Price and Trading Volume Reaction Surrounding Distributions of Earnings: A Close Investigation on the Firms Associated with DSE

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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 supports 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 amount 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 listed firms seem to be determined by volume of continuous trading among individual investors.

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

1. INTRODUCTION

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

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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 pre-disclosure information on its trading volume.

2. LITERATURE REVIEW

In an efficient securities market, prices reflect intrinsic values of underlying firm. It no doubt, ensures the proper allocation of new funds to the most productive areas of the economy. Modern theories of finance argue that exchange occurs when market makers assign different values to an asset. 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). Their studies hypothesize that small traders' abnormal trading response is significantly positively associated with absolute random-walk forecast error, even after controlling for absolute analyst forecast errors, contemporaneous price changes, and market–wide trading, whereas large traders' abnormal trading response is not. Similarly, Bhattacharya (2001) finds a positive association between small traders' trading and seasonal random walk forecast errors for the firms with low-to-moderate analyst following, but not for firms with the heaviest analyst following. However, earnings announcements may generate differential trading responses among different classes of investors. The trading activities of small traders may not stimulate large price or volume reactions because of a disclosure is of little use to individual investors based simply on negligible average price and volume reactions would be premature. Policymakers, in this connection, find the realization to evaluate the usefulness of disclosures affecting trading responses in different classes of investors. Research of volume changes may provide some insights how investors react information during the days surrounding the announcement of earnings. Any change in trading volume during the week of announcement may cause the fact that the annual earnings announcement was assumed to have had information content. Morse (1981) finds significant price changes and trading volume surrounding quarterly earnings announcements providing stronger evidence that the information processing that is costly in terms of time is taking place among investors in the securities markets. Trading volume following the public announcement may be due to different interpretations of the signal released and/or investors returning to diversified positions after taking speculative positions prior to the public

announcement. Significant changes in trading volume prior to the public announcement may indicate the signal or some clue about it that had been received by the investors. Karpoff (1986) finds at least three reasons important for better understanding of trading volume. First one is the inconsistency between the widespread use of homogeneous investor assumption and observations of positive trading volume indicating that investors having a demand to trade even in the absence of new information because of unique liquidity or speculative desires. Second one is that, in the financial market, volume data are regularly reported along with price data. The third reason is that the effects of institutional design of the market on trading volume are not well understood. Trading volume is lower in the imperfect market, and information has a persistence effect on volume in the imperfect market. Empirical works by Beaver (1968) and Morse (1980) suggest that markets do not immediately clear all demands motivated by the information or those investors make trading mistakes and have demands to re-contract in subsequent periods. Kim and Verrecchia (1991) show that during the announcement period trading volume increases, and such increases are increasing functions of the precision of the announced information and decreasing functions of the amount of pre-announcement public and private information. This implies that informed traders are most likely to trade in the periods of increased liquidity preferred by uninformed traders. When a firm declare dividend, trading volume will changes around dividend announcement (Lobo and Tung, 1997). Bamber (1986) finds this relation is correlated with the firm size. Nichols et al. (1979) show that the magnitude of changes in earnings is associated with large changes in trading activity.

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.

3. Theories of Trading Volume

Volume refers to as the number of transactions between buyers and sellers who are randomly paired in the trading period, the transactions of whom are executed by the help given by a broker. Trading opportunities arise because both the potential buyers and sellers revise their demand prices prior to the market period according to idiosyncratic liquidity or speculative desires, which appear random to the outside observer who does not have specific data on each agent. Studies by Rendleman et al. (1987), Freeman and Tse (1989), Bernard and Thomas (1989, 1990), Bartov (1992), Bernard and Seyhun (1997), Bernard et al. (1997) suggest that there are some securities investors who fail to assimilate publicly available, value-relevant information from previously announced earnings in forming expectations about future earnings. Bernard and Thomas (1990) did also add that a part of the securities market appears to depend on the seasonal random work

model to form earnings expectations. More specifically, they argue that abnormal returns around quarterly earnings announcements have the same autocorrelation structure as forecast errors from a seasonal random walk earnings expectation model.

Because of at least three reasons, theoretical treatment of trading volume appears in the literature: the bid-ask spread relation to it, its relation to price changes and the information relation to it. The dealer's bid and asks prices weighs the cost of supplying quotes to informed traders against the revenues expected from liquidity-motivated traders. Epps (1976) argues that the expected number of transactions and expected volume from exogenous shock are decreasing function of transaction costs, which are exogenously determined. The relation of trading volume to price changes is being considered by several theoretical models. Using simulation, Copeland (1976) shows that volume after all investors received the information is positively related to the magnitude of price change. Each model developed by Clark (1973), Tauchen and Pitts (1983), and Epps and Epps (1976) argue that the volume is positively related to the corresponding price change over fixed time intervals or on a given transaction. The magnitude of price change is uncorrelated with the trading by speculators with private information but is positively related to trading by liquidity-motivated investors. The degree of the correlation between absolute price changes and volume is negatively related to the existence of private information. Trading volume depends only on differences of opinion, even when the investors receive different information. The market price adjusts to reveal all information in the economy and thus negates the value of the unique information to any single investor. One drawback of this model is that sometimes it implies that price decreases while trading volume increases. Each investor in the securities markets receives information about the price of a risky asset that includes both a common and a unique component.

4. RELATIONSHIP between price and volume

Generally trading volume reflects a lack of consensus regarding the price. Such lack of consensus is induced by 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.

5. 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.

6. Characteristics of Variables

This section devotes to define the variables reflecting the volume and price movements of common stocks surrounding the dividend announcement date of the firms listed with DSE. The date of dividend announcements will have been obtained from the closing price and volume quotation index of DSE. Any information relating to the announcements of earnings may affect the volume of trading in the securities market. This hypothesis asserts that trading volume around the dividend announcements is very much related to the level of pre-disclosure information. Trading volume is supposed to be lower to the non-announcement period but higher at the time of the announcements. It is essential to investigate whether trading volume and the firm' earnings are related in a continuous manner. The absolute value of the dividend declared might change the volume of trading around dividend announcements positing that the greater the magnitude of unexpected dividends, the greater the volume of trading around the announcement dates. This, therefore, implies that the volume of trading around the dividend announcements depend on the firm size. The smaller the firms have higher the unexpected trading volume around dividend announcements and vice versa. Dividend announcements of smaller firms may become more difficult to predict. It is necessary to explain here that the dividend announcements by smaller firms constitute a larger proportion of the total information available about those firms. Their announcements may be linked with a relatively large volume of trading. The larger the absolute value of the dividend earnings, the longer the period of abnormally high trading associated with dividend announcements. Relatively small firms usually provide little pre-disclosure information. So, empirical studies may, therefore, be extended to firm size. The smaller the firm, the longer the period of abnormally high trading associated with dividend announcements. Investors believe that upon the release of dividend announcements, trading volume increases as the traders revise their

prior beliefs. Median non-announcement level of trading can be compared with the trading volume during the announcement date. The magnitude of the differences, as measured may carry an important inference about the volume reaction to the public announcements. To show whether the trading volume is positively correlated with the absolute value of the magnitude of the dividend declared or not it is essential to find the difference between the trading volume linkage with the random-walk earnings expectation model and the trading volume linked with the analysts' forecast model. Firm size may be defined as the product of the number of shares outstanding and the market price per share as of the declaration date. Trading volume is related with the firm size. Dividends of smaller firms are more surprising and change more from year to year than larger firms. Maybe such proposition occurs due to the absolute magnitude of the earnings and the retained earnings of the firms. When abnormal earnings are held constant, there exists a relation between the firm size and trading volume around the earnings announcements. Firm size effect might occur for one of the reasons that a smaller firm's announcement tends to be more surprising than that of a larger firm. There is a size effect beyond the attributable to unexpected earnings if the earnings announcements provide a large share of the information about the firm and one might expect a larger volume reaction, as the information of such announcements has not been obtained from other sources. The relative magnitude of the associated trading activity to the executive forecast is of interest and the relative change in the volume occurs at time t_0 may be computed as follows:

$$\Delta V_i = (V_{i0} - \overline{V}_i)/\ \overline{V}_i$$

Where,

$\overline{V}_i$= the average trading volume for company i for the study period surrounding announcement period.
A measure of investor expectations of earnings can test this possibility. Last year's earnings might be treated as base for investor expectations of earnings for the next year.

Trading volume: Trading volume reflects the investors' activity by summing all market trades. Because of trading volume hypothesis, an expectation model is needed. In this regard, different approaches may be taken. Analysts may use the percentage of shares traded adjusted for the overall market level of trading as the expectation. Each firm's median trading volume may also be used as its expectation over the period. The percentage of shares traded may be treated as the dependent variable. Beaver (1968) uses each firm's percentage of shares traded on an index of market-wide trading defined as the percentage of shares traded on an exchange. 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:

$V_{it} = a_i + b_i(V_{mt}) + \epsilon_{it}$

Where,

V_{it} = percentage of firm *i*'s shares traded during period *t*,
V_{mt} = percentage of shares traded on the market during period *t*,
a_i, b_i = regression constant and coefficient (specific to firm *i*) determined by simple linear regression of daily data and
ϵ_{it} = volume residual for firm *i* during period *t*.

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 study period as follows:

$R_{it} = \epsilon_{it} / \sigma(\epsilon_{it}$

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 parameters of the regression would be estimated to calculate expected trading volume. The absence of announcement and the parameter estimation period should not include those days immediately surrounding the dividend announcement date. Therefore, for each firm, regression parameters may be estimated over the study period except the days centered on the firm's dividend announcement dates. The measure of the unexpected trading volume is simply refers to the regression prediction error as:

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

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

$$VF_{it} = V_{it} - \text{md}(V_{it})$$

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).

Market-adjusted trading volume (MV$_{it}$): At time t for stock i it indicates the daily percentage of the outstanding shares of stock i traded minus the percentage of DSE shares traded which adjusts the percentage of shares traded for the overall market level of trading.

Abnormal market-adjusted trading volume (AMV$_{it}$): For stock of firm i during the period t it refers to the difference between MV$_{it}$ and its non-announcement period mean volume.

Firm size: Total assets and owners' equity of a firm carry an importance in measuring the firm's value. Market value of common shares outstanding measures the firm size. Book value of total assets and equities may produce a more stable measure of a firm size than its market value of common shares outstanding.

7. Methodology

7.1 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 for 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,

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 pre-disclosure information asymmetry.

7.2 Measurement of Abnormal Trading

Abnormal trading volumes may be measured by using the Mean Adjusted Returns Model as:

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

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 tand
$\bar{V}_i$ = 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 simplelinear 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:

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

8. 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 $\pm$ 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 axes 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 up to 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.

9. Conclusion and Implication

The primary objective of this paper is to provide hypothetical evidences on the extent to which dividends announcements generate large trading surrounding such announcements. The major contribution of this study has been devoted to analyze trading behaviour around the dividends announcements of the firms listed with DSE during the period under study and the pre-disclosure information asymmetry on that behaviour. 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 it is discussed those investors' incentives to collect pre-disclosure 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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APPENDIX

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	-.0153	-.1575	-1.8158
- 7	-.0987	-1.0818	-.0913	-.9404	+ 9	-.1547	-1.170	-.1634	-1.9792
- 6	-.0712	-1.1530	-.1143	-1.0547	+10	-.1302	-1.300	-.0982	-2.0974
- 5	-.0198	-1.1728	-.0951	-1.1498	+11	-.1425	-1.442	-.1357	-2.2331
- 4	-.0098	-1.1826	-.0286	-1.1784	+12	-.1798	-1.622	-.1573	-2.3904
- 3	.0587	-1.1239	-.0619	-1.2403	+13	-.1325	-1.755	-.1136	-2.5040
- 2	.1102	-1.0137	-.0496	-1.2899	+14	-.1452	-1.900	-.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 mean 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 adjustedabnormal 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.

Figure-1: Daily Abnormal Trading Volume and Cumulative Abnormal Volume (Mean-adjusted) of the Sample Firms around Dividend Announcement Dates.
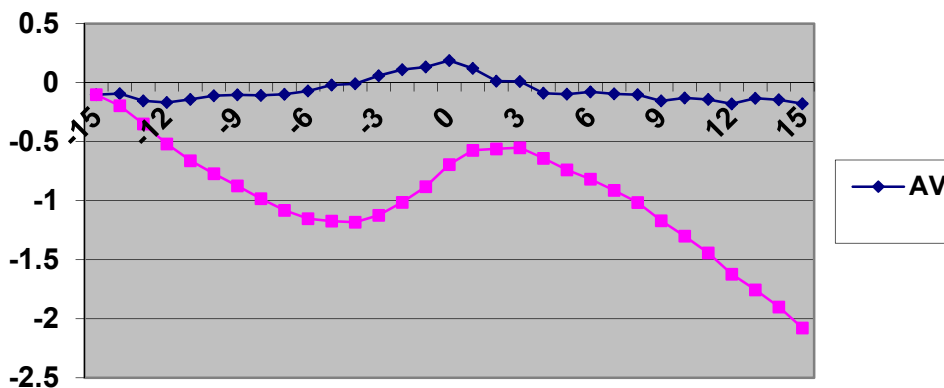
Figure-2: Daily Abnormal Trading Volume and Cumulative Abnormal Volume (Market-adjusted) of the Sample Firms around Dividend Announcement Dates.
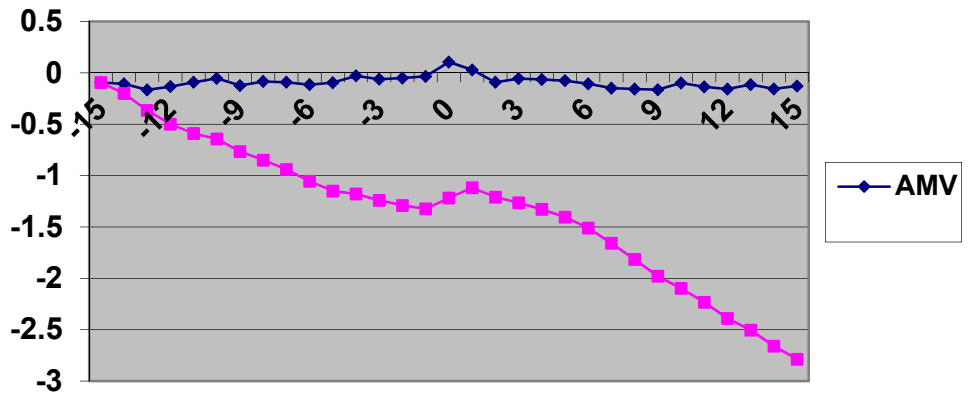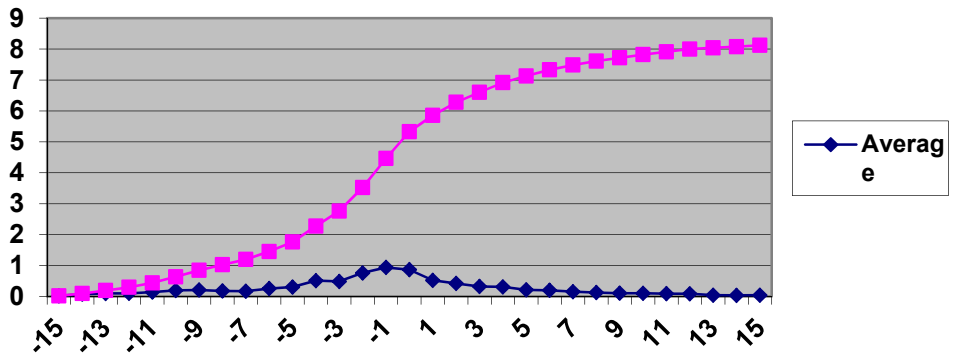

Figure-3: Average Trading Volume and Cumulative Average Volume around Dividend Announcement Dates.

Price and Trading Volume Reaction Surrounding Distributions of Earnings: A Close Investigation on the Firms Associated with DSE.