A Study on Semi-Strong Efficiency of Indian Stock Market

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Abstract- The study aims at examining the efficiency of Indian Stock market by studying stock price and trading volume reaction resultant upon the corporate action information. If the market is efficient prices fully reflect all information and to evaluate there is no scope for abnormal returns and dramatic increase in the traded volume consequent upon such release of information. Here the efficiency of stock market is tested by analyzing the dissimilation of corporate event announcements like dividend, Stock Split, merger, Bonus issue.

I. INTRODUCTION

Indian stock market is an emerging market. A capital market is said to be informational efficient when stock prices fully reflect all available information. In an efficient market, when a new information item is added to the market its impact will instantaneously incorporated in the share prices and no one can make abnormal return based on the information. A number of factors – both internal and external to the organization can cause changes in the returns of the securities and a study of these factors and the pattern of their impact on security returns have generated considerable interest to all the stake holders of the capital market.

II. STATEMENT OF THE PROBLEM

Researchers around the world have focused on the effect of various corporate announcements like quarterly earnings, bonus issue, rights issue, stock split, mergers, buy back of stocks etc. The standard methodology used to evaluate the reaction of share prices to these public announcements is conducting an *event study*, which was employed as early as by Dolley(1933). The *event* is what the investigators would like to study, and it conveys information that potentially influences the stock prices.

Detailed literature review and discussions with academicians and researchers have resulted in identifying bonus issue, stock split, merger and dividend as four corporate events of significance and hence the information release regarding these events are selected to arrive at a broad-based result. Out of these four selected events, two of them have monetary implications and the other two have strategic implications. As is evident, dividend and bonus issue have monetary implications and stock split and merger information have strategic implications as far as the shareholders are concerned. This study focuses on the variability of security prices consequent upon the release of corporate information regarding bonus issue, stock split, merger and dividend. According to the theoretical framework, the information about the corporate actions would be incorporated in share markets and the extent of incorporation of the corporate information in the price of shares would depend upon the form of efficiency viz., Weak, Semi strong or Strong efficiency of the market. As a corollary, the study on the effect of corporate information release on the price and volume of shares would reveal the type of efficiency of the market.

III. OBJECTIVES OF THE STUDY

a. To study the security price reaction to corporate information release.
b. To draw a conclusion on efficient market hypotheses with regard to Indian stock market.

IV. HYPOTHESES

a. Corporate information release influences share price after discounting the company specific effects and impact of market index
b. The Abnormal Returns around the event dates are close to zero

V. METHODOLOGY

Event study methodology, which tries to measure the effect of an event and how quickly these events are reflected in asset prices, is used to analyse the effect of the selected events, Dividend, Stock split, Merger and Bonus issue. The analysis centers on the "Event Window" or test period when evidence of abnormal behavior in market is sought. In this study the event window is 30 days before the event (announcement) date and 30 days after the event. Total event window is 60 days and it is in line with many other event studies, Bae and Jo(1999), Iqbal and Mallikarjunappa(2007), and Gupta and Gupta (2007).All the companies in BSE 100 index forms the population. From the total population, the sample set for each event is selected based on the availability of the dates of announcement of the selected event. The sample set for each event consists of all the companies which have announced the respective event. Data collected for the study are:

a. Share price of each company for 5 years
b. BSE 100 index for 5 years.
c. Bonus issue, Dividend, Merger, and Stock split announcement dates of each company during the study period of 5 years (2004 April 1st to 2009 March 31st)

The analysis for each event is conducted separately. The abnormal return in price of all the sample companies for each event were calculated for each day before and after the day of announcement. The abnormal return of each day is averaged out across the entire set of companies in the data set, in order to eliminate the company specific impact on information release such as the track record, size, type of the firm etc.

Abnormal returns are analyzed over a sample time frame from thirty days prior to the announcement of bonus issue to thirty days post announcement. Abnormal Return of security i during period t

$$ARit = \quad Rit - ERit \tag{1}$$

Rit is the actual return of security i during period t. The daily returns for each sample company have been computed for the event window period and the equation for the same is

$$Rit = (Pit - P\,it\text{-}1) / P\,it\text{-}1 \tag{2}$$

Where, Pit and Pit-1 are respective daily prices of company i at time t and t-1. Expected return (ERit) is the return expected on security i during period t and is calculated using the simplified model of regression for estimating returns on each security by taking the actual returns on the market model and BSE 100 index is used as a proxy for the market portfolio. The market model, which is used for evaluating the expected return, is mathematically expressed as:

$$ERit = \quad \alpha i + \beta i\,Rmt + eit \tag{3}$$

Rmt is the market's rate of return at time t (BSE 100). αi is the average rate of return the stock would realize in a period with a zero market return. This is the estimate of the intercept of a straight line or alpha coefficient of ith security. βi measures the stock sensitivity to the market return which is the slope of a straight line or Beta coefficient of ith security. ei is known as residual which is the stock's return over and above what one would predict presumably due to the event in question. Hence the above equation provides a decomposition of expected return into market and firm specific factors. There is an assumption inherent in the market model that eit is unrelated to the overall market and has an expected value of zero. The estimates of the constant and coefficient obtained from the regression are then used to generate a time series of return predictions and, ultimately, a time series of excess returns, which are then divided by the prediction to compute the standardized excess return. The abnormal returns are computed using the following model:

$$ARit = Rit - ERit \tag{4}$$

Rit = Actual Returns of the ith security during time t. β and α of the companies having the announcement were calculated for each event window, by solving the regression equation,

$$ERit = \alpha i + \beta i\,Rmt \tag{5}$$

As indicated in the frame work of analysis, the abnormal returns of individual securities are averaged for each day before and after the event day in the event window and the Average Abnormal Return (AAR) are obtained

$$AARit = \frac{\sum_{t=1}^{N} ARit}{N} \tag{6}$$

Statistical tools of t- test, z test, and non parametric U test were conducted to study the significance of the results. Even though parametric tests are very much useful tests, there are restrictive assumptions about the population from which the sample is drawn. One of the main assumptions is that the population is normally distributed population. The population may not always be normal, especially in this study, where market behavior is considered, which is an abnormal process and hence cannot confirm 100 percentagenormality. The most popular approach to addressing non-normality of the data can be provided by nonparametric tests.

VI. ANALYSIS

The mean of average abnormal return of before the announcement of the dividend is 0.1083 which reduces to -0.1076 after the announcement. To find whether this difference in abnormal return is significant or not, t-test and u test were conducted. The test results indicate that the difference in price before and after the dividend announcement is not significant at 5 percent level of significance. The average abnormal return of before the announcement of the merger is 0.891 and after the announcement which reduces to -0.0896 after the announcement. Here also the application of statistical tests t and u indicates that the difference in price before and after the merger announcement is not significant at 5 percent level of significance. Thus it is concluded that merger information has no significant impact on price of shares and investor cannot earn abnormal return by trading after the release of merger information. The mean value of AAR for 30 days before the split announcement is 0.0148 and that for 30 days after the announcement is -0.0145. t test and U test revels that this the difference in abnormal returns are insignificant. So it is clear that the split information also will not influence share price of the companies in a significant manner. The average abnormal return of 30 days before the announcement of the bonus issue is 0.1340 which reduces to -0.1323 after the announcement. The statistical test results indicates that the difference in price before and after the bonus announcement is not significant, thus confirm that investor cannot earn abnormal return after bonus information. So it is evident that bonus information has no significant impact on price of shares.

VII. CONCLUSION

Hence it can be concluded that the bonus information release will not influence the stock price.The analysis reveal that the information release of dividend, bonus issue, stock split and merger do not influence the security returns in any significant manner. From the study of four important corporate information

it is clear that announcement of corporate information do not have any significant effect on security price and volume traded when the market is stable on an average. So the investor cannot earn abnormal returns upon the release of corporate information, irrespective of the nature of such information. As regards the informational efficiency of the market, the results of the study suggest that the Indian stock market tends to indicate semi strong form of efficiency.

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