

Impact of Buyback of Shares on Stock Prices and Financial Performance of Companies in India

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The objective of this paper is to examine if Indian companies undertake buyback for the purpose of information signaling. The author has used event study methodology to analyse the impact of buyback announcement on a dataset of 34 companies in India during 2010-14. The author has calculated the average abnormal stock returns (AAR) and cumulative abnormal returns (CAR) on the stock using BSE 500 as market index. The stock returns are calculated 20 days prior to and 20 days after the date of announcement and tested for signaling theory. Further, the author has evaluated the impact of buyback on financial indicators by examining the effect on EPS and ROE for the quarter and year immediately preceding and after the buyback, using t-test methodology. The empirical findings provide evidence that market reacts positively to the announcement as the AAR on the 1st day after announcement date is 1.5 per cent and CAR is 3.2 per cent.

The stock market reaction is positive for 20 firms wherein share price increased even up to the 20th day from the announcement date. For the financial performance indicators, while EPS increases significantly for the quarter after the buyback announcement, the ROE does not. However, when the annual figures for both the ratios are compared, there is a significant increase post buyback. The rationale is that the full impact of buyback is not reflected in the immediate quarter following the announcement but after that. Thus, a strong case of signaling is reported which is evidenced by the fact that buyback has a significant and substantial effect on boosting up the share price for a firm.

Keywords: Buyback, Abnormal, Returns, Financial Performance, Signaling

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Section I Introduction

Share buybacks became popular in the US in 1980s although the concept was introduced in 1960s. Traditionally as the concept was understood, the system of buyback was considered to be one of the most liberal one as it allowed companies to repurchase shares by borrowing funds and it wasn't mandatory that repurchase had to be made only out of the undistributed profits or reserves. This meant that companies could replace share capital by debt. Several countries adopted the concept but were more conservative in their approach. In the UK share repurchases was introduced in 1980s and in other European countries share repurchases became popular in mid-1990s as the government had either prohibited buybacks or the tax laws were very stringent. The restrictions were gradually released in late 1990s. The period 1995 to 2000 witnessed lot of share buybacks in European countries like Finland, Germany, France, Denmark and Sweden.

Even in Asian countries share buybacks became popular in late 1990s: Japan-1995, Malaysia- 1997 followed by Singapore and Hong Kong in 1998 and Taiwan in 2000 (Rajagopalan and Shankar, 2013). In India, till 1998 share buybacks were prohibited but the Companies (Amendment) Act 1999 introduced Section 77A, 77AA and 77B in the Companies Act, 1956 permitting companies to buy back their own shares and other securities. Further, the Securities and Exchange Board of India (SEBI) framed the SEBI (Buyback of Securities) Regulations, 1999 and the Department of Company Affairs framed the Private Limited Company and Unlisted Public Company (Buyback of Securities) Rules, 1999 pursuant to Section 77A(2)(f) and (g) respectively.

The buyback of equity shares is in a way a capital restructuring process. It means repurchase of its own share by a company. A company having substantial cash resources may like to buy its own share from the market when the prevailing market price of its share is much lower than its book value or what the company perceives to be its true value. The rules for share buybacks in India are quite stringent. The terms and conditions are stated in Section 1.2 below. Several theories have been propounded regarding the reasons for companies to go for buyback. One of the primary objective for companies going in for buyback includes the signaling hypothesis. This concept is based on the assumption that the management of a company can estimate the true value of their securities and when they feel that their security is undervalued (market value is less than the intrinsic value) they resort to buyback of shares.

Typically, buyback of shares is done at a premium to market price with the objective of signaling to the market undervaluation of shares. In a way, by resorting to share buyback the company gives a positive signal to investors that the value of their share is much higher than the prevailing market value. When the company buys back its own shares, the number of shares are reduced,

which in turn increases the EPS. Thus, buyback leads to improvements in ratios and financial performance. Free cash flow hypothesis or agency cost is also advocated as one of the reasons for companies going in for buyback as this concept is based on the assumption that the company should distribute the surplus cash amongst the shareholders, if it feels that there are no investment avenues available. Optimum financing ratio or leverage hypothesis implies that capital structure can be rationalised through share repurchase as it increases the quantum of debt and reduces equity in the share capital.

Increased leverage results in increasing the volatility in the share price making, in turn making it more attractive. Several studies have talked of the 'substitution effect' where share buyback is generally considered as a substitute to dividends because of the rationale that dividends are taxed at a higher rate than capital gains. Research shows that increase in promoters' holding is often the underlying reason for buybacks as this route is adopted by companies for offsetting an equity dilution caused by allotment of shares through ESOPs and otherwise. Buybacks may also be undertaken to ward off or overcome a takeover threat and to provide an exit route to the shareholders in case of illiquid shares.

Methods of Buyback Prevalent in India

Buyback can be carried out broadly in two ways in India:

(a) Tender Offer: Shareholders may be presented with a tender offer whereby they have the option to submit a portion or all of their shares within a certain time frame (20-300 day period) and at a premium to the current market price. Tender offer is used when the buyback is slightly large.

(b) Open Market Offer: Shares are bought from the open market through brokers over a long-term period. In this method, the company announces the minimum and the maximum buyback price, while the actual price is market-determined. Open market purchases are used when the number of shares to be bought is relatively small. Open market repurchases end up being prolonged.

Conditions of Buyback

- ❑ The buyback is authorised by the Articles of Association of the company.
- ❑ A special resolution is passed in the general meeting of the company authorising the buyback. In the case of a listed company, this approval is required by means of a postal ballot. Also, the shares for buyback should be free from a lock-in period/non-transferability. The buyback can be made by a Board resolution if the quantity of buyback is or less than 10 per cent of the paid-up capital and free reserves.
- ❑ The buyback is of less than 25 per cent of the total paid-up capital and free reserves of the company and that the buyback of equity shares in any financial

year shall not exceed 25 per cent of its total paid-up equity capital in that financial year.

- ❑ The ratio of the debt owed by the company is not more than twice the capital and its free reserves after such buyback.
- ❑ There has been no default in any of the following:
 - (a) Repayment of deposit or interest payable thereon.
 - (b) Redemption of debentures, or preference shares.
 - (c) Payment of dividend, if declared, to all shareholders within the stipulated time of 30 days from the date of declaration of dividend.
 - (d) Repayment of any term loan or interest payable thereon to any financial institution or bank.
- ❑ There has been no default in complying with the provisions of filing of annual return.
- ❑ Payment of dividend and form and contents of annual accounts.
- ❑ All the shares or other specified securities for buyback are fully paid-up.
- ❑ The buyback of the shares or other specified securities listed on any recognised stock exchange shall be in accordance with the regulations made by the Securities and Exchange Board of India in this behalf.
- ❑ The buyback in respect of shares or other specified securities of private and closely held companies is in accordance with the guidelines as may be prescribed.

Objectives

It is against this backdrop that this paper identifies 34 companies which have gone for buyback option from 2010-14 and analyses the impact on stock prices up to 20 days from the date of buyback announcement, thereby affirming the signaling effect. Further, the research also compares the financial performance of the companies for the quarter before and after the buyback to assess if buyback leads to improved financial ratios.

Section II Literature Review

The extant literature has proposed several hypotheses to explain the motivations for share repurchase. Among these, the signaling (undervaluation) hypothesis and the free cash flow hypothesis have received the most attention. The signaling hypothesis suggests that repurchase announcements are interpreted as

managerial signals that the shares are currently undervalued. Several studies have been done on the signaling effect of buyback of shares by examining the impact of buyback policies on stock prices in showing abnormal return and cumulative abnormal return post buyback.

Vermaelen (1981) examined the pricing behaviour of securities and thus the signaling effect on US' firms which repurchased their own shares. Their findings were consistent with the hypothesis that firms offer premia for their own shares mainly in order to signal positive information, and that the market uses the premium, the target fraction and the fraction of insider holdings as signals in order to price securities around the announcement date. The observation that repurchases via tender offer are followed by abnormal increases in earnings per share and that mainly small firms engage in repurchase tender offers provided further support for the signaling hypothesis. Comment and Jarrell (1991) compared the relative signaling power of three buyback methods. Their research showed that the strongest signal in share price is obtained through a fixed price tender offer, followed by Dutch auction tender offer and the open market offer. The positive reaction of the share prices to the announcement is related to the option value, which is recognised by the market.

Ikenberry and Vermaelen (1996) concluded that the buyback announcement is an option that can be exercised whenever market conditions are favourable. Rees (1996) analysed the impact of share repurchase announcements on stock prices using the UK data of open market repurchase announcements. He found that prior to the repurchase announcements, firms experience a significant decline in their stock prices and that the market reaction is positively associated to share buyback, further supporting signaling hypothesis.

Skjeltorp (2004) analysed the market reaction to share repurchases by Norwegian companies for the period 1998-2001 and found statistically significant two-day CAR of 0.88 per cent for 100 companies announcing the first repurchase. Chen, *et al.* (2004) analysed announcement returns for Taiwanese firms and found significant positive cumulative abnormal returns (CARs) of 1.64 per cent for a three-day window around the announcement date for restricted open market repurchases (OMRs). In the Indian context, Mishra (2005) analysed 25 buyback programs i.e. 18 tender offers and seven open market operations and found that 44 per cent of the buyback programs have registered enhancement in the earnings per share. He advocated that buyback is generally used to improve the shareholding of the promoters of the company and with a view to impart short-term gains for the investors.

Gupta (2006) applied the market model for computing excess returns and found a CAR of 12.69 per cent for a 61-day window period, significant at 5 per cent level, for 46 buybacks announced between January 1, 1999 and March 15, 2004. The announcement day AAR and CAR were 1.67 per cent and 11.82 per cent respectively. Kim and Varaiya (2008) examined the hypothesis (insider

timing hypothesis) by investigating insiders' trading activities during the periods of corporate share buyback trading in the US. The study found evidence that insiders do increase the net number of shares sold in a fiscal quarter when the firm is in the market engaged in share buyback trading and suggested the possibility of insiders' opportunistic trading behaviour during the periods of corporate open market share buyback trading.

Other studies included those by Hyderabad (2009) which contradicts the prediction of signaling hypothesis of buyback. In his research, the author examined excess returns on the announcement of share buybacks by Corporate India and found significant announcement day average abnormal return (AAR) of 2.77 per cent and cumulative abnormal return (CAR) of 7.91 per cent for a sample of 70 announcements for the period 1999-2007. The fall in CAR in the post-offer period suggested that all positive returns are realised in the pre-offer period only. The author attribute this positive behaviour to the listing norms or point to the existence of information leakage. Hyderabad (2013) examined the dividend substitution effect of share repurchase decisions of firms in India.

According to the dividend substitution hypothesis, firms use funds ordinarily meant for dividend payment to buy back shares. The statistical model employed exhibited a positive relationship between dividend forecast errors and repurchase activity, contradicting the dividend substitution hypothesis. The research study advocated that high-levered small-sized firms with higher cash balances and lower valuations engage in share repurchase in India but not at the expense of dividends.

Ishwar (2010) studied 106 BSE-listed companies and found an average abnormal return of 2.23 per cent, but that was not statistically significant on the event day to signal the underpricing of securities. The author opined that the market has not found any news in the announcement as revealed by the continuing trend that started before the announcement and the market anticipated the information and incorporated into prices before the announcements. Rajagopalan and Shankar (2012) analysed stock returns around buyback announcement made during a 10-year period between 2000-01 and 2009-10 by taking the S&P CNX 500 index companies through the standard event study methodology. They observed that in spite of experiencing an early response to the announcement of buybacks by way of increased returns, the market had not given any scope for earning abnormal returns on a sustained basis by getting the information adjusted into prices, to favour the semi-strong form efficiency in the Indian stock market. They (2013) further analysed the buyback information impact on stock returns during different conditions and commented on market efficiency in assimilating the information into prices and highlighting that the market condition hypothesis is applicable to the Indian context also.

Chavali and Shemeem (2011) in their study also highlighted that there exists a positive market reaction with buyback announcements in case of the Indian stock market. The AAR on the announcement day was 1.07 per cent and the CAAR (cumulative average abnormal return) was 1.59 per cent. Kurniawan and Sumiati (2013) analysed the impact of buyback on two companies listed on the Indonesian stock exchange. The results showed there was no real difference between the stock return, abnormal return and cumulative abnormal returns for the period before and after the stock buyback policy for one company but not the other. This indicated that investors are more cautious in their purchases of shares and investors have different preferences towards exercising stock buyback announcement.

They summarised that the differences in these results are related to a company's business sector; there is an indication investors are more interested to invest in the company property and real estate developer fields than to invest in maritime transport services. Gupta, *et al.* (2014) tested for the signaling effect of buyback (both through open market and tender offer) on a sample of 58 Indian companies and found no evidence that buybacks trigger market reaction in stock prices when buybacks take place both through tender offer and open market offer. Further research on the signaling effect of buybacks was conducted by Sadaf, *et al.* (2016) who examined the signaling effect of the payout decisions namely, cash dividends and share repurchases on BSE 500 index companies. They attempted to uncover the underlying forces behind the firm's choices of payout policy in the Indian context. It was observed that cash dividends are not perceived by investors as positive signals as they prefer their earnings to be retained by the companies for growth prospects.

Dittmar (2000) examined all the reasons for which companies undertake buyback namely, distribution of excess cash, favourable capital structure, to offset dilution of equity, undervaluation, and minimise takeover threat among others. The research findings corroborated that firms repurchase stock to take advantage of potential undervaluation and in many periods to distribute excess capital. However, very often firms also undertake buyback to ward off takeover threats, alter their leverage ratios, and counter the dilution effects of stock options. Similar studies were also carried out by Yarram (2013) who investigated the factors influencing decisions to buy back shares in Australia. The analysis was carried out on a sample of non-financial firms and their study found no evidence of undervaluation influencing buyback decisions of Australian firms.

Mitchell, *et al.* (2001) surveyed the motivations of managers regarding buyback of shares in Australia and found improving financial performance or increase in earnings per share as a major motive for firms to buy back shares as also to signal to investors that their shares are undervalued in the marketplace. Ramesh and Rane (2013) analysed the impact of buyback and the findings of the research were that 78 per cent of the buyback programs registered an

enhancement in the earnings per share while the earnings per share of the remaining 22 per cent decreased. Therefore, the study concluded that the stock buybacks enhance the earnings per share and thereby create value for the shareholders.

By and large, literature relating to share buybacks empirically supports undervaluation signaling both in international and Indian contexts. Apart from analysing the buybacks based on methods followed to affect such an exercise, one more interesting aspect of research was to examine if market conditions had influenced stock market reactions to buyback announcements. The studies have mostly focused on a specific aspect of buybacks - whether it is signaling effect or dividend substitution or cash flow hypothesis. Our study analyses the signaling impact and also the impact on financial ratios post buyback.

Section III **Research Methodology**

Data Source

For the purpose of studying the returns around buyback announcements in the Indian stock market, the companies listed in the BSE 500 broad-based index and which announced buybacks between the years 2010-11 to 2014-15 have been considered. Our initial sample of buyback announcements was collected from the official website of Securities and Exchange Board of India (SEBI). The source listed 95 buyback programs during the aforesaid period. Prowess CMIE (Centre for Monitoring Indian Economy), Capitaline database and BSE sites were the sources from which the daily share price data and their respective dates of announcements based on the Board meeting were identified (Table 1).

To be included in the final sample, it was necessary that there were no other confounding events reported for the companies; and that the continuous returns over the estimation and examination period were available. Also, since the research entails testing the impact of buyback on financial performance, the availability of information on financials on a quarterly and annual basis for the companies was also imperative. Thus, the final sample after filtering came to 34 companies.

Methodology

The standard event study procedure was adapted for the analysis. Event study methodology is used primarily to test the null hypothesis that the market is efficient in terms of information efficiency and second within the ambit of market efficiency to examine the impact of buyback announcement on the security prices and thus wealth creation for the shareholders. The dates of the meeting of the Board of Directors regarding the announcement of buybacks were denoted

as the 'event day', and the days surrounding the event day (20 days before and 20 days after the event) were denoted as 'event window'. Up to a 365-day period prior to the first day of the event window (-365 to -21 days) was considered as the 'estimation window'.

Table 1
Companies going for Buyback with their Announcement Dates

<i>S. No.</i>	<i>Company Name</i>	<i>Date of Announcement</i>
1.	Clariant Chem	21 Sep 2015
2.	Infinite Computer	22 Jun 2015
3.	Crisil	19 Jun 2015
4.	Bayer Crop Science	03 Jun 2015
5.	Sasken	23 Apr 2015
6.	Onmobile Global	11 Dec 2014
7.	Crompton Greaves	04 Jul 2013
8.	GEECEE	10 Jan 2012
9.	PVR	28 May 2011
10.	SRF	30 Mar 2011
11.	Reliance Industries	20 Jan 2012
12.	Praj Industries	06 Dec 2011
13.	Amtek Auto	21 Nov 2011
14.	Gemini Communications	09 Nov 2011
15.	Jindal Poly	31 Oct 2011
16.	Softsol India	26 Oct 2011
17.	Zee Entertainments	18 Jul 2011
18.	Bhagyanagar India	18 Jan 2011
19.	Deccan Chronicle	12 Nov 2010
20.	Motilal Oswal Financial Services	27 Apr 2013
21.	Garware Wall Ropes	30 Sep 2013
22.	Zen Technologies	09 May 2013
23.	Maharashtra Seamless	08 Apr 2013
24.	Cairn India	14 Jan 2014
25.	Reliance Infrastructure	11 Apr 2013
26.	Gravis Hospitality	12 Feb 2013
27.	Indiabulls Real Estate	31 Dec 2011
28.	Balrampur Chini	22 Feb 2011
29.	Allied Digital	20 Feb 2011
30.	Siemens	02 Aug 2012
31.	FDC	22 Aug 2012
32.	HEG	14 Mar 2011
33.	Kirloskar Oil Engine	25 Jan 2012
34.	Kanoria Chemicals	08 Aug 2012

The BSE 500 index returns were taken as proxy for the market returns of 360 days during the estimation window and the respective shares were regressed against the proxy to determine the constant and the regression coefficient to calculate the expected returns during the event window (market model). The difference between the actual return and the expected return during the event window is considered as the abnormal returns (AR). The average abnormal returns (AARs) were calculated for each day during the event window across securities for analysing the ARs around the event. The percentage returns for the securities have been taken as the core data for analysis.

AR = Actual return of security at day – Expected return of security at day.

The average abnormal returns (AARs) were also calculated for each day during the event window across securities for analysing the ARs around the event.

AAR = $\frac{1}{n} \sum$ Abnormal returns around the event.

The CAARs were also calculated for analysing the price adjustment process. CAAR is the sum of daily AARs during the event window.

Cumulative Average Abnormal Return (CAAR) = $\sum(t-k \text{ to } +k) AAR_t$

While the AARs are used to analyse the information content of buybacks and CAARs are used to analyse the adjustments of prices to new information and to check the efficiency of market, student's *t*-test has been applied. To find out whether the abnormal returns and the cumulative abnormal returns differed significantly from zero during the two market conditions, the following null hypotheses were framed:

H_0 : Average Abnormal Returns = 0

H_1 : Average Abnormal Returns \neq 0

The test statistics is: $t = \sqrt{N} \frac{AAR}{S.E.}$

The methodology adopted can be summarised in the steps in Table 2.

The research study also examines the impact of buyback on the financial ratios for the quarter and the year post buyback. The same has been compared with ratios for the quarter and year prior to the buyback and *t*-test methodology has been used to test for significance. The two ratios identified for this purpose have been the EPS and ROE.

Table 2
Steps of Methodology Adopted for Event Study

1. Enlisted 34 stocks with their buyback announcement date
2. Collection of historical data for every company (Source: Yahoo Finance)
3. Regression of stock prices (from -365th day to -21st day) with respect to reference index (BSE SENSEX)
4. Formulation of regression equation for every individual stock
5. Using the regression equation to find the expected return from -20th day to +20th day
6. Finding an average abnormal return (AAR) for every stock using data of actual return and expected return
7. Finding the value of cumulative average abnormal return (CAAR) for descending dates from -20th day to +20th day
8. Finding the t-stat value for descending dates from -20th day to +20th day
9. For deduction of conclusion, the deviation of actual return from expected return has been observed till the 20th day after buyback announcement and the result has been tabulated on the basis of AAR

Section IV Results and Discussion

The AARs and CAARs together with their significance for the normal market condition period (2010-2014) are presented in Table 3 below.

Table 3
AARs and CAARs of Buyback Announcements Made During 2010-14

Day	AAR (in percentage)	t-statistic	p-value	CAAR (in percentage)	t-statistic	p-value
+20	0.44	4.924	0.199	0.44	4.924	0.430
+19	-0.06	-0.688	0.453	0.38	4.235	0.440
+18	0.10	1.080	0.427	0.47	5.316	0.424
+17	0.81	9.093	0.059	1.28	14.409	0.303
+16	0.36	4.052	0.244	1.64	18.461	0.254
+15	0.15	1.710	0.385	1.79	20.171	0.235
+14	0.20	2.250	0.350	1.99	22.421	0.211
+13	-0.01	-0.119	0.492	1.98	22.302	0.212
+12	0.42	4.683	0.211	2.40	26.985	0.167
+11	0.62	6.997	0.115	3.02	33.982	0.112
+10	-0.26	-2.966	0.306	2.76	31.016	0.133

(Contd.)

Table 3 (Contd.)
AARs and CAARs of Buyback Announcements Made During 2010-14

<i>Day</i>	<i>AAR</i> <i>(in percentage)</i>	<i>t-statistic</i>	<i>p-value</i>	<i>CAAR</i> <i>(in percentage)</i>	<i>t-statistic</i>	<i>p-value</i>
+9	-0.42	-4.686	0.211	2.34	26.330	0.173
+8	0.50	5.621	0.168	2.84	31.951	0.126
+7	-0.06	-0.652	0.456	2.78	31.300	0.131
+6	-0.07	-0.806	0.445	2.71	30.494	0.137
+5	-0.30	-3.396	0.280	2.41	27.098	0.166
+4	-0.36	-3.992	0.247	2.06	23.106	0.204
+3	-0.09	-1.057	0.428	1.96	22.049	0.215
+2	-0.24	-2.710	0.321	1.72	19.339	0.244
+1	1.51	17.026	0.002	3.23	36.365	0.096
0th day	0.10	1.139	0.423	3.34	37.504	0.089
-1	0.05	0.601	0.459	3.39	38.105	0.086**
-2	0.84	9.487	0.052	4.23	47.592	0.044*
-3	0.44	4.920	0.199	4.67	52.512	0.030*
-4	0.68	7.638	0.095	5.35	60.150	0.016*
-5	0.30	3.412	0.279	5.65	63.562	0.011*
-6	0.92	10.371	0.038	6.58	73.933	0.004*
-7	1.57	17.617	0.001	8.14	91.549	0.001*
-8	-0.02	-0.203	0.486	8.13	91.346	0.001*
-9	-0.32	-3.638	0.266	7.80	87.708	0.001*
-10	-0.19	-2.127	0.358	7.61	85.581	0.001*
-11	0.29	3.256	0.288	7.90	88.837	0.001*
-12	-0.10	-1.069	0.427	7.81	87.768	0.001*
-13	-0.36	-4.033	0.245	7.45	83.735	0.001*
-14	-0.81	-9.161	0.058	6.63	74.574	0.004*
-15	-0.05	-0.617	0.458	6.58	73.956	0.004*
-16	-0.02	-0.271	0.481	6.55	73.686	0.004*
-17	-0.07	-0.823	0.444	6.48	72.863	0.004*
-18	0.04	0.447	0.469	6.52	73.310	0.004*
-19	-0.25	-2.827	0.314	6.27	70.482	0.006*
-20	-0.94	-10.566	0.035	5.33	59.916	0.016*

Note: *Significance at 5 per cent, **Significance at 10 per cent.

It is observed that the AAR of 0.1 per cent on the event day is not statistically significant, thereby denoting no abnormal return to signal a strong undervaluation assumption. The days having significant AAR were only 8 out of 41 days considered for the study. The post-event window period had two days with AARs having significance, and both days recorded a positive abnormal return of 1.51 per cent on day +1 and 0.81 per cent on day +17, thereby signifying the possibility of earning abnormal returns. On the other side, the pre-event window period had six-day AAR, which is significant, out of which four days which are close to event day (-2,-4,-6,-7) are recorded as positive abnormal return and the other two (-14,-20) days are recorded as negative abnormal return.

An observation of CAARs showed that 22 out of 41 days have significant value in which all pre-event days are included but only one post-event day had significant CAAR. Since the CAAR values have been decreasing as the days come close to event day, it means that the buyback has a substantial impact to bring down the CAARs which was maintained before announcement or pre-event days.

The observations made for stock market reactions to the buyback announcements were that among the sample of 34 publicly listed firms taken for the study, 20 firms have shown positive impact as the share price has gone up even up to 20th day after buyback announcement. Although the rest 14 firms have shown negative impact, among these, 10 firms have been into a negative trend since the last 20th day before the buyback announcement and only four firms have actually shown a negative impact after the buyback announcement.

Certain days showed abnormal returns as is the case with nine companies out of 34 firms. The r-square for the same has been computed by regressing the stock returns with the market index (Table 6). These stocks have shown their abnormal return pertaining to changes in market index and in rest of the cases we assume that other factors may have played an important role such as fundamental issues, industry trend or published or non-published affairs. Therefore, it can be concluded that buyback has a significant and substantial effect on boosting up the share price for a firm. Sometimes some systematic or unsystematic risks involved may cause the share price to either show neutral behaviour or fall as per the firm's fundamentals.

Table 4
Company-wise Changes in Stock Prices up to 20 days of
Buyback Announcement

(Figures in Percentage)

Company	-20th Day	-10th Day	-1st Day	0th Day	+1st Day	+10th Day	+20th Day
Clariant	-0.24	0.86	-0.23	0.87	-0.41	-0.01	-0.96
Infinite	-17.06	-8.27	3.65	2.57	-3.49	-1.40	4.86
Crisil	0.86	-1.76	-0.51	-1.24	1.71	0.16	1.06
Bayer	1.01	-2.38	1.95	2.56	2.02	0.31	0.30
Sasken	-2.36	8.29	-1.72	-0.59	-5.54	0.03	-0.82
Onmobile	-2.86	3.38	2.08	-2.55	5.98	1.59	5.82
CG	2.19	1.70	-1.78	-3.47	-1.92	-0.86	-1.61
GEECEE	-2.19	-0.06	-5.25	-2.86	-3.01	-1.79	0.09
PVR	2.71	-1.03	1.63	0.93	0.07	0.21	0.11
SRF	-3.24	-0.90	-0.53	-2.08	1.42	-2.59	-1.14
RIL	-0.55	2.49	-0.61	0.22	-2.76	-1.32	-0.68
Praj	-0.35	0.65	1.29	-1.73	-1.02	-0.34	-0.23
Amtek	-3.46	-0.28	-13.39	8.53	18.46	1.87	1.16
Gemini	-4.74	-2.54	5.44	4.74	2.92	-2.55	2.00
Jindal	-2.11	-1.19	4.86	0.04	-0.01	0.08	-4.93
Softsol	-2.77	4.46	1.05	-3.91	-2.13	5.24	5.38
Zee	1.15	-1.14	-3.00	-0.20	3.15	-1.37	0.65
Bhagyanagar	0.51	0.38	-0.76	-0.14	20.10	-0.38	2.16
Deccan	-0.49	-1.49	-2.59	2.94	-2.11	-0.55	2.68
Motilal Oswal	-4.35	2.70	5.12	-1.61	2.00	2.48	1.94
Zen	-2.77	-6.05	-0.36	-0.67	-0.40	-4.03	0.68
Garware	-0.63	-0.24	-1.23	-0.51	-1.21	1.23	-1.02
Maharashtra Seamless	1.69	-0.87	0.79	3.92	8.37	-1.38	3.35
Cairn	0.50	-0.21	-0.41	2.15	-1.82	0.00	0.21
R Infra	0.18	-5.89	2.65	-2.49	5.76	3.57	0.44
Gravis	-0.02	-0.26	-0.15	0.00	3.94	-4.33	-1.93
IndiaBulls	1.85	-1.57	3.26	0.40	0.05	-1.89	-2.54
Balrampur	-0.53	-2.79	0.49	-0.13	-2.04	0.93	-0.68
Allied Digital	0.99	1.91	1.66	0.52	-0.11	-0.81	0.86
Siemens	0.26	0.79	-0.55	-0.81	0.35	0.15	-1.68
FDC	1.16	4.40	-1.69	2.71	-0.98	-0.29	0.03
HEG	5.26	1.77	1.62	0.83	2.77	-0.85	0.44
Kirloskar	-0.25	-1.02	-0.12	0.48	-1.01	2.02	-0.30
Kanoria	-1.31	-0.25	-0.86	-5.98	2.38	-2.07	-0.81

Table 5
Summary of Stock Returns from 1st Day to 20th Day of Announcement

Return (in Percentage)	-20th Day	-10th Day	-1st Day	0th Day	+1st Day	+10th Day	+20th Day
<-5	1	3	2	1	1	0	0
-2% to -5	10	3	2	6	6	5	2
-2% to 0	9	15	15	10	10	15	12
0% to 2	11	7	8	9	6	10	14
2.01% to 5	2	5	5	7	6	3	4
5.01% to 20	1	1	2	1	4	1	2
>20.00	0	0	0	0	1	0	0
	0	0	0	0	0	0	0

Positive Impact of Buyback

Return (in Percentage)	-20th Day	-10th Day	-1st Day	0th Day	+1st Day	+10th Day	+20th Day
0 to 2	11	7	8	9	6	10	14
2.01 to 5	2	5	5	7	6	3	4
5.01 to 20	1	1	2	1	4	1	2
>20.00	0	0	0	0	1	0	0
Total	14	13	15	17	17	14	20

Table 6
Regressing the Stock Returns with Market Index

S.No.	Company Name	p-value	R-square (in Percentage)
1.	Clariant Chem	0.0143	2.65
2.	Infinte Computer	0.0000	11.15
3.	Crisil	0.0008	5.06
4.	Bayer Crop Science	0.0001	7.10
5.	Sasken	0.0140	2.72
6.	Onmobile Global	0.0001	6.97
7.	Crompton Greaves	0.0000	18.13
8.	GEECEE	0.0000	7.78
9.	PVR	0.0000	10.79
10.	SRF	0.0000	24.98
11.	Reliance Industries	0.0000	60.77

(Contd.)

Table 6 (Contd.)
Regressing the Stock Returns with Market Index

S.No.	Company Name	p-value	R-square (in Percentage)
12.	Praj Industries	0.0000	35.71
13.	Amtek Auto	0.0000	14.64
14.	Gemini Communications	0.0000	14.43
15.	Jindal Poly	0.0000	21.50
16.	Softsol India	0.0529	2.15
17.	Zee Entertainments	0.0000	11.77
18.	Bhagyanagar India	0.0000	11.00
19.	Deccan Chronicle	0.0000	17.86
20.	Motilal Oswal Financial Services	0.0000	9.81
21.	Garware Wall Ropes	0.0000	10.92
22.	Zen Technologies	0.6363	0.10
23.	Maharashtra Seamless	0.0665	1.66
24.	Cairn India	0.0000	10.48
25.	Reliance Infrastructure	0.0000	52.10
26.	Gravis Hospitality	0.3279	0.46
27.	IndiaBulls Real Estate	0.0000	46.44
28.	Balrampur Chini	0.0000	28.36
29.	Allied Digital	0.0000	28.53
30.	Siemens	0.0000	40.12
31.	FDC	0.0526	1.67
32.	HEG	0.0000	11.48
33.	Kirloskar Oil Engine	0.0001	7.67
34.	Kanoria Chemicals	0.0467	1.91

Assumptions

Those firms (9 out of 34) who have R-square values greater than 20 per cent are assumed to be showing abnormal returns due to stock market/market index.

As per the fundamental analysis, by considering EPS and ROE of 31 publicly listed firms prior and post the buyback execution and performing t-test between the sample data, it can be concluded that there has been a significant difference between mean of EPS due to buyback. In other words, it can be interpreted that a buyback does have a significant impact in increasing the EPS for a firm.

Figure 1
Impact of Buyback on Share Price

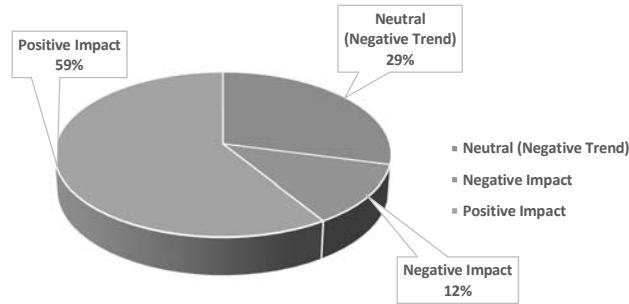


Table 7
Null Hypothesis and Alternate Hypothesis for Fundamental Analysis

(Null Hypothesis) H0:	The mean of two paired samples are equal
(Alternate Hypo) H1:	The means of two paired samples are not equal
Significance Level	0.05

Table 8
Findings on EPS from T-test

t-test: Paired Two Samples for EPS Means

	EPS (Post)	EPS (Prior)
Mean	4.8545	3.2584
Variance	30.6916	15.1975
Observations	31	31
Pearson Correlation	0.6401	
Hypothesized Mean Difference	0	
df	30	
t-stat	2.0809	
P (T<=t) one-tail	0.0230	
t critical one-tail	1.6973	
P (T<=t) two-tail	0.0461	
t critical two-tail	2.0423	

Since $t(\text{stat}) > t(\text{critic})$ We can reject null hypothesis.

There is significant mean difference between the two paired samples.

Table 9
Findings on ROE from t-test

t-test: Paired Two Samples for ROE Means

	ROE (Post)	ROE (Prior)
Mean	8.8915	8.4800
Variance	76.5857	68.9967
Observations	31	31
Pearson Correlation	0.9789	
Hypothesized Mean Difference	0	
Df	30	
t-stat	1.0187	
P (T<=t) one-tail	0.1606	
t critical one-tail	1.7291	
P (T<=t) two-tail	0.3212	
t critical two-tail	2.0930	

Since $t(\text{stat}) < t(\text{critic})$ We cannot reject null hypothesis.

There is no significant mean difference between the two paired samples.

Table 10
Findings on Annual EPS and ROE Before and After Buyback from t-test

<i>t-test: Paired Two Samples for EPS Means</i>			<i>t-test: Paired Two Samples for ROE Means</i>		
	EPS (Post)	EPS (Prior)		ROE (Post)	ROE (Prior)
Mean	16.3059	15.8615	Mean	36.2936	33.2261
Variance	358.2397	455.5170	Variance	1456.8257	1398.0026
Observations	27	27	Observations	27	27
Pearson Correlation	0.9755		Pearson Correlation	0.9561	
Hypothesized Mean Difference	0		Hypothesized Mean Difference	0	
Df	26		Df	26	
t-stat	2.4564		t-stat	2.4209	
P (T<=t) one-tail	0.0326		P (T<=t) one-tail	0.0836	
t critical one-tail	1.7056		t critical one-tail	1.7056	
P (T<=t) two-tail	0.0452		P (T<=t) two-tail	0.1672	
t critical two-tail	2.0555		t critical two-tail	2.0555	

(Null Hypothesis) H0:	The mean of two paired samples are equal
(Alternate Hypo) H1:	The means of two paired samples are not equal
Significance Level	0.05

Since $t(\text{stat}) > t(\text{crit})$ We can reject null hypothesis.

There is significant mean difference between the two paired samples.

It is observed that when ROE and EPS are compared prior to buyback and post buyback, while EPS shows positive change from pre-buyback, ROE does show improved value post-buyback. The difference in the period used to measure return may explain the lack of significance of ROE for the quarter after buyback but not after four quarters of the buyback. While both the ratios factor in net income and share capital, we believe that the reduction in number of shares on account of buyback has led to higher EPS, while in the case of ROE computation, the denominator is not just share capital but also reserves and surplus which has improved more, thus leading to lower ROE. Moreover, the fundamentals of a company are not just a function of one factor *viz.* buyback but many other issues as sector outlook, company turnover, rise in costs, rise in interest payments, and taxation.

However, as theoretically advocated, EPS does change. If buyback programs convey good news about future performance, operating performance improves in the years after buyback. Investors update and upgrade their expectations and their forecasts about future earnings after the buyback announcements. Essentially, earnings of the company should increase post-buyback due to the reduction in equity capital. This in turn would mean a better discounting of the company's shares, thus giving a boost to the sagging share prices, which would have been languishing well below their book values. However, going forward, the EPS could fall if the performance of the company deteriorates or if the funds used for the buyback earned significant additional income for the company. Further, investors will adjust their valuations to reflect the reduction in both share prices and cash, thus cancelling the increase in earnings per share.

Section V Conclusion

The buyback announcements and reaction of stock markets to the same have concentrated on various aspects, including undervaluation signaling, excess cash distribution, substitution for cash dividends, defense against takeover threat, and the like. Foreign studies and studies in the Indian context, by and large, documented undervaluation signaling. The present study envisaged to understand the effect of announcement of buyback of shares on the share price. A sample of 34 companies was taken over a period of five years which announced share repurchases through tender offer. The event study methodology was

adopted for the study to compute the abnormal returns and cumulative abnormal returns (AAR and CAAR) using t-test. The average abnormal returns were tested for statistical significance.

The findings of the study reported that the abnormal returns were not statistically significant for all the companies. It is observed that the AAR of 0.1 per cent on the event day is not statistically significant, thereby denoting no abnormal return to signal a strong undervaluation assumption. The days having significant AAR were only eight out of the 41 days considered for the study. The post-event window period had two days with AARs having significance, and both days recorded a positive abnormal return of 1.51 per cent on day +1 and 0.81 per cent on day +17, thereby signifying the possibility of earning abnormal returns.

On the other hand, the pre-event window period had six-day AAR, which is significant, out of which four days which are close to event day (-2,-4,-6,-7) recorded positive abnormal return and the other two (-14,-20) days are recorded as negative abnormal return. The observations made for stock market reactions to the buyback announcements were that among the sample of 34 publicly listed firms taken for the study, 20 firms have shown positive impact as the share price has gone up even up to the 20th day after buyback announcement. It is also seen that EPS for the quarter after buyback announcement showed an increase as compared to the quarter prior to the buyback announcement. This substantiated one of the reasons for companies to go for buyback which is to show improved financial ratios for potential investors.

The results of the study imply that the information related to the announcement of the buyback is already reflected in the share price. This also throws light on the growing maturity and efficiency of the stock market of India. These findings may have important implications for all the market participants. Traders who look for abnormal returns about corporate announcements may not always get such gains, and even if so, there is the question of quantum of returns and their sustainability. Companies proceeding for buyback may feel more confident about approaching the market since volatility in share price will be less.

Scope for Future Research

More research can be taken up along the same lines for other corporate announcements taking the recent data to corroborate with the findings of the study. The limitation of the study is that the sample size is not large enough to completely generalise about stock market reactions. It can also be seen that the reasons for stock returns to not increase are not a function of buyback but related to other corporate news. The scope of the study can be increased by including more companies and observing the changes in stock returns post-buyback for both tender offer and open market repurchase. As scope for future research, sensitivity can also be done by filtering some companies that showed

negative EPS and ROE prior to buyback also, and then comparing performance across the two quarters. Further, the impact can also be gauged for other ratios that reflect financial performance as ROA. Further research can also be undertaken to see the impact of various parameters on buyback.

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