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SEMI-STRONG FORM EFFICIENCY OF NIFTY 50 INDEX: AN EMPIRICAL TESTING IN RELATION TO RIGHTS ISSUE ANNOUNCEMENTS

Mr.Ch.Naveen
Research Scholar-Part time,
Department of Management Studies
Andhra University
Visakhapatnam

Prof. G.Satyanarayana
Professor and Principal-Arts and Commerce,
Andhra University,
Visakhapatanam.

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ABSTRACT

Stock price series is a wandering one. Investors put their money after analysing the behavior of the price using technical or fundamental analysis. The assumption behind these models is that the stock price behaviour is quite orderly and not random. Many researchers questioned this assumption and argued that the stock price behaviour is random. Efficient market hypothesis is explained in three levels. Weak form, semi-strong forma and strong form. With this background an attempt was made to anlayse the efficiency of the leading stock index in India i.e. Nifty 50 Index in weak-form in relation to rights issue. In this study rights issue of Nifty 50 companies announced during 2009-2018 were considered and event study methodology was applied to examine the randomness. The results of the study revealed that the Nifty 50 Index is not efficient in semi-strong form.

KEY WORDS: ***Efficient Market hypothesis, Rights issue, event study, Nifty 50 index.***

INTRODUCTION

The concept of efficient capital market is an dominant themes in academics literature since 1960s. Efficient market hypothesis states that all information will be reflected in the stocks immediately. An efficient capital market is one in which normally market prices of the stocks are equal to their intrinsic values at all times. The efficient capital market model is primarily concerned with the speed with which information is incorporated into the security prices. According to efficient market, new information is processed and evaluated as it arrives and prices instantaneously adjust to the new and correct level. As a result investors cant earn excess return by undertaking fundamental and technical analysis.

There are three levels of market efficiency existed based on the available information. They are weak form efficiency, semi-strong form efficiency and strong form of efficiency. Weak form of the efficient market hypothesis states that the current market price of the stock already fully refkect all the information contained in the historical sequence of prices. It is also known as random walk theory. So prices can never be predicted due to random behavior,

Semi-strong form efficiency states that the current market price of the stock fully reflect information contained in the past sequence of the price and publicly available information like mergers, acquisition, announcement of bonus shares, stock split, right issue, dividends etc. therefore investors cannot gain using the public information.

Strong form of efficiency states that the current market prices of the stock reflect information contained in the past sequence of the price, publicly available information and private information.

Announcement of rights issue is not a usual phenomenon it attract the attention of all investors in the market. Many studies were identified in relation to

bonus issue, declaration of dividends and interim dividends, stock splits, mergers and other corporate events. Very few studies on testing of market efficiency in semi-strong level in relation to right issue were identified. Pariticulary in India such studies are very less. Thus this study will help the investors to know the impact of rights issue on market price and market efficiency.

REVIEW OF LITERATURE

Numbers of studies are available across the world to examine the applicability of semi-strong form of efficient market hypothesis to the stock markets of many developed as well as emerging economies in the context of different corporate events like announcements of stock split, stock dividend, right issue, financial results, etc.

The famous study in this field was conducted by Fama et.al (1969) who examined the reaction of stock prices in relation to stock splits announcements. The results of their study proved high abnormal risk adjusted stock returns prior to the announcement of stock split and no such evidence following the split. So they confirmed the existence of semi-strong form of efficiency of the market and, therefore, the investors were not able to earn super normal profit by purchasing stocks on the split date.

Harrison and Paton (2004) examined the evolution of stock market efficiency on BSE from mid-1997 to September 2002 and, with the help of a GARCH model, they found evidence of inefficiency on BSE in that the lagged stock price index is a significant predictor of the current price index. MINJINA, D. I., and REŞCEANU, O. (2008) examined the efficiency of the Romanian capital market in terms of public offers for acquisitions or takeover took place during 2003 to 2008. The results of the event study methodology proved that the Romanian capital markets are inefficient in semi-strong form and investors can gain abnormal profits. Hussein Salameh and Rana Albahsh (2011) conducted a study on testing the efficient market hypothesis at the semi strong form in relation to mandatory disclosure in Palestine stock exchange. They applied event study methodology to examine the impact of the mandatory disclosure on stock price. The results of the study proved inefficiency of the stock market at semi-strong level.

Tobias Olweny (2012) conducted a study to determine the extent, to which dividend announcements have information content, its effect on firm value and what this implied on the semi strong efficiency of the Nairobi Stock Exchange (NSE). The event study methodology was used analyze information content of dividend announcements for the four firms. A sample of trading delays in each year for the period 1999-2003 was used. Dividend announcements of four firms during these years were considered. The results of the study show that the information content in dividend announcements significantly affects the firm value. NSE is not semi strong from efficiency and therefore market participants can make abnormal profits

Ikram, F., & Nugroho, A. B. (2014) test the efficiency of the Indonesian Stock market in semi-strong form with respect to 19 merger announcements from 2000 to 2013. Event study methodology with 30 days window was applied to achieve the objective. The results of the study proved semi-strong form efficiency of Indonesian Stock market in the case of merger announcements. Shihadeh, F., & Hannon, A. (2016). Conducted a study with an objective of testing of market efficiency of the Palestine Exchange in semi-strong form level interms of cash dividend announcements in nine years for the period between 2006 to 2014. The results of the event study proved inefficiency of the Palestine Exchange in semi-strong form.

Srinivasan (1997), NarayanaRao (1994) and Obaidullah (1990) examined the share price responses to announcement of dividend increase, bonus issue and equity rights and found that the Indian stock market is semi-strong form efficient. Belgaumi (1995) studied the speed of adjustments of stock prices to half-yearly earnings announcements by examining the efficiency of Indian Stock Markets. He concluded that learning lags were existed in the Indian Stock market and imbibing of publicly available information was slow. So, it was concluded that the semi-strong form of EMH was not prevailed in the Indian stock market.

Mallikarjunappa and Dsouza (2013) examined the efficiency of the stock market in semi-strong form level by taking earnings announcements of companies. They used June 2008 quarterly results of BSE-200 index based companies. They identified 160 company results for this quarter. They calculated the Expected return (ER), Abnormal Return (AR), Average Abnormal Return (AAR) and cumulative Average Abnormal Return (CAAR) for an event window of 30 days. Resuts of the study shows slow reflection of news in the stock markets and indication of inefficiency of the market in semi-strong level.

Objective of the study: The main objective of this paper is to test the efficiency of Nifty 50 Index in semi-strong form in relation to announcement of Rights issues during 2009-2018.

DATA AND METHODOLOGY

The present study is based on secondary data only. The required to achieve the objective has been collected from yahoo finance website. Daily closing prices of stocks and Nifty 50 Index were collected. Total four rights issues were found during 2009-2018. Event study methodology has been applied to test the efficiency of the Nifty 50 Index.

HYPOTHESIS

The following null hypothesis (H_o) and alternative hypothesis (H_1) are set:

H_o: Abnormal returns are zero.

H_1: Abnormal returns are not zero.

The following steps are involved in the event study Methodology:

1. **Identification of event**: it involves identification of the event of interest (Rights issue) and the event window.
2. **Deciding the event window**: There is no specific criterion to select event window period.

It should be as shorter as possible. 6 days event window is considered (-6 to +6).

3. **Estimation window**: It is the period prior to occurrence of an event. This estimation window explains normal behavior of the stock. 240 days estimation window is considered .i.e. -246 to -7.
4. A. Abnormal returns and cumulative abnormal returns for all four events are calculated during the event window. Risk adjusted market model is used to calculate abnormal returns. The following formula is used to calculate the abnormal return:

$AR_{jt} = R_{jt} - E(R_{jt})$ ----------eq.(1)

Where AR_{jt} = Abnormal Return of the firm over a specific time period (t).

R_{jt} = Return of specific firm over time.

$E(R_{jt})$ = expected return of the firm j for the day t.

Expected return $E(R_{jt})$ is calculated with the help of the following equation:

$E(R_{jt}) = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt}$ ---------- eq. (2)

Where ε_{jt} = standard error

α_j and β_j are intercept and slope

R_{mt} = Return of Market Portfolio

Here standard error is negligible.

B. cumulative abnormal returns are calculated with the following formula:

$$CAR = \sum_{j=1}^{N} \text{ARjt} \quad \text{----------eq. (3)}$$

5. Calculation of Average Abnormal Returns (AAR) is calculated by averaging the abnormal returns of the sample companies for each day of the event period with the following formula:

$$AAR = \frac{1}{n}\sum_{j=1}^{n} AR_{j,t} \quad \text{----------eq. (4)}$$

6. Calculation of Cumulative Average Abnormal Return (CAAR): It is the sum of daily average abnormal return (AAR) during the event window. The following formula is used to calculate CAAR:

$$CAAR = \sum_{t=1}^{n} AAR_t \quad \text{----------eq. (5)}$$

7. Average abnormal return (AAR) values are analysed using t-test to identify whether they significantly different from zero.

ANALYSIS AND DISCUSSION

Table 1: List of Rights issue from 2009 to 2018

Company	Event Date	Ratio	FV	Premium	Record Date
Tata Steels	19-12-17	4:25	10	500	31-01-18
Tata Motors	27-01-15	6:109	2	448	06-04-15
Bajaj Finance	15-01-13	3:19	10	1090	25-01-13
Bajaj Finserve	16-05-12	1:10	5	645	08-09-12

(Source: Data extracted from moneycontrol)

Table 1 Shows list of rights issue announced by Nifty 50 index companies during 2009-2018. A total of four rights announcements were identified during the study period. From the above table it is observed that Tata steels issued 4 shares for every 25 shares held by investors in the form of rights issue. Tata Motors issued 6 shares for every 109 shares, Bajaj Finance issued 3 shares for every 19 shares and Bajaj Finserv issued 1 share for every 10 shares held by the investor. Tata Steels and Bajaj Finance issued highest number of shares in the form of rights issue to the investors. All four rights issue are at premium. Bajaj finance issued shares at a premium of Rs. 1090 to the investors.

Table 2: Regression results of Rights issue announcements by Nifty 50 index companies

Name of the company	Alpha (α)	Beta (β)	Standard Error	R-Square
Tata Steels	0.0007	1.5917	0.0138	0.3115
Tata Motors	-0.0003	1.4339	0.0150	0.3914
Bajaj Finance	0.0025	0.6985	0.0155	0.1557
Bajaj Finserve	0.0019	0.7187	0.0229	0.1465

Table 2 shows regression results of all right issue announcements made of Nifty 50 index companies during 2009-2018. Alpha (α) in the above table shows excess return. Positive Alpha value shows bonus to the investors and negative shows penalty. Alpha value of rights issue announcement made by Tata motors (-0.0003) is negative and shows penalty to the investors. Alpha values of announcements made by Tata steels (0.0007), Bajaj Finance (0.0025) and Baja Finserv (0.0019) are positive and indicates bonus to the investors.

Beta (β) is used to measure the volatility of the stock or systematic risk. A beta of more than 1 indicates more volatility of the stock and less than 1 indicates less volatility. From the table it is observed that volatility of the stock in terms of Beta is more than one for Tata Steels (1.5917) and Tata Motors (1.4339). it indicates more volatility in these stocks. Beta values of Bajaj Finance (0.6985) and Bajaj Finserv (0.7187) are less than one and indicating less volatility.

Standard error has varied between 0.0229 (Bajaj Finserv) to 0.0138 (Tata Steels). This standard error is is used to measure the accuracy with which a sample represents a population. For large sample test the standard error value will be very small.

R-square is used to indicate the fraction of variance of the dependent variable (stock return)

explained by the movement in the independent variable (index return). From the above table it is observed that R-square values have varies from a maximum of 39.14% (Tata Motors) to a minimum of 14.65% (Bajaj Finserv). It indicates less correlation between the stocks returns and market returns.

Table 3: Abnormal Returns (%) of Stocks during event window period

Day	Tata Steels	Tata Motors	Bajaj Finance	Bajaj Finserve
-6	-0.70	-1.66	-0.08	1.01
-5	-0.20	1.81	-0.50	1.31
-4	-0.65	1.39	-0.81	-0.95
-3	-0.28	-1.91	2.24	-0.92
-2	-0.03	2.19	-1.51	0.92
-1	0.50	2.62	-0.46	-0.39
0	-0.43	1.52	0.24	-0.16
+1	-0.83	-2.60	-1.07	-0.94
+2	1.65	1.00	-0.93	-3.74
+3	-1.35	0.07	-1.33	2.04
+4	0.80	1.47	0.98	-1.28
+5	0.79	2.50	0.01	-3.70
+6	1.88	-1.42	-2.56	1.79

Table 3 shows Abnormal returns for 6 days event window (-6 days to +6 days) Abnormal returns of Tata Steels have varied between -1.35% to 1.88%. Abnormal returns are positive for 5 out of 13 days during the event window and for the remaining days negative abnormal returns were reported.

Abnormal returns of the Tata Motors have varied between -2.60% to 2.62%. Abnormal returns are positive for 9 out of 13 days during the event window and for the remaining days negative abnormal returns were reported.

Abnormal returns of the Bajaj Finance have varied between -2.56% to 2.24%. Abnormal returns are positive for 4 out of 13 days during the event window and for the remaining days negative abnormal returns were reported.

Abnormal returns of the Bajaj Finserv have varied between -3.74% to 2.04%. Abnormal returns are positive for 5 out of 13 days during the event window and for the remaining days negative abnormal returns were reported.

Table 4: Cumulative Abnormal Returns (%) of Stocks during event window period

Day	Tata Steels	Tata Motors	Bajaj Finance	Bajaj Finserve
-6	-0.70	-1.66	-0.08	1.01
-5	-0.90	0.14	-0.58	2.32
-4	-1.55	1.54	-1.39	1.37
-3	-1.82	-0.38	0.86	0.44
-2	-1.85	1.81	-0.66	1.37
-1	-1.35	4.43	-1.12	0.98
0	-1.78	5.95	-0.88	0.82
+1	-2.61	3.35	-1.95	-0.12
+2	-0.96	4.35	-2.88	-3.86
+3	-2.31	4.42	-4.22	-1.82
+4	-1.51	5.89	-3.24	-3.10
+5	-0.72	8.39	-3.23	-6.80
+6	1.16	6.97	-5.79	-5.01

Table 4 shows cumulative abnormal returns of the stocks during the event window period. From the above table it is observed that Cumulative abnormal returns are positive for two out of four companies during the event window period. CAR of Tata Steels is 1.16% indicating the accumulation of wealth of the shareholder by 1.16%. CAR of Tata Motors is 6.97% indicating the accumulation of wealth of the shareholder by 6.97%. CAR of Bajaj Finance is -5.79% indicating loss of wealth of the investors by 5.79%. CAR of Bajaj Finserv is -5.01% indicating loss of wealth of the investors by 5.01%. Tata Motors has highest cumulative abnormal return during the event window period.

Table 5: Average Abnormal Return (AAR) and Cumulative Average Abnormal Returns (CAAR)

Day	AAR	CAAR	T-Stat	P-Value
-6	-0.36	-0.36	-0.639	0.569
-5	0.61	0.25	1.076	0.361
-4	-0.26	-0.01	-0.464	0.674
-3	-0.22	-0.23	-0.245	0.822
-2	0.39	0.17	0.501	0.651
-1	0.57	0.73	0.79	0.487
0	0.29	1.03	0.68	0.546
+1	-1.36	-0.33	-3.264	0.047*
+2	-0.51	-0.84	-0.417	0.704
+3	-0.14	-0.98	-0.179	0.869
+4	0.49	-0.49	0.811	0.477
+5	-0.10	-0.59	-0.076	0.944
+6	-0.08	-0.67	-0.072	0.948

(*Significant at 5% level)

Table 5 shows Average Abnormal Return (AAR) and Cumulative Average Abnormal Returns (CAAR) of individual days in the event period covering all rights announcements made by Nifty 50 index companies during 2009-2018. Above table depicts that AAR is significant on +1st day means immediate day of announcement. It indicates rejection of null hypothesis (Ho: Abnormal returns are zero). The investors gain abnormal profit after the day of announcement of right issue. It slows slow reflection of rights issue information in the stock price. Therefore it may be concluded that Nifty 50 index is not efficient in semi-strong form. CAAR is negative (-0.67%).

CONCLUSION

The focus of this thesis was to examine the existence of semi strong-form efficiency in Nifty 50 Index. This study used event study methodology to investigate the null hypothesis of semi strong efficiency. The study recorded the market behavior around right dates for 50 companies of Nifty 50 Index over the period 2009-2018.An event study was conducted using an event window of 6-days. It was found that on an average stocks start showing positive abnormal returns three days before announcement date. AAR is positive on announcement day also. AAR is positive in 1 day after announcement day during the event window period.

Significant average abnormal return was identified after announcement day indicates inefficiency of the Nifty 50 index.

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