# Stock Price Reaction to Dividend Announcement: the Case of Bangladesh Capital Market 

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#### Abstract

Stock price response towards the 'dividend announcement' is highly supported both by theoretically and empirically. Investors consider several factors in investing funds in any particular securities of capital market of which the most important factor is the return from the investment in securities that typically depends on the dividend declaration. Company declares dividend in the form of cash and/ or stock with in the financial year (quarterly or biannually) to meet the expectations of investors considering the ability and strategy of the company. In this paper, a thorough investigation is done with the help of 'event study methodology' to analyze the effect of dividend announcement on stock prices taking seventy four listed companies of Dhaka Stock Exchange (DSE) in Bangladesh. The study finds that dividend declaration does not bring any gain to the investors; rather they lose due to substantial fall in share prices both in pre dividend and post dividend period as market passes through regular and continuous revision of directives of regulators to check a bullish market. It is expected that the study will not only help in developing investors' awareness regarding stock price sensitivity towards dividend declaration, but also help to design their investment decision in a more rational, efficient and convenient way to protect their interest. Furthermore, it will help the companies to determine their good standing, aware investors in affluently designing their investment decision, and regulators, the prime policy makers, to take necessary initiatives for the betterment of all concerned.


Keywords: Dividend, Capital Market, Securities, SEC, Bangladesh.

### 1.0 Introduction

Investors consider several factors in investing funds in any particular securities of capital market, of which, the most important factor is the return from the investment in securities that typically depends on the dividend declaration in the stock market (Khan et al, 2011). Company declares dividend in the form of cash and/ or stock with in the financial year (quarterly or biannually) to meet the expectations of investors considering the ability and strategy of the company. Payout of dividend is important as it informs the investing public certainty about the financial well-being of the company concerned. Furthermore, company's dividend decision on a regular interval that involves with whether to payout earnings to shareholders is important as it helps avoid agency problem ( Jensen \& Meckling, 1976). On the investors' side, those who are looking to secure current income invest their fund in securities of the companies that are paying high dividend on a regular basis. Companies having long-standing history of dividend payout would be negatively affected by reducing dividend distribution and would positively be affected by increasing the same. Furthermore, companies without a dividend history are generally viewed favorably when they declare new dividends (Jais et al, 2010).
Generally, market expectations for the future growth rate in dividends and Dividend announcement- both contain a considerable influence on stock price. If investors think a stock's dividend are going to grow faster than average rate for a prolonged period of time, they will bid up the current price of the stock relative to the current level of dividends per share (Haugen, 2002). When a dividend is paid, as the amount paid out in dividends no longer belongs to the company, on the ex-dividend date, the stock price is expected to be adjusted downward by the amount of the dividend. Thus, dividend announcement is considered as one of the most influential factors like earning announcement, stock splits, merger announcement, etc., for stock price movements. In this paper, a thorough investigation is done regarding the stock price reactions towards dividend declaration of seventy four listed companies of Dhaka Stock Exchange (DSE) in Bangladesh.

### 1.1 Rationale of the Study

In any economy, stock market is regarded as an economic barometer that faithfully registers the changing events and opinion about the investment outlook. Economies without well-functioning stock markets may suffer from three types of imperfections: first, opportunities for risk diversification are limited for investors and entrepreneurs, second, firms are unable to optimally structure their financing packages and third, countries
without well functioning markets lack information about the prospects of firms whose shares are traded, thereby restricting the promotion of investment and its' efficiency (Demirguc-Kunt and Levine, 2001). Therefore, the efficiency of stock exchange is highly needed to protect the interests of retail and institutional investors. If stock market works as a complete safeguard to our investors, it will certainly motivate the investors and consequently the entrepreneurs will be able to collect fund issuing securities which will help in expediting the growth of the economy through industrialization.
If the current and future earnings of a firm is believed to be affected by any information resulting from an event, its security price changes as soon as the market learns about the event, and the market is termed as efficient one following the Efficient Market Hypothesis (EMH) (Fama, 1991). As briefed earlier, stock price responses towards the event 'dividend announcement' is highly supported both theoretically and empirically, it might work as a substantial factor to determine market efficiency and thus, in other words, the paper will examine the informational efficiency of capital market of Bangladesh considering cash and stock dividend information of seventy four listed firms at DSE. It is expected that the study will not only help in developing investors' awareness regarding stock price sensitivity towards dividend declaration, but also help to design their investment decision in a more rational, efficient and convenient way to protect their interest.

### 2.0 Literature Review

In this section, brief reviews of existing dividend theories and policies; and empirical works have been documented with reference to their implications for stock price reactions to dividend declaration.

### 2.1 Theoretical Backdrop

One of the central tenets in finance is the share price maximization. Many theories are there in the financial literature to explain the relationship between dividend policies and stock returns.
In the Dividend Irrelevance Theory, Modigliani-Miller (1961) argue that the firm's value is determined by the investment policy and that the split between dividends and funds to be reinvested does not affect firm's value and thus its share prices assuming a perfectly competitive market, in which, in the absence of any corporate or personal taxes and transaction cost, an investor behaves and believed to be behaved rationally to maximize their wealth without any informational asymmetry and no investor is capable to influence security prices (Pike and Neale, 2005). Black-Scholes (1974) support the argument while Lumby and Jones strike the view saying the name itself is misleading as they observe it is not the dividend that is irrelevant but the dividend pattern (Lumby \& Jones, 1998). The postulates of their suggested perfect market is a fantasy, market imperfection is the most common experience the clientele ever encounter that makes dividend relevance in stock price fluctuations. Investors cannot costlessly adjust their dividend pattern and thereby they prefer companies to supply them with their desired dividend pattern. Investors are attracted to different company policies, and when the company policy changes, investors will adjust their stock holdings accordingly. As a result of this adjustment, the stock price will move (Myers, 2002). It has been better explained by Modigliani-Miller (1961) in their clientele effect hypothesis in which they pointed out that the portfolio choices of individual investors might be influenced by certain market imperfections such as transaction costs and differential tax rates to prefer different mixes of capital gains and dividends.
A few of the illustrations reporting tax induced and transaction cost induced clientele effects have been noteworthy. Since most of the investors are interested in after-tax returns, the different tax treatment of dividends and capital gains might influence their preference for dividends versus capital gains. Investors in low tax brackets who rely on regular and steady income will tend to be attracted to firms that pay high and stable dividends and investors in relatively high tax brackets might find it advantageous to invest in companies that retain most of their income to obtain potential capital gains, all else being equal (Kinkki, 2001). Dividend policy may influence different investors to shift their portfolio allocation, resulting in transaction costs. Small investors (such as retirees, income-oriented investors, and so on) who rely on dividend income for their consumption needs, might be attracted to (and even may pay a premium for) high and stable-dividend stocks, because the transaction costs associated with selling stocks might be significant for such investors. On the other hand, some investors (e.g. wealthy investors), who do not rely on their share portfolios to satisfy their liquidity needs, prefer low payouts to avoid the transaction costs associated with reinvesting the proceeds of dividends, which they actually do not need for their current consumption (Al-Malkawi, Rafferty \& Pillai, 2010).
Another imperfection of capital markets is the need for information which is neither costless nor universally available. Therefore, a dividend declaration which is both free and universally available is thought to signal information to the market as described in the Signaling Theory. The theory infers that changes in dividend policy may be signal concerning the firm's financial condition. A dividend increase may signal good future earnings. A dividend decrease may signal poor future earnings. The information content inherent in a dividend announcement would cause the shareholders to react to the announcement and thus influence the company share
prices (Ali \& Chowdhury, 2010). Of course, information content conveyed through dividend announcement is not still beyond controversy.
Based on the information content some other theories have been developed to explain the impact of dividend declaration on firm's value and thus on its share prices. One attractive view is the 'bird in the hand' hypothesis, according to which, a higher current dividend reduces uncertainty about future cash flows, a high payout ratio will reduce the cost of capital, and hence increase share value. The proposition suggests that the lower uncertainty attached to dividends received will result in a lower discount factor applied to the firm's earnings resulting in a higher stock value. But Modigliani-Miller (1961) argued that riskiness of firm's operating cash flows determines its risk, not by the way it distributes its earnings. That is, the riskiness of a firm's cash flow influences its dividend payments, but increases in dividends will not reduce the risk of the firm.
All in a summary, dividend policy determines the division of earnings between payments to stockholders and retained earnings that are one of the most significant sources of funds for financing corporate growth. Corporate growth makes it eventually possibly to get more dividends. There is a mystery with dividend theories- a decision to increase dividends puts upward pressure on stock price, however, higher dividends means reinvesting fewer dollars, lowering firm's expected growth, it in turns puts downward pressure on price of stocks.

### 2.2 Empirical Evidence

Plenty of empirical studies have been conducted to examine how dividend declaration influences stock prices. Modigliani-Miller's irrelevance proposition was strongly supported by the study of Black-Scholes (1974) in which they tested the relationship between security returns and dividend yield by forming well diversified portfolios and ranking them on the basis of their systematic risk (their "beta") and then divided yields within each risk class. They found out that dividend yield had no effect on security returns (Black \& Scholes, 1974). Some other studies conducted by Miller and Scholes (1978, 1982), Hess (1981), and Bernstein (1996) provided similar evidence like Black-Scholes.
In some other empirical works, it has been found that the market value of the shares and dividends has some kind of interdependence. Considering two different income groups, Jais et al, (2010) found the dividend increase announcement is greeted positively by the stock market, while investors react negatively before the dividend decreased is announced (Jais et al 2010). Adelegan (2009) in his study examined the speed of adjustment of share prices to the announcement of dividend payments on the Nigerian stock market and found that stock prices generally respond negative for all the dividend omission subsamples both before and after the date of the announcement. They are also negative for the dividend paying subsamples before the day of the announcement, but positive after the announcement date.
Investors' portfolio allocation and their demographic attribute including taxes and transaction costs have been studied in a number of studies. Examining the portfolio positions of 914 individual investors, Pettit (1977) found tax induced and transaction cost induced clientele effect as he suggested, elderly low-income investors tend to rely more on their portfolios to finance their current consumption, and avoid the transaction costs associated with selling stocks, ...investors whose portfolios have low systematic risk prefer high-payout stocks, and he found evidence for tax-induced clientele effect. In a firm based study that covers 192 US firms that initiated dividends for the first time during the period of 1969 through 1982, Richardson et al. (1986) found that the increased trading volume associated with dividend policy changes was mainly related to the information contained in the dividend announcement, and only a small part was related to clientele adjustment.
From Bangladesh standpoint, ample researches have been done examining security price reaction towards dividend declaration. In one of the outset studies, Ahsan and Bashar (1997) found that there was no significant impact of dividend announcement on the security prices on an average considering 21 actively traded securities in Dhaka Stock Exchange (DSE) over 1995 1nd 1996, and thus reflect the hypothesis of dividend irrelevancy given by Miller and Modigliani (1961). But, at their time, our capital market was at very infant level to get access to classified data and information and the study was conducted based on the observation of security prices only for few days whereas it requires yearlong observation of security prices to find out the true response of dividend announcement on security prices. Moreover, size of sample and its composition they used could be criticized as not a representative one as it ignored the securities of many of the industries (securities of 9 industries out of 13 had been considered).
In a more comprehensive study, Uddin \& Chowdhury (2003) also supported Miller and Modigliani (1961) dividend irrelevancy argument as they did not find dividend payment signals any information to the investors in their study conducted based on 137 DSE listed companies declaring dividends during October 2001 and September 2002 (Uddin \& Chowdhury, 2005).
Mosarof, M. (2006) examined the determinants of stock price considering several factors like earnings per share (EPS), dividend per share, dividend payout ratio, number of IPOs along with some macroeconomic variables like GDP, per capita income, etc., and found that stock price is inversely related with dividend yield and thus
concluded that dividend yield partially compensated the losses in stock value. In another study of stock price behavior around ex-dividend date from DSE, Rahman and Rahman (2008) made a conclusion that ex-dividend price increased instead of dropped in DSE that implies a clear preference for capital gains without having any focus of dividends by the stockholders.
In a recent study based on the listed private commercial banks in DSE, Bangladesh, Ali \& Chowdhury (2010) found no strong evidence that stock price reacts significantly on the announcement of dividend.
Therefore, research findings regarding stock price responses towards dividend announcement are controversial from the standpoint of Bangladesh. In spite of this controversy, in the real economy, a change in dividend policy must be replicated by a change in share value; this paper is another initiative to examine the degree and direction of that replication.

### 3.0 Methodology, Data Sources, Structure of the Test

To study the stock price reaction to specific event like 'dividend announcement', excess returns around that specific information event are examined using the 'event study approach'. Generally, security prices of firms' response immediately to an event that has a substantial impact on firms' current and future earnings and in this respect 'excess returns' of securities around the specific information event describe how a particular event affects the value of a firm. Therefore, an event study methodology is likely to be useful for this empirical study.

### 3.1 Hypothesis to be tested

Stock prices usually response to dividend announcement showing excess returns. Therefore, a null hypothesis $\mathrm{H}_{0}$ : Stock price does not show an abnormal return due to dividend announcement is set to test against the alternative hypothesis $\mathrm{H}_{\mathrm{a}}$ : Stock price shows an abnormal return due to dividend announcement.

### 3.2 Sample Period and Data Sources

The study employs daily data of the securities and all share price index (ASPI) at Dhaka Stock Exchange and covers the period January 2011 through December 2011. It also considers data from secondary sources found available in the DSE Publications, library and information division of Dhaka Stock Exchange (DSE), Inquiry Committee Reports, Probe Committee Report and market-generated information about daily price of stocks and market index available in daily newspapers, websites of SEC.

### 3.3 Different Steps of Event Study Methodology

To analyze the impact of dividend announcement on stock prices of the securities, returns generated by each of the securities for each of the 61 trading days across the event window have been measured as follows-

$$
\mathrm{R}_{\mathrm{j}, \mathrm{t}}=\ln \mathrm{P}_{\mathrm{j} \mathrm{t}}-\ln \mathrm{P}_{\mathrm{j}, \mathrm{t}-\mathrm{i}}
$$

In the same way, market returns $R_{m, t}=\operatorname{lnDASPI} I_{t}-\operatorname{lnDASPI} I_{t-i}$ have been found using daily data of DSE all share price index (DASPI). Then to adjust returns of the individual securities to market performance and risk to arrive at excess returns for each stock in the sample, security returns are regressed on market returns using the following model:

$$
\mathrm{R}_{\mathrm{jt}}=\widehat{\alpha}+\widehat{\beta}_{\mathrm{j}} \mathrm{R}_{\mathrm{mt}}+\hat{u}_{\mathrm{j}, \mathrm{t}}
$$

In this model, the residual term $u$ is an indicator of excess returns. Here, $\beta$ (beta factor) which is a measure of the response of the security's returns to the change in the rates of return to the market portfolio is estimated using the returns of 201 trading days around the event date. After measuring $\beta$, the excess returns $\hat{u}_{\mathrm{j}, \mathrm{t}}=\mathrm{R}_{\mathrm{jt}}-$ $\widehat{\alpha}-\widehat{\beta}_{\mathrm{j}} \mathrm{R}_{\mathrm{mt}}$ can be computed for each of the 61 trading days for each stock in the event window. When the excess returns are available, averaging them average excess returns are found. Dividing the average excess returns by the respective standard error, t -statistics are known, which are used as the best approximate of stock price response to dividend announcement under event study approach.

For any given day $t$ relative to day 0 (that is the event announcement day), the accumulated response is averaged over all 74 stocks in the sample as follows to arrive at the cumulative average excess return:

$$
\bar{E}=\frac{\sum_{j=1}^{74} \hat{u}_{\mathrm{j}, \mathrm{t}}}{74}
$$

Since the only thing the stocks in the sample have in common is the event dividend announcement, the contaminating effect, that is, the influence of other factors on their prices, should cancel out in the averaging. The movement in $\bar{E}_{\mathrm{t}}$ as we approach the announcement of the event should give an indication of the average speed and accuracy of the response of stock prices to the particular event of interest (Haugen, 2002).

### 4.0 Sample Description

To employ the event study approach, an event window of 61 days, keeping the specific event date, that is, the dividend announcement date at the middle, has been taken. Therefore, companies declared their dividend in January 2011 and December 2011 have to be set out of the sample, and thus 89 companies have been found who
satisfy the condition. In addition, to adjust the returns generated by each of the securities with market risk, the approach under consideration requires daily data of security prices for longer period (a period of 201 days around the dividend announcement date for each of the securities for the study has been taken) without any break in the trade of securities. Therefore, securities trades of which have been interrupted on a regular or irregular basis have also been excluded from the sample. During the course of the study, 10 such companies have been found out of 89 dividend declaring companies' trade of which was suspended by Securities and Exchange Commission (SEC) one or several times for their major irregularities. Trading of shares of 5 companies remained closed for major restructuring process in their ownership status. Finally 74 companies (out of 89 dividend declaring companies) listed under various industries at DSE have been found to conduct the study during the selected time frame.

(Figures in brackets show the standard deviation of respective industries)
Figure-01 gives a detail of the sample companies listed in different industries at DSE. The table shows that the sample covers all sectors except travel and leisure as no of the companies in this sector announced dividend in the sample time frame. In the year 2011, average dividend paid at DSE is $47.98 \%$ with standard deviation equals 95.413. Apart from the dividend paid by telecommunication sector consists of a single industry, highest average dividend was paid in food and allied sector ( $97.8 \%$ ) with highest standard deviation (166.19), followed by miscellanies ( $76.67 \%$ ), engineering ( $74.45 \%$ ), Pharmaceuticals \& Chemicals( $63.13 \%$ ) and so on. Though textile, paper, IT and ceramic sector paid the lowest $8.36 \%$ average dividend together, disjointedly they were the least dividend paying sector (less than $10 \%$ ) for the year 2011 as well. Sample also displays that among 74 companies 70 companies belong to A category, 3 belong to B category and 1 belong to Z category. As sample includes companies from all sectors and representative categories, the empirical result is likely to be reliable.

### 4.1 Empirical Findings

Test result shows (table 01 in appendix) that on the dividend announcement date, the market fails to generate any gain, rather average excess return falls by 1.16 percent and the result is statistically significant. This might occur due to the following facts:
If the information of payment of dividend leaks out prior to the announcement date, it is commonly expected that the market will react earlier than the announcement date generating some positive average excess return. Under such a circumstance, on the actual date of announcement, if investors find it that sufficient return has already been made by the earlier investors and currently stocks are overvalued, on the particular event day, price may fall and thus the average excess return as well.
But, result of this empirical study exhibits that in 14 of the trading days prior to dividend announcement date in the event window, market reacts positively with a maximum of 0.90 percent on day -20 and with a minimum of 0.06 percent on day -18 (both are significantly away from the event day), while the average gain is 0.27 percent against loosing 0.49 percent in the rest of the trading days prior to announcement date, registering a 0.2258
percent point loss. Therefore, it is clear that the desire to avail the dividend benefits do not carry any surprise to investors prior to the announcement date. All results are statistically significant showing no evidence of stock price response towards dividend announcement at any of the $1 \%, 5 \%$ and $10 \%$ level of significance.
Table 01: Gain and Loss Statistics in the Pre and Post Event Window

| Event <br> Window | Gain |  |  |  | Loss | Maximum |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | Maximum | Average | Maximum | Minimum | Average |  |
| Pre | $0.90(-20)$ | $0.06(-18)$ | 0.27 | $1.69(-4)$ | $0.00(-12)$ | 0.49 |
| Post | $0.80(27)$ | $0.01(5)$ | 0.23 | $3.69(19)$ | $0.05(24)$ | 1.30 |

(Figures in brackets show the specific days in the event window)
Again, if we stare at the post-event window, it shows an average gain of 0.23 percent in 11 trading days and an average loss of 1.30 percent in the rest of the 19 trading days reporting a 1.07 percent point loss and as like the pre-even window, results are statistically significant at any of the $1 \%, 5 \%$ and $10 \%$ level of significance showing no evidence of stock price response towards dividend announcement.
It is noteworthy that for both of the pre and post-event window, dividend announcement fails to create a positive yield in terms of average excess return bringing about an increase in stock prices either in the pre or post event window, rather stock prices falls through out the window and the fall is sharp in the post dividend days compared to the pre dividend days, and thereby results of the study reflect with Modigliani-Millers' dividend irrelevance theory. Throughout the event window, DSE faces a 1.29 percent fall is share values due to dividend announcement.


Results (table 02 in appendix) shows that cumulative average excess return fluctuates surrounding zero in alternating trading days giving uncertain indication of investors gain or loss both in the pre and post dividend announcement days. Investors in the pre dividend window gain a maximum of 40.10 percent on day -20 against a maximum loss of 63.29 percent on day -27 , while in the post dividend window, it records 29.23 percent maximum on day 4 against a loss of maximum 103.43 percent on day 7 . On the dividend declaration date, investors lose by 35.52 percent. In both pre and post event windows, investors' gain falls short enough to cover their loss and in the post dividend days investors lose more than the pre dividend days. Furthermore, on day 30, cumulative average excess return falls by 3.88 percent which is partially compensated by dividend payments. The downward sloping trend line drawn for cumulative average excess return depicts the result evidently.

### 5.0 Policy Implications and Conclusion

The significance of both positive and negative average excess return and cumulative average excess return around the dividend announcement date is that dividend announcement do convey message to market to revise
share price, but market failed to adjust accordingly in a balanced way for the sample firms in our study. Such findings are not new for the case of Bangladesh capital market. The results we obtained are consistent with results obtained in an earlier study on Bangladesh stock market by Hamid and Golam (2005).
Results are not contrary as well for several supporting arguments. Cash dividend, especially when it falls short of investors' expectation, investors seem to gain no value from dividend announcement and thereby lose their spirit to uphold their share holding, they become over reactive and dispose shares in the subsequent days as soon as the market receives the information of dividend payment.
The performance rating mechanism might be another reason for the outcome. There is always an indirect control over the companies by the regulatory bodies. Regulators rate the performance of the enlisted companies based on their regular dividend payment. As a result, companies always consider the regular dividend payment as a safeguard of their good standing, and ultimately fail to give indication regarding the future earning prospects through their dividend announcement.
Another reason is that our investors' literacy level is very low and they are led by speculators, insiders and exchange employees, a good portion of them are myopic in nature. Some illiterate investors even don't know about the company and its business operation when they buy share of the company. Even they do not know how to operate their Beneficiary Owner (BO) accounts and take help from friends and relatives. As insiders and exchange employees pose private information, outsiders like to follow them and thereby they are mislead by asymmetric information.
But above all the facts, the study period, January 2011 to December 2011, considered for the study should receive the prime attention for the results we obtain which matches with the period when Bangladesh stock market experiences a massive fall. Numerous factors worked together for the crash. The number of investors increased with a great pace in late 2011. As CPD (2011) reported, opening 590 branches at 32 districts by 238 brokerage houses, internet-based trading operation, opening branches of brokerage houses across the country, easy access to the market information, arranging a countrywide 'share mela (fair)' were the factors for increasing investors. The total number of BO Account holders on 20th December, 2010 reached to 3.21 million though the number was 1.25 million in December 2009. To minimize the cost of bearing excess liquidity that the banks \& other financial institutions of Bangladesh had due to less business opportunities during the recession period of 2009-10, these financial institutions \& its officials as well as other people took loan and invest in the share market. It was seen that the daily transaction in the share market was on an average from Taka 20,000 to 30,000 million in 2010 and the figure was double comparing to 2009 (Raisa, 2011). All these together caused a huge access of liquidity in the share market. But supplies of new securities were not enough to chase huge capital of too many investors in the market.
In addition, though a lot of control measures were sued, but SEC and BB failed to check the market condition. They frequently changed their directives which aggravate the problem. For example, SEC changed directives of margin loan ratio 19 times. As banks were investing more than their means at the stock market, BB raised SLR and CRR and took initiative to withdraw illegal industrial loan. Consequently, banks started selling shares and withdrawing that money from the market. Institutional investors including financial institutions started selling shares from the beginning of December 2010 to show high return on investment at their balance sheet. Thus, despite the measures taken by the regulatory commissions, as the directives passed through continuous revision, it failed to retain the trust of investing public, which added fuel to the flame. People suffered major financial loss and worse than that, many lost confidence in the stock market, they became over reactive and panicked, share prices continued to fall all through the year 2011 and ultimately dividend announcement bring no gain to investors' urn but loss.

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## Appendix

Table 01: Distribution of Sample Companies Listed on DSE

| Sector | Number of company | Maximum Divident \% | Minimum Divident \% | Average <br> Divident | Standard deviation |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Banks \& | 11 | 55.00 | 5.00 | 20.32 | 14.93 |
| Engineering | 11 | 600.00 | 5.00 | 74.45 | 167.25 |
| Food \& Allied | 5 | 430.00 | 10.00 | 97.8 | 166.19 |
| Fuel \& Power | 8 | 154.00 | 5.00 | 43.43 | 110.45 |
| Jute | 1 | 20.00 | 20.00 | 20.00 | 0 |
| Textile, | 11 | 16.00 | 5.00 | 8.36 | 3.96 |
| Pharmaceutica | 8 | 200.00 | 10.00 | 63.13 | 61.49 |
| Services \& | 3 | 20.00 | 10.00 | 13.33 | 4.71 |
| Cement | 3 | 43.00 | 15.00 | 27.67 | 11.59 |
| Tannery | 3 | 105.00 | 30.00 | 58.33 | 33.25 |
| Insurance | 6 | 40.00 | 5.00 | 16.67 | 12.47 |
| Telecommunic | 1 | 120.00 | 120.00 | 120.00 | 0 |
| Misc. | 3 | 180.00 | 10.00 | 76.67 | 74.09 |
| Total | 74 |  |  |  |  |
| Industry Average |  | 47.98 |  |  |  |
| Industry Standard Deviation |  | 95.41 |  |  |  |

Table 02: Average Excess Returns, Cumulative Average Excess Returns \& t-ratios

| Trading day | Average Excess <br> Return | SE | t-statistics | CAAR |
| :---: | :---: | :---: | :---: | :---: |
| -30 | -0.001553931 | 0.054747 | -0.028383886 | -0.189422894 |
| -29 | 0.002119556 | 0.028106 | 0.075411666 | 0.176040924 |
| -28 | -0.004937338 | 0.028279 | -0.174595456 | -0.174071135 |
| -27 | -0.012635562 | 0.104864 | -0.120494348 | -0.632930119 |
| -26 | 0.002324896 | 0.029719 | 0.078229565 | -0.035349715 |
| -25 | -0.00301238 | 0.023934 | -0.125861598 | -0.150307885 |
| -24 | $-3.29 \mathrm{E}-05$ | 0.024976 | -0.001315896 | 0.005177619 |
| -23 | 0.005454727 | 0.028529 | 0.19119766 | 0.250458259 |
| -22 | 0.001519274 | 0.036829 | 0.041252585 | 0.014467271 |
| -21 | -0.001722418 | 0.025179 | -0.068407178 | -0.107508224 |
| -20 | 0.00945076 | 0.027873 | 0.339059832 | 0.401077856 |
| -19 | 0.002698991 | 0.027397 | 0.098513371 | 0.236937233 |
| -18 | 0.000686898 | 0.02452 | 0.028014111 | -0.024115193 |
| -17 | 0.001205741 | 0.02446 | 0.049293755 | 0.106725877 |
| -16 | 0.00371316 | 0.027463 | 0.135206018 | 0.090453822 |
| -15 | 0.001988929 | 0.029797 | 0.066749469 | 0.021952712 |
| -14 | 0.001406179 | 0.028216 | 0.049836914 | 0.044984486 |
| -13 | -0.004341132 | 0.025251 | -0.171918875 | -0.040515948 |
| -12 | $-1.73 \mathrm{E}-05$ | 0.02932 | -0.000589802 | -0.042703553 |
| -11 | 0.001921569 | 0.027177 | 0.070706714 | 0.08682379 |
| -10 | 0.002355756 | 0.026576 | 0.088641558 | 0.072966022 |
| -9 | -0.00676052 | 0.02145 | -0.315177343 | -0.237617369 |
| -8 | -0.000545747 | 0.026565 | -0.020543551 | -0.018292545 |
| -7 | -0.010820013 | 0.069915 | -0.154760119 | -0.58750322 |
| -6 | 0.001613703 | 0.026687 | 0.060468028 | 0.071113781 |
| -5 | -0.002137388 | 0.029758 | -0.071825183 | -0.03836723 |

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| -4 | -0.016919664 | 0.105047 | -0.16106745 | -0.190795121 |
| :---: | :---: | :---: | :---: | :---: |
| -3 | -0.001302804 | 0.027927 | -0.046649579 | 0.076026793 |
| -2 | -0.007919842 | 0.108295 | -0.073131932 | 0.109699794 |
| -1 | -0.005189279 | 0.029749 | -0.174436475 | -0.237449951 |
| 0 | -0.011556127 | 0.085374 | -0.135358958 | -0.355159491 |
| 1 | -0.008478593 | 0.039715 | -0.213487189 | -0.234426939 |
| 2 | 0.000523265 | 0.025492 | 0.020526978 | -0.029173102 |
| 3 | 0.001298111 | 0.027317 | 0.047519597 | 0.100657291 |
| 4 | 0.005428719 | 0.025485 | 0.213014556 | 0.292392463 |
| 5 | 0.000171078 | 0.026672 | 0.006414148 | 0.153183023 |
| 6 | -0.004805462 | 0.035563 | -0.1351238 | -0.21074639 |
| 7 | -0.02523685 | 0.077155 | -0.327092765 | -1.034277924 |
| 8 | -0.01710902 | 0.063933 | -0.267608692 | -0.824752483 |
| 9 | -0.008973062 | 0.055189 | -0.162588848 | -0.354671327 |
| 10 | -0.006236742 | 0.031953 | -0.195186151 | -0.019407735 |
| 11 | 0.000661174 | 0.027825 | 0.023762075 | -0.000709283 |
| 12 | -0.015975672 | 0.110278 | -0.144866731 | -0.162980805 |
| 13 | -0.019368754 | 0.110882 | -0.174678735 | -0.381573676 |
| 14 | 0.002328528 | 0.040792 | 0.057082939 | 0.225079245 |
| 15 | 0.001492593 | 0.027613 | 0.054054177 | 0.015968121 |
| 16 | -0.01248354 | 0.104985 | -0.118908349 | -0.125600113 |
| 17 | -0.012749445 | 0.105589 | -0.120745533 | -0.271974631 |
| 18 | -0.019087068 | 0.116989 | -0.163152427 | -0.269361405 |
| 19 | -0.036946161 | 0.176072 | -0.209834941 | -0.358654094 |
| 20 | -0.014685965 | 0.112855 | -0.130131732 | -0.205018882 |
| 21 | 0.001625539 | 0.02323 | 0.069976648 | -0.024897242 |
| 22 | -0.017241963 | 0.106515 | -0.161874 | -0.337303663 |
| 23 | -0.014754564 | 0.104776 | -0.14082068 | -0.135151893 |
| 24 | -0.000474412 | 0.02245 | -0.021132032 | -0.081640161 |
| 25 | -0.003440598 | 0.023381 | -0.14715044 | -0.178992214 |
| 26 | -0.001722796 | 0.025238 | -0.06826078 | -0.05866586 |
| 27 | 0.008050285 | 0.024341 | 0.330734862 | 0.250056476 |
| 28 | -0.007197919 | 0.107057 | -0.067234517 | 0.145859477 |
| 29 | 0.001518882 | 0.022593 | 0.067226956 | 0.03699257 |
| 30 | 0.001949542 | 0.02296 | 0.084909509 | -0.038787423 |

