



STOCK MARKET REACTION TO THE UNION BUDGET ANNOUNCEMENT IN INDIA: AN EVENT STUDY APPROACH

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ABSTRACT

"Beating the market" is impossible, according to the efficient market hypothesis (EMH), because existing share prices always encompass and represent all relevant information. An efficient market builds the boldness of the investors. It states that no individual investor can attain abnormal returns on the announcement of any information because the exchange quickly adjusts itself to the new information. The main purpose of this study is to investigate the impact of the union budget announcement on 1st Feb 2022 by India's Finance Minister, Nirmala Sitharaman on S&P BSE Sensex stocks considering the S&P BSE 500 as a proxy market by applying the event study technique. According to the research, the introduction of the Union Budget had a positive impact on security returns.

KEYWORDS: Union Budget, Event Study, EMH, Abnormal Return, Proxy Market

INTRODUCTION

The announcement of the Union Budget is the foremost significant event within the economy because it's how the new policy initiatives are announced by the govt. of India. These policies and initiatives are geared toward the event of various sectors so impact the financial health of the economy. The union budget announcements may provide support or restrain an industry's development. The Union Budget, which was presented within the design of a finance bill on February 1, 2022, this year, should be elapsed by the house before it comes into force on April 1 once a year (Goyal & Gupta, 2019). The knowledge becomes available to the ultimate public as soon because it's presented within the house. Certain questions must be answered within the study like does this information affect the value of securities and ultimately returns? How quickly the knowledge is absorbed by the security prices. Over the next five years, a 6,000-crore initiative to assess MSMEs and startups would be implemented. The budget proposes 60 lakh employment over the next five years, entrepreneurship opportunities, blockchain-based digital money, financial support for farmers, battery swapping for EVs, a digital platform for the National Health Ecosystem, and ease of doing business are a variety of the announcements which are purported to impact the returns of securities listed in BSE. FAMA divides the Efficient Market Hypothesis (EMH) and empirical tests of the hypothesis into three sub hypotheses based on the knowledge set: (1) Weak-form EMH, (2) Semi-Strong-form EMH, and (3) Strong-form EMH. The EMH's weak shape implies that price changes in the past haven't followed any pattern or trend. Prices in the past haven't had any serial dependencies. As a result, information not included in the value series influences all future price changes (Nadig, 2014). To "detect the presence of weak-form EMH," technical analysis is performed (Reily and Brown, 2012). "The present stock values react swiftly to the final public information," the semi-strong form EMH takes. Because historical information on the market, such as past stock prices and trading volume, is available, the strong form of EMH incorporates the weak form hypothesis. The semi-stronger strong model—the event study was coined by FAMA (1991). To test "adjustment of the prices to public announcements," he employs event studies rather than semi-strong-form (Nadig, 2014). The strong form of EMH posits that all public and private sources of information are completely reflected in stock prices.

REVIEW OF LITERATURE

R. Deepak & N. Bhavya (2014) From 1993 to 2014, R. Deepak and N. Bhavya did a study on market views of union budget announcements. The findings show that there has been no major impact on broad and sectoral indices over time and that investors cannot use trading tactics to make investment decisions in the short term because the market corrects itself in the long run.



Khanna and Gogia (2014) investigated the impact of budget announcements on stock market returns in India, the United States, and the United Kingdom, finding substantial differences in the short run.

Warner and Brown (1985) argue for the use of daily stock returns, their qualities, and their impact on event study approaches in their study. Autocorrelation in daily abnormal returns is recognized in the study, and changes in their variance as a result of an event can be helpful at times.

Gupta and Kundu (2006) looked at the effects of union budget announcements on Indian stock market performance and found that it was only significant in the near term.

Edirisinghe (2017) Using event study methodology, the study investigated the impact of Sri Lankan government budget announcements on Colombo Stock Exchange sector returns from 2005 to 2009 and 2002 to 2013. The study's findings show that in the 15-day event window, there are considerable negative returns.

Goyal & Gupta (2019) In their research on Stock Market Response to the Union Budget Release, 2018 on BSE Sensex Companies, it is found that the union budget announcement had no meaningful impact on stock prices.

Table No. 1 The results of a literature review on the events described.

RESEARCHERS	STOCK	METHODOLOGY	EVENT	FINDINGS
DAHAL AND DAS (2021)	BSE Sensex Companies	Event Study Methodology	Make In India, Demonetization, GST	Make In India: Positive Impact Demonetization: Negative Impact GST: No Impact
Deepak & Bhavya (2014)	23 Market Indices of BSE & NSE	Descriptive Statistics, Event Study Methodology, Stationarity Test	Union Budget Announcement	Pre-Event: Positive Impact Post Event: Negative Effects
Taqi et al., (2018)	BSE Stocks	Event Study Methodology	Demonetization	Negative Impact
Maheshwari et al., (2020)	NSE Sectorial Indices	Event Study Methodology	Union Budget Announcement	No Impact
Pandey & Kumari (2020)	49 Market Indices	Event Study Methodology, Rank Test	Covid-19 Pandemic	Negative Impact
Sharma & Chandar (2009)	Nifty Companies	Event Study Methodology, CAPM	Earnings Announcement	Positive Impact
Singh & Dhall (2020)	Stock Market G-20 Countries	Event Study Methodology, Panel Data Regression	Covid-19 Outbreak	Negative Impact
Goyal & Gupta (2019)	BSE Sensex Companies	Event Study Methodology	Union Budget Announcement	No Impact
Datta et al., (2015)	Nifty 10 Budget Session	ADF Test, Correlation	Union Budget Announcement	Significant Impact
Gupta & Kundu (2006)	BSE Closing Price	T-Test, F-Test	Union Budget Announcement	Significant Impact around Event Day

Source: Compiled by Author



The objective of the Study

The goal of the research is to look at how the stock market reacted to the Union Budget Announcement on February 1, 2022. The research will aid in determining whether or not there were any unusual returns in the days leading up to the announcement date.

The hypothesis of the Study

H_0 = Average Abnormal Return tends to be insignificant around the announcement of Union Budget 2022 in S&P BSE Sensex
 H_0 = Cumulative Average Abnormal Return tends to be insignificant around the announcement of Union Budget 2022 in S&P BSE Sensex

DATA AND METHODOLOGY

The present study has taken the thirty (30) largest and actively traded stocks of various sectors forming Sensex.

Table No.2 Samples under study	
Asian Paints	Larsen & Toubro
Axis Bank	Mahindra & Mahindra
Bajaj Finance	Maruti Suzuki India
Bajaj FinServ	Nestle India
Bharti Airtel	NTPC
Dr Reddy's Laboratories	Power Grid Corp of India
HCL Technologies	Reliance Industries
HDFC Bank	State Bank of India
Hindustan Unilever	Sun Pharmaceutical Industries
Housing Development Finance Corp	Tata Consultancy Services
ICICI Bank	Tata Steel
IndusInd Bank	Tech Mahindra
Infosys	Titan Co
ITC	UltraTech Cement
Kotak Mahindra Bank	Wipro
Source: Compiled by Author (bseindia.com)	

The Union Budget announcement date i.e., event day is 1 February 2022. The analysis relied on these companies' daily closing prices, which were obtained from the BSE India official site. For the analysis, the S&P BSE 500 is used as a representative for the Indian stock market. To examine the influence of the various events, the data is divided into two portions for the study: pre-announcement and post-announcement periods.

Event Study Methodology.

It is employed to detect stock price patterns in response to a variety of occurrences (Fama, 1969), (Brown, 1980). The event research identifies and analyzes the importance of the gap between expected and actual security prices. Based on (Peterson, 1989), (MacKinlay, 1997), (Anwar et al., 2017), and (Dahal & Das, 2021), the event research involves the following steps.

Event window

An Event window is a time frame for analyzing the effect of an event. The current analysis takes into account a 21-day timeframe (-10...0...+10).



Here,

“-10 day to -1 day” are the days before the declaration of the event.

“0 day” is the day on which the declaration was done.

“+1 day to +10 days” is the days after the declaration of the event.

Estimation Period

The parameters alpha (α) and beta (β) are estimated during this timeframe. An estimation period of 120 days before the event window is considered in the study.

Here, “-130 day to -11 day” is the estimation period in the current study.

Actual Return calculation

A log return of stock ‘s’ on time ‘t’ is calculated.

$$R_{st} = \ln (P_{st}/P_{st-1})$$

Here, R_{st} = Return of stock ‘s’ at time ‘t’.

P_{st} = Price of stock ‘s’ at time ‘t’.

P_{st-1} = Price of stock ‘s’ at time ‘t-1’.

Model Estimation

The OLS Market Model, also known as the Risk-Adjusted Model of Sharpe (1964), is used to calculate the Expected Return E (R) of the securities.

Expected Return Calculation

$$E(R) = \alpha + \beta * R_{mt}$$

So, E(R) is the expected return, and are parameters estimated from the estimation period, and R_{mt} is the return of S&P BSE Sensex 500.

Calculation of Abnormal Return:

It is the difference between the actual return and expected return.

$$Abnormal\ Return = R_{st} - E(R)$$

Calculation of Average Abnormal Return (AAR) and Cumulative AAR (CAAR):

$$AARs = \sum_{t=1}^N AR_{st}/N$$

Here,

AR_{st} is the abnormal return of security ‘s’ on time ‘t’.

N is the number of firms under study.



$$CAARs(t, t + 1) = \sum_{t=1}^{t+1} AARs$$

As, To quantify the cumulative effect on the sample stocks under research, the average abnormal returns are averaged across all days (from -10 to +10 in this study).

The t-Test Statistics for AARs

$$t = \frac{AAR}{\sigma(AAR)}$$

Where AAR = Average Abnormal Return.

$\sigma(AAR)$ = Standard Error of Average Abnormal Return.

The Standard Error is calculated using this formula.

$$S.E = \frac{\sigma}{\sqrt{n}}$$

Where, S.E = Standard Error, σ = Standard Deviation, n = Number of Observation

The t-Test Statistics for CAARs

$$t = \frac{CAAR}{\sigma(CAAR)}$$

Where CAAR = Cumulative Average Abnormal Return.

$\sigma(CAAR)$ = Standard Error of Cumulative Average Abnormal Return.

The Standard Error is calculated using this formula.

$$S.E = \frac{\sigma}{\sqrt{n}}$$

Where, S.E = Standard Error, σ = Standard Deviation, n = Number of Observation

DATA ANALYSIS AND INTERPRETATION

SECTOR	N	DoF	5% SIGNIFICANCE LEVEL
TOTAL COMPANIES	30	29	-2.045 TO +2.045

Table 3. Critical t-value 5% significance level

Table 3 displays the critical (tabulated) t-values. We examine the estimated t-values to the tabulated t-values at 5% significance levels to determine whether the hypotheses should be accepted or rejected.

Table 4: Impact of Government Budget on Sensex				
DAY	AAR	T STATS	CAAR	T STATS
-10	-0.00062	-1.2107	-0.00062	-0.5091
-9	-0.00027	-0.5287	-0.00090	-0.7313
-8	-0.00229	-4.4556*	-0.00319	-2.6047*
-7	-0.00125	-2.4235*	-0.00444	-3.6237*
-6	-0.00032	-0.6284	-0.00476	-3.8879*
-5	0.00190	3.6993*	-0.00285	-2.3325*
-4	0.00248	4.8146*	-0.00038	-0.3082
-3	0.00030	0.5760	-0.00008	-0.0660
-2	-0.00287	-5.5711*	-0.00295	-2.4084*
-1	0.00066	1.2908	-0.00228	-1.8657
0	0.00464	9.0137*	0.00236	1.9242
1	0.00112	2.1792*	0.00348	2.8404*
2	-0.00153	-2.9660*	0.00195	1.5934
3	0.00068	1.3137	0.00263	2.1457*
4	-0.00094	-1.8174	0.00169	1.3816
5	0.00446	8.6701*	0.00615	5.0269*
6	0.00028	0.5473	0.00643	5.2570*
7	0.00104	2.0157	0.00747	6.1046*
8	0.00082	1.5912	0.00829	6.7736*
9	-0.00057	-1.1132	0.00772	6.3055*
10	0.00384	7.4558*	0.01155	9.4404*
Source: Author's Calculation				
Significant at 5% level (± 2.045)				

The data in Table 4, suggest that the introduction of the budget for 2022 was favorable to investors, as evidenced by the considerable positive CAAR persists even after the announcement date which suggests investors are positive about the economy. The Average Abnormal Returns are maximum and significant on the event day as well as on the 1st day, 2nd day, 5th day, and 10th day later to the announcement of the Budget and also on -the 5th and -4th day before the event day. This shows that the Union Budget 2022 has a significant and generally positive effect on the stocks of Sensex listed Firms, as evidenced by the fact that AAR and CAAR are significant at a 5% significance level around the announcement of the Union Budget 2022 in the S&P BSE Sensex, rejecting the null hypothesis. S&P BSE Sensex gained 848.40 points, an increase of 1.46% to close at 58,862.57 on February 1, 2022 (Source – Indian Express) also which means investors are benefitted from the announcement.

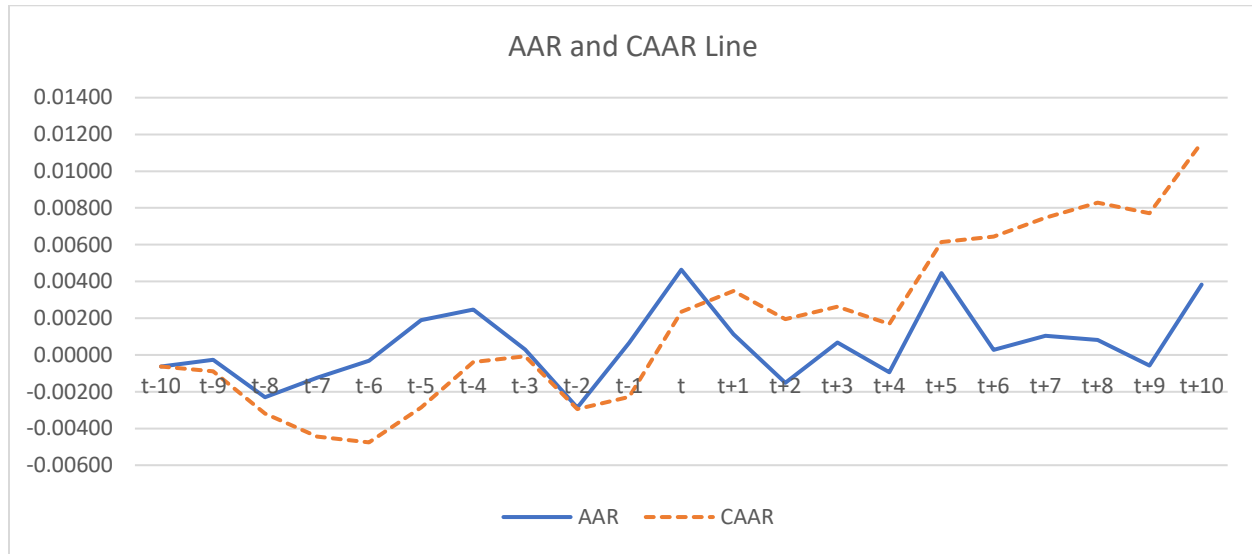


Figure 1. AAR and CAAR-line during the event window

The AARs and CAARs of event is represented graphically in Figure 1. The distance between the AAR-line and the CAAR-line has been increasing from day t-10, recovered on t-2. After the event day, the AAR-line and CAAR-line separate and continue to broaden upward. The large difference between the day after the occurrence and the day following the announcement reflects the impact of the announcement which looks to be quite significant following the incident.

Table 5: Small Window For CAAR		
Window	CAAR	T STATS
-7, +7	0.011	8.709*
-5, +5	0.011	8.915*
-2, +2	0.002	1.659
Source: Author's Calculation		
Significant at 5% level (± 2.045)		

The impact of announcement is tested around small windows of (-7, +7), (-5, +5), (-2, +2). Such small windows provide measure for accurately identifying the impact of the event announced and also information leakage if any. The windows of (-7, +7) and (-5, +5) show that buying securities on 7 and 5 days before the announcement and selling it after announcement on day 7 and 5 would have gained Significant positive returns, to the investors, this window seems to be the best window from an investors point of view.

CONCLUSION

The study looked at how the Union Budget announcement affected the stock market, specifically the reaction of the BSE Sensex. A closer examination of the data reveals that the stock market prices had a major impact during the study period. With the sample of 30 stocks of the Indian Stock Market, we employed the event study method with the widely used market model to examine the stock price reaction to the Union Budget Announcement 2022 on thirty (30) largest and actively traded stocks of various sectors forming Sensex. The statistical results indicate significant average abnormal returns on the event day and later. As a reason, investors should be more careful around the time of the budget announcement, as short-term market volatility is high. As a speculator, you may be able to profit during this time by devising investing methods.

The present study is limited to S&P BSE Sensex. Various other sectoral indices of NSE and broad market index like Nifty 50 can be taken for further study. Also, the individualized return of various companies of different sectors can be taken as an area of future research.



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