
An event study analysis of the impact of bonus share announcements on Nifty 100 and Nifty Midcap 100 companies

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Abstract

This study examines how the large-cap and mid-cap firms listed on the National Stock Exchange responded to bonus share announcements between January 1, 2006, to September 30, 2022. The conventional event study approach has been utilized, along with the commonly used market model assessment of predicted returns to analyze 45 pure events during this period consisting of 20 events of large-cap and 25 events of midcap stocks. According to the analysis, stock values significantly changed around the time of occurrence. Announcements of stock dividends typically increase stock prices. The mean of average abnormal return around the event for Nifty Midcap 100 indexed companies (0.2087) is higher than that for Nifty 100 indexed companies (0.1446), although the difference is insignificant. The study also shows that the cumulative average abnormal return for Nifty Midcap 100 indexed companies (6.472) is higher than that for Nifty 100 indexed companies (4.483) during the event period.

Keywords: Event Study; Bonus Share; Market Model; Mid-cap; Large-cap.

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1. Introduction

Bonus shares are fully paid-up shares that are given free of cost to current shareholders in the same proportion as their prior ownership. A company with significant reserves may decide to capitalize part of these reserves by giving current shareholders free bonus shares. Companies may choose to provide bonus shares to current equity owners in cases when it is not sensible to distribute earnings and reserves in cash. As long as no bonus shares are given using reserves created via asset revaluation, a business is allowed to issue fully paid-up bonus shares to its members however it sees appropriate, utilizing its free reserves, securities premium account, or capital redemption reserve account. No bonus shares will be issued in place of dividends (The Companies Act, 2013).

Bonus shares boost each shareholder's shareholdings, but they have no impact on the shareholder's proportional ownership of shares, capital structure, or earning capacity. The bonus issue merely increases the number of outstanding shares, which means that the share price should ideally decline by the same percentage. The worth of each investor's holdings, or the market value of all shares, should remain constant, even though investors' shares' nominal or face value rises proportionally. Miller and Modigliani (1961) showed that the impact of stock dividends on shareholder wealth was minimal. In the Australian market, Sloan (1987) discovered no connection between bonus issues and shareholders' wealth.

For years, researchers have argued over whether bonus share announcements (BSA) had an impact on stock prices. With a few notable exceptions, empirical research on established and developing stock markets has demonstrated that the market generally reacts favourably to the BSA.

One of the most important corporate announcements, BSA, is continually watched by investors, analysts, and financial intermediaries. Long-term investors view the BSA as an indication of the company's financial health and potential, while short-term speculators look for quick profits out of the oddity of the stock price around it. Several factors, including

liquidity, earnings, cash flows, capital structure, and security price, might affect the decision to issue bonus shares. This paper investigates the impact of BSA on stock returns in India at the time of the announcement by large-cap companies and mid-cap companies listed on the National Stock Exchange (NSE) in India, which, as of the 30th September 2022, comprise the indices NSE Nifty 100 and Nifty Midcap 100, respectively utilising the event study (EST) methodology developed by Fama et al. (1969) and Brown and Warner (1980, 1985). The study aims to advance our understanding of this topic by providing evidence about the relationship between BSA and stock returns for large-cap stocks and midcap stocks.

This study will give investors the tools they need to make investment decisions when BSA is made by large-cap and mid-cap equities listed on the NSE. The findings are also anticipated to enable policymakers to decide on BSA with the goal of boosting business value. Additionally, it will aid the researchers in their future research projects since they will be able to assess the effects of other business announcements and conduct a comparative analysis based on market capitalization or any other characteristic.

The rest of the paper is as follows: Section 2 discusses a few relevant prior research in this area. Section 3 enumerates the objectives of this paper. Section 4 describes the data, methodology, and hypothesis of this study. Section 5 presents the analysis and result of this study followed by the conclusion in Section 6 and implications and limitations of this study in Section 7.

2. Literature review

2.1 Literatures on BSA

The BSA has always piqued the curiosity of scholars from both established and developing markets. While Foster and Vickrey (1978) researched the developed market such as the US, Masse et al. (1997) studied the Canadian market. Bechmann and Raaballe (2005) studied the Danish stock market while Liljebloom (1989) researched the Swedish stock market. Among the developing nations, Dhatt et al. (1997) studied the Korean stock market while Ramachandran (1985) and Mishra (2005) researched the Indian stock market. Papaioannou et al. (2000) studied the Greek stock market while Barnes and Ma (2003) researched the Chinese stock market.

There have been a variety of responses to the BSA from the stock market. Empirical studies show that when a stock dividend is declared, the market often reacts favourably. Peterson (1971) was one of the first to conceptualize the signalling hypothesis, claiming that after the announcement of a stock split issue, the price of the shares may rise since it contains important market information. Ball et al. (1977) examined how the Melbourne Stock Exchange's securities responded to various BSA, stock split, and rights issue events between 1960 and 1969, and found a 20.2 per cent excess return. McNichols and Dravid (1990) analyzed the stock market response to events of BSA or stock splits between 1976 and 1983 based on data from the CRSP (The Centre for Research in Security Prices) Daily Master Tape. A positive association between bonus issue ratio and excess return was observed, signifying further evidence for the signalling hypothesis. Anderson et al. (2001) examined how BSA affected the New Zealand stock exchange and discovered that BSA should be connected with the positive announcement effect.

In relation to BSA issued by 43 Information Technology firms on the Bombay Stock Exchange (BSE) between 2000 and 2007, Raja and Sudhakar (2010) looked at the informational effectiveness of the Indian capital market. The average abnormal return (AAR) on the event day was assessed to be 2.06%, indicating the semi-efficiency of the Information Technology sector of BSE to the BSA. Ahsan et al. (2013) used the Sharpe's (1963) Single Index Model to examine how the Bangladesh stock market responded to the BSA between 2009 and 2012 using 136 sample companies from 6 industries listed on the Dhaka Stock

Exchange (DSE). The whole sample's observation of a considerable price increase around the event date supports the signalling theory for the Bangladesh stock market.

Malhotra et al. (2007) looked at how BSA by Chemical securities listed on the Bombay Stock Exchange (BSE) between January 2000 and January 2006 affected the stock market's response and liquidity. Contrary to past studies, the study discovered a link between BSAs by Indian chemical corporations and significant negative anomalous returns. Ghatak (2011) investigated 15 events of BSA from 2000 to 2010 by IT securities listed on the NSE in India and found insignificant abnormal returns on and around the event date.

Al-Yahyaee (2014) assessed the effects of a sample of 271 BSA from 1997 to 2012 by companies in Oman and found that BSA received a positive reaction. Marangu et al. (2019) discovered that rights issues had significant and positive effects on stock returns, with better AARs than BSA throughout the course of the twenty-day event period for securities listed on Nairobi Stock Exchange. Basra and Singla (2020) revalidated the information signalling theory and the liquidity hypothesis in relation to the Indian stock market in the context of BSA across the study period of 2004–2016.

In their study on elective stock dividends, which provide shareholders with the option of receiving new shares or the same amount in cash, Feito-Ruiz et al. (2020) look at how corporations decide to distribute stock dividends. They find that elective stock dividend is more usually used when getting outside financing is costly, and UK firms who issue them are more likely to be having financial difficulties. Isiker and Tas (2021) observed that AARs, a sign of information leaking, can sometimes be identified 10 days before to the BSA. Following the BSA, the effect is still observed only in 2 out of the 6 examined nations.

Kadioglu and Kirbas (2021) examine how the ex-day of a BSA affects stock return and volume on the Istanbul stock market and establish a positive AAR and volume around the ex-day. Using a sample of Chinese-listed companies from 2008 to 2017, Huang et al. (2022) investigate how BSA affects analysts' positive bias in profit predictions. The authors find that, as a result of BSA, analysts exhibit a favourable bias in their profit forecasts. According to Hu et al. (2022), BSA improves the lottery features of the equities, making them more desirable to speculative investors who are prepared to pay more for skewed securities and share company risk with current shareholders.

Despite the abundance of studies on the link between BSA and an equity share price that are available in the research literature, it is challenging to locate any that examined the comparative impact of bonus issues on the equity price of large-cap and mid-cap firms. The purpose of this EST is to compare the anomalous returns of the Nifty Midcap 100 firms with Nifty 100 Index firms and to make the necessary statistical judgments.

2.2 Literatures on EST Methodology

EST methodology is widely used to analyse the impacts of events on the price performance of various stocks. Using EST methodology, Chen et al. (2007) investigated how the SARS pandemic affected changes in hotel stock prices in Taiwan. Cai et al. (2009) measure, from 2000 to 2006, how exchange rates in nine developing markets respond to macroeconomic news from the U.S. and home economies using EST. Kurt Gümüş et al. (2011) examine how macroeconomic news announcements from home and abroad affected the Istanbul Stock Exchange between 2002 and 2010 utilizing EST. The impacts of macroeconomic pronouncements on the Standard & Poor's 500 and oil prices are examined by Belgacem et al. (2015) using the EST technique. Pandey and Jaiswal (2017) examined using the EST technique, how the demonetization influenced the Indian stock market.

Elad and Bongbee (2017) examines the reaction of stocks traded on the London Stock Exchange to acquisition news using the EST technique. Pandey and Kumar (2022) investigate the effects of the Russia-Ukraine war in 2022 on the global tourist industry stocks using the

EST and establishes that the effect varies for companies in various market settings. Pandey and Kumari (2021a) examines the effects of the 2019-nCoV epidemic on established and emerging economies throughout the world using EST. Hanif et al., (2022) examined the impact of the Covid-19 pandemic on the market performance of Indian banking stocks using EST methodology. Rai and Pandey (2022) examine the impact of the news articles about the privatization of two public sector Indian banks using EST on a sample of 22 banks. Pandey et al. (2022) investigate the effects of corporate announcements on share return amid the pandemic using EST.

3. Objectives

The objectives of this EST are

- i) To analyze the effect of BSA on stock prices of large-cap companies listed on the NSE represented by the Nifty 100 index
- ii) To examine the effect of BSA on stock prices of mid-cap companies listed on the NSE represented by the Nifty Midcap 100 index
- iii) To compare AAR in stock prices of large-cap companies listed on the NSE represented by the Nifty 100 and mid-cap companies listed on the NSE represented by the Nifty Midcap 100.

4. Data and Methodology

4.1 Data Selection

A total of 20 events of BSA by Nifty 100 index companies and a total of 25 events of BSA by Nifty Midcap 100 companies between 01 Jan 2006 to 30 September 2022 have been analyzed in this EST. BSA events contaminated by any other announcement have been ignored. In this investigation, secondary data have been employed. Data about the BSA and other announcements have been gathered from moneycontrol.com. The Nifty 100 index price, Nifty Midcap 100 index price, and stock prices data have been gathered from the website of yahoo finance.

4.2 Methodology

The standard EST method (Brown and Warner, 1980, 1985) and the widely used market model assessment of expected returns have both been applied. For each sample stock, the event day (t_0 day) has been defined as the day the board meets to discuss bonus concerns. Regressing the individual stock logarithmic returns against the Nifty 100 index and Nifty Midcap 100 index logarithmic returns across a 250-day estimation window (starting at $t-265$ days and ending at $t-16$ days) yielded the alpha and beta values for individual stocks. The stock has been regressed on the Nifty 100 index or Nifty Midcap 100 index following whether it makes up the Nifty 100 index or the Nifty Midcap 100 index as of 30 September 2022. An event investigation period of 31 days [$t - 15$ to $t + 15$] has been used. The alpha and beta values obtained by regression have been utilized in Equation (1) to determine abnormal returns (AR) during the investigation window:

$$AR_{Stock} = LR_{Stock} - (\alpha + \beta \cdot LR_{INDEX}) \quad (1)$$

where, AR_{Stock} is the AR of the sample stock on day t ; LR_{Stock} is the log return of the sample stock on day t ; α and β are the intercept and slope of the OLS regression; and LR_{INDEX} is the log return of the relevant reference index on day t .

The ARs derived as per eq. 1 has been combined across time to calculate the cumulative abnormal returns (CAR) as per Equation (2):

$$CAR_{Stock} = \sum_{i=1}^N AR_{Stock} \quad (2)$$

where, CAR_{Stock} is the CAR for the sample stock 'i' on day t; N is the number of days in the event window, for example, for an event window [-15,+15], N=31; and AR_{Stock} as per Equation (1).

The AAR then has been determined by aggregating the ARs throughout sample stock as per Equation (3):

$$AAR_{Stock} = \frac{1}{n} \sum_{i=1}^n AR_{Stock} \quad (3)$$

where, AAR_{Stock} is the average abnormal return for the sample stock 'i' on day t; n is the number of firms; and AR_{Stock} is as per eq. 1.

The AARs derived as per eq. 3 has been combined across time to calculate the cumulative average abnormal returns (CAAR) for all the stocks as per Equation (4):

$$CAAR_{Stock} = \sum_{i=1}^N AAR_{Stock} \quad (4)$$

where, $CAAR_{Stock}$ is the CAAR for all the sample stocks on day t; N is the number of days in the event window, for example, for an event window [-15,+15], N=31; and AAR_{Stock} as per eq. 3.

After that, the test statistic has been calculated as per Equations (5) and (6):

$$AAR_t = \frac{AAR_{Stock}}{AgSD} \quad (5)$$

$$CAAR_t = \frac{CAAR_{Stock}}{AgSD * \sqrt{Nt + 1}} \quad (6)$$

where, AAR_t is the test statistics for the AAR on day t;

$AgSD = \sqrt{\frac{\sum_{i=1}^N eSD_{i,e}^2}{n^2}}$ where, $eSD_{i,e}$ is the standard deviation (SD) of the sample stock 'i' during the estimation period; n is the sample size.

$CAAR_t$ is the t-statistics for CAARs and $Nt+1$ is the absolute value of event day t plus 1 (e.g. for event day t-2, the absolute value is 2, and $Nt+1 = 3$)

The t-values calculated using the above-mentioned computations have been used to test the research hypothesis. If the absolute value of the t-test statistic is greater than the crucial values, the relevant anomalous return is statistically significant. If the AARs and CAARs are significant and positive, it suggests a favourable market response and that the gains on the event day and after it is greater than those before it (Kumari and Pandey, 2021). Additionally, a paired t-test of the mean will be performed on the AARs of Nifty Midcap 100 index stocks and Nifty 100 index stocks throughout the investigation window to determine the significance of the difference between the two.

4.3 Hypothesis

The Null hypotheses are as follows:

H₀₁: Bonus issues events have no impact on the AAR of the large-cap stocks forming the Nifty 100 index on NSE.

H₀₂: Bonus issues events have no impact on the CAAR of the large-cap stocks forming the Nifty 100 index on NSE.

H₀₃: Bonus issues events have no impact on the AAR of the mid-cap stocks forming the Nifty Midcap 100 index on NSE.

H₀₄: Bonus issues events have no impact on the CAAR of the mid-cap stocks forming the Nifty Midcap 100 index on NSE.

H₀₅: There is no difference between the impact of bonus issues events on the AAR of the large-cap stocks forming the Nifty 100 index on NSE and midcap stocks forming the Nifty Midcap 100 index on NSE.

H₀₆: There is no difference between the impact of bonus issues events on the CAAR of the large-cap stocks forming the Nifty 100 index on NSE and midcap stocks forming the Nifty Midcap 100 index on NSE.

5. Analysis and result

According to data from moneycontrol.com, there were 1195 BSA incidents overall between 1 January 2006 and 30 September 2022 for all the companies listed on either the BSE or NSE. Out of these 1195 BSA occurrences, 132 BSAs by Nifty 100 index and Nifty Midcap 100 index firms occurred between January 1, 2006, and September 30, 2022. Throughout the research period, the Nifty 100 index and Nifty Midcap 100 index businesses announced many stock splits, rights issues, and dividends. Such BSA events have been categorized as contaminated BSA events if any such announcement occurs between 30 trading days before BSA event day and 15 trading days following BSA event day and others as pure BSA events.

Table 1. Pure BSA events between 1st January 2006 to 30th September 2022

Nifty 100 Index stock			Nifty Midcap 100 Index stock		
Name of Stock	Bonus ratio	BSA Date	Name of Stock	Bonus ratio	BSA Date
Cipla	03:02	11-02-2006	Manappuram Fin	01:01	15-01-2007
UPL	01:01	24-07-2008	Sun TV Network	01:01	24-04-2007
IOC	01:01	13-09-2009	Jindal Steel	05:01	29-07-2009
Pidilite Ind	01:01	28-01-2010	Manappuram Fin	01:01	18-03-2010
Bajaj Auto	01:01	22-07-2010	Hind Zinc	01:01	19-01-2011
Info Edge	01:01	12-08-2010	Cummins	02:05	04-08-2011
Tech Mahindra	01:01	30-01-2015	Container Corp	01:02	25-07-2013
Colgate	01:01	30-07-2015	Bharat Elec	02:01	24-07-2015
Divis Labs	01:01	08-08-2015	Power Finance	01:01	14-07-2016
Bajaj Finance	01:01	26-07-2016	HPCL	02:01	20-07-2016
IOC	01:01	29-08-2016	REC	01:01	11-08-2016
Wipro	01:01	25-04-2017	Oil India	01:03	28-11-2016
Reliance	01:01	21-07-2017	Tata Elxsi	01:01	27-07-2017
M&M	01:01	10-11-2017	Bharat Elec	01:10	10-08-2017
GAIL	01:03	12-02-2018	Bharat Forge	01:01	10-08-2017
Infosys	01:01	13-07-2018	BHEL	01:02	10-08-2017
Britannia	01:01	06-08-2018	Container Corp	01:04	20-12-2018
SRF	04:01	31-08-2021	Varun Beverages	01:02	17-06-2019
GAIL	01:02	27-07-2022	Astral Ltd	01:04	02-08-2019
Bajaj Finserv	01:01	28-07-2022	Astral Ltd	01:03	03-02-2021
			Varun Beverages	01:02	03-05-2021
			IEX	02:01	21-10-2021
			Varun Beverages	01:02	28-04-2022
			REC	01:03	30-06-2022
			Bharat Elec	02:01	04-08-2022

Note: This table presents the pure events of bonus share announcements by Nifty 100 indexed companies and Nifty Midcap 100 indexed companies between 1st January 2006 to 30th September 2022

Source: Data from moneycontrol.com analysed by the author

The analysis has not included the contaminated BSA events since, when combined with other business events, it is difficult to recognize the precise influence of BSA on the stock

price. An inaccurate choice of accepting or rejecting the null hypothesis might result from including such a contaminated BSA event in the study. After excluding such contaminated BSA events final sample consisted of 20 events of BSAs by 18 companies of the Nifty 100 index and 25 events of BSAs by 17 companies of the Nifty Midcap 100 index. The final sample has been presented in Table 1.

5.1 Impact of BSA by Nifty 100 index stock

The AARs and CAARs for Nifty 100 indexed equities for the investigation window, from t-15 days to t+15 days, are displayed in Table 2 and Figure 1. The empirical data show that there were 12 positive AARs in the pre-event window and 7 positive AARs in the post-event window. On the day of the event, there is also a positive anomalous return. Only one significant positive AAR is seen in the pre-event period. The AAR is significantly favourable on the day of BSA as well.

The CAAR is positive each day from t-7 to t day in the pre-event window and every day in the post-event window. Two days before and each day following the BSA, the CAAR is significant. The CAAR is significantly positive on the day of the event as well.

The AAR is significantly positive at a 5% significance level on the t-2 day. The AAR is significantly positive at a 1% significance level on the event day. The CAAR is significantly positive 1% significance level every day from t-2 day to t+15 day.

Table 2. AARs, CAARs, and T-values for Nifty 100 indexed stocks

Day	Pre-event Window				Post-event Window				
	AAR	t-value	CAAR	t-value	Day	AAR	t-value	CAAR	t-value
t-15	0.439	1.136	0.439	0.284	t	2.176	5.632***	4.233	10.954***
t-14	-1.007	-2.61***	-0.568	-0.380	t+1	0.461	1.193	4.694	8.589***
t-13	-0.139	-0.360	-0.707	-0.489	t+2	0.424	1.097	5.118	7.646***
t-12	-0.097	-0.251	-0.804	-0.577	t+3	-0.214	-0.554	4.904	6.345***
t-11	0.234	0.606	-0.570	-0.426	t+4	0.504	1.304	5.408	6.258***
t-10	0.023	0.059	-0.547	-0.427	t+5	0.189	0.490	5.597	5.913***
t-9	0.407	1.054	-0.139	-0.114	t+6	-0.338	-0.874	5.260	5.144***
t-8	0.055	0.142	-0.084	-0.073	t+7	0.099	0.255	5.358	4.902***
t-7	0.168	0.435	0.084	0.077	t+8	0.423	1.096	5.782	4.987***
t-6	0.148	0.382	0.231	0.226	t+9	-0.108	-0.279	5.674	4.643***
t-5	0.266	0.688	0.497	0.525	t+10	-0.508	-1.314	5.166	4.031***
t-4	0.181	0.470	0.679	0.785	t+11	-0.304	-0.786	4.863	3.632***
t-3	0.395	1.021	1.073	1.389	t+12	-0.013	-0.033	4.850	3.481***
t-2	0.973	2.518**	2.047	3.058***	t+13	-0.672	-1.739*	4.178	2.889***
t-1	0.010	0.026	2.057	3.763***	t+14	-0.195	-0.504	3.983	2.661***
t	2.176	5.632***	4.233	10.95***	t+15	0.501	1.295	4.484	2.900***

Note: *, ** and *** depicts Substantial at 10%, 5% and 1% level respectively

This table presents the AAR and CAAR and their t-value during pre-event window and post-event window around the event of bonus share announcement by Nifty 100 indexed companies

Source: Author's own calculations

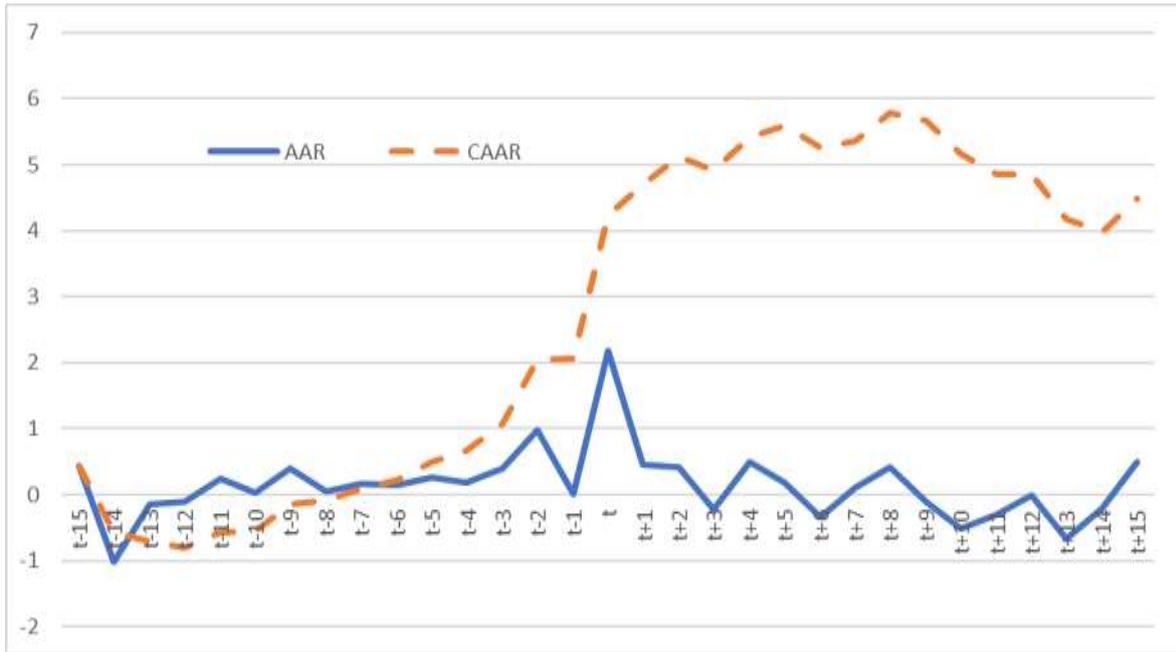


Figure 1. Trend line of AARs and CAARs for Nifty 100 stocks from t-15 day to t+15 day
Source: Plotted using findings of the analysis in MS-Excel

More significant AARs on and around the event day imply that the news had an impact on the share market. Given the favourable returns, the effect is favourable. Figure 1 illustrates the AARs and CAARs during the 31-day event frame. The CAAR graph's trend line can be observed going upward from the t-7 day. Additionally, the rising trend backs up the statistical finding that the BSA by Nifty 100 indexed stocks has had a significant favourable impact.

5.2 Impact of BSA by Nifty Midcap 100 index stock

Table 3 and Figure 2 show the AARs and CAARs for Nifty Midcap 100 indexed stocks for the investigation window, from t-15 days to t+15 days. According to the empirical data, there are 10 positive AARs in each of the pre-and post-event windows. There is also a positive anomalous return on the day of the BSA. Compared to 3 significantly positive AAR in the pre-event window, only one significantly positive AAR is seen in the post-event window. On the day of BSA, the AAR is insignificantly positive.

From t-9 to t-1 day in the pre-event window and every day in the post-event window, the CAAR is positive. The CAAR is statistically significant for the BSA on t-6 day and every day thereafter. On the actual event day, the CAAR is also significantly positive.

On the t-6 day, the AARs are significantly positive at 5%, and on the t-4, t-3, and t+1 days, they are positive at 10%. The AAR is somewhat favorable on the day of the event. On the t-6 day, the CAARs are substantially favorable at a 10% level, and on the t-5 day, they are significantly favorable at 5%. From the t-4 day through the t+15 day, the CAAR is consistently significantly favorable at a 1% level.

AARs that are more significant on and around the event day indicate that the stock market was impacted by the news. The effect is favorable given the positive abnormal returns. The AARs and CAARs for the 31-day event period are shown in Figure 2. Starting from the t-9 day, the trend line of the CAAR graph may be observed climbing. The growing trend also supports the statistical result that the BSA by Nifty Midcap 100 indexed stocks has had a statistically significant positive influence.

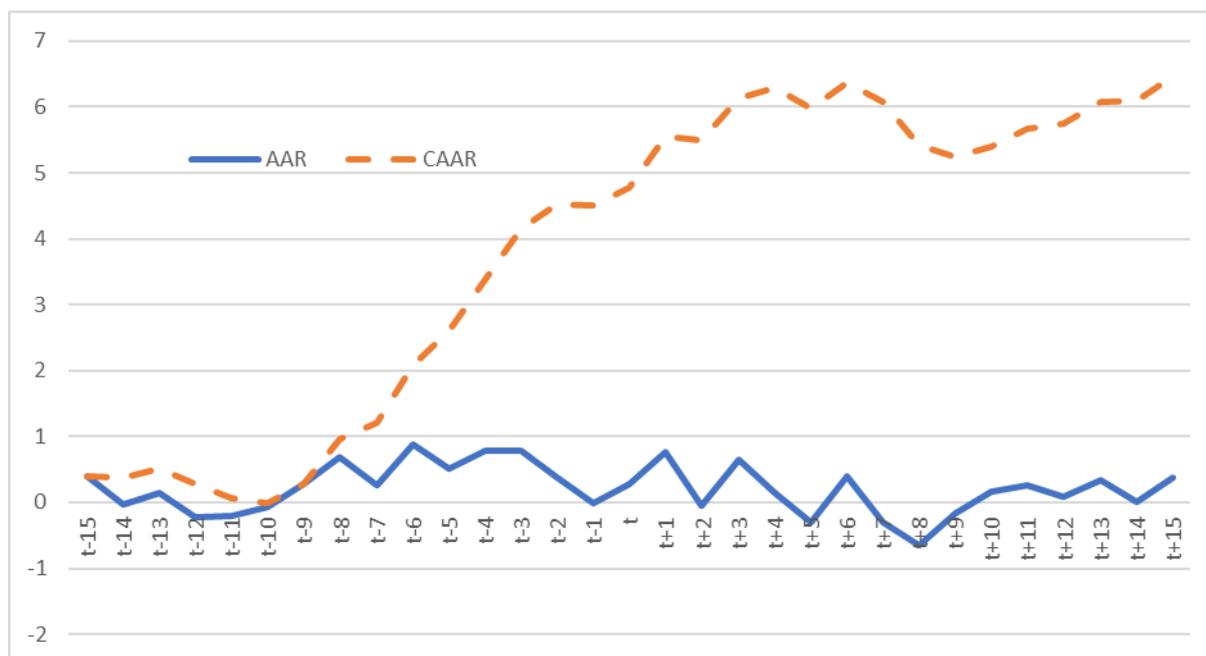


Figure 2. Trend line of AARs and CAARs for Nifty Midcap 100 indexed stocks from t-15 day to t+15 day
Source: Plotted using findings of the analysis in MS-Excel

Table 3. AARs, CAARs, and t-values for Nifty Midcap 100 indexed stocks

Pre-event Window					Post-event Window				
Days	AAR	t-value	CAAR	t-value	Days	AAR	t-value	CAAR	t-value
t-15	0.401	0.914	0.401	0.229	t	0.272	0.620	4.782	10.890***
t-14	-0.033	-0.075	0.368	0.217	t+1	0.765	1.742*	5.547	8.932***
t-13	0.140	0.318	0.508	0.309	t+2	-0.057	-0.130	5.490	7.218***
t-12	-0.234	-0.532	0.274	0.173	t+3	0.644	1.467	6.134	6.985***
t-11	-0.204	-0.465	0.070	0.046	t+4	0.152	0.347	6.287	6.402***
t-10	-0.077	-0.175	-0.007	-0.005	t+5	-0.303	-0.689	5.984	5.563***
t-9	0.285	0.650	0.279	0.201	t+6	0.391	0.890	6.375	5.487***
t-8	0.687	1.566	0.966	0.733	t+7	-0.303	-0.690	6.072	4.889***
t-7	0.251	0.572	1.217	0.980	t+8	-0.653	-1.488	5.419	4.113***
t-6	0.874	1.991**	2.092	1.800*	t+9	-0.167	-0.380	5.252	3.782***
t-5	0.506	1.152	2.597	2.415**	t+10	0.155	0.352	5.407	3.712***
t-4	0.777	1.769*	3.374	3.436***	t+11	0.256	0.584	5.663	3.723***
t-3	0.778	1.772*	4.152	4.728***	t+12	0.078	0.178	5.741	3.626***
t-2	0.376	0.857	4.528	5.954***	t+13	0.333	0.759	6.074	3.697***
t-1	-0.019	-0.043	4.510	7.262***	t+14	0.015	0.034	6.089	3.580***
t	0.272	0.620	4.782	10.890***	t+15	0.383	0.872	6.472	3.684***

Notes: *, ** and *** depicts Substantial at 10%, 5% and 1% level respectively. This table presents the AAR and CAAR and their t-value during pre-event window and post-event window around the event of bonus share announcement by Nifty 100 indexed companies.

Source: Author's own calculations

5.3 Comparison of AARs and CAARs across the investigation window for BSA by Nifty 100 and Nifty Midcap 100 indexed stocks

This section intends to compare the market response to BSAs by Nifty 100 indexed stocks and Nifty Midcap 100 indexed stocks by comparing respective AAR and CAAR during the investigation window of 31 days. The AAR and CAAR during the pre-and post-event

period for Nifty 100 indexed stocks and Nifty Midcap 100 indexed stocks have been displayed in table 4.

Table 4. Daily AARs and CAARs across the investigation window for Nifty 100 and Nifty Midcap 100 indexed stocks

Pre-event Window					Post-event Window				
Days	AAR Nifty 100	AAR Nifty Midcap 100	CAAR Nifty 100	CAAR Nifty Midcap 100	Days	AAR Nifty 100	AAR Nifty Midcap 100	CAAR Nifty 100	CAAR Nifty Midcap 100
t-15	0.439	0.401	0.439	0.401	t	2.176	0.272	4.233	4.782
t-14	-1.007	-0.033	-0.568	0.368	t+1	0.461	0.765	4.694	5.547
t-13	-0.139	0.140	-0.707	0.508	t+2	0.424	-0.057	5.118	5.490
t-12	-0.097	-0.234	-0.804	0.274	t+3	-0.214	0.644	4.904	6.134
t-11	0.234	-0.204	-0.570	0.070	t+4	0.504	0.152	5.408	6.287
t-10	0.023	-0.077	-0.547	-0.007	t+5	0.189	-0.303	5.597	5.984
t-9	0.407	0.285	-0.139	0.279	t+6	-0.338	0.391	5.260	6.375
t-8	0.055	0.687	-0.084	0.966	t+7	0.099	-0.303	5.358	6.072
t-7	0.168	0.251	0.084	1.217	t+8	0.423	-0.653	5.782	5.419
t-6	0.148	0.874	0.231	2.092	t+9	-0.108	-0.167	5.674	5.252
t-5	0.266	0.506	0.497	2.597	t+10	-0.508	0.155	5.166	5.407
t-4	0.181	0.777	0.679	3.374	t+11	-0.304	0.256	4.863	5.663
t-3	0.395	0.778	1.073	4.152	t+12	-0.013	0.078	4.850	5.741
t-2	0.973	0.376	2.047	4.528	t+13	-0.672	0.333	4.178	6.074
t-1	0.010	-0.019	2.057	4.510	t+14	-0.195	0.015	3.983	6.089
t	2.176	0.272	4.233	4.782	t+15	0.501	0.383	4.484	6.472

Source: Author’s own calculations

Notes: This table presents the comparison between Nifty 100 indexed companies and Nifty Midcap 100 indexed companies for AAR and CAAR during pre-event window and post-event window around the event of bonus share announcement.

The AAR around the event of BSA by Nifty 100 indexed stocks and Nifty Midcap 100 indexed stocks has been compared using the “Paired t-test for two samples for means” function in MS Excel and the result has been displayed in table 5.

Table 5. Result of t-test: Paired Two Sample for Means of AAR around BSAs by Nifty 100 indexed stocks vs Nifty Midcap 100 indexed stocks using

	AAR Nifty 100	AAR Nifty Midcap 100
Mean	0.1446	0.2087
Variance	0.2979	0.1388
Pearson Correlation		0.1132
t Stat		-0.5713

Source: Author’s own calculations using MS Excel data analysis function

Notes: This table presents mean and variance of AAR of Nifty 100 indexed companies and Nifty Midcap 100 indexed companies during 31 days event investigation window, Pearson’s correlation co-efficient between them and t-value for test of difference between them

For the investigation window of 31 days, the mean of AAR for Nifty 100 indexed stocks and Nifty Midcap 100 indexed stocks has been 0.1446% and 0.2087% respectively with a variance of 0.2979% and 0.1388%. The Nifty Midcap 100 stocks have higher AAR due to BSA while lower variance as compared to Nifty 100 stocks. They are negligibly co-related with a

Pearson Correlation of only 0.1132. Although the AAR of Nifty Midcap 100 stocks is higher than that of Nifty 100 stocks, the difference is statistically insignificant.

The AAR during the pre-and post-event period for Nifty 100 indexed stocks and Nifty Midcap 100 indexed stocks has been graphically displayed in figure 3 and CAAR in figure 4.

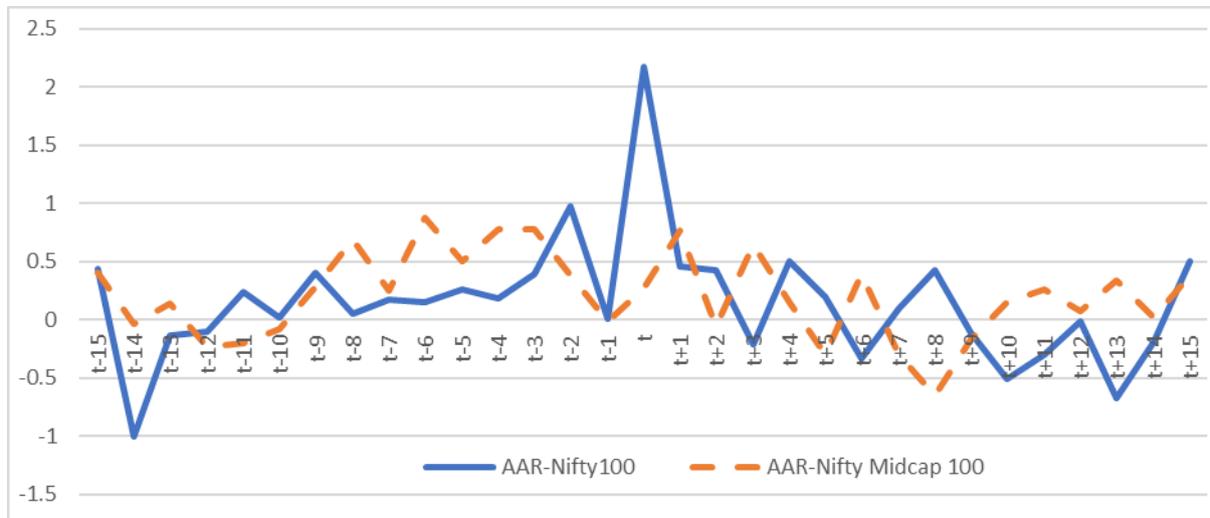


Figure 3. Trend line of AARs around BSA events by Nifty 100 indexed stocks and Nifty Midcap 100 indexed stocks from t-15 day to t+15 day
Source: Plotted using findings of the analysis in MS-Excel

It is evident from the trend lines in figure 4 depicting the CAAR due BSA by Nifty 100 indexed stocks and Nifty Midcap 100 indexed stocks from t-15 day to t+15 day that the CAAR of Nifty Midcap 100 stocks is higher than that of Nifty 100 stocks starting from the first day of the investigation window.

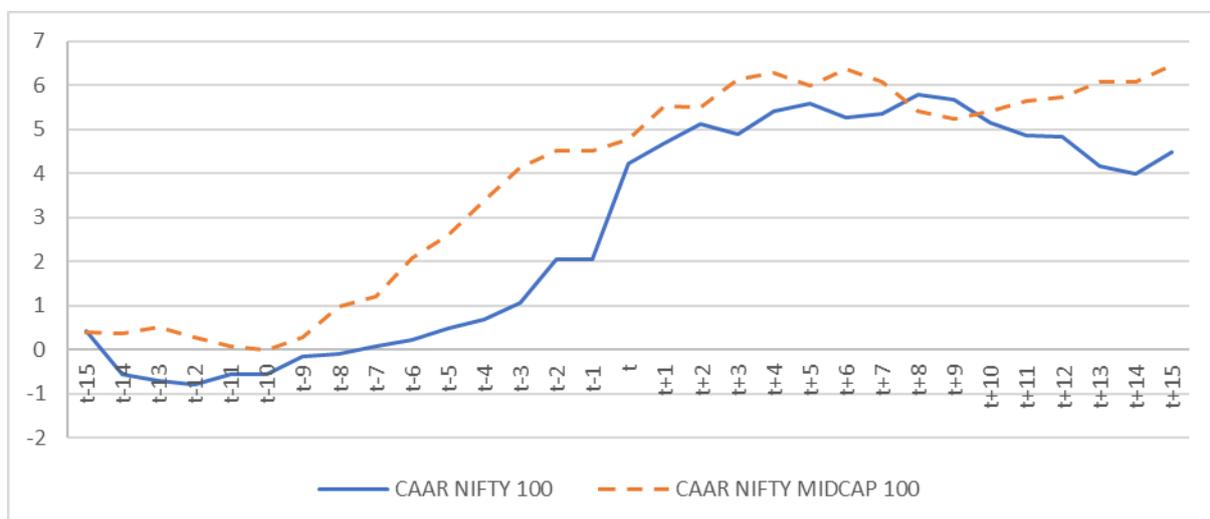


Figure 4. Trend line of CAARs around BSA events by Nifty 100 indexed stocks and Nifty Midcap 100 indexed stocks from t-15 day to t+15 day
Source: Plotted using findings of the analysis in MS-Excel

The null hypothesis of zero abnormal return has been rejected considering the findings of this study. As a result, it is possible to conclude that the event bonus issue has a favorable and significant influence on returns near the announcement date. The analysis discovers a steady leaking of knowledge before the public release date, with a modest increase in CAAR. It might thus be argued that the market's slow leakage of knowledge resulted in speculative

trading in chosen scripts, resulting in price increases before the formal announcement date. Thus, the rise in script prices at the announcement dates was modest.

6. Conclusion

AAR due to BSA by Nifty 100 stocks is 2.176% and the t-value is significant on the event (t) day. Hence, we reject H_{01} and infer that BSAs have a significantly positive impact on abnormal returns of Nifty 100 index companies listed on NSE. CAAR for Nifty 100 stocks is 4.233% and the t-value for CAAR is substantial on the event (t) day as well as on all 18 days from t-2 day to t+15 day. Hence, we reject H_{02} and conclude that Bonus issues events have a significantly positive impact on cumulative abnormal returns of Nifty 100 index companies listed on NSE.

AAR due to BSA by Nifty Midcap 100 stocks is 0.272% but the t-value is insignificant on the event (t) day. Hence, we accept H_{03} and infer that BSAs have an insignificantly positive impact on abnormal returns of Nifty Midcap 100 index companies listed on NSE. CAAR for Nifty Midcap 100 stocks is 4.782% and the t-value for CAAR is substantial on the event (t) day as well as on all 22 days from t-6 day to t+15 day. Hence, we reject the H_{04} and conclude that Bonus issues events have a significantly positive impact on cumulative abnormal returns of Nifty Midcap 100 index companies listed on NSE.

The above findings are in line with most of the previous works of literature. Ball et al. (1977) examined share price responses to BSAs, splits, and rights in Australia between 1960 and 1969 and found that the CAAR was 20.2%. An AAR of 1.1% was discovered by Grinblatt et al. (1984) while analysing the announcement effect of BSA and splits between 1967 to 1976 by securities listed on the New York Stock Exchange. S. N. Rao (1994) observed a CAAR of 6.31% between the (-1, 1) period of BSA. K. C. Rao and Geetha (1996) observe a CAAR of 6.31% during the (-1, 1) period of BSA. Masse et al. (1997) examined how BSA affected the value of companies traded in Canada and discovered a CAAR of 3.11% during (-10, 10) of BSA. Balachandran et al. (2004) discovered a substantial price reaction of 2.37% AAR to the pure events of BSA during the (0, 1) period in the Australian market. Lukose and Rao (2005) examined the impact of BSA on BSE-listed companies and they observed a significantly positive CAAR of 11.60% during the (-3,1) period of BSA. Mishra (2005) observed a substantial positive CAAR of 9.49% between the (-10, -1) period of BSA, which cast doubt on the semi-strong efficiency of the Indian capital market.

Pathirawasam (2009) used the EST approach to analyse the response to BSA by Sri Lankan firms from 1998 to 2007. The author discovered a CAAR of 6.60% between (-20, -1) and a CAAR of 15.06% between the (-20, 20) period of BSA which is much higher as compared to any other country. Raja and Sudhakar (2010) discovered an AAR of 2.06% on the event day, casting doubt on the efficient market hypothesis of the IT sector of India to BSA. Rohit et al. (2013) discovered a statistically significant AAR of 1.76% on the event day and 0.72% on the t+1 day for BSA by BSE 500 indexed firms. 7.9% CAAR is observed on the event day.

Studies by Isiker and Tas (2021), Wang et al. (2021), Feito-Ruiz et al. (2020), Marangu et al. (2019), Heavilin and Songur (2019), Chang et al. (2019), Lee (2019), Arulsulochana (2019), Khanal and Mishra (2017), Dedman et al. (2017), De Ridder and Burnie (2016) and many others have also concluded a positive impact of BSA.

While comparing the AAR of Nifty 100 stocks and Nifty Midcap 100 stocks, the t-value of paired t-test for means fetches a minimal value that is statistically insignificant. Hence, we accept H_{05} and infer that there is no difference between the impact of BSA on the AAR of the large-cap stocks forming the Nifty 100 index on NSE and midcap stocks forming the Nifty Midcap 100 index on NSE. The CAAR of Nifty 100 stocks and Nifty Midcap 100 stocks can be compared from Table 4 and Figure 4 and H_{06} can be rejected, and it can be inferred that the

CAAR of the large-cap stocks forming the Nifty 100 index on NSE is impacted lower than that of midcap stocks forming Nifty Midcap 100 index on NSE.

There are only a few prior literatures that illustrate the comparison of impact of any corporate announcement (CA) on large cap, mid-cap and small cap stocks. Marisetty and M (2020) examined comparative impact of BSA and Splits on large cap, midcap and small cap stocks and discovered highest AAR on the event day for large cap stocks and lowest AAR on the event day for mid-cap stocks. However, the highest CAAR during the event window was discovered for small cap stocks and lowest CAAR for large cap stocks. According to the study de Souza et al. (2018) conducted in Brazil, average returns of small cap firms do not appear to differ statistically significantly. Sehgal and Tripathi (2005) analysed the data for 482 firms listed in BSE 500 index during 1990-2003 and observed the return for small cap firms to be higher than large and mid-cap firms. Dissa et al. (2002) measured the impact of dividend announcement by 37 firms listed on Colombo Stock Exchange between 1993 to 1998 and discovered that positive effect of dividend is stronger for small cap firms as compared to large and mid-cap firms.

It is evident from above discussion that the relative impact of any CA differs depending on size of the companies.

6 Implication and Limitations

There is a limited amount of EST research that examines the effects of BSAs by a specific market capitalization section of the Indian stock market. The goal of this study is to add to the corpus of information about EST techniques. In addition, this research separates the effects of BSAs on big-size firms and mid-sized firms listed on the NSE so that these companies may make the best policy decision for themselves as well as the best investment decisions by current and future investors. This analysis may have some limitations because it only considered BSAs between 2006 and 2022 by the firms that made up the Nifty 100 index and Nifty Midcap 100 index as of September 30, 2022. The NSE frequently changes the index's composition. In the future, the impact of BSAs might be examined after taking into account the index's ongoing adjustment.

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