




“Trading strategy using share buybacks: evidence from India”

AUTHORS

Asheesh Pandey  <https://orcid.org/0000-0002-4637-7378>
Vandana Bhama  <https://orcid.org/0000-0002-3575-8378>
Amiya Kumar Mohapatra  <https://orcid.org/0000-0003-3963-5997>

ARTICLE INFO

Asheesh Pandey, Vandana Bhama and Amiya Kumar Mohapatra (2020). Trading strategy using share buybacks: evidence from India. *Investment Management and Financial Innovations*, 17(2), 169-182. doi:[10.21511/imfi.17\(2\).2020.14](https://doi.org/10.21511/imfi.17(2).2020.14)

DOI

[http://dx.doi.org/10.21511/imfi.17\(2\).2020.14](http://dx.doi.org/10.21511/imfi.17(2).2020.14)

RELEASED ON

Monday, 15 June 2020

RECEIVED ON

Tuesday, 25 February 2020

ACCEPTED ON

Wednesday, 20 May 2020

LICENSE



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

JOURNAL

"Investment Management and Financial Innovations"

ISSN PRINT

1810-4967

ISSN ONLINE

1812-9358

PUBLISHER

LLC “Consulting Publishing Company “Business Perspectives”

FOUNDER

LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

42



NUMBER OF FIGURES

11



NUMBER OF TABLES

4

© The author(s) 2024. This publication is an open access article.



BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine
www.businessperspectives.org

Received on: 25th of February, 2020

Accepted on: 20th of May, 2020

Published on: 15th of June, 2020

© Asheesh Pandey, Vandana Bham, Amiya Kumar Mohapatra, 2020

Asheesh Pandey, PhD, Professor of Finance, Fortune Institute of International Business, Delhi, India. (Corresponding author)

Vandana Bham, PhD, Assistant Professor (Finance & Accounting), FORE School of Management, New Delhi, India.

Amiya Kumar Mohapatra, PhD, Associate Professor of Economics, Fortune Institute of International Business, New Delhi, India.



This is an Open Access article, distributed under the terms of the [Creative Commons Attribution 4.0 International](https://creativecommons.org/licenses/by/4.0/) license, which permits unrestricted re-use, distribution, and reproduction in any medium, provided the original work is properly cited.

Conflict of interest statement:

Author(s) reported no conflict of interest

Asheesh Pandey (India), Vandana Bham (India), Amiya Kumar Mohapatra (India)

TRADING STRATEGY USING SHARE BUYBACKS: EVIDENCE FROM INDIA

Abstract

The efficient market hypothesis states that in the efficient markets, participants cannot make extra-normal returns by exploiting any publicly available information. However, traders are constantly looking to exploit publicly available information to generate abnormal returns for themselves and their clients. One such event is share buyback announcement, which traders can utilize to create profitable trading strategies. The authors undertake the present study to examine if share buyback announcements provide profitable trading strategies to traders. Event study methodology has been adopted to analyze buyback announcements by Indian companies from January 2012 to December 2018. Forty-one (41) day window period comprising of 20 days pre-event, an announcement day, and 20 days post-event period is created to analyze the risk-adjusted average abnormal returns. The empirical findings suggest that there are negligible trading opportunities available for investors post announcements. However, significant risk-adjusted returns are found in the pre-event window, indicating that if investors can predict buyback announcements, they may earn extra-normal returns. The study confirms that Indian stock markets are in the semi-strong form of efficiency. The study also provides a profitable trading strategy for investors in the pre-event window. Finally, it also draws the regulators' attention to see if insider trading could be the reason for abnormal returns in the pre-event window. The authors conclude the results by confirming that Indian markets are semi-strong in market efficiency and by indicating regulatory interventions to control insider trading.

Keywords

share buyback, semi-strong market efficiency, event study, trading strategy

JEL Classification

G14, G12, G35

INTRODUCTION

The practice of share repurchases can be traced back to the late 1960s when U.S. companies started the practice; however, it gained momentum only in the 1980s and has become a constant feature of corporate announcements in recent decades (Vermaelen, 2005). Various motives have been assigned to share buybacks, and the prominent among them is the "Signaling Hypothesis," which states that as managers tend to have more information than investors they provide a signal to the market through their buyback announcements (Vermaelen, 1981; Comment & Jarrell, 1991; McNally & Smith, 2006). Another major empirically observed reason is "Agency Cost Hypothesis," which states that by providing surplus cash to shareholders, the agency cost gets reduced, and chances of takeover are also less (Jensen, 1986; Fenn & Liang, 1997; Lie, 2000). Another rationale provided in literature of buyback is the "Leverage Hypothesis," which states that buybacks are announced to adjust the capital structure to its optimum leverage (Tsetsekos, Kaufman, & Gitman, 1991; Dixon, Palmer, Stradling, & Woodhead, 2008). One of the prominent reasons of share buybacks is the "Substitution Effect," which states that buybacks are done in place of dividends wherein companies do not have to change their regu-

lar dividend policies and can announce repurchases to distribute surplus cash among shareholders (Asquith & Mullins, 1986; Gullon & Michaley, 2002; Jagannathan, Stephens, & Weisbach, 2000).

The result of allowing buybacks to pay them in place of dividends or adjusting capital structure has opened a new area of research in terms of observing their influence on share prices. Researchers have investigated the buyback effect on share price and have documented evidence that buybacks do affect stock prices (Hertzel, 1991; Ervin & Miller, 1998; Akhgbe & Madura, 1999; Miller & Shanker, 2005).

The majority of the literature evidenced in India has analyzed the share buyback impact on the stock prices using the event study approach. The number of years studied for buyback and its impact on stock returns in India's existing literature has been limited (Gupta, 2018; Bhargava & Agrawal, 2015; Chatterjee & Mukherjee, 2015; Hyderabad, 2009). Studies have been done to test the semi-strong form of market efficiency with regards to other publicly available information liked stock splits, bonus shares, and dividend payouts, to name a few. However, a limited number of studies have been done to test a semi-strong form of market efficiency using share buybacks.

Moreover, prior Indian studies on examining the buyback impact on share prices have been done for a shorter time spanning up to three to four years. It provides a scope to carry out a detailed study on buybacks to cover a longer time, including the recent period. Studying an impact of buybacks over a longer period would provide more reliability to this study. Another identified area is the creation of small windows to conduct a rigorous analysis, which has been lacked in the majority of the existing studies done for India.

Thus, to fill the research gap mentioned above, this paper conducts an event study to analyze if share buyback announcements provide a profitable trading strategy to investors in the Indian context. As a corollary, the study examines the semi-strong form of market efficiency for Indian capital markets.

1. LITERATURE REVIEW

In mature markets, buybacks were formally allowed during the 1990s, starting from US and UK, after which various countries of the European Union also followed suit by making appropriate amendments in their existing laws. For example, provisions relating to buyback were incorporated in Denmark in 1995, Finland, and Poland in 1997, France and Germany in 1998, and Norway in 1999.

Similarly, until 1998, buybacks in India were prohibited under the Companies Act 1956. In 1998, amendments were made in Sections 77A, 77AA, and 77B in the Act, which allowed share buyback by Indian companies. Further to operationalize it, the capital market regulator in India, Securities and Exchange Board of India (SEBI), framed the SEBI (Buyback of Securities) Regulation 1999, and Department of Companies Affairs framed Private Limited Company and Unlisted Company (buyback of securities) Rules 1999 to allow private companies to buy back shares. SEBI

allows Indian companies to announce buybacks through Open Market Repurchases (OMR) or Fixed Price Tender (FPT) offers. Apart from it, several other methods are also allowed by SEBI like reverse right issues, reverse book building (which are named as Dutch Auction in US), odd lot shares, and purchase of employee stock options. However, leveraged buybacks, i.e., issuing debt to execute buyback, is not allowed in India. Till about a few years back, there was not much activity found in the buyback space in India (see Table 1). However, in the past few years, buyback activity has shot up in India mainly owing to the tax benefit which shareholders get in comparison to dividends wherein dividend distribution tax should be paid by companies. On the contrary, the tax on buyback income is taxed as capital gains tax, which is charged at 10% plus surcharge. However, in the budget presented on July 5, 2019, the Finance Minister of India proposed amendments to the buyback provisions related to listed companies. Provisions, if accepted, would introduce the effective tax on buyback to 20% (plus

surcharge and cess), which could derail the buyback process by Indian companies in the near future.

The share buybacks and dividends aim to reward shareholders by repaying surplus cash to them; however, the signaling role of these two is different (Asquith & Mullins, 1986). Generally, the share buybacks indicate that stocks' undervaluation and the offering of dividends suggest a firm's promising future. The reaction of a market is more favorable to the equity buyback announcements than the dividend offering announcements. This indicates the strength of the signaling power of equity buyback announcements by firms (Thirumalvalavan & Sunitha, 2006). In the last many years, the frequency of buybacks has increased and become more concentrated. This has a substantial positive effect on earnings per share of the companies (Horan, 2012).

Firms generally repurchase stock in the situations of distributing excess/idle cash (Dittmar, 2000) or because of stock price undervaluation (Brockman & Chung, 2001; Peyer & Vermaelen, 2007), or due to lack of investment opportunities (Grullon & Michaely, 2004) or to indicate robust future performance (Lie, 2005), or to boost earnings per share by diluting the effect of stocks options (Bens, Nagar, Skinner, & Wong, 2003) or perceiving the high risk of takeovers by other firms in the market (Doan, Yap, & Gannon, 2012).

To conduct a buyback, firms can either opt for a tender offer price or open market purchases. A plethora of literature evidence indicates that equity buybacks provide benefits to investors by creating a positive signal for the economy. However, the open market purchases convey weak signals due to the inflexibility of this option and, thus, lack commitment for the investors (Chan, Ikenberry, Lee, & Wang, 2010). Li and McNally (1999) think firms prefer that tender offer in the situations of financial slack and when a vast majority of shareholders monitor the performance of management. On the other hand, open market repurchases are chosen when there are weak business scenarios and instability in the market.

In the Indian context, the announcements related to tender offers have provided more returns to the investors vis-a-vis open market repurchases (Hyderabad, 2009a). Unlike the tender offer, Gupta

(2018) also notes that open-market repurchases have a weak signaling impact on the share prices. Hence, this leads to a contradiction of market reaction for equity buyback to the signaling hypothesis. Market discounts the information in advance and, thus, the information reflects in the existing share prices. This shows that Indian markets have become mature and efficient with time. The market reaction in the case of open market buybacks is much more influenced by free cash flow proposition. The findings of Rajagopalan and Shankar (2013) indicate a semi-strong form of efficiency for buyback announcements in the Indian stock market.

Exploring the price reaction of share buyback announcement in the Indian market, Mishra (2005) observed the oversubscription of stocks for those firms, which offered buyback prices at a premium. After the buyback, he observes a significant fall in the stock prices. Thirumalvalavan and Sunitha (2006) noted high abnormal returns for two days after the announcement, indicating a positive market reaction for the equity repurchase announcement. Thus, markets show an immediate jump in the prices, which provide abnormal returns; however, the tenure of these returns is very short. Hence, these announcements should be considered as a strategy to gain returns only for a shorter period (Rajlaxmi, 2013). Chavali and Shemeem (2011) find average abnormal returns (AAR) of 1.07% and cumulative average abnormal returns (CAAR) of 1.59% on the buyback announcement, indicating a short gain for a single day. A sustainable rise in the price of the security for long could not be ensured after the buyback announcement (Mishra, 2005).

Hyderabad (2009) observed that AAR was highly negative before the announcement day, compared to the days closer to the announcement. The author observed that the large chunk of buybacks does not have any relationship with the announcement returns in any year. Moreover, cumulative average returns (CAR) has been noted to be negative when buybacks were limited in few years. Further, Hyderabad (2009a) studied the buyback effect from 1999 to 2007 and found a transient positive share price effect on the announcement date. Extending the study for more years, Hyderabad (2009b) examined market reaction to multiple buybacks. The response to multiple offers was in contrast to the signaling hypothesis in a

way that CAR was found to be a negative and insignificant post announcement (Ishwar, 2010) and observes that the majority of positive return impact was observed during the pre-event window period. The perspective is that market anticipates the information and incorporates the same before the announcements. Therefore, the announcement information does not support the undervaluation by providing significant AAR on the day of the announcement.

Testing the signaling effect, Gupta, Kalra, and Bagga (2014) find an insignificant impact of buyback news on the stock prices. Chatterjee and Mukherjee (2015) think that repurchases do not convey much information to the market due to the major stake of owners or promoters in the equity, which derives the ownership structure. Therefore, buyback announcements have a limited role in reviving the share prices. Analyzing the repurchase announcement impact of financially constrained firms, Chen and Wang (2012) observed insignificant abnormal returns and operational performance after the announcement.

Thus, from the above literature, it can be observed that there is a scope to measure the effect of buyback announcements on stock returns for a short-time period. This study fills this important research gap using seven-year buyback data for 136 companies in the Indian context.

2. METHODOLOGY

Data of 180 Indian companies, which announced buyback data from January 2012 to December 2018, have been taken to conduct this study. Out of the total sample of 180 companies, the data of five companies were not available; hence, the sample size has been reduced to 175. Further, 39 companies were subject to elimination due to sample selection criteria (given further). Finally, 136 firms were selected for the final analysis (see Table 1). A capital line database has been used to obtain financial facts. To find out expected returns, monthly adjusted closing prices of the sample companies and monthly data on BSE 500 Index have been taken from July 2011 to December 2018 from the capital line database. The daily prices have been converted into returns to perform further estimations.

To examine the effect of share buybacks on stock returns, pure announcements have been considered, and certain other announcements have not impacted these pure announcements during the chosen event window. Therefore, companies with the effect of other announcements during the event window are excluded from the study. Other announcements can include dividend announcements, new product launches, and announcement of takeover, to name a few. These events could probably affect the share prices of the company during the event window. Therefore, it becomes critical to remove firms, with multiple announcements during the event window, from the study to examine the isolated impact of the share buyback on stock returns. Hence, the share buyback announcements of the sample companies have been included if they meet the following criteria as has been done in prior research (McWilliams & Seigel, 1997; Mackinlay, 1997; Anwar, Singh, & Jain, 2017):

1. The company must be trading for at least two years on the BSE before the buyback announcement.
2. The buybacks are for ordinary shares.
3. Each sample company must have traded at a minimum period of 192 trading days, and its price should be available daily.
4. No other major announcements like that of dividend announcements, acquisitions, mergers and takeovers, stock split, etc. should have been made during the event window.
5. Financial results should not have been declared during the event window.

Table 1. Number of buybacks each year

Year	Number of companies*	%
2012	14	10.29
2013	18	13.23
2014	9	6.62
2015	6	4.43
2016	24	17.64
2017	26	19.12
2018	39	28.67
Total	136	100

Note: *Numbers are given after filtering the data for each year.

Event study has been used as a standard methodology to examine market reactions after important corporate announcements like bonus shares, dividends, mergers and acquisitions, and stock splits, to name a few. The methodology helps in evaluating how securities perform during the announcement of a certain corporate event. That event may negatively or positively affect the stock returns. The current study examines the impact of another important corporate event, i.e., share buyback on security's return (Mishra, 2005; Ishwar, 2010; Rajgopalan & Shanker, 2013; Gupta, 2018). The behavior of stock returns around buyback of shares would help test the event's informational content and the applicability of signaling hypothesis in Indian market. The present study has been conducted to assess the economic impact by examining stock prices around an event, i.e., buyback of shares, for shorter time duration (Mackinlay, 1997).

This is a standard methodology, which has been adopted by researchers for estimating abnormal returns in prior literature. The variables required are event of interest, event window, estimation window, and model of estimation, as has been used by Bowman (1983). To find out expected or normal returns, the 'market model' has been employed. Abnormal returns are estimated by subtracting expected returns from the observed daily returns.

Event of interest

In this study, the event of interest has been taken as the announcement of share buyback. The announcement date has been taken as the first

official announcement by the sample companies' board of directors.

Event window

The event window is the period during which the returns have been examined. The event window, in this case, is 41 days, i.e., 20 days before the announcement (AD-20), the announcement date (AD) denoted as day zero, and 20 days after the announcement (AD+20). To perform the detailed analysis, event windows of different periods are created.

Estimation window

Expected returns are estimated through this window. One hundred fifty days before event window is taken as an estimation window. It means the estimation window is from -171 to -21. It ensures that expected returns are not affected by returns related to the event.

Market model, as adopted by Anwar, Singh, and Jain (2017), is used to estimate expected returns. BSE500 Index has been used to proxy for the market, and the expected or normal returns have been calculated as per equation (1):

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + e_{i,t}, \quad (1)$$

where α and β are the coefficients of intercept and market factor, $R_{i,t}$ is the expected return on stock i at time t , $R_{m,t}$ is the market return, which is represented by BSE 500 Index, and $e_{i,t}$ is the error term.

The abnormal return (AR) of each firm per day is estimated as per equation 2:

Source: Compiled by the authors.

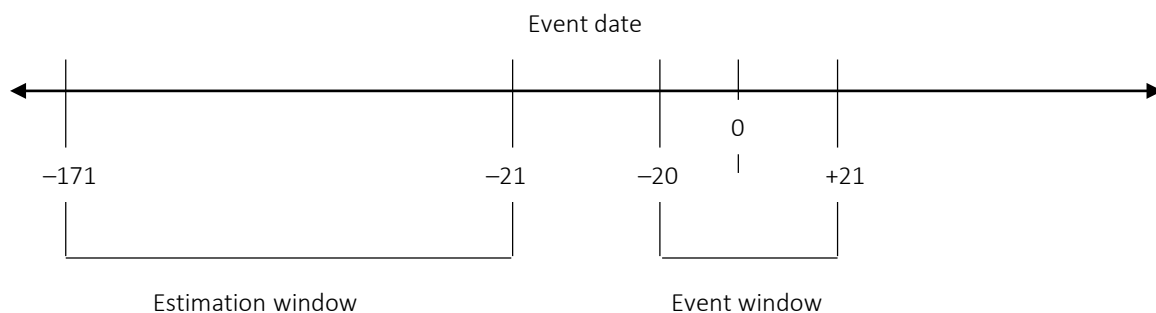


Figure 1. Event study timeline (in days)

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{m,t}). \quad (2)$$

The Average Abnormal Return (AAR) is estimated by totaling the abnormal returns of all the sample firms on each day and averaging them out, as given in equation 3:

$$AAR = \frac{1}{N} \sum_{i=1}^N AR_{i,t}, \quad (3)$$

where N is the number of companies.

Next, CAARs (Cumulative Average Abnormal Returns) are estimated to determine the combined effect of an event during a given time. CAAR (Cumulative Average Abnormal Return) is the aggregate total of daily AARs for the pre-identified period that starts at period 1, i.e., t_1 , and continues till period 2, i.e., t_2 . It is also termed as event window (t_1, t_2) given in equation 4:

$$CAAR_i(t_1, t_2) = \frac{1}{N} \sum_{t=t_1}^{t_2} AR_{i,t}. \quad (4)$$

Standard deviations are estimated using time series of AARs as given in equation 5:

$$\sigma(AAR_t) = \frac{1}{150} \sum_{t=-171}^{-21} \frac{(\overline{AR_t} - \overline{AR})^2}{148}, \quad (5)$$

where

$$\overline{AR} = \frac{1}{150} \sum_{T=-171}^{-21} \overline{AR_t},$$

$$AR_t = \frac{1}{N} \sum_{j=1}^N AR_{j,t},$$

t -statistics to perform hypothesis testing for AAR on the day t during the event period, as well as for CAAR for the event window (t_1, t_2) have been given in equations 6 and 7, respectively:

$$t\text{-statistic} = \frac{AAR}{\sigma(AAR_t)}, \quad (6)$$

$$t\text{-statistic} = \frac{CAAR_t}{\sqrt{t_2 - t_1 + 1} \sigma(AAR_t)}. \quad (7)$$

To check the normality of data, the one-sample Kolmogorov-Smirnov test has been used. The test

value is 0.2489, which is equivalent to critical value at 5%, indicating the normality of data.

3. RESULTS AND DISCUSSION

3.1. Descriptive statistics

Table 2 presents the descriptive and statistical data of abnormal returns due to the sample firms' buyback announcement effect. The table contains AAR and CAAR values, along with their t -statistics, for the 41 days event window period. The values corroborate that buyback announcements have not generated many abnormal gains to the shareholders. The AAR values are significant from -3 to -1 days in a window. This reveals that the returns are significant for the preceding three days before the announcement; however, the returns are not greater than 2 percent throughout the window. It is evidenced that investors anticipate and discount information in advance before the announcement, which reflects in the share prices. However, the discounting has not many implications in the share prices to obtain abnormal returns and, thus, the announcement information does not support the undervaluation by providing significant AAR on the day of the announcement (Ishwar, 2010).

3.2. Price reaction to announcement

Share buybacks typically boost share prices by improving investor confidence in the company, at least for a shorter period. However, it is observed that sample stocks generate negligible extra-normal returns before the announcements, and post-announcement results are insignificant. These results are in tune with the findings of Gupta (2018) who states that repurchases have a weak signaling impact on the stock prices. Thus, there is a contradiction of signaling theory and market reaction to buyback offer announcements. The authors further find that the CAAR values are initially negative, followed by subsequent positive returns. It is detected that the maximum value of CAAR can be observed on the first day after the announcement with the highest value of up to 6 percent. After that, a declining trend in CAAR values is found; however, they remain statistically significant. This downfall in returns could have

Table 2. Average abnormal returns (AAR) statistics

Day	AAR (%)	t-statistic	CAAR (%)	t-statistic	Median Abnormal Returns (MAR)	Min	Max	Skew	Kurtosis	SD
-20	-0.003	-0.747	-0.003	-0.747	-0.004	-0.052	0.066	0.620	1.092	0.020
-19	0.002	0.589	-0.001	-0.111	-0.001	-0.045	0.088	0.959	2.371	0.021
-18	-0.002	-0.682	-0.003	-0.484	-0.003	-0.057	0.068	0.362	1.369	0.022
-17	0.000	0.072	-0.003	-0.384	-0.003	-0.050	0.088	1.095	2.499	0.022
-16	0.002	0.426	-0.001	-0.153	-0.001	-0.060	0.070	0.453	0.912	0.022
-15	0.001	0.367	0.000	0.011	0.001	-0.060	0.082	0.316	1.872	0.023
-14	0.001	0.359	0.001	0.145	-0.001	-0.051	0.066	0.572	0.509	0.023
-13	-0.001	-0.240	0.001	0.051	-0.004	-0.051	0.081	0.953	1.410	0.025
-12	0.004	0.995	0.004	0.380	0.000	-0.052	0.076	0.765	1.290	0.021
-11	0.003	0.762	0.007	0.602	0.000	-0.049	0.058	0.478	0.839	0.021
-10	0.002	0.442	0.008	0.707	0.000	-0.058	0.053	-0.077	0.701	0.021
-9	0.001	0.305	0.009	0.765	0.000	-0.052	0.084	0.508	0.854	0.025
-8	0.001	0.296	0.010	0.817	0.001	-0.057	0.074	0.239	1.503	0.021
-7	0.000	0.051	0.011	0.801	-0.003	-0.058	0.089	0.967	2.596	0.024
-6	0.004	1.212	0.015	1.086	0.000	-0.048	0.079	0.695	0.929	0.022
-5	0.002	0.521	0.017	1.182	0.000	-0.050	0.084	0.634	1.010	0.024
-4	0.002	0.606	0.019	1.294	0.002	-0.060	0.067	-0.130	0.056	0.026
-3	0.010	2.874***	0.029	1.934*	0.008	-0.052	0.087	0.684	0.707	0.027
-2	0.016	4.384***	0.045	2.889***	0.014	-0.057	0.086	-0.014	-0.065	0.029
-1	0.011	3.173***	0.056	3.525***	0.009	-0.051	0.089	0.460	0.648	0.026
0	0.002	0.534	0.058	3.557***	0.002	-0.056	0.068	0.226	-0.549	0.028
1	0.002	0.543	0.060	3.591***	-0.005	-0.057	0.089	0.472	-0.356	0.034
2	-0.002	-0.540	0.058	3.399***	-0.003	-0.056	0.058	0.341	0.006	0.023
3	-0.003	-0.725	0.055	3.179***	-0.003	-0.051	0.084	0.630	1.488	0.023
4	0.000	0.127	0.056	3.141***	-0.001	-0.050	0.068	0.490	1.037	0.021
5	0.002	0.471	0.057	3.172***	0.000	-0.047	0.058	0.618	1.389	0.018
6	0.001	0.290	0.058	3.168***	0.000	-0.055	0.084	1.051	3.794	0.019
7	0.000	0.065	0.059	3.124***	-0.001	-0.057	0.063	0.417	1.749	0.019
8	-0.002	-0.456	0.057	2.985***	-0.002	-0.055	0.056	0.170	1.564	0.018
9	0.000	-0.121	0.057	2.912***	-0.002	-0.059	0.060	0.057	1.923	0.020
10	-0.001	-0.183	0.056	2.832***	-0.001	-0.037	0.045	0.532	0.762	0.016
11	0.000	0.030	0.056	2.793***	0.001	-0.053	0.061	0.181	1.735	0.018
12	0.002	0.581	0.058	2.851***	0.000	-0.050	0.063	0.701	1.888	0.018
13	0.001	0.184	0.059	2.841***	0.001	-0.041	0.052	0.114	0.610	0.017
14	0.001	0.354	0.060	2.860***	-0.002	-0.042	0.089	1.353	3.664	0.019
15	-0.001	-0.413	0.058	2.751***	-0.003	-0.054	0.056	0.414	1.778	0.018
16	-0.002	-0.539	0.057	2.625***	-0.002	-0.054	0.053	0.181	2.076	0.016
17	0.000	0.117	0.057	2.609***	-0.002	-0.044	0.075	0.762	2.451	0.019
18	0.000	0.008	0.057	2.577***	-0.001	-0.054	0.068	0.870	2.142	0.019
19	0.000	-0.043	0.057	2.537**	-0.002	-0.058	0.087	1.277	4.898	0.019
20	0.002	0.470	0.059	2.580***	0.000	-0.061	0.086	0.969	4.227	0.019

Note: The table indicates AAR and CAAR values of buyback announcements for the period from -20 to +20. ***, ** and * indicate significance level at 1%, 5%, and 10%.

emerged due to a mismatch between the buyback price announced by the company and the investors' expectations. Thus, one does not observe any sustainable rise in returns through share buyback (Mishra, 2005). The price trend fluctuations are

subject to many variables like the condition of the market, the means and size of the offer, the offer and market price differentiation, and, lastly, the trust of the market for the management and its objective behind carrying the offer.

Table 3. Year-wise analysis of AAR results

Day	2012		2013		2014		2015		2016		2017		2018	
	AAR (%)	t-stat	AAR (%)	t-stat	AAR (%)	t-stat	AAR (%)	t-stat	AAR (%)	t-stat	AAR (%)	t-stat	AAR (%)	t-stat
-20	-0.006	-0.856	-0.008	-1.116	-0.002	-0.170	-0.005	-0.471	-0.001	-0.226	0.002	0.399	-0.002	-0.474
-19	-0.005	-0.661	0.013	1.668	0.009	0.898	0.005	0.537	-0.006	-1.003	0.005	1.291	0.001	0.130
-18	-0.006	-0.844	-0.013	-1.676	0.012	1.196	0.002	0.199	0.004	0.661	-0.002	-0.509	-0.004	-0.977
-17	0.000	-0.057	0.003	0.431	-0.007	-0.652	0.023	2.295	0.004	0.799	0.001	0.162	-0.006	-1.231
-16	0.002	0.238	0.010	1.389	-0.007	-0.728	0.000	-0.009	-0.004	-0.732	0.005	1.279	0.001	0.122
-15	-0.003	-0.460	0.007	0.951	-0.002	-0.185	-0.001	-0.061	-0.003	-0.596	-0.003	-0.662	0.007	1.498
-14	0.004	0.481	0.014	1.871	-0.017	-1.689	-0.004	-0.445	0.003	0.526	-0.001	-0.325	0.000	0.073
-13	-0.010	-1.351	0.001	0.136	0.006	0.586	-0.009	-0.887	-0.001	-0.257	0.001	0.201	0.001	0.165
-12	0.001	0.134	0.003	0.383	0.007	0.718	0.021	2.118	0.002	0.445	0.000	-0.041	0.004	0.921
-11	0.000	-0.038	0.008	1.092	0.019	1.852	0.018	1.774	-0.004	-0.688	0.005	1.264	-0.002	-0.356
-10	-0.005	-0.651	0.010	1.297	0.011	1.092	0.026	2.636	0.003	0.535	-0.005	-1.382	-0.001	-0.197
-9	0.001	0.079	0.002	0.205	0.007	0.685	0.021	2.086	0.002	0.335	0.000	-0.108	-0.003	-0.615
-8	0.005	0.703	0.004	0.493	-0.008	-0.745	0.016	1.570	-0.002	-0.409	0.001	0.244	0.000	0.011
-7	-0.005	-0.677	0.008	1.041	0.022	2.179	0.003	0.295	-0.006	-1.088	0.003	0.683	-0.004	-0.954
-6	0.000	-0.057	0.005	0.657	0.018	1.766	0.010	1.024	0.003	0.532	0.009	2.242	0.000	-0.085
-5	-0.001	-0.095	-0.012	-1.549	0.005	0.448	0.007	0.661	0.004	0.813	0.004	1.154	0.005	0.993
-4	0.015	2.007	-0.008	-1.009	-0.005	-0.480	-0.002	-0.209	-0.001	-0.188	-0.001	-0.275	0.008	1.838
-3	0.010	1.347	0.024	3.157	0.005	0.472	0.014	1.455	0.005	0.839	0.006	1.444	0.011	2.370
-2	0.022	2.966	0.015	1.949	0.030	2.957	0.006	0.570	0.015	2.643	0.009	2.311	0.017	3.625
-1	0.008	1.013	0.024	3.165	0.008	0.814	0.023	2.356	0.016	2.918	0.004	0.932	0.008	1.698
0	-0.014	-1.829	0.013	1.716	-0.001	-0.062	-0.011	-1.155	0.006	1.019	-0.007	-1.837	0.008	1.814
1	0.006	0.786	0.013	1.744	0.022	2.105	0.013	1.304	-0.017	-3.121	0.000	-0.017	0.001	0.246
2	-0.009	-1.143	0.002	0.272	0.017	1.666	-0.015	-1.471	-0.006	-1.055	0.000	0.003	-0.003	-0.613
3	-0.021	-2.750	0.008	1.051	-0.004	-0.352	-0.007	-0.689	-0.005	-0.856	0.000	0.030	-0.001	-0.110
4	-0.001	-0.096	0.007	0.914	-0.007	-0.671	0.001	0.140	-0.001	-0.225	0.004	1.025	-0.002	-0.400
5	0.000	0.002	0.006	0.805	-0.005	-0.537	0.003	0.342	-0.002	-0.431	0.006	1.663	0.001	0.194
6	-0.002	-0.226	0.005	0.716	-0.002	-0.204	-0.010	-1.016	0.004	0.799	0.001	0.352	0.000	0.030
7	0.006	0.754	0.001	0.195	0.003	0.289	-0.006	-0.559	0.006	1.041	-0.003	-0.806	-0.003	-0.743
8	-0.003	-0.445	0.002	0.277	-0.003	-0.255	0.002	0.186	-0.003	-0.554	-0.004	-1.084	-0.001	-0.118
9	-0.002	-0.205	0.002	0.310	0.000	0.007	0.003	0.352	-0.001	-0.254	-0.004	-1.069	0.001	0.229
10	-0.007	-0.984	0.000	-0.035	-0.002	-0.208	0.007	0.707	-0.002	-0.317	-0.001	-0.315	0.002	0.409
11	0.000	-0.050	0.002	0.311	0.001	0.056	0.004	0.382	-0.002	-0.372	-0.003	-0.807	0.002	0.440
12	0.010	1.326	0.009	1.233	0.002	0.238	-0.004	-0.437	-0.002	-0.378	-0.001	-0.360	0.002	0.347
13	-0.003	-0.464	0.006	0.741	-0.001	-0.089	0.004	0.417	-0.003	-0.542	-0.001	-0.344	0.003	0.706
14	-0.001	-0.084	0.006	0.778	-0.012	-1.146	0.003	0.346	-0.001	-0.219	-0.002	-0.423	0.006	1.313
15	-0.003	-0.461	0.002	0.296	0.004	0.417	-0.003	-0.327	-0.003	-0.633	0.001	0.139	-0.004	-0.785
16	-0.002	-0.273	0.001	0.175	-0.006	-0.601	-0.003	-0.339	0.001	0.113	-0.008	-2.128	0.000	0.087
17	0.004	0.569	0.005	0.675	0.006	0.565	0.006	0.602	-0.001	-0.177	0.001	0.387	-0.005	-1.110
18	-0.005	-0.654	0.004	0.497	-0.008	-0.809	0.007	0.682	-0.005	-0.843	0.001	0.215	0.003	0.697
19	0.000	0.008	0.001	0.147	0.016	1.572	0.002	0.249	-0.003	-0.462	-0.004	-1.020	-0.001	-0.221
20	0.008	1.055	0.001	0.114	0.005	0.441	0.006	0.598	0.001	0.180	0.000	-0.083	0.000	0.064

Note: The table indicates AAR values of buyback announcements for the period from -20 to +20 from 2012 to 2018.

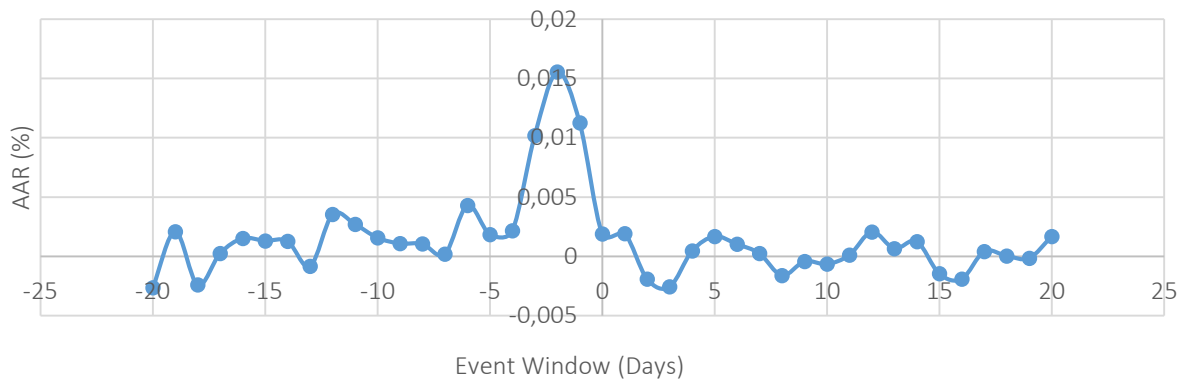


Figure 2. Average abnormal returns for 41 days

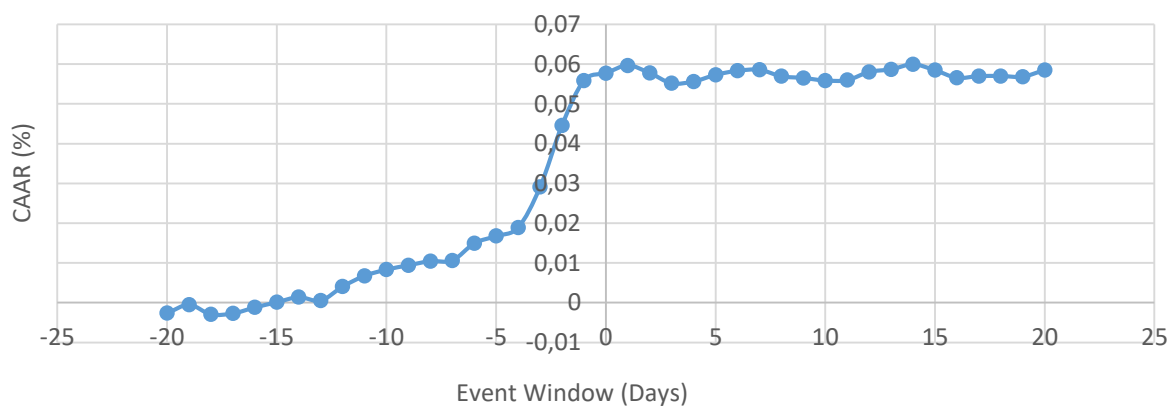


Figure 3. Cumulative average abnormal returns for 41 days

To further validate the results, the AAR values are calculated across different years in Table 3. The results indicate similar evidence for all the years, with returns exceeding not more than 3 percent in any of the sample years. The majority of the values are found to be significant before the announcement across all years. Thus, one concludes that, in the Indian context, buyback announcements have not created significant post-announcement returns for the investors, and most of the information gets discounted in prices before the announcement.

Figures 2 and 3 depict the AAR and CAAR values. The graphs show that AAR is highest between -5 to 0 days, and during the other days, negligible returns are found. Similarly, CAAR value is observed to be highest between 0 and 1 day. Thus, the authors find that investors need to buy a stock at least 5-6 days before the company's announcement and sell the same on the day of announcement to make profitable trading strategies.

3.3. Small event windows

To have the in-depth analysis of abnormal returns, small event windows are created to test the impact of buybacks on stock returns. This has been one of the major contributions as no other prior study on India has undertaken this aspect. Table 4 indicates the CAAR results of varying small windows and their corresponding *t*-statistics values. The impact of buyback announcements is measured by creating 10 small windows, i.e., (-20, -1), (-15, -1), (-10, -1), (-5, -1), (-3, -1), (-2, -1), (-1, 0), (-1, +1), (+2, +5), (+2, +10) event windows. One creates these splits due to significant price reactions before the announcement found in the first phase of the study. These event windows support in controlling for investor's advance anticipation of the event and their reactions in the stock prices. CAAR is observed to be significant for all days in a window (-20 to -1) before the repurchase announcement. The authors find that to make abnormal returns in this strategy, the window of (-15 to -1) is the most profitable due to the highest CAAR value of approximately

Table 4. CAAR for buyback announcements

Event window	CAAR (%)	t-statistic
(-20, -1)	0.055	2.987***
(-15, -1)	0.057	3.360***
(-10, -1)	0.049	2.983***
(-5, -1)	0.040	2.757***
(-3, -1)	0.036	7.531***
(-2, -1)	0.026	6.240***
(-1, 0)	0.013	1.404
(-1, +1)	0.015	1.613
(+2, +5)	-0.006	-0.594
(+2, +10)	-0.004	-0.895

Note: The table indicates CAAR values of buyback announcements for small event windows. *** indicates significance level at 1%.

Figures 4 to 11 indicate the varying price reaction due to buyback announcements.

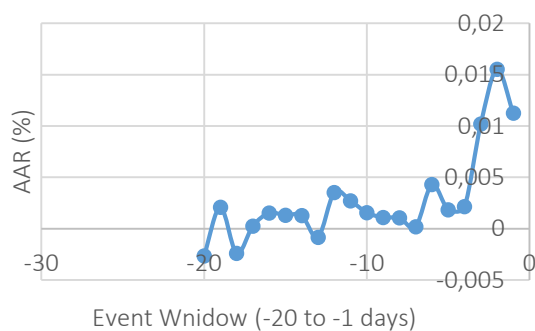


Figure 4. Average abnormal returns for the period of (-20, -1) days

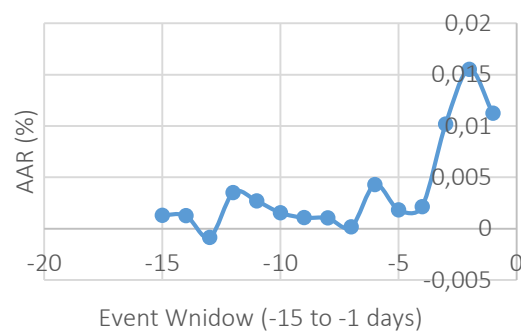


Figure 5. Average abnormal returns for the period of (-15, -1) days

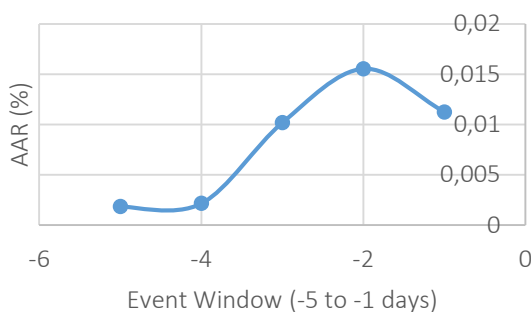


Figure 6. Average abnormal returns for the period of (-5, -1) days

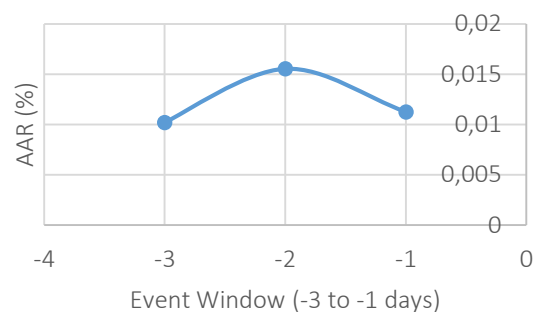


Figure 7. Average abnormal returns for the period of (-3, -1) days

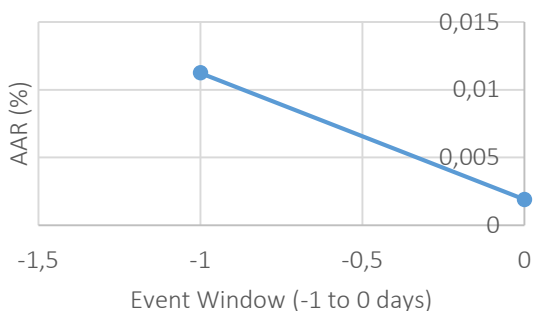


Figure 8. Average abnormal returns for the period of (-1, 0) days

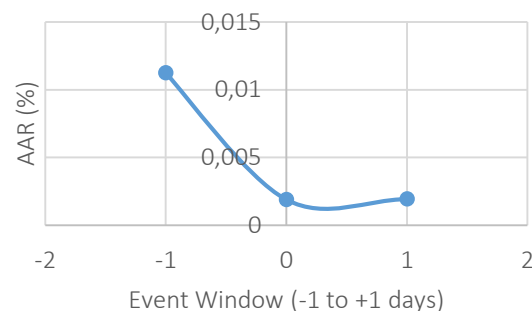


Figure 9. Average abnormal returns for the period of (-1, +1) days

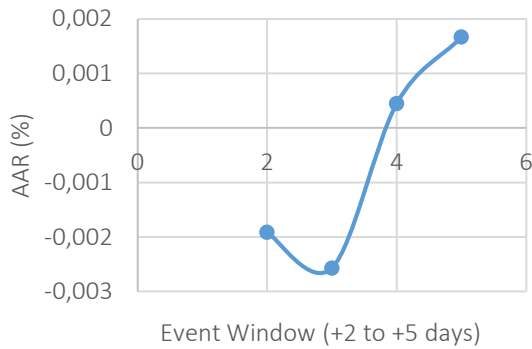


Figure 10. Average abnormal returns for the period of (+2, +5) days

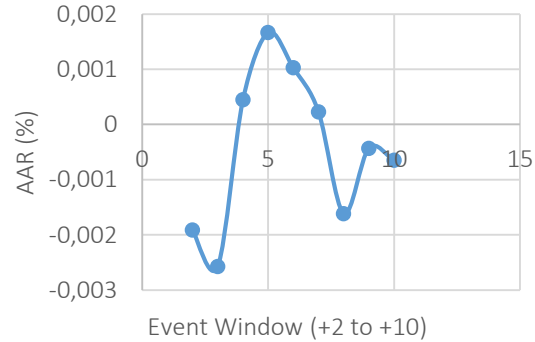


Figure 11. Average abnormal returns for the period of (+2, +10) days

6 percent. It is detected that in subsequent windows, there is a deceleration in the CAAR values. It is further observed that from announcement day, the CAAR values become statistically insignificant. Moreover, the returns are found to be negative in event windows (+2, +5) and (+2, +10). These results clearly confirm prior results that the market absorbs the buyback information before the announcement, and no scope of making any abnormal returns after the announcement is found. The significant CAAR returns before the announcement date mean that if investors want to make any extra normal returns, they will have to speculate about the buyback announcements a

few days in advance. It is also suggested that significant pre-announcement returns may be due to insiders taking advanced positions in stocks, which are about to announce buybacks. It has serious implications for regulators who may have to make stringent regulations against insider trading to protect investor interests. In the absence of any significant post-announcement returns observed in the sample data, the authors conclude that stock markets in India are in the semi-strong form of market efficiency, as propounded by Fama (1960), and buyback announcements in India do not offer any significant trading strategy to traders.

CONCLUSION

Using an event study methodology, the present study is conducted to find the impact of share buyback announcement on stock returns for a short-term period in an Indian context. The literature provides several reasons for share buybacks, which include signaling theory, boosting share price, avoiding hostile takeover, and returning excess cash to shareholders, to name a few. Using the buyback announcement of seven years by the Indian listed companies, the 41 days period is studied, i.e., 20 days before and 20 days after the announcement to examine if investors in Indian stock market can form profitable trading strategies.

The paper contributes to the literature in the following ways: There have been done adequate studies to test a semi-strong form of market efficiency using buyback announcements. However, a limited number of such studies have been undertaken in the Indian context and for a limited period. The paper contributes to the existing literature by focusing on a larger dataset, i.e., by taking a longer period of seven years of share buybacks, which none of the similar prior studies for India have undertaken. The larger dataset over a longer period provides more reliability to the results. Another important contribution of this study is that it captures the announcement effect on the stock prices by creating small windows. The formation of these windows for very short time frame helped us understand the impact of any shorter duration to generate abnormal returns as the proposed trading strategy. This study is one of the first few studies done on testing a semi-strong form of market efficiency for India over a longer period and the first study in India to test the impact of buybacks on stock returns by creating small windows.

The authors find that there is a negligible post-announcement profit-making trading strategy for the sample period. However, the pre-event window enables investors in the pre-event window to make abnormal returns. It is observed that like Gupta (2018), share buybacks neither provide any signal to the markets nor help boost shareholder returns after the buyback.

The abnormal returns in the pre-event window motivated us to further divide the event windows into small windows, especially in the pre-event period, to see if these small windows enable investors to make extra-normal returns. Cumulative returns are found to be significant in all the small windows before announcement day. This signifies that if investors can predict announcement day and purchase stock a few days before that, they may exploit this trading strategy. The findings suggest repurchase announcements should be viewed only as a trading strategy for short-term returns (Rajlaxmi, 2013).

Thus, the authors conclude that share buybacks do not provide any post-announcement profitable trading opportunity to shareholders. However, interestingly significant returns are found in the pre-event window. It confirms that Indian capital markets are in the semi-strong form of market efficiency. However, the study also raises doubt of insider trading in the Indian stock market, which needs regulatory attention.

The study has implications for investors, academia, and regulators. To investors, the findings provide a fair idea about the behavior of Indian stock markets with regards to buyback announcements. The results indicate an absence of any post-announcement profitable trading strategy for investors, and it is recommended that they should exploit some other publicly available information to make a profitable trading strategy. The paper contributes to academia by providing Indian evidence by examining buyback as an additional public announcement to test market efficiency. The authors provide evidence of the Indian stock market to be in the semi-strong form of market efficiency through the study. The study also has implications for regulators to better understand the information flow in the Indian capital market, and the results of significant pre-announcement returns suggest regulators to improve the disclosure norms in Indian capital markets.

AUTHOR CONTRIBUTIONS

Conceptualization: Asheesh Pandey.

Formal analysis: Asheesh Pandey, Vandana Bhama.

Funding acquisition: Asheesh Pandey, Vandana Bhama, Amiya Kumar Mohapatra.

Investigation: Asheesh Pandey, Amiya Kumar Mohapatra.

Methodology: Asheesh Pandey, Amiya Kumar Mohapatra.

Project administration: Asheesh Pandey.

Resources: Asheesh Pandey, Vandana Bhama.

Software: Vandana Bhama, Amiya Kumar Mohapatra.

Supervision: Asheesh Pandey.

Validation: Asheesh Pandey, Amiya Kumar Mohapatra.

Visualization: Asheesh Pandey, Vandana Bhama.

Writing – original draft: Vandana Bhama, Amiya Kumar Mohapatra.

Writing – review & editing: Asheesh Pandey.

ACKNOWLEDGEMENT

The infrastructural support provided by FORE School of Management, New Delhi in completing this paper is gratefully acknowledged

REFERENCES

1. Anwar, S., Singh, S., & Jain, P. K. (2017). Impact of Cash Dividend Announcements: Evidence from the Indian Manufacturing Companies. *Journal of Emerging Market Finance*, 16(1), 29-60. <https://doi.org/10.1177%2F0972652716686238>
2. Asquith, P., & Mullins, D. W., Jr. (1986). Signaling with Dividends, Stock Repurchases and Equity Issues. *Financial Management*, 15(3), 27-44. Retrieved from <https://www.jstor.org/stable/3664842?seq=1>
3. Babenko, I. (2009). Share Repurchases and Pay-Performance Sensitivity of Employee Compensation Contracts. *Journal of Finance*, 64(1), 117-151. <https://doi.org/10.1111/j.1540-6261.2008.01430.x>
4. Bens, D. A., Nagar, V., Skinner, D. J., & Wong, M. H. F. (2003). Employee Stock Options, EPS Dilution, and Stock Repurchases. *Journal of Accounting and Economics*, 36(1-3), 51-90. <https://doi.org/10.1016/j.jac-ccco.2003.10.006>
5. Bhargava, S., & Agrawal, P. (2015). Announcement Effect of Share Buyback on Share Price at National Stock Exchange: An Empirical Investigation. *Annual Research Journal of SCMS Pune*, 3, 89-105. Retrieved from <https://www.scmspune.ac.in/chapter/Chapter%206.pdf>
6. Brockman, P., & Chung, D. (2001). Managerial Timing and Corporate Liquidity: Evidence from Actual Share Repurchases. *Journal of Financial Economics*, 61(3), 417-448. [https://doi.org/10.1016/S0304-405X\(01\)00068-X](https://doi.org/10.1016/S0304-405X(01)00068-X)
7. Bowman, R. G. (1983). Understanding and Conducting Event Studies. *Journal of Business Finance and Accounting*, 10(4), 561-584. <https://doi.org/10.1111/j.1468-5957.1983.tb00453.x>
8. Brown, S. J., & Warner, J. B. (1985). Using Daily Stock Returns: The Case of Event Studies. *Journal of Financial Economics*, 14(1), 3-31. [https://doi.org/10.1016/0304-405X\(85\)90042-X](https://doi.org/10.1016/0304-405X(85)90042-X)
9. Chavali, K., & Shemeem, S. (2011). Impact of Buybacks on Share Price Performance of Companies in Indian Context. *European Journal of Finance and Banking Research*, 4(4), 23-33. Retrieved from <http://globip.com/contents/articles/european-vol4-article3.pdf>
10. Chan, K., Ikenberry, D., Lee, I., & Wang, Y. (2010). Share Repurchases as a Potential Tool to Mislead Investors. *Journal of Corporate Finance*, 16(2), 137-158. Retrieved from http://www3.nccu.edu.tw/~konan/research/JCF_2010.pdf
11. Chatterjee, C., & Mukherjee, P. (2015). Price Behaviour Around Share Buyback in the Indian Equity Market. *Global Business Review*, 16(3), 425-438. <https://doi.org/10.1177%2F0972150915569931>
12. Chen, S., & Wang, Y. (2012). Financial Constraints and Share Repurchases. *Journal of Financial Economics*, 105(2), 311-331. <https://doi.org/10.1016/j.jfine-co.2012.03.003>
13. Comment, R., & Jarrell, G. A. (1991). The Relative Signalling Power of Dutch Auction and Fixed Price Tender Offers and Open Market Share Repurchase. *Journal of Finance*, 46(4), 1243-1271. Retrieved from <https://www.jstor.org/stable/2328858?seq=1>
14. Dittmar, A. K. (2000). Why do Firms Repurchase Stock? *Journal of Business*, 73(3), 331-355. Retrieved from https://www.jstor.org/stable/10.1086/209646?seq=1#metadata_info_tab_contents
15. Dixon, R., Palmer, G., Stradling, B., & Woodhead, A. (2008). An Empirical Survey of the Motivation for Share Repurchases in the UK. *Managerial Finance*, 34(12), 886-906. <https://doi.org/10.1108/03074350810915833>
16. Doan, D. H., Yap, C. J., & Gannon, G. (2012). Takeover Deterrent Effect on Market Share Buyback in Australia. *Australian Accounting Business and Finance Journal*, 5(4), 65-84. Retrieved from <https://ro.uow.edu.au/aabfj/vol5/iss4/6/>
17. Fenn, G. W., & Liang, N. (1997). Good News and Bad News About Share Repurchase. Milken Institute and Board of Governors of the Federal Reserve System (draft only). Retrieved from <https://www.federalreserve.gov/pubs/feds/1998/199804/199804pap.pdf>
18. Grullon, G., & Michaely, R. (2004). The Information Content of Share Repurchase Programs. *Journal of Finance*, 59(2), 651-680. <https://doi.org/10.1111/j.1540-6261.2004.00645.x>
19. Gupta, S., Kalra, N., & Bagga, R. (2014). Do Buybacks Still Hold Their Signaling Strength? An Empirical Evidence from Indian Capital Market. *Amity Business Review*, 15(1), 2-18. Retrieved from <https://www.amity.edu/abs/abr/pdf/Vol%2015%20No.1/1.pdf>
20. Gupta, V. (2018). Open Market Repurchases and Signaling Hypothesis. *Theoretical Economics Letters*, 8(3), 592-608. Retrieved from <https://www.scirp.org/journal/paperinformation.aspx?paperid=82571>
21. Horan, M. (2012). Are Buybacks Increasing EPS. *Accounting and Taxation*, 4(1), 11-24. Retrieved from <http://www.theibfr2.com/RePEc/ibf/acttax/at-v4n1-2012/AT-V4N1-2012-2.pdf>
22. Hyderabad, R. (2009a). Market Reaction to Buyback Announcements in India. *IUP Journal of Applied Finance*, 15(12), 54-78. Retrieved from https://iu-pindia.in/Applied_Finance.asp
23. Hyderabad, R. (2009b). Market Reaction to Multiple Buybacks in India. *Indore Management Journal, IIM Indore*, 1(2), 18-49. Retrieved from <https://www.iimdr.ac.in/research-publications/indore-management-journal/archives/volume-2009/>
24. Hyderabad, R. (2009). Price Performance Following Share

- Buyback Announcements in India. *VISION – The Journal of Business Perspective*, 13(1), 59-78. <https://doi.org/10.1177%2F097226290901300105>
25. Ikenberry, D. L, Lakonishok, J., & Vermaelen, T. (1995). Market Underreaction to Open Market Share Repurchases. *Journal of Financial Economics*, 39(2-3), 181-208. [https://doi.org/10.1016/0304-405X\(95\)00826-Z](https://doi.org/10.1016/0304-405X(95)00826-Z)
 26. Ishwar, P. (2010). Stock Price Responses to the Announcement of Buyback of Shares in India. *Indian Journal of Commerce and Management Studies*, 1(1), 14-29. Retrieved from <http://www.scholarshub.net/index.php/ijcms/article/view/309/301>
 27. Jagannathan, M., Stephens, C. P., & Weisbach, M. S. (2000). Financial Flexibility and the Choice Between Dividends and Stock Repurchases. *Journal of Financial Economics*, 57(3), 355-384. [https://doi.org/10.1016/S0304-405X\(00\)00061-1](https://doi.org/10.1016/S0304-405X(00)00061-1)
 28. Jensen, M. C. (1986). Agency Cost of Free Cash Flow, Corporate Finance, and Takeovers. *American Economic Review*, 76(2), 323-329. Retrieved from <https://www.jstor.org/stable/1818789?seq=1>
 29. Kahle, K. (2002). When a Buyback isn't a Buyback: Open Market Repurchases and Employee Options. *Journal of Financial Economics*, 63(2), 235-261. Retrieved from http://schwert.simon.rochester.edu/f423/jfe02_kk.pdf
 30. Li, K., & McNally, W. J. (1999). Open Market vs Tender Offer Share Repurchases: A Conditional Event Study. *University of British Columbia Finance Working paper*, 2-33. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=149513
 31. Lie, E. (2000). Excess Funds and Agency Problems: An Experimental Study of Incremental Cash Disbursements. *Review of Financial Studies*, 13(1), 219-248. Retrieved from <https://pdfs.semanticscholar.org/d705/0c69dd37a32f3018ed1891fc838ce8d336d2.pdf>
 32. Mackinlay, A. C. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature*, 35(1), 13-39. Retrieved from <https://www.aeaweb.org/journals/jel>
 33. McNally, W., & Smith, B. (2006). The Price Impacts of Open Market Repurchase Trade. *Journal of Business Finance & Accounting*, 33(5&6), 715-734. <https://doi.org/10.1111/j.1468-5957.2006.00618.x>
 34. McWilliams, A., & Siegel, D. S. (1997). Event Studies in Management Research: Theoretical and Empirical Issues. *Academy of Management Journal*, 40(3), 626-657. Retrieved from <https://asu.pure.elsevier.com/en/publications/event-studies-in-management-research-theoretical-and-empirical-is>
 35. Mishra, A. (2005). *An Empirical Analysis of Share Buybacks in India* (Working Paper). Retrieved from <https://econwpa.ub.uni-muenchen.de/econ-wp/fin/papers/0507/0507001.pdf>
 36. Peyer, U., & Vermaelen, T. (2007). The Nature and Persistence of Buyback Anomalies. *Review of Financial Studies*, 22(4), 1693-1745. <https://doi.org/10.1093/rfs/hhn024>
 37. Rajagopalan, N. V. R., & Shankar, H. (2013). Buyback Announcements and Stock Market Reaction in India: Testing the Market Condition Hypothesis. *IUP Journal of Applied Finance*, 19(2), 64-83. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2260223
 38. Rajlaxmi (2013). Share Buybacks – An Analytical Study of Announcement Effect on Stock Prices in India. *Indian Journal of Applied Research*, 3(2), 241-243. Retrieved from [https://www.worldwidejournals.com/indian-journal-of-applied-research-\(IJAR\)/article/share-buybacks-an-analytical-study-of-announcement-effect-on-stock-prices-in-india/MTA-0Mw==/?is=1&b1=317&k=80](https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/article/share-buybacks-an-analytical-study-of-announcement-effect-on-stock-prices-in-india/MTA-0Mw==/?is=1&b1=317&k=80)
 39. Thirumalvalavan, P., & Sunitha, K. (2006). *Share Price Behaviour around Buyback and Dividend Announcements in India* (Indian Institute of Capital Markets, 9th Capital Markets Conference Paper). Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=873986
 40. Tsetsekos, T. P., Kaufman, D., & Gitman, L. J. (1991). A Survey of Stock Repurchase Motivations and Practices of Major US Corporations. *Journal of Applied Business Research*, 7(3), 15-21. Retrieved from <https://clutejournals.com/index.php/JABR/article/view/6221/0>
 41. Vermaelen, T. (1981). Common Stock Repurchases and Market Signaling. *Journal of Financial Economics*, 9(2), 139-83. [https://doi.org/10.1016/0304-405X\(81\)90011-8](https://doi.org/10.1016/0304-405X(81)90011-8)
 42. Vermaelen, T. (2005). Share Repurchase. *Foundation and Trends in Finance*, 1(3), 171-268. Retrieved from <https://www.now-publishers.com/article/Details/FIN-007>