Market Efficiency of Indian Stock Market – A Study of Bonus Announcement in Bombay Stock Exchange

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ABSTRACT *Efficient market emerges when new information is quickly incorporated into the price. In other words the current market price should reflect all publically available information. Under such conditions the current market price in any financial market could be the best unbiased estimate of the value of the investment. The present study is an attempt to test the informational efficiency of the Indian Stock Market in the semi-strong form of efficient market hypothesis with respect to the information content of the event bonus issue announced by companies listed in BSE 500 during the study period. The AARs and CAARs were analysed to ascertain whether an opportunity was available to make above abnormal returns during the price adjustment period. The study reveals that the investors have not been able to earn abnormal returns in the study companies.*

Introduction

Financial market is a market for the exchange of capital and credit instruments. It comprises the money market and the capital market. While money market is the market for short-term debt securities which comprises typically highly liquid instruments, capital market is the market where long-term debt securities and equities are traded. In order to attract investments and capital creation, it is imperative to create confidence of the investors in the market and to achieve this, prices of the securities dealt with in the market should be efficient. Even though many other considerations do exist, price efficiency may be considered as a dominant one. The correctness of the price is hence an important factor in the securities market. Price of securities in the market is information driven and the perception of the market of available information is expected to be reflected in the price. Market efficiency refers to a condition, in which current prices reflect all the publicly available information about a security. The basic idea underlying, market efficiency is that competition will drive all information into the price which would incorporate them quickly for the prices to get adjusted. In other words, the current market price is expected to reflect all available information. Under such a condition the current market price in any financial market would be the best unbiased estimate of the value of the investment.

Efficient Market Hypothesis (EMH)

The Efficient Market Hypothesis (EMH) has been considered as one of the cornerstones of modern financial economics. Fama first defined the term "efficient market" in financial literature in 1965, as one in which security prices fully reflects all available information. The market is considered efficient, if the reaction of market prices to new information is instantaneous and unbiased. Efficient market hypothesis is based on the idea that information is quickly and efficiently incorporated into asset prices at any point in time and consequently past prices cannot be used to predict future price movements since addition to existing information cannot be foreseen.

All markets are neither fully efficient nor are they fully inefficient. Their levels of efficiency vary in between. Fama (1970) classified market efficiency into three different forms namely, weak form, semi strong form and strong form based on the type of information set that is reflected in the share prices.

Weak Form of Efficiency

The weak form of efficiency stipulates that current security prices already reflect past price and volume information. The information contained in the past series of prices of a security is fully reflected in the current market price of that security implying no above normal returns is possible based on the past price information or trend.

Semi - Strong Form of Efficiency

The semi strong form of EMH states that all publically available information is immediately incorporated into security prices and hence is fully reflected in a security's current market price. The public information includes not only past prices but also information like data reported in a company's financial statements, company's announcements, economic factors and others.

Strong Form of Efficiency

The strong form of EMH stipulates that private information or insider information too, is quickly incorporated in the market prices and therefore such information cannot be used to predict future prices.

Thus, all information, whether public or private, is fully reflected in a security's current market price and thus information asymmetry cannot be a ground to anticipate future prices. The net effect of non-predictability of prices is that, it cannot be effectively used to earn profits through trading, exclusively by such information holders. In other words, if extra profits could not be earned by using such information, the market is efficient. If not, the market would not be efficient with respect to that information and the form.

Bonus Issue

Many company related information, happenings and announcements affecting its operations and finance would have its impact on the value, through the market perception of such information. One such decision of the company is announcement of bonus shares. Bonus shares are distribution of additional stocks to the existing shareholders. It is a free issue of shares in the sense; it is in the nature of distribution of accumulated profits made, to the existing shareholders in proportion to their current holdings. Bonus issue increases the number of equity shares outstanding but have no effect on shareholders proportional ownership of shares. If a company distributes accumulated reserves through a bonus issue, it effectively transfers retained earnings into paid-up capital. Thus, it results in each shareholder holding a larger number of shares and with more stocks on issue, but their relative claim on the assets of the company remains the same. There is also no effect on the capital structure and the financial position of the company. The relationship between bonus announcements and share prices has been the subject of much of empirical discussion within the finance literature.

Analysis of semi strong form of market efficiency has been lim-

ited to the study of well developed stock markets. The present study attempts to test the stock price reaction to information content of bonus issues with a view to examining whether the Indian Stock Market is efficient in its semi strong form.

Review of Literature

Many studies have been made on testing the semi-strong form of efficient market hypothesis in relation to bonus issue announcements. A reference to these earlier studies will be relevant in the context of shaping the present study.

Researchers have shown earlier that the market generally reacts positively to bonus announcement. Fama et al. (1969), Peterson (1971), Ball et al. (1977), Foster and Vickrey (1978), Wool ridge (1983), Grinblat et al. (1984), Ramachandran (1985), Lijleblom (1989), McNichols and Dravid (1990), Obaidullah (1992), Srinivasan (1993), Rao (1994), Singh. A (1995), Masse et al. (1997), Onyango (1999), and Anderson et al. (2001), in their studies have established this aspect.

Balachandran Balasingham (2001) examined the share price reaction to announcement of bonus share issues of Australian companies. They found that the magnititude of price reaction to bonus issue announcements is statistically related to the size of bonus issues and pre-announcement effect.

Madhuri Malhotra et al. (2003) provided evidence to support signaling hypotheses by examining the relationship between bonus issue announcement and stock price reaction. The study concluded that there is a negative reaction after the bonus issue announcement, conveying that the market under reacts after the announcement.

Vandana Gupta (2003) in a study involving a sample of 145 bonus issues examined the announcement effects of bonus issues on equity share prices in India. Based on the results the study concluded that the Indian Stock market was efficient in its semi-strong form.

Budhraja et al. (2004) in their study on BSE suggested that abnormal returns in stock prices around the bonus issue announcement data, over three day trading period starting one day before the announcement is significant at 95 per cent confidence level. It also says that much of the information in the bonus announcement gets impounded into stocks by the time of the announcement of the bonus issue.

Mishra (2005) examined the reaction of the stock price to the information content of bonus issues and found that the stock starts showing positive abnormal returns eight to nine days before the announcement date. This could be due to the leakage of the informational content. This paper lends support to the hypothesis that Indian stock market is efficient in its semi-strong form.

Madhuri Malhotra et al. (2007) in their study has examined the share price reaction to the announcement of bonus issue for a sample of Indian companies. Bonus issue announcement yielded negative abnormal returns around the announcement date. There is a negative reaction after the bonus issue announcement conveying that the market under reacts after the announcement. It was also observed that there is no information leakage prior to the announcement.

Satyajit Dhar and Sweta Chhaochharia (2009) examined the effects of two types of events, bonus issue and stock split in the Indian stock market. The abnormal returns were calculated using the Capital Asset Pricing Model and t-tests were conducted to test the significance. Consistent with the existing literature, the two events were found to be associated with significantly positive announcement effect. On the whole, the paper finds evidence of semi-strong form of efficiency in the Indian stock market.

Koustubh Kanti Ray (2010) in his study concludes that the Indian stock market is efficient in its semi- strong form with respect to bonus issue announcements only.

Anirban Ghatak (2011) in his study to investigate of semi-strong form of market efficiency had limited himself to the study of well developed stock markets. The aim of this paper was to examine the stock price reaction to information release of bonus issues or stock splits with a view to ascertain whether the Indian stock market is efficient in its semi-strong form or not. The results showed, that was positive abnormal return of 2.08% with confidence level of 90% on event date which is the bonus issue announcements date. Market reacts positively on the announcement date and after that there is mixed reaction in the market. Therefore, this evidence strongly confirms that the Indian Stock Market is efficient in its semi strong form of efficient market hypothesis.

An event study is an empirical analysis that is normally used to assess the effect of an event on stock returns. The earlier studies by applying event study were taken up by Sharpe (1963), Ball and Brown (1968), Fama et al. (1969), Brawn and Warner (1985), Henderson (1990). The announcement effect on the price was calculated by the standard market model using the event study methodology (Craig MacKinlay 1997). This methodology is used for the analysis in this study.

The present study is expected to help investors in general and small and medium investors in particular, by way of assessing efficiency of the stock market through studying the share price movement at the time of bonus issue announcement.

Statement of the Problem

Additions to existing information and new information would alter the perception of the investors who tend to evaluate the impact of such information and reprice the stocks invested. The quickness with which this process is completed determines the efficiency of the market. The type of information flow is several and each is likely to have different kinds of impact in different time frames on the prices. In other words, how quickly and correctly security prices absorbs information, shows the efficiency of the stock market. The kind of information may be announcement of annual earnings, half-yearly earnings, quarterly earnings, dividend, bonus issue, rights issue, buy-back, mergers and acquisitions, stock splits, etc. In the developed markets, a number of research studies have been conducted to test the efficiency of the capital market with respect to information content of corporate events. In India, studies to test the efficiency of the stock market with respect to information have been limited. Most of these studies have been industry specific and involving different periods. Hence the present study is an attempt to test the efficiency of Indian Stock Market with respect to information content of bonus issue announcement of select companies listed in the BSE 500. Ideally the event announcement should not result in any change in market price. But this may not practically happen. What needs to be tested is how quick this additional information gets absorbed and prices get adjusted. Correct prices in an efficient market renders fair returns to investors and hence assumes importance.

Scope of the Study

The present study is an attempt to test the informational efficiency of the Indian Stock Market in the semi strong form of efficient market hypothesis with respect to the event bonus issues announced by listed on BSE 500 companies. Other events are not considered.

Objectives of the Study

The objectives of the present study are as follows;
1. To assess the stock returns in terms of change in its market value around bonus announcement for companies listed on BSE 500.
2. To examine the persistence of effect of bonus announcement on stock prices in terms of returns due to change in market value of the companies listed on BSE 500.

Period of the Study

The present study is to test the semi-strong form of efficiency of the Indian Stock Market with respect to information con-

tent of a major corporate event namely bonus issue and the period for the study considered is 10 years from 2001 to 2010.

Sources of Data
The present study is based on secondary data relating to share prices, bonus issue announcement dates and the value of index around these days. The data were obtained from "PROWESS" database maintained by Centre for Monitoring Indian Economy (CMIE). Additional information was obtained from Bombay Stock Exchange Official Directory and the BSE website. Extensive use of books, journals and magazines were made for collecting required background information.

Sample Selection
The universe for this study comprises companies which had announced bonus issue during the study period. 84 Companies listed in BSE 500 resorted to bonus issues during the study period 2001-2010. The criteria for selection of companies for analysis were based on bonus issue announcement exclusively. During the period, a total 84 companies had announced bonus share issues, out of which 24 companies clubbed bonus issue announcement with other major events like stock splits (10), dividend (7) and periodical operating results (7). These companies were not considered for this study, since a combination of events is likely to have a combined impact on market values and hence the impact of bonus issues cannot be analysed exclusively. Other than these, 26 other companies were eliminated due to non-availability of share price data within the period either before or after the announcement and during the event window. Hence this study relates to the remaining 34 companies which constitute the sample.

Event Study Methodology
An event is a corporate announcement that is likely to have an effect on the share price of the firm like bonus, rights, dividend, financial results, stock splits, merger and acquisition, earnings announcement, etc. since they constitute important information. According to efficient market hypothesis the impact of an event will be immediately reflected on the share price of the firm. The main purpose of an event study is a systematic way of analyzing the behaviour of the share price around the event.

In order to carry out an event study, the event date, event period and estimation period need to be determined. The event date (t = 0) in this study is the date of bonus announcement by the sample companies. The event window is set as 41 days and is considered as t-20 to t+20 relative to the event day t = 0. The estimation window is from t-170 to t-21 relative to the event day t = 0. Return on security j in period t is given by

$$R_{jt} = (P_{jt} - P_{jt-1})/ P_{jt-1} \qquad … (1)$$

Where, R_{jt} is return of security 'j' at day 't'

P_{jt} is price of security 'j' at day 't'

P_{jt-1} is price of security 'j' at previous day observed

Standard event study methodology has been used to make the analysis. This study in order to examine the impact of bonus issue announcement on the stock return also uses the event study to estimate the normal return for security.

Stage 1: The dates of announcement of corporate events were denoted as event day. 40 days surrounding the event day that is between 20 days before (t -20) and 20 days after (t+20) the event day have been taken as 'event window'. 150 days prior to the day of the event window i.e., -170 to -21 days before the event day have been considered as the estimation window.

Stage 2: The BSE-500 index returns were taken as the proxy for the market.

Stage 3: The returns of 150 days during the estimation window of the respective shares were regressed against the BSE-500 index returns to determine the 'constant' and the regression 'co-efficient' in order to calculate the expected returns during the event window (Market Model). The market model computes normal returns and abnormal return by using the following equations:

$$R_{jt} = \alpha_j + \beta_j R_{mt} + E_{jt} \qquad … (2)$$

Where,
R_{jt} is the daily return security j at day t
R_{mt} is the daily return on BSE index at day t
α_j, β_j is regression intercept and slope coefficient estimators respectively
E_{jt} is the error term of the stock j on the day t.

Expected return is the estimated return which is calculated by using regression analysis. The expected returns for security at day are defined as,

$$ER_{jt} = \alpha_j + \beta_j R_{mt} \qquad … (3)$$

Where ER_{jt} is expected return on security 'j' as day 't'
α_j, β_j are regression estimated from the equation (2).

Stage 4: Abnormal returns are obtained as the difference between actual returns of company at event day and the expected return generated by the selected market index according to the market model. The abnormal return during the event window is calculated as:

$$AR_{jt} = R_{jt} - ER_{jt} \qquad … (4)$$

Where,
AR_{jt} is abnormal return of security 'j' at day 't'
R_{jt} is actual return of security 'j' at day 't'
ER_{jt} is expect return of security 'j' at day 't'

After calculation of abnormal returns of all the securities, the average abnormal returns has been computed by averaging the abnormal returns of the sample companies for each day of event period. The average abnormal returns (AARs) are used to analyse the information content of bonus issue announcements. The Average Abnormal Returns (AARs) of various securities on a particular event day 't' is calculated as:

$$AAR_t = \frac{1}{N} \sum_{j=1}^{N} AR_{jt} = (AR_{j1} + AR_{j2} + AR_{j3} + \ldots + AR_{jQ})/N$$

Where, 'N' denotes Number of Securities

The cumulative average abnormal return (CAARs) has been computed by cumulating the daily average abnormal returns for the entire event period. It is used to analyse the adjustment of prices to new information. The Cumulative Average Abnormal Returns (CAARs) are the sum of daily Average Abnormal Returns (AARs) during the event window.

$$CAAR_t = \sum_{t-k}^{+k} AAR_t \qquad … (6)$$

Where, -k to +k denotes -20 to +20 days during the event window.

Stage 5: The average abnormal returns in all the trading days in the event window and cumulative average abnormal returns during the event window are analyzed by using 't' test to identify whether they significantly differ from zero.

Hypothesis of the Study
In order to examine the impact of bonus issue announcements its effect on AARs and CAARs is studied through the framing the following hypotheses:

H01= There is no significant difference between AARs before and after issue of bonus announcement.

H02 = There is no significance difference between CAARs

before and after issue of bonus announcement.

Results of the Study

Table 1 presents the results obtained by computing the AARs and CAARs for the 34 companies' bonus issue announcements. For each of the 41 days in the event window it reports the average abnormal returns (AARs) and cumulative average abnormal returns (CAARs). The AARs and CAARs with their respective values along with their significance at 1 %, 5 %, and 10 % levels are analyzed for the above sample.

The event day generated an AAR of 1.34 percent which was significant at 10 percent level. The AARs before announcement period from -20 days to -1 day are positive for 15 days out of 20 days and are negative for the other 5 days. The AARs are significant at 5 percent level consisting of positive returns of 1.06 percent on day -10, 2.02 percent on day -6 and 1.99 percent on day -5. On day -17 a negative return of 0.69 percent during the pre-announcement period which was significant at 10 percent level.

During the post event period there was no consistent pattern in the AARs. It was negative for 10 days out of 20 days and is positive for remaining days. AARs after the announcement day are not statistically significant except on day +3. It reveals that the investors did not have a chance to earn abnormal returns due to the event. The AARs consequent to bonus issue announcement are presented graphically in Chart.1

Table 1: AARs AND CAARs OF BONUS ISSUE ANNOUNCEMENTS

DAYS	AAR	t-statistics	CAAR	t-statistics	DAYS	AAR	t-statistics	CAAR	t-statistics
-20	-0.2867	-0.882	-0.2867	-0.882	1	0.6467	1.071	9.0013	2.531b
-19	-0.2066	-0.786	-0.4932	-1.152	2	-0.0456	-0.086	8.9557	2.473b
-18	0.4592	0.849	-0.0340	-0.049	3	-0.9510	-2.308b	8.0047	2.221b
-17	-0.6927	-1.823c	-0.7267	-0.938	4	-0.3141	-0.795	7.6906	2.142b
-16	0.3591	0.876	-0.3676	-0.471	5	-0.2560	-0.657	7.4345	1.986c
-15	0.4091	0.966	0.0415	0.057	6	0.8095	1.601	8.2440	2.128b
-14	0.2529	0.526	0.2944	0.343	7	0.1196	0.316	8.3636	2.086b
-13	0.0362	0.101	0.3305	0.362	8	-0.1113	-0.220	8.2523	2.030c
-12	0.1190	0.330	0.4495	0.408	9	-0.2581	-0.547	7.9942	1.923c
-11	0.4152	0.910	0.8647	0.696	10	0.4216	1.169	8.4158	2.040b
-10	1.0574	2.036b	1.9221	1.451	11	0.1798	0.406	8.5956	2.006c
-9	0.3442	0.784	2.2663	1.488	12	-0.2978	-0.812	8.2978	1.892c
-8	0.0473	0.124	2.3135	1.488	13	-0.2073	-0.702	8.0905	1.761c
-7	0.3434	0.650	2.6570	1.455	14	-0.1777	-0.503	7.9128	1.670
-6	2.0218	2.442b	4.6788	1.954c	15	0.4189	0.912	8.3316	1.667
-5	1.9931	2.222b	6.6718	2.410b	16	0.1403	0.337	8.4720	1.625
-4	0.0144	0.028	6.6862	2.379b	17	0.2577	0.437	8.7296	1.581
-3	-0.0793	-0.136	6.6069	2.106b	18	-0.3662	-0.678	8.3634	1.476
-2	0.8997	1.468	7.5066	2.232b	19	0.5603	0.939	8.9238	1.592
-1	-0.4933	-1.340	7.0133	2.018c	20	0.7358	1.531	9.6596	1.695c
0	1.3414	1.795c	8.3546	2.429b					
a. Significant at 1% level. b. Significant at 5% level. c. Significant at 10% level.									

Source: Computed from "PROWESS" Database

Chart 1AARs of Bonus Announcements
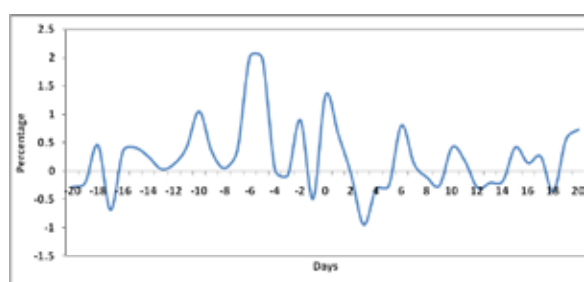
Returns which had occurred on day one after announcement has come down to normal levels during day five. Absence of statistical significance shows that among the companies studied no much of variations had occurred.

However, CAARs were positive for 36 days including the event day and negative for only 5 days during the event window. The event day CAAR of 8.35 percent was significant at 5 percent level. It is seen that there is positive returns of 4.68 percent on day -6 and 7.01 percent on day -1 during the pre-announcement period and a return of 7.43 percent on +5th day, 8.25 percent on +8th day, 7.99 percent on +9th day, 8.29 percent on +12th day, 8.09 percent on +13th day and 9.66 percent on +20th day during the post-announcement period at 10 percent level of significance. The CAARs results were significant at 5 percent level consisting of positive returns of 6.67 percent on day -5, 6.69 percent on day -4, 6.61 percent on day -3, 7.51 percent on day -2, 9.00 percent on day +1, 8.95 percent on day +2, 8.00 percent on day +3, 7.69 percent on day +4, 8.24 percent on day +6, 8.36 percent on day +7 and 8.41 percent on day +10. The CAARs on bonus issue announcements are presented graphically in chart 2.

Chart 2 CAARs of Bonus Announcements
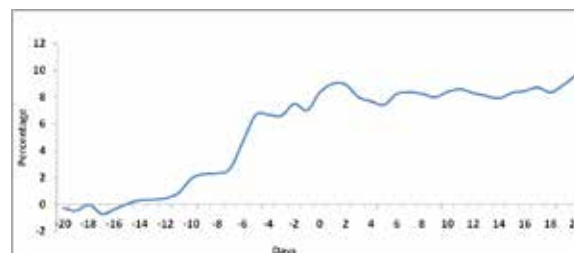
The CAARs figures show that it has increased from day -10 itself and decreased from day +2. It indicates that, starting from around day five before announcement date, positive overall changes have occurred up to day five after the announcement, except for some intraday negative changes. Subsequently the returns have remained static. It can be inferred that a period of five days was needed for price adjustment. The quickness with which price adjustment have taken place with reference to the study points to efficiency.

Conclusion

Efficient market emerges when new information is quickly incorporated into the price. The study was taken up to test the stock price reaction to information content of bonus issues

with a view of examining whether the Indian Stock Market is efficient in semi strong form. AARs after the announcement day (except +3 day) are statistically not significant. It reveals that the investors have not earned abnormal returns in the sample companies. This is corroborated by the CAAR data as well. This implies that the level of efficiency of the stock market is high.

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