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THE IMPACT OF A SURPRISE DIVIDEND INCREASE ON A STOCKS PERFORMANCE. THE ANALYSIS OF COMPANIES LISTED ON THE WARSAW STOCK EXCHANGE

The reaction of marginal investors to the announcement of a surprise dividend increase has been measured. Although field research is performed on companies listed on the Warsaw Stock Exchange, the paper has important theoretical implications. Valuation theory gives many clues for the interpretation of changes in dividends. At the start of the literature review, the assumption of the irrelevance of dividends (to investment decisions) is described. This assumption is the basis for up-to-date valuation procedures leading to fundamental and fair market valuation of equity (shares). The paper is designed to verify whether the market value of stock is immune to the surprise announcement of a dividend increase. This study of the effect of a surprise dividend increase gives the chance to partially isolate such an event from dividend changes based on long-term expectations. The result of the research explicitly shows that a surprise dividend increase is on average welcomed by investors (an average abnormal return of 2.24% with an associated *p*-value of 0.001). Abnormal returns are realized by investors when there is a surprise increase in a dividend payout. The subsample of relatively high increases in a dividend payout enables investors to gain a 3.2% return on average. The results show that valuation models should be revised to take into account a possible impact of dividend changes on investors' behavior.

Keywords: *effect of a dividend announcement, event study analysis*

1. Introduction

The development of a stock exchange gives the opportunity to measure investor's immediate reaction to a change in a company's financial policy. The observation of the investor's behavior enables recording their "true" preferences and gives a unique

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chance to test theoretical developments in real-life situations. Only an efficient market facilitates the swift reaction of an investor thanks to sophisticated technology and unconstrained information flow. The task for a rational investor is even more demanding, requiring a carefully measured reaction to each piece of new information*. However, to run a test based on an investor's behavior, the supreme state of market efficiency (called the strong form) is not required. In most developed markets with highly efficient trading platforms, only the inflow of publicly available information makes the stock price change. This assumption constitutes semi-strong market efficiency.

Much research observes the reaction to important information announced by a company, in order to test the assumption of semi-strong efficiency. Undoubtedly, information on the dividend has become one of the most popular forms of information for such a test. Information on the dividend has caught scientists' and practitioners' attention because it is vital to shareholders. In this case, the results of such tests allowed creation of many alternative theories to classical solutions. The prime example of a contribution from such a market test is the refutation of the dividend irrelevance theory created by Miller and Modigliani [8].Therefore, the reaction to the first dividend payout, a change in the dividend and cancellation of a dividend payment have been tested repeatedly in many markets.

Numerous studies try to find an investor's long term reaction patterns to a policy change in paying dividends (the time-series of a company's dividend characteristics are scrutinized). However in the paper, dividend changes are studied in times of capital market turbulence (2006–2009) and for this reason the dividend expectations based on historical patterns might be misleading. Additionally, the current state of development of the Polish market gives managers the chance of shaping the policy on dividend payments more freely, i.e. with less stress on adaptation to past data.

Since dividend paying companies represent a significant fraction of the companies listed on the Warsaw Stock Exchange (WSE), a test based on dividend information could be performed on the Polish stock market. The subject of this paper is to observe the reaction to a resolution passed at an annual meeting of shareholders (AMS) that changes the projected dividend level. Adjustment of the dividend is defined as the change in a dividend as declared in an AMS's draft resolution. On the Polish stock market draft resolutions are published weeks before the AMS. The reaction analyzed is basically the short-term price adjustment to a fairly isolated piece of information about a change in the dividend. The results will provide information about how valuable is information about an unanticipated change in a future dividend. Secondly, the speed of adjustment will help to test the assumption of semi-strong efficiency in the Polish market.

*It is sufficient to assume that investors' reactions are evenly distributed around the rational reaction. Furthermore, accepting the dominant role of institutional investors will diminish the impact of speculative trading.

2. Overview of the literature

The seminal paper by Miller and Modigliani about dividends and a firm's value introduced the concept of dividend irrelevance [8]. The assumed lack of association between stock price and dividend arose for two reasons: (1) the absence of a theoretical foundation and/or (2) the impossibility of an unequivocal interpretation of information on dividends by investors [3].

A large proportion of subsequent studies responded to the challenge of interpreting how investors read information on the dividend. Researchers try to apply the signalling hypothesis, which states that the current dividend level contains information about the future level of profits and dividends. The pioneering works of Bhattacharya [2] and Kose and Williams [5] confirm the signalling hypothesis. These research results prove that a dividend increase has a positive effect on the stock price and *vice versa* (in particular, the initial dividend has a strong positive effect*). Furthermore, there is a strong relationship between a dividend increase and growth in earnings in the two subsequent years [11].

Researchers use other methods as well. Litzenberger and Ramaswamy [7] run a regression analysis with respect to the level of specific and market risks. They find a significant relationship between risk adjusted stock market returns and high dividend yield, which indicates that investors expect higher returns from dividend paying stocks. These results were confirmed by [Naranjo, Nimalendran and Ryngaert [10] who run a regression based on the factors used in the Fama and French model and dividend yield. Using data from 378 months, they find that companies with higher dividend yields have higher returns and this result is statistically significant. These studies support the thesis that dividends are undesirable, because investors require higher risk-adjusted returns.

3. Hypothesis and research method

The history of dividend payouts for companies listed on the WSE is relatively short. Therefore, the choice of different payout policies is limited. Since companies which explicitly follow a particular dividend policy are scarce on the Polish market, investors attach almost no weight to changes in dividend policy [13]. This phenomenon could be explained by the fact that, for most companies, dividends may be described as specially designated. Research on the effect of the ex-date announcement of specially designated dividends – those labeled by management as "special" or "extra"

*In the USA market the first dividend payout results in a 3% stock price increase [1]. This effect has not been confirmed for the Polish Stock Market.

– show a positive reaction to the information contained in the dividend. Research on USA companies [4] shows that the market reacts positively to the announcement of a designated dividend, but compared with a regular dividend it conveys less information.

The first hypothesis is that the announcement of a surprise change in dividend policy will not significantly influence abnormal rates of return on day (0) or day (–1). If proved, this could mean that a marginal investor is able to determine the level of future dividends regardless of management declarations. Note that management proposals should be changed during the AMS. However, if this hypothesis is rejected, then investors recognize such changes as a surprise and react accordingly. In a perfect capital market this would mean that the stock price should drop*. If the price goes up, then an investor assumes that the surprise dividend effect will not be offset by negative signals about financing and investment decisions (as explained by Miller and Rock [9]**). The positive effect of a surprise dividend could indicate that dividends convey positive information about the prospects of a firm.

The next hypothesis, which is associated with the former one, is the hypothesis of gaining no abnormal returns if the level of the projected dividend is confirmed at the AMS. This hypothesis may simply exclude the effect of the AMS (since many different important resolutions may be passed at the annual meeting).

The third hypothesis will be tested if the first hypothesis is rejected. The second hypothesis states that an investor's reaction depends on the magnitude of the change in the dividend. It is assumed that the bigger the change in the dividend, the greater the abnormal returns are. The explanation of this is based on the supposition that the scale of the change in the dividend may indicate the scale of anticipated change in a company's performance.

One of the major problems in event study analysis is the assessment of abnormal returns. One of the most popular methods of calculating abnormal returns is the market model method. This method is most commonly used due to the fact that it factors risk adjusted returns that accompany listed companies. At the very beginning of the estimation procedure, a clean period is selected. Next, regression analysis is performed for each day in the period. The abnormal rate of return (AR) is defined as the difference between observed $(R_{i,t})$ and normal returns $(\hat{R}_{i,t})$:

$$AR = R_{i,t} - \hat{R}_{i,t}$$

*This is a result of the dividend irrelevance hypothesis which indicates that any increase in a dividend payout will result in an equivalent drop in the ex-dividend price of the stock.

**This study confirms that the earnings surprise and the net dividend surprise can convey the same information. Furthermore, the effect of a financing announcement is merely the effect of a dividend announcement but with the sign reversed.

The normal return is calculated by means of the regression analysis:

$$\hat{R}_{i,t} = \alpha_i + \beta_i R_{m,t}$$

where: $\hat{R}_{i,t}$ – the rate of return on stock i on day t, $R_{m,t}$ – the return on a market index on day t, α_i – the intercept resulting from the regression analysis, β_i – the slope resulting from the regression analysis.

A statistical test is carried out in order to check whether the abnormal returns differ significantly from zero. To run such a test, it is assumed that the rate of returns is independent and the form of their parametric distribution is known. The statistics:

$$t_{\text{stat}} = \frac{\overline{AR_t}}{\hat{\sigma}_{\overline{AR_t}}}$$

can be described by the t-distribution where:

$$\hat{\sigma}_{\overline{AR}} = \sqrt{\frac{1}{99}\sum_{t=t-104}^{t-5}\left(\overline{AR_t} - \overline{\overline{AR}}\right)^2}$$

$$\overline{\overline{AR}} = \frac{1}{100}\sum_{t=t-104}^{t-5}\overline{AR_t}$$

The procedure of inference based on this test is as follows: the null hypothesis can be rejected only when the ratio $r_{jt}/\hat{S}(r_j)$ is greater than the critical value (the 1-day residual differs from zero at the significance level of 5%).

Given the assumption that the size of the sample is not large, we employ the bootstrap approach as a method of non-parametrical testing. This method was significantly modified for event study analysis by Kramer [6]. We start the process by estimating market models for each of the N firms in the sample:

$$R_{it} = \beta_{i0} + \beta_{i1} M_{it} + \beta_{iD} D_{it} + \varepsilon_{it}, \qquad i = (1, \ ..., \ N)$$

where: N – the number of companies in the sample, β_{i0} – the coefficients in the model, M_{it} – rates of return of market indices, D_{it} – dummy variables.

Next we calculate N t-statistics: one for each estimate of a firm's dummy variable. Then we calculate the conventional Z statistic for pooled coefficients.

$$Z = \frac{\sum_{i=1}^{N} t_i}{\sqrt{N}}$$

When conducting conventional inference, we would stop at this point and compare the value of the Z statistics to a critical value from the standard normal distribution. But this distribution is usually inappropriate, (even when N is increased) so we have to normalize the statistics to account for the fact that its variance differs from one. First we compute the sample standard deviation of the t_i:

$$\hat{\sigma}_N = \sqrt{\frac{\sum_{t=1}^{N} \left(t_i - \overline{t}\right)^2}{N-1}}$$

Then divide Z by $\hat{\sigma}_N$, to yield the normalized version of Z:

$$\tilde{Z} = \frac{Z}{\hat{\sigma}_N}$$

During the next stage of the calculation, the empirical distribution of $\tilde{Z}$ will be constructed. We construct a collection of *mean-adjusted t*-statistics, denoted by t^* by deducting $\overline{t}$ from each of the individual *t*-statistics:

$$t_i^* = t_i - \overline{t}$$

The mean-adjusted data are used to construct an empirical distribution for Z. This involves drawing many random samples from the population of t_i^*, a single bootstrap sample is constructed by randomly drawing N observations from the collection of t_i^* with replacement. A total of 1000 such bootstrap samples, individually denoted using the index b = (1, ..., 1000), are constructed, with each bootstrap sample containing N observations. For each bootstrap sample we construct:

$$Z_b = \frac{\sum_{j=1}^{N} t_{b,j}^*}{\sqrt{N}}$$

and then normalize it using

$$\hat{\sigma}_{N,b} = \sqrt{\frac{\sum_{j=1}^{N} \left(t_{b,j}^* - \overline{t}_b^*\right)}{N-1}}$$

to obtain

$$\tilde{Z}_b = \frac{z_b}{\sigma_{N,b}}$$

Finally, ordering the collection of $1000 Z_b$ statistics from the smallest to the largest defines the empirical distribution. Inference is conducted by comparing the Z statistics to critical values from the empirical distribution. If the value of the Z statistics happens to be larger than 95% of the bootstrap $\tilde{Z}_b$ statistics or smaller than 5% of the bootstrap Z_b statistics, one rejects the two-sided null hypothesis of no abnormal returns at the 10% level of significance.

4. Description of the sample and results

The data represent all surprise dividend payouts within the period 2006–2010. A dividend reduction was voted down in merely a few cases. Therefore, we decided to include only divided increases in the sample. Some of the management boards declared no dividend amount in their projections (they mentioned only the possibility of a dividend payment). These companies were excluded from the sample. The entire sample of dividend payouts (255 events) was reduced to 21 surprise dividend increases.

The results for the entire sample of surprise dividend payouts are presented in Figure 1. Figure 1 presents abnormal rates of returns and cumulative abnormal returns for 11 days around the announcement day. Within this period, the only statistically significant result appeared on day 0 (i.e. the day of the announcement).

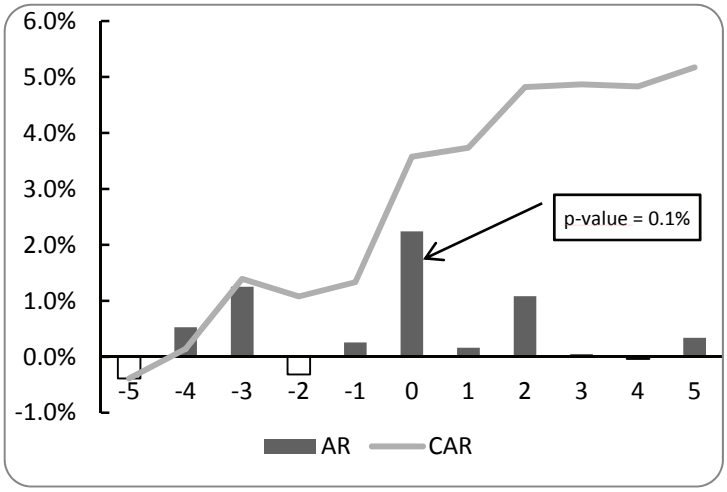

Fig. 1. Abnormal rates of return (AR) around the announcement day (day 0) and cumulative abnormal returns (CAR) for the entire sample of surprise dividend increases. Source: author's calculations

The abnormal rate of return obtained by investors on the announcement day was equal on average to 2.24%. This result is statistically significant because of the extremely low *p*-value equal to 0.001 (the remaining returns are not found to be significant by the statistical test). The first hypothesis should be rejected because the announcement of a surprise dividend led to an abnormal return. Secondly, the returns illustrated show a strong positive bias, which proves that surprise dividends are on average appreciated by investors. This announcement day effect could be explained by the fact that surprise dividends lead investors to believe in an increase in future earnings.

To test the third hypothesis, the test was performed on AMS resolutions which approved the dividend payout previously declared. The number of companies which maintain the original dividend payout is large (206 companies). Despite the existence of statistically significant results, their interpretation is ambiguous. The abnormal results observed on day (–1) and day (0) are small and their effects cancel each other out.

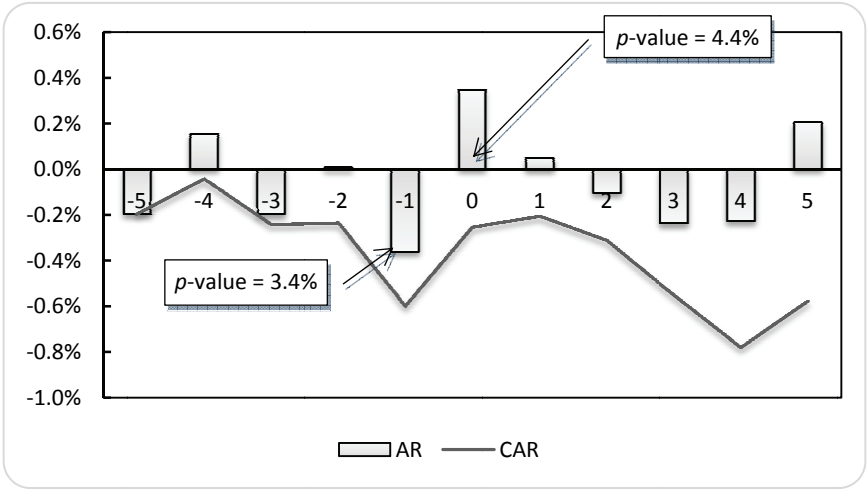

Fig. 2. Abnormal rates of return for companies which confirmed the declared dividend payout at the AMS. Source: author's calculation

Both the opposing effects of the two successive abnormal returns, and their small scale (less than the transaction costs) do not lead to a consistent explanation. The general conclusion is that dividend confirmation constitutes a weak signal to investors.

Next, the relation between the scale of a dividend increase and abnormal returns was calculated. The sample was divided into two groups with respect to the median (45.5% increase in the dividend). The subsample of companies which increased dividends by a relatively high amount produce even stronger results (3.2% return on day 0, *p*-value 0.003). The group which passed a small increase in dividends noted a small positive effect on the return, but this was not statistically significant. This

means that a surprise dividend increase gives a strong positive result only if the increase is substantial. These results are confirmed by both parametrical and non-parametrical tests.

5. Conclusions

Concerning the speed of adjustment, one may say that the Polish stock market passes the test of semi-strong efficiency. New information is immediately reflected in the stock price without any slow adjustment or overshooting effect.

It is proved that a surprise dividend increase allows marginal investors to achieve abnormal returns. For the entire sample of dividend increases, this effect is positive (2.24%) and statistically significant. Nevertheless, this positive effect depends on the size of the dividend increase. For relatively small dividend increases (in this survey smaller than 45.5%), the signal is weak and abnormal returns would not compensate for the transaction costs.

The positive results of large dividend increases mean that this information is on average welcomed by marginal investors. This would eliminate suspicion of predatory behavior by large shareholders, which is frequently stated in relation to emerging markets ([12], p. 159–160). We may hypothesize that substantial dividend increases may carry information about companies' future prospects. However, to confirm this assumption one should check investors' behavior after the dividend payout.

Event study analysis is extremely sensitive to mistakes made during the design phase and interpretation of results. Firstly, abnormal returns may be calculated in several ways. In order to test the hypotheses, the most popular market model method was used, together with the state-of-the-art bootstrap method. Secondly, the time-span of the survey captures many different phases of the capital market. Thirdly, equal weights in the portfolio analyzed are assumed which, if inappropriate, can be modified for further studies.

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