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Dividend and Stock Repurchase Announcement in Tunisia: A Signaling Approach

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Abstract- The objective of the present paper is to add the understanding of stock price reaction at two kinds of events: (1) The announcement of dividend and (2) the announcement of stock repurchase. To do so we develop a traditional event studies.

In the case of the first kind of event, the results obtained are not consistent with information content of dividend: The market does not react significantly to the announcement of dividend. Although a negative reaction is observed when the announcement is a decrease of dividend level. This announcement may be interpreted as a negative signal.

For stock repurchase announcement also, we do not observe significant reaction of the market around the event period but a significant and a negative reaction is observed over the event period.

This results do not support the signaling theory the Tunisian market may be fully anticipate ant that so incorporate this events on the market price.

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GJMBR-C Classification: JEL Code: B13

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JEL Classification: *G14; G32; G35*

I. Introduction

Several explanatory theories have been proposed to explain the behavior of firms when setting his payment but no consensus was until now found. Firm can distribute cash by several methods in particularly by dividend or by stock repurchase.

Under the assumption of perfect market Modigliani and Miller (1961) demonstrate that the dividend policy no matter and then firm's dividend policy does not affect its value. They show that what really counts is the firm's investment policy as long as investment policy doesn't change. In other words in an ideal world (without tax and any restrictions) therefore dividend payments would have no impact on the shareholders' value. In the real world, however a change in the dividend policy is often followed by change in the market value of stocks. The economic argument for investor' preference to dividend income was offered by Graham-Dodd (1951). Subsequently, Walter (1956) and Gordon (1959 and 1962) forwarded the dividend relevancy idea, which has been formalized into a theory, postulating that current stock price would reflect the present value of all expected dividend payments in the future.

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Under the assumption of imperfect market many others theories were also developed, in particularly the signaling approach and the information content of dividend. This theory state that dividends are a significant source of information and then can communicate valuable information about present or maybe future value of the firm. Under this approach, firms with good news, rather making a simple announcement, can choose to increase the distribution of the cash for shareholders either by dividend or by stock repurchases despite the costs associated with paying those dividends or repurchases.

In this article we propose to examine the payout policy of the Tunisian firms under the signaling hypothesis and then to test the reaction of the announcement of dividend and stock repurchase made by firms listed in Tunisian Stock Exchange (TSE).

This article is organized as follow: Section 1 we developed a review of studies of the dividend policy and stock repurchase under signaling approach. Section 2we present the application of the methodology of event studies to test dividend and stock repurchase announcement in Tunisia Section 3 concludes.

II. Dividend Policy and Stock Re-Purchase under Signaling Hypothesis: A Survey

a) Dividend Policy

Many signaling model were developed in theory the best known are those of Ross (1977); Bhattacharaya (1979)), Miller and Rock (1985), Kalay (1980), Bar-Yosef and Hoffman (1986), John and Williams (1987), Bernheim (1991), Kumar (1988). All these theory and models proposed explain how firms can use the dividend as a signal and then may explain why firms pay out so many dividends. These models assumed that firms use dividend changes to signal changes in future earnings or cash flows and then associated to current or future profitability of the firm.

Other models show that the good news in a dividend increase is not about (expected) increases in future cash flow but it might concern also a decline in (systematic) risk. This result is tested particularly by Grullon, Michaely, and Swaminathan (2002) with their maturity hypothesis. According to this hypothesis, firms increase dividends when growth opportunities decline,

which leads to a decrease in the firm's systematic risk and profitability.

Empirically most paper tries to test the signaling power of dividend and then the hypothesis of information content of dividends. According to this hypothesis changes in dividends can convey information to the market about also current and future earnings.

Trying to test to information content of dividend Pettit (1972) showed that a significant price increase follows announcements of dividend increases, and a significant price drop follows announcements of dividend decreases in the same way, Aharony and Swary (1980) showed that these price changes hold even after they controlled for contemporaneous earnings announcements. Using a comprehensive sample of dividend changes of at least 10% over the period 1967-1993, Grullon, Michaely, and Swaminathan (2002) found that the average abnormal return to dividend increases was 1.34% and the average abnormal market reaction to dividend decreases was 3.71%

Asquith and Mullins (1983) (dividend initiations), Healy and Palepu (1988), and Michaely, Thaler and Womack (1995) (dividend initiations and omissions) focused on extreme changes in dividend policy. Their research showed that the market reacts quite severely to those announcements. The average excess return is 3.4% for initiation and -7% for omissions.

Michaely, Thaler, and Womack (1995) examined this issue and found that when they controlled for the change in yield, the announcement of an omission had a larger impact on prices than did an announcement of an initiation. They also reported that the effect of a unit change in yield had a greater effect on prices for initiations than it did for omissions. The price impact may explain, to some extent, why managers are so reluctant to cut dividends.

Watts (1973) was the first to test the proposition that the knowledge of current dividends improves the predictions of future earnings, over and above knowledge of current and past earnings. Using 310 firms with complete dividends and earnings information for the years 1946-67, and annual definitions of dividends and earnings, Watts tested whether earnings in year t+1 could be explained by the current (year t) and past (year t-1) levels of dividend and earnings. For each firm in the sample, Watts estimated the current and past dividend coefficients (while controlling for earnings). Although he found that the average dividend coefficients across firms were positive, the average t-statistic was very low. In fact, only the top 10% of the coefficients were marginally significant. Using changes in levels yielded similar results.

Benartzi, Michaely, and Thaler (1997) investigate the relation between dividend changes and future changes in earnings. They measure earnings changes relative to the industry average changes in earnings that they adjusted for earnings momentum and for mean reversion in earnings. Two robust results emerge. First, there is a very strong lagged and contemporaneous correlation between dividend changes and earnings changes. When dividends are increased earnings have gone up. There is no evidence of a positive relation between dividend changes and future earnings changes. In the two years following the dividend increase, earnings changes were unrelated to the sign and magnitude of the dividend change.

Using the three-factor model of Fama-French, Grullon, Michaely and Swaminathan (2002) find abnormal returns of around 8.3% during the three years following the year of the increase but they did detect no abnormal performance for firms that have cut their dividends. Michaely, Thaler and Womack (1995) found an adjusted market return of about 25% after three years following an introduction and an abnormal return of 15% for the three years following a failure.

Nissim and Ziv (2001) offer yet another look at this problem. They attempt to explain future innovation in earnings by the change in dividend, like Benartzi, Michaely, and Thaler (1997). They argue that a good control for mean reversion is the ratio of earnings to the book value of equity (ROE) and add it as an additional explanatory variable. They advocate the inclusion of ROE to improve the model of expected earnings and using several independent variables in addition to ROE, Benartzi, Michaely, and Thaler (1997) do not find any significant relation between current changes in dividends and future changes in earnings.

In another study, Deangelo, Deanglo and Skinner (1996) examined a sample of 145 companies whose annual earnings change is negative after 9 consecutive years of positive changes. And year 0 is considered the first year of decline for several years. Their test is based primarily on the decision taken during the year 0, which have scared some information content for investors and ensure is that this decline is temporary or permanent. The empirical results of DeAngelo, De Angelo and Skinner (1996) do not support the hypothesis that a favorable decision which is manifested by an increase in dividends is a signal for future earnings of the firm. There is no evidence for the 99 firms studied that increased profits always leads to an increase in the same direction of dividends. Thus the results of this study do not go with the signaling theory and especially that dividends can be used as an informational vehicle.

Ofer and Siegel (1987) used a sample of 781 observed change in dividends to examine how financial analysts adjust their forecasts of current earnings as a response to the change observed at the level of dividends. They found that analysts react to changes made at the level of dividends and revise their forecasts by an amount which was positively correlated with the

size of the changes made at the level of dividends. They in addition, put in evidence that the revised forecast is positively correlated with the market reaction to the announcement of the dividend.

In a different context than the U.S., Amihud and Murgia (1997) examined dividend policy of German companies, where dividends are taxed less than most capital gain. In this context, and based on the model of signaling in the presence of signaling costs as developed by John and Williams (1995), Bernheim (1991) and Allen, Bernardo and Welch (2000), Amihud and Murgia (1997) find no informational power from a change in the dividends of German companies. Indeed no price reaction was observed around a change in dividends. However despite this disappointing result for the signaling hypothesis,

So from this review of empirical work we can say that the empirical evidence does not validate the models of signaling by dividends: the relationship between the change in dividends and earnings change is the opposite of what the theory implies. Indeed, if firms are distinguished by the dividends, the signal does not provide information or future earnings or growth of the cash flows of the firm and the market does not perceive the signal. There is a slight variation during the years after the change but this change is not attributed to the dividend as a vector informational but rather a change in the level of risk as perceived by the market.

b) Share Repurshase

Most researchers and managers agree that share repurchases convey information, which reflects the economic motivations behind repurchase decisions (Brav, Graham, Harvey, and Michaely (2005)). The literature proposes two potential ways that managers can use share repurchases as signals to overcome the information asymmetry that exists between principal and agents. The first rationale is the signaling hypothesis (Bhattacharya (1979), Miller and Rock (1985), and Vermaelen (1984)), which suggests that managers who have private information about future cash flows can use repurchases as a signal of future profitability. The signaling hypothesis implies that profitability will improve after share repurchases. The second rationale is the free cash-flow hypothesis, which suggests that firms repurchase their shares to mitigate potential waste of cash by management (Jensen (1986)). The theory suggests that firms that have been experiencing a reduction in growth opportunities are more likely to repurchase their shares, leaving fewer funds available to invest in uneconomic projects. When the value of growth options represents a lower portion of the firm's total value, the overall risk of the firm will decline (because the growth options of the firm are likely to be riskier than the assets in place). Therefore, the free cash-flow hypothesis also implies that firms‟ systematic risk will decrease after repurchase decisions.

According to the signaling theory we found models that imply dividends and repurchases as perfect substitutes (Bhattacharya (1979)), the signaling cost is the transaction cot associated with raising new capital, and in Miller and Rock (1985), it is the cost of reducing investments. Neither is related to the choice of payout. An exception is the John and Williams (1985) model, in which the higher taxes on dividend are the costs of the signal. This model suggests that share repurchases and dividends are not interchangeable. Allen, Bernardo, and Welch (2000) develop a model in which share repurchases and dividends are not substitutes because the latter payout method attracts institutions.

Many studies also tried to test the price impact of announcement of stock repurchase program. Dann (1981), Vermaelen (1981), Comment and Jarell (1991), Stephens and Weisbach (1998), Ikenberry et al. (1995), Grullon and Michaely (2004all find a significant abnormal price increase surrounding repurchase authorization announcements in the US of around 3%, indicating that repurchase announcements have a positive economic benefit for shareholders. Ikenberry et al. (1995) argue that if managers can detect undervaluation of the firm's shares and therefore decide to buy back shares, the announcement of the repurchase program is a valuable signal to the less informed marketplace. If the capital market is semi-efficient, the new equilibrium price should immediately fully reflect the "true" value of the new information. However, studies such as Ikenberry et al. (1995, 2000), Chan et al. (2004), Zhang (2005), and Peyer and Vermaelen (2009) find long-run abnormal returns up to 48 months following repurchase announcements. Thus, the market seems to under react to the information conveyed in repurchase announcements. Why the market reaction extends for such a long time is still puzzling. One explanation for the reported long-run excess returns is that they could be caused by chance and may be sample specific as argued by Kothari and Warner (1997), and Fama (1998).

Bartov (1991), Comment and Jarrell (1991), and Lie (2005) favor the signaling hypothesis, whereas Jagannathan and Stephens (2003), Grullon and Michaely (2004), and Li and McNally (2007) favor the free cash flow hypothesis. This controversy may be due to the uncommitted nature of repurchase announcements (Lie (2005).

III. The Effect of Annoucement of Dividend and Repurchases on Tunisian Shareholders

a) Methodology

In this section we try to test the impact of the announcement of the dividend and stock repurchase observed in TSE. Therefore we adopt to test our hypotheses, the methodologies of event studies. This

approach was initially used by Ball and Brown (1968) to study the impact of the announcement of annual results of companies on stock prices and was later opted b by Fama, Fisher, and Roll (1969) who, based on monthly data and referring to the market model have demonstrated the benefit of this approach for measuring the impact of an announcement on stock prices and hence the degree of market efficiency.

To apply this methodology of event studies we must define a number of parameters in particularly to define the event, the event of and the event window. The event studies suppose also to determine the selection criteria to calculate the abnormal return (AR) which is the actual return over the event window minus the normal return over the event period. The normal return is defined as the expected return without conditioning on the event taking place.

For firm i and event date t the abnormal return can be given as follow:

$$AR_{it} = R_{it} - E(R_{it}) \qquad (1)$$

Where E(Ri,t) is can be computed using various methods. The methods tested in this paper include Mean Adjusted Abnormal Returns (MEAR) and Market Adjusted Abnormal Return (MAAR).

MEAR: Is the mean of adjusted return calculated over the estimation period

MAARit is the market adjusted abnormal return for security i over time t

Rit is the time t return on security i, calculated as (Pit – Pit-1)/Pit-1. Where, Pit is the market losing price of stock i on day t. Pit-1 is the market closing price of stock i on day t-1.

Rmt is the time t return on the Tunisia stock exchange all-share price index calculated as (It–It-1)/It-1. Where, Iit is the market index on day t. It-1 is the market index on day t-1.

The market adjusted abnormal return (MAAR) or the Mean Adjust Abnormal Return (MEAR) shows the change in individual stock's value due to the dividend announcement. As the percentage change in mean (average return) or market index (average market price) is deducted, the remainder gives us the unsystematic portion of the value change, which is specific to that particular stock resulting from its dividend announcement. MEAR or MAAR are calculated over a period starting to –25 days to +25 days relative to the dividend announcement day (0-day)

The second measure used is cumulative abnormal returns (CAR), which measures the investors' total return over a period starting from well before the announcement of dividend to well after the dividend announcement day. We use a window period starting from -25-day to +25-day relative to the dividend announcement day (0-day).

CAR is computed as follows:

$$CAR_t = \sum_{t=1}^{j} MEAR_t \qquad (2)$$

And

$$CAR_t = \sum_{t=1}^{j} MAAR_t \qquad (3)$$

Where, CARt is cumulative abnormal return, MAARtand MEARt are defined above, j denotes the day -25 through day +25.

Finally, we used parametric test to determine the statistical significance of market adjusted average abnormal return of dividend paying stocks over the window period (-30 day to +30 day relative to dividend announcement). The t-statistics were calculated the standard deviation of abnormal returns of the portfolio of 196 dividend-paying stocks. Moreover, t-test suggested in Brown and Warner (1980) is also applied to test the statistical significance of the cumulative abnormal returns.

b) Samples Description

The sample includes 39 companies listed on the Tunisian Stock Exchange (TSE) who announced dividends between years 1996-2004. The total announcement of dividend is about of 196 announcements. This sample is afterwards subdivided afterwards according to the variation of dividend then we have three sub-samples: The first with firms that increase their dividend level between year t and year t-1 with 64observations, the second include firms that decide do not change their dividend ratio between year t and year t-1 with83 observations and finally firms that decrease their dividend between year t and t-1 with 49 observations.

Concerning the announcement of stock repurchases we consider a 17observed between years 2001-2002.

c) Empirical Findings and Analyses

i. *Dividend Annoucement*

Findings (insert Table 1and Graph 1) shows that average mean adjusted abnormal return (MEAR) on the day of dividend announcement were only 1.4 percent, which was not statistically significant. This could be due to the fact that the information of dividend payment often leaks out to the market a few days before the announcement made by the company. Hence, the announcement of dividend normally carries' no surprise to the market.

This findings was confirmed by the use of the Market Adjusted Abnormal Return (MAAR)(insert Table2); the abnormal return is about 1.42 percent but it's not statistically significant. Also we don't find any abnormal return during days before the announcement. During the post announcement periods (day +1 to +25), all MAARs are insignificant. Overall, MAAR results

suggest that the effect of dividend announcement is not strong in Tunisian Stock Exchange.

In the case of increase of dividends, which is interpreted according to the theory of signal as a positive signal sent to the market and allowing information about an improvement in firm performance, the results (insert table 3 and graph 4) do not validate the hypothesis of the theory of signal, as long as no statistically significant and positive reaction was observed. This result found witch not consistent with the hypothesis of information content of dividends may be explained by the fact that the decision of increase in TSE was already anticipated by the market.

The only abnormal adjusted return observed decrease about -0.14 percent is observed a day following the announcement of dividend day without being statistically significant. This abnormal return can be explained by the attitude of some investors who are assumed to be uninformed and who had anticipated an increase and then try to revise their anticipations.

In the case of maintaining of the same dividend level of the previous year, the findings (insert table 4 and graph4)showed no significant abnormal returns around the announcement date, the abnormal returns are near zero. This result, which implies that the announcement is fully anticipated by the market and that prices incorporate such information, to confirm the hypothesis that the Tunisian companies mostly try do not change their payout ratio. Thus, all investors in the TSE, even those uninformed, can know in advance the level of dividend to be paid even before its official publication. The absence of any observed reaction may also be due to the ownership structure of Tunisian companies or other explanations.

In the case of a decrease of the dividend level between year t and t-1 the findings show (table5)that these are a negative mean adjust abnormal return MAR and also a negative market adjusted abnormal return MAAR for the 5-day and 4-day before the announcement date with respectively an abnormal return of about 1058% (t-statistic -3.44) and -1.42% (t-statistic -1.18) Similarly, and consistent with the shape of CAR (insert graph 4), both in the case where the reference is the mean average return or the market index we note the existence of a statistically and significant cumulative profitability from the fourth day of the announcement date and this profitability is maintained for all the days of our estimation period.

Given the results found on the Tunisian context and when the event is an announcement of dividend, it appears that the assumptions of the theory of signaling are partially validated.

ii. *Stock Repurshase*

Finding (insert Table 6, table 7 and Graph 5) show that there's no significant reaction during the event's date or the event period. We observed only a positive abnormal return 0.57 in the day of announcement and about 1.26 in 4-day after the repurchase announcement event but this positive reaction is not statistically significant.

This finding do not confirm the hypothesis of information content and then the signaling hypothesis on Tunisian context. After the event period and especially on the seventh and ninth day following the announcement of stock repurchase, we observe a negative and statistically significant abnormal return, respectively about 2.93 percent and 2.11 percent. This evidence suggests that investor perceive this vent as a negative signal but the reaction is delayed. This can be explained that the principle purpose for stock repurchase in TSE is to maintain and then regulate the market price of company's shares. This finding confirm the Ikenberry et al. (1995, 2000), Chan et al. (2004), Zhang (2005), and Peyer and Vermaelen (2009) results for a possible delayed reaction to stock repurchases.

IV. Concluding and Remarks

In academic literature, it was suggested that dividend payments have no impact on the shareholders' value (Miller and Modigliani, 1961) in the absence of taxes and other market imperfections. A dividend payment provides cash flow to the shareholders but it reduces firm's recourses for investment. Hence, firms should not pay dividend if they have any positive net present value project in hand. However, Walter (1956) and Gordon (1959 and 1962) showed that valuation of stock depends on the expected future dividends. If company pays out all the earnings to shareholders, funds for future investment will decrease and dividend may not increase in the future. Therefore, theoretical literature suggested that dividends payout should not be desirable provided that companies can better invest their funds. Moreover, cash dividend is not desirable if investors need to pay taxes on their dividend income. Given the valid reasons for not paying dividends, an announcement of dividend payments may carry some information for the market and stock prices may be adjusted accordingly.

Based on the 39TSE listed companies declaring dividends during the period 1996-2004, we found that the only abnormal return is observed when the firm decreases their dividend level between year t and t-1. In this case we observed a negative reaction in the 7-day and 9- day following the announcement of dividend.

In this paper we examined also the announcement of 17repurchase programs during the period 2001-2002 on TSE. The empirical results show that the market does not react instantly in the event period but during the estimation period we observe a negative abnormal adjusted return on the 7- day and 9-day after the announcement date.

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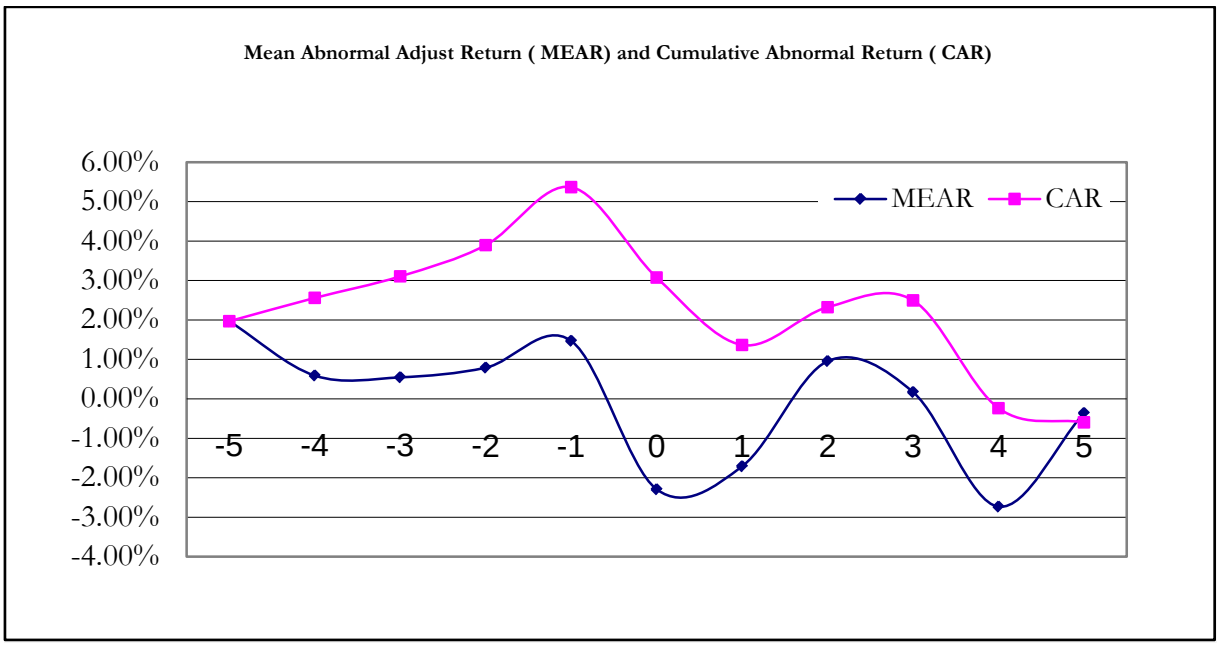
Table 1: Mean adjusted abnormal return (MEAR) of 39 dividend-paying TSE stocks over a window period starting from day –25 to day +25 relative to dividend announcement day (0-day) and associated Cumulative Abnormal Return (CAR) over the event period.

Day relative to dividend announcement	Average MEAR	t-statistic	CAR	t-statistic
-26				
-25	0,87978013	0,8481318		
-24	0,95409552	0,91977385		
-23	0,81595778	0,78660534		
-22	0,85930782	0,82839594		
-21	0,5870373	0,56591981		
-20	0,79019943	0,76177359		
-19	0,95494915	0,92059677		
-18	0,8701122	0,83881166		
-17	0,81685803	0,7874732		
-16	0,72409857	0,69805058		
-15	1,39366416	1,34352988		
-14	1,17298003	1,13078443		
-13	0,78588176	0,75761124		
-12	0,78326666	0,75509022		
-11	0,65181463	0,62836691		
-10	0,80313646	0,77424523		
-9	0,80137021	0,77254253		
-8	0,66728471	0,64328048		
-7	0,62429378	0,60183606		
-6	0,8882792	0,85632514		
-5	0,89750769	0,86522165	0,89750769	0,22747385
-4	0,81352916	0,78426408	1,71103685	0,43366329
-3	0,86877472	0,8375223	2,57981157	0,65385475
-2	0,63303879	0,61026649	3,21285036	0,8142988
-1	0,90135237	0,86892803	4,11420273	1,04274708
0	1,4139213	1,36305832*	5,52812403	1,40110626
1	1,56072229	1,50457844	7,08884632	1,79667224
2	1,04679029	1,00913411	8,13563662	2,06198185**
3	1,76072666	1,69738805	9,89636328	2,50823905**
4	1,39542577	1,34522813	11,291789	2,86191052**
5	0,9621902	0,92757734	12,2539792	3,10577819***
6	1,43940863	1,38762879		
7	1,4713649	1,4184355		
8	1,74253837	1,67985405		
9	0,76029627	0,73294614		
10	1,33349658	1,28552672		
11	1,14330014	1,10217221		
12	0,8513694	0,82074309		
13	1,14620505	1,10497262		
14	1,37487473	1,32541637		
15	1,20851814	1,16504413		
16	1,22552871	1,18144277		
17	1,24864028	1,20372295		
18	1,07915836	1,0403378		
19	1,15650324	1,11490036		

20	0,95563842	0,92126125		
21	0,99183182	0,95615266		
22	0,84222201	0,81192477		
23	0,94280642	0,90889085		
24	0,80300887	0,77412224		
25	7,33057708	7,06687428		

Note: Asterisks in the last column denotes that the corresponding MEAR is statistically significant. The asterisks ***, ** indicate the level of significance (based on the *t* values) at respectively the 1, 5 percent level.



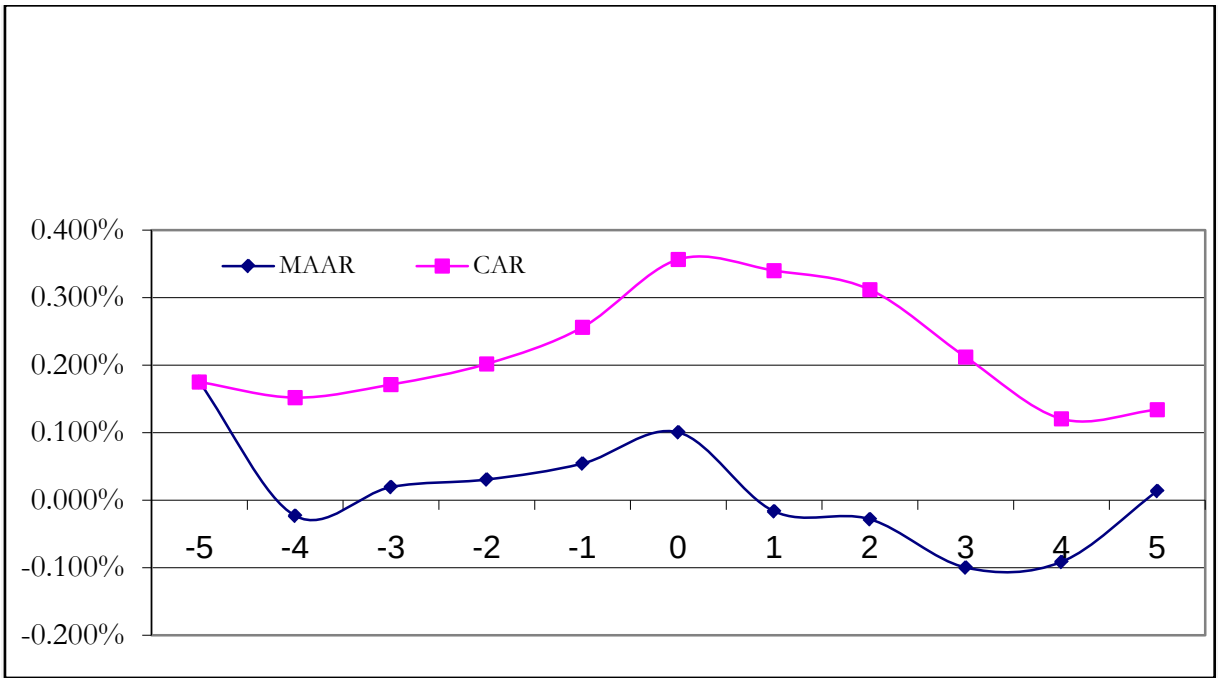
Graph 1: Mean adjusted abnormal return (MEAR) of 39 dividend-paying TSE stocks over a window period starting from day –5 to day +5 relative to dividend announcement day (0-day) and associated Cumulative Abnormal Return (CAR) over the event period.

Table 2: Market adjusted abnormal return (MAAR) of 39 dividend-paying TSE stocks over a window period starting from day –25 to day +25 relative to dividend announcement day (0-day and associated Cumulative Abnormal Return (CAR) over the event period.

Day relative to dividend announcement	Average MEAR	t-statistic	CAR	t-statistic
-26				
-25	0,8805419	0,84784654		
-24	0,95775312	0,92219083		
-23	0,81630382	0,78599368		
-22	0,85954902	0,82763315		
-21	0,58723636	0,56543171		
-20	0,79040676	0,7610582		
-19	0,95500572	0,91954544		
-18	0,87097659	0,8386364		
-17	0,81686174	0,78653089		
-16	0,72474291	0,69783252		
-15	1,39370451	1,34195493		
-14	1,17336877	1,12980047		
-13	0,78588264	0,75670207		
-12	0,78568532	0,75651207		
-11	0,65584811	0,63149585		

-10	0,80318459	0,77336158		
-9	0,80137602	0,77162016		
-8	0,6678744	0,64307559		
-7	0,6327875	0,6092915		
-6	0,89040254	0,85734104		
-5	0,90197958	0,86848822	0,90197958	0,2278707
-4	0,8164923	0,78617516	1,71847188	0,43414441
-3	0,87111368	0,83876839	2,58958555	0,65421733
-2	0,64183277	0,61800091	3,23141833	0,8163661
-1	0,90327065	0,86973135	4,13468898	1,04456297
0	1,42042909	1,36768721	5,55511807	1,40341164
1	1,5616394	1,50365424	7,11675747	1,79793483
2	1,04748494	1,00859082	8,1642424	2,06256512**
3	1,76237934	1,69694051	9,92662174	2,50780205**
4	1,40665953	1,35442892	11,3332813	2,86317206**
5	0,96583691	0,92997447	12,2991182	3,10717529**
6	1,48795764	1,43270835		
7	1,48179759	1,42677703		
8	1,74829629	1,68338038		
9	0,76563271	0,73720404		
10	1,33654653	1,28691929		
11	1,14333605	1,1008829		
12	0,85178013	0,82015272		
13	1,14645575	1,10388676		
14	1,3751276	1,3240678		
15	1,21122693	1,16625292		
16	1,23065967	1,18496411		
17	1,24990545	1,20349527		
18	0,90932252	0,87555851		
19	1,1564729	1,11353196		
20	0,95780834	0,922244		
21	0,99225214	0,95540887		
22	0,84827479	0,81677754		
23	0,94287067	0,90786099		
24	0,80626266	0,77632536		
25	7,33324185	7,06095159		

Note: Asterisks in the last column denotes that the corresponding MAAR is statistically significant. The asterisks ***, ** indicate the level of significance (based on the *t* values) at respectively the 1, 5 percent level.



Graph 2: Market adjusted abnormal return (MAAR) of 39 dividend-paying TSE stocks over a window period starting from day –5 to day +5 relative to dividend announcement day (0-day) and associated Cumulative Abnormal Return (CAR) over the event period.

Table 3: Mean adjusted abnormal return (MEAR) of 39 dividend-paying TSE stocks over a window period starting from day –25 to day +25 relative to dividend announcement day (0-day) for firms that increase their dividend level between year t and year t-1 and associated Cumulative Abnormal Return (CAR) over the event period and subsequent days.

Day relative to dividend announcement	Average MEAR	t-statistic	CAR	t-statistic
-25	0,001259	0,86530626	0,00125898	
-24	0,000709	0,48739068	0,00196811	
-23	0,001334	0,91685304	0,00330209	
-22	- 0,000109	-0,07468562	0,00319343	
-21	0,000845	0,58070749	0,00403833	
-20	0,000815	0,5600527	0,00485319	
-19	0,000951	0,65345463	0,00580393	
-18	0,001150	0,79013588	0,00695355	
-17	- 0,001007	-0,69200468	0,00594671	
-16	0,000623	0,42811517	0,0065696	
-15	- 0,000056	-0,03839662	0,00651373	
-14	0,001647	1,13166397	0,00816025	
-13	0,001265	0,86958148	0,00942546	
-12	0,000097	0,06637474	0,00952203	
-11	0,000380	0,26126465	0,00990216	
-10	0,000710	0,48792337	0,01061206	
-9	0,000636	0,43728798	0,0112483	
-8	0,000939	0,6451926	0,01218703	
-7	- 0,000585	-0,40178975	0,01160244	
-6	0,000673	0,46249052	0,01227534	
-5	0,001751	1,20344556	0,0140263	5,15423008
-4	- 0,000231	-0,15885841	0,01379517	5,06929628

-3	0,000194	0,13304785	0,01398875	5,14043044
-2	0,000305	0,20994356	0,01429421	5,25267697
-1	0,000542	0,37255114	0,01483625	5,4518618
0	0,001005	0,69065589	0,01584113	5,82112165
1	- 0,000165	-0,1134938	0,015676	5,76044208
2	- 0,000282	-0,19406621	0,01539364	5,65668439
3	- 0,000998	-0,68586177	0,01439574	5,28998772
4	- 0,000914	-0,62852243	0,01348127	4,95394759
5	0,000135	0,09297168	0,01361654	5,00365499
6	- 0,001198	-0,82338128	0,01241856	
7	0,001037	0,71263626	0,01345541	
8	- 0,000308	-0,21177074	0,01314729	
9	0,000352	0,24199308	0,01349938	
10	- 0,000260	-0,17896743	0,01323899	
11	0,000012	0,00858253	0,01325148	
12	0,000433	0,29778043	0,01368474	
13	- 0,000827	-0,56808382	0,0128582	
14	- 0,001302	-0,89504626	0,01155595	
15	0,001963	1,34915514	0,01351891	
16	0,000216	0,1482253	0,01373457	
17	- 0,002251	-1,54696175	0,01148381	
18	- 0,001223	-0,84054964	0,01026085	
19	- 0,000901	-0,61943197	0,0093596	
20	- 0,000975	-0,67014447	0,00838457	
21	0,000648	0,44530582	0,00903247	
22	0,000251	0,17277697	0,00928385	
23	- 0,000453	-0,31114264	0,00883115	
24	0,001222	0,84022123	0,01005364	
25	- 0,007002	-4,81274624	0,00305131	

Note: Asterisks in the last column denotes that the corresponding MEAR is statistically significant. The asterisks ***, ** indicate the level of significance (based on the *t* values) at respectively the 1, 5 percent level.

Table 4: Mean adjusted abnormal return (MEAR) of 39 dividend-paying TSE stocks over a window period starting from day –25 to day +25 relative to dividend announcement day (0-day) for firms that not change their dividend level between year t and year t-1 and associated Cumulative Abnormal Return (CAR) over the event period and subsequent days.

Day relative to dividend announcement	Average MEAR	t-statistic	CAR	t-statistic
-25	0,001022	1,144792953		
-24	- 0,000282	-0,31582245		
-23	- 0,000045	-0,050221139		
-22	- 0,000722	-0,808480085		
-21	0,000192	0,215214653		
-20	0,000633	0,708299283		
-19	0,000915	1,024280382		
-18	0,002998	3,356983566		
-17	0,000544	0,608945932		
-16	0,002072	2,319560424		
-15	0,001006	1,126740706		
-14	0,001742	1,950898881		
-13	0,000365	0,408279815		
-12	0,000819	0,917145811		

-11	0,000775	0,867453814		
-10	0,002263	2,533493531		
-9	- 0,000865	-0,969060975		
-8	- 0,000767	-0,859184463		
-7	0,001139	1,275053053		
-6	- 0,000467	-0,522703549		
-5	0,000608	0,680441982	0,000607722	0,001751
-4	0,000213	0,238486837	0,000820722	0,001520
-3	0,000649	0,727074185	0,001470093	0,001713
-2	0,000158	0,177461224	0,001628589	0,002019
-1	0,000381	0,426294062	0,002009324	0,002561
0	- 0,001405	-1,572893352	0,000604528	0,003566
1	- 0,001043	-1,167424937	-0,000438133	0,003401
2	0,000876	0,981347257	0,000438336	0,003118
3	- 0,001352	-1,513553767	-0,000913462	0,002120
4	- 0,000508	-0,568918177	-0,00142158	0,001206
5	0,001165	1,304661903	-0,000256348	0,001341
6	- 0,000678	-0,759380585		
7	- 0,001163	-1,30166536		
8	0,000233	0,260587341		
9	- 0,000084	-0,0941876		
10	0,001391	1,557375612		
11	0,000211	0,236360797		
12	0,000539	0,603278604		
13	0,000002	0,002015878		
14	- 0,000422	-0,472213702		
15	- 0,000539	-0,603489755		
16	- 0,000169	-0,189278603		
17	- 0,000074	-0,082300368		
18	0,000112	0,125592702		
19	- 0,000301	-0,337503702		
20	0,000067	0,074980498		
21	- 0,000223	-0,249803204		
22	- 0,000036	-0,040539026		
23	0,000633	0,708192849		
24	0,000483	0,541038691		
25	0,001027	1,14941928		

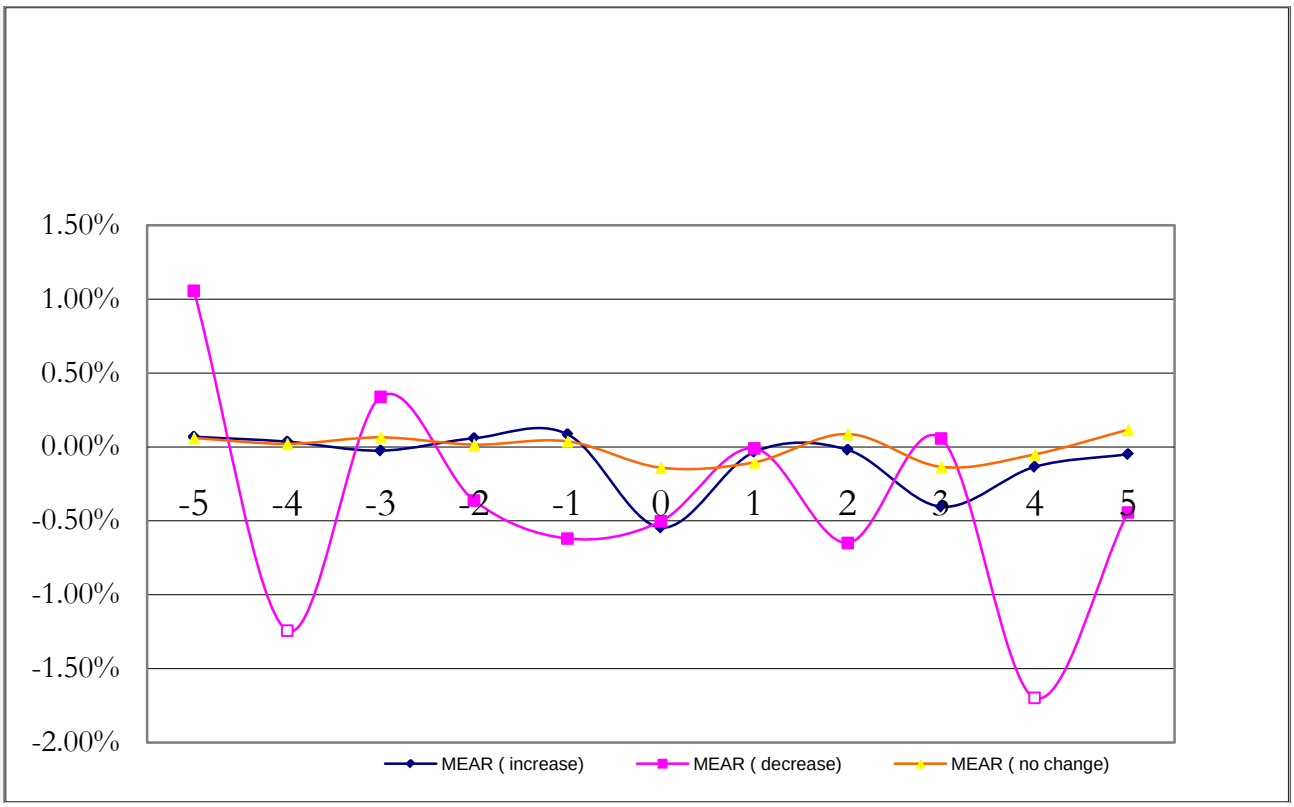
Note: Asterisks in the last column denotes that the corresponding MEAR is statistically significant. The asterisks ***, ** indicate the level of significance (based on the *t* values) at respectively the 1, 5 percent level

Table 5: Mean adjusted abnormal return (MEAR) of 39 dividend-paying TSE stocks over a window period starting from day –25 to day +25 relative to dividend announcement day (0-day) for firms that decrease their dividend level between year t and year t-1 and associated Cumulative Abnormal Return (CAR) in the event period and estimation period and subsequent days.

Day relative to repurchase announcement	Average MEAR	t-statistic	CAR	t-statistic
-25	0,003%	0,00614694		
-24	-0,238%	-0,48158831		
23	0,317%	0,64227547		
-22	-0,317%	-0,64213089		
-21	0,205%	0,415622		
-20	-0,642%	-1,30166844		
-19	-0,100%	-0,20262791		
-18	0,549%	1,11355411		
-17	0,234%	0,47424756		
-16	0,580%	1,17574257		
-15	-0,385%	-0,78099295		
-14	0,134%	0,2708623		
-13	-0,164%	-0,33246183		
-12	0,298%	0,60465653		
-11	0,642%	1,30233524		
-10	-0,048%	-0,09765555		
-9	0,462%	0,93590345		
-8	0,162%	0,32895142		
-7	-0,326%	-0,66091995		
-6	0,196%	0,39774982		
-5	1,058%	2,14437403***	0,01057708	0,34417319
-4	-1,242%	-2,51845094	-0,00184513	-0,06003955
-3	0,339%	0,68803158	0,00154857	0,05038989
-2	-0,362%	-0,73387591	-0,00207125	-0,06739759
-1	-0,619%	-1,25563092	-0,00826463	-0,26892702
0	-0,503%	-1,02021118	-0,0132968	-0,43267147
1	-0,009%	-0,01908946	-0,01339095	-0,43573534
2	-0,649%	-1,31640344	-0,01988409	-0,6470188
3	0,058%	0,11731335	-0,01930544	-0,62818994
4	-1,697%	-3,44142209***	-0,03628018	-1,18054005**
5	-0,443%	-0,89795422	-0,04070932	-1,32466218**
6	-0,809%	-1,6399765	-0,04879847	-1,58787929**
7	0,170%	0,34438611	-0,04709979	-1,53260514**
8	-0,367%	-0,74439705	-0,05077152	-1,65208126**
9	-1,398%	-2,83503052***	-0,06475524	-2,10710519***
10	-0,382%	-0,77404891	-0,06857322	-2,23134046***
11	-0,559%	-1,13384775	-0,0741659	-2,41332363***
12	0,435%	0,88154304	-0,06981771	-2,2718355***
13	-0,285%	-0,5785364	-0,07267133	-2,3646909***
14	-0,848%	-1,71967948	-0,08115361	-2,64070039***
15	1,060%	2,1486513	-0,07055544	-2,2958407***
16	-0,561%	-1,13755946	-0,07616642	-2,4784196***
17	-0,113%	-0,22938024	-0,07729784	-2,51523525***
18	0,194%	0,3933658	-0,07535757	-2,45209983***
19	-0,790%	-1,60075964	-0,08325328	-2,70902262***

20	-0,072%	-0,14655659	-0,08397617	-2,73254503***
21	0,444%	0,90029013	-0,07953551	-2,58804798***
22	0,263%	0,53334362	-0,0769048	-2,50244604**
23	0,629%	1,27611332	-0,0706104	-2,29762916***
24	0,004%	0,00781736	-0,07057184	-2,29637447***
25	-0,405%	-0,82199334	-0,0746263	-2,42830485***

Note: Asterisks in the last column denotes that the corresponding MEAR is statistically significant. The asterisks ***, ** indicate the level of significance (based on the *t* values) at respectively the 1, 5 percent level



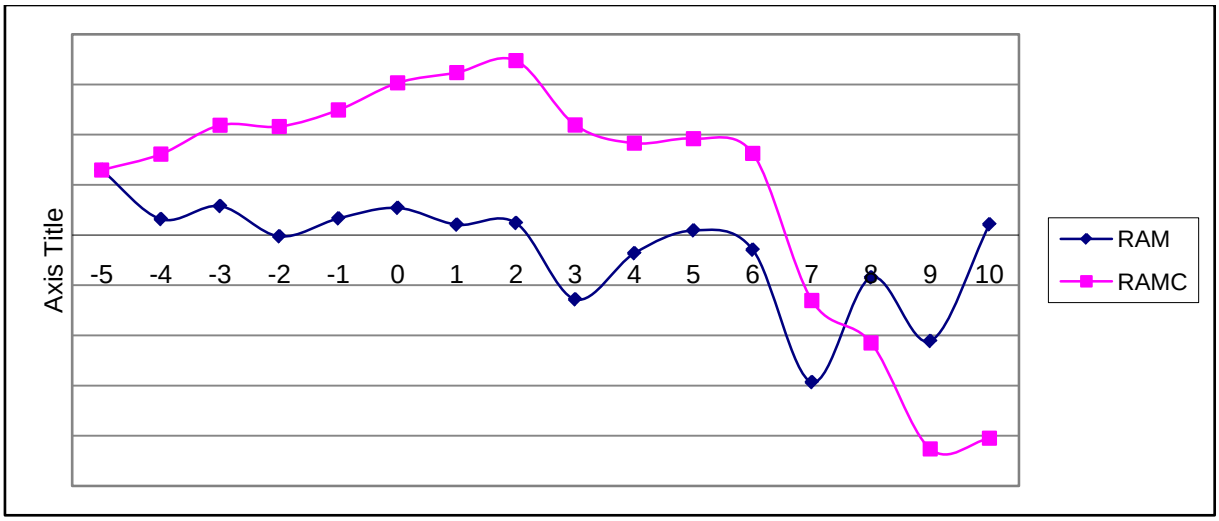
Graph 3: Mean adjusted abnormal return (MEAR) of 39 dividend-paying TSE stocks over a window period starting from day –5 to day +5 relative to dividend announcement day (0-day) for firms that decrease their dividend level between year t and year t-1 and associated Cumulative Abnormal Return (CAR) in the event period and estimation period and subsequent days.

Table 6: Market adjusted abnormal return (MEAR) of 17repurchase-paying TSE stocks over a window period starting from day –25 to day +25 relative to stock repurchase announcement day (0-day) for firms that decrease their dividend level between year t and year t-1 and associated Cumulative Abnormal Return (CAR) in the event period and estimation period and subsequent days.

Day relative to repurchase announcement	Average MEAR	t-statistic	CAR	t-statistic
-26				
-25	0,609813	-0,49032579		
-24	0,670426	-0,414157105		
-23	0,355244	-0,810228415		
-22	0,438983	-0,70499819		
-21	0,660156	-0,427063039		
-20	0,331441	-0,840140436		
-19	0,579918	-0,527892689		
-18	0,56769	-0,543258985		
-17	1,108022	0,135744572		

-16	0,716867	-0,355797445		
-15	0,3008	-0,878645004		
-14	0,466763	-0,670088655		
-13	0,460595	-0,677839803		
-12	0,928566	-0,089766815		
-11	0,589713	-0,515584726		
-10	0,738574	-0,328518977		
-9	1,331335	0,416369116		
-8	0,264878	-0,923785288		
-7	0,524043	-0,598107835		
-6	1,118651	0,149101359		
-5	1,054742	0,068790916	0,01297	0,329954927
-4	0,588839	-0,516682151	0,01614	0,410481171
-3	0,725915	-0,34442689	0,02190	0,55702352
-2	1,847332	1,064794128	0,02163	0,55026132
-1	1,37603	0,472535145	0,02493	0,6343300
0	0,537658	-0,580998296	0,03034	0,771817039
1	1,248439	0,31219957	0,03239	0,823993381
2	0,428072	-0,718709121	0,03477	0,884619871
3	1,105407	0,132459198	0,02194	0,558280524
4	1,026912	0,03381843	0,01831	0,465847316
5	0,440249	-0,703407521	0,01922	0,488968777
6	0,9207	-0,099652334	0,01628	0,414192887
7	3,796026	3,513605674***	- 0,01304	-0,331854623
8	1,97896	1,230203113	- 0,02149	-0,546762465
9	2,999612	2,512798113***	- 0,04262	-1,084258635
10	0,673248	-0,410609917	- 0,04049	-1,030114567
11	0,271712	-0,915197597	- 0,03932	-1,000228989
12	0,781923	-0,274044541	- 0,03649	-0,928256978
13	0,457693	-0,681485982	- 0,04027	-1,024532011
14	1,758602	0,953292148	- 0,04362	-1,109801369
15	3,212176	2,779914489***	- 0,05943	-1,511849128
16	1,33656	0,422935495	- 0,06452	-1,641404597
17	0,803535	-0,246885978	- 0,06398	-1,627600701
18	1,369517	0,46435073	- 0,05505	-1,400558825
19	0,853564	-0,18401797	- 0,06017	-1,530816967
20	0,293225	-0,888164115	- 0,06001	-1,526559308
21	1,016945	0,021293384	- 0,06284	-1,598648997
22	0,70694	-0,368272259	- 0,06247	-1,589176047
23	0,7549	-0,308002847	- 0,05936	-1,510124514
24	1,529653	0,665585042	- 0,04594	-1,168651562
25	1,182494	0,229329248	- 0,04530	-1,15230538

Note: Asterisks in the last column denotes that the corresponding MEAR is statistically significant. The asterisks ***, ** indicate the level of significance (based on the *t* values) at respectively the 1, 5 percent level



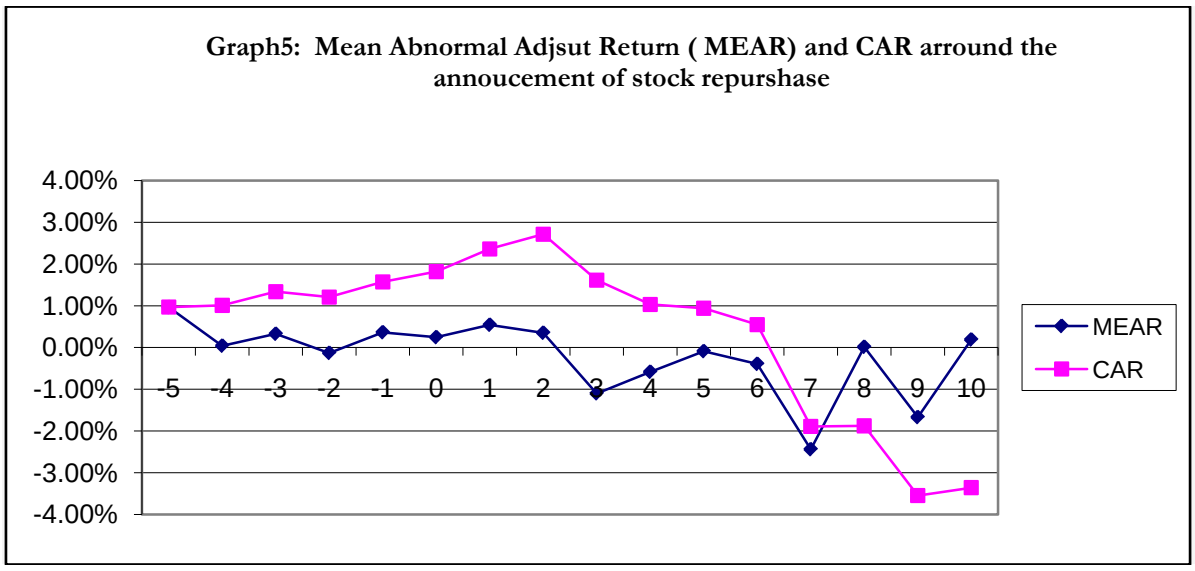
Graph 4: Market adjusted abnormal return (MEAR) of 17 repurchase-paying TSE stocks over a window period starting from day –25 to day +25 relative to stock repurchase announcement day (0-day) for firms that decrease their dividend level between year t and year t-1 and associated Cumulative Abnormal Return (CAR) in the event period and estimation period and subsequent days.

Table 6: Mean adjusted abnormal return (MEAR) of 17 repurchase-paying TSE stocks over a window period starting from day –25 to day +25 relative to stock repurchase announcement day (0-day) for firms that decrease their dividend level between year t and year t-1 and associated Cumulative Abnormal Return (CAR) in the event period and estimation period and subsequent days.

Day relative to repurchase announcement	Average MEAR	t-statistic	CAR	t-statistic
-25	0,36%	0,59119881		
-24	0,61%	1,01648807		
and-23	0,06%	0,09545055		
-22	-0,09%	-0,14781817		
-21	0,46%	0,76408428		
-20	-0,03%	-0,05476158		
-19	0,53%	0,87964506		
-18	0,31%	0,51806159		
-17	0,42%	0,68984062		
-16	0,26%	0,43284297		
-15	-0,06%	-0,09155938		
-14	0,46%	0,7538951		
-13	0,28%	0,45672479		
-12	0,52%	0,85938823		
-11	0,23%	0,38892771		
-10	0,07%	0,11299225		
-9	-0,21%	-0,34448695		
-8	0,05%	0,0893111		
-7	-0,45%	-0,74291223		
-6	0,46%	0,75787472		
-5	0,97%	1,6027543	0,009680	0,32995493
-4	0,04%	0,06939931	0,010099	0,41048117
-3	0,33%	0,54147298	0,013369	0,55702352
-2	-0,13%	-0,21543997	0,012068	0,55026132
-1	0,36%	0,6027901	0,015709	0,63433
0	0,25%	0,40881625	0,018178	0,77181704

1	0,54%	0,89908714	0,023608	0,82399338
2	0,35%	0,58265464	0,027127	0,88461987
3	-1,10%	-1,8215372	0,016126	0,55828052
4	-0,58%	-0,96569331	0,010293	0,46584732
5	-0,09%	-0,14701113	0,009405	0,48896878
6	-0,39%	-0,65085369	0,005475	0,41419289
7	-2,44%	-4,03759205	- 0,018911	-0,33185462
8	0,01%	0,02388667	- 0,018767	-0,54676246
9	-1,67%	-2,76379485	- 0,035459	-1,08425863
10	0,19%	0,31354837	- 0,033565	-1,03011457
11	-0,06%	-0,10655087	- 0,034209	-1,00022899
12	-0,23%	-0,38190236	- 0,036515	-0,92825698
13	-0,50%	-0,82544972	- 0,041501	-1,02453201
14	-0,54%	-0,89551985	- 0,046909	-1,10980137
15	-0,74%	-1,22390984	- 0,054301	-1,51184913
16	-0,06%	-0,10343778	- 0,054926	-1,6414046
17	0,38%	0,63203404	- 0,051109	-1,6276007
18	0,87%	1,4354234	- 0,042439	-1,40055882
19	-0,03%	-0,05448561	- 0,042768	-1,53081697
20	0,04%	0,06222498	- 0,042393	-1,52655931
21	-0,14%	-0,23735262	- 0,043826	-1,598649
22	0,21%	0,34815396	- 0,041723	-1,58917605
23	0,45%	0,75314722	- 0,037175	-1,51012451
24	0,69%	1,14771506	- 0,030243	-1,16865156
25	-0,28%	-0,460472	- 0,033024	-1,15230538

Note: Asterisks in the last column denotes that the corresponding MEAR is statistically significant. The asterisks ***, ** indicate the level of significance (based on the *t* values) at respectively the 1, 5 percent level



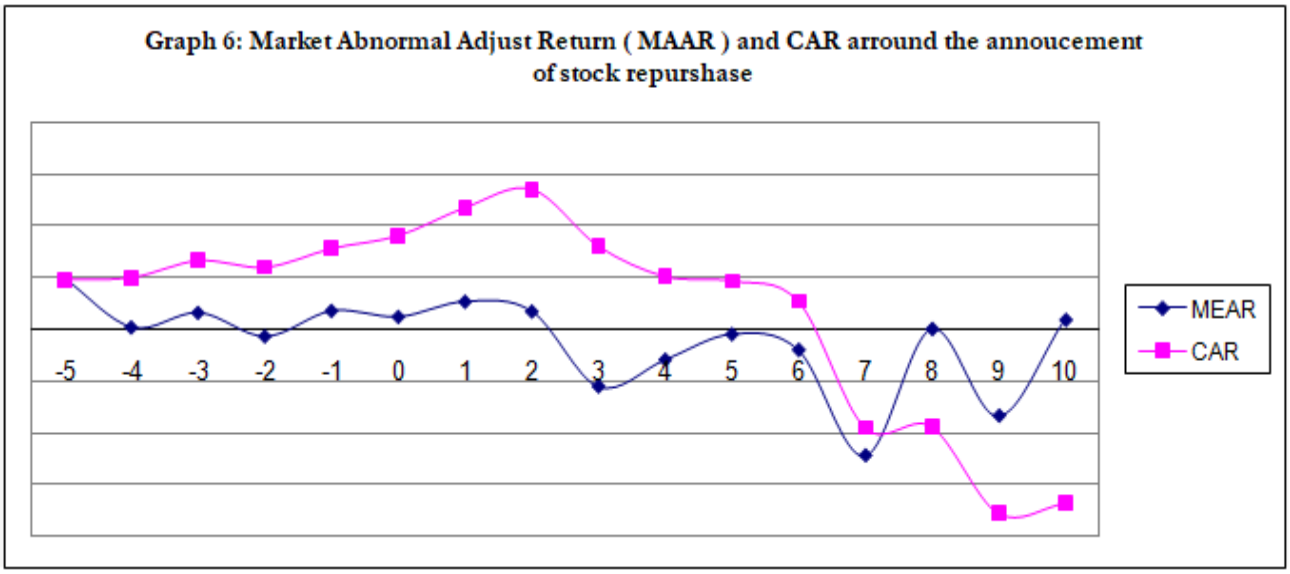
Graph 5: Mean adjusted abnormal return (MEAR) of 17 repurchase-paying TSE stocks over a window period starting from day –25 to day +25 relative to stock repurchase announcement day (0-day) for firms that decrease their dividend level between year t and year t-1 and associated Cumulative Abnormal Return (CAR) in the event period and estimation period and subsequent days.

Table 7: Market adjusted abnormal return (MAAR) of 17 repurchase-paying TSE stocks over a window period starting from day –25 to day +25 relative to stock repurchase announcement day (0-day) for firms that decrease their dividend level between year t and year t-1 and associated Cumulative Abnormal Return (CAR) in the event period and estimation period and subsequent days.

Day relative to repurchase announcement	Average MEAR	t-statistic	CAR	T Statistic
-26				
-25	0,36%	0,59119881		
-24	0,61%	1,01648807		
-23	0,06%	0,09545055		
-22	-0,09%	-0,14781817		
-21	0,46%	0,76408428		
-20	-0,03%	-0,05476158		
-19	0,53%	0,87964506		
-18	0,31%	0,51806159		
-17	0,42%	0,68984062		
-16	0,26%	0,43284297		
-15	-0,06%	-0,09155938		
-14	0,46%	0,7538951		
-13	0,28%	0,45672479		
-12	0,52%	0,85938823		
-11	0,23%	0,38892771		
-10	0,07%	0,11299225		
-9	-0,21%	-0,34448695		
-8	0,05%	0,0893111		
-7	-0,45%	-0,74291223		
-6	0,46%	0,75787472		
-5	0,97%	1,6027543	0,00968	1,63616901
-4	0,04%	0,06939931	0,01010	1,70701517
-3	0,33%	0,54147298	0,01337	2,25977695
-2	-0,13%	-0,21543997	0,01207	2,03984542
-1	0,36%	0,6027901	0,01571	2,65520267
0	0,25%	0,40881625	0,01818	3,07254204
1	0,54%	0,89908714	0,02361	3,99037363
2	0,35%	0,58265464	0,02713	4,58517563
3	-1,10%	-1,8215372	0,01613	2,72566247
4	-0,58%	-0,96569331	0,01029	1,73983609
5	-0,09%	-0,14701113	0,00941	1,58976003
6	-0,39%	-0,65085369	0,00547	0,92533715
7	-2,44%	-4,03759205	- 0,01891	-3,19643184
8	0,01%	0,02388667	- 0,01877	-3,17204717
9	-1,67%	-2,76379485	- 0,03546	-5,99346245
10	0,19%	0,31354837	- 0,03357	-5,67337713
11	-0,06%	-0,10655087	- 0,03421	-5,7821494
12	-0,23%	-0,38190236	- 0,03652	-6,17201377
13	-0,50%	-0,82544972	- 0,04150	-7,01467271
14	-0,54%	-0,89551985	- 0,04691	-7,92886263
15	-0,74%	-1,22390984	- 0,05430	-9,17828892
16	-0,06%	-0,10343778	- 0,05493	-9,28388319
17	0,38%	0,63203404	- 0,05111	-8,63867231
18	0,87%	1,4354234	- 0,04244	-7,17332277

19	-0,03%	-0,05448561	- 0,04277	-7,22894432
20	0,04%	0,06222498	- 0,04239	-7,16542206
21	-0,14%	-0,23735262	- 0,04383	-7,40772308
22	0,21%	0,34815396	- 0,04172	-7,0523107
23	0,45%	0,75314722	- 0,03717	-6,28346164
24	0,69%	1,14771506	- 0,03024	-5,11181867
25	-0,28%	-0,460472	- 0,03302	-5,58189073

Note: Asterisks in the last column denotes that the corresponding MEAR is statistically significant. The asterisks ***, ** indicate the level of significance (based on the *t* values) at respectively the 1, 5 percent level



Graph 6: Market adjusted abnormal return (MAAR) of 17 repurchase-paying TSE stocks over a window period starting from day –5 to day +10 relative to stock repurchase announcement day (0-day) for firms that decrease their dividend level between year t and year t-1 and associated Cumulative Abnormal Return (CAR) in the event period and estimation period and subsequent days.