Dividend Announcement and Share Prices: A Nepalese Evidence

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Abstract- *This paper examines the abnormal returns of dividend announcements in the Nepalese stock market using the market model of event methodology after adjustment of existing thin-trading problem. To examine the abnormal returns of dividend announcements, 139 dividend announcement samples were partitioned into dividend-initiation (good-news), dividend-increase (good-newsy. dividend-decrease (bad-news), and no dividend-change (no-news) sub-samples. The positive abnormal returns were found much higher on the dividend announcement day in the dividend-initiation and dividend-increase cases. The dividend-decrease sub-sample shows the highest negative abnormal returns on the dividend announcement day. The no dividend-change announcements sub-sample shows that the entire 21-day event-window has insignificant abnormal returns. The percentage of dividend changes is only the influential factor to determine abnormal returns during the dividend announcement day, whereas the variables such as dividend yield, size of the firm, market-to-book ratio, market conditions and time specification have no explanatory power on the share prices around the dividend announcement day. The dividend announcements have a signalling effect in the Nepalese stock market. The study also found that the Nepalese stock market supported the semi-strong form of market efficiency.*

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1. INTRODUCTION

One of the major premises of efficient market theory is that the market quickly and correctly impounds any publicly available information. The Fama (1970) classifies the market efficiency into Weak form efficiency, Semi-strong form efficiency and Strong form efficiency. After twenty years of market efficiency literature published in 1970, Fama (1991) proposed to change the categories of market efficiency, namely: (1) Using tests for return predictability instead of weak-form tests, (2) Using event studies instead of semi-strong-form tests and (3) Using test for private information instead of strong-form tests.

The study is concerned with the information asymmetry and the dividend policy. It can refer to the signalling theory and the free cash flow hypothesis. The signalling theory, associated to the dividend content information hypothesis, holds that dividend policy acts as a vehicle for transmitting information from firm's authority to the market. The second theory postulates that the dividends work as a vehicle to drain excess cash-flows. Bhattacharya (1979), John and Williams (1985) and Miller and Rock (1985) developed the signalling models based on the information asymmetry hypothesis. On the other hand, Jensen (1986) proposed a theory which is widely known as the free cash flow hypothesis. The theory predicts that the stock prices will increase (decrease) if there is an increase (decrease) in unexpected dividend payments.

There are various factors that affect stock market price behaviors; they bring out over- or under-reaction in the market. The study of events and stock price behavior occupies an important place in financial management. As such, this study is focused on the independence of stock returns and the short-run effect on stock price caused by the announcement of unanticipated corporate dividend announcements. Similarly, investors perceive the dividend-announcements in different ways, viz., as good-news, bad-news and no effect-news.

2. OBJECTIVES

The main objective of the study is to test the semi-strong form of market efficiency. The study examines the market reaction that would follow immediately to the new unanticipated dividend announcements in the context of the Nepalese stock market. The specific objectives of the study are as under:

- To examine the abnormal returns before and after dividend announcements in the Nepalese stock market.
- To assess the time duration, i.e., speed of price adjustment of market reaction to announcement of new unanticipated dividend information in the Nepalese stock market.

- To evaluate the abnormal return on the equity shares during the announcement of changes in the dividends and influence of firm specific variables as well as market trends and time effects in the Nepalese stock market.

3. Review of Literature

Dhillon and Johnson (1994) found that the information content hypothesis was consistent with positive reaction to a dividend increase. It was so because dividend increases were perceived as good-news by the investors. In the context of Nigeria, Adelegan (2003) has provided evidence on negative excess returns for the dividend paying samples before the day of announcements, and positive after the announcement date. It indicates that the dividend announcement is good-news to investors and increases share prices.

The majority of the empirical tests done on the dividend signalling hypothesis domain explore the effects of the dividend change announcements on share prices (Pettit, 1972, Aharony & Swary, 1980, Asquith & Mullins, 1983, Dhillon & Johnson, 1994, Lonie et al., 1996, Viswanath et al., 2002, Abdullah et al., 2002, McCluskey et al., 2006, Gurgul et al., 2006, Chen et al., 2009, Dasilas & Leventis, 2011). The results were mixed. Although it was well documented that there was a strong positive association between dividend changes and share price reactions in the days surrounding the dividend change announcements (Pettit, 1972, Aharony & Swary, 1980, Asquith & Mullins, 1983, Dielman & Oppenheirmer, 1984, Impson & Karafiath, 1992, Dasilas & Leventis, 2011). Their conclusions emphasis on existence of dividend information content, or signalling effect. Nevertheless, several studies, including Benartzi, Michaely and Thaler (1997), Chen, Firth and Gao (2002) and Abeyratna and Power (2002) have not supported the existence of a positive relationship between dividend changes and the market reaction.

Similarly, studies have not supported these relations between dividend changes announcement and stock prices (Chen et al., 2002, Abdullah et al., 2002, Adelegan, 2003, Mallikarjunappa & Manjunatha, 2009). Some studies also showed that the price adjustment has occurred during the announcement day, indicating that the market is efficient in semi-strong form and accepting dividend signalling hypothesis (McCluskey, 2006, Joshipura, 2009). The study deals with investigation of the semi-strong form of market efficiency, including dividend signalling hypothesis using dividend announcements as a proxy variable.

However, Mollah (2007) found that in the Bangladesh stock market, the dividend-signalling hypothesis was rejected indicating that dividend announcements convey no information. In Saudi Arabia, Uddin and Osman (2008) reported that the information signal of dividend announcements is weak, and the market did not react to dividend announcements according to the information content hypothesis. Chen et al. (2009) found the Chinese market reacting positively to both dividend increases and dividend decreases, showing partial compliance with the dividend signalling hypothesis. The empirical results are mixed regarding the dividend signalling effects to the value of stocks.

The similar results were found also by Dangol (2008a) in the case of the Nepalese stock market. Dangol (2008a) explained that the percentage change in the dividend was strongly positively correlated with security abnormal returns; however, the payout ratio change was not a significant explanatory variable. The study results of Impson and Karafiath (1992) and Dangol (2008a) are attributed to the information content of dividend. These studies provided a message that the payout ratio changes are only an artifact of an earnings-stream that is more variable than the dividend-stream; it hints at having no significant shifts in the managerial policy.

In Nepal, Bhatta (2008) evaluated the effect of cash dividend announcements on stock returns and did not find any dividend signalling effect, and rejected the semi-strong form of market efficiency. Similarly, Dangol (2009) examined the abnormal returns of dividend announcements in the Nepalese stock market and found the average abnormal returns around the dividend announcement days (0, +1) were positive and statistically significant. The abnormal returns were found much higher around the dividend announcement day. The dividend announcements had a signalling effect on the Nepalese stock market, but found inefficiency in the semi-strong level. Similarly Dangol (2008b) also found the similar results supporting information content hypothesis and rejecting efficiency of semi-strong form in the Nepalese stock market.

The majority of the above studies showed that the dividend signalling hypothesis was accepted in the developed markets and stock prices were adjusted effectively during the announcement day. On the contrary, dividend announcement-effect has not been observed effectively in the emerging stock markets. Similarly, in the emerging markets, the leakage of dividend announcement-news is also possible to a great extent. The major inference of almost all the studies concerning with the event window is either positive or negative abnormal returns.

Good-news announcement affects investors' confidence positively towards the stock market. It creates positive abnormal market returns to shareholders. On the contrary, announcements of bad-news lead investors towards the future uncertainties so that investors tend to lose their confidence in the stock market, and it generates a negative abnormal market return. In the context of Nepal, there is the need to study whether the dividend announcements generate immediate market reactions or not.

4. HYPOTHESES

The study has formulated following null hypotheses on the basis of the dividend signalling assumptions.

Hypothesis 1: Relation between dividend announcements and the market reaction

Null hypothesis, H0: "The dividend changes are not associated with a subsequent share price-reaction in the same direction during the dividend announcement period"

Hypothesis 2: Relations between dividend announcements and firm-specific factors

Null hypothesis, H0: "Firm-specific factors do not affect the market reaction around the dividend change announcement period"

5. RESEARCH METHODS

5.1 Population

As the size of the population, the study has considered those listed companies that have announced dividends from mid-July 2000 to mid-July 2011 in Nepal Stock Exchange (NEPSE).

5.2 Sample selection

The sample companies of the study should fulfil the following criteria:

- The company should be the one listed at the Nepal Stock Exchange Ltd (NEPSE).
- The company should not be the one that has remained de-listed for a long period of time.
- The company should be the one that has already paid dividends (cash or stock or both) at least one time in its life.
- The company should be the one that has not dividend events with other potential contamination announcements, i.e., earnings, rights-share issue, merger or acquisition, investment decision, and capital gain tax changes announcements occurring within 10 days (Confounding effect before and after 10 days of divided announcement).

- The securities of the company should be the one traded on at least 50 per cent of the floor-days during the estimation period. This can avoid the sample traded very infrequently.
- The company should not have missing data (on dividend announcement date, and annual reports.)

The study has considered the dividend announcements between 2000/011 and 2010/11. During the period, total dividend events are 561 company-observations On the basis of the above criteria, the total sample for the analysis has been fixed at 139 firm dividend announcements. The selected sample size has been found statistically adequate according to the calculation based on the formula devised by Cochran (1999). The sample includes dividend events: dividend initiation, dividend increase, dividend decrease and dividend no-change. The table 1 summarizes the population and sample data.

Table 1: Sample selection

The table reports the number of dividend events (population) and samples for analysis, classified by sample selection criteria as well as the frequency by years (Panel A). Dividend events in terms of dividend initiation, dividend increase, dividend decrease and dividend no-change as well as its types categoried into only cash dividend, only stock dividend and, both cash-and-stock dividend are shown in Panel B. Similarly, Panel C presents sample companies by industry breakdown.

Panel A: Sample and its frequency by year							
Fiscal years	**Total number of dividend events**	**Dividend events with other potential contamination announcements occurs within 10 trading days (Confounding effect before and after 10 trading days of divided announcement)**	**Infrequent trading (stock trade less than 50% (90 days) during the estimation period**	**Dividend events with missing data**	**Total excluded dividend events**	**Total number of dividend events for analysis**	**Percentage (%)**
2000/01	41	6	24	5	35	6	4.32
2001/02	49	7	31	7	45	4	2.88
2002/03	37	5	20	6	31	6	4.32
2003/04	44	8	16	12	36	8	5.76
2004/05	33	2	14	10	26	7	5.04
2005/06	52	6	23	15	44	8	5.76
2006/07	61	5	34	11	50	11	7.91
2007/08	69	4	41	10	55	14	10.07
2008/09	68	6	30	15	51	17	12.23
2009/10	51	5	16	6	27	24	17.27
2010/11	56	2	18	2	22	34	24.46
Total	**561**	**56**	**267**	**99**	**422**	**139**	**100.00**

Panel B: Dividend events and its classification					
Dividend events	**Type of Dividend**				
	Cash	**Stock**	**Cash and Stock**	**Total**	**Percentage (%)**
Dividend Initiation	13	14	3	30	21.58
Dividend Increased	27	10	18	55	39.57
Dividend Decreased	18	6	13	37	26.62
Dividend No-changed	6	8	3	17	12.23
Total	**64**	**38**	**37**	**139**	**100.00**
Percentage (%)	46.04	27.34	26.62	**100.00**	

Panel C: Sample by industry breakdown		
Type of companies	**Number of dividend announcements**	**Percentage (%)**
Commercial Bank	98	70.50
Development Bank	20	14.39
Finance Company	12	8.63
Hydro Power	6	4.32
Others	3	2.16
Total	**139**	**100.00**

5.3 Data

The data for the investigation of the proposed hypotheses relate to dividend announcements date and rate of dividend have been obtained from the individual companies. The required information relating to dividend yield and market-to-book ratios have been calculated from the annual reports of the individual company. The daily market indices have been obtained from the official website of Nepal Stock Exchange (NEPSE). The total number of companies listed in NEPSE, dividend payers and dividend non-payers companies have been obtained from the annual reports of Securities Board of Nepal (SEBON).

5.3.1 Methodology to test Hypothesis 1: Relationship between dividend announcements and the market reaction

Market model is employed to test the dividend announcements effect to stock price. To test the relations between dividend announcements and the market reaction, the majority of the studies has used market model2, which is already known as the event study[3], thus:

$$R_{it} = \alpha_i + \beta_i R_{mt} + e_{it} \quad \text{.....(1)}$$

The market model makes no explicit assumption about how equilibrium stock prices are established (Strong, 1992). The basic assumptions of the market model are (i) error term (e_{it}) is a mean zero, independent disturbance term in period *t*, (ii) linear relationship between overall market returns (R_{mt}) and the individual stock returns (R_{it}), and (iii) the effect of firm-specific events is meant to be fully captured in the unsystematic component (e_{it}) and the information signal, i.e., dividend announcement and market returns (R_{mt}) are independent.

Dangol (2012) discovered that the Nepalese stock market suffered from the thin trading (infrequent trading) problem. First, such problems lead to autocorrelation structure in the returns series (Miller et al., 1994). The returns series are required to correct without autocorrelations in the series. Second, these effects have centred on price-adjustment delays and trading frictions which cause the observed returns on stocks to depart from their true value (Strong, 1992). Third, price-adjustment delays result in an error-in-variables problem in the ordinary least squares market model regression model resulting in biased and inconsistent beta estimates.

To remove the problem of thin-trading and its effect on event methodology[4], the study applies a correction to the observed overall index by using a methodology proposed by Miller et al. (1994). Thus, the proposed model to investigate about abnormal returns on stock due to dividend announcements is as under:

$$R_{it} = \alpha_i + \beta_i R_{mt}^{adj} + e_{it} \quad \text{.....(2)}$$

Where, R_{it} = the return of stock *i* on day *t* = $\text{Ln}\left(\frac{P_t}{P_{t-1}}\right)$

R_{mt}^{adj} = the adjusted market return on day *t*[5]

R_{mt} = the unadjusted market return on day *t* = $\text{Ln}\left(\frac{\text{NEPSE}_{mt}}{\text{NEPSE}_{mt-1}}\right)$

e_{it} = a random error term for stock *i* on day *t*

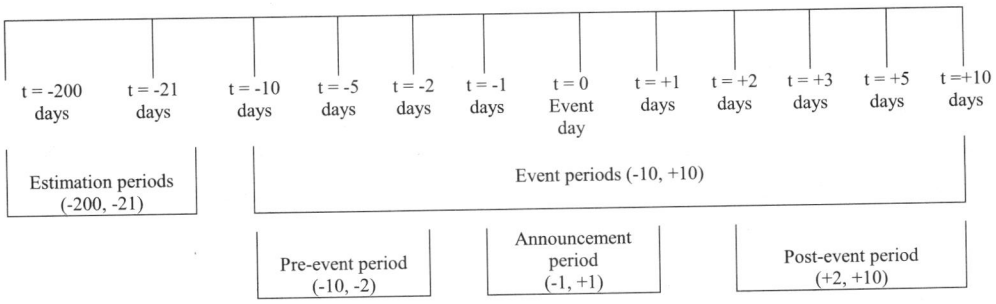
α_i and β_i = firm independent coefficients to be estimated

Here, the returns series are taken in logarithm as suggested by Strong (1992). The market model is estimated for each company in the sample using 180 daily returns. The estimated period starts 200 days before the announcement date and ends of 21 days before the announcement date (or day t = - 200 to day t = -21). The length of the estimation period used in this study is consistent with prior studies of capital market responses (Bosch & Hirchey, 1989, Hovav & D'Arcy, 2003, Dasilas & Leventis, 2011). The estimated parameters and the realised returns on the adjusted overall NEPSE market index have been used to predict normal returns before and after the event period.

The study confined to six separate events periods for a 21 days around the event announcement (i.e. –10 days to +10 days) as suggested by Cheng and Leung (2006). Event day *t* = 0, is the date when firm *i* makes the announcements of dividend[6]. The shorter event window is selected to test the effects of dividend events, are quickly incorporated into stock prices. McWilliams and Siegal (1997) argued that the assumption of market efficiency is difficult to reconcile with the use of a long event window.

Figure 1. Parameter estimation and event periods

The figure reports parameter estimation and different major dividend event periods. The total event period is for 21 days around the dividend event announcement (*i.e.* –10 days to +10 days). The market model has estimated its coefficient for each sample company using 180 daily returns. The estimated period starts 200 days before the announcement date and ends 21 days before the announcement date (or day t = - 200 to day t = -21). The category of event periods covers the complete event window in major three separate segments: (1) the pre-event period (-10, -2), ten trading days prior to the information announcement, $t - 10$, to two day prior to the date of announcement day (*i.e.* day $t = -10$ to $t = -2$; (2) the announcement period (-1, +1), one trading day prior to the dividend information announcement, $t - 1$, to one trading day after the date of dividend announcement (*i.e.* day $t = -1$ to $t = +1$) and (3) the post announcement period (+2, +10), two trading days after the announcement, $t + 2$, to ten trading days after the dividend announcement, $t + 10$; (*i.e.* day $t = +2$ to $t = +10$). Event day $t = 0$, is the date when firm i makes the announcement of new unanticipated dividend information.



The coefficient estimates from regression equation are used to predict normal returns for the six events periods: (-10, -2), (+2, +10), (-10, +10), (-5, +5), (-3, +3) and (-1, +1). Prediction errors during the event periods, *i.e.*, deviations of realisation returns from normal returns, are estimates of abnormal returns (AR). Thus, the market model is used to calculate an abnormal return for the common stock of a firm i on event day t, as under:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}^{Adj}) \quad \ldots\ldots(3)$$

The null hypothesis to be tested is that the average abnormal returns and cumulative abnormal return are equal to zero for any given event period. More formally, for a sample of N securities, the mean abnormal returns on any given day t is:

$$\overline{AR}_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \quad \ldots\ldots(4)$$

To measure abnormal returns over a specific time interval or holding period, the sample mean abnormal returns are summed to derive the sample mean cumulative abnormal returns as under:

$$\overline{CAR}_t = \sum_{t=T_1}^{T_2} \overline{AR}_t \quad \ldots\ldots(5)$$

where, T_1 and T_2 identify beginning and ending days of sample-specific event periods within the overall 21 days t = -10 to t = +10 event period. The test t-statistic for the significance of $\overline{AR}_t$ is calculated as under:

$$t - \text{statistic (for AR)}^{7} = \frac{\overline{AR}_t}{\hat{S}(\overline{AR}_t)} \quad \ldots\ldots(6)$$

where,

$$\hat{S}(\overline{AR}_t) = \sqrt{\sum_{t=-200}^{t=-21} \frac{(\overline{AR}_t - \overline{\overline{AR}}_t)^2}{179}} \quad \ldots\ldots(7)$$

$$\overline{\overline{AR}} = \frac{1}{180}\sum_{t=-200}^{t=-21} \overline{AR}_t \quad \ldots\ldots(8)$$

where, t = -200 to t = -21 is the 180 days estimation period. The interval test statistic for each sample and each holding period of T days in length is assumed to be approximately unit-normal and can be written as under and follows a *t*-statistic distribution:

$$t - \text{statistic (for CAR)} = \frac{\overline{CAR}_t}{\hat{S}(\overline{AR}_t)\sqrt{T_2 - T_1 + 1}} \quad \ldots\ldots(9)$$

The significance of daily and cumulative average abnormal returns is further tested using a non-parametric binominal statistic calculated as under:

$$Z = \frac{A - E}{\sqrt{NP(1-P)}} \quad \ldots\ldots(10)$$

where, A is the actual number of positive abnormal returns, E is the expected number of positive returns (i.e., equal to N × P), N is the number of observations, and P is the expected percent of positive abnormal returns. Under the null hypothesis of no effect, P = 0.5. The binomial Z statistic tests whether the proportion of positive to negative returns exceeds the number expected from the market model. This binomial Z statistic is more conservative than the t-statistic test and does not require the assumption of normality.

5.3.2 Methodology to test Hypothesis 2: Relation between dividend changes announcements and firm-specific factors

Thus, the model has regressed the cumulative abnormal returns on the event period ($CAR_{-1 \text{ to } +1}$) obtained from market model independent variables, such as dividend yield (DY), firm size (SIZE), percentage change in dividend (ΔD), Market-to-book ratio (MB), dummy for market conditions (MC) and dummy for time specific (YEAR).

The model is reported as follows:

$$CAR_{i,-1 \text{ to } +1} = \alpha + \beta_1 \Delta D_i + \beta_2 DY_i + \beta_3 SIZE_i + \beta_4 MB_i + e_{it} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (11)$$

$$CAR_{i,-1 \text{ to } +1} = \alpha + \beta_1 \Delta D_i + \beta_2 DY_i + \beta_3 SIZE_i + \beta_4 MB_i + \beta_5 MC_i + \beta_6 YEAR_i + e_{it} \quad \ldots (12)$$

where,

$CAR_{i,-1 \text{ to } +1}$	=	Cumulative abnormal return for share *i*, during announcement period (-1,+1)
ΔD	=	the percentage change in the dividend from year to year
DY	=	dividend yield estimated as the ratio of the annual dividend over the price one day prior to the dividend announcement day
SIZE	=	the firm size as measured by the logarithmic market capitalisation one day prior to the dividend announcement day
MB	=	Market-to-book ratio one day prior to the dividend announcement day
MC	=	Dummy variable of market conditions, value 1 if up market condition, zero otherwise
YEAR	=	Dummy variable of year specification, value 1 if time period is classify current period, zero otherwise

6. EMPIRICAL TEST RESULTS

6.1 Test results of the hypothesis 1: Relations between dividend change announcements and the market reaction

6.1.1 Abnormal returns

The average daily abnormal returns from day t = -10 to day t = +10, and t-statistic are shown in Tables 2, 3, 4 and 5. The tables also report the distribution of cumulative average abnormal returns, and t-statistic, with event periods of different length such as (-10, -2), (+2, +10), (-10, +10), (-5, +5), (-3, +3) and (-1, +1).

The prior expectations such as, dividend initiations and dividend-increase (good-news) announcements cause strong positive average abnormal returns, and dividend decrease (bad-news) announcements cause strong negative average abnormal returns either daily or cumulative. Similarly, there is no significant average abnormal return in the case of dividend no-change (no-news). The dividend initiations and increase-announcements are bound to introduce substantial certainty about the future course of the firm business and the share market.

It has enhanced the investors' confidence. Thus, a positive value-effect may be expected from the dividend initiations and increase announcements. Similarly, the dividend decrease announcements are bound to introduce substantial uncertainty about the future course of the firm business and its returns, and therefore, it results in loss of investors' confidence. Thus, a negative value-effect might be expected from the dividend-decrease announcements.

Abnormal returns: Dividend initiation

According to Table 2, the highest positive abnormal returns among the event window is 0.028 per cent with statistically significant at the 1 per cent level in both parametric *t*-test ($t = 5.275$) and non-parametric Z-test ($Z = 4.017$) on the day of the dividend announcements. It indicates that the dividend announcement with the dividend initiation (good-news) is the strong positive signal effect to the Nepalese stock market only for the announcement day. The average abnormal return on day $t = 0$ (0.028 per cent) is larger than the average return on any day of ten prior or ten subsequent days.

In case of the cumulative average abnormal returns over the pre-announcement period, the figure (-10, -2) is 0.011 per cent without being statistically significant. The cumulative average prediction error improved to 0.035 per cent (t-statistic = 3.902, $Z = 2.921$, significant at the 1 per cent level in both tests) during the announcement period (-1, +1). It reduced to 0.005 per cent on the post-event period (+2, +10) without being statistically significant. It indicates that 86 per cent of the positive abnormal returns during the announcement period (-1, +1) has been cancelled out by the post-event period (+2, +10). Hence, there is a strong positive valuation effect on dividend-initiation sub-sample to the share market around the dividend announcement periods.

The other three overlapping event periods (-10, +10), (-5, +5) and (-3, +3) have also produced strong positive cumulative average abnormal returns. During the event period (-10, +10), the cumulative average abnormal return is 0.052 per cent (*t*-statistic = 2.172, $Z = 2.556$, significant at the 5 per cent level). The cumulative average abnormal return over the period (-5, +5) reduced to 0.036 per cent (*t*-statistic = 2.090, significant at the 5 per cent level). Similarly, the cumulative average abnormal return over the period (-3, +3) has again fallen down to 0.033 per cent (*t*-statistic = 2.049, significant at the 1 per cent level). It means that the dividend initiation sub-samples show higher positive abnormal returns around the announcement event period. Thus, the dividend initiations sub-sample of the dividend announcements has placed the positive valuation effects around the announcement period.

Abnormal returns: Dividend increase

Table 3 shows the abnormal returns during dividend increases announcement events. On the day of the dividend announcements, the highest positive abnormal returns among the event window is 0.029 per cent with statistically significant at the 1 per cent level in both parametric *t*-test (t = 8.770) and non-parametric Z-test (Z = 4.180). The t-value and Z-value are much higher in the case of dividend-increase than that of dividend initiation events on the event day. It indicates that the dividend announcement with the dividend increase (good-news) is the strong positive signal effect to the Nepalese stock market than dividend initiation event. In both cases of dividend initiation and dividend increases, there are statistically significant positive abnormal returns in the dividend announcement day as per expectations. The results are similar to the notion of the efficient market hypothesis. The result explains that the statistically positive effect of the dividend-increase (good-news) announcement is only for the announcement day. The average abnormal return on day t = 0 (0.029 per cent) is bigger than the average return on any day of ten prior or ten subsequent days.

In case of the cumulative average abnormal returns over the pre-announcement period, the figure (-10, -2) is 0.001 percent without being statistically significant. The cumulative average abnormal returns has improved to 0.032 per cent (t-statistic = 5.729, Z = 2.832, significant at the 1 per cent level in both tests) during the announcement period (-1, +1). It has reduced to -0.006 per cent on the post-event period (+2, +10) without being statistically significant. It indicates that the 119 per cent of the positive excess returns during the announcement period (-1, +1) are cancelled out by the post-event period (+2, +10). Hence, there is a strong positive valuation effect on dividend-increases (good-news) sub-sample to the share-market around the dividend announcements periods.

The other three overlapping event periods (-10, +10), (-5, +5) and (-3, +3) have also produced strong positive cumulative average abnormal returns. During the event period (-10, +10), the cumulative average abnormal return is 0.028 percent without being statistically significant. The cumulative average abnormal return over the period (-5, +5) is 0.034 per cent (*t*-statistic = 3.143, significant at the 1 percent level). Similarly, the cumulative average abnormal returns over the period (-3, +3) has increased to 0.036 per cent (*t*-statistic = 4.235 and Z = 3.101, significant at the 1 per cent level in both tests). It means that the dividend-increase sub-samples appear to the higher positive abnormal returns around the announcement event period. Thus, the dividend-increase announcement has placed the positive valuation effects around the announcement period.

Table 2. Summary of average daily abnormal returns for the dividend initiation sample of dividend announcements over the period July 2000 to July 2011

The table reports the average daily abnormal returns for day $t = -10$ to day $t = +10$. The sample consists of a total 30 dividend initiation announcements for the companies listed with the NEPSE for the period covering July 2000 to July 2011. The market model is considered for the normal returns. Average abnormal returns is the simple average abnormal return for the specified day of the event time; and cumulative average abnormal returns is the simple cumulative average abnormal return for the specified event window. The event time is measured in days relative to the dividend announcement date.

Panel A: Average daily Abnormal Returns

Day	Average Abnormal Returns (%)	*t*-Statistic for Average Abnormal Returns	Percentage Positive Abnormal Returns	Z-Statistic for Percentage Positive Abnormal Returns
-10	0.001	0.152	36.67	-1.461
-9	0.004	0.810	53.33	0.365
-8	0.002	0.358	50.00	0.000
-7	-0.007	-1.291	36.67	-1.461
-6	0.008	1.451	70.00	2.191
-5	0.002	0.403	63.33	1.461
-4	0.003	0.534	63.33	1.461
-3	-0.003	-0.669	43.33	-0.730
-2	0.002	0.408	50.00	0.000
-1	0.002	0.444	50.00	0.000
0	0.028	5.275*	86.67	4.017*
1	0.005	1.039	46.67	-0.365
2	0.002	0.358	53.33	0.365
3	-0.003	-0.483	43.33	-0.730
4	-0.004	-0.788	46.67	-0.365
5	0.002	0.411	43.33	-0.730
6	0.009	1.770	66.67	1.826
7	0.001	0.116	53.33	0.365
8	0.001	0.276	53.33	0.365
9	0.001	0.286	53.33	0.365
10	-0.005	-0.908	36.67	-1.461

Panel B: Cumulative average abnormal returns

Period	Cumulative Average Abnormal Returns (%)	t-Statistic for Cumulative Average Abnormal Returns	Percentage Positive Cumulative Abnormal Returns	Z-Statistic for Percentage Positive Abnormal Returns
(+2, +10)	0.005	0.346	56.67	0.730
(-10, +10)	0.052	2.172**	73.33	2.556**
(-5, +5)	0.036	2.090**	63.33	1.461
(-3, +3)	0.033	2.409**	66.67	1.826
(-1, +1)	0.035	3.902*	76.67	2.921*
(-10, -2)	0.011	0.719	60.00	1.095

** Significant at the 5% level (two-tail test)
* Significant at the 1% level (two-tail test)

Table 3. Summary of average daily abnormal returns for the dividend increase sample of dividend announcements over the period July 2000 to July 2011

The table reports the average daily abnormal returns for day t = -10 to day t = +10. The sample consists of a total 55 dividend-increase announcements for the companies listed at the NEPSE for the period of July 2000 to July 2011. The market model is considered for the normal returns. Average abnormal returns is the simple average abnormal return for the specified day of the event time; and cumulative average abnormal returns is the simple cumulative average abnormal return for the specified event window. The event time is measured in days relative to the dividend announcement date.

Panel A: Average daily Abnormal Returns

Day	Average Abnormal Returns (%)	*t*-Statistic for Average Abnormal Returns	Percentage Positive Abnormal Returns	Z-Statistic for Percentage Positive Abnormal Returns
-10	-0.002	-0.647	43.64	-0.944
-9	0.001	0.388	50.91	0.135
-8	0.002	0.480	49.09	-0.135
-7	-0.003	-0.848	52.73	0.405
-6	0.002	0.493	50.91	0.135
-5	0.000	-0.091	41.82	-1.214
-4	-0.001	-0.277	47.27	-0.405
-3	0.002	0.509	43.64	-0.944
-2	0.001	0.426	49.09	-0.135
-1	0.005	1.442	52.73	0.405
0	0.029*	8.770	78.18*	4.180
1	-0.001	-0.289	40.00	-1.483

2	0.003	0.817	52.73	0.405
3	-0.002	-0.470	43.64	-0.944
4	-0.005	-1.440	38.18	-1.753
5	0.003	1.027	49.09	-0.135
6	-0.003	-0.826	40.00	-1.483
7	-0.001	-0.431	60.00	1.483
8	0.000	0.114	56.36	0.944
9	0.000	0.027	52.73	0.405
10	-0.002	-0.693	49.09	-0.135

Panel B: Cumulative average abnormal returns

Period	Cumulative Average Abnormal Returns (%)	t-Statistic for Cumulative Average Abnormal Returns	Percentage Positive Cumulative Abnormal Returns	Z-Statistic for Percentage Positive Abnormal Returns
(+2, +10)	-0.006	-0.625	40.00	-1.483
(-10, +10)	0.028	1.851	50.91	0.135
(-5, +5)	0.034*	3.143	61.82	1.753
(-3, +3)	0.036*	4.235	70.91*	3.101
(-1, +1)	0.032*	5.729	69.09*	2.832
(-10, -2)	0.001	0.145	49.09	-0.135

** Significant at the 5% level (two-tail test)
* Significant at the 1% level (two-tail test)

Table 4. Summary of average daily abnormal returns for the dividend decrease sample of dividend announcements over the period July 2000 to July 2011

The table reports the average daily abnormal returns for day t = -10 to day t = +10. The sample consists of a total 37 dividend decrease announcements for the companies listed at the NEPSE for the period of July 2000 to July 2011. The market model is considered for the normal returns. Average abnormal returns is the simple average abnormal return for the specified day of the event time; and cumulative average abnormal returns is the simple cumulative average abnormal return for the specified event window. The event time is measured in days relative to the dividend announcement date.

Panel A: Average daily Abnormal Returns

Day	Average Abnormal Returns (%)	*t*-Statistic for Average Abnormal Returns	Percentage Positive Abnormal Returns	Z-Statistic for Percentage Positive Abnormal Returns
-10	0.002	0.446	48.65	-0.164
-9	0.001	0.122	40.54	-1.151
-8	-0.003	-0.582	37.84	-1.480
-7	-0.003	-0.595	51.35	0.164
-6	0.005	1.121	56.76	0.822
-5	-0.005	-1.092	37.84	-1.480
-4	0.009	1.929	62.16	1.480
-3	-0.002	-0.505	51.35	0.164
-2	0.004	0.725	56.76	0.822
-1	0.006	1.127	51.35	0.164
0	-0.011	-2.250**	29.73	-2.466**
1	0.006	1.157	59.46	1.151
2	-0.002	-0.448	48.65	-0.164
3	0.001	0.272	62.16	1.480
4	0.001	0.207	56.76	0.822
5	-0.004	-0.887	40.54	-1.151
6	0.001	0.184	40.54	-1.151
7	-0.001	-0.255	48.65	-0.164
8	0.001	0.105	45.95	-0.493
9	0.000	-0.090	43.24	-0.822
10	0.006	1.153	62.16	1.480

Panel B: Cumulative average abnormal returns

Period	Cumulative Average Abnormal Returns (%)	t-Statistic for Cumulative Average Abnormal Returns	Percentage Positive Cumulative Abnormal Returns	Z-Statistic for Percentage Positive Abnormal Returns
(+2, +10)	0.001	0.080	45.95	-0.493
(-10, +10)	0.009	0.402	51.35	0.164
(-5, +5)	0.001	0.071	45.95	-0.493
(-3, +3)	0.000	0.030	45.95	-0.493
(-1, +1)	0.000	0.020	35.14	-1.808
(-10, -2)	0.008	0.523	48.65	-0.164

** Significant at the 5% level (two-tail test)

* Significant at the 1% level (two-tail test)

Table 5. Summary of average daily abnormal returns for the dividend no-change sample of dividend announcements over the period July 2000 to July 2011

The table reports the average daily abnormal returns for day t = -10 to day t = +10. The sample consists of a total 17 dividend no-change announcements for the companies listed at the NEPSE for the period covering July 2000 to July 2011. The market model is considered for the normal returns. Average abnormal returns is the simple average abnormal return for the specified day of the event time; and cumulative average abnormal returns is the simple cumulative average abnormal return for the specified event window. The event time is measured in days relative to the dividend announcement date.

Panel A: Average daily Abnormal Returns

Day	Average Abnormal Returns (%)	*t*-Statistic for Average Abnormal Returns	Percentage Positive Abnormal Returns	Z-Statistic for Percentage Positive Abnormal Returns
-10	-0.006	-0.838	41.18	-0.728
-9	0.006	0.852	58.82	0.728
-8	0.001	0.197	47.06	-0.243
-7	0.006	0.883	47.06	-0.243
-6	0.007	1.051	52.94	0.243
-5	0.001	0.137	47.06	-0.243
-4	0.009	1.256	47.06	-0.243
-3	0.001	0.153	41.18	-0.728
-2	0.000	0.072	41.18	-0.728
-1	-0.007	-1.003	35.29	-1.213
0	0.006	0.813	47.06	-0.243
1	0.004	0.624	47.06	-0.243
2	0.009	1.348	41.18	-0.728
3	0.004	0.632	64.71	1.213
4	0.008	1.195	58.82	0.728
5	-0.004	-0.597	47.06	-0.243
6	0.007	0.951	58.82	0.728
7	0.001	0.209	41.18	-0.728
8	0.002	0.292	52.94	0.243
9	0.005	0.774	58.82	0.728
10	0.014	2.097	58.82	0.728

Panel B: Cumulative average abnormal returns

Period	Cumulative Average Abnormal Returns (%)	t-Statistic for Cumulative Average Abnormal Returns	Percentage Positive Cumulative Abnormal Returns	Z-Statistic for Percentage Positive Abnormal Returns
(+2, +10)	0.047	2.300**	70.59	1.698
(-10, +10)	0.076	2.422**	47.06	-0.243
(-5, +5)	0.032	1.396	52.94	0.243
(-3, +3)	0.018	0.997	47.06	-0.243
(-1, +1)	0.003	0.251	29.41	-1.698
(-10, -2)	0.026	1.254	52.94	0.243

** Significant at the 5% level (two-tail test)

* Significant at the 1% level (two-tail test)

Abnormal returns: Dividend decrease

Table 4 shows average daily abnormal returns (panel A) and cumulative average abnormal returns (panel B) for the dividend-decrease (bad-news) announcements. The dividend-decrease announcements cause strong negative average abnormal returns. On day t = 0, the strong negative average abnormal returns of 0.011 per cent (| t | statistic = |-2.250| = 2.250 and Z = -2.466, both significant at the 5 per cent level) has been found, and it is similar with the prior expectation as a negative average abnormal returns during the bad-news announcements. The average excess return on day t = 0 (-0.011 per cent) is larger than the average return on any day of ten pre-event or ten subsequent days. The results explain that the strong negative valuation effect to dividend-decrease (bad-news) sub-sample only in the day of dividend announcements. Such a result is similar with the notion of the efficient market hypothesis.

The cumulative average abnormal returns over the pre-announcement period (-10, -2) is positive 0.008 per cent without being statistically significant. The cumulative average abnormal returns are 0 per cent (not significant) during the announcement period (-1, +1). Similarly, during the post-event period (+2, +10), the negative cumulative average abnormal returns is 0.001 per cent (not significant). It indicates that the positive cumulative average abnormal returns earned during the pre-event (-10, -2) drifts to less positive returns on the post-event period (+2, +10). Hence, the negative valuation effect of dividend-decrease (bad-news) announcements on share market has been found.

In the case of the overlapping event periods (-10, +10) and (-5, +5), it has produced positive cumulative average abnormal returns and event period (-3, +3) reports zero. During the event period (-10, +10), the cumulative average abnormal returns is 0.009 per cent (not significant). The cumulative average abnormal returns over the period (-5, +5) is 0.001 per cent and zero per cent during the period of (-3, +3), but these are statistically insignificant.

The results show that the longer the length of overlapping event period, higher the cumulative positive abnormal returns, which are reduced to zero with shorter event windows. It means the dividend decrease sub-sample cancelled out the positive abnormal returns by negative valuation after the event day. Thus, the dividend-decrease announcements sub-sample placed the negative valuation effects during the announcement and the post announcement periods as per prior expectation.

Abnormal returns: Dividend no-change

Table 5 shows average daily abnormal returns (panel A) and cumulative average abnormal returns (panel B) for the dividend no-changes (no-news) announcements. As per prior expectation, there is no statistically significant (at 5 per cent level) abnormal return in announcement day or any days of the 21 event periods or 3 days announcement period (day t = -1 to day t = +1). It indicates that no excess returns (zero average abnormal returns) generated during the day of dividend no-changes (day t = 0) and dividend announcement period. The results supported the philosophy of efficient market hypothesis.

The cumulative average abnormal returns over the pre-announcement period (-10, -2) is 0.026 per cent (not statistically significant). The positive cumulative average abnormal return is 0.003 per cent (not statistically significant) during the announcement period (-1, +1). It indicates that market has no reaction towards the dividend no-changes events. Similarly, during the post-event period (+2, +10), the cumulative average abnormal return is 0.047 per cent (t-statistic = 2.300), which is statistically significant at the 5 per cent level. It indicates the cumulative average abnormal return earned during the pre-event period (-10, -2) has improved on the post-event period (+2, +10). Hence, there is a positive valuation effect on dividend-no-change (no-news) announcement to share market on the post event period.

In the case of the overlapping event periods (-10, +10), (-5, +5) and (-3, +3) produced positive cumulative average abnormal returns. During the event period (-10, +10), the cumulative average abnormal return is 0.076 per cent (t-statistic = 2.422, statistically significant at the 5 percent level). The cumulative average abnormal returns are 0.032 per cent over the period (-5, +5) and the period (-3, +3) is positive 0.018 percent, but these are statistically insignificant. The longer the length of overlapping event period, higher the cumulative positive abnormal returns will be. It means that the valuation effect around the announcement date is not strong.

As per Fama (1991) stock prices get adjusted within a day to event announcements. The fact that quick adjustment is consistent with efficiency is noted. The present empirical evidences accept the Efficient Market Hypothesis. First, the positive (negative) abnormal returns with statistically significant has shown only in dividend announcement day for dividend initiations, increases (decreases). In other words, market is able to identify the dividend changed on the day of dividend announcements. Similarly, dividend-decrease firms experience statistically significant negative abnormal returns on the event day. However, there is no significant abnormal returns (nearly zero) reported in the dividend no-change firms. It indicates that the stock price adjustment has made within day of dividend announcement considering dividend initiation/increase (good-news), dividend decrease (bad-news) and dividend no-change (no-news). Second, there are no leakages of the dividend announcement information (*i.e.* insider information or private information) since no statistically significant abnormal returns have been found before announcement days (*i.e.*, day t = -10 to day t = -1) for all dividend events (initiation, increase, decrease and no-change). Third, there is no statistically significant returns during post announcement event days (i.e., day t = +1 to day t = +10) for all dividend events.

The study results with respect to dividend announcements is similar with the previous study by Pettit (1972) – who provided evidences on the hypothesis that changes in dividend levels- give out important information to market participants, *i.e.*, changes in dividend payments in assessing the value of a security.

It is noted that the study result is consistent with Kwan (1981), Aharony and Swary (1980), and Dhillon and Johnson (1994) from the viewpoint of information content dividend hypothesis. Ghosh and Woolridge (1991) opined that the rational investors react only to the unexpected news content of dividend announcements. Thus, the study results are supported the alternative hypothesis showing that the dividend changes are associated with a subsequent share price-reaction in the same direction during the dividend announcement period. The Nepalese investors are found to be rational to dividend events. The result is the evidence of efficiency of the Nepalese stock market at the semi-strong level. Similarly, the results are consistent with McCluskey et al. (2006) from the market efficiency viewpoints.

6.2.1 Test results of the hypothesis 2: Relations between dividend change announcements and firm-specific factors

To evaluate whether firm-specific factors affect the market reaction in the dividend announcement period, the study has tested the relationship between the cumulative abnormal returns in the dividend announcement period (day t = -1 to day t = +1) and the firm specific variables, estimating the regression equation 11. Apart from this, the equation 12 has also been employed to test the effect of market conditions and time specific effect. The results are shown in Table 6.

The pooled least squares have been first regressed for abnormal returns in the announcement period ($CAR_{-1,+1}$) with percentage of dividend changes (model 1). The coefficient of percentage of dividend change (ΔD) is positive and statistically significant at 1 per cent level. It indicates that the dividend changes are associated with a subsequent share price reaction in the same direction during the dividend announcement period.

Then, regression has been run for abnormal returns in the announcement period ($CAR_{-1,+1}$) with percentage of dividend change (ΔD) and dividend yield (model 2), firm's size (SIZE) (model 3) and Market-to-book ratio (MB) (model 4). The coefficient of percentage of dividend change (ΔD) is only positive and statistically significant at 1 per cent level. It indicates that the percentage of dividend changes is the dominating factor to determine abnormal returns during the dividend announcement period.

To test the joint effect of all firm-specific variables, abnormal returns in announcement period ($CAR_{-1,+1}$) have been regressed with percentage of dividend change (ΔD), dividend yield (DY), firm's size (SIZE) and Market-to-book ratio (MB) (model 5). The coefficient of percentage of dividend change (Δ D) is positive and statistically significant at 1 percent level and other such firm specific variables as dividend yield (DY), firm size (SIZE) and Market-to-book ratio (MB) are insignificant. It points to the finding that the percentage of dividend change is the main element in determining abnormal returns during the dividend announcement period. It has also been found that the variable of dividend yield (DY), firm's size (SIZE), and Market-to-book ratio (MB) do not adequately explain the phenomenon.

Table 6. Regression of market reaction to dividend-change and other variables

The table reports the regression of market reaction to dividend-change and such other fundamental variables as dividend yield, size of firm, market-to-book ratio, market condition and time specific effects considering the dependent variable as $CAR_{-1,+1}$. The $CAR_{-1,+1}$ is the cumulative abnormal returns on the 3 day period, i.e., 1 day before and 1 day after the dividend announcement day.

ΔD_i is the dividend per share changes for the year t. DY is the dividend yield estimated as the ratio of the annual dividend over the price one day prior to the dividend announcement day. SIZE is the firm size as measured by the logarithmic market capitalization one day prior to the dividend announcement day. MB is the market-to-book ratio one day prior to the dividend announcement day. MC is the dummy variable of market conditions with the value 1 if there is the up market condition, otherwise remains at zero. YEAR is the dummy variable of year specification with the value 1 if time period is classified as present period (beyond August 24, 2007), otherwise it remains at zero. The numbers in the parentheses are the p-values.

Dependable variable – $CAR_{-1,+1}$								
$CAR_{i,-1 \text{ to } +1} = \alpha + \beta_1 \Delta D_i + \beta_2 DY_i + \beta_3 SIZE_i + \beta_4 MB_i + \beta_5 MC_i + \beta_6 YEAR_i + e_{it}$								
Coefficient	**Pooled OLS**							
	1	2	3	4	5	6	7	8
Constant	0.012***	0.013	0.001	0.005	0.018	0.006	0.019***	0.003
	(.066)	(.283)	(.987)	(.701)	(.798)	(.458)	(.068)	(.970)
ΔD	0.038*	0.038*	0.038*	0.039*	0.038*	0.036*	0.037*	0.035*
	(.000)	(.000)	(.000)	(.000)	(.001)	(.001)	(.000)	(.002)
DY		-0.029			0.142			0.256
		(.928)			(.713)			(.538)
SIZE			0.001		-0.002			-0.001
			(.860)		(.774)			(.904)
MB				0.001	0.002			0.002
				(.490)	(.430)			(.489)
MC						0.017		0.013
						(.180)		(.396)
YEAR							-0.011	-0.009
							(.378)	(.565)
F	14.659*	7.209*	7.222*	7.483*	3.714*	8.266*	7.660*	2.796**
	(.000)	(.001)	(.001)	(.001)	(.008)	(.001)	(.001)	(.016)
Adjusted R^2	0.130	0.120	0.120	0.125	0.107	0.138	0.128	0.106
Durbin-Waston (D-W)	2.054	2.052	2.059	2.031	2.018	2.004	2.047	1.993
N	92	92	92	92	92	92	92	92

* Significantly different from zero at the 1% level

** Significantly different from zero at the 5% level

*** Significantly different from zero at the 10% level

To test the effect of the market condition (i.e., up and down market status), abnormal returns in announcement period ($CAR_{-1,+1}$) have been regressed with the dummy variable of 'market condition' (model 6). The result of regression finds that the coefficient of ΔD is statistically significant at 1 percent level and the coefficient of market condition is statistically insignificant. Similarly, to test the effect of time specific as present and past, abnormal returns in the announcement period ($CAR_{-1,+1}$) have been regressed with the dummy variable of time (YEAR) (model 7). The result of regression finds that the coefficient of ΔD is statistically significant at 1 per cent level, and the coefficient of time (YEAR) is statistically insignificant.

In model 8 of regression, to test the effect of joint effects, abnormal returns in announcement period ($CAR_{-1,+1}$) have been regressed with all firm-specific variables, dummy variable of 'market condition' as well as a dummy variable of time specific. The result of regression finds that the coefficient of ΔD is statistically significant at 1 percent level and the coefficient of all other variables are statistically insignificant.

Overall, it indicates that the percentage of dividend changes is the main explanatory variable in determining abnormal returns during the dividend announcement period. The significant market reaction to dividend change announcement is the evidence for agreeing with the "information content of dividend hypothesis". The results are similar with Pettit (1972), Aharony and Swary (1980), Kwan (1981), Dhillon and Johnson (1994), Lonie et al. (1996), Abdullah et al. (2002), Al-Yahyaee et al. (2011) and Dasilas and Leventis (2011) from the viewpoint of information content dividend hypothesis. Similarly, the results are consistent with McCluskey et al. (2006) from the market efficiency viewpoint.

The dividend yield (DY), the firm's size (SIZE) and Market-to-book ratio (MB) has no explanatory power. Similarly, there is no effect of market conditions and time specific during the dividend announcement. Thus, the study result supports the null hypothesis, *"Firm-specific factors do not affect the market reaction around the dividend change announcement period"*. It indicates that the Nepalese stock market reacts only to the dividend change announcement around the dividend announcements date. The results are in agreement with the notion of semi-strong form of market efficiency, which advocates that the fundamental analysis is unable to earn abnormal returns from the market, and security prices reflect all publicly available information.

7. CONCLUSIONS

The study results are in consonance with the dividend information content hypothesis as well as with the semi-strong form of efficient capital market hypothesis. On an average; the Nepalese stock market adjusts in an efficient manner to new dividend information according to the dividend changes. Almost all of the price adjustments have occurred within the dividend announcement date. As per the pre-set expectation, the dividend initiation (dividend omission) and dividend-increase (dividend-decrease) is perceived as good-news (bad-news) with only significant abnormal returns on the dividend announcement day. No significant abnormal returns are obtained on any day of the event window of 21-days during the announcement of dividend-no-change, since it is perceived by the market as 'no-news' event.

The percentage of dividend changes is the main explanatory variable to determine abnormal returns during the dividend announcement period rather than such other fundamental variables as dividend yield (DY), firm's size (SIZE) and Market-to-book ratio (MB). Similarly, the market trend and time (specific) period have no effect to adjust stock prices on the day of dividend announcements.

Thus, the debate over the empirical validity of the dividend signalling hypothesis and the efficient market hypothesis are remains alive in the finance literature.

Notes

1. The first year 2000/01 is conditioned by the availability of information regarding the number as well as name of firm's dividend announcement in the annual report of SEBON.
2. Strong (1002) argued that the market model has probably been the most popular benchmark employed in the event studies.
3. An event study is the name given to an empirical investigation of the relationship between stock prices and economic events.
4. The thin trading on stock returns series have improved by Miller et al. (1994) model.
5. To separate the effect of thin trading; the study has applied a correction to the observed overall index by using a methodology proposed by Miller et al. (1994) as follows:

$$R_{mt} = \alpha_1 + \alpha_2 R_{mt-1} + \varepsilon_t$$

$$R_{mt}^{adj} = \frac{\varepsilon_t}{(1 - \alpha_2)}$$

6. The Day-zero in the event time is the dividend announcement date reported by the concerned company. In case, the stock trading is not undertaken at the NEPSE during the time of dividend announcement date (i.e. announcements made in public holiday, on Friday or after floor-closure, and closure of the trading due to other reasons), then the next trading day is considered as the dividend announcement day, i.e., day t = 0.
7. The corresponding t-statistics assumes independent drawings from identically distributed normal population. It is, therefore, implicitly assumed that the mean effect of the event is identical across stocks.
8. Dividend change refers to the dividends measured in percentage of differences between the current and last fiscal years. So it is not applicable in the case of dividend initiations.

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