	0.158	10	-0.0043	-0.1538	0.1082	0.6085
-20	-0.0013	-0.042	0.0121	0.1218	11	0.0009	0.0365	0.1091	0.6493
-19	0.0042	0.1532	0.0163	0.1704	12	-0.0014	-0.0481	0.1078	0.5819
-18	0.0031	0.1263	0.0194	0.2222	13	0.0037	0.12	0.1114	0.5512
-17	-0.0056	-0.1988	0.0138	0.1299	14	0.0016	0.0578	0.1131	0.6028
-16	-0.0003	-0.0081	0.0135	0.11	15	0.0032	0.1208	0.1163	0.6481
-15	-0.0002	-0.0067	0.0133	0.1096	16	0.0053	0.2158	0.1216	0.7157
-14	0.0041	0.1218	0.0174	0.125	17	0.0037	0.1311	0.1253	0.6424
-13	0.0015	0.0419	0.0189	0.1235	18	0.0001	0.0022	0.1254	0.6661
-12	0.0066	0.1851	0.0255	0.1644	19	-0.0011	-0.0494	0.1242	0.7779
-11	0.0024	0.078	0.0279	0.2026	20	-0.0005	-0.0126	0.1238	0.4635
-10	0.0018	0.0625	0.0297	0.2279	21	-0.0016	-0.0601	0.1222	0.6385
-9	0.0023	0.0781	0.032	0.2325	22	-0.0023	-0.0995	0.1198	0.7036
-8	0.0035	0.104	0.0355	0.2224	23	0.0053	0.1632	0.1252	0.5199
-7	0.0048	0.1246	0.0403	0.2128	24	0.0022	0.0766	0.1274	0.5854
-6	0.0048	0.1137	0.0451	0.2137	25	0.0026	0.0877	0.13	0.5904
-5	0.0144	0.3428	0.0594	0.2779	26	-0.0018	-0.0612	0.1282	0.5687
-4	0.013	0.3343	0.0724	0.3584	27	-0.0032	-0.1077	0.125	0.5475
-3	0.0158	0.3898	0.0882	0.4123	28	-0.0022	-0.0764	0.1228	0.6045
-2	0.0126	0.3327	0.1008	0.4929	29	0.003	0.1108	0.1258	0.5936
-1	0.0096	0.2744	0.1104	0.5781	30	-0.0069	-0.2244	0.119	0.4958
0	0.0187	0.4078	0.1291	0.5058					

Table 3 t-values of Cumulative Average Abnormal Returns
Around Bonus Announcement Date (Companies that issued more than 1:1 Bonus)

Lag	AAR	t AAR	CAAR	t CAAR	Lag	AAR	t AAR	CAAR	t CAAR
-30	-0.0052	-0.1527	-0.0052	-0.1527	1	-0.0126	-0.2937	0.0566	0.2327
-29	-0.0034	-0.1419	-0.0087	-0.2532	2	0.004	0.1285	0.0606	0.3402
-28	-0.0091	-0.2908	-0.0178	-0.3274	3	-0.0042	-0.1272	0.0563	0.2926
-27	-0.0054	-0.1413	-0.0232	-0.3018	4	0.0037	0.1664	0.0601	0.4519
-26	0.0019	0.0676	-0.0213	-0.3333	5	-0.0085	-0.2593	0.0516	0.2636
-25	0.0016	0.0461	-0.0197	-0.2336	6	-0.0012	-0.0464	0.0504	0.3187
-24	0.008	0.2456	-0.0117	-0.1349	7	0.002	0.1018	0.0524	0.433
-23	0.0011	0.0348	-0.0106	-0.1173	8	0.0035	0.1716	0.056	0.4338
-22	0.0045	0.1416	-0.006	-0.0625	9	-0.0014	-0.0559	0.0546	0.3504
-21	-0.0034	-0.1195	-0.0095	-0.1039	10	0.0089	0.3021	0.0635	0.3372
-20	0.0006	0.0173	-0.0088	-0.0738	11	-0.0033	-0.2322	0.0601	0.646
-19	-0.0041	-0.1192	-0.0129	-0.1086	12	-0.0006	-0.021	0.0596	0.3254
-18	-0.0115	-0.3333	-0.0244	-0.1963	13	0.0118	0.5365	0.0713	0.4899
-17	0.0087	0.3035	-0.0157	-0.146	14	0.0037	0.1635	0.075	0.5003
-16	0.0024	0.0788	-0.0134	-0.1156	15	-0.0026	-0.1128	0.0724	0.4598
-15	0.0001	0.0017	-0.0133	-0.0914	16	-0.002	-0.0823	0.0704	0.42
-14	-0.0056	-0.1836	-0.0189	-0.1499	17	-0.0028	-0.1081	0.0676	0.378
-13	0.0056	0.1814	-0.0133	-0.1008	18	0.0022	0.08	0.0698	0.3564
-12	0.0028	0.1134	-0.0105	-0.0994	19	0.0021	0.072	0.0719	0.3568
-11	0.0044	0.1653	-0.0061	-0.0517	20	-0.0008	-0.0269	0.0711	0.3485
-10	0.0023	0.0929	-0.0038	-0.0341	21	0.0022	0.0753	0.0733	0.3534
-9	0.0102	0.2472	0.0063	0.0327	22	-0.0037	-0.1039	0.0696	0.2683
-8	0.0006	0.0187	0.0069	0.047	23	-0.0029	-0.1018	0.0666	0.3168
-7	0.0009	0.0265	0.0078	0.047	24	-0.0019	-0.0564	0.0648	0.263
-6	0.0094	0.2403	0.0172	0.0877	25	0.0017	0.0645	0.0665	0.337
-5	0.017	0.3438	0.0342	0.1357	26	-0.0014	-0.0541	0.065	0.322
-4	0.0046	0.1324	0.0388	0.2144	27	-0.0086	-0.2898	0.0565	0.251
-3	0.0053	0.1704	0.0441	0.2679	28	0.0006	0.02	0.0571	0.2478
-2	0.0168	0.3555	0.0609	0.2393	29	0.0073	0.3198	0.0644	0.3655
-1	0.006	0.1497	0.0669	0.304	30	0.0063	0.195	0.0707	0.279
0	0.0022	0.0436	0.0692	0.2408					

**Table 4   t-values of Cumulative Average Abnormal Returns
Around Bonus Announcement Date (Companies that issued more than 1:2 Bonus)**

Lag	AAR	t AAR	CAAR	t CAAR		Lag	AAR	t AAR	CAAR	t CAAR
-30	0.001	0.059	0.001	0.059		1	-0.0124	-0.3439	0.0488	0.2383
-29	-0.0024	-0.0828	-0.0014	-0.0345		2	-0.0104	-0.3756	0.0383	0.2404
-28	-0.0086	-0.2422	-0.01	-0.1631		3	0.0018	0.1036	0.0401	0.3939
-27	0.0081	0.2392	-0.002	-0.0292		4	-0.005	-0.3153	0.0351	0.3714
-26	-0.0029	-0.1031	-0.0049	-0.0768		5	-0.0008	-0.0374	0.0343	0.2813
-25	-0.0009	-0.039	-0.0058	-0.1075		6	0.0019	0.0885	0.0362	0.2782
-24	0.0043	0.2803	-0.0015	-0.0364		7	-0.0027	-0.2034	0.0335	0.4061
-23	-0.002	-0.0717	-0.0035	-0.044		8	-0.0015	-0.0725	0.032	0.242
-22	-0.0087	-0.4524	-0.0122	-0.2108		9	-0.0037	-0.1625	0.0283	0.1977
-21	0.0013	0.0655	-0.0109	-0.1758		10	-0.0041	-0.2568	0.0242	0.2351
-20	-0.0099	-0.3544	-0.0208	-0.2252		11	0.0014	0.0715	0.0256	0.1969
-19	0.0063	0.192	-0.0145	-0.1263		12	-0.0055	-0.3085	0.0201	0.1732
-18	-0.0045	-0.1663	-0.019	-0.1933		13	0.0008	0.0423	0.021	0.1632
-17	-0.0066	-0.218	-0.0256	-0.2267		14	0.0002	0.0099	0.0212	0.1616
-16	-0.0023	-0.1299	-0.0279	-0.4071		15	-0.0024	-0.1217	0.0187	0.1383
-15	0.0026	0.1032	-0.0253	-0.2503		16	-0.0014	-0.067	0.0174	0.125
-14	-0.0036	-0.1193	-0.0289	-0.2308		17	-0.0054	-0.2114	0.012	0.068
-13	0.0022	0.0692	-0.0267	-0.1952		18	0.004	0.2186	0.0159	0.1257
-12	0.0031	0.1233	-0.0235	-0.2122		19	0.0053	0.2269	0.0212	0.1294
-11	0.0039	0.1478	-0.0196	-0.1675		20	0.0009	0.0437	0.0221	0.1585
-10	0.0145	0.3345	-0.0051	-0.0258		21	-0.0023	-0.1075	0.0198	0.129
-9	0.0084	0.2903	0.0032	0.0239		22	0.0052	0.3663	0.025	0.2418
-8	-0.0011	-0.0542	0.0021	0.0218		23	0.007	0.4018	0.0319	0.251
-7	0.0061	0.1712	0.0082	0.0472		24	0.0007	0.0369	0.0326	0.2312
-6	0.0294	0.5849	0.0376	0.1497		25	0.0007	0.0346	0.0333	0.2129
-5	0.0193	0.3919	0.0569	0.2263		26	-0.0016	-0.0772	0.0317	0.1996
-4	0.0111	0.3017	0.068	0.3556		27	0.0032	0.1858	0.0349	0.2657
-3	-0.0006	-0.0131	0.0674	0.2909		28	0.0008	0.0512	0.0358	0.2997
-2	-0.0037	-0.1043	0.0637	0.3351		29	-0.0118	-0.7276	0.0239	0.1902
-1	0.0019	0.0673	0.0656	0.4252		30	-0.0034	-0.176	0.0206	0.1365
0	-0.0044	-0.0996	0.0612	0.2474						

**Table 5 t-values of Cumulative Average Abnormal Returns
Around Bonus Announcement Date (Companies that issued bonus on other ratios)**

	Levene's Test for Equality of Variances		t-test for Equality of Means					
	F	Sig.	t	Sig. (2-tailed)	Mean Difference	Std. Error Differ-ence	95% Confidence Interval of the Difference	
							Lower	Upper
All bonus issues (134)	11.543	.001	3.690	.000	.0038	.00103	.00174	.00586
Bonus issues at 2:1 ratio (9)	1.832	.181	1.053	.297	.0038	.00364	-.00345	.01111
Bonus issues at 1:1 ratio (77)	1.719	.195	3.691	.000	.0045	.00122	.00206	.00694
Bonus issues at 1:2 ratio (20)	.764	.386	1.444	.154	.0022	.00151	-.00084	.00521
Bonus issues at other ratios (28)	4.469	.039	1.905	.062	.0033	.00175	-.00017	.00683

Table 6 t-test for the Equality of Mean in the Abnormal Returns around the bonus announcement dates

S.No.	Bonus Issue Ratio	Two Sample Kolmogorov-Smirnov Test				
		Most Extreme Differences			Kolmogorov – Smirnov Z	Asymp. Sig (2-tailed)
		Absolute	Positive	Negative		
1	All (134)	0.449	0.000	-0.449	1.755	.004
2	2:1 or more (9)	0.256	0.085	-0.256	0.999	.271
3	1:1 (77)	0.404	0.000	-0.404	1.579	.014
4	1:2 (20)	0.275	0.091	-0.275	1.075	.198
5	Other ratios (28)	0.285	0.029	-0.285	1.113	.168

Table 7 Two Sample Kolmogorov-Smirnov Test to Measure the Differences in the Distribution Pattern of Abnormal Returns Before and After the Event

Note: Figures in brackets refer to number of bonus issues in the respective category

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