
Do Buybacks still hold their Signaling Strength? An Empirical Evidence from Indian Capital Market

SHAVETA GUPTA¹, NEHA KALRA¹ and RAJESH BAGGA¹

¹ ApeeJay Institute of Management Technical Campus
Jalandhar

Share buyback has been recognized as an important phenomenon in the corporate world that has gained a lot of attention of the researchers worldwide. Share buyback is considered as one of the classic methods to raise a company's stock price. The empirical studies on the impact of share buybacks revealed that signaling hypothesis is the major motivation. Share buybacks were introduced in India since 1998. This study examines whether Indian companies have undertaken buy-backs for the purpose of information signaling through the announcement of share buyback by 58 companies (both from open market and tender offer) in India during 2010-12 by taking the BSE 500 index companies. The study analyzed the share price behavior surrounding initiation announcements of tender offer and open market share repurchase programs and the abnormal stock performance following the announcements, through a standard event study methodology. The study used a detailed dataset on tender offer, open market and total sample population share buyback programs. The results showed that the market had not given any scope for earning abnormal returns. The authors find no evidence that buybacks triggers market reaction in stock prices through generation of abnormal returns to the investors. The results have been found to be in tandem with the studies of Hertz, 1991; Roosenboom et al., 2001; Cook et al., 2004, which could not find evidence of abnormal returns associated with the announcement of buy-back of shares in the Indian capital market.

Keywords: Share buyback, Abnormal Return, Signaling, Market Reaction, Event Study and Wilcoxon signed rank test.

INTRODUCTION

Corporations distribute large amounts of their cash flow to shareholders through stock repurchases (Fenn and Liang, 1997). Earnings management by corporate executives appeared to be rewarded by investors. According to several studies, investors seem to reward firms that reported steady growth in earnings and consistently met the earnings forecasts of analysts (Nadarajan et al., 2009). Wansley et al. (1989) indicated that repurchase can act as a substitute for dividend payments in order to provide shares for reissue because of a lack of investment opportunities or an excess of available cash and to signal favorable information about the firm's prospects¹. There are two alternatives for allocation of the surplus fund when companies are over capitalized. First alternative is to retain the fund with itself and invest it for further development of the organization. Second alternative is to return the fund to the shareholders of the company. It can be through dividend or in form of shares buyback² (Mohanty

¹ Vermaelen (2005) pointed four different aspects of share buybacks: investment for the company, payout decision, changes the capital structure and changes the ownership of the company. Grullon and Ikenberry (2000) listed five theories/reasons as to why companies perform share repurchases: to signal that the current share price is too low, reduce agency problems, to reallocate capital in the stock market, to return excess capital to the shareholders and to change the capital structure of the company.

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and Panda, 2011). One of the most puzzling business conundrums today is the extreme propensity of public companies to buy back their own shares (Milano, 2011). The stock repurchase is considered as one of the classic methods to raise a company's stock price, but has failed to get the same amount of attention of researchers that other corporate actions viz. dividend announcement, mergers etc. get³. By reducing the number of shares outstanding, the interaction of demand and supply is expected to cause the stock price to float upward. As the signaling properties vary with the mode of repurchase⁴, the company may buy-back shares from the existing shareholders on a proportionate basis either through tender offer; or from the open market either by inviting tenders or by the book building process (Thirumalvalavan and Sunitha, nd). Bens et al. (2003) investigated whether stock repurchases were affected by a firm's desire to manage earnings and they observed that firms avoid an earnings disappointment. In other words, the notion is that some managers may be announcing open market buybacks with the intention of misleading investors⁵.

Share buyback has been recognized as an important phenomenon in the corporate world and has gained a lot of attention in many of the researches that are taking place worldwide. Earlier researches have documented different aspects of buyback; few have focused on magnitude of share buyback, while

others have focused on managerial motivation through management surveys (Vermaelen, 1984 and Ofer and Thakor, 1987) and also financial impact of buyback of shares (Elton and Gruber, 1968). Prior studies have mostly covered the reasons to undertake a buyback but not the motivations behind choosing between different methods of doing so. Few studies have identified the main motivations as signaling undervaluation⁶ (Dann, 1981 and Vermaelen, 1984), distribution of free cash flow (Grullon and Michaely, 2004), or as a flexible alternative to dividends (Jagannathan et al., 2000). Brav et al. (2005) surveyed 348 financial executives to identify and explore their perspectives on dividends and share repurchase. The study concluded that repurchase decisions are made after investment decisions are undertaken and the firms are concerned with the impact of repurchase on EPS⁷. The study also concluded that managers tend to initiate buybacks when the stock is considered to be undervalued⁸.

While companies may announce share repurchase, they are under no obligation to carry them out. The proportion of repurchases actually undertaken varies on the basis of scope as to regions and time. Rau and Vermaelen (2002) argued that the proportion of repurchases actually executed was 37% in U.K. over the 1985-1998 period, but 10% for 1998. Ikenberry et al. (2000) estimated this proportion at 28.6% for the Canadian repurchase programs during 1989-1997⁹.

³ Buyback and repurchase has been used interchangeably throughout the paper.

⁴ Lee (2001) has listed share buyback as first among various areas that have traditionally been regarded as the domain of corporate finance in which accounting researchers have an opportunity to generate some of the most significant research in financial economics over the next few decades.

⁵ Refer Comment and Jarrell (1991), Gay et al. (1991), Persons (1994), and Grullon and Ikenberry (2000) for discussions related to the differential signaling strengths.

⁶ See, Bens et al. (2003), Hribar et al. (2006) and Chan et al. (2007)

⁷ Few main reasons that have been quoted in earlier researches include distribution of excess cash (Brennan and Thakor, 1990 and Stephens and Weisbach, 1998), trying for optimum financial leverage (Dittmar, 2000), reduction of agency costs (Denis and Denis, 1993 and Grullon and Michaely, 2004), earnings management (Grullon and Ikenberry, 2000 and Guay and Harford, 2000), financing of employee stock option plans (Kahle, 2002) and redistribution of voting rights (Harris and Raviv, 1988; Stulz, 1988; Bagwell, 1992 and Hodrick 1999). For further reading, refer Baker et al (2003), Chan et al. (2003) and Brav et al. (2005).

⁸ Bens et al. (2003) studied the relation between repurchase and EPS and found that managers tend to increase buybacks in order to maintain a target rate of EPS growth.

⁹ For the details on studies supporting the findings, see studies of open market share buyback in Hong-Kong (Brockman and Chung, 2001), Japan (Zhang, 2002), US (Cook et al., 2004), and Canada (McNally et al., 2006).

¹⁰ A study by Stephens and Weisbach (1998) estimated that only between 74% and 82% of the announced repurchase programs were actually carried out in the U.S.

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The main research questions addressed in this paper are that whether the buyback announcements have an impact on the stock prices of the respective firms or not and besides this, the researchers have also made an effort to explore the market efficiency of Indian stock market. The remainder of the paper is structured as follows: In the next section, some of the more relevant previous studies on effect of share buyback announcements has been presented, followed by a detailed description on the data that has been used and the methodology that has been applied. Next section presents and discusses the empirical results with the conclusion in the last section.

LITERATURE REVIEW

Share buyback has been a topic of interest not only to the researchers but also to the corporate world. However, a huge number of researches on announcement effects of buyback have been carried out in US as compared to other countries¹⁰. This section covers a brief on the studies carried out in the said arena. The researchers have followed two paths in addressing the reasons and impact of share buyback: one is to survey the managers to explore their hidden intentions behind share buyback; and second, to empirically test the impact of share buyback. As per the scope of the study, this section throws light on the empirical studies on buyback.

The rich literature house on empirical studies on impact of share buyback revealed that signaling hypothesis¹¹ is the major motivation¹². Few studies on signaling hypothesis put forth that buyback announcement represent signals about future operating performances. Dann (1981) compared the signaling hypothesis with other hypotheses using a

sample of 143 cash tender offers announced between 1962 and 1976. The study concluded that the announcement returns of these securities are positively related to the size of repurchase and stock price movements. Bartov (1991) analyzed a sample of 185 US companies announcing open market stock repurchases from 1978 to 1986 and found an average increase in the level of earnings. Rees (1996) analyzed the impact of share repurchase announcements on stock prices using UK data of open market repurchase announcements. He found that prior to the repurchase announcement, firms experience a significant decline in their stock prices, and that the market reaction is positively associated to share buyback, further supporting signaling hypothesis. Ginglinger and L'Her (2006) examined open market stock repurchases in France and found a positive average market reaction to the repurchase announcement (+0.57% in window (0, +1)). However, the magnitude of the price reaction is found to depend on a number of corporate governance structure measures. Recently, Aharoni et al. (2011) also observed that repurchases are used as a signaling device. Their results indicated that repurchases signal a lower probability of a large deterioration in the firm's future prospects, rather than a high probability of a good outcome.

In order to test the signaling hypothesis of share buyback, few studies have been carried out in India also. Mohanty (2002) studied 12 buybacks in India and found a 3.86 percent return on the announcement day to indicated the first ever evidence of positive signaling in Indian context. In a study of 25 buybacks between 1999 and 2001, Mishra (2005) investigated the validity of long-term effect of share buyback program on a company's share price and to assess which companies benefit more from

¹⁰ See Vermaelen, 1981; Comment and Jarrell, 1991; Ikenberry et al., 1995; Kahle, 2002; Grullon and Michaely, 2004; and Peyer and Vermaelen, 2005.

¹¹ Signaling hypothesis predicts that managers, having privy information on their firms, would be impelled to correct mispricing of their shares. One of the method is to announce buyback of shares.

¹² See Bhattacharya, 1979; Vermaelen, 1981; Dann, 1981; Lakonishok and Vermaelen, 1990; Bartov, 1991; Comment and Jarrell, 1991; Dann et al., 1991; and Persons, 1997.

these programs. The study concluded that announcement of a buyback did bring about an increase in share prices but this was a short-term phenomenon. Reaffirming the earlier results, Gupta (2006) studied 46 buybacks between 1999 and 2005 and supported positive signaling by having observed a significant abnormal return of 1.66 percent. However, in another study by Hyderabad (2009), a statistically significant average abnormal return of 2.76 percent was found on the announcement day for the 70 corporate buyback announcements made during the period 1999 to 2007. Supporting the findings of Hyderabad (2009), Ishwar (2010) studied 106 BSE listed companies, which announced buybacks during from 1999 to 2006 and found an average abnormal return of 2.23 percent. The results indicated that the market has not found any news in the announcement as revealed and the market anticipated the information and incorporated into prices before the announcements.

It has well been accepted in the earlier researches that share buyback programmes enhances performance indicators of the issuers. Shoven and Simon (1987) have tested the validity of the free cash flow hypothesis¹³. They found a positive correlation

between abnormal returns and measures for excess funds at the discretion of management and concluded that buy-backs are an effective means of convincing the market about the sound investment decision making of the firms. Similar results have been witnessed in few other researches also¹⁴. However, few studies have contradicted the earlier findings¹⁵. Regarding leverage hypothesis¹⁶, Jensen (1986) indicated that a buyback increases the firm's leverage through a reduction in assets and may create value for the enterprise. Baker and Wurgler (2002) provided empirical evidence that corporate managers issue shares at high prices and repurchase them at low prices. They supported the "market timing theory" of capital structure, indicating that the current mix of debt and equity is influenced by managers' historical market "timing" activities.

Share buyback can be carried out using different modes of buyback¹⁷. Comment and Jarrell (1991) compared the relative signaling power of three primary buy-back methods. Their research showed that the strongest signal in share price is obtained through a fixed-price tender offer, followed by the Dutch-auction tender offer, and the open market offer¹⁸. Gay et al. (1996) presented the advantages of

¹³ This hypothesis argues that a firm uses on-market share buyback to distribute its excess cash flow to shareholders. A firm's buyback activities should be positively correlated with its cash in excess of investment (Dittmar 2000).

¹⁴ Stephens and Weisbach (1998), Nohel and Tarhan (1998) and Guay and Harford (2000) showed that the announcement effects of share buyback were strongly positive, and that long-term returns were also positive. Further they also observed that EPS gain came from high book-to-market firms, consistent with the over-investment hypothesis. For further reading, see, Mitchell and Robinson (1999), Weisbender (2000), Mitchell et al. (2001), Stonham (2002), Baker et al. (2003), Guffey and Schneider (2004) and Hribar et al. (2006).

¹⁵ In a study by Ikenberry et al. (1995) and Jagannathan and Stephens (2003) in which the researchers showed a decline in earnings after the repurchase. The results were further supported in another study carried out by Evans and Gentry (1999), the researchers not only found little improvement but also underperformance by repurchasing firms. They put forth that firms that did not repurchase create more long-run growth in value than firms that incorporate a buyback strategy. For further details, see, Grullon and Michaely (2004), Barth and Kasznik and Lie (2005).

¹⁶ The leverage hypotheses states that management provides information that the firm is moving closer to its optimal capital structure through a buyback that has the effect of reducing the equity of a company and thereby changing its capital structure mix. See, DeAngelo and Masulis (1980) and Hu and Chuan (2006).

¹⁷ One of the type is tender offer that includes: Fixed-price tender offers, where the corporation offers to buy a specified amount of shares at a fixed price during a fixed tender offer period; Dutch-auction tender-offers, which are similar to fixed-price tender offers, except that prices are set in a book-building procedure; targeted buy-backs, where the corporation negotiates with a particular shareholder. For a detailed overview see e.g. Lamba and Ramsay (2000).

¹⁸ Lie and McConnell (1998), and Peterson and Peterson (1993) found no significant differences between fixed-price and Dutch auction tender offer. Nohel and Tarhan (1998) combined these two types of tender offers to examine the operating performance changes surrounding tender offers. Open market share repurchase announcements target on average about 7% of a firm's outstanding shares (Stephens and Weisbach, 1998), whereas Dutch auction and fixed-price tender offers target a larger percentage of total firm shares, about 15.6% and 18.8% respectively (Comment and Jarrell, 1991).

Dutch-auction repurchases over that of fixed-price tender offers. They suggested that if firms use a fixed-price offer, then there will be an excessive wealth transfer from remaining shareholders to exiting shareholders. Further, D'Mello & Shroff (2000) tested whether firms that repurchase their shares using fixed price tender offers are undervalued relative to their economic value (EV), and found that 74% of repurchasing firms are undervalued with regard to their EV at the beginning of the announcement year. Considering undervaluation as one of motives for share buyback, Cook et al. (2004) carried out to study the timings and execution of open market repurchases using data of 64 firms. Their evidence showed that firm's share repurchase is insensitive to market as well as own price movement. The results were further reaffirmed in the study by Dittmar (2000) who concluded that firms repurchase stock to take advantage of potential under-valuation and to distribute excess capital to stockholders.

The major contribution in the field of share buyback is on the stock price reaction, and to detect positive abnormal returns at the announcement date¹⁹. Ikenberry and Vermaelen (1996) concluded that the buyback announcement is an option that can be exercised whenever market conditions are favorable. The positive reaction of the share prices to the announcement is related to the option value, which is recognized by the market. On the same lines, few other researches have also documented the similar results²⁰.

NEED AND RESEARCH OBJECTIVE OF THE STUDY

Share buyback and the resulting impact have been long examined in the finance literature. Not only are the empirical findings mixed, but there also exist several distinct hypotheses trying to explain the reasons for varied impacts. Considering the limited research on share buyback in Indian industry, the present research study has been aimed at exploring that whether buyback announcement is always viewed as "good news" and be met with significantly positive stock price reactions. Most repurchases are open market repurchases. However, we have examined tender offers and open market repurchases individually followed by overall impact of share buyback. Open market repurchases usually take several months to several years to complete whereas repurchase tender offers are usually completed within a month (Fried, 2000). Contrary to open market repurchases, tender offers entail substantial costs and involve outside parties. Because repurchase tender offers are completed in a much more timely manner than open market repurchases, they offer a less noisy setting to test questions related to financial reporting as well as performance around repurchases.

HYPOTHESIS OF THE STUDY

Many of the researches that have been conducted till date on the share buyback announcement event holds that stock price returns are significantly

¹⁹ See Dann, 1981; Dann et al. 1991; Ikenberry et al. 1995 and Erwin and Miller, 1998, showed positive stock price reactions for firms announcing repurchases

²⁰ Vermaelen and Peyer (2005) found that the average abnormal return is +3.53%, during 48 months after the announcement of share buyback. For further reading, refer Arosio et al. (2000) and Othchere and Ross (2002), who also showed that shareholders earned statistically significant abnormal returns.

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positive around the event date and also positive stock returns continue or up to four years post the event date²¹.

Dann (1981) concluded that the announcement returns of these securities are positively related to the size of repurchase and stock price movements. Bartov (1991) found an average increase in the level of earnings. Rees (1996) found that prior to the repurchase announcement, firms experience a significant decline in their stock prices, and that the market reaction is positively associated to share buyback. Mohanty (2002) found a 3.86 percent return on the announcement day to indicated the first ever evidence of positive signaling in Indian context. Mishra (2005) found short term gain for the shareholders. Ginglinger and L'Her (2006) found a positive average market reaction to the repurchase announcement (+0.57% in window (0, +1)). Gupta (2006) supported positive signaling by having observed a significant abnormal return of 1.66 percent. Aharoni et al. (2011) also found that repurchases are used as a signaling device. Their results indicated that repurchases signal a lower probability of a large deterioration in the firm's future prospects, rather than a high probability of a good outcome. Rasbrant (2011) showed that initiation announcements of open market share repurchase programs exhibit a two-day abnormal return of approximately 2% which is both statistically and economically significant during the first three repurchase days. Till date, many researches have shown the existence of positive abnormal returns following share buyback announcements²². Few earlier researches also indicated that the market has not found any news in the announcement as revealed and the market

anticipated the information and incorporated into prices before the announcements²³. However, it is still a puzzle that if buyback signals undervaluation or used as a way to manage earnings with an appropriate use of free cash flow, followed by positive reactions around the announcement. Furthermore, if the reason behind buyback is to encash opportunities, one should not see positive long-term abnormal returns. Thus, the following null hypothesis has been developed to explain the announcement effects of share buyback.

H0: There is insignificant (zero) share price response to share buyback announcements.

The researchers have hypothesized that the return for share buyback will be less positive or perhaps non-positive. However, it is quite possible that this may not be immediately recognized in the short run. Also the reason may be that manager of the firm may try to encash some opportunity but it may also holds that such moves are not always aligned with the interests of the shareholders. In other words, if no difference in the stock price reactions is observed at the announcement date, then it may be that buyback in such case may be consistent with either the free cash flow hypothesis or the undervaluation hypothesis, thus, making it a tough decision.

DATA BASE AND METHODOLOGY

The Securities Exchange Board of India (SEBI) permits companies to buy back their shares either by giving a tender offer or by purchasing shares from the open market. In tender offer, the company repurchases its shares from the existing shareholders on a proportionate basis through the tender offer at a specific price, and in an open market

²¹ For details, refer Dann, 1981; Shoven and Simon, 1987; Arosio, et al., 2000; Guay and Harford, 2000; Mohanty, 2002; Otchere and Ross, 2002; Vermaelen and Peyer, 2005; Ginglinger and L'Her, 2006 and Gupta, 2006.

²² See Stephens and Weisbach, 1998; Guay and Harford, 2000 and Ramsey, 2000.

²³ See Hertz, 1991; Roosenboom et al. 2001; Cook et al., 2004; Hu and Chuan, 2006 and Hyderabad, 2009.

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offer, companies purchase their shares by announcing the maximum buyback price; the actual price at which shares are bought back may vary from this announced price. When a company announces a buyback, the stock price of the company moves upwards as investors perceive the buyback as a huge positive for the stock.

To test the semi strong form of market efficiency on the announcement of buyback, both types of share buy-backs announced by companies trading on the Bombay Stock Exchange during January 2010 - December 2012 were taken as sample. Our initial sample of buy-back announcements as collected from the official website of Bombay Stock Exchange i.e. www.bseindia.com and public announcement dates of buy back of shares were collected from the official website of Security and Exchange Board of India (SEBI) i.e. www.sebi.gov.in comprised 68 companies.

To be included in the final sample the researchers required that: (a) there are no other confounding events reported in the five days before and after the announcement date of the buy-back, and (b) daily returns over the estimation and examination periods are available. These criteria resulted in a final sample of 58 share buy-backs. Further, the sample is divided into 2 portfolios taking the modes the companies have used for share re-purchase, which resulted in 6 companies in tender offer portfolio and rest 52 companies in open market portfolio. Table 1 shows the annual distribution of the final sample of buybacks analyzed.

Table 1: Annual Distribution of Share Buy-backs Announced During January 2010 - December 2012		
Year	Buyback through Tender Offer	Buyback through Open Market Offer
2010	3	11
2011	2	27
2012	1	14
Total	6	52

The statistics show that Indian companies prefer open market offer program over tender offer program, primarily because the later can go up to one month only, while share re-purchase through the open market operations can prolong for one year, giving companies ample time to buyback.

Analytical Tools Used

The method chosen to analyze the stock price reaction to buyback announcements is event study methodology. Though event studies have a long history²⁴, Brown and Warner (1980), and Fama et al. (1969) considered the papers that introduced the event study methodology as is known today. Since then the method has become a widely used standard to examine the impact of firm-specific and economy wide events on the value of a firm. This method measures the stock price reaction to the unanticipated announcement of an event. In our case, the event is the announcement of a share buyback. The event study methodology is based on the hypothesis of efficient markets²⁵. A list of companies involved in share buyback during 2010-2012 was compiled from several sources like web sites of the SEBI and BSE. For the purpose of this study, the first date of media announcement of the share buyback has been taken as the event date (day zero). Annexure 1 provides the list of companies' along with the announcement dates that have undertaken buyback program in the period under study.

Event Study Methodology

The data in the present study has also been analyzed using Event Study. The procedure for event studies is to investigate whether there are abnormal returns around the announcement date. The announcement

²⁴ See Dolley 1933, Myers and Bakay 1948, Baker 1956, Ashley 1962, Ball and Brown 1968.

²⁵ Fama, 1970 put forth that if stock prices reflect all the available information of firms, then when the market faces an event that is not anticipated, abnormal returns should happen with a positive or negative impact on stock prices.

effect exists only if abnormal returns are significant. This analytical approach is well accepted and has been used widely. The event study methodology has, in fact, become the standard method of measuring security price reaction to some announcement or event. In practice, event studies have been used for two major reasons: 1) to test the null hypothesis that the market is efficient in terms of information efficiency, and 2) within the ambit of market efficiency hypothesis, to examine the impact of some event on the wealth of the firm's security holders. Cable and Holland (1999) argued that the market model compares favorably to other models proposed in the literature²⁶. For that reason, the reference has been made only to the results from the market model.

To investigate the price impact surrounding the initiation announcement of the buyback program we have applied a market model as benchmark for calculating abnormal returns. The market model assumes a linear relationship between the return of the security to the return of the market portfolio. The BSE 500 Sensex had been taken as the benchmark index. The stock returns had been regressed to BSE 500 Sensex returns for a period of 240 trading days viz. 120 trading days before and after the event (announcement) date. The abnormal return for each of the day in the event window was the difference between the actual stock return during that day and the expected normal return according to the BSE 500 Sensex as per the 'a' and 'b' of the concerned stock. In brief, this approach involved the following sequence:

Daily abnormal returns before and after the announcement (including announcement day) of the share buyback has been computed using OLS model as:

$$AR_{it} = R_{it} - E(R_{it})$$

Where t = day measured relative to the share buyback announcement day ($t=0$)

AR_{it} = abnormal return on security 'i' for day 't'

R_{it} = raw return on security 'i' for day 't' which was calculated as:

$$R_{it} = \frac{MP_{i,t} - MP_{i,(t-1)}}{MP_{1,t}}$$

Where $MP_{i,t}$ = closing price of security 'i' on day 't'

$MP_{i,(t-1)}$ = closing price of security 'i' on day 't-1'

$E(R_{it})$ = expected return on security 'i' during day 't' which had been estimated through market model using BSE 500 Sensex as follows:

$$E(R_{it}) = \alpha_i + \beta_i R_m + \varepsilon_i$$

Where R_m = return on the BSE 500 Sensex and α_i , β_i are the OLS values from the estimation period and ε_i is assumed to indicate the abnormal returns.

Average abnormal returns for each relative day had been calculated by:

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{it}$$

Where N = Number of securities (companies) with abnormal returns during day 't'.

Event Definition and Date of Announcement

For the purpose of this study, the first date of media announcement of the buyback has been taken as the event date i.e. day zero (Annexure 1). The first possible date when the news of the buyback was made public has been used. The same has been obtained from the information available on the web sites of SEBI, Bombay stock exchange and the respective firms.

²⁶ Refer Brown and Warner, 1980; Dann, 1981; DeAngelo and Rice, 1983 and McNichols and Manegold, 1983.

Window Period

Even though there is no consistency between the event windows chosen in existing studies, they can be broadly classified as being either short run or long run. The choice of appropriate performance measure also varies considerably between studies (Barber and Lyon, 1997 and Lyon et al., 1999). This study focuses only on short-run event study methods, restricting analysis to an eleven-day event window. This provides the best comparison of various methods because the shorter the event window, the more precise are the tests (Ahern, 2006). If a test does not perform well for a one-day event window, it will only perform worse for longer-run studies. Thus, if small errors are presented in this study, they will be compounded in long-run studies (Fama, 1998; Kothari and Warner, 2005). It is important to note that if the event window is broadened to include more days then it has the disadvantage in terms that prices, in that period, might be affected by confounding effects, including other significant announcements about the firms (Branca and Borges, nd). Therefore, it is important to use an event window as narrow as possible, balancing the pros and cons of smaller and larger windows²⁷. Also, allowing for the possibility of some market rigidities, or a lagged response by investors, we analyze price behaviour until day +5. The event window has been taken at -5 to +5 days; the estimation window has been taken at maximum from -120 days to -6 days and the post event window has been taken at +6 to +120 days.

Test Statistics

t-statistic

The t-statistic is computed as in Brown and Warner (1985). The traditional t test, relies on the assumption

that the average abnormal returns as are normally distributed independently and identically. With the assumption that the residuals which are the measurements of the abnormal performance are uncorrelated between the stocks, the abnormal performance standard deviation is based on the standard deviation of each stock performance measure of the sample in the estimation period. Accordingly, while T indicates the length of the estimation period, the test statistics on day 0; complies with $T-1$ degrees of freedom and Student's t distribution²⁸.

Wilcoxon signed rank test

The Wilcoxon signed rank test ranks all abnormal values in the t -day or set of t -days under analysis, and then assigns the sign of each abnormal return to the respective rank. If positive abnormal returns tend to be in greater number than negative abnormal returns, and/or have relatively higher absolute values, the sum of the signed ranks will tend to be a higher positive number. If positive and negative abnormal returns tend to cancel each other, the sum of signed ranks will tend to be close to zero. A sum of signed ranks statistically different from zero will reject the null hypothesis of no abnormal returns in the event window. The sign test uses only the signs of the abnormal returns in the t -day or set of t days under analysis. Under the null hypothesis of no abnormal returns, we expect the proportion of positive (or negative) signs to be close to 50%. p -values can be determined from the binomial distribution. These tests are not affected by outliers, as the absolute values of abnormal returns are dropped, and only ranks or signs are retained (Borges and Branca, 2010).

²⁷ See Vermaelen (1981), Comment and Jarrell (1991), Ikenberry et al. (1995), Ikenberry et al. (2000), McNally (2002) and Grullon and Michaely (2004).

²⁸ Brown and Warner, 1980, indicated that the reason for calculating the standard deviation of the residuals from the estimation period is to solve a probable cross-sectional dependence problem. Dyckman et al. (1984) opined that non-normality of individual security daily return residuals has little effect on the inferences drawn from the use of t -test applied to the portfolios. Berry et al. (1990) also put forth that t -test works well.

RESULTS AND DISCUSSIONS

This section covers the effect of buyback announcements on the share prices for the full sample population as well as on the basis of modes of buyback. When a company buys back its shares, management gives an information signal to shareholders. However, the signal may be ambiguous. On the one hand, it may be that the company has no profitable use for its funds and therefore undertakes a buy-back as a means of returning these funds to shareholders while on the other hand, management may believe that the company is undervalued and a buy-back which is undertaken at a significant premium above the current market price is a means by which management passes this information on to shareholders (Lamba, 2000). However, the signaling theory of buy-backs has received support from a survey of 140 chief financial officers of US companies which undertook share buy-backs. The authors of the study concluded:

"An important finding of this research is that managers do use share repurchases to signal their confidence in the company, which management believes is not being incorporated in share prices." (Lamba, 2000)

Table 2 presents the results for the daily average abnormal returns for the full sample and mode wise sample distribution of 58 share buy-backs announced during 2010-12. Over the period leading up to the announcement day the researchers observed a rush of negative abnormal returns to the highest of -0.7%, for over 50% of the sample companies in most cases. Though the immediate pre announcement period documented negative abnormal returns but the results were not found to be statistically significant, but the returns following the announcement day have been statistically significant. The findings are in tandem with the study of Ishwar (2010) who studied 106 BSE listed companies, which announced buybacks during the period from 1999 to 2006 and found an average abnormal return of 2.23 percent that was not statistically significant on the event day to signal the

under-pricing 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 anticipate the information and incorporated into prices before the announcements. A similar stream of negative abnormal returns was seen since the day companies announced their buybacks (De Ridder, 2005 and Yook, 2010). A little variation was noted in the period exactly after the announcement, with the abnormal returns increasing further from -.09% on day 1 to -.8% on day 2 and then maintaining the level around -.5% till day 5. Also the proportion of companies reporting the negative returns rose from 58% to 74% of the total sample, all being statistically significant at the 0.05 level. Thus, our results are not being driven by only a few negative abnormal returns. This continued for the entire period under consideration till the 120th day after the announcement, indicating a permanent bearish phase for the companies. The findings are consistent with Modigliani & Miller (1961) who stated that in perfect capital markets it doesn't matter whether companies pay out cash to its shareholders as dividends or repurchases shares. All information is already priced in the current share price and therefore no new information is passed on to the markets and the share price should not respond to changes in payout policies from the company. The results are further consistent with the results of Roosenboom et al. (2001) and Mishra (2005). The findings indicate that share buyback does not create a sustained rise in stock price which is in alignment with the results of Hua Zhang (2002) who investigated the stock price performance after actual share repurchases. On average, repurchasing firms do not exhibit strong superior abnormal performance either initially or over long horizons when they make actual share repurchases. The perusal of the above movements/ statistics points out an interesting fact. One of the most prominent motivators for companies to go for buyback of its own shares is to send a positive signal to the shareholders. But it has been noted here that Indian

corporations, in a ray of hope to revive its stock prices and to reverse their process of decline went for share buybacks, which is consistent with the conjecture that firms time their repurchases to coincide with temporary declines in their stock prices (Stewart, 1976; Stephens and Weisbach, 1998; Brav et al., 2005 and Kinsler et al., 2008), yet to their surprise no major change was found in the returns due to the announcement.

A further issue is whether different types of buy-backs convey signals of different strengths. It can be recalled that in the United States, managers may choose among two main types of buybacks: an open-market buy-back, or a tender-offer buy-back. In his 1981 study, Vermaelen studied 131 tender-offer buy-backs and 243 open-market buybacks and argued that open-market buy-backs provide less powerful signals than tender-offer buy-backs (Lamba, 2000). Harris and Ramsay also found that the market's reaction to share buy-backs differs by the type of share buy-back announced. The results for the market's reaction to the disaggregated sample of 6 tender buy-backs and 52 open market buy-backs appear in Table 2.

Table 2 displays the statistics for both the methods of buy-back announcements. The data shown above portrays a clear picture of the movements of stock prices before and after the announcements unfolding itself to the market. In both the cases companies continue to document significant negative cumulative average abnormal returns both before and after the announcement day. Especially between days -8 to +8, the abnormality has a strong drift towards bearish phase for the sample companies. As with the full sample, the results for the tender offer are not driven by outliers since no single company comprising the sample earned positive cumulative average abnormal returns over days {-1, 0}. Though day +1 documented positive returns for 16.66 per cent of companies but again for day +2, no company registered positive returns. Similar results has been witnessed for the open market offer, where negative returns dominate as

over 50 per cent of the sample companies both before and after the announcement. An analysis of it reveals that the market makes no discrimination in its reaction towards the two methods of buyback. Moreover since the results have been similar for the two methods, therefore they also are in tandem to the full sample results.

For event windows {-10, 0} and {-5, 0} preceding the announcement, negative abnormal returns of 0.4% and 0.3% respectively have been recorded, though these are not significant. However, for event window {-1, 0}, statistically significant negative abnormal returns of 0.2% have been recorded with absolutely no company experiencing positive abnormal returns. Even the post announcement period of {+1, +5} and {+1, +10} showed negative cumulative abnormal returns of -2.63% and -2.66%, both significant at 0.05 and 0.01 level. The cumulative returns for the event window of {-1, +1} makes it crystal clear, that market was experiencing negative abnormal returns before and after the announcement, and moreover the entire sample of 58 companies documented negative abnormal returns. The run-down in prices was consistent as observed by the statistically significant cumulative abnormal returns of -2.17% over the period {-10, +10}.

In case of tender offer, the event windows {-10, 0} preceding the announcement, statistically significant negative abnormal returns of 0.2% have been recorded. Also, the post announcement period of {-5, 0} to {-5, +5} have showed negative cumulative abnormal returns of -2.92% and -7.11%, both significant at 0.05 and 0.01 level. The cumulative returns for the event window of {-1, +1} clears the picture, that market was experiencing negative abnormal returns before and after the announcement, and moreover the entire sample of 6 companies documented negative abnormal returns. The run-down in prices was consistent in case of open market offers as observed by the statistically significant cumulative abnormal returns of -1.5% over the period {-10, +10}.

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Table 2: Summary of Daily Average Abnormal Returns for the Full Sample and Modes of Share Buy-backs Announced During January 2010 - December 2012

*Summary of Abnormal Returns over Days -120 to +120 Relative to the Announcement Day, summated by the its t-statistics computed for each day abnormal return with its two-tailed p-values reported in brackets. The t-statistics which have been found to be statistically significant at 0.05 and 0.10 level have been marked with */**. The last column reports the percentage of companies documenting non-negative (positive) abnormal returns on respective days both preceding and proceeding the event of buyback announcement.*

Event Day	Full Sample (N=58)			Tender Offer (N=6)			Open market Offer (N=52)		
	Average Abnormal Returns (%)	t-Statistics	Percentage Non-Negativity	Average Abnormal Returns (%)	t-Statistics	Percentage Non-Negativity	Average Abnormal Returns (%)	t-Statistics	Percentage Non-Negativity
-120	-.7462	-3.528(.001) *	31.03	-0.8728	-2.038(0.097)**	33.33	-.7316	-3.159(.014) *	30.76
-110	-.5678	-1.662(.102)	43.10	-1.8976	-2.619(0.047)*	0	-.4017	-.948(.680)	48.07
-100	-.4439	-1.403 (.166)	41.37	-1.6028	-1.421(0.215)	33.33	.4499	1.023(.961)	42.30
-90	-.3010	-.743(.461)	36.20	-0.5523	-0.547(0.608)	16.66	.0382	.093(.532)	38.46
-75	-.5516	-1.245(.218)	37.93	-3.0273	-1.298(0.251)	16.66	.5132	1.434(.063) **	40.38
-50	-.1686	-.369(.008) *	36.20	-0.9898	-2.074(0.093)**	16.66	-2.7238	-1.565(.347)	38.46
-30	-.6134	-1.617(.111)	37.93	-1.4738	-2.871(0.035)*	16.66	-.3078	-.779(.882)	40.38
-15	-.1290	-.332(.741)	51.72	0.1544	0.244(0.817)	50	-.3369	-.642(.816)	51.92
-8	-.5301	-1.454(.152)	39.65	-0.2697	-0.433(0.683)	66.66	-.1739	-.532(.968)	26.53
-5	-.0532	-.128(.898)	38.65	-1.3156	-1.106 (.319)	16.67	-.0925	-.210 (.834)	32.31
-4	-.4637	-1.264(.211)	40.38	-.8107	-1.544 (.183)	16.67	-.4236	-1.045 (.301)	38.46
-3	-.4643	1.209(.232)	65.38	.8601	.718 (.505)	66.67	-.4186	-1.024 (.311)	37.69
-2	-.6139	.962(.340)	51.92	1.8814	.946 (.388)	50.00	-.4676	-.690 (.493)	36.15
-1	-.0392	-.112(.911)	50.00	-1.9486	-8.060 (.000)*	0	-.1811	-.478 (.635)	20.00
0	-.2178	-.766(.447)	32.69	-1.5939	-2.838 (.036)*	0	-.0590	-.194 (.847)	32.69
+1	-.0969	-.334(.040) *	42.30	-1.2267	-2.735 (.041)*	16.67	.0334	.106 (.916)	40.38
+2	-.8743	-3.297(.002)*	26.92	-1.1171	-2.533 (.052)**	0	-.8463	-2.898 (.006)*	26.92
+3	-.6355	-2.286(.026)*	32.69	-.4351	-1.718 (.146)	16.67	-.6586	-2.132 (.038)*	30.77
+4	-.4548	-1.984(.052)*	38.46	-.3901	-1.098 (.322)	33.33	-.4623	-1.826 (.074)**	34.62
+5	-.5686	-1.712(.092) **	38.46	-1.0229	-2.387 (.063)**	0	-.5162	-1.405 (.166)	32.41
+8	-.1034	-.396(.693)	43.10	-0.3208	-1.188(0.288)	33.33	-.0783	-.270(.692)	44.23
+15	-.0872	-.222(.825)	46.55	-0.7217	-1.653(0.159)	16.66	-.0140	-.032(.046) *	46.15
+30	.0298	.128(.899)	41.37	-0.8225	-2.44(0.059)**	16.66	-.0510	-.152(.058) **	44.23
+50	-.7884	-2.943(.005) *	32.14	-1.8519	-3.85(0.012)*	0	-.5473	-1.980(.468)	36
+75	-.6123	-2.353(.022) *	33.33	-1.1387	-2.775(0.039)*	16.66	-.2768	-.627(.549)	35.41
+90	-.3655	-1.465(.149)	41.51	-0.005	-0.013(0.99)	50	-.0926	-.297(.047) *	40.42
+100	-.3081	-.762(.450)	45.28	-3.0569	-1.863(0.122)	33.33	-.2808	-1.042(.154)	46.80
+110	.0842	.184(.855)	43.39	-1.8897	-2.925(0.033)*	0	-.1243	-.375(.046) *	48.93
+120	-.5396	-1.909(.062) **	32.07	-0.6393	-2.969(0.031)*	16.66	-.5269	-1.656(.208)	34.04

Source: Author's Own.

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Table 3 sums up the cumulative average abnormal returns over different event windows.

Table 3: Summary of Cumulative Average Abnormal Returns over Different Event Windows for the Full Sample of Share Buy-backs Announced During January 2010 - December 2012

*Summary of Cumulative Abnormal Returns over nine different event windows. Here three event windows of {-10, 0}, {-5, 0} and {-1, 0} indicate the abnormal movement of stock prices cumulated for 10 days, 5 days and 1 day prior to the event till the date of announcement respectively and on similar lines event windows of {0, +1}, {0, +5} and {0, +10} indicate the abnormal movement of stock prices cumulated from the date of event till 1 day, 5 days and 10 days after the event. The last three windows sum up the abnormal returns for 3 days, 11 days and 21 days around the event. This has been supplemented by the its t-statistics computed for the abnormal return of each event window with its two-tailed p-values reported in brackets. The t-statistics which have been found to be statistically significant at 0.05 level have been marked with *. The last column reports the percentage of companies documenting non-negative (positive) cumulative abnormal returns for respective event windows.*

Event Window	Full Sample (N=58)			Tender Offer (N=6)			Open market Offer (N=52)		
	Cumulative Abnormal Returns (%)	t-Statistics	Percentage Non-Negativity	Cumulative Abnormal Returns (%)	t-Statistics	Percentage Non-Negativity	Cumulative Abnormal Returns (%)	t-Statistics	Percentage Non-Negativity
{-10, 0}	-0.4939	-1.109(.293)	36.36	-0.28803546	-3.888(.003)*	54.5454545	-0.517667	-.271(.792)	54.54545
{-5, 0}	-0.3044	-.755(.484)	33.33	-2.92733	-2.893(.034)*	33.33333	-0.677304	-1.764(.138)	66.66667
{-1, 0}	-0.2569	-1.360(.004)*	0	-3.5424602	-3.445(.180)	0	-0.122144	-5.142(.122)	50
{+1, +5}	-2.6301	-3.359(.028)*	0	-4.19193	-5.632(.005)*	0	-2.44987	-3.058(.038)	20
{+1, +10}	-2.6665	-7.246(.000)*	20	-7.71889	-6.606(.000)*	0	-2.08352	-6.979(.000)*	30
{-1, +1}	-0.3539	-2.329(.045)*	0	-4.76917	-4.189(.053)	0	-0.155557	-8.957(.012)*	66.66667
{-5, +5}	-2.3257	-1.589(.143)	18.18	-7.11926	-4.459(.001)*	18.18182	-1.77256	-.511(.620)	45.45455
{-10, +10}	-2.1726	-2.807(.011)*	28.57	-7.43085	-1.603(.125)	28.57143	-1.56585	-3.188(.005)*	42.85714

Source: Author's Own.

Table 4: Pre and Post AR: Results of Paired t-test and Wilcoxon signed-rank test

The table reports an application of Paired t-test and its non-parametric parallel, Wilcoxon Z-test, for comparing the per event abnormal returns with those post event returns for three different windows. They test whether the null hypothesis that the abnormal returns have a mean value equal to zero holds good or not.

Event Window	Full Sample (N=58)		Tender Offer (N=6)		Open market Offer (N=52)	
	T (p-values)	Z (p-values)	T (p-values)	Z (p-values)	T (p-values)	Z (p-values)
-1 to +1	.135(.893)	.868	-1.316(.245)	.173	.313(.756)	.649
-5 to +5	1.787 (.148)	.225	1.030(.361)	.345	3.499(.325)	.443
-10 to +10	2.597(.299)	.437	2.193(.556)	.569	1.668(.130)	.203

Source: Author's Own.

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The conclusion holds good as the cumulated returns (of all buyback companies) for windows $\{-5, +5\}$ and $\{-10, +10\}$ turn out to be around negative $(-1\%$ and -2% respectively) for more than 30% of the companies, thus indicating no change in the trend from pre announcement to post announcement period and nullifying the signaling hypothesis.

The sample buyback companies were further examined to explore any possible association between pre and post returns as a result of buyback announcement. The table above presents the results of paired t-test and its non-parametric parallel, wilcoxon signed rank test. It can be observed that for the immediate event window $\{-1 \text{ to } +1\}$ the market did not witness any significant change in returns for the entire sample. The pattern remained the same for entire sample companies going for buyback either through tender offer or open market in short duration as well $\{-5 \text{ to } +5\}$. Also, the relatively long window of $\{-10 \text{ to } +10\}$ days indicated the no significant difference in the returns. The momentum of the share price adjustment to buyback announcements indicated that the markets did not consider buybacks by Indian companies as a significant signal of managerial information. The results are inconsistent with signaling evidences of prior studies that found the average repurchasing firm experiences very positive abnormal returns.

Whatever be the mode of buyback, studies on share buy-backs undertaken in the United States have the strongest empirical support for information signaling (Lamba, 2000). But the scene is a little inconsistent in the Indian context. While Purohit, et al (2012) could not find any association of the abnormal returns with the announcement of buy-back of shares, Gupta (2006) and Mohanty's (2002) found a positive CAR around the announcement. However, the results for this study have been found to be in tandem with the studies of Hertz, 1991; Roosenboom et al., 2001; Cook et al., 2004, which could not find evidence of abnormal returns associated with the announcement of buy-back of shares in the Indian capital market, resulting in the

acceptance of the hypothesis of insignificant (zero) share price response to share buyback announcements. Thus, buybacks in India have failed to create an impact in the minds of the investors.

CONCLUSION

Buybacks are viewed as an important piece of information to signal undervaluation of shares by effecting a positive change into their stock prices. However, the study failed to find any response to second their results. A negative terrain of statistically significant abnormal returns has been witnessed for the companies both before and after the buyback announcement. The markets reacted in similar fashion for buybacks administered through tender offer as well as open market offer. It has been viewed that the company announced buyback with a motive of furthering a positive signal to the market of private information revealed by the companies. But, the market reacted in complete contradiction of the signaling hypothesis. The results have been found to be in tandem with another study conducted by Purohit et al. (2012) which could not find evidence of abnormal returns associated with the announcement of buy-back of shares in the Indian capital market. Similar to our study this paper also analyzed the impact of mode of buy-back. No significant impact of mode of buy-back was seen from analysis. The investors did not perceive it as an information signal worth reacting and continued with the previous trend of prices, thus having no significant impact on the minds of the investors.

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BIOGRAPHIES

Shaveta Gupta, Ph.D. is Assistant Professor, Department of Finance, Apeejay Institute of Management Technical Campus, Jalandhar. She has done Ph.D on "Management Considerations and Factors Affecting Dividend Decisions: a Study of Selected Companies in India" from Punjab Technical University, Kapurthala. She did her MBA in Finance from Gian Jyoti Institute of Management and Technology, Mahali and Bachelor of Commerce from Sikh National College, Banga. She has also done Diploma in Business Finance from ICFAI. She has ten years of teaching experience. Her research papers have been published in journals of repute like *Global Business Review* (International Management Institute, New Delhi), *Asia Pacific Journal of Management Research and Innovation* (Asia Pacific Institute

of Management, New Delhi), *IMS-Manthan* (Institute of Management Studies, Noida), *Effective Management-A Key to Growth* (Punjab Agriculture University, Ludhiana), *Chartered Secretary(ICS)*, *Chartered Accountant (ICAI)*, New Delhi). Her research interests are in the areas of Capital Structure, Capital Budgeting and Dividend Decisions, Security Analysis and Portfolio Management, Working Capital Management and Changing Business Scenario.

Neha Kalra is Assistant Professor, Department of Finance, Apeejay Institute of Management Technical Campus, Jalandhar. She is pursuing Ph.D on "Determinants and Implications of ESOPs: A Study of Indian Corporate Sector" from Punjab Technical University, Kapurthala. She did her MBA in Finance from Apeejay Institute of Management Technical Campus, Jalandhar and Bachelor of Commerce from Apeejay College of Fine Arts, Jalandhar. She has four years of teaching experience. Her research papers have been published in reputed journals like *Global Business Review* (International Management Institute, New Delhi), *Asia Pacific Journal of Management Research and Innovation* (Asia Pacific Institute of Management, New Delhi), *Effective Management-A Key to Growth* (Punjab Agriculture University, Ludhiana). Her research interests are in the areas of Capital Structure, Capital Budgeting and Dividend Decisions, Security Analysis and Portfolio Management, Working Capital Management and Changing Business Scenario.

Rajesh Bagga, Ph.D. is Professor and Director, Apeejay Institute of Management Technical Campus, Jalandhar. He has done Ph.D on "A Comparative Study of Opportunities, Growth and Problems of Women Entrepreneurs" from Himachal Pradesh University, Shimla. He did his LLB and M.Com from Punjabi University, Patiala. He has around twenty years of teaching experience. He has co-authored two books on Accounting for Management. His research papers have been published in reputed journals like *Global Business Review* (International Management Institute, New Delhi), *Asia Pacific Journal of Management Research and Innovation* (Asia Pacific Institute of Management, New Delhi), *IMS-Manthan* (Institute of Management Studies, Noida) and *Effective Management-A Key to Growth* (Punjab Agriculture University, Ludhiana). His research interests are in the area of Capital Budgeting, Security Analysis and Portfolio Management, Working Capital Management and Changing Business Scenario.

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ANNEXURE 1: List of Companies and Announcement Dates for Share Buyback

S. No.	Date of Announcement	Company Name	Mode of Buyback	S. No.	Date of Announcement	Company Name	Mode of Buyback
1	January 13, 2010	FDC Limited	Open Offer	30	November 02, 2011	Bhagyanagar India Limited	Open Offer
2	February 18, 2010	Poddar Pigments Limited	Open Offer	31	November 02, 2011	Rain Commodities Limited	Open Offer
3	February 22, 2010	Gee Cee Ventures Limited	Tender Offer	32	November 08, 2011	De Nora India Limited	Open Offer
4	February 22, 2010	Kilburn Engineering Limited	Open Offer	33	November 08, 2011	Jindal Poly Films Limited	Open Offer
5	March 04, 2010	TIPS Industries Limited	Open Offer	34	November 11, 2011	Gemini Communication Limited	Open Offer
6	May 10, 2010	Manaksia Limited	Open Offer	35	November 16, 2011	SoftSol India Limited	Open Offer
7	July 07, 2010	Panacea Biotech Limited	Open Offer	36	November 18, 2011	Borosil Glass Works Limited	Open Offer
8	August 16, 2010	Hindustan Unilever Limited	Open Offer	37	November 24, 2011	Amtek Auto Limited	Open Offer
9	August 18, 2010	Consolidated Securities Limited	Open Offer	38	November 24, 2011	Avantel Limited	Open Offer
10	October 22, 2010	Crisil Limited	Open Offer	39	December 13, 2011	Praj Industries Limited	Open Offer
11	November 16, 2010	Navin Fluorine	Tender Offer	40	December 15, 2011	CRISIL Limited	Open Offer
12	November 24, 2010	Sasken Communication Technologies Limited	Open Offer	41	December 19, 2011	Infinite Computer Solutions (India) Limited	Open Offer
13	December 10, 2010	Piramal Healthcare Limited	Tender Offer	42	December 28, 2011	Ansal Housing and Construction Limited	Open Offer
14	December 28, 2010	Buyback offer of India Infoline Limited	Open Offer	43	December 29, 2011	India Bulls Real Estate Limited	Open Offer
15	January 03, 2011	ABG Infralogistics Limited	Tender Offer	44	January 10, 2012	Valiant Communications Limited	Open Offer
16	January 03, 2011	Lakshmi Machine Works Limited	Open Offer	45	January 25, 2012	Reliance Industries Limited	Open Offer
17	January 28, 2011	Hindustan Composites Limited	Open Offer	46	January 30, 2012	Geecee Ventures Limited	Open Offer
18	February 14, 2011	FDC Limited	Open Offer	47	February 28, 2012	Monnet Ispat and Energy Limited	Open Offer
19	March 01, 2011	Balrampur Chini Mills Limited	Open Offer	48	April 03, 2012	Rain Commodities Limited	Open Offer
20	March 22, 2011	SRF Limited	Open Offer	49	April 13, 2012	Zee Entertainment Enterprises Limited	Open Offer
21	March 25, 2011	HEG Limited	Open Offer	50	April 27, 2012	Sasken Communication Technologies Limited	Open Offer
22	April 06, 2011	Reliance Infrastructure	Open Offer	51	May 25, 2012	Akzo Nobel India Limited	Tender Offer
23	April 11, 2011	Allied Digital Services Limited	Open Offer	52	June 05, 2012	LKP Finance Limited	Open Offer
24	May 11, 2011	Deccan Chronicle Holdings Limited	Open Offer	53	July 31, 2012	TIPS Industries Limited	Open Offer
25	May 26, 2011	Amrutanjan Health Care Limited	Tender Offer	54	August 22, 2012	Kanoria Chemicals and Industries Limited	Open Offer
26	June 15, 2011	PVR Limited	Open Offer	55	August 24, 2012	FDC Limited	Open Offer
27	July 20, 2011	ECE Industries Limited	Open Offer	56	September 25, 2012	Selan Exploration Technology Limited	Open Offer
28	August 30, 2011	Amtek Auto Limited	Open Offer	57	October 05, 2012	Rain Commodities Limited	Open Offer
29	October 05, 2011	Eon Electric Limited	Open Offer	58	November 12, 2012	Mastek Limited	Open Offer