THE IMPACT OF EARNING ANNOUNCEMENT ON STOCK PRICE REACTION FOR NIFTY 500 COMPANIES

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CERTIFICATION

This is to certify that the project work titled "**The Impact of Earning Announcement on Stock Price Reaction for NIFTY 500 Companies**", being submitted by Enakshi Roy, Rima Kundu, Rita Behara the students of MA semester IV, Economics of Money and Finance special paper session 2022-2024 of the Department of Economics, is an original work based on secondary data analysis in which the above students took part.

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STUDENT'S DECLARATION

We, hereby declare that this project titled **"The Impact of Earnings Announcement on Stock Price Reaction for NIFTY 500 Companies"** and the work presented herein is entirely our own original work, except for data source and where explicitly stated otherwise. All sources of information and material used have been duty acknowledged and referenced.

We further declared that:

- This project has not been submitted in whole or in part for any other academic degree or qualification.
- All contributions from other individuals or sources have been appropriately credited and acknowledged in this project.
- We have adhered to all ethical guidelines and academic standards prescribed by our university.
- Any assistance received in the preparation of this project from individuals or organizations has been duly acknowledged.
- The data, findings, and conclusions presented in this project are based on secondary data.
- We understand that any act of plagiarism or academic dishonesty in relation to this project may result in disciplinary action by our university.

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ABSTRACT

Our study endeavors to explore the impact of earnings announcement on Indian stock price reactions for the NIFTY 500 companies just after the COVID-19 pandemic period. Based on our objective, we have chosen the first quarter of 2022 as our study period. We chose NIFTY 500 companies as it represents a broad and diverse scenario of the Indian stock market, covering firms from many sectors and industries, which also gives exposure to large and mid-cap firms. Earnings announcements are considered as important information to market participants. The Event Study Methodology is used to calculate the average abnormal returns and cumulative average abnormal returns for the event window of 61 days i.e. 30 days prior to the announcement day and 30 days after the announcement day. The Abnormal returns and Cumulative average abnormal returns are tested by using the Mean Adjusted model, Market Adjusted model, and Market OLS model. The parametric Student-t test has been used for examining the statistical significance of our study. Our parametric results show that the Indian stock market rejects the Efficient Market Hypothesis (EMH).

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1. INTRODUCTION

The objective of our study is to explore the impact of earnings announcement changes on stock price reactions. The stock market is an ever-evolving entity. It is influenced by several factors such as economic indicators, political events, and company-specific news. The stock price of a publicly traded company reflects the company's value where the price of a share fluctuates subject to market conditions. It will likely increase if the company is perceived to be doing well, or fall if the company isn't meeting expectations. Many researchers investigated the stock market reaction to informational disclosure regarding various corporate announcements. Among these corporate announcements, earnings announcement is one of the most important financial disclosures of publicly traded companies that affects stock prices through the buying and selling of any firm's shares (Lounie and Abeyratna, 1996).

An earnings announcement is a quarterly report that publicly traded companies release to provide information about their financial performance. Earnings announcement reports provide financial information on how well a company is doing by providing quarterly updates of a company’s financial statement which includes a balance sheet, profit and loss statement, and cash flow statement. The Earnings announcement provides two types of information – (i) the firm's current period earnings that is used for equity shareholders and (ii) possible future earnings that would be finally distributed to shareholders.

An Earnings announcement of a company releases new information to the market which in turn tends to change the stock price. Prior to the earnings disclosure of a

company, it creates expectations and speculations about information. If the announced earnings of a firm differ from the market-expected earnings, then the market reacts to that unexpected announcement. Therefore, if a company's earnings report exceeds market expectations then the investors may view the company as a good investment opportunity and start buying shares which can lead to an increase in stock prices. On the other hand, if the earnings report falls short of expectations, investors may start selling shares, leading to a decline in stock prices.

In a nutshell, earnings announcement can be positive or negative and affect the company’s stock price accordingly. For example, when a company announces that it has exceeded its revenue or earnings expectations, the stock price usually increases. Similarly negative company-specific announcements can also hurt stock prices. For example, when a company announces that it missed its revenue or earnings expectations, the stock price will fall. Thus, how the financial information is reflected in stock prices and the stock market efficiency could be explained through the Efficient Market Hypothesis (EMH). This theory states that a market is said to be efficient if a quick and correct adjustment takes place in the share price of a company just after its earnings announcement. Here, the correct adjustment means there will be no overreaction or under-reaction of the stock prices of a company in response to any specific announcement. The EMH can be further classified into three forms: weak, semi-strong, and strong form of market efficiency.

A. Weak form of market efficiency - when historic market data and past prices are fully reflected in share prices. However, historical market data and past prices are unable to predict future prices.

B. Semi-strong form of market efficiency -when all publicly available information is fully reflected in the share price. Broadly speaking, when investors cannot use published information as well as historical prices to earn abnormal returns then the market behavior is characterized as a semi-strong form of the efficient market.

C. Any market will be considered a strong form when all available public and private sources of information are fully reflected in the share price.

It is important to investors, policymakers, researchers, and regulators that the market adjust the share price to earnings announcement, as in emerging markets, they are eager to increase their portfolio return by identifying all the opportunities to make a profit by trading around the announcement date.

The capital market plays a vital role in developing India's economy. In the eighteenth century, East India Company was the one that introduced the Indian capital market. In the early 1990s, India’s rank was pretty poor in the global context regarding the state of capital markets, which improved using the reforms, adopting IT tools in trading and settlement mechanisms. The National Stock Exchange (NSE) also played a crucial role in this transformation by establishing screen-based trading, shorter settlement periods, dematerialization, and derivatives. Under this market, the stock market witnessed enormous growth over the years. However, the financial crisis of 2007-08 had massively affected the stock market, and corporate and financial institutions are believed to be

responsible for this. This occurred due to the development of new and complicated products, and the creation of private information that reduces the accuracy. The global financial crisis occurred due to huge subprime lending that also affected the Indian stock market. When Foreign Institutional Investors pulled out their investment from the Indian market, it resulted in stock market volatility and negative returns. The Indian market was regaining its normal phase, in the post-crisis period (2008-2011).

During the time period of December 2002 to December 2011, the Indian stock market faced rejection for a semi-strong form of market efficiency. It also seems that investors react more to bad news, i.e. lower aggregate earnings, compared to good news, i.e. higher aggregate earnings (Sanjay Sehgal, Kumar Bijoy). Even in the March 2011 quarter, the market failed to adjust rapidly to the quarterly earnings news and therefore the market is again inefficient in semi-strong form (Janet Jyothi Dsouza and T Mallikarjunappa, 2016). Similarly in the September 2012 quarter, the market has positively reacted to the earnings announcement. This reflects that the Indian stock market responded asymmetrically to good and bad news earnings announcements (Janet Jyothi Dsouza and T Mallikarjunappa, 2017).

From the third quarter of the financial year 2018–2019, the stock prices of Indian companies like Godrej Consumer Products, HDFC, and Maruti Suzuki India declined by 7%,1.03%, and 9% respectively after the earnings announcement. On the other hand, ICICI Bank, Domino's Pizza in India stock price increased over 4%,6% before the earnings announcement. (Sayantan and Aditya, 2021)

However, during the period of the COVID-19 pandemic, 2020 the Indian stock market performance in terms of average returns has declined. Interestingly, COVID-19 has not shown any significant impact on the Volatility Index, which implies that the risk perception of investors has decreased, which encouraged them to enter the bearish market, thus improving market volumes. As economic factors are declining, the stock market is becoming a hot spot for investors. Once the pandemic is over, some sectors in India go bullish due to the perception of the market, and the sectors are actually gaining trading volume but losing average returns (Ashraf, Yilmazkudey and Barro et al. 2020)

Against this backdrop, we want to empirically investigate the market's response to earnings announcements for NIFTY 500 for the first quarters of the year 2022. We focus here on a window of 312 trading days around the official public announcement and compare market variables' reactions. We used three sophisticated models to analyze the relationship between earnings announcement news and the share price of the sample companies.

The rest of the study is structured as follows: Section 2 describes the literature review. Section 3 presents the research gap, section 4 presents the objectives of the study, Section 5 shows the data collected and methodology, Section 6 shows the empirical findings and results, and Section 7 concludes the analysis of the study.

2. LITERATURE REVIEW

2.1 GLOBAL CONTEXT

Beaver (1968) attempted to study the earnings surprise by examining the information of earnings announcements in the US market. Beaver (1968) found that there is a significant increase in the stock price volatility and trading volume during the announcement period.

Firth (1981) studied the firm enlisted on the Stock market in the United Kingdom the magnitude of the abnormal return influenced by the size of the company. Smaller companies don't attract any attention from financial institutions and financial media, due to which there exists asymmetric information in the smaller companies' stock price. When earnings are announced, it increases the abnormal return due to larger information reactions.

Hirshleifer (2001) studies the New York Stock Exchange and found that while forming market expectations of a firm's future performance, investors may not always correctly understand the available information and as a result trades occur out of such irrationality.

Cameron Truong (2011) studied over 16 years about the information of earnings announcements for the New Zealand equity market. He explains that over the time there has been a significant increase in the information of earnings announcements for both interim and preliminary. He also found that earnings announcements exhibit higher levels of information available and experienced a

more pronounced rising trend in June year-ends as compared to non-June year-ends.

Savor and Wilson (2016) studied in the US stock market that the announcement time is important, as the firms which make announcements earlier than others, have higher risk and earn higher risk premium.

Barber et al. (2013) in his study of the US stock market explains that the investors get a high premium before announcement due to uncertain earnings which makes stock price more volatile.

Sponholtz (2001) studies the Danish Stock market for the period 1999-2001 found around the earnings announcement in the market the abnormal price reactions are statistically significant.

Deshpande and Svetina (2011) in his study of country USA, found that for the news about earning surprises, investors are more attentive towards the local news about the local firms

William Kross and Douglas A. Schroeder (1984) studied in the USA market. He states that stock return is highly influenced by timings of earnings announcements. The firms that announced early have significantly higher abnormal returns than the firms that announced late.

André Tiago Torres Lopes Magone (2019) in his study of FAANG Stock market says that around event day there are different price reactions. On an individual event and period after the announcement day have consistent high abnormal returns but the stocks are not consistently positive or negative on a multi-period analysis, which leads to symmetric high abnormal returns along with a low abnormal performance. Similarly, the impact of the stock market price

movements on the types of news have a significantly under and overreactions on a multi-event analysis.

Chenxi Wang, Gerky King Phet (2012) in their study about the Nordic countries found that earnings information has a low impact on the stock market. The positive earnings surprise has a longer effect on stock price compared to negative earnings surprise, which have a stable reaction on the stock price. Annual earnings information was incapable of influencing the stock market effectively. During the whole event window investors can earn abnormal returns through this information

Branda examines the stock price reaction to a company's annual earnings announcement report for 73 AEX listed companies for the period 1990 – 2018. He found a positive relation between the abnormal return and the earnings announcement, which includes a positive abnormal return for good news events and a negative abnormal return for bad news events. On the post-earnings-announcement period For both the good and bad news, he found an upwards sloping trend.

Gerard (2012) in European markets said that there is a change in the trading volume around the announcement date, and there is a positive relation between the trading volume and the abnormal return.

Dumontier and Raffournier (2002) explained that in Europe, earnings announcements is not a good measures of the earnings on event day, because they have been included in share prices during the reported period, and earnings capture only a weak proportion of the information contained in the share prices .

Ali Murad Syed and Ishtiaq Ahmad Bajwa (2018) conducted their study on the Saudi Stock Market, the market rejects the semi-strong form of EMH, as they find abnormal returns to be statistically significant.

Malhotra et al., (2015) in his study of Turkish Stock market found a jump in the stock price around both "Good" and "Bad" earnings announcement, and the cumulative abnormal returns for "Bad" earnings news is statistically significant for the event window.

Dongwei Su(2003) studied the chinese stock market, where he explained that reduction in Asymmetric information helps to increase the investor's confidence. It also improves competitiveness and informational efficiency.

Chen et al. (2005) evaluate the timing of earnings announcements in a four-month cluster in the China market. They found that firms, who want to make early announcements, lead to higher trade volume and price reactions compared to firms who make late announcements. These indicate there exists information asymmetry between early and late announcements.

Rufus (2011) in his study of stock price reaction on the Nigerian stock market has found that the market is inefficient.

Vieru (2002) studied the Helsinki stock market which highlighted that, before an announcement large trades create permanent price effects higher than after announcement, and the results were statistically insignificant for small trades.

Asiri and Alzeera, 2013 studied Saudi Stock Market using four different tests and revealed that the market is weak form market efficiency (share prices and 11 individual sectors).

Olowe, 1998; Oludoyi, 1999 and Adelegan, 2009 studied in Nigerian stock market that the market did not find any evidence of efficiency, which implies it is informationally inefficient.

2.2 INDIAN CONTEXT

Janet Jyothi Dsouza & T Mallikarjunappa (2016) study the stock market reaction on earnings announcement which explained that the Indian stock market fails to absorb the publicly available market information about the earnings announcement, which helps the investors to easily anticipate the future returns.

Mallikarjunappa (2004) and Iqbal and Mallikarjunappa (2007, 2008a, 2008b, 2010, 2011) found that the Indian stock market circulates the information very slowly which gives opportunity to gain abnormal returns.

Das et al. (2014) studied the impact of earnings news on the stock market through SENSEX companies during boom and recession periods. The returns are statistically insignificant during both the periods.

Mallikarjunappa and Dsouza (2013, 2014), Saravanakumar and Mahadevan (2013), Seghal and Bijoy (2015) examined the semi-strong form of efficient market hypothesis and found the Abnormal return around the earning announcement to be statistically significant. They also showed that the Indian market is predictable. Thus it rejects semi strong form of market efficiency

Gupta (2006) revealed that good news shows a positive average abnormal return (AAR) and a bad news shows a negative AAR for stocks on the announcement days

Mallikarjunappa (2004) and Iqbal and Mallikarjunappa (2007, 2008a, 2008b, 2010, 2011) found that the Indian stock market circulates the information very slowly which gives opportunity to investors to gain abnormal returns.

Belgaumi (1995) studied the speed of stock prices adjustments to half-yearly earnings announcements based on the stock market efficiency. He concluded that in the Indian stock market, there exists learning lags and incorporation information very slowly, which results in the rejection of a semi strong form of market efficiency.

S Kundu and A Banerjee (2021) studies that in the pre announcement period all stocks get exclusive return. If firms generate higher stock returns, if the current period earnings are better than the previous one. It is clearly understandable that firms' earnings can be anticipated before the announcement. In post-announcement, stock prices adjust according to the earnings information, and declining stock prices are experienced by only the non-performers.

3. RESEARCH GAP

There is vast literature available on this topic but it was found that most of the studies were conducted in advanced economies whereas very few studies were conducted in the Indian context and also most of the studies were based on one or

few quarters. In addition to this, no study has been conducted for the post-COVID-19 period. So our study provides an addition to existing literature on the topic of earnings announcements and its effect on stock price reaction in the Indian context. Moreover, we have taken into consideration the first quarter of the year 2022, which is also the post-COVID period. Also, our study categorized the companies into good news, and bad news and explored whether the impact of earnings announcement changes on stock price reaction.

4. OBJECTIVES

A. Exploring the impact of the earnings announcement for the first quarter of 2022, on the stock price reaction of the firm.
B. Dividing the earnings announcements into – GOOD NEWS and BAD NEWS, we want to re-examine the same objective.

5. METHODOLOGY

5.1 DATA DESCRIPTION

In our study, we have used quarterly earnings announcement news of NIFTY 500 companies for the first quarter of the year 2022, from the National Stock Exchange (NSE) to analyze the information during the announcement, using the event study methodology. We chose NIFTY 500 companies which represent a broad and diverse scenario of the Indian stock market, covering firms from many sectors and industries, which also gives exposure to large and mid-cap firms. After the outbreak

of COVID-19, a global pandemic that spread primarily from person to person through small droplets from the nose or mouth expelled when a person with COVID 19 coughs or sneezes, the stock market came under fear as Bombay Stock Exchange (BSE) Sensex and National Stock Exchange (NSE) NIFTY fell, which leads to a great loss in stock market from the beginning of 2019 and there was continuous circuit breakdown of NSE during COVID 19 period. Thus we wanted to see the impact of the post-Covid earnings announcement on stock price reaction, so we have taken the first quarter of the financial year 2022 for our study. Some restrictions are placed on selecting companies from NIFTY 500 to make our study more meaningful. These restrictions are as follows: (i) we are keeping those companies that have not simultaneously declared earnings announcements and as well as other announcements (such as share repurchases, stock splits, dividend announcements). (ii) We have kept all those companies that were not delisted or suspended during the study period. (iii) This way we are left with 74 companies. We have deleted those companies that had missing data problems related to quarterly profit and loss statements as well as adjusted closing prices and market data.

In total, we have 500 companies but applying the restrictions we have 74 companies. Further, dividing our earnings announcement data into good news and bad news, we have finally got 66 companies.

The company-specific adjusted closing price and market closing price data have been taken for a total of 312 trading days. The abnormal performance of the sample companies is tested using the Market-Adjusted Model, Mean-Adjusted Model, and Market Ordinary Least Square (OLS) Method. The details of the model are given below:

5.2 ASSOCIATED PROBLEMS

Data regarding announcement date, quarterly profit and loss, and company-specific adjusted close price of some companies are not available on the National Stock Exchange (NSE). After eliminating such companies, whose data are unavailable, 74 companies out of NIFTY 500 companies listed in NSE, were selected for our study. In many cases the earnings are announced on the non-trading day or holiday, thus we took the next immediate trading day after the announcement, which is taken as the event day.

5.3 EVENT STUDY METHODOLOGY

Using the Event study methodology, we could analyze the movement in share price in terms of newly available financial information in the capital market. During the earnings announcements, to capture the overall reactions of the market, the Event study methodology uses average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) (Fama 1991). Thus, it will help us to understand the behavior of the average price in the market. Hence, the market is said to be efficient, if AAR and CAAR are close to zero [Brown and Warner (1980, 1985), Mallikarjunappa (2004) and Iqbal & T. Mallikarjunappa (2007)].

The objective of our study is to see the impact of earnings announcement change on stock price reaction during the first quarters of the year 2022. To explore this, we are using the Event Study Methodology, which was developed by Fama et al. (1969). An event study is a statistical method used to examine the reaction of the stock market. It is used to see the stock price reaction due to earnings announcements and has become popular. The same methodology was used by other

researchers to test the Efficient Market Hypothesis (EMH), which is an investment theory that states the price of financial instruments which reflects all available market information.

The earning announcement news is nothing but the earning announcement date, which is defined as event day (i.e. t=0). In our study, we have taken 61 days of data as an event window which also includes the event day. So, it contains 30 days before event day (i.e., t= -30,-29...-1), the event day (t=0), and 30 days post event days (i.e. t=1, 2... 30), to examine the relationship between information and return. Thus, the event window is the period over which the security prices of the firms that are involved in the event are analyzed. It also captures the price effect of the earnings announcements on the event day after the stock market closed down. One may investigate all the possibilities of pre-event returns by examining the information about the earnings before the actual earnings announcement.

The estimation period is basically the period before the event window. In our study, we took 251 trading days as the estimation window, starting from -281 day to -31 day, which is also referred to as a nonevent period in the event study methodology. Usually, the event window is not included here to prevent the parameters estimate (normal performance model) from getting influenced by the event, with these estimated parameters we can evaluate the abnormal return. It also allows us to make informed decisions or predictions based on the past data and also helps us to understand the trends, patterns, and potential future outcomes by providing a sample of data over a specific period.

5.3.1 ABNORMAL RETURN MEASURE

The abnormal return is the difference between the actual ex-post return of the security and the normal return of the firm over the event window. The normal return is defined as the expected return without conditioning on the event taking place. For firm i and event date τ the abnormal return is

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

Where, AR_{it}, R_{it}, and $E(R_{it}|X_t)$ are the abnormal, actual, and normal returns respectively for time period t. X_t is the conditioning information for the normal return model.

There are two choices for modeling the normal return-

- When X_t is constant it is referred to as the Mean–the adjusted model or constant mean return model- which assumes that the mean return is constant for a given security through time.

- When X_t is market return it refers to the market model, which assumes a stable linear relation between the market return and security return. Based on this market return. The market model is divided into two groups – (a) Market adjusted Model; and (b) Market OLS model.

All these models are vividly explained below.

5.3.1.1 MEAN ADJUSTED MODEL

This model was developed by Masulis in 1980. It assumes that the expected return for the given security i is equal to constant $\bar{R}_i$. The abnormal return is a

portfolio or investment's uncharacteristically high earnings or losses over a certain time period i.e. the difference between actual return and expected return.

$$AR_{it} = R_{it} - \overline{R}_i$$

$$\overline{R}_i = \frac{1}{250} \sum_{i=-280}^{-31} \mathrm{R_i}$$

AR_{it} represents the abnormal return for security i on day t and $\underline{R_i}$ represents the average of security i 's daily return for the estimation period (-280,…,-31).

5.3.1.2 MARKET ADJUSTED MODEL

This model was developed by Cowles in 1933 and, Latane and Jones in 1979. In this model, the expected returns are equal across securities. The abnormal return is the difference between the security return and the market return.

$$AR_{it} = R_{it} - R_{mt}$$

R_{mt} represents the return on the BSE-200 index for t day.

5.3.1.3 MARKET OLS MODEL

This model was developed by Adrien-Marie Legendre in 1805. To calculate the expected return, we regress each security return with market return using α, and β coefficients from simple regression. This model states that,

$$AR_{it} = \alpha_i + \beta_i R_{mt} + e_{it}$$

Here, α_i and β_i are the OLS values for the estimation period.

The β is calculated as,

$$\beta_i = \frac{N \sum_{i=1}^{N} R_{mt} R_{it} - (\sum_{t=1}^{N} R_{mt})(\sum_{t=1}^{N} R_{it})}{N(\sum_{t=1}^{N} R_{mt}^2) - N(\sum_{t=1}^{N} R_{mt})^2}$$

Here, β_i = Slope of a straight line or beta coefficient of security i

R_{mt}=Return on market during time period t

R_{it} = Return on security i during time period t

N= Number of observations

In our study, we compute the *Average Abnormal Returns* (AARs), which is the average of abnormal returns of all securities, and *Cumulative Average Abnormal Returns* (CAARs) which are cumulative aggregates of abnormal returns for all securities based on this methodology, that are given below.

A. Average Abnormal Returns(AARs)

This model is used to calculate the *Average Abnormal Return* (AAR)

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

Here, i represents different securities in this study

N represents total no. Of securities

t is the event window days

B. Cumulative Average Abnormal Return (CAAR)

The value of *Average Abnormal Returns* (AAR) is cumulated over the 61 days to evaluate the *Cumulative Average Abnormal Returns* (CAARs). In our study, we expect that the CAARs should be close to zero.

For the CAAR, the following formula is-

$CAAR_t = \sum_{t=-30}^{k} AAR_{it}$; where, t= -30,-29,….0,+1,….,+30

5.3.2 HYPOTHESIS TESTING

Hypothesis testing is used to estimate the significance level of the estimated parameters. In other words, hypothesis testing is where two hypotheses are compared and tested against each other, which includes a null hypothesis and an alternative hypothesis.

We have considered a t-test to calculate the critical value. So to run the hypotheses testing, the two hypotheses are as follows:

$H_{0:}$ AAR=0 and CAAR=0

H_1: AAR≠0 and CAAR≠0

5.3. 3 TEST FOR STATISTICAL SIGNIFICANCE

Test statistics are calculated using the parametric test. The parametric t-test is a test that is used to measure the significance of Average Abnormal Returns (AARs) and Cumulative Average Abnormal Returns (CAARs). The 5% level of significance with a suitable degree of freedom is used to test the null hypothesis that, after the event day there are no significant abnormal returns. Here, in our study, we assume that if the market is efficient, then the value of AARs and CAARs must be close to *zero*.

5.3.2.1 THE STATISTICAL TEST (t TEST) FOR AVERAGE ABNORMAL RETURNS (AARs)

The t statistics for Average Abnormal Returns (AARs) is given below:

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

Where, AAR= Average Abnormal return

$\sigma(AAR)$= Standard error of Average Abnormal Returns (AARs)

The following formula helps to calculate the standard error

$$\text{Standard Error (S.E.)} = \frac{\sigma}{\sqrt{n}}$$

Where, σ= Standard deviation; n= No. Of observation

5.3.2.2 THE STATISTICAL TEST (t TEST) FOR CUMULATIVE AVERAGE ABNORMAL RETURNS (CAARs)

The t statistics for Cumulative Average Abnormal Returns (CAARs) is given by:

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

Where, CAAR= Cumulative Average Abnormal Returns

$\sigma(CAAR)$= Standard error of *Cumulative Average Abnormal Returns*

The formula which is used for calculating the standard error is given below:

$$\text{Standard Error (S.E.)} = \frac{\sigma}{\sqrt{n}}$$

Where, σ= Standard deviation

n= No. Of observation

5.3.4 DETERMINATION OF GOOD NEWS AND BAD NEWS

To analyze the impact of the stock price on earning disclosures with different information contents, it is necessary to divide the total sample into good news and bad news.

In our study, we have used four combinations to estimate good news and bad news from the quarterly profit and loss statement of the firm. Those combinations are as follows:

A. If net sales and net profit both are positive, then it will be considered as GOOD NEWS

B. If net sales is negative but net profit is positive, then it will be considered as GOOD NEWS

C. If net sales is positive but net profit is negative, then it will be considered as BAD NEWS

D. If net sales and net profit both are negative, then it will be considered as BAD NEWS.

6. RESULT AND INTERPRETATIONS

TABLE 1: SAMPLE WITH NUMBER OF EVENTS

SL. NO.	COMPANY NAME	NO. OF EARNING ANNOUNCEMENT
1	**ABB INDIA LTD.**	4
2	**Adani Enterprise**	4
3	**Adani Ports and Special Economic Zone Ltd.**	4
4	**Apollo Hospitals Enterprise Ltd.**	4
5	**Asian Paints Ltd.**	4
6	**Avenue Supermarts Ltd.**	4
7	**Bajaj Finance Ltd.**	4
8	**Bajaj Finserv Ltd.**	4
9	**Bajaj Holdings & Investment Ltd.**	4
10	**Berger Paints India Ltd.**	4
11	**Bharat Electronics Ltd.**	4
12	**Bharti Airtel Ltd.**	4
13	**Britannia Industries Ltd.**	4
14	**Colgate Palmolive (India) Ltd.**	4
15	**Dabur India Ltd.**	4
16	**Divi's Laboratories Ltd.**	4
17	**DLF Ltd.**	4
18	**Dr. Reddy's Laboratories Ltd.**	4
19	**Eicher Motors Ltd.**	4
20	**GAIL (India) Ltd.**	4
21	**Godrej Consumer Products Ltd.**	4
22	**Grasim Industries Ltd.**	4
23	**HCL Technologies Ltd.**	4
24	**Hero MotoCorp Ltd.**	4
25	**Hindustan Aeronautics Ltd.**	4
26	**Hindustan Unilever Ltd.**	4
27	**ICICI Lombard General Insurance Company Ltd.**	4
28	**ICICI Prudential Life Insurance Company Ltd.**	4
29	**Indian Railway Catering And Tourism Corporation Ltd.**	4
30	**Indigo**	4
31	**Info Edge (India) Ltd.**	4
32	**Infosys Ltd.**	4
33	**ITC Ltd.**	4
34	**JSW Steel Ltd.**	4
35	**Kotak Mahindra Bank Ltd.**	4

36	**Larsen & Toubro Ltd.**	4
37	**LTI Mindtree Ltd.**	4
38	**Mahindra & Mahindra Ltd.**	4
39	**Marico Ltd.**	4
40	**Maruti Suzuki India Ltd.**	4
41	**Muthoot Finance Ltd.**	4
42	**Oil & Natural Gas Corporation Ltd.**	4
43	**PI Industries Ltd.**	4
44	**Pidilite Industries Ltd.**	4
45	**Power Grid Corporation of India Ltd.**	4
46	**Procter & Gamble Hygiene & Health Care Ltd.**	4
47	**Reliance Industries Ltd.**	4
48	**Samvardhana Motherson International Ltd.**	4
49	**SBI Cards and Payment Services Ltd.**	4
50	**SBI Life Insurance Company Ltd.**	4
51	**Shree Cement Ltd.**	4
52	**Shriram Finance Ltd.**	4
53	**Tata Consultancy Services Ltd.**	4
54	**Tata Consumer Products Ltd.**	4
55	**Tata Motors Ltd DVR**	4
56	**Tata Motors Ltd.**	4
57	**Tata Steel Ltd.**	4
58	**Titan Company Ltd.**	4
59	**Torrent Pharmaceuticals Ltd.**	4
60	**Trent Ltd.**	4
61	**TVS Motor Company Ltd.**	4
62	**United Spirits Ltd.**	4
63	**UPL Ltd.**	4
64	**Varun Beverages Ltd.**	4
65	**Vedanta Ltd.**	4
66	**Zydus Lifesciences Ltd.**	4

Sources: Author's Calculation

TABLE 2: AAR AND CAAR VALUES OF FULL SAMPLE EARNINGS ANNOUNCEMENT OF Q1 OF 2022

DAYS	MEAN ADJUSTED MODEL				MARKET ADJUSTED MODEL				MARKET OLS MODEL			
	AAR	t VALUE	CAAR	t VALUE	AAR	t VALUE	CAAR	t VALUE	AAR	t VALUE	CAAR	T test
-30	-0.0014	-1.2171	-0.0014	-0.6593	-0.0020	-1.2741	-0.0020	-0.5346	-0.0014	-1.1408	-0.0014	-0.6319
-29	-0.0029	-2.1607 *	-0.0044	-2.0024 *	-0.0047	-2.8835 *	-0.0066	-1.8091	-0.0030	-2.1965 *	-0.0044	-2.0293 *
-28	-0.0012	-0.9366	-0.0056	-2.5534 *	-0.0040	-3.0998 *	-0.0106	-2.8921 *	-0.0013	-0.9836	-0.0056	-2.6156 *
-27	-0.0004	-0.4069	-0.0060	-2.7399 *	-0.0029	-2.5668 *	-0.0135	-3.6729 *	-0.0004	-0.4253	-0.0060	-2.8148 *
-26	-0.0001	-0.0938	-0.0061	-2.7786 *	-0.0019	-1.8652	-0.0154	-4.1818 *	-0.0001	-0.1470	-0.0062	-2.8769 *
-25	0.0012	1.1153	-0.0049	-2.2526 *	0.0009	0.8556	-0.0145	-3.9339 *	0.0011	1.1103	-0.0050	-2.3450 *
-24	0.0033	3.9371 *	-0.0016	-0.7505	0.0022	2.3422 *	-0.0122	-3.3326 *	0.0032	3.8155 *	-0.0018	-0.8572
-23	0.0014	1.4157	-0.0002	-0.1026	0.0009	0.9136	-0.0113	-3.0767 *	0.0013	1.3261	-0.0005	-0.2437
-22	0.0009	1.0104	0.0007	0.3228	-0.0003	-0.2884	-0.0116	-3.1609 *	0.0009	0.9174	0.0003	0.1527
-21	0.0018	1.9954 *	0.0025	1.1343	0.0010	1.0171	-0.0106	-2.8793 *	0.0017	1.8923	0.0020	0.9377
-20	0.0013	1.4812	0.0038	1.7390	0.0015	1.5103	-0.0091	-2.4795 *	0.0014	1.5972	0.0034	1.5966
-19	-0.0002	-0.2965	0.0036	1.6293	-0.0010	-1.1045	-0.0101	-2.7612 *	-0.0002	-0.2432	0.0032	1.5045
-18	0.0021	2.5027 *	0.0057	2.5904 *	0.0010	1.0490	-0.0092	-2.4905 *	0.0020	2.4333 *	0.0053	2.4485 *
-17	0.0025	3.2833 *	0.0081	3.7137 *	0.0019	2.1427 *	-0.0072	-1.9652*	0.0024	3.2199 *	0.0077	3.5750 *
-16	0.0018	1.8126	0.0099	4.5406 *	0.0020	1.6967	-0.0052	-1.4085	0.0018	1.7503	0.0095	4.3987 *
-15	-0.0007	-0.1643	0.0092	4.2245 *	-0.0005	-0.1106	-0.0057	-1.5386	-0.0007	-0.1653	0.0088	4.0742 *
-14	0.0017	1.9928 *	0.0110	5.0074 *	0.0011	0.9983	-0.0045	-1.2319	0.0015	1.7531	0.0103	4.7854 *
-13	0.0019	2.5220 *	0.0129	5.8935 *	0.0029	3.2050 *	-0.0017	-0.4515	0.0019	2.4971 *	0.0122	5.6764 *
-12	-0.0002	-0.2540	0.0127	5.7895 *	-0.0005	-0.4723	-0.0022	-0.5963	-0.0003	-0.3242	0.0119	5.5395 *
-11	0.0014	1.8752	0.0141	6.4269 *	0.0017	1.8164	-0.0005	-0.1362	0.0014	1.8066	0.0133	6.1752 *
-10	0.0023	2.9007 *	0.0164	7.4706 *	0.0034	3.5873 *	0.0029	0.7861	0.0023	2.8997 *	0.0156	7.2369 *
-9	0.0022	2.3871 *	0.0186	8.4915 *	0.0046	3.7507 *	0.0075	2.0276 *	0.0023	2.3857 *	0.0178	8.2866 *
-8	0.0042	5.1808 *	0.0228	10.4220 *	0.0047	4.6156 *	0.0122	3.3173 *	0.0041	4.9624 *	0.0220	10.2131 *
-7	0.0010	1.1896	0.0238	10.8685 *	0.0027	2.3896 *	0.0149	4.0449 *	0.0009	1.0538	0.0228	10.6229 *
-6	0.0016	2.2059 *	0.0254	11.5970 *	0.0037	3.8801 *	0.0185	5.0426 *	0.0016	2.2412 *	0.0244	11.3606 *
-5	0.0025	3.1148 *	0.0279	12.7468 *	0.0044	4.9392 *	0.0230	6.2461 *	0.0026	3.3167 *	0.0270	12.5782 *
-4	0.0022	2.7672 *	0.0301	13.7484 *	0.0033	3.6071 *	0.0263	7.1506 *	0.0021	2.6175 *	0.0291	13.5568 *
-3	0.0020	2.1554 *	0.0321	14.6451 *	0.0049	4.3329 *	0.0312	8.4814 *	0.0021	2.2637 *	0.0312	14.5179 *
-2	0.0004	0.4504	0.0325	14.8336 *	0.0028	2.5436 *	0.0340	9.2537 *	0.0005	0.4978	0.0317	14.7299 *
-1	0.0030	2.8926 *	0.0355	16.2006 *	0.0041	3.3906 *	0.0381	10.3639 *	0.0030	2.8666 *	0.0346	16.1082 *
0	0.0015	1.2190	0.0369	16.8671 *	0.0016	1.1343	0.0396	10.7868 *	0.0013	1.0837	0.0359	16.7059 *
1	0.0005	0.2956	0.0374	17.0820 *	0.0015	0.8702	0.0412	11.2078 *	0.0005	0.2937	0.0364	16.9227 *
2	0.0039	5.3617 *	0.0413	18.8749 *	0.0072	6.9675 *	0.0484	13.1597 *	0.0040	5.4407 *	0.0404	18.7829 *
3	-0.0108	-0.8085	0.0305	13.9564 *	-0.0105	-0.7866	0.0379	10.3047 *	-0.0109	-0.8195	0.0295	13.7082 *
4	0.0007	0.8257	0.0313	14.2880 *	0.0028	2.2743 *	0.0406	11.0582 *	0.0007	0.8175	0.0302	14.0447 *
5	-0.0003	-0.2953	0.0310	14.1604 *	0.0006	0.5147	0.0412	11.2117 *	-0.0003	-0.3103	0.0299	13.9066 *
6	0.0011	1.4855	0.0321	14.6798 *	0.0027	2.5871 *	0.0439	11.9585 *	0.0011	1.4326	0.0310	14.4146 *
7	0.0024	2.9089 *	0.0345	15.7862 *	0.0044	4.2771 *	0.0484	13.1595 *	0.0025	3.0360 *	0.0335	15.5857 *
8	0.0007	0.9891	0.0353	16.1067 *	0.0015	1.5233	0.0499	13.5789 *	0.0006	0.8934	0.0341	15.8856 *
9	0.0014	1.7608	0.0366	16.7239 *	0.0004	0.3704	0.0503	13.6859 *	0.0013	1.6804	0.0355	16.5066 *
10	0.0005	0.5527	0.0371	16.9501 *	-0.0003	-0.2688	0.0500	13.5984 *	0.0005	0.5290	0.0360	16.7274 *
11	0.0014	1.7148	0.0385	17.5714 *	0.0016	1.4438	0.0516	14.0471 *	0.0014	1.8063	0.0374	17.3845 *
12	0.0008	0.9871	0.0393	17.9489 *	0.0004	0.3180	0.0520	14.1433 *	0.0010	1.2179	0.0384	17.8648 *
13	0.0013	1.5905	0.0406	18.5613 *	0.0002	0.1686	0.0522	14.1957 *	0.0012	1.3685	0.0396	18.4120 *
14	-0.0001	-0.1327	0.0405	18.5141 *	0.0000	-0.0429	0.0521	14.1836 *	-0.0001	-0.1025	0.0395	18.3746 *
15	0.0003	0.3778	0.0408	18.6451 *	0.0025	2.4063 *	0.0546	14.8628 *	0.0004	0.4986	0.0399	18.5489 *
16	0.0005	0.7401	0.0414	18.8949 *	0.0004	0.5035	0.0551	14.9804 *	0.0005	0.7386	0.0404	18.8046 *
17	0.0007	0.8389	0.0420	19.1993 *	0.0001	0.1063	0.0552	15.0102 *	0.0006	0.7000	0.0410	19.0734 *
18	0.0003	0.4400	0.0424	19.3573 *	-0.0003	-0.3292	0.0549	14.9275 *	0.0003	0.4354	0.0413	19.2320 *
19	0.0024	2.7415 *	0.0447	20.4396 *	0.0036	2.9737 *	0.0585	15.9112 *	0.0024	2.7184 *	0.0438	20.3560 *
20	-0.0015	-0.6335	0.0432	19.7495 *	-0.0009	-0.3731	0.0576	15.6607 *	-0.0015	-0.6125	0.0423	19.6782 *
21	0.0013	1.5224	0.0446	20.3613 *	0.0019	1.7185	0.0594	16.1753 *	0.0013	1.5492	0.0436	20.3044 *
22	-0.0002	-0.1801	0.0444	20.2852 *	0.0013	1.1493	0.0608	16.5381 *	-0.0002	-0.1973	0.0435	20.2191 *
23	-0.0017	-2.1633 *	0.0427	19.4952 *	0.0001	0.0687	0.0608	16.5548 *	-0.0017	-2.1438 *	0.0418	19.4280 *
24	0.0016	1.9514	0.0442	20.2157 *	0.0034	3.3397 *	0.0642	17.4720 *	0.0016	1.9316	0.0433	20.1584 *
25	0.0008	0.8685	0.0450	20.5710 *	0.0010	1.0158	0.0652	17.7462 *	0.0008	0.8827	0.0441	20.5222 *
26	-0.0021	-0.8000	0.0430	19.6312 *	-0.0011	-0.4542	0.0641	17.4333 *	-0.0021	-0.8156	0.0420	19.5474 *
27	0.0008	1.1009	0.0438	20.0097 *	0.0006	0.6819	0.0647	17.5944 *	0.0007	0.9343	0.0427	19.8703 *
28	-0.0010	-1.0586	0.0428	19.5630 *	0.0004	0.3850	0.0651	17.7093 *	-0.0010	-1.0549	0.0417	19.4152 *
29	-0.0162	-1.2208	0.0266	12.1620 *	-0.0152	-1.1455	0.0499	13.5655 *	-0.0161	-1.2150	0.0256	11.9132 *
30	0.0007	0.6129	0.0273	12.4770 *	0.0008	0.5957	0.0506	13.7712 *	0.0007	0.5981	0.0263	12.2266 *

Sources: Author's Calculation

Table 2 shows the AAR and CAAR values of full sample earnings announcement of mean adjusted model, market adjusted model, and Ordinary Least Square Method of quarter 1, 2022. Here, we used three models to see if the results are consistent. Thus, from the table, we observe that AARs are insignificant for all three models for most of the days in the event window for the overall portfolio.

In the case of **Mean Adjusted Model**, the AAR values are

- Positive and insignificant on -25, -23, -22, -20, -16, -11, -7, -2, 0, 1, 4, 6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 21, 24, 25, 27, 30 day.
- Negative and insignificant on -30, -28, -27, -26, -19, -15, -12, 3, 5, 14, 20, 22, 26, 28, 29 days.
- Negative and significant on -29, 23 day
- Positive and significant on -24, -21, –18, -17, -14, -13, -10,-9, -8, -6, -5,-4, -3, -1, 2,7,19 days in the event window.

On the Event Day (t=0) and Post Announcement period (i.e., t =1, 2... 30), AARs are positive and insignificant. Whereas in the Pre-announcement period (i.e., t = -30, -29 ....-1), AARs are positive and significant.

So, by observing the t-test, AARs are positive for 44 days with 17 significant days and negative for 17 days with 2 significant days during the event window of 61 days. Therefore, we accept the null hypothesis, which means AARs values close to zero.

In the case of the CAARs values are

- Negative and significant on -29, -28, -27, -26, -25 day
- Negative and insignificant on -30, -24, -23 day

- Positive and significant on -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 day
- Positive and insignificant on -22, -21, -20, -19 day in the event period.

In the Pre-announcement period (i.e., t = -30, -29….-1), Event Day (t=0) and Post Announcement period (i.e., t =1, 2... 30), CAARs are positive and significant.

So, CAARs are positive for the entire event window with 49 significant days and 4 insignificant days. Therefore it is said that CAARs are not close to zero.

In the case of **Market Adjusted Model**, the AAR values are

- Positive and insignificant for -25, -23, -21, -20, -18, -16, -14, -11, 0, 1, 5, 8, 9, 11, 12, 13, 16, 17, 21, 22, 23, 25, 27, 28, 30 day.
- Negative and insignificant on -30, -26, -22, -19, -15, -12, 3,10 , 14, 18, 20, 26, 29 day
- Positive and significant on -24, -17, -13, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 2, 4, 6, 7, 15, 19, 24 day
- Negative and significant on -29, -28, -27 day in the event window.

On the Event Day (t=0), and Post Announcement period (i.e., t =1, 2... 30), AARs are positive and insignificant. Whereas Pre-announcement period (i.e., t = -30, -29….-1), AARs are positive and significant.

So, by observing the t-test, AARs are positive for 45 days with 20 significant days and negative for 16 days with 3 significant days during the event window of 61 days. Therefore, we accept the null hypothesis, which means AARs values close to zero.

In the case of the CAARs values are

- Negative and significant on -28, -27, -26, -25, -24, -23, -22, -21, -20, -19, -18, -17 day
- Negative and insignificant on -30, -29, -16, -15, -14, -13, -12, -11 day
- Positive and significant on -9, -8, -7, -5, -4, -3, -2, -1, 0, 1, 2,3, 4, 5, 6, 7, 8, 9,10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 day
- Positive and insignificant on -10 day in the event period.

In the Pre-announcement period (i.e., t = -30, -29….,-1), CAARs are negative and significant, in the case of the Event Day (t=0) and Post Announcement period (i.e., t =1, 2... 30), CAARs is positive and significant.

So, CAARs are positive for the entire event window with 39 significant days. Therefore it is said that CAARs are not close to zero.

In the case of the **Market OLS Model**, the AAR values are

- Positive and insignificant on -25, -23, -22, -21, -20, -16, -14, -11, -7, -2, 0, 1,4, 6,8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 21, 24, 25, 27, 30 day.
- Negative and insignificant on -30, -28, -27, -26, -19, -15, -12, 3, 5, 14, 20, 22, 26, 28, 29 day
- Negative and significant on -29, 23 day
- Positive and significant on -24, -18, -17, -13, -10, -9, -8, -6, -5, -4, -3, -1, 2, 7, 19 day in the event window

On the Pre-announcement period (i.e., t = -30, -29 ....-1), AAR is positive and insignificant. Whereas, event Day (t=0) and Post Announcement period (i.e., t =1, 2... 30), AAR is positive and insignificant.

So, by observing the t-test, AARs are positive for 40 days with 15 significant days and negative for 18 days with 2 significant days during the event window of 61 days. Therefore, we accept the null hypothesis, which means AARs values close to zero.

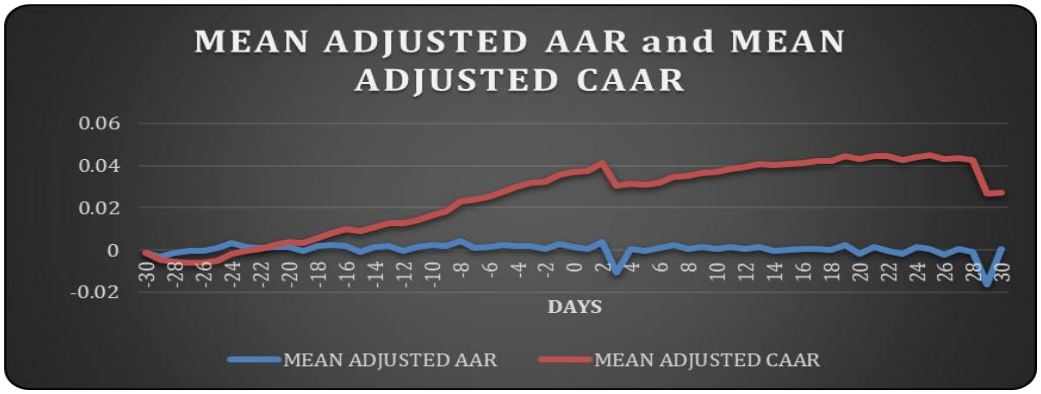
In the case, of the CAARs values are

- Negative and significant on -29, -28, -27, -26, -25 day
- Negative and insignificant on -30, -24, -23 day
- Positive and significant on -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 day
- Positive and insignificant on -22, -21, -20, -19 day in the event period.

In the Pre-announcement period (i.e., t = -30, -29 ....-1), Event Day (t=0) and Post Announcement period (i.e., t =1, 2... 30), CAARs are positive and significant.

So, CAARs are positive for the entire event window with 49 significant days. Therefore it is said that CAARs are not close to zero.

Figure 1A: AARs and CAARs trends of mean models over the 61 days event window of full sample earnings announcement of Q1 of 2022

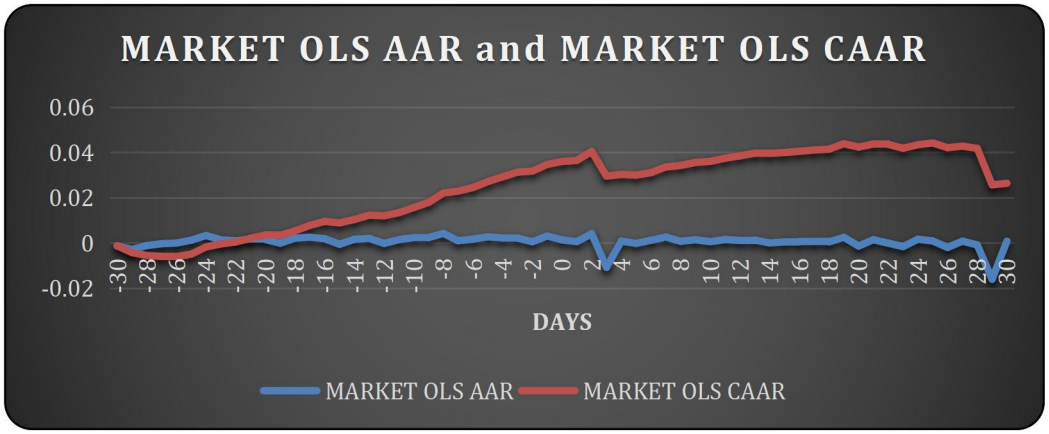


Sources: Author's Calculation

Figure 1B: AARs and CAARs trends of market models over the 61 days event window of full sample earnings announcement of Q1 of 2022

Sources: Author's Calculation

Figure 1C: AARs and CAARs trends of market ols models over the 61 days event window of full sample earnings announcement of Q1 of 2022



Sources: Author's Calculation

The figure 1A represents the trends of AARs and CAARs for the mean adjusted model of Q1 of 2022. Mean adjusted AARs fluctuates around zero for most of the days, but in the post announcement period there is a slight dip for day 3 and day 29. The mean adjusted CAARs is negative until day -22 then it gradually increases except for day 3 and day 29.

The figure 1B represents the trends of AARs and CAARs for the market adjusted model of Q1 of 2022. Market adjusted AARs fluctuates around zero for most of the days, but in the post announcement period there is a slight dip for day 3 and day 29. The market adjusted CAARs is negative until day -11 then it gradually increases except for day 3 and day 29.

The figure 1C represents the trends of AARs and CAARs for the Market OLS model of Q1 of 2022. Market ols AARs fluctuates around zero for most of the days, but in the post announcement period there is a slight dip for day 3 and day 29. The market ols CAARs is negative until day -23 then it gradually increases except for day 3 and day 29.

TABLE 3: AAR AND CAAR VALUES OF GOOD NEWS EARNINGS ANNOUNCEMENT OF Q1 OF 2022

DAYS	MEAN ADJUSTED MODEL				MARKET ADJUSTED MODEL				OLS MODEL			
	AAR	t VALUE	CAAR	t VALUE	AAR	t VALUE	CAAR	t VALUE	AAR	t VALUE	CAAR	T test
-30	-0.0012	-0.9291	-0.0012	-0.6030	-0.0023	-1.3604	-0.0023	-0.6803	-0.0012	-0.9176	-0.0012	-0.6198
-29	-0.0027	-1.9278	-0.0039	-2.0041 *	-0.0043	-2.5712 *	-0.0066	-1.9598	-0.0028	-1.9351	-0.0039	-2.0885 *
-28	-0.0009	-0.7261	-0.0049	-2.4813 *	-0.0036	-2.7963 *	-0.0102	-3.0179 *	-0.0009	-0.6874	-0.0048	-2.5603 *
-27	0.0005	0.5359	-0.0043	-2.2068 *	-0.0019	-1.6654	-0.0121	-3.5659 *	0.0006	0.5500	-0.0043	-2.2675 *
-26	-0.0006	-0.6499	-0.0049	-2.5014 *	-0.0018	-1.7510	-0.0138	-4.0901 *	-0.0005	-0.5901	-0.0048	-2.5498 *
-25	0.0012	1.2232	-0.0037	-1.8673	0.0011	1.1133	-0.0127	-3.7544 *	0.0014	1.3770	-0.0034	-1.8161
-24	0.0032	3.8754 *	-0.0005	-0.2457	0.0020	2.1812 *	-0.0107	-3.1564 *	0.0032	3.8770 *	-0.0002	-0.1276
-23	0.0018	1.6804	0.0013	0.6665	0.0009	0.8570	-0.0098	-2.8853 *	0.0014	1.3349	0.0012	0.6153
-22	0.0009	0.9808	0.0022	1.1412	0.0001	0.1245	-0.0096	-2.8463 *	0.0007	0.7241	0.0019	0.9871
-21	0.0018	2.0886 *	0.0040	2.0587 *	0.0011	1.1142	-0.0085	-2.5134 *	0.0019	2.1590 *	0.0037	1.9686 *
-20	0.0013	1.3449	0.0053	2.7114 *	0.0011	1.0703	-0.0074	-2.1941 *	0.0012	1.2387	0.0049	2.5855 *
-19	0.0003	0.3695	0.0056	2.8649 *	-0.0006	-0.6847	-0.0081	-2.3857 *	0.0002	0.1889	0.0050	2.6666 *
-18	0.0022	2.7067 *	0.0078	3.9685 *	0.0012	1.2054	-0.0069	-2.0418 *	0.0024	2.9381 *	0.0075	3.9502 *
-17	0.0025	3.3941 *	0.0103	5.2515 *	0.0023	2.5916 *	-0.0046	-1.3664	0.0026	3.3816 *	0.0101	5.3417 *
-16	0.0012	1.1660	0.0115	5.8796 *	0.0018	1.3973	-0.0028	-0.8398	0.0012	1.1220	0.0113	5.9769 *
-15	-0.0016	-0.3381	0.0100	5.0870 *	-0.0011	-0.2428	-0.0040	-1.1780	-0.0017	-0.3652	0.0096	5.0877 *
-14	0.0014	1.6253	0.0114	5.8044 *	0.0005	0.4769	-0.0035	-1.0266	0.0010	1.1281	0.0106	5.6135 *
-13	0.0015	1.9503	0.0128	6.5549 *	0.0020	2.2117 *	-0.0015	-0.4334	0.0012	1.5528	0.0118	6.2350 *
-12	-0.0009	-1.1586	0.0120	6.1112 *	-0.0013	-1.2626	-0.0028	-0.8157	-0.0013	-1.5747	0.0105	5.5699 *
-11	0.0013	1.7223	0.0133	6.7741 *	0.0018	1.8385	-0.0010	-0.2982	0.0015	1.9360	0.0120	6.3480 *
-10	0.0021	2.6586 *	0.0154	7.8519 *	0.0038	3.9110 *	0.0028	0.8326	0.0024	2.9440 *	0.0144	7.6395 *
-9	0.0018	2.1100 *	0.0172	8.7658 *	0.0040	3.3143 *	0.0068	2.0149 *	0.0020	2.2023 *	0.0165	8.7061 *
-8	0.0044	5.4345 *	0.0216	11.0145 *	0.0049	4.8702 *	0.0118	3.4747 *	0.0044	5.3002 *	0.0209	11.0344 *
-7	0.0007	0.9617	0.0223	11.3943 *	0.0023	2.1194 *	0.0141	4.1568 *	0.0007	0.8931	0.0216	11.4090 *
-6	0.0018	2.6426 *	0.0242	12.3249 *	0.0044	4.8294 *	0.0185	5.4507 *	0.0018	2.6553 *	0.0234	12.3570 *
-5	0.0020	2.5409 *	0.0262	13.3578 *	0.0043	4.6255 *	0.0228	6.7236 *	0.0021	2.7057 *	0.0255	13.4693 *
-4	0.0024	3.1001 *	0.0286	14.6062 *	0.0032	3.3799 *	0.0259	7.6603 *	0.0022	2.8081 *	0.0276	14.6189 *
-3	0.0026	2.7604 *	0.0312	15.9144 *	0.0054	4.8067 *	0.0313	9.2505 *	0.0025	2.6643 *	0.0301	15.9352 *
-2	-0.0001	-0.0767	0.0311	15.8787 *	0.0020	1.7269	0.0333	9.8376 *	-0.0001	-0.1361	0.0300	15.8699 *
-1	0.0029	2.7800 *	0.0341	17.3820 *	0.0042	3.6020 *	0.0376	11.0924 *	0.0029	2.7529 *	0.0329	17.4241 *
0	0.0021	1.7378	0.0362	18.4762 *	0.0021	1.4548	0.0396	11.6993 *	0.0019	1.5268	0.0348	18.4091 *
1	0.0006	0.3449	0.0368	18.7702 *	0.0020	1.0442	0.0416	12.2754 *	0.0005	0.3167	0.0353	18.6880 *
2	0.0036	4.7267 *	0.0404	20.6308 *	0.0066	6.6374 *	0.0481	14.2121 *	0.0036	4.8430 *	0.0389	20.5720 *
3	-0.0139	-0.9563	0.0265	13.5421 *	-0.0136	-0.9317	0.0346	10.2066 *	-0.0141	-0.9681	0.0248	13.1339 *
4	0.0011	1.2073	0.0276	14.0938 *	0.0026	2.0849 *	0.0372	10.9826 *	0.0012	1.2963	0.0260	13.7464 *
5	-0.0001	-0.0804	0.0275	14.0550 *	0.0010	0.8678	0.0382	11.2779 *	-0.0003	-0.3170	0.0257	13.5781 *
6	0.0011	1.3612	0.0286	14.5937 *	0.0027	2.5095 *	0.0409	12.0681 *	0.0011	1.4186	0.0268	14.1572 *
7	0.0030	3.5582 *	0.0316	16.1146 *	0.0048	4.4168 *	0.0457	13.4881 *	0.0032	3.7570 *	0.0299	15.8352 *
8	0.0004	0.6255	0.0320	16.3394 *	0.0004	0.4700	0.0461	13.6191 *	0.0006	0.7715	0.0305	16.1320 *
9	0.0011	1.3914	0.0331	16.8987 *	0.0003	0.2678	0.0464	13.6992 *	0.0011	1.3838	0.0316	16.7293 *
10	0.0008	0.9837	0.0340	17.3289 *	-0.0006	-0.4485	0.0458	13.5330 *	0.0006	0.5856	0.0322	17.0209 *
11	0.0008	1.0523	0.0347	17.7320 *	0.0016	1.4238	0.0474	14.0098 *	0.0012	1.4685	0.0333	17.6333 *
12	0.0007	0.9184	0.0355	18.1054 *	0.0003	0.2311	0.0477	14.0838 *	0.0007	0.8637	0.0340	18.0055 *
13	0.0017	1.9583	0.0372	18.9829 *	0.0002	0.1616	0.0479	14.1405 *	0.0017	1.9051	0.0357	18.8976 *
14	-0.0003	-0.3330	0.0369	18.8497 *	-0.0001	-0.0578	0.0478	14.1229 *	-0.0002	-0.3067	0.0355	18.7694 *
15	0.0004	0.5061	0.0373	19.0386 *	0.0023	2.4652 *	0.0501	14.8110 *	0.0004	0.5533	0.0359	18.9830 *
16	0.0006	0.8924	0.0379	19.3555 *	0.0011	1.2279	0.0512	15.1237 *	0.0007	1.0117	0.0366	19.3550 *
17	0.0008	1.2437	0.0388	19.7847 *	-0.0002	-0.1929	0.0510	15.0687 *	0.0005	0.7808	0.0371	19.6425 *
18	0.0005	0.6898	0.0393	20.0479 *	-0.0005	-0.5855	0.0505	14.9187 *	0.0006	0.7493	0.0377	19.9407 *
19	0.0022	2.4558 *	0.0415	21.1810 *	0.0034	2.7952 *	0.0539	15.9252 *	0.0023	2.5192 *	0.0400	21.1816 *
20	-0.0024	-0.9278	0.0391	19.9550 *	-0.0013	-0.4886	0.0526	15.5402 *	-0.0022	-0.8600	0.0378	20.0049 *
21	0.0020	2.2980 *	0.0411	20.9711 *	0.0025	2.2477 *	0.0552	16.2893 *	0.0017	1.9743 *	0.0396	20.9272 *
22	-0.0003	-0.2999	0.0408	20.8353 *	0.0017	1.4861	0.0569	16.8000 *	-0.0002	-0.2027	0.0394	20.8328 *
23	-0.0013	-1.7114	0.0395	20.1530 *	0.0005	0.5455	0.0574	16.9435 *	-0.0013	-1.6678	0.0381	20.1525 *
24	0.0012	1.6544	0.0407	20.7825 *	0.0029	2.9368 *	0.0603	17.8061 *	0.0011	1.3619	0.0391	20.7082 *
25	0.0008	0.8847	0.0416	21.2070 *	0.0011	1.0771	0.0614	18.1415 *	0.0009	0.9723	0.0400	21.1873 *
26	-0.0024	-0.8509	0.0392	19.9908 *	-0.0012	-0.4421	0.0602	17.7813 *	-0.0024	-0.8618	0.0376	19.9114 *
27	0.0010	1.2477	0.0401	20.4861 *	0.0011	1.2011	0.0613	18.0926 *	0.0009	1.1182	0.0385	20.3628 *
28	-0.0006	-0.6151	0.0396	20.1972 *	0.0000	0.0218	0.0613	18.0994 *	-0.0008	-0.8872	0.0376	19.9177 *
29	-0.0186	-1.2854	0.0210	10.6952 *	-0.0177	-1.2185	0.0436	12.8760 *	-0.0186	-1.2847	0.0190	10.0689 *
30	0.0002	0.1865	0.0212	10.8055 *	0.0005	0.3629	0.0441	13.0167 *	0.0006	0.4603	0.0196	10.3603 *

Sources: Author's Calculation

Table 3 shows the AARs and CAARs values of good news earnings announcement of the mean adjusted model, market adjusted model, and Ordinary Least Square Model of quarter 1, 2022.

In the case of **Mean Adjusted Model**, AARs are

- Negative and insignificant for -30, -29, -28, -26, -15, -12, -2, 3, 5, 14, 20, 22, 23, 26, 28, 29 day
- Positive and significant on -24, -21, -18, -17, -10, -9, -8, -6, -5, -4, -3, -1, 2, 7, 19, 21 day
- Positive and insignificant on -27, -25, -23, -22, -20, -19, -16, -14, -13, -11, -7, 0, 1, 4, 6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 24, 25, 27, 30 days in the event period of 61 days.
- There is not a single day that represents negative as well as significant values of AARs.

On the Pre-announcement period (i.e., t = -30, -29 ...-1), Event Day (t=0), Pre announcement period (i.e., t = -30, -29 ....-1), AAR is positive and insignificant,

So, by observing the t-test, AARs are positive for 45 days with 16 significant days and negative for 16 days with 0 significant days during the event window of 61 days. Therefore, we accept the null hypothesis, which means AARs values close to zero.

The CAARs are

- Negative and insignificant for -30, -25, -24 day
- Positive and significant on -21, -20, -19, -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 day
- Positive and insignificant on -23, -22 day

- Negative and significant on -29, -28, -27, -26 day in the event window.

On Pre-announcement period (i.e., t = -30, -29….-1), the Event Day (t=0) and post Event period (i.e., t =1, 2,.. 30), CAARs are positive and significant.

So, CAARs are positive for the entire event window with 42 significant days. Therefore, the null hypothesis that CAARs are not close to zero is rejected.

In the case of **Market Adjusted Model**, AARs are

- Negative and insignificant for -30, -27, -26, -19, -15, -12, 3,10,14, 17, 18, 26, 29 day
- Positive and significant on -24, -17, -13, -10, -9, -8, -7, -6, -5, -4, -3, -1, 2, 4, 6, 7, 15, 19, 21, 24 day
- Positive and insignificant on -25, -23, -22, -21,-20, -18, -16, -14, -11,-2, 0, 1, 5, 8, 9, 11, 12, 13, 16, 22, 23, 25, 27, 28, 30 day
- Negative and significant on -29, -28 day in the event period of 61 days.

On the Pre-announcement period (i.e., t = -30, -29….-1), Event Day (t=0), and Post Announcement period (i.e., t =1, 2... 30) AARs are positive and insignificant.

So, by observing the t-test, AARs are positive for 45 days with 20 significant days and negative for 13 days with 2 significant days during the event window of 61 days. Therefore, we accept the null hypothesis, which means AARs values close to zero.

The CAARs are

- Negative and insignificant for -30, -29, -17, -16, -15, -14, -13, -12,-11 day

- Positive and significant on -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 day
- Positive and insignificant on -10 day
- Negative and significant on -28, -27, -26, -25, -24, -23, -22, -21, -20, -19, -18 day in the event window.

In the Pre-announcement period (i.e., t = -30, -29 ....-1), CAARs are negative and significant. Whereas, in the case of the Event Day (t=0) and Post Announcement period (i.e., t =1, 2... 30), CAARs is positive and significant.

So, CAARs are positive for the entire event window with 40 significant days. Therefore, the null hypothesis that CAARs are not close to zero is rejected.

In the case of **Market OLS Model**, AARs are

- Negative and insignificant for -30, -29, -28, -26, -15, -13, -2, 3, 5, 14, 20, 22, 23, 26, 28, 29 day
- Positive and significant on -24, -21, -18, -17, -10, -9, -8, -6, -5, -4, -3, -1, 2, 7, 19, 21 day
- Positive and insignificant on -27, -25, -23, -22, -20, -19, -16, -14, -12, -11, -7, 0, 1, 4, 6, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 24, 25, 27, 30 day
- There is no day that is negatively significant in the event period of 61 day

On the Pre-announcement period (i.e., t = -30, -29….-1), Event Day (t=0) and Post Announcement period (i.e., t =1, 2,..., 30), AAR is positive and insignificant,

So, by observing the t-test, AARs are positive for 45 days with 16 significant days and negative for 16 days with 0 significant days during the event window of 61 days. Therefore, we accept the null hypothesis, which means AARs values close to zero.

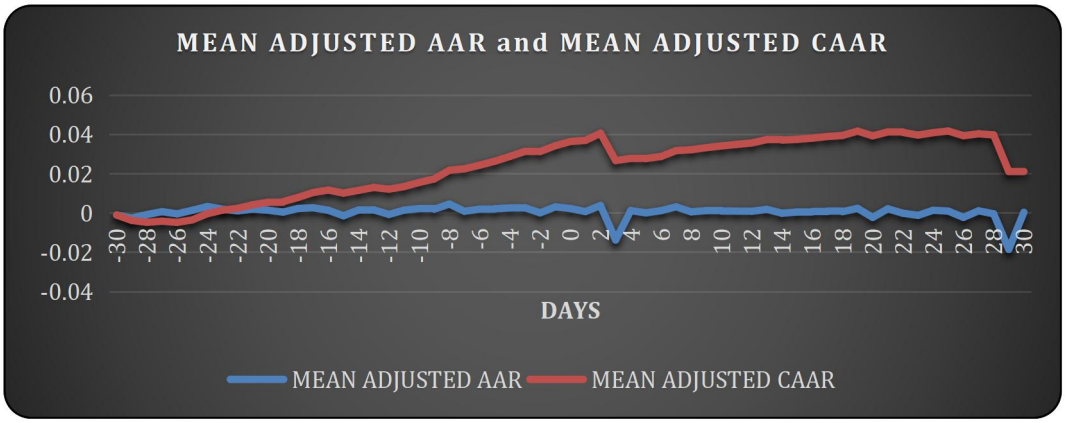
The CAARs are

- Negative and insignificant for -30, -25, -24 day
- Positive and significant on -21, -20, -19, -18, -17, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 day
- Positive and insignificant on -23, -22 day
- Negative and significant on -29, -28, -27, -26 day in the event window.

In Pre-announcement period (i.e., t = -30, -29….-1), Event Day (t=0) and Post Announcement period (i.e., t =1, 2... 30) CAARs are positive and significant.

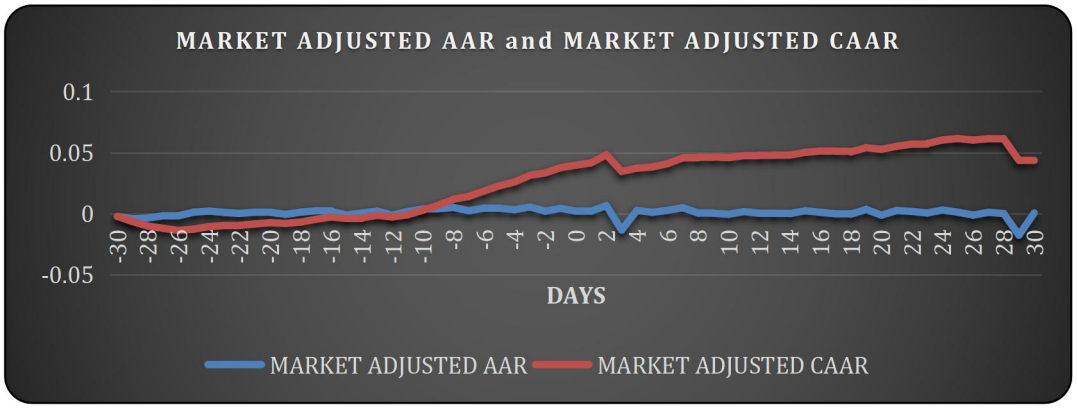
So, CAARs are positive for the entire event window with 42 significant days. Therefore, the null hypothesis that CAARs are not close to zero is rejected.

Figure 2A: AARs and CAARs trends of mean models over the 61 days event window of good news earnings announcement of Q1 of 2022



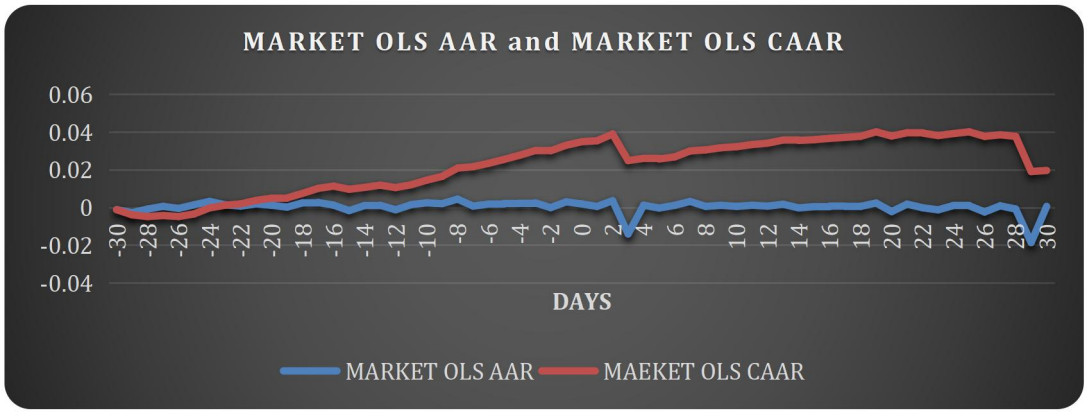
Sources: Author's Calculation

Figure 2B: AARs and CAARs trends of market adjusted models over the 61 days event window of good news earnings announcement of Q1 of 2022



Sources: Author's Calculation

Figure 2C: AARs and CAARs trends of market ols models over the 61 days event window of good news earnings announcement of Q1 of 2022



Sources: Author's Calculation

The figure 2A represents the trends of AARs and CAARs for the mean adjusted model of Q1 of 2022. Mean adjusted AARs fluctuates around zero for most of the days, but in the post announcement period there is a slight dip for day 3 and day 29. The mean adjusted CAARs is negative until day -24 then it gradually increases except for day 3 and day 29.

The figure 2B represents the trends of AARs and CAARs for the market adjusted model of Q1 of 2022. Market adjusted AARs fluctuates around zero for most of the days, but in the post announcement period there is a slight dip for day 3 and day 29. The market adjusted CAARs is negative until day -11 then it gradually increases except for day 3 and day 29.

The figure 2C represents the trends of AARs and CAARs for the market ols model of Q1 of 2022. Market ols AARs fluctuates around zero for most of the days, but in the post announcement period there is a slight dip for day 3 and day 29. The market ols CAARs is negative until day -26 then it gradually increases except for day 3 and day 29.

TABLE 4: AAR AND CAAR VALUES of BAD NEWS EARNINGS ANNOUNCEMENT OF Q1 OF 2022

DAYS	MEAN ADJUSTED MODEL				MARKET ADJUSTED MODEL				OLS MODEL			
	AAR	t VALUE	CAAR	t VALUE	AAR	t VALUE	CAAR	t VALUE	AAR	t VALUE	CAAR	t value
-30	0.0046	1.1658	0.0046	1.7575	0.0089	1.7452	0.0089	1.6564	0.0062	1.9479	0.0062	2.0568 *
-29	-0.0101	-6.3803 *	-0.0055	-2.0946 *	-0.0157	-8.2301 *	-0.0068	-1.2628	-0.0105	-7.1722 *	-0.0043	-1.4520
-28	-0.0035	-2.1780 *	-0.0090	-3.4311 *	-0.0089	-5.2478 *	-0.0157	-2.9210 *	-0.0054	-4.8260 *	-0.0098	-3.2553 *
-27	-0.0057	-11.0796 *	-0.0147	-5.6119 *	-0.0053	-8.4901 *	-0.0210	-3.9075 *	-0.0064	-15.4878 *	-0.0162	-5.3936 *
-26	0.0118	16.7595 *	-0.0028	-1.0993	0.0054	5.2983 *	-0.0156	-2.8961 *	0.0103	10.9436 *	-0.0059	-1.9652 *
-25	-0.0015	-2.9725 *	-0.0044	-1.6818	-0.0034	-5.0376 *	-0.0190	-3.5308 *	-0.0039	-8.8380 *	-0.0098	-3.2633 *
-24	0.0095	16.5986 *	0.0051	1.9495	0.0087	9.0661 *	-0.0103	-1.9143	0.0074	7.7894 *	-0.0024	-0.7990
-23	-0.0012	-1.9450	0.0039	1.4857	0.0038	9.1665 *	-0.0065	-1.2105	0.0029	3.5620 *	0.0005	0.1777
-22	0.0013	1.4171	0.0052	1.9991 *	0.0000	0.0588	-0.0064	-1.2015	0.0033	7.5834 *	0.0039	1.2999
-21	-0.0016	-0.9229	0.00359	1.3687	-0.0048	-3.4232 *	-0.0113	-2.1026 *	-0.0043	-2.6156 *	-0.0004	-0.1455
-20	-0.0022	-5.6343 *	0.0013	0.5311	0.0009	0.8160	-0.0103	-1.9258	0.0013	1.8402	0.0009	0.3058
-19	-0.0071	-13.1394 *	-0.00576	-2.1944 *	-0.0025	-2.0372 *	-0.0129	-2.4015 *	-0.0041	-3.5775 *	-0.0032	-1.0697
-18	0.0046	3.6753 *	-0.0011	-0.4314	-0.0029	-4.0282 *	-0.0158	-2.9422 *	-0.0010	-3.2806 *	-0.0042	-1.4048
-17	0.0039	3.0910 *	0.0028	1.0772	-0.0017	-1.0474	-0.0175	-3.2610 *	0.0012	1.9190	-0.0029	-0.9884
-16	0.0036	11.1966 *	0.0065	2.4808 *	0.0043	30.2322 *	-0.0132	-2.4573 *	0.0035	10.5469 *	0.0005	0.1856
-15	0.0051	19.0641 *	0.0116	4.4463 *	0.0076	11.1820 *	-0.0055	-1.0340	0.0071	18.1317 *	0.0077	2.5681 *
-14	0.0066	4.5239 *	0.0182	6.9611 *	0.0142	13.7791 *	0.0086	1.6069	0.0093	8.4869 *	0.0171	5.6656 *
-13	0.0062	4.4527 *	0.0245	9.3521 *	0.0110	26.1471 *	0.0196	3.6484 *	0.0103	13.1220 *	0.0274	9.0800 *
-12	-0.0036	-2.9374 *	0.0208	7.9495 *	-0.0004	-0.4915	0.0192	3.5738 *	0.0011	1.8979	0.0285	9.4662 *
-11	-0.0028	-3.2170 *	0.0180	6.8844 *	-0.0040	-4.7273 *	0.0152	2.8205 *	-0.0061	-12.2005 *	0.0224	7.4316 *
-10	0.0037	2.8140 *	0.0218	8.3194 *	-0.0008	-2.8723 *	0.0143	2.6617 *	-0.0014	-3.5167 *	0.0210	6.9653 *
-9	0.0055	3.0811 *	0.0274	10.4442 *	0.0086	7.4327 *	0.0230	4.2659 *	0.0026	2.2321 *	0.0236	7.8296 *
-8	0.0062	4.6495 *	0.0336	12.8152 *	0.0070	3.3954 *	0.0300	5.5752 *	0.0048	3.4148 *	0.0284	9.4304 *
-7	0.0060	11.9937 *	0.0397	15.1297 *	0.0063	5.8212 *	0.0364	6.7531 *	0.0048	8.4559 *	0.0333	11.0491 *
-6	-0.0028	-2.40339 *	0.0369	14.0519 *	-0.0068	-4.5977 *	0.0295	5.4773 *	-0.002	-2.1948 *	0.0308	10.2138 *
-5	-0.0018	-3.6104 *	0.0350	13.3377 *	0.0043	9.9385 *	0.0338	6.2759 *	-0.0013	-2.8158 *	0.0294	9.7632 *
-4	0.0031	12.6765 *	0.0382	14.5522 *	0.0104	16.374 *	0.0443	8.2170 *	0.0058	5.9175 *	0.0352	11.6923 *
-3	-0.0007	-2.6627 *	0.0374	14.2738 *	0.0018	1.3879	0.0462	8.5675 *	0.0025	5.5052 *	0.0377	12.5210 *
-2	-0.0019	-2.9774 *	0.0355	13.5430 *	0.0028	5.3979 *	0.0490	9.0950 *	-0.0001	-0.2242	0.0376	12.4597 *
-1	0.0005	0.3480	0.0360	13.7347 *	0.0012	0.6170	0.0503	9.3312 *	-0.000	-0.0253	0.0375	12.4494 *
0	0.0033	12.1444 *	0.0394	15.0142 *	0.0076	25.2811 *	0.0580	10.7534 *	0.0042	9.8559 *	0.0418	13.8576 *
1	-0.0023	-10.3634 *	0.0370	14.1134 *	-0.0009	-1.7098	0.0570	10.5694 *	-0.0017	-4.4902 *	0.0400	13.2742 *
2	0.0043	10.3027 *	0.0413	15.7539 *	0.0111	5.7850 *	0.0681	12.6278 *	0.0075	6.4095 *	0.0475	15.7680 *
3	0.0109	5.4865 *	0.0522	19.9062 *	0.0131	7.5367 *	0.0812	15.0606 *	0.0108	5.4678 *	0.0584	19.3767 *
4	0.0010	1.1568	0.0532	20.2856 *	0.0067	4.5204 *	0.0880	16.3200 *	-0.0005	-0.5472	0.0579	19.1936 *
5	-0.0073	-5.3827 *	0.0459	17.4956 *	-0.0044	-19.2063 *	0.0835	15.4880 *	-0.0035	-4.4587 *	0.0544	18.0342 *
6	0.0005	3.3705 *	0.0465	17.7221 *	-0.0008	-0.8854	0.0826	15.3258 *	-0.0008	-4.4507 *	0.0535	17.7416 *
7	0.0010	0.7725	0.0475	18.1059 *	0.0017	1.9327	0.0844	15.6441 *	-0.0001	-0.1789	0.0533	17.6806 *
8	0.0046	12.1406 *	0.0521	19.8600 *	0.0105	34.0465 *	0.0949	17.6039 *	0.0016	4.0571 *	0.0549	18.2097 *
9	0.0016	2.2183 *	0.0537	20.4831 *	-0.0015	-1.0072	0.0934	17.3225 *	0.0010	1.2830	0.0560	18.5677 *
10	-0.0051	-2.6696 *	0.0486	18.5206 *	-0.0027	-4.0806 *	0.0907	16.8142 *	-0.0008	-0.9460	0.0551	18.2864 *
11	0.0029	2.0195 *	0.0515	19.6391 *	-0.0088	-9.1882 *	0.0819	15.1805 *	-0.0014	-3.2533 *	0.0537	17.8091 *
12	0.0029	1.8942	0.0544	20.7507 *	0.0086	7.5941 *	0.0905	16.7863 *	0.0071	5.8385 *	0.0608	20.1619 *
13	-0.0010	-2.5745 *	0.0534	20.3348 *	0.0026	2.2007 *	0.0932	17.2810 *	-0.0036	-5.9326 *	0.0572	18.9703 *
14	0.0015	5.3692 *	0.0549	20.9189 *	-0.0058	-7.1904 *	0.0874	16.2044 *	0.0018	6.0525 *	0.0590	19.5790 *
15	-0.0075	-11.1327 *	0.0473	18.0458 *	-0.0063	-8.8798 *	0.0811	15.0373 *	-0.0062	-7.6942 *	0.0528	17.5149 *
16	-0.0063	-5.1094 *	0.0410	15.6469 *	-0.0053	-5.4373 *	0.0757	14.0434 *	-0.0075	-6.6704 *	0.0453	15.0231 *
17	0.0050	8.3971 *	0.0461	17.5659 *	0.0113	18.4442 *	0.0870	16.1397 *	0.0078	11.3809 *	0.0532	17.6277 *
18	0.0010	1.4198	0.0472	17.9811 *	-0.0020	-5.2889 *	0.0849	15.7518 *	0.0001	0.2167	0.0533	17.6656 *
19	0.0025	3.8214 *	0.0498	18.9692 *	-0.0009	-1.2175	0.0840	15.5793 *	0.0017	2.4306 *	0.0550	18.2473 *
20	0.0026	5.0563 *	0.0525	19.9896 *	-0.0015	-2.6261 *	0.0825	15.2951 *	0.0009	1.9976 *	0.0560	18.5733 *
21	-0.0078	-9.5887 *	0.0446	17.0046 *	0.0004	0.3118	0.0829	15.3707 *	-0.0043	-5.1119	0.0516	17.1174 *
22	0.0088	7.8464 *	0.0535	20.3790 *	0.0092	5.9672 *	0.0921	17.0757 *	0.0073	5.0085 *	0.0589	19.5446 *
23	-0.0046	-12.9715 *	0.0489	18.6251 *	-0.0065	-10.2705 *	0.0856	15.8701 *	-0.00478	-11.7071 *	0.0542	17.9618 *
24	-0.0045	-7.3660 *	0.0444	16.9108 *	0.0030	4.0875 *	0.0886	16.4323 *	-0.00192	-5.7681 *	0.0522	17.3244 *
25	-0.0012	-2.0227 *	0.0431	16.4405 *	0.0009	1.2488	0.0896	16.6114 *	-0.00256	-8.9007 *	0.0497	16.4760 *
26	-0.0007	-2.3261 *	0.0424	16.1646 *	0.0013	10.0298 *	0.0909	16.8594 *	-0.00097	-2.8717 *	0.0487	16.1551 *
27	-0.0038	-4.4944 *	0.0385	14.6904 *	-0.0054	-14.0015 *	0.0855	15.8530 *	-0.00456	-5.3179 *	0.0441	14.6429 *
28	-0.0062	-7.5119 *	0.0323	12.3146 *	-0.0001	-0.1645	0.0853	15.8282 *	-0.00211	-4.2498 *	0.0420	13.9427 *
29	-0.0051	-3.5599 *	0.0271	10.3526 *	-0.0002	-0.1883	0.0851	15.7850 *	-0.00380	-3.6675 *	0.0382	12.6842 *
30	0.0044	3.0279 *	0.0316	12.0521 *	0.0041	2.6109 *	0.0893	16.5546 *	-0.00096	-1.52856	0.0373	12.3645 *

Sources: Author's Calculation

Table 4 shows the AAR and CAAR values of bad news earnings announcement of mean adjusted model, market adjusted model and Ordinary Least Square Method of quarter 1, 2022.

In the case of **Mean Adjusted Model**, AARs are

- Negative and insignificant for -23, -21 day
- Positive and significant on -26, -24, -18, -17, -16, -15, -14,-13, -10, -9, -8, -7, -4,0, 2, 3, 6, 8, 9, 11, 14, 17, 19, 20, 22, 30 day
- Positive and insignificant on -30, -22, -1, 4, 7, 12, 18, day
- Negative and significant on -29, -28, -27, -25, -20, -19, -12, -11, -6, -5, -3, -2, 1, 5, 10, 13, 15, 16, 21, 23, 24, 25, 26, 27, 28, 29 day in the event period of 61 days.

On the Event Day (t=0), the pre-announcement period (i.e., t = -30, -29….-1) and post-announcement period (i.e., t =1, 2... 30) AARs are positive and significant.

So, by observing the t-test, AARs are positive for 33 days with 26 significant days and negative for 28 days with 26 significant days during the event window of 61 days. Therefore, we accept the null hypothesis, which means AARs values close to zero.

The CAARs are

- Negative and insignificant for -26, -25, -18 day
- Positive and significant on -22, -16, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 day
- Positive and insignificant on -30, -24, -23, -21, -20, -17 day
- Negative and significant on -29, -28, -27, -19 day in the event window.

In the Pre-announcement period (i.e., t = -30, -29….-1), Event Day (t=0), and Post-announcement period (i.e., t =1, 2... 30) CAARs are positive and significant.

So, CAARs are positive for the entire event window with 48 significant days. Therefore, the null hypothesis that CAARs are not close to zero is rejected.

In the case of **Market Adjusted Model**, AARs are

- Negative and insignificant for -17, -13, 1, 6, 9, 19, 28, 29 day
- Positive and significant on -26, -24, -23, -16, -15, -14, -13, -9, -8, -7, -5, -4, -2, 0, 2, 3, 4, 8, 12, 13, 17, 22, 24, 26, 30 day
- Positive and insignificant on -30, -22, -20, -12, -3, -1, 7, 21, 25 day
- Negative and significant on -29, -28, -27, -25, -21, -19, -18, -11, -10, -6, 5, 10, 11, 14, 15, 16, 18, 20, 23, 27 day in the event period of 61 days.

On the Event Day (t=0), Pre-announcement period (i.e., t = -30, -29….-1) AARs are positive and significant but in the case of the Post Announcement period (i.e., t =1, 2,..., 30) AARs are negative and significant.

So, by observing the t-test, AARs are positive for 33 days with 25 significant days and negative for 28 days with 20 significant days during the event window of 61 days. Therefore, we accept the null hypothesis, which means AARs values close to zero.

The CAARs are

- Negative and insignificant on -24, -23, -22, -20, -15 day
- Positive and significant on -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 day
- Positive and insignificant on -30, -14 day
- Negative and significant on -28, -27, -26, -25, -21, -19, -18, -17, -16 day in the event window.

In the Pre-announcement period (i.e., t = -30, -29….-1), Event Day (t=0), and Post Announcement period (i.e., t =1, 2... 30), CAARs are positive and significant.

So, CAARs are positive for the entire event window with 44 significant days. Therefore, the null hypothesis that CAARs are not close to zero is rejected.

In the case of **Market OLS Model**, AARs are

- Negative and insignificant for -2, -1, 4, 10, 21, 30 day
- Positive and significant on -26, -24, -23, -22, -16, -15, -14, -13, -9, -8, -7, -6, -4, -3, 0, 2, 3, 8, 12, 14, 17, 19, 20, 22 day
- Positive and insignificant on -30, -20, -12, 9, 18 day
- negative and significant on -29, -28, -27, -25, -21, -19, -18, -11, -10, -6, -5, 1, 5, 6, 11, 13, 15, 16, 23, 24, 25, 26, 27, 28, 29 day in the event period of 61 day

On the Event Day (t=0), Pre announcement period (i.e., t = -30, -29….-1) AARs are positive and significant. In the case of the Post Announcement period (i.e., t =1, 2,..., 30), AARs are negative and significant

So, by observing the t-test, AARs are positive for 32 days with 25 significant days and negative for 29 days with 25 significant days during the event window of 61 days. Therefore, we accept the null hypothesis, which means AARs values close to zero.

The CAARs are

- Negative and insignificant for -29, -24, -21, -19, -18, -17 day
- Positive and significant on -30, -15, -14, -13, -12, -11, -10, -9, -8, -7, -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 day
- Positive and insignificant on -23, -22, -20, -16 day

- Negative and significant on -28, -27, -26, -25 day in the event window.

In the Pre-announcement period (i.e., t = -30, -29 …,-1), Event Day (t=0) and Post Announcement period (i.e., t =1, 2... 30) CAARs are positive and significant.

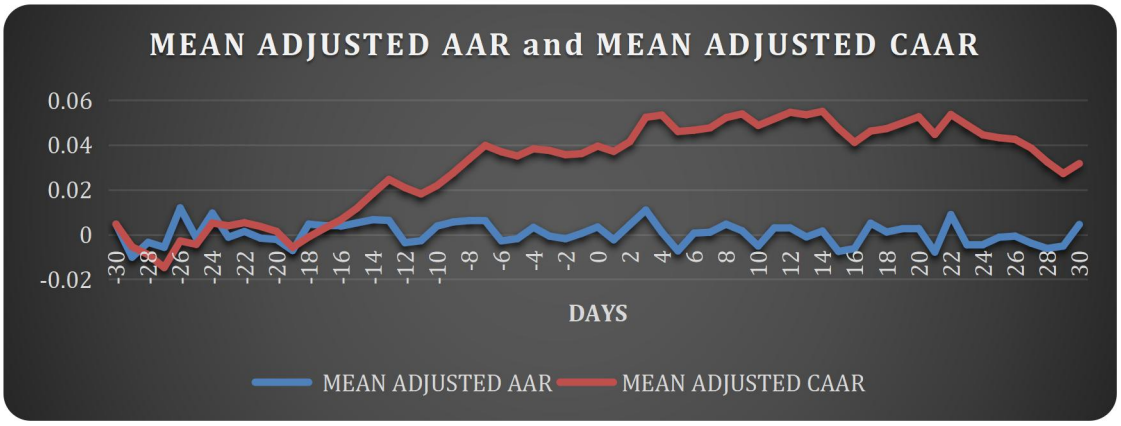
So, CAARs are positive for the entire event window with 47 significant days.

The figure 3A represents the trends of AARs and CAARs for the mean adjusted model of Q1 of 2022. Mean adjusted AARs fluctuates around zero for most of the days. Initially, the mean adjusted CAARs started with a positive value but it moved towards negative until day -25, then it rose for a little period and again fell on day -19 and day -18. After that it gradually increased for the rest of the entire event window.

The figure 3B represents the trends of AARs and CAARs for the market adjusted model of Q1 of 2022. Market adjusted AARs fluctuates around zero for most of the days. Initially, the market adjusted CAARs started with a positive value but it moved towards negative until day -15, then it gradually increased for the rest of the entire event window.

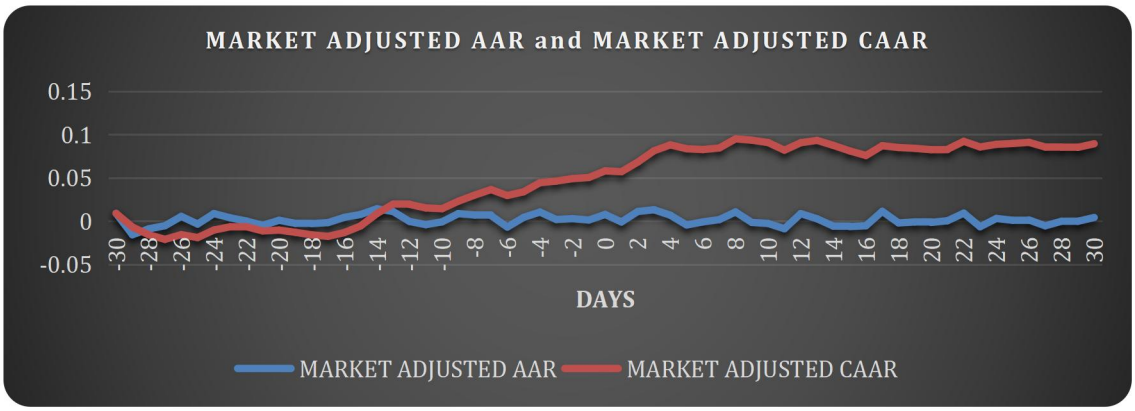
The figure 3C represents the trends of AARs and CAARs for the market ols model of Q1 of 2022. Market ols AARs fluctuates around zero for most of the days. Initially, the market ols CAARs started with a positive value but it moved towards negative until day -24, then it rose for a little period and again fell up to day -17. After that it gradually increased for the rest of the entire event window.

Figure 3A: AARs and CAARs trends of mean models over the 61 days event window of bad news earnings announcements of Q1 of 2022



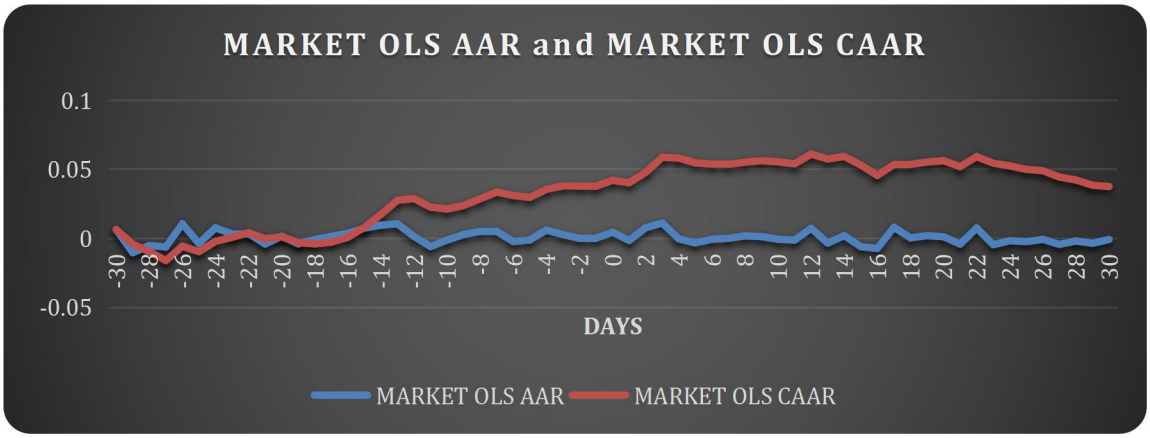
Sources: Author's Calculation

Figure 3B: AARs and CAARs trends of market models over the 61 days event window of bad news earnings announcements of Q1 of 2022



Sources: Author's Calculation

Figure 3C: AARs and CAARs trends of market ols models over the 61 days event window of bad news earnings announcements of Q1 of 2022



Sources: Author's Calculation

From our entire analysis, we have observed that AARs,on the event day and post earnings announcement period are mostly positive and insignificant for full sample and good news earnings announcement . Whereas in the pre announcement period it is mostly positive and significant for a full sample earning announcement. But there is one interesting result for bad news earnings announcement, i.e. AAR is positive and significant for event day and pre announcement period but negative and significant for post announcement period. In case of CAARs, it is positive and significant for a full sample, good news and bad news earning announcement over the entire window.

The reasons for the significant value of CAARs and AARs in the pre announcement period can be explained by three ways:

(i) One of the main reasons is information leakage, which means that there is already some kind of information about the event that can be anticipated before the events.

(ii)Another factor is that businesses frequently announce their earnings around the same time each year, which aids in market anticipation and this means that the announcement return will be higher in the pre-event period.

(iii)The market will react around the event date because of the event date uncertainty, which indicates that the market is unsure of the exact event date.

Overall, AARs are close to zero and CAARs are incresing. So, we can say that the efficient form of Market, in particular, the semi-strong form of market efficiency is rejected.

7. CONCLUSION

Our study endeavors to explore the impact of earnings announcement on stock price reactions for the NIFTY 500 companies just after the COVID-19 pandemic period. Based on our objective, we have chosen the first quarter of 2022 as our study period. The abnormal performance of the sample companies is measured using the mean mean-adjusted model, market-adjusted model, and market OLS model. An event study is conducted using a 61-day event window i.e. 30 days before the earning announcement date and 30 days after the announcement day and the overall impact of both AARs and CAARs are observed for this event window. An Event Study Methodology is being used to calculate the AARs and CAARs and test their significance using the parametric Student t-statistics. Our study further classified the samples as good news and bad news, based on net profit and net sales of quarterly profit and loss statements, and their AARs and CAARs were observed. The results of the t-test show that AARs are positive and statistically insignificant for most of the days in the event window of 61 days and therefore we accept the null hypothesis that AAR values hover around zero. However, the CAARs are positive and statistically significant for most of the days in the event window for the first quarter irrespective of all three alternative models and therefore, we reject the null hypothesis which implies CAARs are not close to zero. From our observed results we infer that the Indian stock market rejects the Efficient Market Hypothesis (EMH) just after the Post –COVID 19 period. Based on our own result, we can infer that greater surveillance, timely announcement of financial statements and financial educational awareness are needed to achieve market efficiency.

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