

## A Study on Stock Market Reaction to the Union Budget Announcement, 2018

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### Abstract:

*The efficient market hypothesis (EMH) states that it is impossible to "beat the market" as the existing share prices to always incorporate and reflect all relevant information. An efficient market builds the confidence of the foreign investors. It states that no individual investor can attain abnormal returns on the announcement of any information as the stock market quickly adjusts itself to the new information. This paper is an attempt to study the stock market efficiency with respect to the Union Budget Announcement of 2018. The event study methodology given by Warner and Brown has used in the study to identify the presence of the abnormal returns around the Union Budget announcement date. Further, Parametric T test has been used to check the significance of the abnormal returns. In the study, the AARs observed are not statistically significant and it is corroborated by the CAARs data as well. This implies that the level of efficiency of the stock market is high.*

### Key Words:

*Efficient Market Hypothesis, Event Study, T test, Union Budget*

### Introduction

The announcement of Union Budget is the most important event in the economy as it is the way in which the new policy initiatives are announced by the Government of India. These policies initiatives are aimed at the development of various sectors and therefore 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 in the form of finance bill and the appropriation bill on February 1, 2018 this year, has to be passed by the house before it comes into force on April 1 every year. The information becomes available to general public as soon as it is presented in the house. There are certain questions need to be answered in the study like does this information affect the price of securities and ultimately returns? How quickly the information is absorbed by the security prices? Introduction of 10 percent tax on long-term capital gains, Empowerment of agricultural sector like rising of Minimum Support Price (MSP), good news for insurance sector by Medicare , Higher allocation to infrastructure sector, due attention given to MSME sector and Strengthening the bond market are some of the announcements which are supposed to impact the returns of securities listed in BSE. The overall Efficient Market Hypothesis (EMH) and the empirical tests of the hypothesis is divided by FAMA into three sub hypothesis depending on the information set involves: (1) Weak-form EMH, (2) Semi Strong-form EMH (3) Strong- form EMH. Weak form of the EMH suggests that past price movements do not follow any pattern or trend. There are no serial dependencies in past prices. Hence the information not present in the price series determines entirely future price movements (Nadig, 2014). Technical analysis is used to "identify the presence of weak-form of EMH" (Reilly and Brown, 2012). The semi- strong form EMH assumes that "the current stock prices adjust rapidly to the public information". The semi strong-form of EMH encompasses the weak form hypothesis as historical information of market such as past stock prices and trading volume is public. FAMA (1991) coined a new term for the semi strong model—the event study. He uses *event studies* instead of semi strong-form to test "adjustment of prices to public

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announcements” (Nadig, 2014). The strong-form of EMH assumes that all the information from both public and private sources is fully reflected in the stock prices.

### **Literature Review**

Stock market reaction to the Union Budget announcement has widely been studied and discussed topic and many studies in this respect have been done in different countries. These studies are related to the investigation of volatility of stock market during immediate pre and immediate post budget period in short run.

Varadharajan et. al. (2011) studied the impact of union budget on stock market volatility and found that NSE was more volatile in comparison to BSE.

Kumar et. al. (2012) studied existence of abnormal returns because of an event using the event study method. The study revealed that chances of abnormal returns were seen in only few companies.

Thomas and Shah (2001) studied the possibilities of arbitrage because of the response of the stock markets to the announcements of the union budget. The study was conducted in both the stock markets NSE and BSE. The study, using event study method, found Indian Markets to be efficient at the information processing nearing the union budget announcements and there was no significant difference found in the pre-budget returns and post-budget returns.

Ranjani et. al. (2009), Edirisinghe (2017) examined the reaction of Sri Lankan government budget announcements on the returns of Colombo Stock Exchange sector wise during 2005-2009 and 2002-2013 using event study methodology. The results of study indicate significant negative returns in the event window period of 15 days.

Singh & Kansal (2010) studied the reaction of union budget announcements on returns of NSE Nifty during 1999-2009 using event methodology. The study was conducted in three categories short term (3days) medium term (15days) and long term (30days). The budget announcements were found to be significant in short term and medium term and insignificant in long term.

Kutcher (2012) investigated semi-strong form of efficiency of Indian Stock Markets by analyzing the reaction of union budget announcements during 2011-2012. The study was conducted considering various sectors in Nifty. The study used event study methodology. The results of the study concluded that there is a chance of making abnormal returns for the investors and the impact of union budget announcements seems to be company specific.

Gupta & Kundu (2006) studied the impact of union budget announcements on returns of Indian Stock Market and found it post budget significant in short terms only.

Khanna & Gogia (2014) conducted study on reaction of budget announcements on the returns on stock markets in India, USA and UK and found it significant different in short term.

R. Deepak & N. Bhavya (2010) conducted study on perceptions of markets towards the announcements of union budget during 1993-2014. The results indicate that there is no significant impact on broader and sectoral indices over the years and trading strategies cannot be adopted by investors in making investment decision during the short time frame as the market corrects itself in long run.

Patel ET. Al (2016), studied market efficiency of Indian Stock Market with respect to budget announcements and found that investors have not been able to earn abnormal returns in the study of selected companies.

Das et. al. (2014) studied effect of quarterly earnings announcement on companies constituting sensex and found that the quarterly earnings announcement does not have statistically significant effect on stock returns.

### Objective of the Study

The study is aimed to study the stock market reaction to the Union Budget Announcement made on 1<sup>st</sup> February, 2018. The study will help to analyse the presence of the abnormal returns during the days surrounding the announcement date.

### Hypothesis of the Study

H<sub>0</sub>: Semi Strong form of efficiency exists in the Indian Stock Market i.e. investors cannot make the abnormal returns based on the public union budget announcement made by the GOI. To test this two hypotheses are formulated. H<sub>0a</sub>: The AARs of the sample firm are zero in the event window. H<sub>0b</sub>: The CAARs of the sample firm are zero in the event window (Das et. al, 2014).

### Research Methodology

#### Data and their Source

The study is based on the list of 31 companies listed on the BSE sensex 30. The daily closing prices of the sample firms are taken from 30<sup>th</sup> March, 2017 to 5<sup>th</sup> March, 2018 from the website of BSE.

#### Methodology Adopted

For semi strong form of EMH, Event study methodology (Elton and Gruber, 2002) has been applied. Daily returns and Market Model (Warner and Brown, 2012) has also been used. Event study measures the impact of a specific economic event on the value of a firm. The key focus of event study is on measuring the “sample securities” average abnormal returns around the time of an event. The announcement was made by the Government on 1<sup>st</sup> February, 2018 before the closing of the market. The event date is defined as “t” = 0. An event window of 41 days (t= -20 to t= +20) is considered for the research. The daily returns of the firms (R<sub>it</sub>) and the market index (R<sub>mt</sub>) is calculated using formulae: Current daily return = log(Current day price / Previous day price). The Expected return (normal return) is calculated using the market model. For any security i, the market model is:

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} + \epsilon_{it}$$

where, E(R<sub>it</sub>) is the expected return on security i on day t; R<sub>mt</sub> is the return on the market index on day t; and  $\epsilon_{it}$  is the zero mean disturbance term.  $\alpha_i$ ,  $\beta_i$  and  $\epsilon_{it}$  are the parameters of the market model. To determine the parameters of the market model, Ordinary Least square method has been applied on the estimation window of 200 days prior to the event window. The BSE sensex 30 is used as a proxy for the market index. Some of the earlier studies related to semi strong form of efficiency also adopted similar method where the firms constituting the index and market index are same (Ramachandran, 2013; Gupta, 2015). The Abnormal return (AR) for the firm i in the event window is calculated as:

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

where, R<sub>it</sub> is the actual return for the security i during time t and E(R<sub>it</sub>) is the Expected return calculated using market model. The abnormal returns of individual securities are averaged for each day before and after the event day in the event window and the Average Abnormal Return (AAR) is obtained using formulae:

$$AAR_t = \sum_{i=1}^N (AR)_{it} / N, \text{ where } t = -20 \text{ to } +20$$

Where, (AR)<sub>it</sub> represents abnormal returns of the ith firm on the event day t and N refers to total number of firms. Parametric t test is used to measure the significance of AARs. The 5% level of significance with suitable degree of freedom is used to test the null hypothesis. T test has been calculated in SPSS. Similarly, the significance testing has done with the CAARs.

### Findings of the Study

To test the semi strong form of EMH, firstly expected returns are to be calculated. For this, regression coefficients using actual returns for each company and NIFTY 50 index are calculated. These are used as the parameters in the Ordinary Least Square Market Model to compute the expected returns. The

analysis has been divided into two sections. First section analyses that whether the information yields any significant average abnormal return on any of the days in the event window. Second section analyses the presence of significance Cumulative average abnormal return during the event window.

**(1). AAR on each day surrounding the Announcement date.**

The AARs of the companies were found out for the event window. With regards to this the hypothesis formulated is  $H_{02a}$  -The AARs of the sample firms is zero in the event window. Parametric t test has been used to test the significance of AAR during the event window.  $t = AAR / \sigma (AAR)$ , where AAR = Average abnormal return and  $\sigma (AAR)$  = standard error of average abnormal return. The t values in the following table 1.1 represent the values of test statistic for AAR.

<b>Table 1.1</b> Representing AARs, t values and significance level			
<b>Event Window</b>	<b>AAR</b>	<b>T value</b>	<b>P value</b>
-20	-0.010%	-.044	.965
-19	-0.359%	-1.577	.125
-18	-0.286%	-1.129	.268
-17	0.069%	.282	.780
-16	-0.093%	-.362	.720
-15	-0.006%	-.030	.976
-14	0.036%	.214	.832
-13	0.131%	.865	.394
-12	0.668%	2.192	.036
-11	0.043%	.118	.907
-10	0.020%	.088	.930
-9	0.584%	2.010	.054
-8	-0.046%	-.250	.804
-7	0.204%	.605	.550
-6	-0.094%	-.416	.680
-5	0.139%	.358	.723
-4	0.155%	.582	.565
-3	0.338%	.967	.341
-2	-0.111%	-.578	.567
-1	0.450%	1.222	.231
0	-0.022%	-.060	.953
1	-0.028%	-.104	.918
2	-0.514%	-1.391	.174
3	-0.022%	-.085	.933
4	-0.302%	-1.491	.147
5	0.025%	.095	.925
6	-0.234%	-1.285	.209
7	-0.292%	-1.164	.254
8	0.016%	.048	.962
9	0.114%	.674	.505
10	0.058%	.388	.701
11	0.358%	1.353	.186
12	-0.283%	-2.061	.048
13	0.316%	1.093	.283
14	-0.010%	-.039	.969
15	-0.287%	-1.112	.275
16	-0.126%	-.456	.651
17	-0.203%	-.916	.367
18	0.024%	.144	.887
19	-0.334%	-2.492	.018
20	0.118%	.438	.664
Computed in SPSS			

### Analysis of AARs

From the above table 1.1, it is analysed that the AARs in the event window are not statistically significant. The p value in the event window for most of the days is greater than 0.05, which indicates the support for the null hypothesis i.e. the AARs in the event window is statistically and significantly not different from zero. Therefore, it can be said that the information was quickly reflected by the stock prices and there was no scope of earning abnormal returns.

### Cumulative Average Abnormal Returns during the event window

The average abnormal returns of the companies were cumulated to calculate the cumulative average abnormal returns (CAAR). With regards to this the hypothesis formulated is  $H_{0b}$ : The CAAR during the event window is equal to zero. Parametric t test has been used to test the significance of CAAR during the event window.  $t = CAAR / \sigma (CAAR)$ , where CAAR = Cumulative Average abnormal return and  $\sigma (CAAR)$  = standard error of average abnormal return. The t values in the following table 1.3 represent the values of test statistic for CAAR.

Table 1.2 representing CAARs and t values.			
Event Window	AAR	T value	P value
-20	-0.010%	-0.01	0.992
-19	-0.369%	-0.53	0.599
-18	-0.655%	-0.94	0.352
-17	-0.587%	-0.84	0.405
-16	-0.680%	-0.97	0.337
-15	-0.686%	-0.98	0.332
-14	-0.650%	-0.93	0.357
-13	-0.519%	-0.74	0.463
-12	0.149%	0.21	0.834
-11	0.192%	0.27	0.788
-10	0.211%	0.30	0.765
-9	0.796%	1.14	0.261
-8	0.749%	1.07	0.291
-7	0.953%	1.36	0.181
-6	0.859%	1.23	0.225
-5	0.997%	1.43	0.160
-4	1.153%	1.65	0.106
-3	1.490%	2.13	0.039
-2	1.379%	1.97	0.55
-1	1.829%	2.61	0.012
0	1.807%	2.58	0.136
1	1.779%	2.54	0.015
2	1.266%	1.81	0.778
3	1.244%	1.78	0.826

in the entire event window. Significant CAAR were observed on the event day but this significant abnormal return was not carried forward indicating the efficiency of the stock market to immediately reflect the information in the prices. Therefore, the hypothesis that the CAARs during the event window are not significantly different from zero is rejected.

**Conclusion**

From the study it has been analysed that based on the announcement of Union Budget, abnormal returns cannot be earned by the investors as the information is quickly reflected in the stock prices leaving no arbitrage opportunity. Similar results has been observed in the studies of Gupta, (2015); Patel et. al (2016); Bansal, (2017). In the study, the AARs observed are not statistically significant and it is corroborated by the CAARs data as well. This implies that the level of efficiency of the stock market is high. For, future research, the impact of the Union Budget can be learned with respect to different sectors and thereafter a comparison can be made.

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