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Stock Market Reaction to Shares Buyback in India: An Event Study Methodology

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I. INTRODUCTION

Share buyback is considered as a mechanism in order to improve the stock price performance of the companies in the stock market. It is a process whereby a company purchases a certain percentage of own shares from the existing shareholders. It results in the reduction of the present stock of the company at the same time creating value for the remaining shareholders. Therefore buyback of shares is also regarded as a vital tool of financial restructuring by the firms especially in case of over capitalization.In India buyback of shares has been gaining its space. Large numbers of companies are using buyback of shares as an effective mechanism for corporate and financial restructuring. Table 1 presents the growth in buyback of shares in India.

Table 1: Buyback Announcements in Indian Capital Market

Year	Amount (Rs. Cr.)	No. of Buyback Announcement
2003-04	52	8
2004-05	3,600	11
2005-06	363	10
2006-07	295	7
2007-08	2,004	10
2008-09	4,218	46
2009-10	824	20
2010-11	4,295	20
2011-12	13,765	31
2012-13	1,694	21
Total	31110	184

Source: PRIME DATABASE: The primary market monitor

There were 184 buyback announcements with an amount of approximately rupees 31110 crores over a period of ten years i.e. from 2003 to 2013.

II. LITERATURE REVIEW

Ikenberry, Lakonishok and Vermaelen (1995) analyzed a sample of 1239 open market repurchases declared between 1980 and 1990 and found that investing in these firms resulted in 12.4% abnormal returns over a period of four years. They determined that value stocks (i.e. firms with high book to market value) generated buy-and-hold average abnormal returns of 45.3% over four years period subsequent the announcement. However non value stocks did not indicate any positive flow of prices.

Liano et al(2003) analyzed the open market share repurchase for the period 1982-1997. They found that the announcement period returns (days -2 to +2) are considerably positive and the pre announcement returns (days -20 to -3) are considerably negative for the entire sample of companies. There was around 3 percent excess return over the five-day announcement window.

Hatakeda and Isagawa (2004) studied the stock repurchases made by Japanese firms listed on Tokyo stock exchange (TSE). They examined the stock price behaviour surrounding announcements by employing standard event study methodology and found that stock prices in Japan increased in response to stock repurchase announcements. They further reported that the firms announcing stock repurchases experienced average abnormal returns of 2.36% in the three day window surrounding the announcement.

Sunitha (2006) examined the response of the market to the announcement of buyback and dividends by 22 firms listed in the BSE 500 index during the period 2002-2004. She also examined the choice between these two-payout schemes (i.e buyback of shares and dividends). It was discovered that and found that there was 2.1% cumulative abnormal returns within one day of the announcement of dividend while the buyback of shares resulted in 3.2% of cumulative abnormal return within two days of the announcement.

Hyderabad (2009) also defended the theory of undervaluation after examining 70 share buyback announcements during 1999-2007. He discovered an average abnormal return of 2.76% on the announcement day which was supposed to be statistically significant. He further mentioned that these abnormal returns did not continue for long after the event period.

Ishwar (2010) examined the buyback announcements during 1999-2006 by 106 companies listed on BSE. He discovered that there is no news in the announcement as disclosed by the regular trend which had been started before the announcement. The market already predicted this information even before the announcements and comprised into share prices. He observed an average abnormal return of 2.23% on event day but that was not significant enough to convey the signal of undervaluation of shares.

KaurKaramjeet and Singh Balwinder (2010) in their study considered share buyback as an intensifying tool of financial restructuring. They examined 100 share buyback announcements of BSE listed companies during the period from 1999 to 2004. They used standard event study methodology taking Sensex as market index to examine the market response to share buyback announcements. They observed a positive reaction by the market on the announcement of share repurchase. They further tested the abnormal returns for hypotheses of information signaling and undervaluation, leverage and free cash flows.

Rasbrant (2011) studied the effects of buyback of shares on the market price in Swedish stock market. He reported that the repurchase activity result in positive abnormal returns. His results showed an abnormal return of approximately 2% over a period of two days after the announcement of share buyback

through open market. He also explained that management would go for repurchase when they observe the prices of the shares fall below their real value and thus share buyback announcement conveys a positive signal to the market.

Axelsson et al. (2011) studied the share buybacks of listed real estate companies in Sweden. They found a short term abnormal returns of 1.96% on the announcement day which was statistically significant and support the signaling hypothesis. The cumulative abnormal returns for first ten days following the buyback announcement were 2.32% not significant on conventional level. Thus it was concluded that share buyback program may result in positive abnormal returns for short term (10 days) as well as long term (12 months)

Kaur (2012) later on analyzed 172 shares buybacks by the companies listed on BSE. during March 2001 to March 2012 through open market repurchase to study the effect of such buybacks on the prices of shares. It was found that the share market accepted the buyback and responded positively to such announcements. There were positive mean daily returns for two days testing period which were significant also.

Bhatia (2013) examined the hypothesis of signaling and undervaluation hypothesis and the short term impact of 52 buyback announcement of shares on the market price in India for a period January 2011 to December 2012 in India. Using standard event study technique the study discovered negative abnormal returns before the announcement and the positive abnormal returns after the announcement. This made the hypotheses of undervaluation and signaling hold true. The study showed the cumulative abnormal return 4.5 % considering only post significant AAR which indicated a positive market reaction of buyback of shares.

III. RESEARCH METHODOLOGY

A. Objectives of the study

The objective of the present study is to examine the behaviour of the market share price of the selected Indian companies before and after the buyback of shares using the standard event study methodology.

B. Hypothesis

Following Hypotheses have been formulated to achieve the above mentioned objectives:

H_1: There are no significant abnormal returns during the buyback period
H_2: There is no significant difference in CAARs of firms

C. Methodology

To achieve the objective of the study the standard event study methodology has been used. Event study is a statistical technique to analyze the effect of an event on the market price of the shares of the company with the following terminologies:

Event Day

Event day is the day on which the event under consideration happens. In this study, the share buyback announcement day i.e. the day on which the Board of Directors announced the buyback of shares is considered as the event day and is defined as day '0'.

Event Window

Event Window is the period over which the event under consideration is assumed to have an impact on the stock prices. The event period for this study is of 41 days including the event day and 20 days before and 20 days after the event day i.e. -20,…,-1,0,+1,…,+20.

Estimation Period

Estimation period is the period that is used to determine the values of expected returns. For this study 180 days prior to the first day of the event window (-200 to -21 days) has been taken as the estimation window.

The event study methodology is conducted on the share buyback announcement over a period of ten years from 2003 to 2013 by the companies listed on Bombay Stock Exchange through open market repurchase method. The event date (board meeting date) data is extracted from the official website of BSE and it was found that 139 buyback announcement was made through open market during the above mentioned period. But out of 139 buybacks 23 buybacks are such for which either the announcement dates are not available or the buyback has not been conducted after the announcement. Thus such buyback cannot be taken up for the study. The price data has been collected from CMIE Prowess Database and official website of BSE. Out of remaining 116 buyback announcements, the consistent price data is not available for 7 buybacks during the estimation period. Finally 109 buyback announcements made by Indian companies have been considered for the present study. The adjusted closing price data has been collected from CMIE Prowess Database for a period of 200 days prior to and 20 days after the buyback announcement date for every announcement. BSE SENSEX is used as the benchmark index for measuring the market return.

Data for SENSEX for the corresponding period has been derived from the official website of BSE. Following steps have been taken to carry out the empirical research:

1. Daily Returns of particular stock and benchmark index i.e. SENSEX are calculated using natural log function (i.e. Ln) in MS Excel.

Thus Actual Stock Returns are calculated as:

$R_{it} = Ln\ (P_{it}/P_{it-1})$

Where,

P_{it} = Daily adjusted closing price for the share of a company i at time t and

P_{it-1} = Daily adjusted closing price for the share of a company i at time t-1

The Actual Market Returns are calculated as:

$R_{mt} = Ln(I_t/I_{t-1})$

Where,

I_t = Daily value for the market index i.e. SENSEX at time t and
I_{t-1} = Daily value for the market index i.e. SENSEX at time t-1.

2. The values for α (alpha) i.e. the y-intercept and β (beta) i.e. the slope coefficient are determined by using regression on 180 daily returns prior to the event window of an individual company as well as BSE SENSEX in MS-Excel.

3. The estimated return of a company i is calculated for the event window using Market Model assuming a constant α and β value for a given stock i.

Thus $E\ (R_{it}) = \alpha + \beta * R_{mt} + e$

Where $E(R_{it})$ is the expected return of company i at time t, while α and β are parameters of the regression equation. β is the stock beta value and R_{mt} is the daily return on a stock

market index m i.e. BSE - SENSEX at time t.

4. Further the abnormal return is defined as the difference between the actual return and the expected return and is determined for an event window of 41 days as:

$AR_{it} = R_{it} - E(R)_{it}$.

Where AR_{it} is the abnormal return of a stock i at time t.

5. Then the Average Abnormal Return (AAR) for each day of the event window is calculated using the arithmetic mean of the abnormal returns of all sample companies (i.e. n) for that particular day.Thus

$$AARt = \frac{1}{n}\sum_{i=1}^{n} \text{ARit}$$

6. Cumulative Abnormal Returns for an individual company are calculated for a given time period as:

$CAR_t = CAR_{t-1} + AR_t$

The average of CAR for n firms is calculated as

$$CAAR = \frac{1}{n}\sum_{i=1}^{n} \text{CARi}$$

CAAR = ΣAAR

To test the statistical significance of AARand CAAR determined by analyzing the data related to buyback announcement following tests have been used.

Parametric Tests

T test has been used to find out whether the abnormal returns of the stocks as a result of buyback announcement are significant or not. If the null hypothesis is accepted, it signifies that there are no abnormal returns as a result of buyback announcement. The rejection of null hypothesis indicates that there are abnormal returns, either positive or negative. The hypotheses are tested at 95% level of confidence.

Non Parametric Tests

Non parametric tests i.e. Wilcoxon test and Sign test have been used to substantiate the results of parametric test. The level of significance is same as that of t test i.e. 95%. So the one sample test is repeated using Wilcoxon and sign tests to test the same hypotheses.

IV. ANALYSIS AND INTERPRETATION OF DATA

Effect of Share buyback on share prices

In this section the share price behaviour of selected companies before and after the buyback of shares is analysed using event study methodology. An estimation window of 180 days has been considered to find the expected returns for the event window of 41 days i.e. 20 days before, the event day(the day of buyback announcement) and 20 days after the buyback announcement. Market model has been further applied to calculate the expected returns taking BSE SENSEX as the benchmark. Actual returns and expected returns are then compared to find the abnormal returns for all 109 buyback announcements.

Abnormal Returns (AAR)

The information content of buyback announcement on the stock prices are analyzed and tested in terms of Average Abnormal Returns (AAR) in Table 2. It is examined from Table 2 that average abnormal return is -1.38% at the announcement date which is statistically significant. However positive and negative abnormal returns can be observed over the entire period of analysis.

Table 2: Average Abnormal Returns (AAR)

				T – test		Wilcoxon test		Sign test	
Days	**Average Abnormal Returns**	**Positive Returns (%)**	**Negative Returns (%)**	**t –statistics**	**p Value**	**z–statistics**	**p Value**	**z–statistics**	**p Value**
Day-20	0.00530	57.58	42.42	2.197	0.029	-1.491	0.136	-1.713	0.087
Day-19	-0.00021	51.52	48.48	-0.072	0.943	-0.165	0.869	-0.467	0.64
Day-18	-0.00052	51.52	48.48	-0.207	0.836	-0.12	0.905	-0.311	0.755
Day-17	0.00232	53.33	46.67	0.792	0.429	-1.008	0.313	-0.623	0.533
Day-16	-0.00193	47.88	52.12	-0.849	0.397	-0.959	0.337	-0.467	0.64
Day-15	0.00199	55.15	44.85	0.708	0.48	-1.252	0.211	-1.401	0.161
Day-14	0.00150	48.48	51.52	0.551	0.582	-0.108	0.914	-0.467	0.64
Day-13	0.00372	52.12	47.88	1.202	0.231	-0.909	0.364	-0.467	0.64
Day-12	0.00185	47.88	52.12	-0.477	0.634	-0.715	0.475	-0.623	0.533
Day-11	0.00307	51.52	48.48	-0.92	0.359	-0.295	0.768	-0.311	0.755
Day-10	-0.00112	49.7	50.3	0.326	0.745	-0.019	0.985	0	1
Day-9	-0.00334	53.33	46.67	1.041	0.299	-0.5	0.617	-0.467	0.64
Day-8	-0.00140	52.12	47.88	-0.431	0.667	-0.279	0.78	-0.623	0.533
Day-7	-0.00328	54.55	45.45	-1.056	0.292	-0.128	0.898	-1.246	0.213
Day-6	-0.00612	52.12	47.88	-1.799	0.074	-1.288	0.198	-0.467	0.64
Day-5	-0.01203	42.42	57.58	-3.001	**0.003***	-1.861	0.063	-1.401	0.161
Day-4	-0.01376	38.79	61.21	-3.321	**0.001***	-3.043	**0.002***	-2.647	**0.008***
Day-3	-0.01482	41.21	58.79	-3.89	**0***	-3.352	**0.001***	-2.024	**0.043***

				T – test		Wilcoxon test		Sign test	
Days	**Average Abnormal Returns**	**Positive Returns (%)**	**Negative Returns (%)**	**t –statistics**	**p Value**	**z–statistics**	**p Value**	**z–statistics**	**p Value**
Day-2	-0.01950	36.97	63.03	-4.869	**0***	-4.425	**0***	-3.425	**0.001***
Day-1	-0.01442	33.33	66.67	-5.207	**0***	-5.1	**0***	-4.36	**0***
Day0	-0.01388	43.03	56.97	-3.233	**0.001***	-2.63	**0.009***	-1.557	0.119
Day1	0.00823	60	40	2.036	**0.043***	-2.721	**0.007***	-2.647	**0.008***
Day2	0.00854	64.85	35.15	2.702	**0.008***	-4.212	**0***	-4.048	**0***
Day3	0.01189	61.82	38.18	4.506	**0***	-4.594	**0***	-3.425	**0.001***
Day4	0.00492	61.82	38.18	1.865	0.064	-2.877	**0.004***	-2.958	**0.003***
Day5	0.00302	54.55	45.45	1.271	0.206	-1.691	0.091	-1.09	0.276
Day6	0.00023	53.33	46.67	0.136	0.892	-0.907	0.364	-0.467	0.64
Day7	0.00250	54.55	45.45	1.055	0.293	-0.972	0.331	-0.934	0.35
Day8	0.00047	53.33	46.67	0.199	0.843	-1.049	0.294	-0.778	0.436
Day9	-0.00076	52.12	47.88	0.256	0.798	-0.961	0.337	-0.311	0.755
Day10	-0.00038	56.36	43.64	-0.137	0.891	-1.546	0.122	-1.713	0.087
Day11	-0.00334	43.64	56.36	-1.706	0.09	-1.817	0.069	-1.557	0.119
Day12	-0.00336	43.64	56.36	-1.469	0.144	-1.721	0.085	-1.401	0.161
Day13	0.00256	57.58	42.42	1.107	0.27	-1.867	0.062	-1.868	0.062
Day14	-0.00931	41.82	58.18	-4.195	**0***	-3.001	**0.003***	-1.868	0.062
Day15	0.00230	50.91	49.09	0.989	0.324	-0.238	0.812	0	1
Day16	0.00194	53.33	46.67	0.367	0.714	-0.767	0.443	-0.623	0.533
Day17	-0.00327	53.33	46.67	-1.445	0.15	-0.347	0.728	-0.778	0.436
Day18	0.00540	57.58	42.42	2.328	**0.021***	-2.515	**0.012***	-1.713	0.087
Day19	-0.00030	51.52	48.48	-0.122	0.903	-0.411	0.681	-0.311	0.755
Day20	-0.00322	51.52	48.48	-1.278	0.203	-0.603	0.547	-0.467	0.64

* Significant at 5% level

Source: Author's own calculation on the basis of SPSS output

Further it has also been noticed that the abnormal returns are statistically significant at 5% level of significance from day -5 to day 3. Thus positive and statistically significant abnormal returns after the announcement of buyback clearly indicate that the market reacts positively on the announcement of buyback of shares. After some time abnormal returns are negative and insignificant which means that the abnormal returns are squeezed in the initial period of announcement itself.

Table 3: Cumulative Average Abnormal Returns (CAAR)

				T – test		Wilcoxon test		Sign test	
Event Windows	**CAARs**	**Positive Returns (%)**	**Negative Returns (%)**	**t – statistics**	**p Value**	**z– statistics**	**p Value**	**z– statistics**	**p Value**
(-20,20)	-0.05610	36.97	63.03	-3.257	**0.001***	-3.406	**0.001***	-3.27	**0.001***
(-20,-11)	0.00714	51.52	48.48	0.78	0.437	-0.357	0.721	-0.311	0.755
(-20,-1)	-0.07324	27.88	72.12	-5.216	**0***	-5.891	**0***	-5.605	**0***
(-10,-1)	-0.08216	18.79	81.21	-6.998	**0***	-7.763	**0***	-7.785	**0***
(-10,10)	-0.05341	34.55	65.45	-3.849	**0***	-4.179	**0***	-3.737	**0***
(-5,5)	-0.04957	29.09	70.91	-4.724	**0***	-4.716	**0***	-4.982	**0***
(-3,3)	-0.03276	42.42	57.58	-3.852	**0***	-3.457	**0.001***	-1.713	0.087
(-1,1)	-0.01865	42.42	57.58	-3.097	**0.002***	-2.918	**0.004***	-2.024	**0.043***
(1,10)	0.04095	61.82	38.18	4.764	**0***	-4.475	**0***	-3.114	**0.002***
(11,20)	-0.01143	38.79	61.21	-1.765	0.079	-2.397	**0.017***	-2.647	**0.008***
(1,20)	0.02872	63.03	36.97	2.591	**0.01***	-3.174	**0.002***	-3.425	**0.001***

* Significant at 5% level

Source: Author's own calculation on the basis of SPSS output

Cumulative average abnormal returns (CAAR)

To examine the short term effect of announcement of buyback of shares on the share market prices over different event periods Cumulative average abnormal returns (CAAR) are also calculated and analyzed for eleven different event windows. Table.3 exhibits the results of the analysis of CAAR for various event windows.

In most of the event windows CAAR are negative except (-20,-11) (1,10) and (1,20) which substantiate the finding that the post announcement period reported increase in abnormal returns. Further CAAR for all window periods are significant at 5% except for (-20.-11) and (11, 20). The overall CAAR over a period of 41 days (-20, 20) is negative (5.61%) but found to be statistically significant at 5% level of significance. A declining trend is observed for different windows in the pre announcement period. However CAAR is positive in the post announcement period (1, 10) and (1, 20). This would further attribute to the favourable price movement after the announcement of buyback of shares. The positive overall CAAR of 2.87% in the post buyback period (1, 20) further supports the signaling hypothesis, which states that the buyback announcement are meant to correct the negative trends in the prices of the securities before the buyback announcement. Thus from the above results it can be concluded that buyback of shares in India provides benefits to the shareholders only for a short span of time. For example if an investor buys the share on -20th day and sells on + 20 day, he earns a negative return of 5.6 %. But if an investors buys on -10th day and keeps till +10th day then his return would be -5.34%. This means his loss is reduced if he keeps for a short period which further indicates that buyback announcement provides him the positive returns. CAARs in the post buyback period are recorded to be negative but reducing for the sample in the present study. This further supports the presence of positive abnormal returns in the post buyback period.

CONCLUSION

The analysis of the impact of share buyback announcement on the market price of the shares of the sample companies is done with the help of event study methodology. A clear observation of the abnormal returns indicates that returns are negative in the pre announcement period and the event day while positive abnormal returns are observed in the post announcement period. The Indian capital market is assumed to be semi strong efficient which means the news of any corporate action is reflected in share price as soon as it becomes public. Thus the abnormal returns are expected to be decreasing after the event date. CAAR (Cumulative Average Abnormal Returns) are also observed in order to find out the immediate and short term impact of buyback announcement. It has been observed that all event windows have negative CAAR except three (-20,-11), (1,10), (1,20). This further supports the result of positive abnormal returns in the post buyback period. These returns are also found to be statistically significant at 5 % level.Thus it can be concluded that the buyback of shares provides the abnormal returns but for a shorter period of time.

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