REACTION OF TRADING VOLUME AND PRICES OF STOCKS OF THE FIRMS LISTED WITH DHAKA STOCK EXCHANGE LTD.: THE EFFECTS OF PREDISCLOSURE INFORMATION ASYMMETRY

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Abstract

The goal of the study is to test the information content of dividend announcements by examining aggregate market reaction on the volume of trading and prices of shares around the declaration dates. The study relies upon the substantial evidence, which support market efficiency in the semi-strong form. The significant trading activity and price changes in days following the announcement are somewhat surprising. The most significant price changes and excess trading volume occurred the days prior to and the day the dividend announcement dates of the sample observations during the period under study. Although, on average, the stock market may adjust rapidly in an unbiased manner at individual level, there seems to be several days of adjusting prices and portfolios. The trading activities during the days prior to the dividend announcement could be due to a misspecification of the dividend announcement. The study finds bulk level of trading volume and price changes of shares occurring the days prior to the announcement date. In nonparametric tests on the absolute volume and return residuals, there seems to be positive price reactions within a very few days prior to the announcement dates. The study somehow, observes that prices of stocks of DSE (Dhaka Stock Exchange) listed firms seem be determined by volume of continuous trading among individual investors.

Key-words: Announcement dates, Abnormal trading volume, unexpected trading volume, Market-adjusted trading volume, volume residual, price reactions.

Prelude

A major decision of financial management is the dividend decision in the sense that the firm is to choose between distributing the profits to the shareholders and ploughing them back in the business. In an efficient market, the expected part of the earnings increase should be reflected in the price and investors should trade on the new information until all the gains from doing so are competed away. The stock price adjustment to the information should be rapid, and the new price should make the stock a fair game promising new investors a normal rate of return. According to the efficient market hypothesis, publicly available information is accessible to all investors at zero cost. Therefore, the security prices might adjust to information as soon as it becomes publicly available. There are announcements of earnings and dividends, new debt and equity issues, management changes, asset write-offs, bond rating changes, changes in interest rate. Stock market reaction to dividend announcements introduced the concept of event time, which may well have been the single most important breakthrough in our understanding of how stock prices respond to financing information.

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Trading volume reflects the differences in the individual investors' belief revisions about value relevant attributes of a security. Dividend announcements conveying relevant information about a firm may cause investors to revise their expectations about those attributes. A firm raising its dividends often experiences an increase in its stock price and a firm lowering its dividends has a falling stock price. This seems to suggest that dividends affect stock price. But several empirical works on the ground argue that dividends not affecting stock prices have refuted this causal relationship; rather it is the informational content of dividends that affects both stock prices and volume of trading as well. Investors' trading responses to the differing characteristics of management-generated earnings forecast has been a topic of concern for a number of years. Among the means of assessing potential investor's interest in the firm's earnings, the most appropriate one is to investigate investor reactions to voluntarily disclosed executive forecasts. It is urgently necessary to investigate trading volume reaction associated with the announcements of a firm's dividend and the effect of predisclosure information on its trading volume. Event studies might be carried out to investigate just to what extent stock prices actually react to the release of price sensitive information such as announcement of earnings and dividends. The present study is devoted to investigate how trading volume and stock prices react to the announcement of dividends of firms associated Dhaka Stock Exchange (DSE), a pioneer capital market of Bangladesh.

Literature Review

May (1971) finds that price changes in the weeks of quarterly earnings announcements are greater than average price changes and that the relative price changes following the quarterly earnings. He finds not less than the price changes following the annual earnings. Kiger (1972) finds that average daily trading volume of the selected stocks increased during five days surrounding the announcement day to about one and one-half times the trading volume during other days. Joy, Litzenberger and McEnally (1977) test the semistrong version of the efficient market hypothesis with respect to earning announcements and find the favorable cumulative effects of the average deviations from the normal market relationship twenty six weeks after the announcement of earnings. Their empirical tests support the notion that the favorable post-announcement performance is influenced by the favorable earnings signal. Trading volume reflects investors' activity by summing all market trades, whereas, security prices reflect an aggregation or averaging of investors' beliefs. Foster (1981) shows that earnings information disclosed by one firm in an industry conveys information about other firms in the same industry. Bamber (1986) shows a positive relationship between trading volume and the magnitude of unexpected earnings and an inverse relationship between firm size and trading volume around earnings announcement days. Ziebart (1990) hypothesizes that the degree of change of abnormal trading activity is positively related with both the change in the level of consensus and the absolute value of the percentage revision in the analysts' mean forecast. Kalay (1982) documents that the ex-dividend day price drop is significantly less than the dividend per share and positively correlated to its respective dividend yield. The documented positive correlation may be the result of an incomplete adjustment for the normal daily price movement and the use of closing

prices on the ex-dividend day. Beaver, McAnally and Stinson (1997) find that earnings changes and price changes are endogenous i.e., both price and earnings coefficients increase jointly and provide increasingly similar estimates of permanent components of earnings. Bali and Hite (1998) provide a simple model of trading around ex-dividend date concluding that, on an average, the price drops by less than the dividend but greater than or equal to the dividend minus one tick. Holthausen and Verrecchia (1990) hypothesize and show that the variance of unexpected price changes increases at the time of earnings announcements and that unexpected price changes are positively correlated with the unexpected component of earnings announcements. Such information and consensus each affect both the variance of unexpected price changes and trading volume. More specifically, an increase in informedness results in an increase in the variance of unexpected price changes and an increase in trading volume and an increase in consensus results in an increase in the variance of price changes resulting a decrease in trading volume. Bamber and Cheon (1995) find a positive relation between the magnitudes of price and volume reactions. Trading volume is found to be highly related to price reaction when an earnings announcement generates differential belief revisions among investors. Morse (1981) finds abnormal price changes and substantial trading volume prior to the announcement dates. Bhattacharya (2001) shows that abnormal trading of small traders increases around earnings announcements. But abnormal trading response of large traders is adversely related to seasonal random-walk forecast errors. Penman (1983) examines whether significant price changes are associated with the dividend announcements of the firms. Jeblom (1989) finds a significant positive price reaction regarding the announcements of stock dividends or stocks split that cannot be attributed to contemporaneous information disclosures of earnings per share (EPS) or dividends. Atiase and Bamber (1994) find that trading volume reaction to earnings announcements is an increasing function of both the magnitude of the associated price reaction and level of information asymmetry prevailing before the announcement, which is consistent with finance literature that in general, trading volume is positively associated with the magnitude of returns. However, the level of predisclosure information asymmetry is significantly positively related to investor's trading volume reactions to earnings announcements. This provides insight into the market's assimilation of information by suggesting that predisclosure information asymmetry does not help explain the relation between volume and price reactions to public disclosures. However, all other things remaining the same, the greater the level of predisclosure information asymmetry, the greater the earnings announcement's effect on the investors' trading response.

Frank and Jagannathan (1998) find that most trades tend to occur at the bid on the last cum-dividend date and at the ask on the ex-dividend day. Kim and Verrecchia (1994) hypothesize that earnings announcements provides information that allows certain traders to make judgments about a firm's performance that are superior to the judgment of other traders. Therefore, there may be more information asymmetry at the time of an announcement than in non-announcement periods. Public disclosure may lead to an increase in trading volume. Kraus and Stoll (1972) hypothesize that intra-day price effects are associated with the size of the block. The pressure of institutional trading is a significant factor in the observed price effects of

block trades. Price effects accompanying block trades can be ascribed to a change in the underlying value of the stock or to a temporary deviation of prices. Hew et al. (1996) find that share prices significantly increase on the earnings announcement day relative to the two days either side of the announcement.

Bajaj and Vijh (1995) show that the excess return, price volatility, and trading volume are positively correlated around dividend announcement days suggesting that the marginal investors setting prices around dividend announcements are information motivated investors and that the announcement period excess return is a likely compensation for the risk borne during the information production. Atiase (1985) documents that the degree of unexpected security price changes in response to earnings reports is inversely related to the capitalized value of firms. Bamber et al. (1997) reveal that trading volume around earnings announcement increases with the level of predisclosure information dispersion. Nichols et al. (1979) evidence similar result finding that security price response to executive forecast that investors also appear to react with increased trading activity to executive forecast of earnings. Suominen (2001) finds a positive correlation between price variability and volume and autocorrelation in price variability. Positive correlation between price variability and trading volume arises because trading by informed traders reveals private information to markets and affects prices. Research works by Cready (1988), Lee (1992) and Lee and Radhakrishna (2000) suggest that volume of trading increases along with the investor's wealth and information about the return of the firms. Easley and O'Hara (1987) and Hasbrouck (1988, 1991) infer that, on an average, more informed investors trade more (large traders) and less informed investors are likely to make smaller trades (small traders). Ahsan et al. (2003) find that dividends and earning announcements of the companies listed with DSE influence the prices of the stocks and find an inconsistency in stock price behavior around dividend announcement with that of other developed markets. It has been experienced that cumulative abnormal returns of the firms listed with DSE do not follow the patterns observed in developed markets around the world. A rise or fall in cumulative abnormal returns of the companies associated with DSE begins long before both dividend and earnings announcement dates and the magnitudes of returns are too large and not similar with that of the developed stock markets. Islam (1999) experiences that underpricing of shares by Bangladeshi issuers and overpricing of initial public offerings contribute to the abnormal initial returns implying that Bangladeshi stock markets are subject to some inefficiencies under certain circumstances. Such inefficiencies may not always be sole determinants in the valuation of the shares in the market. Safa and Khan (1999) analyze the efficiency of DSE by testing the weak-form of efficiency inferencing that the same is not efficient as the changes in the stock prices are not statistically independent and random. Akhter and Chowdhury (1996) find that price behavior of new issues of common stock of DSE follow their trading debut over the next few months. Such type of new issues of common stock experience significantly large return on the day the issue makes trading debut on DSE. However, dividend could act as a signaling device to mitigate information asymmetry and it is also perceived that dividend changes are not actions that just happen to have information content. Habib (2004) argues that these are explicit signals about future earnings sent intentionally and at some cost by

management to the firm, and its shareholders implying that announcements of dividend changes should be positively related to stock returns as higher dividend signals higher current and future earnings. An insight into the dividend practices of Bangladeshi firms shows that dividend yields have been consistently dropping and dividend rate also demonstrates a declining trend (Chowdhury, 1996). Consequently, he finds that the lower dividend yield is attributable to both lower dividend rate and higher market capitalization of Bangladesh capital market. It may be noted here that time deposit interest is higher than dividend rate and dividend yield. Tax on dividends in Bangladesh depends in part of whether it is a private or a public company. A very few researches have been conducted regarding price behavior of firms listed with Dhaka Stock Exchange. A few important studies to test whether the Bangladesh stock markets are efficient have been conducted during the last two decades. A descriptive study of price changes may provide some inside into how investors react to dividend announcements. The present study is an original and unique empirical investigation of price changes during the days surrounding the announcement of dividends by the firms associated with Dhaka Stock Exchange. No other study has been done elsewhere like the present one.

The public announcements change investors' beliefs and induce them to engage in a new round of trade. Based on different theories and assumptions this paper is devoted to analyze trading volume reactions and their side effects on the prices surrounding dividend announcements of the firms listed with DSE.

Relationship between Price and Volume

Generally trading volume reflects a lack of consensus regarding the price. Such lack of consensus is induced by a new price information regarding the earnings report of a firm. If consensus were reached on the first transaction, there would be a price reaction but no volume reaction, assuming homogeneous risk preferences among investors. However, there should be a volume reaction even after the equilibrium price had been reached if risk preferences differ among the investors. Price reflects changes in the expectations of the market as a whole and the volume reflects changes in the expectations of individual investors. A piece of information may change the expectations of individuals rather than it changes the expectations of the market as a whole. Under these circumstances, there would be no price reaction but there would be shifts in portfolio positions reflected in the volume. Beaver (1968) argues that price reflects expectations of many investors. So, it may imply a very efficient forecast of earnings for several days prior to the announcement date. Efficiency, in this regard, is defined as the difference between the forecasted value of the reported earnings and the actual value. The closer the expectation is to zero, the more efficient the forecast is.

Objectives of the Study

The main objective of this study is to examine the impact of dividend on the trading volume and its subsequent effects on the price of the stock listed with Dhaka Stock Exchange. To achieve the main objective, the study focuses on the following

specific objects:

i) to identify and evaluate the factors affecting corporate dividend policies and the prices of the stocks;

ii) to investigate trading volume reaction associated with dividend announcements of the firms listed with DSE;

iii) to analyze the reaction of trading volume on the prices of the stocks of the firms listed with DSE surrounding the announcement dates; and

iv) to investigate the reaction of stock prices associated with dividend announcements of the firms listed with DSE.

Methodology

i. Introduction

a) Analysis of trading volume: There is no theoretical basis for choosing a specific measure of trading volume. Different approaches of trading volume measures are involved. Whatever measure is most appropriate depends upon the objectives of the researcher(s). Beaver (1968), Nichols et al. (1979) adjust the percentage of shares traded for the overall market level of trading to measure the trading volume. On the other hand, based on a firm specific measure of normal volume, another measure is the percentage of shares traded minus the firm-specific median daily percentage of shares traded. This method of measuring trading volume makes no attempt to adjust the effects of economy-factors on trading volume.

Based on the research works of Bamber (1986); Ajinkya et al. (1991); Atiase and Bamber (1994), Lobo and Tung (1997), this study measures trading volume as the percentage of a firm's outstanding shares traded on a given day, computed as:

$$V_{it} = [ST_{it} / SO_{it}] \times 100$$

where,

V_{it} = trading volume of firm i during period t,

ST_{it} = number of firm i's shares traded during period t, and

SO_{it} = number of firm i's shares outstanding during period t

This measure of trading volume ignores the level of trading in the overall market. Adjusting for differing levels of trading in the overall market, Atiase and Bamber (1994) employed another measure of trading volume as the difference between the percentage of outstanding shares traded on day *t* for a given firm and the percentage of outstanding shares traded in the overall market on that day which is given as follow:

$$MV_{it} = V_{it} - V_{mt}$$

where,

$$V_{mt} = ST_{mt} / SO_{mt}$$

where,

MV_{it} = Adjusted trading volume of firm i during period t,

V_{mt} = trading volume of overall market (on any exchange) during period t,

ST_{mt} = number of shares traded on any exchange on day t, and

SO_{it} = number of shares outstanding on any exchange on day t.

Dividend announcement date may be termed as day 0. Around the announcement date, V_{it} and MV_{it} may be calculated over a certain day period. Daily mean values of these measures during this period, therefore, may be compared with their corresponding mean values in the non-announcement period prior to the dividend announcement date. In addition, we may cumulate V_{it} and MV_{it} over multiple periods viz., two-day (-1, 0), three-day (-1, 0, $+1$), five-day (-1, 0, $+ 3$), seven-day (-1, 0, $+ 5$) and the like. However, it is essential to examine the relationship between these cumulative volume measures and predisclosure information asymmetry.

b) Measurement of Abnormal Trading : Abnormal trading volumes may be measured by using the Mean Adjusted Returns Model as:

$$AV_{it} = V_{it} - \overline{V}_i$$

where,

AV_{it} = abnormal trading of shares of firm i at time t,

V_{it} = volume of trading of shares of firm *i* at time t and

$\overline{V}_i$ = mean trading volume of shares of firm i during the non-announcement period.

The unexpected daily trading volume may be cumulated over the period for interpretation of the result. Since the amount of trading depends on the number of shares outstanding, the trading volume measures are based on the percentage of shares traded. However, the adjustment for market-wide trading effect is:

$$V_{it} = a_i + \beta_i(V_{mt}) + e_{it}$$

where,

V_{it} = percentage of firm i's shares traded during period t,

V_{mt} = percentage of shares traded on the exchange during period t

a_i, β_i = regression constant and coefficient (specific to firm i) determined by simple linear regression of daily data and

e_{it} = volume residual for firm *i* during period t.

The residual, e_{it}, may, therefore, be computed by deleting constant and coefficient from the regression for each day of the report period for each of the firm as:

$$e_{it} = V_{it} - V_{mt}$$

To attain distributional comparability across the firms, the residuals may be divided by their standard deviations to obtain standardized residuals, which would be computed for each sample firm for each day in the sample period as follows:

$$E_{it} = e_{it} / \sigma(e_{it})$$

Since there is no trading volume market model in practical usage, the unadjusted percentage of shares traded may be employed as an additional volume metric. The measure of the unexpected trading volume is simply refers to the regression prediction error as:

$$UEV_{it} = V_{it} - [a_i + \beta_i(V_{mt})]$$

Another measure of normal volume is the estimate of the mean daily percentage of the firm's shares traded in the non-announcement period. Firm-specific abnormal trading (VF_{it}) volume may, therefore, be defined as the difference between the actual percentage of shares traded on the day t and the mean non-announcement volume estimated as:

$$VF_{it} = V_{it} - m(V_i)$$

The statistical tests of the volume magnitude require the estimates of trading activity around the announcement dates. Patell and Wolfson (1982) find that the bulk of the trading reaction occurs between the day before and after the announcement date (-1 to +1 relative to the announcement dare). Thus, abnormal volume (ABV) around the time of dividend announcement is measured as the sum of the daily-unexpected volume percentage:

$$ABV_i = \sum_{t=1}^{N} VF_{it}$$

c) Analysis of Stock Price Movement: The daily average abnormal returns (AR) for each group (industries) may be calculated as:

$$AR_t = 1/N \sum_{t=1}^{N} e_{it}$$

where, N equals the number of dividend announcements in each group. AR_t may be used to measure the extent to which the dividend announcements, by each group, are perceived by the investors as informative. To measure the stock price reaction for the announcing firm i, Laux et al. (1998) use the market model to estimate the prediction error, PE, for the firm i on day t. The specification of the model is:

$$PE_{it} = R_{it} - \alpha_i - \beta_i R_{mt}$$

where,

R_{it} = the return to the stock of firm i,

R_{mt} = return to the market index and

α_i and β_i are market model parameters, which are used only to compute ordinary least squares and data from the post-event period.

Fama, Fisher, Jensen and Roll (1969) found abnormal return under the market model. Then they summed the cross sectional abnormal returns for each time period and divided by the number of companies to find the mean abnormal return in period t, as follows:

$$AR_t = 1/N \sum_{t=1}^{N} AR_{it}$$

The mean daily abnormal returns are then accumulated through time to give the cumulative abnormal returns (CARs), where the CARs for period t_1 to t_2 is

$$CARs\ (t_1, t_2) = \sum_{t=t_1}^{t_2} AR_t$$

Using capital asset pricing model (CAPM) rather than market model (because the intercept of the market model is an ex post result that cannot be taken as a predictor for the future periods), Kane et al. (1984) calculate abnormal returns surrounding dividend announcement to measure the stock price performance as follows:

$$AR_{it} = R_{it} - [R_{ft} + \beta_i (R_{mt} - R_{ft})]$$

where,

AR_{it} = abnormal return on stock of firm i,

R_{it} = total return on the stock of firm i,

R_{ft} = Treasury bill rate in day t,

R_{mt} = market return in day t, as measured by the portfolio index and

β_i = beta for stock of firm i.

Sharpe's (1964) market model was used to eliminate market wide sources of price change. Rewriting the market model, he computed the unexpected price changes, e, during the test period as follows:

$$e_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

Assuming the traditional version of capital asset pricing model, the expected rate of return of stock i is estimated as:

$$Er_{it} = r_{ft} + \beta_i(r_{mt} - r_{ft})$$

where,

Er_{it} = expected rate of return from stock i at time t,

r_{ft} = risk free return assuming the return from treasury bill rate at time t and

r_{mt} = rate of return on the market index at time t.

Following Joy, Litzenberger and McEnally (1977), the residual rate of return of stock i at time t, e_{it}, is:

$$e_{it} = r_{it} - Er_{it.}$$

They used these residuals to construct both abnormal performance and cumulative average performance indices. The abnormal performance index (API) and the cumulative average performance index (CAPI) are calculated around the date of announcement (day 0), t:

$$API_t = 1/N \sum_{i=1}^{N} \prod_{t=-15}^{t+0} (1+e_{it}) \qquad t = -15, ..., +15$$

and

$$CAPI_1 = 1/N \sum_{i=1}^{N} \sum_{t=-15}^{t+1} e_{it} \qquad t = -15, ..., +15$$

where,

N = total number of announcements under the study,

−15,…+15 = respective 15 days around announcement day.

API_t measures the average price adjustment net of the effects of market movements from fifteen days prior to the announcement to day 0 after the announcement. If we assume, as before, the announcement day is 0, the post-announcement fifteen day cumulative average performance index, $CAPI_t$ may be written as:

$$CAPI_{15} = 1/N \sum_{i=1}^{N} \sum_{t=1}^{t+15} e_{it}$$

At present two stock exchanges are operating in the country namely Dhaka Stock Exchange (DSE) and Chittagong Stock Exchange (CSE). Besides, there are other elements of capital markets in Bangladesh namely ICB, Brokerage houses, BSEC. There are short-term markets operating in Bangladesh namely all commercial banks both public and private, all insurance companies, and all other financial institutions. The study is concentrated on the DSE only.

ii. Sample and their Selections

Data on dividend distribution, ex-dividend dates, share prices, volume of share traded, market index, and other key indicators during the study period are taken to cover the study. The sample refers to the announcements of dividend made by the firms listed with DSE between January, 2008 and December, 2015. In order to be included in the sample, observations commonly referred as events have to meet the following sampling criteria:

a) Dividend announcement dates and dividend payments are available through public media such as the Book Closure File kept by DSE on the next business day following the announcements.

b) In our data set, daily stock price and volume of trading of each firm listed with DSE were available in the Closing Price Quotation for the study period of 31 trading days surrounding the dividend announcement date i.e., 15 days proceeding, to 15 days following dividend announcement date. Weekly data represents the average of the trading days of the respective week.

c) There must be at least 15 days of trading data available from announcement time periods i.e. trading must take place from at least 5 days before and 10 days after announcement dates.

d) Total shares outstanding of the firm are taken from the respective annual reports and those of the market from the Monthly Review of DSE.

e) Daily trading volumes of the sample firms are available in the Closing Price Quotation of DSE.

f) Firms whose shares are not traded within five days before and ten days after announcement dates are rejected.

g) Market rate of return and total shares traded on the market are taken from the DSE all share price index for the period under study.

A total number of 664 observations from 183 stocks, met the above criteria. Each observation is the event, which is documented as the declaration of dividend of the firms.

iii. Collection of Data

The firms which were surveyed were listed on Dhaka Stock Exchange and are classified by sectors/industries. Closing prices and volume of shares traded for the 31 days (-15 to $+15$) as well as 9 weeks (-4 to 4) surrounding the dividend announcement day (day 0) for all DSE listed firms, which paid dividends during the study period from January 2008 to December 2015 were collected from the closing price quotation of DSE. Cumulative averages before and after the announcements have been taken as main statistical tool while analyzing the data. Total numbers of shares outstanding of the market are found available in the Monthly Review of DSE. Numbers of firms' outstanding shares are collected from their respective annual reports.

Announcement dates are obtained from the published sources of DSE. Other information and data of financial performance of the firms under study are obtained from Business Information and Advisory Services Ltd. (BIASL). All information is collected from daily stock quotations and firm's published audited annual reports. Necessary information and data required are also obtained from the annual reports, periodicals, published papers, and other documents of Securities and Exchange Commission. High level of caution has been taken to collect and present the information and data.

Empirical Results

The variable V_{it} as described by Beaver (1968) is the percentage of outstanding shares (stocks of firm i) traded at time t. It is possible that the overall volume of securities traded on that day may influence the volume of trading in specific firm's security. In order to factor out any effects of changes in the level of trading in the market, adjustment of V_{it} should be made, assuming a proportional influence on a security's trading volume from overall market volume. This adjustment will not carry any practical difference on the results obtained from the analysis of the unadjusted volume data.

Abnormal volume of trading (AV_{it}) refers to the difference between daily percentage of the firm's (stock i) outstanding shares traded and its non-announcement daily mean percentage volume where the non-announcement daily mean percentage volume refers to the mean daily percentage of the firm's outstanding shares traded in the non-announcement period which does not include ± 15 days (before and after announcement period). On the other hand, MV_{it} refers to the daily percentage of the firm's outstanding shares traded minus the percentage of DSE shares traded which adjusts the percentage of shares traded for the overall market level of trading. Hence, AMV_{it} stands for the difference between MV_{it} and its non-announcement period mean volume.

Table-1 in the appendix reveals daily mean abnormal trading volumes for the period under study (t = −15 to + 15). The table shows the trends of trading volumes of the study period of 31 days centered on the announcement date (Day 0). The results as reported in Table-1 in the appendix portray that abnormal trading volume is higher at the time of announcement period along with positive abnormal trading volume at trading days from t = −3 to t = + 3. Trading volumes on those days are significantly greater than the non-announcement mean. Abnormal volumes are found positive within days very close to the announcement date. But AMV_{it} stays positive at announcement and the following day indicating that market adjusts rapidly to the dividend announcement. Abnormal trading peaks on the announcement date. Table-1 in the appendix provides abnormally low trading volume after dividend announcement. The results as reported in Table-1 in the appendix suggest that some investors postpone their trades after the dividend announcements. The cumulative figures of AV and AMV are also reported in Table-1. The table shows that the cumulative abnormal volume and cumulative market-adjusted volume on day t = −1 are −.8813 and –1.3240 respectively. The cumulative figure of abnormal volume and market-adjusted volume are plotted in Figure-1 and 2 in the appendix respectively where the vertical axises show the abnormal trading volume and cumulative abnormal trading volume.

Table-2 in the appendix contains the average daily trading volume and their cumulation around dividend announcement. As shown in the table, the highest average of daily trading volume occurred at day t = −1 (.9394) followed by day t = 0 (.8670). Table-2 also supports that trading volume is increasing upto announcement date and thereafter it gradually reduces. The fashion of the trading volume changes and their cumulation is plotted in Figure -3.

Table-3 contains the average daily trading volume of the sample observations. The average trading volume of pre-and post-announcement periods are .2978 per cent and .1860 per cent respectively. The table portrays that the average trading volume at the pre-announcement period is about 1.6 times greater than that of post-announcement period.

Table-4 exhibits the unconditional correlations among the empirical proxies for the theoretical constructs. All correlations are significantly positive. The table reveals that unadjusted trading volume and mean-adjusted trading volume is highly correlated. The correlation between trading volume and abnormal return is

significantly consistent with the assumption that trading volume reaction to the dividend announcement is an increasing function of the magnitude of the associated price reaction.

Price residuals and cumulative price residual in case of the dividend changes of the sample observation during the period under study are depicted in Table 5 and 6 in the appendix respectively. The entire sample is divided into three groups viz., those announcements with dividend increases; announcements with dividend decreases and those with no changes from the previous announcements. Table-5 depicts that the share prices of companies which announced a higher dividend than previous year experience greater positive abnormal returns than those which declare dividend decreases and show no changes. The results of Table-5 clearly indicate that stock prices are affected by the changes in the current dividend which cause investors to revise their expectations concerning the long-run dividend stream. Furthermore, a clear picture of the impacts of dividend changes on the stock prices is drawn by estimating the cumulative abnormal returns in Table-6. The cumulative abnormal returns in case of dividend increases become positive at day t−2 whereas dividend decreases and dividend remaining unchanged show negative CARs during the entire study period. Dividend decreases show a negative CAR of 11.5651 at day t + 15 followed by a negative CAR of 10.3096 in case of dividend unchanged at the same date. The CAR of dividend increases reach at negative 2.7999 at the same date. Following dividend increases cumulative abnormal returns of the companies listed with DSE start to become positive at day t-2 and last upto day t + 11 indicating that the impact of dividend does not last long and they are affected by the announcement of dividend. On the other hand, following dividend decreases and remaining unchanged, cumulative abnormal returns never come positive during the period under study which also indicates that announcement of dividend matter.

Conclusion and Implication

The primary objective of this paper is to provide hypothetical evidences on the extent to which announcements of cash dividends generate large trading surrounding such announcements. The major contribution of this study has been devoted to analyze behavior trading and price around the dividends announcements of the firms listed with DSE during the period under study and the predisclosure information asymmetry on that behavior. We find and suppose that the intelligent investors of DSE with prior information about dividend increase their trading activity before the dividends announcements, other factors determining the trading behavior being constant. To facilitate prediction of which particular firms' announcements are likely to generate an extensive or sustained market reaction, however, it may also be useful to identify a relation between market reaction and a variable whose value is known prior to the announcement. Firm size is one such variable whose value is known before the dividends are announced. Based on the theories and evidences discussed that investors' incentives to collect predisclosure information increase with the firm size. Dividend information effects should be most visible at initiation since these events are more likely to be unexpected than subsequent regular dividend announcements which are preceded by the firm's past dividend history. Trading

volume increases, primarily, in the response to the signal about future earnings contained in the initial dividend. Moreover, this study provides empirical investigation regarding the effects of dividend announcements on the trading volume and the price of the firms listed with DSE during the period under study and finds positive reaction between the volume and price. This study supports that the abnormal price changes and bulk amount of shares traded before such public announcements can be interpreted as the result of the insider trading indicating that abnormal profit earning insiders with private information concerning the announcements of dividend use to increase their trading activity prior to the release of such information but refrain from trading in the period immediately after the release of such price sensitive information.

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APPENDICES

Appendix-A

Table-1: Daily Abnormal Trading Volume of the Sample Firms around Dividend Announcement Dates of the Sample Observations for the Period under Study.

Day	AV	CAV	AMV	CAMV	Day	AV	CAV	AMV	CAMV
-15	-.1024	-.1024	-.0939	-.0939	+ 1	.1203	-.5735	.0296	-1.1182
-14	-.0932	-.1956	-.1065	-.2004	+ 2	.0125	-.5610	-.0911	-1.2093
-13	-.1542	-.3498	-.1650	-.3654	+ 3	.0098	-.5512	-.0550	-1.2643
-12	-.1689	-.5187	-.1330	-.4984	+ 4	-.0896	-.6408	-.0638	-1.3281
-11	-.1423	-.6610	-.0914	-.5898	+ 5	-.0984	-.7392	-.0758	-1.4039
- 10	-.1108	-.7718	-.0532	-.6430	+ 6	-.0785	-.8177	-.1060	-1.5099
- 9	-.1032	-.8750	-.1230	-.7660	+ 7	-.0952	-.9129	-.1484	-1.6583
- 8	-.1081	-.9831	-.0831	-.8491	+ 8	-.1024	-1.0153	-.1575	-1.8158
- 7	-.0987	-1.0818	-.0913	-.9404	+ 9	-.1547	-1.1700	-.1634	-1.9792
- 6	-.0712	-1.1530	-.1143	-1.0547	+10	-.1302	-1.3002	-.0982	-2.0974
- 5	-.0198	-1.1728	-.0951	-1.1498	+11	-.1425	-1.4427	-.1357	-2.2331
- 4	-.0098	-1.1826	-.0286	-1.1784	+12	-.1798	-1.6225	-.1573	-2.3904
- 3	.0587	-1.1239	-.0619	-1.2403	+13	-.1325	-1.7550	-.1136	-2.5040
- 2	.1102	-1.0137	-.0496	-1.2899	+14	-.1452	-1.9002	-.1555	-2.6595
- 1	.1324	-.8813	-.0341	-1.3240	+15	-.1785	-2.0787	-.1280	-2.7875
0	.1875	-.6938	.1062	-1.2178					

Note: i) Day 0 means dividend announcement date.

ii) Minus sign (–) represents relative days before dividend announcement day and plus sign (+) relative days after dividend announcement.

Table -2: Average Volume of Trading around Dividend Announcement Date.

Day	Average	Cumulative	Day	Average	Cumulative
-15	.0214	.0214	+ 1	.5241	5.8561
-14	.0758	.0972	+ 2	.4236	6.2797
-13	.0985	.1957	+ 3	.3254	6.6051
-12	.1024	.2981	+ 4	.3112	6.9163
-11	.1425	.4406	+ 5	.2145	7.1308
- 10	.1966	.6372	+ 6	.1995	7.3303
- 9	.2095	.8467	+ 7	.1560	7.4863
- 8	.1803	1.0270	+ 8	.1276	7.6139
- 7	.1712	1.1982	+ 9	.1062	7.7201
- 6	.2565	1.4547	+ 10	.1035	7.8236
- 5	.3072	1.7619	+ 11	.0907	7.9143
- 4	.5142	2.2761	+ 12	.0879	8.0022
- 3	.4882	2.7643	+ 13	.0415	8.0437
- 2	.7613	3.5256	+ 14	.0358	8.0795
- 1	.9394	4.4650	+ 15	.0422	8.1217
0	.8670	5.33205			

Table-3: Descriptive Statistics.

Period	Average	Median	Std.dev	Maxi	Mini
Pre-announcement	.2978	.1966	.2655	.9394	.0214
Post-announcement	.1860	.1276	.1481	.5241	.0358
Study period	.2620	.1803	.2426	.9394	.0214

Table-4: Unconditional Correlations among Trading Volume, Abnormal Trading, and Abnormal Return Metrics of the Sample During Study Period.

	UAV	AV	AMV	AR_M	MAR
UAV	1.000	.929	.756	.740	.590
AV	.929	1.000	.862	.621	.478
AMV	.756	.862	1.000	.322	.074
AR_M	.740	.621	.322	1.000	.866
MAR	.590	.478	.074	.866	1.000

Note: i) UAV- unadjusted trading volume, AV-abnormal trading volume, AMV-market adjusted abnormal trading volume, AR_M-mean-adjusted abnormal return, MAR-market-deducted abnormal return.
ii) All the correlations are significantly greater than zero.
iii) Trading volume, and return metrics are relative to the dividend announcement date.

Table-5: Price Residuals Following the Changes in Dividends of the Sample for Each Day Surrounding Announcement Day.

Day	Price Residuals			Day	Price Residuals		
	Increase	Decrease	Unchanged		Increase	Decrease	Unchanged
-15	-.8009	-.8104	-.8079	1	.0102	-.0070	.0018
-14	-.8196	-.9465	-.8907	2	.0083	-.1857	-.0198
-13	-.6021	-.8094	-.6963	3	-.0013	-.9993	-.8795
-12	-.6368	-.6760	-.7449	4	-.2019	-.9389	-1.3237
-11	-.6355	-.6239	-.7116	5	-.3593	-.7981	-.6258
-10	-.3011	-.4290	-.3949	6	-.4312	-.6379	-.6160
-9	.0687	-.4932	-.2493	7	-.4584	-.7016	-.5518
-8	-.0559	-.5919	-.3008	8	-.4388	-.6823	-.7317
-7	.0399	-.3017	-.3040	9	-.5349	-.7001	-.8046
-6	.0503	.0162	.0142	10	-.4011	-.3946	-.4085
-5	.7417	.2697	.1013	11	-.6902	-.6384	-.6931
-4	.9991	.6101	.7089	12	-.6813	-.6709	-.6416
-3	1.7622	.8139	1.1139	13	-.5548	-.4938	-.5588
-2	1.3191	.8810	.9832	14	-.6982	-.7011	-.7316
-1	1.6660	.8293	1.1176	15	-.8989	-.8814	-.8999
0	.7258	.1278	.2363				

Note: i) Day 0 means dividend announcement date.
ii) Minus sign (-) represents relative days before dividend announcement day and plus sign (+) relative days after dividend announcement.
iii) Increase, decrease and unchanged assume the price residuals of the listed companies in case of dividend increases, dividend decreases and dividend remains unchanged respectively.

Table-6: Cumulative Price Residuals Following the Changes in Dividends of the Sample for Each Day Surrounding Announcement Day.

Day	Price Residuals			Day	Price Residuals		
	Increase	Decrease	Unchanged		Increase	Decrease	Unchanged
-15	-.8009	-.8104	-.8079	1	3.5311	-2.1410	-.8232
-14	-1.6205	-1.7569	-1.6986	2	3.5394	-2.3267	-.8430
-13	-2.2226	-2.5663	-2.3949	3	3.5381	-3.3260	-1.7225
-12	-2.8594	-3.2423	-3.1398	4	3.3362	-4.2649	-3.0462
-11	-3.4949	-3.8662	-3.8514	5	2.9769	-5.0630	-3.6720
-10	-3.7960	-4.2952	-4.2463	6	2.5457	-5.7009	-4.2880
-9	-3.7273	-4.7884	-4.4956	7	2.0873	-6.4025	-4.8398
-8	-3.7832	-5.3803	-4.7964	8	1.6485	-7.0848	-5.5715
-7	-3.7433	-5.6820	-5.1004	9	1.1246	-7.7849	-6.3761
-6	-3.6930	-5.6658	-5.0862	10	.7235	-8.1795	-6.7846
-5	-2.9513	-5.3961	-4.9849	11	.0333	-8.8179	-7.4777
-4	-1.9522	-4.7860	-4.2760	12	-.6480	-9.4888	-8.1193
-3	-.1900	-3.9721	-3.1621	13	-1.2028	-9.9826	-8.6781
-2	1.1291	-3.0911	-2.1789	14	-1.9010	-10.6837	-9.4097
-1	2.7951	-2.2618	-1.0613	15	-2.7999	-11.5651	-10.3096
0	3.5209	-2.1340	-.8250				

Note: i) Day 0 means dividend announcement date.

ii) Minus sign (-) represents relative days before dividend announcement day and plus sign (+) relative days after dividend announcement.

iii) Increase, decrease and unchanged assume the price residuals of the listed companies in case of dividend increases, dividend decreases and dividend remains unchanged respectively.
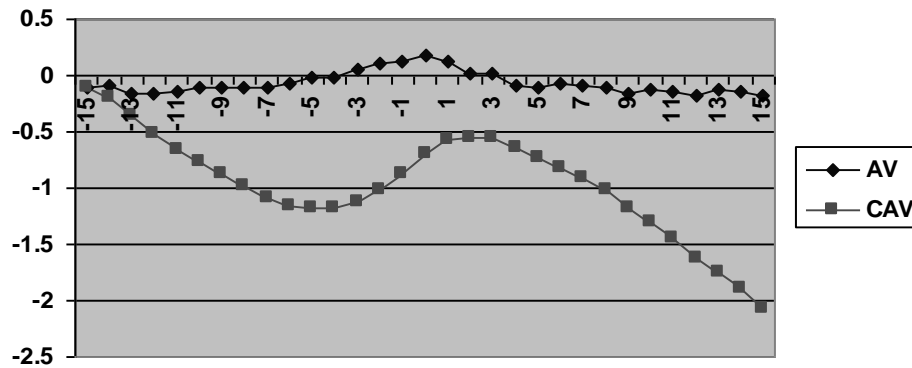
Appendix-B

Figure-1: Daily Abnormal Trading Volume and Cumulative Abnormal Volume (Mean-adjusted) of the Sample Firms around Dividend Announcement Dates.

Figure-2: Daily Abnormal Trading Volume and Cumulative Abnormal Volume (Market-adjusted) of the Sample Firms around Dividend Announcement Dates.
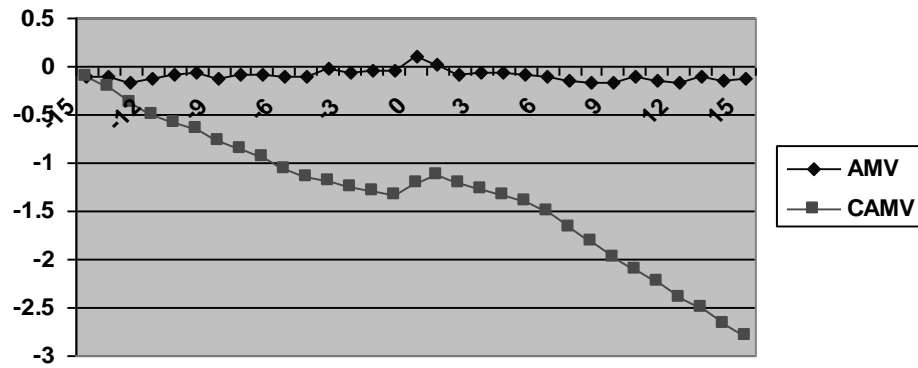

Figure-3: Average Trading Volume and Cumulative Average Volume around Dividend Announcement Dates.