

Market Reaction To Changes In Dividend Payments Policy In Jordan

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ABSTRACT

The purpose of this paper is to examine empirically the signalling theory for a sample of firms listed at Amman Stock Exchange (ASE) during the period 2001 to 2006. The sample consists of 215 observations. The Event Study Methodology (ESM) is employed to examine the market reaction to dividend change announcements. The naïve model is used to classify the sample under four sub samples; Dividend Increase, Dividend Decrease, Dividend No Change and No Dividend No Change. The market model, mean adjusted model, market adjusted model, market model adjusted with Scholes and Williams and market model adjusted with Fowler and Rorke models are used to generate the expected returns. Also, the t-test, ZD test and Corrado's non-parametric test are used to examine the significance of the mean and cumulative abnormal returns. Overall, the results show that the market reacts positively to dividend increase, dividend decrease and dividend no change announcements. In addition, the results indicate that there is no significant market reaction to dividend no change sample with zero distributions. This result indicated that there is little value-relevance to dividend change announcements. The interpretation of the positive market reaction is related to dividend release announcements rather than dividend changes. Therefore, there is some support to the signalling hypothesis to dividend release. Furthermore, applying thin trading models and non-parametric tests leads to the same conclusion.

Keywords: Dividend Payments Policy in Jordan; Changes in Dividend Payments; Amman Stock Exchange (ASE)

1 INTRODUCTION

Financial markets play a crucial role in facilitating the intermediation process between savers and borrowers, thereby helping translate savings into investments. The more efficient this process, the less is the cost of investing, and subsequently, the higher the rate of investment/saving. The development of stock exchanges is crucial to achieve economic growth for developing economies. The increasing globalisation of financial markets has heightened interest in emerging markets. However, much of the research in accounting and finance has focused on developed markets, in particular, the US and European markets. The assumptions which underpin the models employed in developed markets provide a challenge when examining emerging markets such as the Amman Stock Exchange (ASE).

The topic of dividend policy remains one of the most controversial issues in corporate finance. For more than half a century, financial economists have engaged in modelling and examining corporate payout policy. Research into dividend policy has shown not only that a general theory of dividend policy remains elusive, but also that corporate dividend practice varies over time, between firms and across countries, especially between developed and emerging capital markets (Glen, Karmokolias, Miller and Shah; 1995). On average, dividend payout ratios in developing countries are only about two thirds that of developed countries. Therefore, firms in emerging capital markets face more financial constraints and limited resources to finance their investment opportunities, which may result in more reliance on retained earnings and accordingly lower payout ratios. This explanation is largely speculative, since little research has been done on dividend policy in emerging equity markets (Glen *et al.* (1995)).

Miller and Modigliani (1958, 1961) demonstrated that, the market value of a firm is independent of its dividend policy, assuming rational investors and a perfect capital market. The value of the firm is determined solely by its earning power and investment decisions, which are independent of dividend policy. The dividend irrelevance hypothesis has been central to the development of financial economics as a scientific discourse. In particular, it helped to integrate dividend policy into the wider theoretical discipline of financial economics by giving it similar theoretical underpinnings. In an attempt to develop more empirically supported models of dividend policy, financial economists have proposed a number of competing theories. These have attempted to explain the actual patterns of corporate dividend behaviour and why dividend policy is relevant in the real world, where hypothesised perfect markets do not exist. Identifying which market imperfection matter in determining dividend policy has formed the basis of the subsequent dividend relevance theories.

Several theories have been proposed in the literature to explain dividend payout policies. These include the signalling, agency cost, tax clienteles and the transaction cost theories. The results from the empirical literature show that the dividend payout decision is complex, and cannot be characterised by any one theory. The signalling hypothesis is the most common theory used to explain dividend payout. In asymmetric information environment dividends provide a means to convey management's private information to outsiders. Event Study Methodology is used to examine the signalling hypothesis in the short run (e.g., days). This is crucial because if the market reacts to an event (e.g., dividend change), then this event will be related to information content and hence support the signalling hypothesis.

The existing literature has concentrated mostly on examining dividend policy in developed capital markets, especially the US and European markets. Relatively limited evidence exists in relation to emerging markets. Among the first to examine corporate dividend policy in emerging markets was Glen *et al.* (1995) who concluded that:

The evidence presented here provides insight into the dividend policies of emerging market firms, but it also illustrates the complexity of this issue and leaves many unanswered questions. A better understanding of dividend behaviour in these countries will require much additional research, both at the aggregate and firm levels.

This suggests that more research needs to be done on dividend policy in emerging markets, in general. Therefore, this study builds upon the aforementioned studies in the emerging markets to examine the market reaction to dividend change announcements in Jordan.

The remainder of this study is structured in the following manner. Section 2 reviews the literature. Section 3 highlights data and methodology employed, while section 4 presents empirical results. The final section, 5, outlines the conclusion.

2 LITERATURE REVIEW

Relaxing the asymmetric information assumption leads to the prediction that dividends could act as a signal to investors. In an asymmetric information environment, managers possess information about the firm's current and future prospects that is not available to outsiders. This informational gap between insiders and outsiders may cause the true intrinsic value of the firm to be unavailable to the market. According to the signalling hypothesis, investors can infer information about a firm's future earnings through the signal coming from dividend announcements, both in terms of the stability of, and changes in, dividends. However, for this hypothesis to hold, managers should firstly possess private information about a firm's prospects, and have incentives to convey this information to the market. Secondly, a signal should be true: that is, a firm with poor future prospects should not be able to mimic and send false signals to the market by increasing dividend payments. Thus the market must be able to rely on the signal to differentiate among firms. If these conditions are fulfilled, the market should react favourably to the announcements of a dividend increase and unfavourably otherwise (e.g., Ang, 1987; and Koch and Shenoy, 1999). Miller and Modigliani (1961) recognised this imperfection may result in dividends changes leading to a revision in equity value. This proposition has since become known as the "information content of dividends" or the signalling hypothesis.

The most cited dividend signalling models can be found in Bhattacharya (1979), John and Williams (1985), and Miller and Rock (1985). In general, these models are based on several assumptions. There is asymmetric information between corporate insiders (managers) and outside investors (shareholders). Dividends contain information about the firm's current and future cash flows, and managers have incentives to convey their private information to the market through dividend payments in order to close the information gap. The announcement of a dividend increase will be taken as good news and the market will bid up share prices accordingly. Similarly, an announcement that a dividend will be cut suggests unfavourable prospects and will tend to see the firm's share price fall. Dividends are considered a credible signalling device because of the dissipative costs involved. For example, in Bhattacharya's (1979) model the cost of signalling is the transaction cost associated with external financing. In Miller and Rock's (1985) model the dissipative cost is the distortion in the optimal investment decision, whereas in John and William's (1985) model the dissipative signalling cost is the tax penalty on dividends relative to capital gains. Therefore, only good-quality firms (under-valued) can use dividends to signal their prospects, and poor-quality firms cannot mimic by sending a false signal to the market because of the costs involved in that action.

Number of empirical studies followed the theoretical work of signalling models mentioned by Bhattacharya (1979), John and Williams (1985) and Miller and Rock (1985) and the primary work of Pettit (1972) has been the source of debate on the information content of dividend. These debates based on the idea that insiders of a firm have better information regarding the firm's earnings potential than do market participants, and that to maximize shareholder wealth, insiders reveal this information to the market by taking some observable action. The market subsequently uses this new information to update its expectations regarding the firm's earnings prospects, and as a result of this process a new stock price is determined. The existence of asymmetric information in the market makes dividends "relevant", and changes in dividends are therefore a source of information about a firm's earnings potential.

One of the primary literatures that investigated the stock price reaction to dividend announcements was conducted by Pettit (1972). Pettit (1972) empirically examined the efficiency with which information that may be conveyed by announcements of changes in dividends payments is impounded into the security's price. In his study, firms were cross-classified according to the estimated dividends and earnings information conveyed to the market. Earning information was classified into two groups (positive or negative) according to whether actual reported quarterly earnings exceeded or fell short of expected earnings. Expected earnings were formed from estimates of relationship that exists between firms' (growth adjusted) earnings and "market earnings". Dividend classes were made up of: omissions, reductions, no change, less than 10 percent increase, 10 to less than 25 percent increase, 25 percent increase and greater and initial payment. The intent was to provide reasonable homogeneous dividend information groups as a basis of testing the hypothesis that dividends convey information. For each of these earning-dividend classes an abnormal performance index used the market model. The conclusion that a significant level of new information was being conveyed by dividend announcements was based on two findings. First, the performance indices were highest for the initial dividend payment group and declined as dividend performance became worse within the earnings classes. Second, for all but the "no change" group the dividend announcement seemed to dominate the earnings announcement. Their results found that dividend announcement do convey valuable information. However, Watts (1973) and Gonedes (1978) came to the opposite conclusion. They contend that unexpected dividend changes communicate no information beyond that reflected in other contemporaneous variables such as earnings. Laub (1976) and Pettit (1976) challenged Watt's findings, and Watts (1976) rebutted these challenges. However, all of these studies are based primarily on monthly stock returns.

Market reaction of dividend announcements was tested by investigating abnormal returns around dividend change release dates. Charest (1978) documented the risk and return behaviour of common stocks around dividend changes and assessed NYSE efficiency with respect to selected dividend information from the 1947-1967 periods. Using large unexpected dividend changes, he showed a 5.37 percent positive abnormal return over twelve months after the changes for the dividend increase group, and a -12.9 percent negative abnormal price adjustment over the same period for the dividend decrease group. He concluded that the NYSE fails to adjust fully to dividend information within a reasonable period. Furthermore, Charest found that the announcement of a dividend increase generates an excess return of about 1%. Because his study makes no effort to remove the effect of contemporaneous earnings announcements, Charest concludes that his evidence does not necessarily reveal the presence of information in dividend announcements. Eades, Hess and Kim (1985) compared their results to those of Charest

(1978) and found similar results to dividend increases and no evidence for sluggish market response to dividend decreases.

Aharony and Swary (1980) document a small but significant dividend announcement effect separate from the information impact of earnings announcements. Their analysis focuses on dividend announcement dates that differ from earnings announcement dates by at least 11 days. For dividend increases they found a significant average excess return of about 1% over the 2-day announcement period. Their study also supports the semi-strong form of the efficient capital market hypothesis. There is no leakage of information prior to the dividend announcement, and the full impact of the announcement is concentrated in the 2-day announcement period.

In the argument of how the market reacts over a period followed the dividend announcements. Some of studies provide evidence of post-announcement drifts for dividend change. Dielman and Oppenheimer (1984) found that prices continue to adjust for approximately one month following large dividend changes. On the other hand, using more than 70,000 dividend announcements and twenty-trading-day period, Eades *et al.* (1985) concluded that the lag in the market response to dividend announcements is largely due to ex-dividend effects. Michaely, Thaler and Womack (1995) found that price continue to drift after dividend initiations and omissions. Bae (1996) investigated the possibility that post-announcement drifts accompany dividend changes. Their results indicated that statistically significant post-announcement drifts were present for quarterly dividend changes and that these drifts were not an artefact of similar drifts reported previously for earnings announcements. Although these studies report a significant reaction to dividend releases during the announcement period, they provided inconsistent results about the duration of post-announcement reactions.

In the case of dividend initiation and omission announcements, Michaely *et al.* (1995) found that the short-run price impact of dividend omissions is negative and that of the initiations is positive, and initiation reactions are about one-half the magnitude of the market reaction to omission announcements. Moreover, Kosedag and Michayluk (2000) documented the share price response to dividend initiation announcements in a sample of newly traded firms. They examined firms that recently completed an IPO as well as firms that recently completed a reverse-LBO. They found that the IPO firms react with a positive 1% abnormal return at the dividend initiation announcements and the reverse-LBO firms have no abnormal share price reaction when initiate dividends in the year following their return to public markets. Their explanation for their results is that, the dividend may be anticipated and hence, no share price reaction is noted at the time of announcement.

In UK, McCaffrey and Hamill (2000) examined the market reaction to dividend initiation announcements by IPO in the UK. Their data consisted of 131 official listed (OL) and 139 unlisted securities market firms covering the period 1982-1991. They found a positive abnormal return around dividend initiation announcements. Furthermore, they found that unexpected earnings are significantly positively related to the announcement day and unexpected dividends are significantly positively related to official listed sample only. McCluskey, Burton and Sinclair (2006) provided evidence on the Irish stock market. They found little value-relevant information contained in dividend changes. Their results suggested that dividend announcements are important for Irish investors, but earning signals appear to have a stronger impact on equity value.

In Japanese Stock Market, Fukuda (2000) investigated the abnormal stock returns following dividend changes. Applying annual data from Japanese stock market for the period 1990 to 1994, he found that the market perceives dividend increases and initiations as good news and, hence, stock prices react positively for these announcements, and negatively for dividend decreases and omissions.

Furthermore, a study examining one of the emerging markets (Cyprus) was held by Travlos, Trigeorgis, and Vafeas (2001), they examined the stock market reaction to announcement of cash dividend increase and bonus issues (stock dividends) in the emerging stock market of Cyprus. They elicited a significant positive abnormal return for the both events. Their study contended that special characteristics of the Cyprus stock market delimit applicability of most traditional explanations for cash and stock dividends in favour of an information signalling explanation. In another emerging market, Dasilas (2007) documented a significant market reaction on dividend announcements dates when studying Athens capital market for the period 2000 to 2004. His results lend to support the signalling hypothesis.

3 DATA AND METHODOLOGY

3.1 Data

The study spans over six years from 2001 to 2006 covering all the industrial firms. The initial sample consists of 74 industrial firm listed on ASE in the year 2006. 13 industrial firms are excluded from this study if there are introduced, reintroduced or fall in bankruptcy. The sample selection procedure and justification of applying the industrial firms is that the Banking, Insurance, and Service firms are heavily regulated and their accounting conventions are different from Industrial firms. Impson (1997) and Fukuda (2000) applied industrial firms in their samples. This lead to have 366 observations distributed on the whole sample period from 2001-2006. Three stages are employed to reach the final sample. Table 1 presents the number of observations eliminated at each stage of the selection process.

Table 1: Number of Observations Eliminated at Each Stage of the Selection Process

Period	No. of observations	Stage1	Stage2	Stage 3	Total
2001	61	6	6	5	44
2002	61	4	15	4	38
2003	61	9	17	3	32
2004	61	25	11	1	24
2005	61	11	10	5	35
2006	61	9	8	2	42
Total	366	64	67	20	215

Stage One:

Sixty-four observations are excluded from the whole sample. Dividends and earnings are announced simultaneously in the ASE. Hence the announcement date refers to the date at which the firms announce their dividend and earnings change. However, in order to mitigate the effect of other contemporaneous events, it is necessary to eliminate any contemporaneous events surrounding the dividend and earning announcement date, such as stock dividend and split, or mergers and acquisitions that may contaminate the stock price movement. Consistent with Howe and Shen (1998) and Kosedag and Micayluk (2000), any observation with an announcement other than dividend and earnings announcement on the 21 days, test period from -10 to 10 around the event date, are eliminated from this study.

Stage Two:

The announcement date is not available and cannot be determined for some observations, and if this is the case, any observation without an event date is eliminated. This leads to eliminate 67 observations from the sample.

Stage Three:

Stock prices should be available for all the observations to generate the return and calculate the abnormal return. If the data are not available, the return could not be calculated. Therefore, any observation does not have prices on its trading days are eliminated from the whole sample. This leads to exclude 20 observations.

The final sample consists of 215 observations spans over the years 2001 to 2006. To investigate the market reaction to dividend change, four groups have been mentioned on developing the hypothesis depending on the dividend per share for each observation for time *t* comparing it with the previous dividend per share *t-1*. Previous literature like Aharony and Swary (1980), Eddy and Seifert (1992) and Opong (1996) and Mollah (2001) applied the naïve model in their studies. Therefore, this study applies the naïve model to allow for comparability. Each group represents a sample for the purpose of this study, this is as follows:

1. If $DPS_t > DPS_{t-1}$: then any observation meet this criterion is considered as dividend increase (DI).
2. If $DPS_t < DPS_{t-1}$: then any observation meet this criterion is considered as dividend decrease (DD).
3. If $DPS_t = DPS_{t-1}$, and $\dots DPS_t, DPS_{t-1} \neq 0$: then any observation meet this criterion is considered as dividend no change (DNC).
4. If $DPS_t = DPS_{t-1}$, and $\dots DPS_t, DPS_{t-1} = 0$: then any observation meet this criterion is considered as no dividend no change (NDNC).

Applying the above criterion, this study observed 59 observations of those relating to dividend increase (DI), 30 observations to dividend decrease (DD), 44 observations related to dividend no change (DNC) and 82 observations related to no dividend no change (NDNC). Table 2 summarises the number of observations for each sample.

Table 2: Number of Observations for Each Sample

Dividend Samples	Observations
Dividend Increase Sample	59
Dividend Decrease Sample	30
Dividend No Change Sample	44
No Dividend No Change Sample	82
Total	215

Daily stock prices information over the period 2001 to 2006 is collected from Jordan Security Commission (JSC), Amman Stock Exchange (ASE), and Security Depository Centre (SDC). From the same source, dividends and their ex-dates over the period of study are collected. Other information like stock split, stock dividend, merger, acquisition, capital increase and decrease are collected for the purpose of not including the observations which announce any of these events around the announcement date. Other sources like company reports and the stock market publications like monthly statistical bulletin and annual report, companies guide, and the daily official list are used to check the information collected for accuracy.

3.2 Methodology

An event study is the name given to an empirical investigation of the relationship between security prices and economic events. ESM is one of the most frequently used statistical techniques in the applied financial research. Event studies are used to measure the impact of an economic event on firm value, specifically how asset prices respond to information releases during a public announcement of the event. The results of event studies not only can have serious implications in forming accounting or government policy, but also provide an important source of market information to both individual and institutional investors. On the other hand, event studies can also be used to study market efficiency on the semi-strong form by analysing the market reactions to these ‘events’ (Firth, 1979). Therefore, ESM is used in this study to investigate the market reaction to dividend announcements in Jordan. The following includes how to determine the event date, what type of estimation periods will employ in this study and how long it will be, and determining the test period.

Fukuda (2000) and Travlos *et al.* (2001) used the general assembly meeting as an event date. Also, Jordanian Laws indicate that the most important date in which the dividends are officially approved and the public know about it is notified on the general assembly meeting day. Therefore, this study uses the general assembly date as an event date because on that date the dividends are approved and announced officially to the public.

This study employs the daily data rather than the monthly data following Brown and Warner (1980, 1985) and Peterson (1989) who mentioned that daily returns are more powerful than monthly returns. Morse (1984) supported the use of daily return data to estimate information effects, with the possible exception of cases in which there is uncertainty about the date of the information release. Morse (1984) mentioned that even with this uncertainty, however, daily returns may still be preferred to monthly returns. Using daily data allows comparison the results of this study with the previous literature. This study also uses 110 trading daily observations as the estimation

period from day $T=-11$ to $Time I=-110$ before the event period and an event period of 21 trading days, covering the period $T+I=-10$ before to $T+m= +10$ after the announcement day. Peterson (1989) mentioned that the selection of the length of the estimation period and event period is subjective.

Daily returns are then calculated following Strong (1992) in this study using the following formula,

$$R_{i,t} = \log_e (P_{i,t} + D_{i,t}) - \log_e P_{i,t-1} \tag{1}$$

where,

- $R_{i,t}$ is the daily stock returns for security i at day t .
- $\log_e P_{i,t-1}$ is the natural logarithm of the stock price i at day $t-1$.
- $\log_e P_{i,t}$ is the natural logarithm of the stock price i at day t .
- $D_{i,t}$ is the dividend on security i at day t .

The returns on ASE index are computed as the natural logarithm of the first differences of the market index according to the equation below.

$$R_t = \log_e I_t - \log_e I_{t-1} \tag{2}$$

where,

- R_t is the market return at day t .
- $\log_e I_{t-1}$ is the natural logarithm price index of the market at the end of day $t-1$.
- $\log_e I_t$ is the natural logarithm of price index of the market at the end of day t .

Abnormal return analysis, which is at the core of information content studies, requires an appropriate return generating benchmark. In the literature, there are several return-generating models. The use of a particular return model depends on the nature of data at hand and on the specification of the model itself. Researchers have stated that emerging markets are typically characterized by low liquidity, thin trading and possibly less well-informed investors with access to unreliable information and considerable volatility. It is well known that thin trading can affect the results of empirical studies on patterns of equity markets by introducing a serious bias into the results (Al-Khazali, 2008).

The problem of thin trading is especially severe with shorter differencing and infrequent trading and it becomes particularly severe if returns are calculated over short time period (e.g., days). Strong (1992) mentioned that OLS estimates of the market model parameters will be biased and inconsistent resulting in biased estimates of abnormal returns and consequently mis-specified test statistics in event studies. To take on account this problem, Scholes and Williams (1977) provided methods to remove a greater deal of bias from beta. The method requires the running three regressions to obtain the lag, match and lead betas as follows:

$$\begin{aligned} R_{i,t-1} &= \alpha + \beta_{-1}R_{m,t-1} + \varepsilon_{i,t} \\ R_{i,t0} &= \alpha + \beta_0R_{m,t0} + \varepsilon_{i,t} \\ R_{i,t+1} &= \alpha + \beta_{+1}R_{m,t+1} + \varepsilon_{i,t} \end{aligned} \tag{3}$$

where,

- β_{-1}, β_0 and β_{+1} is the lag, match and lead security betas, respectively.
- $R_{m,t-1}, R_{m,t0}$ and $R_{m,t+1}$ is the lag, match and lead market returns, respectively.
- $R_{i,t-1}, R_{i,t0}$ and $R_{i,t+1}$ is the lag, match and lead firm returns, respectively.

The unbiased beta, according to Scholes-Williams (1977), is calculated as follows:

$$\beta_{SW} = \frac{(\beta_{-1} + \beta_0 + \beta_{+1})}{(1 + 2\rho_1)} \tag{4}$$

where,

- ρ_1 is the first-order autocorrelation coefficient of the market index.

The order estimator (parameter) of the market model, α , which is important for computing abnormal returns in the test period, is defined by the following equation:

$$\alpha = \frac{\sum R_{i,t0}}{n} - \beta_{SW} \frac{\sum R_{m,t0}}{n} \tag{5}$$

or,

$$\alpha = \bar{R}_{i,t0} - \beta_{SW} \bar{R}_{m,t0} \tag{6}$$

where,

- n is the number of observations in the match estimation period.

Then, the mean abnormal returns are calculated as follows:

$$\varepsilon_{i,t} = R_{i,t} - \hat{R}_{i,t} \tag{7}$$

where,

- $\varepsilon_{i,t}$ is the excess (abnormal) return of firm i at day t .
- $R_{i,t}$ is the actual (raw) return of firm i at day t .
- $\hat{R}_{i,t}$ is the estimated return of firms i at day t .

The abnormal returns averages individual observations as follows:

$$AR_t = \frac{1}{N} \sum_{i=1}^N \varepsilon_{i,t} \tag{8}$$

where,

- AR_t is the average abnormal return at day t .
- N is the number of observations.
- $\varepsilon_{i,t}$ is the abnormal return of firm i at day t .

Cumulative Abnormal Returns (CAR) are calculated as follows:

$$CAR_{m_1, m_2} = \sum_{t=m_1}^{m_2} AR_t \tag{9}$$

To test the significance of abnormal returns, this study employs the parametric test (t test) to test for the significance of the abnormal return. T test requires the assumptions of normality, homoscedasticity and nonlinearity to be matched; otherwise, the significance will be biased. The use of non-parametric test (Corrado’s test) can be used as a sensitivity analysis if the assumptions underline the t test is violated. Corrado’s test can improve the significance of the abnormal return because the distribution of ranks is uniform.

Coutts, Mills and Roberts (1994) proposed their ZD-test that accounts fully for the increased variance of prediction errors outside of the estimation period and for the cumulating of these errors across different event windows. It also takes account of the fact that market model residuals are typically serially correlated, heteroscedastic and non-normal. The ZD-test is used in the study to investigate the price performance in different event windows around the announcements of dividend change. Hamill, Opong and McGregor (2002) provided a corrected ZD-test methodology due to that there is an erratum in Coutts *et al.* methodology that makes it extremely difficult to replicate the ZD-test. Therefore, ZD test is applied in this study to examine the significance of the cumulative abnormal return for a period of time in the event period. Using this test will correct the mis-specifications related to the market model.

4 EMPIRICAL EVIDENCE

4.1 Descriptive Statistics

Table 3 reports the distribution of proprieties of dividends on ASE. It reports summary statistics for the whole sample selected for the period 2001 to 2006.

Table 3: Summary Statistics for the Dividends Sample from 2001 to 2006

Dividend Type ¹	2001	2002	2003	2004	2005	2006	Row Total	% Total
DI	15	11	7	10	8	8	59	27.4%
DD	1	7	6	3	6	7	30	14%
DNC	9	8	9	4	6	8	44	20.5%
NDNC	19	12	10	7	15	19	82	38.1
Total	44	38	32	24	35	42	215	100%
Total%	20.5%	17.7%	14.9	11.1%	16.3%	19.5%	100%	-

¹ DI= Dividend Increase, DD= Dividend Decrease, DNC= Dividend no Change, NDND= No Dividend no change in Dividend.

Table 3 shows that 38.1% of the entire sample does not distribute dividends, while 27.4% increasing their dividends, 14% decreasing dividends and 20.5% maintains dividends. The distribution of dividends over the years 2001 to 2006 is almost equal, 20.5% of the sample occurs in 2001, 17.7% in 2002, 14.9% in 2003, 11.1% in 2004, 16.3% in 2005 and 19.5% in 2006.

Table 4 reports the proprieties of the market value and a summary statistics for the four samples DI, DD, DNC and NDNC. It shows the mean, standard deviation, skewness, kurtosis, minimum, median, maximum, normality and number of observations.

Table 4: The Dividend Change Samples for the Period 2001-2006

Descriptive	M.Value DI	M.Value DD	M.Value DNC	M.Value NDNC	M.Value ALL
Mean ¹	83,3	83,7	44,3	22,2	52,0
StDev ¹	180	172	139	51	136
Skewness	3.3	2.9	6	4.2	4.5
Kurtosis	11.3	9	38	19.5	22.7
Minimum ¹	2,7	2,3	2,0	0,45	0,45
Median ¹	12,1	12,8	10,1	6,0	9,2
Maximum ¹	916	776	916	321	916
Normality ²	11.4	5.9	11.1	16.7	47.7
N. Obs	59	30	44	82	215

¹ Numbers in millions Jordan Dinnar.

² A-Squared Anderson-Darling Normality Test

Table 4 shows that the highest mean market value is for the dividend decrease and dividend increase, with 83.7 and 83.3 Million JD, respectively. It is clear from this table that the lowest mean market value was observed for the no dividend no change sample comparing with the dividend samples. The skewness statistics, which assess the symmetry of the distribution, is positive, which indicate generally a highly skewed distribution. The kurtosis coefficient is greater than zero, which indicates that the distribution inhabit some large observations. The kurtosis coefficient measures the relative peakness or flatness of the distribution, compared with the normal distribution. The kurtosis coefficient is positive which indicates that the data is peaked. A negative kurtosis value would indicate a relatively flat distribution. The Anderson-Darling normality test was also performed. The null hypothesis for this test is that the market value for the sample of dividends is normally distributed. The results demonstrate that the market value for the selected sample exhibited a high degree of non-normality which means that the null hypothesis of the normality test is rejected. Evidence of the most extreme values is shown by the maximum and the minimum values.

Table 5 shows the actual average dividend per share (DPS) for each sample in this study. It is clear that the highest average dividend per share was observed for the dividend increase sample followed by dividend no change sample and finally dividend decrease sample, with a DPS 19.6%, 18.8% and 10.9%, respectively. Following the market reaction to dividend change studies, the highest dividend payments should relates to the highest market reaction. If this is the case, this will lead to accept the signalling hypothesis that there is information content of dividends.

Table 5: The Average Dividend per Share (DPS) for Each Sample in the Study

Sample Type	Number of observations	Actual Average DPS
Dividend Increase Sample	59	19,6%
Dividend Decrease Sample	30	10,9%
Dividend No Change Sample	44	18,8%
No Dividend No Change Sample	82	0

4.2 Analysis of the Mean Abnormal Return (MAR) and Cumulative Abnormal Return (CAR)

Table 6 reports a summary of the results for the market model adjusted with Scholes and Williams. A Significant abnormal return is observed on days 0 and 1 at 1% significant level for the dividend increase sample. The mean abnormal return is 4.13% and -1.06% with a *t*-statistics 19.21 and -4.94, respectively. Even the market reacts negatively to dividend increase on day 1, the overall market reaction on day 0 and 1 is positive. Therefore, the market reacts positively to dividend change announcements, which is consistent with the signalling hypothesis. For the dividend decrease sample, a significant abnormal return is observed on days 0 and 3 at 1%, 5% significant level, respectively. The mean abnormal return is 1.28% and 0.67% with a *t*-statistics 3.75 and 1.97, respectively. Therefore, the market reacts positively to dividend decrease on day 0 which is not consistent with the signalling hypothesis. Also, a significant abnormal return is observed on days 0, 2, 5, 6 and 9 at 1% significant level for the dividend no change sample. The market reaction to dividend no change is positive on days 0 and 5, while it shows a negative reaction on days 2, 6 and 9. The mean abnormal return for days 0 and 5 is 2.95% and 1.11% with a *t*-statistics 11.06 and 4.15, respectively. The mean abnormal return for days 2, 6 and 9 is -0.73%, -1% and -0.77% with a *t*-statistics -2.75, -3.75 and -2.87, respectively. Even the market reacts negatively on the post event period;

MAR is still low comparing with day 0, MAR is around 3% on day 0. The results from dividend no change sample do not provide evidence related to the market reaction. Therefore, this result is not consistent with the signalling hypothesis. Alternatively, the no dividend no change sample does not observe a significant abnormal return on and around the announcement days. This leads to support the signalling hypothesis for no dividend no change sample that there is no significant change on the abnormal return on and around the announcement days.

In addition to the parametric model, non-parametric returns generating techniques are also employed to avoid the need to rely on tests based solely on variance estimation. Corrado's rank test was applied to test the abnormal return on and around the announcement date of the dividend change payments. Abnormal returns tested are ranked, and the significance of the rankings is then tested. Results from the rank test are analysed as a complement of the conclusions that are generated from the parametric tests. Table 7 reports the mean rank abnormal return for the four samples; dividend increase, dividend decrease, dividend no change and no dividend no change samples. The results for market reaction applying non-parametric test are consistent with results observed from parametric test.

Table 8 reports a summary of the mean cumulative abnormal return for selected holding periods on and around the announcement date for dividend change payments (dividend increase, dividend decrease, dividend no change, and no dividend no change samples). ZD test is used to report the results. This test corrects for misspecifications which is related to the market model which is non-normality, heteroscedasticity and autocorrelation. The cumulative abnormal returns are based on the market model adjusted with Scholes and Williams. The dividend increase sample shows that the highest significant holding period is observed for days -1 and 0. CAR is 4.31 with ZD test 13.61, positively significant at 1 percent level, which leads to support the signalling hypothesis. While, the dividend decrease sample shows that the highest significant holding period is observed for days -1 and 0. CAR is 1.70 with ZD test 3.59, positively significant at 1 percent level. Again, this result reported from CAR does not support the signalling hypothesis. Likewise, the dividend no change sample shows that the highest significant holding period is observed for days -1 and 0. CAR is 2.68 with ZD test 7.16, positively significant at 1 percent level. Alternatively, the no dividend no change sample shows that there is no significant holding periods; this is related that no significant MAR is reported in no dividend no change sample. This result leads to support the signalling hypothesis. Overall, the results show that the highest significant abnormal return is reported for days (-1 and 0). This means that the market reacts significantly to dividend release before one day of the announcement day and on the announcement day but results do not support the market reaction hypothesis to dividend change.

Graphically, Figure 1 shows the cumulative abnormal return for four samples; dividend increase, dividend decrease, dividend no change and no dividend no change samples. It shows that DI, DD and DNC samples react positively when announcing dividends even the reaction's size is different. The highest to react to dividend change announcements is DI followed by DNC and finally DD. The interpretation is related to the average DPS for each sample, the highest DPS is reported for DI, DNC and DD, respectively. NDNC sample shows that no market reaction is observed before or after the announcement day.

Table 6: Mean Abnormal Return for 10 Days around the Dividend Announcements Applying the Market Adjusted with Scholes and Williams

Days	Dividend Increase Sample N=59		Dividend Decrease Sample N=30		Dividend No Change Sample N=44		No Dividend No Change Sample N=82	
	MAR %	t-test	MAR %	t-test	MAR %	t-test	MAR %	t-test
-10	-0.19	-0.88	0.03	0.08	0.01	0.04	-0.11	-0.09
-9	0.20	0.91	-0.42	-1.22	0.11	0.41	-0.23	-0.19
-8	-0.06	-0.30	0.07	0.19	0.20	0.75	0.29	0.24
-7	0.11	0.52	0.18	0.54	-0.18	-0.66	-0.11	-0.09
-6	0.33	1.55	0.22	0.63	-0.33	-1.23	-0.10	-0.08
-5	-0.11	-0.51	-0.03	-0.07	0.32	1.19	-0.06	-0.05
-4	-0.01	-0.06	0.08	0.25	0.05	0.18	0.25	0.20
-3	0.06	0.28	-0.17	-0.50	0.15	0.58	0.02	0.02
-2	0.07	0.30	-0.28	-0.82	-0.01	-0.05	0.17	0.14
-1	0.18	0.83	0.42	1.23	-0.27	-1.02	-0.18	-0.14
0	4.13**	19.21	1.28**	3.75	2.95**	11.06	0.00	0.00
1	-1.06**	-4.94	-0.25	-0.74	-0.43	-1.61	-0.01	-0.01
2	-0.17	-0.81	0.06	0.16	-0.73**	-2.75	-0.05	-0.04
3	0.12	0.54	0.67*	1.97	-0.15	-0.55	0.08	0.06
4	-0.11	-0.51	-0.43	-1.25	-0.19	-0.71	0.49	0.39
5	-0.12	-0.58	-0.02	-0.06	1.11**	4.15	0.30	0.24
6	-0.34	-1.58	-0.30	-0.87	-1.00**	-3.75	-0.29	-0.23
7	0.19	0.89	-0.27	-0.78	-0.03	-0.10	0.35	0.28
8	0.09	0.41	0.37	1.08	-0.01	-0.03	0.07	0.05
9	0.12	0.57	0.21	0.60	-0.77**	-2.87	0.22	0.18
10	-0.26	-1.22	0.11	0.33	-0.10	-0.38	0.58	0.46

* Significant at the 5 percent level, ** Significant at the 1 percent level.

Note: the results are consistent applying the market model, the mean adjusted model, the market adjusted model, and the market model adjusted with Fowler and Rorke.

Table 7: Mean Abnormal Return for 21 Days around the Dividend Announcement Date for the Four Samples Applying Corrado Non-parametric Test

Days	Dividend Increase N=59		Dividend Decrease N=30		Dividend no Change N=44		No dividend no Change N=82	
	Mean Rank	Corrado Statistics	Mean Rank	Corrado Statistics	Mean Rank	Corrado Statistics	Mean Rank	Corrado Statistics
-10	-1.33	-0.22	-1.97	-0.30	1.77	0.28	-4.76	-1.44
-9	6.99	1.14	1.00	0.15	1.00	0.16	-2.56	-0.78
-8	0.79	0.13	5.87	0.90	8.89	1.41	0.11	0.03
-7	3.64	0.59	4.67	0.72	-6.00	-0.95	-1.16	-0.35
-6	1.65	0.27	0.07	0.01	-4.57	-0.73	-0.99	-0.30
-5	-3.01	-0.49	2.90	0.45	8.39	1.33	1.85	0.56
-4	-0.36	-0.06	7.63	1.17	-1.84	-0.29	3.87	1.17
-3	5.31	0.87	-0.10	-0.02	-3.52	-0.56	-1.02	-0.31
-2	-3.49	-0.57	-3.17	-0.49	4.57	0.73	3.98	1.21
-1	2.79	0.46	12.13*	1.86	-7.36	-1.17	-1.88	-0.57
0	41.99**	6.87	21.60**	3.32	37.70**	5.99	-3.44	-1.04
1	-16.01**	-2.62	-0.10	-0.02	-5.59	-0.89	1.95	0.59
2	0.65	0.11	-0.97	-0.15	-6.70	-1.07	1.00	0.30
3	2.38	0.39	11.80*	1.81	1.52	0.24	0.44	0.13
4	1.53	0.25	-10.97	-1.68	-5.91	-0.94	6.20*	1.88
5	-3.01	-0.49	-0.80	-0.12	11.20*	1.78	2.60	0.79
6	-3.58	-0.59	-7.87	-1.21	-1.57	-0.25	-4.02	-1.22
7	3.55	0.58	-2.00	-0.31	1.39	0.22	3.62	1.10
8	2.70	0.44	13.00*	2.00	0.82	0.13	0.20	0.06
9	7.62	1.25	1.00	0.15	-14.07*	-2.24	2.33	0.71
10	1.58	0.26	3.30	0.51	-4.45	-0.71	2.23	0.68

* Significant at the 5 percent level, ** Significant at the 1 percent level.

Table 8: Summary of the Cumulative Abnormal Return for Selected Holding Periods on and around the Dividend Announcements

Holding Periods	Dividend Increase Sample N=59		Dividend Decrease Sample N=30		Dividend No Change Sample N=44		No Dividend No Change Sample N=82	
	CAR %	ZD-test	CAR %	ZD-test	CAR %	ZD-test	CAR%	ZD-test
(-10,-5)	0.28	0.50	0.05	0.06	0.13	0.20	-0.32	-0.11
(-10,-1)	0.57	0.78	0.11	0.10	0.05	0.06	-0.06	-0.02
(-10,5)	3.34**	3.50	1.41	0.99	2.61*	2.29	0.75	0.18
(-10,10)	3.15**	2.81	1.54	0.92	0.71	0.54	1.67	0.39
(-2,0)	4.37**	11.25	1.42**	2.44	2.66**	5.80	-0.01	0.00
(-2,1)	3.31**	7.30	1.17*	1.73	2.24**	4.19	-0.02	-0.01
(-2,2)	3.14**	6.16	1.22	1.61	1.50**	2.50	-0.07	-0.03
(-2,3)	3.25**	5.81	1.90*	2.26	1.36*	2.06	0.01	0.00
(-1,0)	4.31**	13.61	1.70**	3.59	2.68**	7.16	-0.18	-0.10
(-1,1)	3.25**	8.30	1.45**	2.48	2.25**	4.89	-0.19	-0.09
(0,1)	3.07**	9.68	1.03*	2.16	2.52**	6.73	-0.01	0.00
(0,2)	2.89**	7.44	1.08*	1.85	1.79**	3.87	-0.05	-0.03
(0,3)	3.01**	6.67	1.76**	2.59	1.64**	3.08	0.02	0.01
(0,4)	2.90**	5.72	1.33*	1.75	1.45**	2.43	0.51	0.20
(0,10)	2.58**	3.32	1.43	1.23	0.66	0.72	1.74	0.48
(3,10)	-0.32	-0.48	0.35	0.36	-1.13	-1.48	1.79	0.56
(4,10)	-0.43	-0.71	-0.32	-0.36	-0.98	-1.38	1.72	0.57
(5,10)	-0.32	-0.58	0.10	0.12	-0.80	-1.21	1.23	0.43

* Significant at the 5 percent level, ** Significant at the 1 percent level.

Note: the cumulative abnormal return are based on the market model adjusted with Scholes and Williams, the test statistics for the ZD-test are distributed $N(0, 1)$.

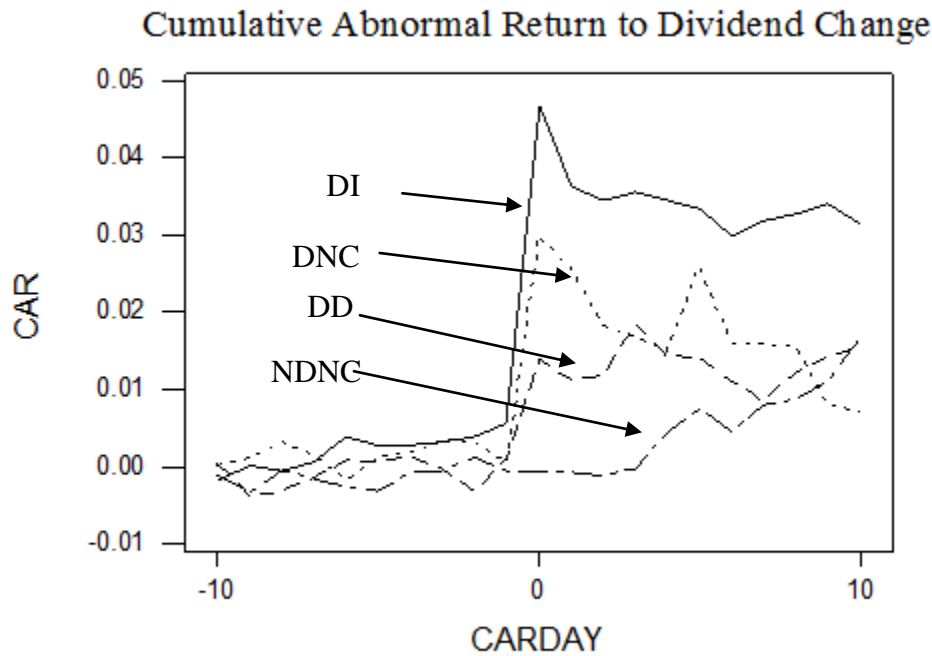


Figure 1

4.3 Discussion of the Event Study Results

A summary of the event study results have been reported on Tables 6, 7 and 8. Table 6 shows the mean abnormal return for 21 days (± 10) around the dividend announcements applying the market model adjusted with Scholes and Williams. The mean abnormal return is 4.13, 1.28, 2.95, and 0.00 for the dividend increase, dividend decrease, dividend no change, and no dividend no change samples, respectively. Furthermore, the mean abnormal return is significant positive on the announcement day (day 0) at 1 percent level applying Scholes and Williams parametric test, and significant at 1 percent level applying the non-parametric Corrado's test except for the no dividend no change sample which reports no significant mean abnormal return. Moreover, the results did not change when other models are applied to generate the parameters. The market model, the mean adjusted model, the market adjusted model, and the market model adjusted with Fowler and Rorke results are consistent with those results observed by applying Scholes and Williams model (Table 6). Even the empirical results of dividend increase and no dividend no change samples support the previous empirical studies, the empirical results of the dividend decrease and dividend no change sample completely disagree with the previous empirical studies leading to reject the signalling hypothesis for dividend change announcement. Reviewing the results of DI, DD and DNC, and comparing it with the results of NDNC sample suggests that the market reacts to dividend release announcements rather than dividend change announcements, and therefore, this notion is accepted in the signalling hypothesis. This view is consistent with previous studies in signalling hypothesis. Recent studies like McClusket *et al.* (2006) and Dasilas (2007) found positive market reaction related to dividend release announcements and a little value-relevant information to dividend change. This is consistent with the results reported in this study.

Table 8 summarises the cumulative abnormal return for 18 holding periods around the announcement day of dividends, and ZD test is used to report the results. This test corrects for misspecifications related to the market model which is non-normality, heteroscedasticity, and auto-correlation. The cumulative abnormal returns are based on the market model adjusted with Scholes and Williams. The results show that the highest cumulative abnormal return is observed for the period -1 to 0 for DI, DD and DNC samples. Nevertheless, the most significant reaction occurred on the announcement day. The pre-event period (-10, -1) did not observe a significant reaction for four samples, which means that there is not information leakage before the announcement day. The post-event period observed a significant positive market reaction except for NDNC sample.

5 CONCLUSION

The results from the empirical literature show that the dividend policy decisions are complex, and cannot be characterised by any one theory. The signalling hypothesis is the most common theory used to explain dividend policies. In asymmetric information environments dividends provide a means to convey management's private information to outsiders. Typically, the signalling hypothesis has been tested by the ESM. Initial analysis examined the information content of dividend increases and decreases. Consistent with the signalling hypothesis, these studies report that security prices react positively to dividend increases and negatively to dividend decreases. Some studies found that the market reacts to dividend release and there is no value-relevance information on dividend change (McClusket *et al.* (2006), Dasilas (2007) and Vieira and Raposo (2007)). Another strand of the literature focused on the price impact of dividend initiations and omissions; concluding that the market reacts favourably to dividend initiations and *vice versa* for omissions. Results from examining the literature of the relationship between dividend changes and firms' future earnings report that managers use dividends to signal their views of future earnings prospects. Two methodologies can be used to test the signalling hypothesis namely: Regression analysis and the ESM. The ESM has been used to examine the price effect of dividends change over a short horizon (e.g., days). Regression analysis can be used to examine the dividend policies over much longer periods (e.g., years). Therefore, the market reaction to dividend change announcements in ASE was studied in accordance with the signalling hypothesis applying the Event Study Methodology.

The ESM, therefore, was used to find out if there is any support for the signalling hypothesis in the ASE for the period 2001 to 2006. The market model, mean adjusted model, market adjusted model and thin trading models were used to generate the expected return. Also, this study employed the parametric test (*t* test) to test for the significance of the abnormal return. T test requires the assumptions of normality, homoscedasticity and nonlinearity to be matched; otherwise, the significance will be biased. Non-parametric test (Corrado's test) was used to improve

the significance of the abnormal return because the distribution of ranks is uniform. Also, ZD test was applied to examine the significance of the cumulative abnormal return for a period of time in the event period. ZD test takes account of the fact that market model residuals are typically serially correlated, heteroscedastic and non-normal, and using this test will correct the mis-specifications related to the market model.

The results showed that the market reacts to dividend release announcement rather than dividend change announcements, and therefore, little value-relevance information is related to dividend change. This lends support to signalling hypothesis for dividend release announcements for the Jordanian market. Moreover, the results from the market model, mean adjusted model, market adjusted model, market model adjusted with Fowler and Rorke and Corrado's non parametric test were consistent with the results reported from the market model adjusted with Scholes and Williams. The results reported in this study highlight the impact of applying the market model adjusted with Scholes and Williams to generate the mean abnormal return. This highlights the importance of methodological choice when drawing inferences. Also, the results for dividend increase and no dividend no change samples were consistent with the previous literature and lending support to signalling hypothesis. This study observed a positive market reaction to dividend increase announcement, and did not observe any market reaction for the no dividend no change sample. Alternatively, the results for dividend decrease and dividend no change samples reported a significant positive market reaction. These results were not consistent with the previous literature leading to reject the signalling hypothesis. Generally, the market reaction seems to be related to dividend release announcements rather than dividend change announcements in the Jordanian market.

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