TESTING SEMI-STRONG FORM OF MARKET EFFICIENCY OF BSE COMPANIES IN INDIAN CAPITAL MARKET

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Abstract
Efficient market means market where all pertinent information is available to all participants at the same time, and where prices respond immediately to available information. 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 try 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 budget announcement for BSE listed Companies during the year 2009-10 and 2016-17. For examining the impact of announcement of bonus issue for BSE listed companies, paired 't' test and Average Abnormal Return (AAR) has employed. The results found that the company ONGC has significant difference between before and after bonus announcement date and AAR result shows that the highest average abnormal return was recorded on T-14th day.

Keywords : Semi-Strong Form, BSE, AAR, Market Efficiency, Indian Stock Market.

Introduction
The share price movement is analyzed broadly with two approaches namely, fundamental analysis and technical analysis. Fundamental approach analyses the share prices based on economic, industry and company statistics. The technical analyst mainly studies the stock price movement of the stock prices. An "efficient market" is defined as a market where there are large number of rational profit-makers actively competing with each trying to predict future market values of individual securities, and where important current information is almost freely available to all the participants. The efficient-market hypothesis was first expressed by Louis Bachelier mathematician, in his 1900 dissertation, "The Theory of Speculation". His work was largely ignored until the 1950s. However, scattered, independent work, which began in 1930s corroborated his thesis. A small number of studies indicated that US stock prices and related financial series followed a random walk model.

The efficient-market hypothesis emerged as a prominent theoretic position in the mid- 1960s. Paul Samuelson had begun to circulate Bachelier's work among economists. In 1964, Bachelier's dissertation along with the empirical studies mentioned above, were published in an anthology edited by Paul Coonter. In 1965, Eugene Fama published his dissertation arguing for the random walk hypothesis and Samuelson published a proof for a version of the efficient-market hypothesis. In 1970, Fama published a review of both the theory and the evidence for the hypothesis.

The efficient market hypothesis is concerned with the behavior of prices in asset markets. It suggests that profiting from predicting price movements is very difficult and unlikely. The main engine behind price changes is the arrival of new information. A market is said to be 'efficient' if prices adjust quickly and, on average, without bias, to new information. As a result, the current prices of securities reflect all available information at any given point in time. There are various forms of market efficiency.

Semi-Strong Form
Under semi-strong form of efficiency, public information includes not only past prices, but also data reported in a company's financial statements (annual reports, income statements, filings for the Security and Exchange Commission etc.), earnings and dividend announcements, announced merger plans, the financial situation of company's competitors, expectations regarding macroeconomic factors (such as inflation, unemployment etc.). Semi-strong form efficiency implies that share prices adjust to publicly available new information very rapidly and in an unbiased fashion, such that no excess returns can be earned by trading on that information and neither fundamental analysis nor technical analysis techniques will be able to reliably produce excess returns. To test for semi-strong form efficiency, the adjustments to previously unknown news must be of a reasonable size and must be instantaneous. To test for this, consistent upward or downward adjustments after the initial change must be looked for. If there are any such adjustments it would suggest that investors had interpreted the information in a biased fashion and hence in an inefficient manner.

The assertion behind semi-strong market efficiency is still that one should not be able to profit using something that "everybody else knows" (the information is public). Nevertheless, this assumption is far stronger than that of weak-form

efficiency. Semi strong efficiency of markets requires the existence of market analysts who are not only financial economists able to comprehend implications of vast financial information, but also macroeconomists, experts adept at understanding processes in product and input markets. In effect, the semi strong form of market hypothesis maintains that as soon as the information becomes publicly available, it is absorbed and reflected in stock prices. Furthermore, even while the correct adjustment is taking place, the analyst cannot obtain consistent superior returns.

Review of Literature
The efficient market hypothesis rapidly gained adherence after 1969 when it was first introduced that stock prices respond quickly to new information, and subsequently display no apparent strong trends. Event studies, pioneered by Fama et al. (1969), generally found this pattern of price adjustment following major events such as mergers, stock splits or changes in firms' dividend policies.

Ali and Mustafa (2001) found little empirical regularity that was contrary to the efficient market hypothesis. For example, the monthly, weekly and daily returns on stocks tend to exhibit discernable patterns, such as seasonal affects, month of the year affect, day of the week affect, hourly affect etc. In case of Pakistan's stock markets, too, such affects are identified, like the Ramadan affect, seasonal effects and day of the week affect. Further, the wide spread use of "technical analysis" among stock traders and their ability to predict to some extent the direction of movements in the prices of individual stocks over medium term testifies the existence of patterns and seasonal trends.

Gelband (2005) offered a test of market efficiency using insider trade data. Insiders are allowed to trade in their own securities so long as they report their trades to the Security Exchange Commission (SEC) and do not trade on "material, non-public" information. It seems logical that an insiders' close knowledge of the company and the company's industry would allow them to time their investments better than an outsider. Indeed this is the case; nearly every study on insider trades has found that insiders earn abnormal returns.

In the light of wealth of support for the semi-strong hypothesis, summarized well by Fama (1970), a violation of this sort would mark a serious anomaly. Historically, studies examining insider trading have not found evidence of this anomaly. The majority of studies have concluded that while insiders can earn abnormal profits, outsiders mimicking insider trades cannot earn abnormal returns. Largely, studies have concluded that outsiders cannot earn abnormal returns because there is a significant delay between when insiders trade and when news of their trades becomes public.

Seiler and Walter (1997) examined the behavior of daily stock returns over the period from February, 1885 through July, 1962, the period before the Center for Research in Security Prices (CRSP) tapes were developed, to assess the degree of market efficiency for stocks listed on the New York Stock Exchange (NYSE). Previous studies have examined the market's efficiency since 1962, but periods pre-dating CRSP have not received adequate attention. The results indicated that with the exception of brief periods in the NYSE's history, the market has traditionally been efficient long before the modern era. To test historical market efficiency they used to examine the pattern of short-term movements in aggregate market returns and attempted to identify the process underlying those returns. The Box- Jenkins methodology was employed in an attempt to identify patterns, which could be used to predict stock returns. Although monthly and weekly return patterns were found to be significant, they were still unsuccessful in predicting future stock price movements.

Objectives of The Study
1. To understand the impact of announcement of bonus issue on Indian stock market in BSE listed companies.
2. To investigate the Average Annual Return of bonus issue of BSE listed companies in Indian Stock Market.

Research Methodology
The study was descriptive in nature. The population of the study was all the firms listed in Bombay Stock Exchange (BSE). Purposive sampling technique was used to select the sample and the data was collected from secondary sources. Daily price data was collected from the website of BSE for all the firms and closing prices on everyday were taken. The sampling frame of the study was for the period from April 1, 2009-10 to March 31, 2016-17. To find out whether the series of price movement has effect on pre and post bonus announcement, paired 't' test was applied. To test the average annual return of the series, 't' test was employed.

Hypotheses of The Study
1. **H_{01} :** The returns of the stock price movements are same at before and after bonus announcement period of the selected companies.
2. **H_{02} :** The pre and post average abnormal returns of stock bonus announcement of the listed companies is same during the study period.

Results and Discussion

It has examined the impact of announcement of bonus issue on its stock price of the BSE listed companies. For this, 42 companies from 11 sector were selected which are listed in BSE. The before 15 days and after 15 days including announcement date were selected and before 100 days were selected before the 15 days of announcement date. After finding the return of the series, paired 't' test were evaluated for examining the significant difference between the price movements of the pre and post bonus issue in the listed BSE companies. The results are discussed in the following.

Significant Impact of Bonus Issue of Listed BSE Companies

In order to find the relationship between pre and post impact of stock bonus announcement of the BSE listed companies is discussed in the following table with a null hypothesis.

Null Hypothesis (H_0) : The returns of the stock price movements are same at before and after bonus announcement period of the selected companies.

Table 1 : Significant Impact of Bonus Issue of BSE Companies (Paired 't' Test)

No.	Company Name	Mean[a]	't' Test	No.	Company Name	Mean[a]	't' Test
1	Aurobindo Pharma	-0.391	0.596[NS]	22	ITC (20.5.16)	0.549	-0.811 [NS]
2	Bharat Electronics	-0.527	0.714 [NS]	23	Jindal Steel	-1.838	1.364 [NS]
3	BPCL (25.5.12)	-0.712	0.981 [NS]	24	Kotak Mahindra	0.173	-0.216 [NS]
4	BPCL (26.5.16)	0.869	-1.255[NS]	25	Larden & Tubro	-0.795	1.121 [NS]
5	Cadila Health	-0.207	0.533 [NS]	26	Marico	0.510	-0.986 [NS]
6	Colgate	-0.445	1.439 [NS]	27	Mindtree (18.1.16)	-0.047	0.109 [NS]
7	Crompton Greaves	-0.524	0.535 [NS]	28	Mindtree (16.4.14)	0.216	-0.348 [NS]
8	Dabur India	-0.481	0.987 [NS]	29	Motherson Sumi (10.6.15)	0.674	-1.492 [NS]
9	Divi's Lab (8.8.15)	0.552	-0.537 [NS]	30	Motherson Sumi (1.11.13)	-0.884	1.085 [NS]
10	Divi's Lab (6.6.09)	-1.385	1.414 [NS]	31	Motherson Sumi (9.8.12)	0.941	-1.630 [NS]
11	Federal Bank	-0.732	0.828 [NS]	32	OIL (11.2.12)	0.436	-1.057 [NS]
12	Havells	-0.917	1.032 [NS]	33	OIL (28.11.16)	-0.415	0.684
13	HCL Tech	0.272	-0.414 [NS]	34	Omaxe	-0.071	0.049 [NS]
14	Hexaware	-1.127	1.142 [NS]	35	ONGC	-1.086	3.115*
15	Hindustan Zinc	-0.827	1.659 [NS]	36	Reliance	-0.573	1.136 [NS]
16	ILFS Transport	0.084	-0.097 [NS]	37	Sun Pharma	-2.775	1.887 [NS]
17	Infosys (24.4.15)	0.169	-0.357 [NS]	38	TCS	0.251	-0.176 [NS]
18	Infosys (10.10.14)	0.376	-0.590 [NS]	39	Tech Mahindra	-1.059	1.918 [NS]
19	IOC (13.9.09)	-0.128	0.147 [NS]	40	Titan Industries	-0.131	0.182 [NS]
20	IOC(29.8.16)	-0.381	0.532 [NS]	41	VA Tech	-0.381	0.379 [NS]
21	ITC (18.6.10)	-0.072	0.123 [NS]	42	Wipro	-0.152	0.214 [NS]

Source : Secondary Data

Note : *- Significant at 1 percent level, NS – Not Significant; ('a' : Post-Pre return values). 'Parenthesis indicates bonus announcement date'

It could be noted from the analysis that among the selected 42 companies, the 26 companies like Aurobindo Pharma, Bharat Electronics, BPCL (25.5.12), Cadila Health, Colgate, Crompton Greaves, Dabur India, Divi's Lab (6.6.09), Federal Bank, Havells, Hexaware, Hindustan Zinc, IOC (13.9.09), IOC (29.8.16), ITC (18.6.10), Jindal Steel, Larden & Tubro, Mindtree (18.1.16), Motherson Sumi (1.11.13), OIL (28.11.16), Omaxe, ONGC, Reliance, Sun Pharma, Tech Mahindra, Titan

Research Paper
Impact Factor: 5.471
Refereed, Listed & Indexed

IJBARR
E- ISSN -2347-856X
ISSN -2348-0653

Industries, VA Tech and Wipro were having negative effect after bonus announcement date during the study period. On the other hand, bonus announcement date would have positive effect for the companies like BPCL (26.5.16), Divi's Lab (8.8.15), HCL Tech, ILFS Transport, Infosys (24.4.15), Infosys (10.10.14), ITC (20.5.16), Kotak Mahindra, Marico, Mindtree (16.4.16), Motherson Sumi (10.6.15), Motherson Sumi (9.8.12), OIL and TCS.

From the results of paired 't' test noticed that the company 'ONGC' only reject the hypothesis and the remaining companies have accept the hypothesis. It indicates that the company ONGC has significant difference between before and after bonus announcement date. It is inferred from the analysis that the companies BPCL (26.5.16), Divi's Lab (8.8.15), HCL Tech, ILFS Transport, Infosys (24.4.15), Infosys (10.10.14), ITC (20.5.16), Kotak Mahindra, Marico, Mindtree (16.4.16), Motherson Sumi (10.6.15), Motherson Sumi (9.8.12), OIL, TCS were having positive effect and the company ONGC only had significant difference between before and after bonus announcement date.

Average Abnormal Return on Bonus Issue of BSE Listed Companies
Average Abnormal return is the average of cumulative abnormal returns of all stocks on a particular day. The analysis of average abnormal returns of sample companies during Pre and Post ex-bonus date are illustrated in the following table. In particular, it contains the mean abnormal return for each single day around the ex-bonus date and the corresponding t-statistic. The following table presents the average abnormal return on bonus issue of BSE listed companies.

Null Hypothesis (H_0) : The pre and post average abnormal returns of stock bonus announcement of the listed companies is same during the study period.

Table 2 : Average Abnormal Return on Bonus Issue of BSE Listed Companies

Day	AAR	Day	AAR
T-14	6.292	T+0	5.032
T-13	0.478	T+1	-0.554
T-12	-1.036	T+2	0.226
T-11	0.005	T+3	0.123
T-10	0.215	T+4	-0.105
T-9	0.507	T+5	-0.018
T-8	0.348	T+6	-0.787
T-7	0.147	T+7	-0.12
T-6	1.153	T+8	0.543
T-5	-0.294	T+9	-0.257
T-4	0.343	T+10	0.244
T-3	-0.132	T+11	-0.083
T-2	0.055	T+12	-0.688
T-1	-0.163	T+13	0.137
't' Test			**1.709^{NS}**

Source : Secondary Data
Note : NS – Not Significant

It is understood from the above table that the analysis of average abnormal returns of sample companies during pre and post announcement of bonus issue are illustrated in the above table. In particular, it contains the mean abnormal return for each single day around the bonus share announcement date and the corresponding t-statistic. Among the 28 days of the event, the sample companies enjoyed positive abnormal returns on 16 days in the entire event window. The highest average abnormal return was recorded as 6.292 percent on T-14th day and has recorded 5.032 percent on bonus announcement date. On the bonus share announcement date, companies enjoyed a positive abnormal return. However, during the period under consideration investors initially appear to respond positively to announcement of bonus offerings, but the AAR shows a declining trend shortly thereafter. The days like t-14, t-13, t-11, t-10, t-9, t-8, t-7, t-6, t-4, t-2, t-0, t+2, t+3, t+8, t+10 and t+13 has recorded a positive growth whereas, the days t-12, t-5, t-3, t-1, t+1, t+4, t+6, t+7, t+9, t+11, t+12 has negative values. The paired sample 't' value is 1.709 and it is not significant, which means that the relation of these returns to the event is not statistically significant. That means the pre and post average abnormal returns of the BSE listed companies are not different during the study period.

It is found from the analysis of average abnormal return of the selected BSE listed companies during the study period that the highest average abnormal return was recorded as 6.292 percent on T-14th day and has recorded 5.032 percent on bonus

Research Paper
Impact Factor: 5.471
Refereed, Listed & Indexed

IJBARR
E- ISSN -2347-856X
ISSN -2348-0653

announcement date. The result of paired 't' test has noticed that the pre and post average abnormal returns of the BSE listed companies are not different during the study period

Findings
1. It is inferred from the analysis that the companies BPCL (26.5.16), Divi's Lab (8.8.15), HCL Tech, ILFS Transport, Infosys (24.4.15), Infosys (10.10.14), ITC (20.5.16), Kotak Mahindra, Marico, Mindtree (16.4.16), Motherson Sumi (10.6.15), Motherson Sumi (9.8.12), OIL, TCS were having positive effect and the company ONGC only had significant difference between before and after bonus announcement date.
2. It is found from the analysis of average abnormal return of the selected BSE listed companies during the study period that the highest average abnormal return was recorded as 6.292 percent on $T-14^{th}$ day and has recorded 5.032 percent on bonus announcement date. The result of paired 't' test has noticed that the pre and post average abnormal returns of the BSE listed companies are not different during the study period

Recommendations
Large investors have clout over companies and can get the information they desire for decision-making, whereas small investors do not have such a privilege and are often deprived of important information. Large investors can also afford to have professional analysis but small investors have to depend on the publicly available information. Channeling small investors' savings into corporate investment is vital for economic growth of developing countries. And to create confidence in small investors, it is important to provide relevant, reliable and ready to use information. The investors should keep the following points in mind before investing.
1. Read and properly understand the risks associated with investing in securities / derivatives before undertaking transactions.
2. Assess the risk-return profile of the investment as well as the liquidity and safety aspects before making your investment decision.
3. Invest, based on sound reasoning after taking into account all publicly available information and on fundamentals.
4. Don't forget to take note of risks involved in the investment.
5. Don't be misled by rumors circulating in the market.
6. Don't be influenced into buying into fundamentally unsound companies (penny stocks) based on sudden spurts in trading volumes or prices or non-authentic favorable looking articles/stories.
7. Don't follow the herd or play on momentum - it could turn against you.
8. Don't be misled by so called 'hot tips.'
9. Don't try to time the market.

Based on the research findings it is suggested to investor that the companies ONGC was affected with the publicly available information. So, the investors should think before investing in these two sectors as they may give maximum returns or even cause loss to the investors depending upon the effect of the information.

Conclusion
In reality, markets are neither perfectly efficient nor perfectly inefficient. All markets are efficient to a certain extent, some more so than others. Rather than being an issue of black or white, market efficiency is more a matter of shades of gray. In markets with substantial impairments of efficiency, more knowledgeable investors can strive to outperform less knowledgeable ones. Most classical investment theories are based on one assumption viz. investors always acts in a manner that maximizes their returns. Yet volumes of research show that investors aren't always so rational. Psychological studies, for example, have repeatedly demonstrated that the pain of losing money from investments is nearly three times greater than the joy of earning money. The semi strong hypothesis says that stock prices accurately reflect all publicly available information regarding a company. All information regarding the firm's balance sheet, earnings, dividends, etc., have already been taken into account in the company's current market price.

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