

Cash Dividend Announcement Effect: Evidence from Dhaka Stock Exchange

Abstract

The sole motive of the paper is to investigate cash dividend announcement effect of the stocks traded in the Dhaka Stock Exchange from 2006 to 2010. Classic event study methodology was used to analyze the data. It was found that in 2006, 2007 and 2009 market has reacted over the announcement in the event date. Some sectors like Food & Auxiliary, Fuel and Miscellaneous have impacted the market both in the event and post event date across the years considered. All the efforts were given to discover reaction therefore the underlying reasoning of such impact are set aside.

Keywords: Cash dividend, Dhaka stock exchange, Event study, Announcement effect

1. Introduction

Securities, to be more specific stocks are not traded in a vacuum, rather amidst the complex interaction of many variables – some explainable and some not manageable. Thousands, perhaps even more variables can exert influence over stock price and dividend is the prime variable. Irrespective of the stock market location – New York, Tokyo, Mumbai or Dhaka, stock price volatility at the dividend announcement date and post announcement dates is a common phenomenon, even though the extent of volatility does differ across globe. This study explores the price behavior and evidence of abnormal return at cash dividend announcement date and post announcement date of various stocks traded in Dhaka Stock Exchange (DSE). This study only considers cash dividend paying firms during 2006 to 2010.

Normally, two generic effects can be associated with cash dividend declaration – a wealth transfer effect and a signaling effect (Woolridge; 1983). In the absence of a perfect me-first principle, a financing decision like cash dividend payoff will certainly result in wealth transfer among various clusters of security holders. Long ago, Modigliani and Miller (1958, 1961) had postulated that given information symmetry, perfect capital market and production-investment decision preset, the value of a firm reflected in stock price is totally independent of any sort of financing decision like cash dividend payoff. Fama and Miller (1972) had added that in the presence of a perfect me-first rule, any type of financing decision like cash dividend payoff could not have any influence over stock price as well as stockholder's and bondholder's wealth. But reality is totally different from Modigliani's, Fama's and Miller's illusionary Atlantis and in reality protective covenants are often incomplete and limited, resulting in wealth transfers in case of cash dividend payment. In a world of information asymmetry, managers convey their messages and expectations to the market by using financial signaling.

Bhattacharya (1979), Kalay (1980) had developed cash dividend signaling model assuming that there existed information asymmetry between security holders and managers. As per each of the above mentioned dividend signaling model, stock prices move to a new equilibrium level in responses to the information that the managers tries to convey in dividend decision. Generally with positive unexpected dividend change, there will be positive signaling and wealth transfer effect from common stockholder's perspective (Woolridge; 1983). On the other hand, with negative unexpected dividend change, there will be negative signaling and wealth transfer effect from common stockholder's perspective (Woolridge; 1983). The impact of cash dividend announcement on stock price has certainly grabbed

huge academic attention. Aharony and Swary (1980), Eades (1982), Kwan (1981) and Woolridge (1983) had found significantly positive relationship between dividend change and announcement date stock return. These results had been attributed to wealth transfer hypothesis and information content carried by the financing decision. Dann (1981) had found evidence of statistically significant positive return for stocks on the announcement date and for non-convertible bond and debt the return was non-significant. Vermaelen (1981) had also found similar results in case of stocks but he did not test the cash dividend announcement effect for preferred stock and bonds.

Empirical research had shown that the market generally reacts positively to the announcement of cash dividend. Numerous studies in Bangladesh have dealt with the information content of various types of announcements especially announcement regarding cash dividends. This research paper is certainly going to enhance the quality of the existing literatures. The study has been performed using a very simple methodology provided by Mark P. Kritzman (1994) for the detection of any market reaction was the sole objective. No effort had been exerted to diagnose the underlying reason behind market reaction. The study has been conducted using only a parametric test whereas there were numerous parametric as well as non-parametric tests to conduct such a study. The Cumulative Average Abnormal Return (CAAR) was avoided as market efficiency identification was not the objective of the study. The data used in the study were collected from the Dhaka Stock Exchange library and from Bangladesh Bank. The daily trade data for the companies upon which the study was conducted sometimes was found to be disordered and missing. In some instances, bootstrapping or linear interpolation was used to reduce such anomalies but these manufactured data could have hampered the conclusion.

2. Literature Review

The principal goal of finance manager is to maximize the investment value of the stockholders. For maximizing the stockholder's value financial managers take different investment and financing decision. Apart from taking investment and financing decision, stockholders have to take dividend basically cash dividend decision – whether to pay off part of the current earnings to the stockholders as reward and with an implied intension to reduce agency problem (Jensen and Meckling, 1976).

Empirical findings revolving market reaction after cash dividend announcement had been mixed. Academicians like Gordon (1959), Ogden (1994), Stevens and Jose (1989), Kato and Loewenstein (1995), Ariff and Finn (1986), and Lee (1995) had found statistically significant above average stock market return after cash dividend announcement. On the other hand, Easton and Sinclair (1989) had found statistically significant negative stock market return after cash dividend announcement. The negative relationship between stock market return and cash dividend announcement is attributed to income tax effect and the positive relationship between stock market return and cash dividend announcement is attributed to information effect of dividend.

In a well-functioning stock market, on an average, dividend declaration should not create any surprise or panic (Bajaj and Vijh, 1995). In the absence of any market microstructures and in the presence of market efficiency, if all the abnormal returns revolving cash dividend announcement are taken together the sum should be a big zero. But Kalay and Loewenstein (1985) had found evidence that the daily stock returns surrounding announcement dates (three day) were statistically significant from the return predicted by market model and from the recent realized average daily return. Kalay and Loewenstein (1985) had also found evidence that market reaction to cash dividend announcement date was a bit sluggish since the excess return persisted over four days after the announcement date. According to Kalay and Loewenstein (1985) the unconditional positive excess return during the announcement date was significantly higher for small firm and low-priced stock than the case with large firm and high-priced stocks. Using almost the similar kind of methodology, Eades, Hess and Kim (1985) had found evidence that the average daily return around cash dividend declaration date was abnormal, even though the researchers did not find any confirm evidence of sluggish market reaction. Eades, Hess and Kim (1985) had also confirmed that market reaction to cash dividend announcement was biased. Very much like the previous studies conducted by Asquith and Mullins (1983) and Healy and Krishna (1988), Michaely, Thaler and Womack (1995) had found cash dividend omissions were associated with a mean drop of 7% on the announcement date and cash dividend initiations were with a mean increase of 3% on the announcement date. Bajaj and Vijh (1995) had found that average excess return to cash

dividend declaration increased as firm size and stock price decreased. Based on the research conducted on a mammoth scale (67,592 cash dividend declaration cases of NYSE stocks across 25 years), the researcher had found evidence of 0.21 percent average excess return over the three-day cash dividend announcement period. For the lowest decile of firm size (stock price), the average excess return was 0.67 (0.61) percent, while the corresponding average for the highest decile of firm size (stock price) was 0.07 (0.05) percent. Such firm-size and stock price effect was attributed to spillover of tax-related trading around ex-dividend days and trading behavior related to the dissemination of dividend information. Karpoff and Walkling (1988) explained that tax-arbitrage trading around ex-dividend days should eliminate excess returns within the limits of transaction costs. The researcher had found evidence that excess returns were higher for small-firm and low-priced stocks (for which transaction costs were greater) and also suggested that the marginal investors around ex-dividend dates were short-term traders. According to Kim and Verrecchio (1991), the anticipation of public information regarding cash dividend stimulated investor's tendency to collect costly private information. Traders and investors generally collect these costly public information regarding cash dividend in order to get the competitive advantage at the time of interpreting subsequent public information. Kim and Verrecchio (1991) had predicted statistically significant price volatility and trading volume during the cash dividend announcement period because upon the release of the public information, both traders and investors would revise their prior beliefs. The aforementioned researchers had also predicted that expected increases in trading volume and price volatility were function of precision needed on a positive tone and function of the volume of preannouncement public and private information on a negative tone. On the other hand, Grundy and McNichols (1989) had attributed portfolio rebalancing reasons to the statistically significant price volatility and trading volume during the cash dividend announcement period. Uddin (2003) had examined the dividend effect on shareholders' value in Dhaka Stock Market with a sample of 137 companies which announced dividend over a period from October 2001 to September 2002. The researcher's results showed that Cumulative Abnormal Return (CAR) of 137 stocks portfolio increased shortly before the announcement of dividends but this value increase did not sustain in the ex-dividend periods. Indeed, the shareholders' of dividend paying companies lost significant amount of value over a period of 30 days after the dividend announcement. However, the lost value can be partially compensated by the dividend yield.

Much theoretical aspects have been already described about the immediate market reaction regarding cash dividend announcement. Now it is the time to discuss the long-term post announcement effect of cash dividend payoff and omission. Even though, each market gets an initial chance to react with the change in cash dividend policy there had been a world-wide evidence of subsequent above average returns. There are basically three schools of thought explaining this financial paradox. Ball and Brown (1968), Foster, Olsen and Shevlin (1984), and Bernard and Thomas (1989) had found evidence of 'post-earnings-announcement drift'. 'Post-earnings-announcement drift' is an example of market under-reaction where the initial price movement is inadequate leaving the room for further drift.

According to the aforementioned researcher cash dividend omission and initiation resembles earnings announcement surprises, so similar drift in price is expected. As per this study goes, prices of firms that omit a dividend would drift down, after the immediate reaction to the omission, and prices of firms that initiate would drift up. Academicians like De Bondt and Thaler (1985), Bremer and Sweeny (1991) had explained the long-term post announcement effect of cash dividend payoff and omission using a completely different paradigm – market overreaction or mean reversion in prices. Bremer and Sweeny (1991) studied the entire set of one day price changes of greater than 10 percent for a sample of large NYSE companies. They had found that over the next six days, the prices of the losers rebounded by about 30 percent of the original loss. There was no evidence of rebound for the winners. De Bondt and Thaler (1985) characterized those results as evidence of overreaction to the accumulation of bad news during the formation period. One might expect a similar reaction to the omission of a dividend especially since firms that take this action are likely to be long-term losers. The overreaction literature also suggests that the price patterns might be different for omissions and initiations, with a rebound only for the omissions. Black and Scholes (1974) and Shefrin and Statman (1984) had explained the long-term post announcement effect of cash dividend payoff and omission using 'cliente effect' theory. The reason why one might expect excess returns following a dividend initiation or omission is the likelihood that such actions could cause a change in the type of stockholders owning the company. This is known as a cliente effect. Changes in a firm's stockholder clientele may occur because some individual stockholders dislike cash dividends for tax reasons, while

others may prefer the cash payments. Similarly, some institutions may either have a preference for dividends or be required by charter to own stock only in dividend paying companies.

3. Methodology

In this paper event study methodology is used to assess the impact of cash dividend announcements on the prices of the underlying stocks. This involves extracting, for all companies and years, strips of abnormal return data for some window around the event dates of interest, and pooling the resulting time-series and or cross-section data to identify patterns which repeatedly occur before, at, or after the event date. Implicitly, it is assumed that the cash dividend payments are the only significant factors affecting all prices in the days around the events.

Event studies start with hypothesis about how a particular event affects the value of a firm. The hypothesis that the value of the company has changed will be translated in the stock showing an abnormal return. Coupled with the notion that the information is readily impounded in to prices, the concept of abnormal returns (or performance) is the central key of event study methods.

Event studies measure the relationship between an event that affect securities and the return of these securities. Some events, such as a regulatory change or an economic shock affect many securities; other events such as earnings announcement are specific to individual securities.

The most common approach to conduct event studies involves the following steps:

- Defining the event and identifying the timing of the event. In this study only those firms are considered which announces only cash dividend. This announcement is the event and the dividend declaration date is the event date. The analysis is done in from 2006 to 2010.
- Arranging the security performance data relative to timing of the event. If the information about the event is released fully on a specific day with time remaining for traders to react, the day of the announcement period is zero. Here 90 days of estimation window, event date and immediately after the announcement the next trading day is considered as the post event date. The study does not include more days in the postevent period because those days may have some other informational content. The pre-event trading days would be labeled as t- 90, t- 89, t- 88..., t- 1; the event day, t = 0; and the post event trading days, t+ 1. Because the event is specific to each security, these days will differ across securities in calendar time based on the announcement date.
- Separating security specific component of the return from the security's total return during the pre-event measurement period. In event study methodology, the interest is to measure the performance of a security following an "event". An important step in this process is to define what a "normal" or expected performance is or should be, and then it will be a matter of computation to realize what can be considered as "abnormal" performance.

The Abnormal return represents the difference between the "expected" return and the actual return. Several methods are used in prior research to estimate expected or normal return; Mean Adjusted Model, Market Adjusted Model, Market Model, the Capital Assets Pricing Model (CAPM) and more recently Fama-French Three Factor Model. The essence of all these models is to subtract the actual performance from the expected performance. In other words, abnormal returns are the differences between event returns and non-event returns (expected returns unconditional on the event). What differ among these models are the assumptions about the expected return $E(R_{it})$ and the risk for the security with regards to the market portfolio reflected in the coefficients.

In practice, the gains from using more sophisticated models are limited because the variance of abnormal return is not reduced significantly by choosing these models (Brown and Warner, 1985; and McKinley, 1997). Here market adjusted model is used to estimate abnormal returns, where it assumes the expected returns are equal across all stocks at a point of time t, but not necessarily constant for a stock at different times.

The approach followed in this paper is the market model. The market model isolates the security specific return using Ordinary Least Square (OLS) method. First, the security's daily returns during the pre-event measurement period from t- 90 through t- 1 are regressed on the

market's return during the same period. The security specific returns are defined as the differences between the security's daily returns predicted from the regression equation (the security's alpha (intercept) plus its beta (slope) times the market's daily returns). These security specific returns will be called as 'Abnormal Return' (AR). This calculation is described by the following equation:

$$A_{i,t} = R_{i,t} - \alpha_i - \beta_i(R_{m,t})$$

✓ Where

$A_{i,t}$ = security- specific return of security i in period t or the Abnormal Return.

$R_{i,t}$ = total return of security i in period t

α_i = alpha or intercept of security i estimated from pre-event measurement period using Ordinary Least Square method.

β_i = beta or slope of security i estimated from pre event measurement period.

$R_{m,t}$ = total return of market in period t.

- Estimating the standard deviation of the daily security- specific returns during the pre-event measurement periods from t- 90 through t- 1. This calculation is described by the following equation:

$$\sigma_{i,pre} = \sqrt{\frac{\sum_{t=-90}^i (A_{i,t} - A_{i,pre})^2}{n - 1}}$$

✓ Where

$\sigma_{i,pre}$ = standard deviation of security specific returns of security i estimated from pre-event measurement period

$A_{i,pre}$ = average of security specific returns of security i estimated from pre-event measurement period

n= number of days in pre-event measurement period

- Isolating the security specific return during the event and post event periods. In order to estimate the security specific return each day during these periods, subtract from each security's total return each day the security's alpha (intercept) and beta (slope) times the markets return on that day. The alphas and betas are the same as those estimated from the pre-event regressions. The equation for estimating these returns is the same as described in step three. The subscript t, however, ranges from 0 to +1 rather than from -90 to -1.
- Aggregating the security specific returns and the standard deviations across the sample of securities on the event day and the post event days; that is, summing the security specific returns for each day and divide by the number of securities in the sample as shown in the following equation.

$$\bar{A}_t = \frac{\sum_{i=1}^N A_{i,t}}{N}$$

✓ Where

\bar{A}_t = Average across all securities of security specific returns in period t

N = Number of securities in the sample

The standard deviations are aggregated by squaring the standard deviation of each security's specific return estimated during the pre-event period, summing these values across all securities, taking the square root of this sum, and then dividing by the number of securities.

Testing the hypothesis that the security specific returns on the event day and post event days differ significantly from zero. All tests of statistical significance are tests of the null

hypothesis that abnormal returns are zero over any event window. However, rejecting this null hypothesis indicates the possibility of achieving predictable abnormal returns and outperforming the market.

The t- statistic is computed by dividing the average of the security specific returns across all securities each day by the aggregation of the standard deviations across all securities as described in the previous step. Then, depending on the degrees of freedom, determine whether the event significantly affects returns. That is,

$$t - \text{statistic} = \frac{\bar{A}_t}{O_{N,\text{pre}}}$$

We can form our hypothesis as follows:

H_0 : The abnormal returns on the event day and post event day is zero or $A_t = 0$

H_1 : The abnormal returns on the event day and post event day differ significantly from zero or $A_t \neq 0$

If the event is unanticipated and the t- statistic is significant on the day of the event but insignificant on the day following the event, a reasonable conclusion is that the event does affect security returns but that it does not contradict the efficient market hypothesis. If, by contrast, the t- statistics continue to be significant on the post event day, it might be concluded that the market is inefficient. But merely using such a simple methodology that has been used in this study it would be that much courageous to draw a conclusion of this magnitude. Instead of drawing this conclusion the primary focus of the study is to shed light on whether market has reacted over the study period because of cash dividend announcement. In the latter part data analysis and results of the analysis is presented.

All the data are secondary in nature and collected from Dhaka Stock Exchange Library personally by the authors and Treasury bill rates are collected from the Bangladesh Bank website (www.BangladeshBank.com).

4. Results and Discussions

The study considered an event window of 92 days consisting of t - 90 to t + 1 relative to event day t = 0. Event date is the date of announcement of cash dividend. The aim of the study being exploring the reaction of the stocks listed in the DSE, it is tried to explore, whether the Abnormal Returns are indicating any pattern or not.

Before moving on to the core analysis some observations on the dividend announcement is indispensable. Among the 324 companies that were on the trading chart of DSE, 115 in 2006, 109 in 2007 and 114 in 2008 have declared a dividend was always representing more than 50% of the listed companies. On the contrary both in 2009 and 2010 it was less than 50% of the companies that give away cash dividend. Table- 01 also shows that 29, 32, 25, 36 and 24 companies declared both cash and stock dividends respectively from 2006 to 2010. Most the firms announced cash dividends but the trend is not an increasing one.

Banks and Non-Bank Financial Institutions (NBFI) are less interested in issuing cash dividend. Miscellaneous, Pharmaceuticals & Chemicals and Textile sector favored cash dividend but the number is reducing as reflected in Table- 02. Only the Investment sector has experienced a rise in the number of cash dividend paying companies. Apart from that every sector tasted a reduction.

Therefore for the sake of this study it is very much crucial that sufficient focus is given on the trend of dividend declaration. Figure- 01 depicts that the number of companies announcing dividends is decreasing year by year. And what are the hidden reasons of such a behavior on the part of the manager whether the clientele really in need of money or the companies are signaling the market that companies are capable of providing extra money to investors which eventually have some implications on the stock price is the main observing point.

In this particular study emphasis is only given to cash dividend announcement to observe whether in the event and post event day abnormal returns shows any sort of behavior or not. In this regard the trend of stock dividend announcement carries much weight because apart from some accounting treatment the announcements should not have any effect. Despite that companies are continuously announcing dividends even though the number is falling as revealed in Figure - 01. Therefore what is the motivating factor behind such a behavior is the issue that provides impetus for this study.

Now it is time to explore some descriptive characteristics of the DSE General Index (DGEN) which was used to represent the market. The Table- 03 is providing some facts regarding the DGEN. According to the trading days the N statistic varied from year to year. In 2008 DGEN has the highest average return of about 0.281% and the lowest was – 0.059% in 2006. On the other hand the highest and lowest standard deviation was 1.817% and 1.089% respectively in 2010 and 2007.

After looking at all the relevant information the main part of the analysis will start from here.

4.1 Announcement Effect Analysis

In analyzing the announcement effect of cash dividend statistical significance is tested year by year.

The analysis will cover:

- Companies announcing only cash dividend;
- Overall market reaction analysis both in the event date and post event date and
- Sector-wise market reaction analysis.

4.1.2 Analysis of Year 2006

Analysis of event date revealed that in 2006(Table- 04) the t-statistic was -15.15227617 and with respect to 1% and 5% significance level and the null hypothesis got rejected. There is statistically significant market reaction at the event date in 2006 implying an abnormal return of -43.0%. At the post event date with a t-statistic of 0.04775322 and with similar level of significances the null hypothesis is accepted, referring no statistically significant reaction.

The companies that announced cash dividends were then divided based on their respective sectors(Table- 05). On the event date as well as post event date analysis revealed that the null hypothesis is accepted across all the significance level implying no statistically significant market reaction for Bank and Insurance. For Investment, Cement & Ceramic and Engineering at event date null hypothesis was accepted and on the post event data it was rejected with abnormal returns of -8.2%, 29.35% and 44.94%. On the contrary in case of NBFI, Food and Auxiliary, Fuel, Miscellaneous, Pharmaceuticals & Chemicals and Textile sectors null hypothesis got rejected on the event date throughout all significance levels with abnormal returns of -43.10%, -122%, -15.16%, -93.74%, 144.85% and -49.89% respectively. But on the post event date except for Food and Auxiliary at 5% significance level with 15.81% abnormal return others got accepted.

4.1.3 Analysis of Year 2007

2007 divulges that at the event date and post event date t-statistic was -6.528068288 and -1.4785196(Table- 06) respectively. Most importantly at all the significance levels the null hypothesis got rejected with abnormal returns of -54.8% in the event date and accepted in the post event date indicating no statistically significant market reaction.

The analysis of different sectors(Table- 07) found that at all the significance levels and across events NBFI, Cement & Ceramic, Food & Auxiliary and Fuel do not reflect any statistical significance in the announcement effect. For Bank, Pharmaceuticals & Chemicals and Textile event date shows the presence of abnormal return with -269%, -108% and -1.06%. In case of Insurance, investment (only at 5% significance level), Engineering and Miscellaneous reflect abnormal return in the post event date with 63.86%, -41.68%, -70.79% and -42.86% respectively.

4.1.3 Analysis of Year 2008

The event date analysis of year 2008(Table- 08) has a t-statistics of 1.693913108 and reflects that null hypothesis is accepted across different significance levels with no statistically significant market reaction. The t-statistic of post event date is -1.367495169 signifying the acceptance of the null hypothesis.

The sector-wise analysis revealed that Investment and Miscellaneous have abnormal returns of 39.92% and 48.16% in the event date whereas NBFI with 16.94% and Insurance with -29.65% abnormal returns in the post event date. All the others lack in statistical significance in producing any abnormal return (Table- 09).

4.1.4 Analysis of Year 2009

The t-statistics are -4.125462153 and -1.418281789 respectively and reflect that alternative hypothesis is accepted with significant market reaction in the event date (Table- 10). At the event date abnormal returns have an impact of -33.015%.

In case of sector-wise analysis of 2009 (Table- 11) in the event date Insurance (only with 5% significance level), Food& Auxiliary, Fuel and Miscellaneous analysis banks have significant market reaction. The abnormal returns have a negative effect of 21.42%, 97.66%, 50.98% and 135.06%. In post event date no reaction was observed except for Miscellaneous with a negative reaction of 66.33%.

4.1.5 Analysis of Year 2010

The analysis of year 2010 reveals the fact that alternative hypothesis is rejected for both the cases and implies no significant announcement effect (Table- 12).

Analysis showed that sectors naming Bank, Insurance, Cement & Ceramic (only at 5% significance level), Engineering, Miscellaneous and Pharmaceuticals & Chemicals exerted impact on the event date with 1.9%, -38.16%, 6.89%, -18.15%, -40%, -18.72%. On the other hand Investment (with -18.39% and -66.6%), Fuel (with -12.45% and -9.07%) and Textile (with -79.44%, 15.57%) have impacted on both event and post event date.

Therefore after conducting and analyzing all the facts and figures it is worth mentioning that in year event date mostly showed announcement effect as in 2006, 2007 and 2009 the null hypothesis got rejected. This conclusion coincides with the findings of Gordon (1959), Ogden (1994), Stevens and Jose (1989), Kato and Lowenstein (1995), Ariff and Finn (1986), and Lee (1995) as they had found statistically significant above average stock market return after cash dividend announcement. On the other hand academicians like Easton and Sinclair (1989) found instances where after cash dividend announcement stock market return was statistically significant negative. Even though for the post event date there was no presence of abnormal returns.

5. Conclusion

The corporate managers issue dividends every now and then according to the need of their clientele. But why they issue dividend has drawn interest of many scholars nonetheless the proper reasoning is yet to discover. Although it is found that the market does react whenever there is a cash dividend announcement implying scope for investors to earn abnormal returns. This particular study is done to identify that kind of reactions that market exhibits. And the findings are very exhilarating.

Even though cash dividend announcement is known as an event which will not impact the market price in a perfect market but in case of Bangladesh some market reaction has been identified in this study as practically the existence of perfect market is in question. The study also reveals that in the year 2008 and 2010 the market did not react that much which could prove to be statistically significant. On the other hand in 2006, 2007 and 2009 market showed significant reaction in terms of abnormal returns implying that investors did earned predictable return and outperformed (under-performed where the effect was negative) the market on the event date in most cases. As event study methodology can be used to indicate the market efficiency in the semi form but merely based on this parametric test it would be a very bold comment rather it is useful to make a conclusion about the reaction which could prove to be the basis for further study in this area.

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