# Distribution of Earning Announcements in Indian Stock Markets: A Statistical Event Study

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**Abstract-**This study is an attempt to investigate the relationship of how the announcement of dividend can affect the stock markets and thereby we comment on the efficiency of the stock market through the statistical framework of event study methodology. In this paper analysis has been done on Nifty 50 companies over a period of 10 years from 2009-10 to 2018-19. The results were mixed with majority of the years having presence of informational inefficiency thereby confirming the impact of Dividend Announcements. The results also confirm that market participant expectations have a significant influence on abnormal returns of dividend announcement. It further supports the semi-strong form of the efficient capital market hypothesis stating that on an average, the stock market adjusts in an efficient manner to the information of dividend announcement. This information can very well    be used by the investors who are willing to take risk by making adjustments in their portfolio prior to the announcement of the dividend to earn abnormal profits. It is suggested that investors who prefer steady and stable income need not change positions on stock market when it comes to light that the event is about to take place.  This paper concludes with providing suggestions and scope for future study. A detailed sectoral study might give further insights into the specific sectors which are inefficient and will be important for investors to exploit and earn profits. This study is of eminent importance for academia, market participants and dividend policy makers and the top management.

*Keywords-* Dividend Announcements, Statistical Event Study, Abnormal Returns, Nifty, Stock Markets

## SECTION 1: INTRODUCTION

The share of individual investors has increased from 39% (March 2020) to 45% (March 2021) in total turnover on the stock exchange as per NSE data. Major factor that influences the investors to invest in the market is the growth opportunities as well as the regular income measured by dividend payment. Dividend is the distribution of part of earnings of the company to the shareholders. Literature has discussed the preference of investors towards regular and stable dividends. It has also questioned whether dividend affects stock prices or not. Lot of work has been done to seek an answer to the dividend puzzle. This paper investigates whether dividend policy has an impact on stock prices (returns) of the companies thereby also giving a reflection of the efficiency of the stock markets of the country.

Dividend is the return that the shareholders get for the investment in the company in proportion of their holdings. Proper balance has to be maintained between the dividend distribution and retention of profit to fund profitable investment proposals so as to keep the company going with growth as well as investors satisfaction with the aim of wealth maximization in long run thereby boosting investors to invest in stock markets (**Black 1976**). **Brealey and Myers** (2002) have enlisted *dividend policy as one of the top ten puzzles in finance.* **Lease, John , Kalay, Loewenstein, Sarig, (2000) and Gibson (2009) have defined dividend policy as a decision by the Board of directors by allocating the size and pattern of cash distributions over time to shareholders.**

Since the objective of the firm is to maximize shareholder's wealth, higher share price being one of the ways to achieve the same. Therefore it becomes important to study the relation between dividend policy and market share price. This is one of the most controversial and unresolved questions, where the empirical evidence is often mixed. One school of thought believes that dividend is irrelevant and does not affect the prices of shares. The other school of thought believes that dividend is relevant and affects the prices of shares. Traditional position expounded expressively by **Graham Benjamin and David L. Dodd** is that the stock market places considerably more weight on dividends then on retained earnings. While, **Walter** in his 1963 model, explains the relevance of dividend for valuation of shares and argues that the choice of dividend policies almost always affects the value of the enterprise. **Gordon (1959)** has also given a popular model which relates market value of the firm to dividend policy. **Modigliani Miller's approach (1961) states that** value of the firm is not determined by its income distribution but by its earning capacity and investment policy.

**Gupta et al. (2012), Das & Samanta (2013), Mallikarjunappa, & Manjunatha, (2009), Pani (2008), Munyua (2012), Movalia & Venkaria (2014), Kandpal & Kavidayal (2015), Maharshi & Malik (2015), Patel & Prajapati, Gill et. al.(2013) , Rane and Raju (2018),** Sharma & Mittal (2018)**, Azhagaiah et al (2014)** study the Indian Stock market and effect of dividend announcements on share prices. The studies over different time spans mostly adopting the event study methodology have varied results finding varying degrees of efficiencies in the Indian Stock market. Some studies have also pointed out that apart from dividend payout, profitability, growth rate, rate of return have varying degrees of impact on share prices. **Michaely, Thaler, & Womack (1995***), **Profilet, Kyle & Bacon (2013)** *have studied the* American Stock exchange companies that initiated dividends concluded that short run price reactions to dividend omissions are greater as compared to initiations. Further dividend yield, leverage, growth and size related negatively to the stock price volatility while payout ratio related positively. **Vazakidis & Athianos (2010) on studying the Greek stock market** indicate that market participants expect the dividend announcements to have a positive impact on the stock prices, and they adapt their own portfolios according to their expectations. **Okafor & Mgbame (2011), Oyinlola, Olabisi , Ajeigbe & Benson (2014), Bassey, Duke et al (2015)** concluded that dividend policy is relevant in

determining share price changes for a sample of firms listed in the Nigerian Stock Exchange, **Aamir & Shah (2011); Habib, Kiani & Khan(2012), Ansari, Batt & Shah (2015**) **on** studying the Pakistan stock market proposed that dividend yield is better and more important determinant factor in determining share price volatility in KSE 100 index rather than payout ratio. **Hashemijoo (2012) and Zakaria et al (2012)** after studying the Malaysian stock market **concluded that** dividend yield and size seem to have the most impact on share price volatility. Further there have been extensive studies from around the globe **Qudah & Badawi (2014) studying Saudi Arabia, Botchwey (2014) studying Ghana Stock Exchange, Masum (2014) studying companies listed in Dhaka Stock Exchange, Kadıoglu, Telceken & Ocal (2015) with evidence from Turkish Stock Market, Velnamby (2017) from Shrilanka have pointed out dividend payout as one of the important factors in share price effects highlighting the different levels of efficiencies in their respective markets.**

It is clear that extensive research has been done on different determinants of dividend decision and its impact on share prices. The basic purpose of this paper is to answer a question or get deeper insight into a controversy. With the distinct theories and results, it is quiet visible that why the term dividend puzzle has been coined. The results are also varied owing to different methodology used. Mostly, studies have been done on developed economies. However, very few studies have been carried on developing economies. Dividend remains an important factor for investors who prefer steady income. However, does dividend announcement has effect on the prices of the shares is a question that has boggled investors for long.

This rest of the paper is divided as follows. The data is described in Section 2. The methodological framework adopted is discussed in Section 3. Empirical results are provided in section 4. The 5th section provides conclusions, recommendations and policy suggestions.

## SECTION 2: DATA

The paper gathers secondary data with respect to Nifty 50 companies listed as on 31st March 2018. The data consist of 50 companies over a timeframe of 2009-10 to 2018-19. The timeframe has been started from 2009-10 onwards owing to the post crisis period (Lagarde, 2016). (For regression analysis as well as for event study only 31 companies are selected as it consists of only those

companies that have continuous profit corresponding to declared final cash dividend. The share prices and financial variables are obtained from CMIE Prowess database, NSE website, official websites of particular companies, annual reports and journals. The data is analyzed through Eviews statistical software.

### SECTION 3: METHODOLOGICAL FRAMEWORK

Event studies are the cleanest evidence we have on efficiency. Fama, 1991, p. 1602 Event study method has been adopted to analyze effect of dividend announcements on stock prices and know the market efficiency. The event day that is supposed to effect the firm is identified and selected. The main aim is to investigate if there is any the abnormal return that can be linked to the event that can be checked by adjusting for the return that arises from the price changes of the market. (Ronald and Bernard1995).

Investigating over 500 studies published Kothari and Warner (2006) state that "*the basic statistical format of event studies has not changed over time*" *(p. 7), and that the intention of event studies is still to measure mean and cumulative abnormal returns of the securities in the sample, induced by an event*.

In this study, day of dividend announcement is the event day. The event day may or may not be same for all the firms depending on the date of final dividend announcement. The next step is to evaluate share price change for the selected firms

on the desired dates. Further, market model is used to ascertain abnormal return and expected return for the event. The advantage of this model is it takes into account the risk component to estimate returns.

After noting the market daily prices, log returns are calculated for each of them during the event period. By regression, intercept and slope are calculated. Both expected returns and normal returns are calculated for the data. The difference between the two i.e. the abnormal returns are calculated for the event period which is due to the effect of event on stock returns.

Finally, individual daily abnormal returns for all the firms on each day are aggregated to calculate standardized abnormal returns. These are further aggregated to calculate cumulative standardized results to know if cumulative returns are statistically different from zero.

Following are the steps involved in event study-

1.) The dividend announcement dates for different companies were found out from 2010 to 2019. Also, share prices of the companies as well as the NSE index were noted for the event day as well as estimation period.

2.) Event day is the dividend announcement day also called day 0. Event window consists of 31 days that include 15 days pre-announcement and 15 days as post announcement day plus the dividend date. The estimation window consists of 105 days. The study includes 31 companies under the Nifty 50 index.

3.) Returns were calculated by the formula-

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

Where,

$R_{it}$ is the daily return on security 'i' on day 't'.

$P_{it}$ is the daily adjusted price of the security 'i' at the end of period 't'.

$P_{it-1}$ is the daily adjusted price of the security 'i' at the end of period 't-1'. $R_{mt} = \ln(I.t/ I_{t-1})$

Where,

$R_{mt}$ is the daily return on market index on day 't'.

$I.t$ and $I_{t-1}$ is the closing index value on day 't' and 't-1', respectively.

$R_{it} = (P_{it} - P_{it-1}) / P_{it}$

$P_{it}$ = price of security on time 't'. $P_{it-1}$ = Price of security on time 't–1'.

The Market model of Sharpe (1964) has been used to estimate the expected returns on a stocks:

$R_i\ t = \alpha_i + \beta_i\ R_{mt} + u_i\ t$

Where,

$\alpha_i$ is intercept. (Mean return over the period not explained by the market).

$R_m$ is the expected market return,

$\beta_i$ is the slope of the regression

$R_{mt}$ is the market return during period t

$u_i\ t$ is the unexpected element known as the random error term or abnormal return or residual.

4.) The abnormal return has been calculated for each stock for each day of a period receding, including and following the event. It is the difference between the actual return on day t and the expected return denoted as follows-

$$AR_{it} = R_{it} - E(R_{mt})$$

Where,

$AR_{it}$ = Abnormal returns

Abnormal returns denote the part of return which is unpredicted. Therefore, they are assumed to be the estimate of share price movement attributed to some announcement.

Then, Average Abnormal return is computed as:

$AAR_t = 1/n\ AR_{it}$

where, n=Number of securities studied

5.) The cumulative effect of the event over a specified number of days is determined by calculating cumulative average abnormal returns or CAARs

$CAAR = \sum AAR_t$

6.) Parametric t-statistic is used to examine the statistical significance of AARs and CAARs. It is tested at 5 percent level of significance and appropriate degree of freedom.

It is given by

$t = AAR_t / \sigma AAR_t$ (Standard error of AAR) Where AAR =average abnormal return

$\sigma AAR_t$ = standard error of average abnormal return.

The standard error is calculated by using following formula.

$SE = \sigma/\sqrt{n}$

Where,

S.E = standard error,

$\sigma$ = standard deviation,

n = number of observation

Event study has been used to analyze the objectives of the study. Event study will help to gain insight into the efficient market hypothesis which states that market quickly absorbs the present information thereby giving no chance for excess profit or return. Time is critical factor here because the time taken to adjust to present information determines the type of market. The market is considered to be efficient if it responds immediately, accurately and in fair manner. Eugene Fama (1998) identified that there may be time lag in event announcement and its adjustment into share prices terming it as semi efficient market. Here the prices fail to fully reflect all relevant information.

We follow the above discussed methodology for our research to check the effect of Dividend announcements. The estimation window has been set to 105 days and 31 days has been taken as event window with day zero being the event day. Companies where data was inconsistent have been removed for the purpose of analysis as consistency and continuity of data is required. It consists of only those companies that have continuous profit corresponding to declared final cash dividend. Companies with losses, no declared dividend or with stock dividend has been scrapped. Also, only final dividend declared by the companies has been taken into consideration for the event study.

To be able to conduct event study we need to know the date when the event occurred i.e. dividend was announced. For this, date of announcement of final dividend has been noted for all the sample companies. We further need to know the length of the event window, which is time period over which we specify the impact of the event. It usually depends on whether we want to assess the change over the long period or short period. MacKinlay (1997) observed that the power of event studies to detect abnormal performance is more when we use daily data instead of weekly or monthly observations. This implies that with smaller sample size 'n', same power can be achieved. In our study, we have used daily data of share prices to analyze the impact of dividend policy on stock prices.

Next step is to ascertain the length of estimation window. Armitage (1995) points that period of estimation can vary from 100 - 300 days where observations frequency is daily. Longer the estimation window the higher is the precision of estimated parameter, although it will also increase chances of structural break, thus tradeoff has to be maintained. Studies investigating sensitivity of r (e.g. predicted return on event date) suggest that results are not sensitive to varying estimation windows as long as the window length exceeds 100 days. (Armitage (1995), Park (2004)). So in our study, we have taken estimation window of 105 days.

After the availability of this data, we need to calculate the returns for all the sample companies for whole event and estimation window. Return for each firm i on each day t during the event window is defined as Rit. This approach has been conducted for the whole period of event window on a daily basis. An announcement after market closure, then appropriate adjustments have been made. It is also important to differentiate the impact of the event on the stock prices from any other unrelated movements in price. For example, if a company announces a merger with another company and its stock prices rise by 6% but on an average it is observed that the share prices of all other companies also rise by 6%, then we cannot attribute the rise in share price to the announcement made. Thus, we calculate the abnormal returns which are denoted by ARit which is calculated by subtracting expected return by the actual return. Augmented Dickey–Fuller Dickey & Fuller (1979) and Phillips & Perron (1998) tests have also been performed as a pre-cursor to time-series analysis. The results reveal that all sample return series are integrated at level.

The most common method to calculate expected return is using the market model. This works by calculating the expected return by using regression of return to stock i on a constant and also the return to market portfolio. For the $i^{th}$ firtm, the expected return for day t would be computed as the estimate ($\beta$) from regression times the market return (actual) on day t. This method has been used in the study to calculate the expected return.

$R_{it} = \alpha_i + \beta_i\,R_{mt} + u_{it}$

Where,

$R_{it}$ is the Expected Return for each firm i on each day t for the event window

$\alpha_i$ is intercept. (Mean return over the period not explained by the market).

$\beta_i$ is the slope of the regression

$R_{mt}$ is the market return during period t

$u_{i\,t}$ is the unexpected element known as the random error term or abnormal return or

residual.

Where, abnormal return is then calculated by subtracting the expected return from the actual return for the event window. Then we aggregate the abnormal returns and divide by the no. of companies resulting in Average Abnormal Returns (AAR) to find out if on an average dividend announcement impacts the share prices of the sample companies or not.

Further to know that if the impact is statistically significant or not, we calculate sum of square of error terms (SSE) for this we square the variances of the error terms as standard deviation is not additive. Then t- statistics can be easily calculated by dividing AAR by square root of SSE.

To see if there is any cumulative return of the dividend announcement over the event period, we can calculate the Cumulative Average Abnormal Return (CAAR). SSE can be cumulated over time to know cumulative sum of square of error (CSSE) which can be used to calculate t- statistics which helps in knowing that returns are statistically significant or not. Further, p value has been calculated to know if there is any significant impact of the event.

Event study can further be used to know the efficiency of the market by graphical representation. If the markets are efficient, change in stock price would occur immediately. If information is not absorbed quickly then there may be overreaction or delayed reaction thereby suggesting weak or semi strong efficiency. This has been illustrated in the figure below-



**Figure 3.1 Market Efficiency**

*(Source: Financialmanagementpro.com)*

*Figure 3.1 clearly depicts that if markets were totally efficient, the stock prices would immediately respond and reflect the above changes. The above figure also denotes that there may be exaggerated or delayed response to the event. This means that Efficient Market Hypothesis doesn't always hold to be true.*

## SECTION 4: EMPIRICAL RESULTS

| Table 4.1 : DATE OF DIVIDEND ANNOUNCEMENTS OF THE SELECT 31 COMPANIES OVER THE SAMPLE PERIOD (2009-10 TO 2018-19 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| COMPANY NAME | 2009-10 | 2010-11 | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 | 2016-17 | 2017-18 | 2018-19 |
| 1-Ambuja Cements Ltd. | 18-02-2010 | 11/2/2011 | 13-02-2012 | 18-02-2013 | 12/2/2014 | 2/3/2015 | 22-02-2016 | 16-03-2017 | 20-02-2018 | 27-02-2019 |
| 2-Asian Paints Ltd. | 17-06-2009 | 30-06-2010 | 9/6/2011 | 7/6/2012 | 6/6/2013 | 16-06-2014 | 24-06-2015 | 16-06-2016 | 15-06-2017 | 14-06-2018 |
| 3-BPCL | 26-082009 | 8/9/2010 | 5/9/2011 | 13-07-2012 | 6/9/2013 | 5/9/2014 | 28-08-2015 | 6/6/2016 | 8/6/2017 | 31-08-2018 |
| 4-Bharti Airtel Ltd. | 24-07-2009 | 18-08-2010 | 17-08-2011 | 16-08-2012 | 23-05-2013 | 21-08-2014 | 13-08-2015 | 11/8/2016 | 13-07-2017 | 2/8/2018 |
| 5-Bosch Ltd. | 7/5/2009 | 13-05-2010 | 12/5/2011 | 11/5/2012 | 10/5/2013 | 12/5/2014 | 20-08-2015 | 9/6/2016 | 8/6/2017 | 6/7/2018 |
| 6-Cipla Ltd. | 10/8/2009 | 23-07-2010 | 9/8/2011 | 1/8/2012 | 6/8/2013 | 6/8/2014 | 11/8/2015 | 12/9/2016 | 26-07-2017 | 13-08-2018 |
| 7-Dr.Reddy's Laboratories Ltd. | 3/7/2009 | 2/7/2010 | 20-06-2011 | 28-06-2012 | 12/7/2013 | 11/7/2014 | 10/7/2015 | 18-07-2016 | 17-07-2017 | 16-07-2018 |
| 8-Eicher Motors Ltd. | 5/3/2010 | 8/3/2011 | 13-03-2012 | 13-03-2013 | 12/3/2014 | 11/3/2015 | 22-3-2016 | 5/3/2017 | 8/5/2017 | 2/8/2018 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **9-GAIL** | 20-08-2009 | 2/9/2010 | 17-08-2011 | 16-08-2012 | 5/9/2013 | 27-08-2014 | 27-08-2015 | 8/9/2016 | 31-08-2017 | 30-08-2018 |
| **10-Hero Motorcorp Ltd.** | 28-08-2009 | 30-08-2010 | 25-08-2011 | 7/8/2012 | 3/9/2013 | 3/7/2014 | 1/6/2015 | 15-09-2016 | 30-06-2017 | 11/7/2018 |
| **11-Hindalco industries** | 10/9/2009 | 24-08-2010 | 14-09-2011 | 31-08-2012 | 30-08-2013 | 8/9/2014 | 7/9/2015 | 6/9/2016 | 4/9/2017 | 12/9/2018 |
| **12-HPCL** | 13-08-2009 | 3/9/2010 | 8/9/2011 | 30-08-2012 | 14-08-2013 | 12/8/2014 | 2/9/2015 | 28-07-2016 | 11/7/2017 | 28-06-2018 |
| **13-Hindustan Uniliver Ltd** | 12/6/2009 | 8/7/2010 | 8/7/2011 | 4/7/2012 | 10/7/2013 | 11/6/2014 | 19-06-2015 | 22-06-2016 | 22-06-2017 | 21-06-2018 |
| **14-ITC Ltd.** | 13-07-2009 | 9/6/2010 | 10/6/2011 | 11/6/2012 | 5/6/2013 | 3/6/2014 | 3/6/2015 | 30-05-2016 | 5/6/2017 | 25-05-2018 |
| **15-ICICI Ltd.** | 11/6/2009 | 10/6/2010 | 2/6/2011 | 31-05-2012 | 30-05-2013 | 5/6/2014 | 4/6/2015 | 16-06-2016 | 20-06-2017 | 24-08-2018 |
| **16-IOCL** | 2/9/2009 | 8/9/2010 | 15-09-2011 | 5/9/2012 | 22-08-2013 | 14-08-2014 | 4/9/2015 | 2/9/2016 | 18-08-2017 | 20-08-2018 |
| **17-IndusInd Bank Ltd.** | 22-06-2009 | 17-06-2010 | 30-06-2011 | 5/7/2012 | 17-06-2013 | 16-06-2014 | 7/8/2015 | 23-06-2016 | 18-07-2017 | 18-07-2018 |
| **18-Infosys Ltd.** | 4/6/2009 | 26-05-2010 | 26-05-2011 | 24-05-2012 | 30-05-2013 | 29-05-2014 | 15-06-2015 | 9/6/2016 | 1/6/2017 | 14-06-2018 |
| **19-Kotak Mahindrabank** | 14-07-2009 | 30-06-2010 | 12/7/2011 | 6/7/2012 | 4/7/2013 | 4/7/2014 | 18-06-2015 | 14-07-2016 | 12/7/2017 | 11/7/2018 |
| **20-Larsen & Tubro Ltd.** | 18-08-2009 | 17-08-2010 | 17-08-2011 | 14-08-2012 | 13-08-2013 | 13-08-2014 | 1/9/2015 | 8/8/2016 | 11/8/2017 | 14-08-2018 |
| **21-Lupin Ltd.** | 3/7/2009 | 19-07-2010 | 18-07-2011 | 13-04-2012 | 29-07-2013 | 21-07-2014 | 14-07-2015 | 25-07-2016 | 24-07-2017 | 30-07-2018 |
| **22-Maruti Suzuki india** | 18-08-2009 | 24-08-2010 | 24-08-2011 | 14-08-2012 | 13-08-2013 | 27-08-2014 | 26-08-2015 | 31-08-2016 | 24-08-2017 | 14-08-2018 |
| **23-NTPC Ltd.** | 3/9/2009 | 8/9/2010 | 8/9/2011 | 6/9/2012 | 5/9/2013 | 13-08-2014 | 3/9/2015 | 8/9/2016 | 7/9/2017 | 6/9/2018 |
| **24-ONGC Ltd.** | 11/9/2009 | 9/9/2010 | 18-08-2011 | 14-09-2012 | 17-09-2013 | 11/9/2014 | 7/9/2015 | 31-08-2016 | 21-09-2017 | 19-09-2018 |
| **25-Power Grid Corporatin of India Ltd.** | 21-08-2009 | 7/9/2010 | 6/9/2011 | 5/9/2012 | 5/9/2013 | 4/9/2014 | 7/9/2015 | 8/9/2016 | 11/9/2017 | 10/9/2018 |
| **26-TCS Ltd.** | 16-06-2009 | 15-06-2010 | 8/6/2011 | 7/6/2012 | 6/6/2013 | 6/6/2014 | 6/5/2015 | 6/6/2016 | 13-06-2017 | 31-05-2018 |
| **27-Tata Steel Ltd.** | 6/7/2009 | 12/7/2010 | 4/7/2011 | 16-07-2012 | 10/7/2013 | 14-07-2014 | 23-07-2015 | 28-07-2016 | 30-07-2017 | 5/7/2018 |
| **28-UltraTech Cement Ltd.** | 9/7/2009 | 21-06-2010 | 25-08-2011 | 17-08-2012 | 17-07-2013 | 24-07-2014 | 14-08-2015 | 4/7/2016 | 10/7/2017 | 10/7/2018 |
| **29-UPL** | 3/9/2009 | 26-08-2010 | 14-07-2011 | 12/7/2012 | 4/7/2013 | 7/8/2014 | 16-07-2015 | 16-06-2016 | 22-06-2017 | 9/8/2018 |
| **30-Yes Bank Ltd.** | 18-06-2009 | 24-06-2010 | 17-06-2011 | 5/7/2012 | 23-05-2013 | 29-05-2014 | 21-05-2015 | 30-05-2016 | 29-05-2017 | 4/6/2018 |
| **31-Zee Entertainment Ltd.** | 6/8/2009 | 7/10/2010 | 28-07-2011 | 5/7/2012 | 11/7/2013 | 10/7/2014 | 9/7/2015 | 21-07-2016 | 5/7/2017 | 9/7/2018 |

*Source: CMIE Prowess Database & Annual Reports*

*Note : These are the dividend announcement dates of selected sample of 31 countries as*

| YEARS | 2010 | | 2011 | | 2012 | | 2013 | | 2014 | | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Table 4.2 : p VALUES OF AVERAGE ABNORMAL RETURNS AND CUMULATIVE AVERAGE ABNORMAL RETURNS (CAAR) OVER THE EVENT WINDOW FOR A PERIOD OF 10 YEARS** | | | | | | | | | | | | | | | | | | | | | |
| **Event/ Day** | AAR | CAAR | AAR | CAAR | AAR | CAAR | AAR | CAAR | AAR | CAAR | AAR | CAAR | AAR | CAAR | AAR | CAAR | AAR | CAAR | AAR | CAAR |
| **15.00** | 0.61 | 0.55 | 0.50 | 0.50 | 0.52 | 0.52 | 0.23 | 0.23 | 0.29 | 0.29 | 0.02 | 0.02 | 0.16 | 0.16 | 0.93 | 0.93 | 0.62 | 0.62 | 0.54 | 0.54 |

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **14.00** | 0.03 | 0.97 | 0.13 | 0.13 | 0.57 | 0.40 | 0.54 | 0.68 | 0.05 | 0.50 | 0.44 | 0.03 | 0.45 | 0.13 | 0.88 | 0.97 | 1.00 | 0.72 | 0.19 | 0.17 |
| **13.00** | 0.12 | 0.90 | 0.06 | 0.82 | 0.62 | 0.77 | 0.64 | 0.95 | 0.52 | 0.86 | 0.56 | 0.15 | 0.05 | 0.02 | 0.94 | 0.94 | 0.84 | 0.87 | 0.57 | 0.74 |
| **12.00** | 0.22 | 0.83 | 0.28 | 0.14 | 0.31 | 0.45 | 0.31 | 0.57 | 0.64 | 0.70 | 0.62 | 0.13 | 0.81 | 0.05 | 0.45 | 0.76 | 0.56 | 0.88 | 0.59 | 0.99 |
| **11.00** | 0.77 | 0.45 | 0.55 | 0.45 | 0.05 | 0.37 | 0.62 | 0.78 | 0.63 | 0.57 | 0.03 | 0.02 | 0.19 | 0.25 | 0.97 | 0.77 | 0.73 | 0.77 | 0.71 | 0.87 |
| **10.00** | 0.93 | 0.36 | 0.86 | 0.86 | 0.74 | 0.49 | 0.88 | 0.84 | 0.74 | 0.70 | 0.37 | 0.08 | 0.19 | 0.11 | 0.43 | 0.96 | 0.09 | 0.66 | 0.49 | 0.67 |
| **9.00** | 0.14 | 0.89 | 0.08 | 0.55 | 0.63 | 0.85 | 0.88 | 0.81 | 0.13 | 0.36 | 0.02 | 0.01 | 0.51 | 0.22 | 0.44 | 0.73 | 0.36 | 0.45 | 0.62 | 0.85 |
| **8.00** | 0.37 | 0.71 | 0.74 | 0.46 | 0.35 | 0.61 | 0.57 | 0.98 | 0.21 | 0.68 | 0.63 | 0.03 | 0.15 | 0.52 | 0.71 | 0.85 | 0.26 | 0.27 | 0.56 | 0.97 |
| **7.00** | 0.69 | 0.49 | 0.65 | 0.97 | 0.25 | 0.70 | 0.57 | 0.87 | 0.26 | 0.99 | 1.00 | 0.04 | 0.24 | 0.32 | 0.59 | 1.00 | 0.23 | 0.52 | 0.05 | 0.52 |
| **6.00** | 0.98 | 0.33 | 0.33 | 0.87 | 0.98 | 0.72 | 0.57 | 0.98 | 0.30 | 0.73 | 0.35 | 0.03 | 0.41 | 0.49 | 0.70 | 0.90 | 0.71 | 0.47 | 0.21 | 0.31 |
| **5.00** | 0.17 | 0.86 | 0.47 | 0.61 | 0.63 | 0.89 | 0.58 | 0.88 | 0.80 | 0.69 | 0.24 | 0.08 | 0.11 | 0.26 | 0.06 | 0.50 | 0.85 | 0.45 | 0.00 | 0.36 |
| **4.00** | 0.62 | 0.54 | 0.95 | 0.85 | 0.76 | 0.96 | 0.10 | 0.54 | 0.40 | 0.53 | 0.46 | 0.14 | 0.46 | 0.19 | 0.81 | 0.47 | 0.80 | 0.52 | 0.50 | 0.49 |
| **3.00** | 0.23 | 0.82 | 0.22 | 0.72 | 0.33 | 0.79 | 0.95 | 0.57 | 0.81 | 0.50 | 0.95 | 0.16 | 0.51 | 0.15 | 0.88 | 0.47 | 0.40 | 0.40 | 0.86 | 0.96 |
| **2.00** | 0.69 | 0.50 | 0.83 | 0.70 | 0.49 | 0.66 | 0.35 | 0.76 | 0.27 | 0.35 | 0.14 | 0.08 | 0.20 | 0.30 | 0.69 | 0.42 | 0.97 | 0.42 | 0.37 | 0.77 |
| **1.00** | 0.60 | 0.55 | 0.11 | 0.64 | 0.40 | 0.83 | 0.18 | 0.95 | 0.51 | 0.46 | 0.29 | 0.15 | 0.46 | 0.23 | 0.35 | 0.59 | 0.36 | 0.31 | 0.12 | 0.69 |
| **0.00** | **0.00** | **1.00** | **0.00** | **0.12** | **0.00** | **0.06** | **0.00** | **0.07** | **0.00** | **0.01** | **0.00** | **0.88** | **0.01** | **0.60** | **0.08** | **0.93** | **0.01** | **0.11** | **0.88** | **0.67** |
| **-1.00** | 0.89 | 0.38 | 0.70 | 0.05 | 0.77 | 0.94 | 0.81 | 0.07 | 0.94 | 0.01 | 0.37 | 0.71 | 0.93 | 0.62 | 0.03 | 0.55 | 0.65 | 0.15 | 0.89 | 0.97 |
| **-2.00** | 0.87 | 0.39 | 0.60 | 0.97 | 0.29 | 0.75 | 0.11 | 0.03 | 0.36 | 0.00 | 0.48 | 0.60 | 0.00 | 0.74 | 0.85 | 0.53 | 0.67 | 0.13 | 0.56 | 0.92 |
| **-3.00** | 0.45 | 0.66 | 0.26 | 0.89 | 0.35 | 0.83 | 0.43 | 0.06 | 0.95 | 0.01 | 0.07 | 0.35 | 0.39 | 0.90 | 0.74 | 0.59 | 0.28 | 0.09 | 0.92 | 0.98 |
| **-4.00** | 0.93 | 0.35 | 0.86 | 0.77 | 0.95 | 0.82 | 0.85 | 0.06 | 0.17 | 0.00 | 0.70 | 0.41 | 0.69 | 0.97 | 0.54 | 0.70 | 0.91 | 0.09 | 0.16 | 0.77 |
| **-5.00** | 0.38 | 0.71 | 0.93 | 0.99 | 0.19 | 0.77 | 0.27 | 0.11 | 0.24 | 0.00 | 0.65 | 0.48 | 0.22 | 0.77 | 0.83 | 0.74 | 0.97 | 0.10 | 0.99 | 1.00 |
| **-6.00** | 0.63 | 0.53 | 0.55 | 0.92 | 0.50 | 0.67 | 0.79 | 0.10 | 0.45 | 0.00 | 0.76 | 0.45 | 0.32 | 0.94 | 0.38 | 0.89 | 0.63 | 0.13 | 0.10 | 0.73 |
| **-7.00** | 0.44 | 0.66 | 0.83 | 0.87 | 0.09 | 0.72 | 0.39 | 0.16 | 0.36 | 0.01 | 0.29 | 0.34 | 0.69 | 0.87 | 0.50 | 0.79 | 0.93 | 0.15 | 0.34 | 0.84 |
| **-8.00** | 0.53 | 0.60 | 0.77 | 0.92 | 0.78 | 0.77 | 0.08 | 0.30 | 0.75 | 0.01 | 0.43 | 0.44 | 0.43 | 1.00 | 0.47 | 0.90 | 0.07 | 0.29 | 0.78 | 0.89 |
| **-9.00** | 0.88 | 0.38 | 0.79 | 1.00 | 0.94 | 0.99 | 0.93 | 0.32 | 0.27 | 0.02 | 0.08 | 0.27 | 0.05 | 0.69 | 0.15 | 0.86 | 0.18 | 0.44 | 0.05 | 0.70 |
| **-10.00** | 0.42 | 0.68 | 0.26 | 0.87 | 0.75 | 0.94 | 0.37 | 0.43 | 0.96 | 0.02 | 0.80 | 0.30 | 0.01 | 0.89 | 0.70 | 0.81 | 0.19 | 0.62 | 0.02 | 0.41 |
| **-11.00** | 0.79 | 0.43 | 0.95 | 0.82 | 0.71 | 0.94 | 0.92 | 0.45 | 0.17 | 0.05 | 0.70 | 0.34 | 0.89 | 0.87 | 0.34 | 0.95 | 0.09 | 0.88 | 0.02 | 0.65 |
| **-12.00** | 0.64 | 0.53 | 0.62 | 0.92 | 0.86 | 0.92 | 0.63 | 0.40 | 0.03 | 0.12 | 0.19 | 0.24 | 0.20 | 0.68 | 0.53 | 0.86 | 0.24 | 0.94 | 0.00 | 0.31 |
| **-13.00** | 0.68 | 0.50 | 0.59 | 0.99 | 0.96 | 0.99 | 0.29 | 0.31 | 0.58 | 0.10 | 0.61 | 0.29 | 0.96 | 0.68 | 0.30 | 0.72 | 0.01 | 0.65 | 0.01 | 0.61 |
| **-14.00** | 0.94 | 0.35 | 0.12 | 0.70 | 0.58 | 0.93 | 0.21 | 0.22 | 0.66 | 0.09 | 0.57 | 0.35 | 0.49 | 0.60 | 0.72 | 0.77 | 0.17 | 0.84 | 0.13 | 0.43 |
| **-15.00** | 0.12 | 0.90 | 0.56 | 0.86 | 0.38 | 0.87 | 0.19 | 0.33 | 0.03 | 0.04 | 0.16 | 0.24 | 0.59 | 0.67 | 0.68 | 0.72 | 0.37 | 0.97 | 0.27 | 0.84 |

*Source : Computation by Authors*

*Note: Event day is marked as day '0'. Day -15 to -1 denotes 15 days before the dividend announcement. If the day happened to be a weekend/ holiday, then preceding*
*day's data has been recorded. Day 1 to 15 denotes 15 days after the event takes place. If the day happens to be a weekend or holiday, then next day's data has been recorded.*

## Dividend Announcements & Statistical Event Study Results

The declaration date is where board of directors announces the next dividend payment. This is also the last day where the holder option must indicate whether the option will be exercised or not. This date remains important for the investors because they will know whether they are eligible for receiving the payment or not. Table 4.1 includes date of dividend announcement of 31 companies included in event study. Table 4.2 shows the p-values of average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) over the event window for a period of 10 years. Under the market model, the p-value of abnormal return on dividend announcement day are 0.003, 0.000, 0.000, 0.000, 0.000, 0.01 for the year 2010,2011, 2012, 2013,2015 and 2018 respectively. It suggests that dividend announcement had significant impact on the sample companies in these years.

Chart 4.1 Market Model 2010



Chart 4.2 Market model 2011



Chart 4.3 Market Model 2012



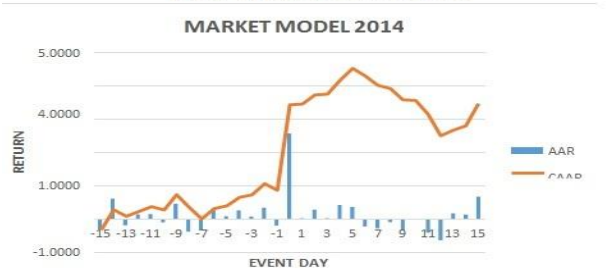Chart 4.4 Market Model 2013



Chart 4.5 Market Model 2014



Chart 4.6 Market Model 2015



Chart 4.7 Market model 2016



Chart 4.8 Market Model 2017



Chart 4.9 Market Model 2018



Chart 4.10 Market Model 2019

*Representation of AAR and CAAR*

*Both the values of AAR and CAAR calculated by the market model are plotted by the authors on graph and represented as pictorial charts from Chart 4.1 to 4.10 from 2009-10 to 2018-19 respectively on the basis of computations. We plot the return in on the vertical axis. Horizontal axis has the pre and post 15 days around the event day which is denoted by day '0'.*

For the year 2010, Chart 4.1 depicts that on the day of dividend announcement there is sudden jump in AAR and CAAR i.e. the event has significant impact on the market. Before the event, fluctuations are being observed in the market including negative returns which may indicate that positive news is not being inferred by the investors. After the event, AAR drops down gradually and CAAR is also falling reflecting that information has been absorbed and market is efficient. It indicates that market movement is supported by dividend information. This observation can be utilized to investors to make abnormal returns.

For the year 2011, Chart 4.2 depicts that AAR and CAAR are fluctuating. Before the event takes place, there is lot of fluctuations in the returns. Maybe there is mixed expectations regarding the event. It rises on the day of dividend announcement. Post the event date; there is immediately fall of CAAR stabilizing within a short period. After 13 days, CAAR drops down to negative. The information had significant impact on the market movement. Also, it drops immediately signifying the irrational expectations of the investors to the information.

For the year 2012, Chart 4.3 signifies that dividend information has significant impact on the price movement. CAAR and AAR has been mostly positive pre announcement period. It increases sharply on the dividend announcement day. CAAR becomes negative for some time and falls instantaneously post announcement period indicating overreaction and irrational reaction of investors to the information of dividend disclosure

For the year 2013, Chart 4.4 indicates that AAR and CAAR rises sharply on the event day. Here, Pre announcement CAAR are negative. On the day of announcement, CAAR rises sharply. Thereafter, it falls gradually whereas AAR is mostly negative on certain days' post announcement. There seems to be little time lag in absorbing the dividend information which might suggest that market is not completely efficient in information absorption. The positive CAAR shows that the investors have earned profits. This implies that dividend announcement information of Nifty companies has not provided any new information to the market and has very minimal impact of the stock prices as seen in Chart.

For the year 2014, Chart 4.5 indicates pre announcement AAR has mixed response. Cumulatively, though returns are positive before the event takes place, Post dividend announcement CAAR rises and then drops after some days

indicating impact of the information. Overall due to positive CAAR, investors have earned profits. AAR doesn't show significant positive returns post announcement. This may reflect irrational expectations of the investors though the information is not significant enough to conclude the market efficiency.

For the year 2015, Chart 4.6 indicates highly negative CAAR before the dividend announcement but after the announcement it turned positive indicating that information is well received by the investors though returns are not significant. AAR shows negative trend prior to the announcement and rises sharply just before the announcement and continues to be positive for only couple of days. The market isn't efficient to absorb the information instantly.

For the year 2016, Chart 4.7 indicates negative CAAR before the announcement of dividend. AAR is also mostly falling before the event takes place. This might indicate that positive news is not being anticipated by the investors. On the day of announcement, there is rise in average abnormal returns however, it is not significant. Thus, dividend announcement had no significant impact on the share prices in 2016. Post dividends also there are no significant average abnormal returns.

For the year 2017, Chart 4.8 shows that in 2017 there was fluctuating movement of the AAR and CAAR. CAAR rises initially 9 days before the announcement and suddenly falls on the event day. Post dividend announcement declines giving negative returns cumulatively suggesting overreaction of investors to the information. AAR also falls to negative on most days. The negative CAAR showed that investors incurred losses post the announcement. However, the dividend information of Nifty 50 companies have no significant impact on share prices.

For the year 2018, Chart 4.9 indicates rising of CAAR in pre-announcement period and continues to increase after the event but drops steeply in the post dividend announcement period. It indicates overreaction to the dividend information. AAR is rising in pre-announcement period and falls immediately after the dividend announcement. The stock movement had random walk which continued even after the dividend announcement was made. However, the information is not significant enough to impact share prices.

For the year 2019, Chart 4.10 indicates no such movement on the event day. Preannouncement both AAR and CAAR are fluctuating. Post dividend announcement CAAR falls negatively for some time. Both AAR and CAAR are changing up

and down frequently in every short period of time. Investor attitude are changing abruptly due to floating of information. No such significant impact is observed. It is clearly evident from the chart that

dividend announcement information does not carry any new information to the markets and thereby has not provided any surprise movement of stock prices.

| | Table.4.3: Magnitude of AAR and CAAR spread over the event window for a period of 10 years | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Year** | **2010** | | **2011** | | **2012** | | **2013** | | **2014** | | **2015** | | **2016** | | **2017** | | **2018** | | **2019** | |
| **DAY** | **AAR** | **CAAR** | **AAR** | **CAAR** | **AAR** | **CAAR** | **AAR** | **CAAR** | **AAR** | **CAAR** | **AAR** | **CAAR** | **AAR** | **CAAR** | **AAR** | **CAAR** | **AAR** | **CAAR** | **AAR** | **CAAR** |
| -15 | 0.592 | 0.592 | -0.21 | -0.21 | 0.181 | 0.181 | 0.35 | 0.35 | -0.32 | -0.32 | -0.74 | -0.74 | -0.98 | -0.98 | -0.03 | -0.03 | 0.118 | 0.118 | -0.16 | -0.16 |
| -14 | 2.455 | 3.047 | -0.48 | -0.69 | 0.159 | 0.34 | -0.18 | 0.169 | 0.61 | 0.289 | -0.25 | -0.99 | -0.53 | -1.51 | 0.042 | 0.017 | 0.001 | 0.118 | -0.35 | -0.52 |
| -13 | -1.78 | 1.265 | 0.598 | 0.121 | 0.142 | 0.142 | -0.14 | 0.033 | -0.19 | 0.095 | 0.184 | -0.8 | -1.36 | -2.87 | 0.021 | 0.038 | -0.05 | 0.069 | 0.153 | 0.153 |
| -12 | -1.42 | -0.16 | 0.343 | 0.941 | 0.29 | 0.432 | 0.298 | 0.331 | 0.141 | 0.237 | -0.16 | -0.96 | 0.162 | -2.7 | -0.22 | -0.18 | -0.14 | -0.07 | -0.15 | 0.009 |
| -11 | 0.339 | 0.184 | 0.188 | 0.531 | 0.57 | 0.57 | -0.15 | 0.184 | 0.147 | 0.383 | -0.7 | -1.66 | 0.907 | -1.8 | -0.01 | -0.19 | -0.08 | -0.15 | 0.1 | 0.1 |
| -10 | 0.104 | 0.289 | -0.05 | 0.134 | -0.09 | 0.477 | -0.04 | 0.141 | -0.1 | 0.281 | 0.283 | -1.37 | -0.92 | -2.71 | 0.225 | 0.038 | 0.406 | 0.254 | 0.184 | 0.284 |
| -9 | -1.71 | -1.42 | 0.553 | 0.498 | 0.137 | 0.137 | 0.043 | 0.184 | 0.457 | 0.738 | -0.75 | -2.12 | 0.458 | -2.25 | 0.22 | 0.258 | 0.218 | 0.472 | 0.133 | 0.133 |
| -8 | -1.02 | -2.45 | 0.106 | 0.659 | 0.268 | 0.405 | -0.17 | 0.019 | -0.38 | 0.359 | 0.155 | -1.97 | 0.999 | -1.26 | -0.11 | 0.15 | 0.269 | 0.741 | -0.16 | -0.03 |
| -7 | 0.459 | -1.99 | -0.14 | -0.04 | 0.329 | 0.329 | -0.17 | -0.15 | -0.35 | 0.013 | -0 | -1.97 | -0.82 | -2.07 | -0.15 | -0 | -0.28 | 0.457 | -0.52 | -0.52 |
| -6 | -0.03 | -2.02 | 0.309 | 0.167 | -0.01 | 0.322 | 0.168 | 0.02 | 0.314 | 0.327 | -0.3 | -2.27 | 0.565 | -1.51 | 0.112 | 0.109 | 0.088 | 0.545 | -0.34 | -0.86 |
| -5 | 1.573 | -0.45 | 0.228 | 0.537 | -0.14 | -0.14 | -0.16 | -0.14 | 0.077 | 0.405 | 0.379 | -1.89 | -1.11 | -2.62 | 0.536 | 0.645 | 0.045 | 0.591 | 0.824 | 0.824 |
| -4 | 0.577 | 0.129 | -0.02 | 0.206 | 0.087 | -0.05 | -0.48 | -0.63 | 0.257 | 0.661 | 0.234 | -1.65 | -0.51 | -3.13 | 0.069 | 0.714 | -0.06 | 0.529 | -0.18 | 0.643 |
| -3 | 1.395 | 1.524 | -0.39 | -0.41 | 0.275 | 0.275 | 0.018 | -0.61 | 0.073 | 0.734 | 0.02 | -1.63 | -0.45 | -3.58 | 0.042 | 0.756 | 0.198 | 0.727 | -0.05 | -0.05 |
| -2 | 0.466 | 1.99 | -0.07 | -0.46 | 0.197 | 0.471 | 0.276 | -0.33 | 0.334 | 1.069 | -0.47 | -2.11 | 0.894 | -2.69 | 0.114 | 0.87 | -0.01 | 0.718 | -0.24 | -0.29 |
| -1 | -0.61 | 1.379 | -0.5 | -0.57 | 0.238 | 0.238 | 0.397 | 0.066 | -0.2 | 0.871 | 0.338 | -1.77 | -0.51 | -3.2 | -0.27 | 0.602 | 0.217 | 0.935 | -0.41 | -0.41 |
| **0** | **3.49** | **4.87** | **2.46** | **1.96** | **1.89** | **2.13** | **2.07** | **2.14** | **2.56** | **3.43** | **1.97** | **0.2** | **1.73** | **-1.5** | **-0.5** | **0.1** | **0.6** | **1.53** | **-0** | **-0.5** |
| 1 | -0.16 | 4.712 | 0.121 | 2.581 | 0.083 | 0.083 | 0.072 | 2.21 | 0.024 | 3.457 | 0.288 | 0.485 | 0.06 | -1.4 | 0.613 | 0.712 | -0.11 | 1.425 | -0.04 | -0.04 |
| 2 | -0.19 | 4.522 | -0.16 | -0.04 | 0.299 | 0.382 | 0.47 | 2.68 | 0.275 | 3.732 | 0.225 | 0.71 | 2.37 | 0.968 | 0.053 | 0.765 | 0.1 | 1.525 | 0.157 | 0.12 |
| 3 | -0.87 | 3.648 | 0.358 | 0.193 | -0.27 | -0.27 | -0.23 | 2.447 | 0.021 | 3.753 | 0.578 | 1.288 | -0.6 | 0.369 | -0.1 | 0.669 | 0.255 | 1.78 | 0.028 | 0.028 |
| 4 | 0.1 | 3.748 | 0.054 | 0.411 | -0.02 | -0.28 | 0.054 | 2.501 | 0.413 | 4.166 | -0.13 | 1.164 | -0.27 | 0.097 | -0.17 | 0.495 | 0.026 | 1.806 | -0.38 | -0.35 |
| 5 | 1.015 | 4.763 | -0.03 | 0.025 | 0.377 | 0.377 | -0.32 | 2.179 | 0.359 | 4.525 | -0.14 | 1.021 | 0.849 | 0.947 | -0.06 | 0.434 | -0.01 | 1.796 | -0.01 | -0.01 |
| 6 | -0.55 | 4.211 | 0.187 | 0.158 | 0.193 | 0.57 | 0.078 | 2.257 | -0.23 | 4.295 | 0.096 | 1.117 | -0.69 | 0.255 | -0.25 | 0.183 | -0.11 | 1.682 | 0.439 | 0.434 |
| 7 | -0.89 | 3.325 | 0.066 | 0.253 | -0.48 | -0.48 | -0.25 | 2.003 | -0.28 | 4.015 | 0.335 | 1.452 | 0.274 | 0.53 | 0.192 | 0.375 | -0.02 | 1.662 | -0.26 | -0.26 |
| 8 | -0.72 | 2.608 | 0.092 | 0.158 | 0.079 | -0.41 | -0.52 | 1.484 | -0.1 | 3.918 | -0.25 | 1.201 | -0.54 | -0.01 | -0.21 | 0.168 | -0.43 | 1.23 | 0.075 | -0.18 |
| 9 | -0.18 | 2.431 | -0.09 | 0.007 | -0.02 | -0.02 | -0.03 | 1.457 | -0.34 | 3.583 | 0.57 | 1.771 | 1.371 | 1.357 | -0.42 | -0.25 | -0.32 | 0.909 | -0.52 | -0.52 |
| 10 | -0.93 | 1.502 | 0.353 | 0.268 | -0.09 | -0.11 | -0.27 | 1.191 | -0.02 | 3.566 | -0.08 | 1.69 | -1.86 | -0.51 | -0.11 | -0.36 | -0.32 | 0.594 | -0.61 | -1.13 |
| 11 | -0.31 | 1.195 | 0.021 | 0.374 | 0.104 | 0.104 | -0.03 | 1.163 | -0.42 | 3.149 | -0.12 | 1.567 | -0.1 | -0.61 | 0.272 | -0.09 | -0.4 | 0.19 | 0.627 | 0.627 |
| 12 | 0.542 | 1.737 | 0.155 | 0.176 | 0.049 | 0.152 | 0.14 | 1.303 | -0.65 | 2.504 | 0.419 | 1.986 | -0.89 | -1.49 | -0.18 | -0.27 | -0.28 | -0.09 | 0.828 | 1.455 |
| 13 | -0.47 | 1.271 | -0.17 | -0.01 | -0.01 | -0.01 | 0.308 | 1.612 | 0.168 | 2.672 | -0.16 | 1.822 | -0.04 | -1.53 | -0.3 | -0.56 | 0.678 | 0.586 | 0.747 | 0.747 |
| 14 | 0.08 | 1.35 | -0.5 | -0.67 | 0.159 | 0.146 | 0.365 | 1.977 | 0.133 | 2.805 | -0.18 | 1.639 | -0.47 | -2 | 0.104 | -0.46 | -0.33 | 0.256 | 0.411 | 1.157 |
| 15 | 1.774 | 3.125 | 0.185 | -0.31 | 0.25 | 0.25 | -0.39 | 1.591 | 0.663 | 3.468 | 0.448 | 2.087 | 0.377 | -1.63 | -0.12 | -0.58 | -0.21 | 0.042 | -0.3 | -0.3 |

*Source: Computation by Authors*

*Note : Event day is marked as day '0'. Day -15 to -1 denotes 15 days before the dividend announcement. If the day happened to be a weekend/ holiday, then preceding day's data has been recorded. Day 1 to 15 denotes 15 days after the event takes place. If the day happens to be a weekend or holiday, then next day's data has been recorded.*

The Table 4.3 denotes AAR and CAAR for sample 31 companies of NIFTY 50 for 10 years. Day 0 denotes the return on the day of dividend announcement for the year. In 2010, Pre dividend announcement, AAR has given mixed response but positive abnormal returns are more dominant. On the day of dividend announcement there is sudden jump in AAR and CAAR. Also, the event was found to have significant impact on the market. On the event day, AAR is 3.49 signifying that there is a rise of 3.49 % in the share prices of the dividend announcement day which is significant. Cumulatively, there is average abnormal return of 4.87% up to the event day. Post announcement, CAAR has been positive for initial days indicating

news have been well received by investors' expectations. After few days, CAAR is declining indicating that information is steadily being absorbed by the market.

In 2011. Before the event, there are minute average abnormal returns but just before the dividend announcement AAR is negative signifying that expectations regarding the announcement are not positive. On the event day, AAR is 2.460 signifying that there is a rise of 2.46 % in the share prices of the dividend announcement day which is significant. The dividend announcement has significant impact on the share prices. Post dividend announcement, CAAR comes close to

zero indicating that market is efficient in absorbing the information.

In 2012, Pre announcement, minute positive incidence of average abnormal returns is noticed. On the day of dividend announcement, there are average abnormal returns of 1.891 indicating that share prices rise by 1.89 % on the event day which is significant. Post announcement, AAR and CAAR is declining indicating information is being absorbed by the market.

In 2013, prior to the event, very minor average abnormal returns are observed. On the day of dividend announcement, AAR is 1.891 which is significant. Thus, dividend announcement has significant impact on share prices. The major negative value of CAAR in Post- announcement period of 15 days implies that there is negative effect of dividend announcement on stock price of NIFTY 50 companies. It is an indication of over expectation and irrational behavior to the new information disclosure regarding the dividend.

In 2014 Pre Announcement Period, there are minor fluctuations in AAR. The AAR and CAAR are 2.56 and 3.43 on the event day but are not statistically significant. Post dividend announcement, CAAR remains high and not close to zero. However, magnitude of overreaction is not significant to invalidate stock market efficiency.

In 2015, not much major average abnormal returns (both positive and negative) are evident pre announcement period. Also, there are negative CAAR before the announcement signifying that not much good news is being anticipated by the investors. On the event day, there is significant average abnormal return of 1.968 %. Post announcement CAAR has turned positive and is increasing. The market doesn't seem to be efficient to process the information quickly.

In 2016, CAAR remains negative throughout pre event period. AAR is 1.734% but it is not significant. Therefore, dividend announcement didn't have any significant impact on the market in 2016. Post the dividend announcement there is declining trend in returns but these are insignificant.

In 2017 the movement of AAR and CAAR is fluctuating. The average abnormal return on the event day isn't significant. CAAR after dividend announcement is negative but is not significant.

In 2018, AAR is fluctuating before the dividend announcement is made. The dividend had significant impact on share prices and there is increase of 0.6 % on the day of dividend. Post dividend, information is absorbed in the market

and CAAR comes close to zero at the end of event period post announcement.

In 2019, AAR is falling in pre-announcement period meaning that expectations are low with respect to the event information. On the event day, average abnormal return is negative though it is found to be statistically insignificant.

The magnitude of AAR and CAAR can be analyzed from the Table 4.3. The years 2010, 2011, 2012, 2013, 2015 and 2018 had significant average abnormal returns of 3.493, 2.460,1.891,2.072,1.968 and 0.596 respectively on the day of announcement. The remaining years also had positive returns but they were statistically in-significant. The ARR for the year 2010 was the highest (3.493) on the event day. CAAR in 2010, 2011, 2012, 2013, 2015 and 2018 is 4.871,1.958,2.129,2.138, 0.198 and 1.531 respectively on the event day. This means that cumulatively investors will earn such percentage of average abnormal returns till the announcement is made in respective years. At the end of the event window, CAAR was highest in the year 2010 i.e. 3.125. This implies that if the investor takes position before the information floats there will be cumulative average abnormal gain of 3.125% at the end of the event window period. Similarly, cumulative average abnormal returns observed in 2011,2012,2013,2015 and 2018 were (-)0.312, 0.250,1.591, 0.2403 and 0.9748 respectively.

## SECTION 5: CONCLUSIONS, RECOMMENDATIONS, POLICY SUGGESTIONS AND SCOPE FOR FUTURE STUDY

**Stock Market Reaction to Dividend Announcement Year Wise Movement of AAR and CAAR**

With reference to the computation of tables, graphs and their analysis by event study, there has been a mixed reaction over the years. Year wise results and inferences drawn have been given below:

In 2010, there are negative fluctuations before the announcement of event. After the event, AAR and CAAR drops gradually. The positive CAAR shows that investors have earned profits. The null hypothesis is rejected concluding that dividend announcement of Nifty 50 companies had significant positive impact on stock prices in year 2010.

In 2011, there are fluctuations before and after the event. Random movement is observed in AAR and CAAR. After the event, there is immediate fall of CAAR stabilizing within short time period. Abnormal returns were positive prior to the date of

announcement with good expectations of increased dividend announcement but post announcement returns are negative. This shows dividend announcement does signal and investors do react on the basis of information revealed.

In 2012, AAR and CAAR remains positive mostly before the pre-announcement period. Thereafter, it falls immediately and CAAR gives negative value for some time. This is a clear indication that information was not as expected by the investors though overall CAAR had positive returns and might have given small profits to the investors.

In 2013, just before the announcement CAAR are negative. Though after the event CAAR becomes positive but on an average, abnormal returns are mostly negative. Investors earned cumulative profits on the dividend announcement day as indicated by CAAR which was found to be significant. Thus, dividend announcement does signal to the investors in 2013 thereby rejecting the null hypothesis that dividend announcement has no significant impact on stock prices of Nifty 50 companies.

In 2014, before the event AAR has mixed response but cumulatively average abnormal returns are positive before the event. Post the event, AAR has mixed values and CAAR rises and then drops after some days indicating impact of the information. However, the information is not significant to conclude that dividend announcement has significant impact on stock prices in 2014 thereby accepting the null hypothesis.

Prior the announcement AAR and CAAR showed a negative trend in 2015. This may be due to the fact that information regarding dividend announcement might not be favorable as perceived by the investors. Post the dividend announcement, CAAR showed positive trend whereas AAR was positive only for couple of days though it wasn't significant. Information wasn't as unfavorable as expected resulting in revival of returns post the announcement. Thus, dividend announcement had significant impact on the stock prices of sample companies.

In 2016, AAR and CAAR showed negative returns predominantly before and after the announcement of dividend. There was a jump in CAAR on the event day which remained for a short period and again turned negative after 10th day. Thus, dividend announcement seemed to be favorable than expected as returns were positive on event day, however they weren't significant enough.

In 2017, CAAR had the pattern of constant rise and fall before and after announcement of the

event. AAR also showed mostly negative returns prior and post announcement of the event. Initially, the behavior of Cumulative Abnormal Returns was on the negative side but later it gained momentum may be due to breakage of dividend announcement information to the insiders. However, within few days' positive cumulative average abnormal returns died falling down to negative.

In 2018, CAAR rises gradually before the announcement and falls steeply after few days of announcement. AAR was rising in pre-announcement period and falls immediately after the dividend announcement. Due to good news being anticipated CAAR started rising much before the event and continued to remain so even after few days of announcement. Investors can earn profits with the advantage of this information. Hence, alternate hypothesis was accepted in 2018 stating that dividend announcement had significant impact on stock prices of Nifty 50 companies.

In 2019, there is haphazard movement of AAR and CAAR both prior and post dividend announcement. Under the Market model, the Average Abnormal Returns and Cumulative Average Abnormal Returns are found to be not statistically significant at 5% level of significance during pre and post event window. Fall in CAAR after the event highlights the overreaction of investors. The greatness of the overreaction was not significant enough to statistically validate the efficiency of the market thereby accepting the null hypothesis that dividend announcement had no impact on stock prices in 2019.

It has been observed that during different years, there were varied expectations of the investors regarding the announcement on dividend. In some years, investors were quiet optimistic relating to dividend announcement while in other years; investors didn't place as much expectations on dividend owing to varied conditions of the company or the market. There might be instances where stock prices decline over a time period yet income from dividend continues to flow in. According to the Hartford Funds accounted for about 42% of the S&P 500 Index's total return from 1930 to 2017. This clearly outlines the importance of dividends for investors. During most of the years of the study, investors' expectations were irrational. It was observed that in 2011,2012,2014,2017 and 2018 investors had irrational expectations from the dividend declaration. In the year 2010 and 2016, investors were not very optimistic about the information while in 2019 investors had abrupt attitude.

The results confirm that the expectations of market participant have a significant influence on abnormal returns of dividend announcement. In the years 2010, 2011, 2012, 2013, 2015 and 2018, dividend announcement had positive significant impact on the sample companies under the market model. The years 2010, 2011, 2012, 2013, 2015 and 2018 had **significant average abnormal returns** of 3.493, 2.460,1.891, 2.072, 1.968 and 0.596 respectively on the day of announcement. The investors can take positions in these years to earn abnormal returns using the dividend information.

The findings of the Nifty 50 companies' reaction to the dividend announcement supports the information content of the dividend hypothesis. It states that managers of a firm use the dividend to signal asymmetric information about the firm's future earnings. The study highlights that dividend signals new information to the market thus triggering movements in the share prices. The study further supports the semi-strong form of the efficient market hypothesis as suggested by Fama. This theory holds that security prices adjust quickly to newly available information. This eliminates the possibility of fundamental or technical analysis to achieve a higher return. We have observed that prices adjusted within a few days of the event based on the information revealed by the dividend announcement, the expectations of the investors played a key role in influencing abnormal returns from the event. At times it was observed that investor's had irrational expectations from the dividend announcement but it wasn't significant enough to invalidate stock market efficiency.

The Dividend policy is one of the most important decisions to achieve the objective of wealth maximization. All the parties involved namely the board of directors, managers, investors and stakeholders should try to comprehend the dividend behavior in multi-dimensional aspect to reach to the level of optimal decision of investment. This study is an attempt in this direction to understand the concepts of dividend and how the announcement of dividend can affect the share prices of the company.

The market reacts strongly to increments in dividend that are paid regularly followed by other factors such as positive performance of firm and condition of the environment. Management can thus float the present information in market that can help to increase/stabilize the market value. The study fairly indicates that semi-strong form efficiency theory plays significant role in

determining the dividend and within a short time frame information will be adjusted by the market.

The study highlighted that in 6 out of 10 years' dividend information had significant positive impact on the share prices. In rest of the years, there was no such significant impact of the announcement on Nifty 50 companies. This information can very well be used by the investors who are willing to take risk by making adjustments in their portfolio prior to the announcement of the dividend to earn abnormal profits. However, it may not be a good idea for investors who want to play very safe with their investments to switch positions on the context of the event.

It further supports the semi-strong form of the efficient capital market hypothesis consistent with the findings of Fama (1970) which states that on an average, the stock market adjusts in an efficient manner to the information of dividend announcement.

On the basis of the study, it is suggested that Investors who prefer steady and stable income need not change positions on stock market when it comes to light that the event is about to take place. Further, at times it was observed that investors had irrational expectations from the dividend announcement and other times expectations were quiet low. Investors' expectations also played a key role in influencing abnormal returns.

The study employed the Sharpe model to compute the expected return from the stock. Other models like mean adjusted model, Walter model can be used to widen the scope of the study to analyze the impact of dividend announcement on stock prices. Likewise, more companies and sectors can be added in future studies. Further, comparison can be made between determinants of dividend policy in Indian companies' vis a vis foreign companies.

Behavior and expectations of the investors can be studied on a deeper level to know their significance on the movement of the stock prices. Also, stock dividend and interim dividend can be taken into consideration to study dividend impact on share prices holistically. Different events like merger, acquisitions etc. can be studied to know what other events impacts the stock market. Further, the impact of ownership pattern and structure can be ascertained in framing the dividend policy. The Fama & French Three factor model can be enhanced by including more factors like Dividend Announcements, dividend yield, dividend coverage ratio, price to earnings ratio or a composite variable covering the dividend parameters to better explain the inefficiencies in

the markets as done by Pandey, Mittal & Mittal (2021) to explain the size effect anomaly in European Markets. A similar methodology may be used to explain the Dividend Announcement Anomaly as experienced in this paper in Nifty 50 companies. Further an in depth sectoral analysis may also be conducted through regression analysis to give a deeper insight into the source of inefficiencies. This paper provides vital information to mathematicians, academia, financial market participants, Dividend policy designers, top managers of companies, regulators as well as international investors as to understand the timings of opportunity to invest in the Indian Stock Markets.

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