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FINNISH STOCK MARKET REACTION TO CASH DIVIDEND ANNOUNCEMENTS

Bachelor's thesis

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I hereby declare that I have compiled the thesis independently

and all works, important standpoints and data by other authors

have been properly referenced and the same paper

has not been previously presented for grading.

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ABSTRACT

Distribution of the cash dividend and dividend policy overall is an important part of the companies' and investors' interests. There have been many theories that have been built around the relevancy of dividend policy and many of these theories propose that dividends increase shareholders' value. Whether or not that is the case, this thesis focuses on the effect of cash dividend announcements on the Finnish stock market and provides some reflections on the effect of any additional information around the announcement day.

The aim of this thesis is to analyse how the dividend announcement affect the share price of the companies listed on the NASDAQ OMX Helsinki stock exchange. The dividend announcement day and its impact on the share prices of the Finnish stock market are evaluated with the help of selected companies that have been listed in NASDAQ OMX Helsinki between 2015 and 2019. To be able to answer the research problem, an event study methodology is used to conduct this study. To understand further variables that are influencing the dividend announcement day, a regression analysis is concluded.

No significant average abnormal returns were found during the dividend announcement day. Abnormal return was also expectedly found to be negative when dividend was decreased, but more surprisingly market reacted more strongly to constant dividend announcement. Also, the selected explanatory variables were found to be statistically significant when regression analysis was conducted, where increasing dividends had a positive impact on share prices and decreasing the dividend had a negative effect.

Keywords: dividend policy, dividend announcement, share prices, Helsinki stock exchange

INTRODUCTION

Many academics have found that the question regarding companies' dividend payments and how those are determined interesting. There have been many studies done about this topic but with somewhat different outcomes. Lintner (1956) suggested in his study that an increase in the dividend amount would have a positive effect on the market value and that decreasing dividend payments leads to a negative effect. In turn, Miller and Modigliani (1961) argued in their study that a company's dividend policy and value that dividends provide would be irrelevant in perfect capital markets with no taxes or information asymmetries. In reality there are no such thing as perfect market, it is unrealistic, thus dividend pay-outs can affect the share price.

Dividend policy is a policy in which companies decide how the dividend pay-out is handled and distributed to the shareholders and for the most companies the dividend policy is an essential part of their strategy. There are many different reasons for a company to pay out dividends instead of reinvesting the money back to the company, but it can also be for the companies' best interest to invest the money back to the company rather than offering a dividend payment for the shareholders. Benefits of steadily paying out dividends is that it signals the investor that the company is doing financially fine. (Hunjra et al. 2014, 110)

The aim of this study is to analyse how dividend announcements affect the share price of listed companies. In this study, the dividend announcements of companies listed on Nasdaq OMX Helsinki during the period 2015-2019 is examined. This study also examines how certain variables affect the abnormal returns around the dividend announcement day. Based on these, the following research questions are presented:

1. Whether and how does dividend announcement effect share prices of Nasdaq OMX Helsinki companies?
2. How does a change in dividend effect share prices of Nasdaq OMX Helsinki companies?
3. Are there other variables which might influence abnormal return in addition to dividend announcements day?

Depending on its content, a dividend announcement can have different effects on the share prices. A decision from the company to decrease the dividend has usually a negative impact on the share price and it is seen as a negative factor by the investors. On the other hand, increased dividend announcements are seen as positive news and therefor have positive impact on share prices. As a result, two hypotheses are tested in the event study and are as follow:

H1: Increasing dividend has positive effect on share price.
H2: Decreasing dividend has negative effect on share price

Most of the data that this study uses can be found from the NASQAD OMX Nordic website. The dividend announcement days were found out separately and the individual closing share price for every single company was gathered from the time period of 2014-2015 and was also done for OMX Helsinki Benchmark GI closing price. The listed companies' annual reports were utilised to find out the dividends per a certain share. In the end, total of 66 companies and 330 event days were selected and examined.

In the empirical part of this study an event study methodology has been used, which is fairly common method when calculating a market's abnormal return around a specific event. For this study, the examined event day is a dividend announcement day and selected event window is (-10, +10). The event study methodology is discussed in depth in chapter one. Furthermore, a regression analysis is also concluded to find out which variables effects the abnormal return around the event day.

After this part, dividends are briefly gone through, different dividend policies are explained, and some previous studies are explored. In the second part, the data that has been selected to conclude this study is explored more deeply and the event study methodology, which is used to conduct this study, will be gone through. Second part will also include regression analysis and used variables. After all this, results are shown and in discussion part the findings on this study are discussed. To finalise this study and to conclude the results of the study, a conclusion is conducted.

1. THEORETICAL BACKGROUND

The company's ownership is divided into shares that investors buy to invest their assets and gain interest to their invest. Share prices must be fair to both parties and close to the correct share price. Each share represents a portion of the value of the company and market prices reflect the value of the company and are based on supply and demand, which are affected by chances of making a profit on the company's shares. Theoretically, the market price of a share has been explained by several models, many of which are based on the assumption that each security has a real value that depends on the financial condition of the firm. Various valuation models are used to analyse the market price of a share, most commonly based on four criteria, returns, cash flows, dividends and net worth. (Kinkki 1998, 8-9)

Dividends are distributed in several different forms. The basic group of cash dividends includes common cash dividend, extra dividend, special dividend, and termination dividend. Depending on national practice, the cash dividends are paid monthly, quarterly, or annually. Sometimes a company distributes an extra dividend, in which case the company's management specifically wants to show that the occurrence of this part is uncertain. The special dividend is similar as the extra dividend, but it is used even more for one-off dividends. A termination dividend means that the business has been sold either in part or in full. (Ross et al. 199, 553–554) Other than cash dividend, a company can also distribute dividends through a bonus issue, by distributing shares to its shareholders, stock split or redeeming shares for itself either on the stock exchange or on the basis of a buying offer made (Brealey, Myers 1991, 373).

1.1. Dividend Policy

One of the main objectives of a company is to generate profit for the shareholders. Generated profit causes a tricky question for the company. The question is: how to use the gained profit in the most effective way to increase the wealth of its shareholders? (Niskanen, Niskanen 2007, 11). Decision on the amount of profit which is given on form of dividend to the shareholders or amount kept by

company, makes up the dividend policy. Kept profit is usually used on future growth, for example as on investments or acquisitions. Dividend policy's aim is to improve the value of the company and above-mentioned wealth increase of the shareholders.

Gordon (1963) presents an argument that shareholders prefer cash dividend more than capital gain, because they wish for a less risky future, a dividend stream, and rather than having uncertain capital gains from uncertain future investments, they prefer a high dividend policy, and this would increase the share price of dividend increase companies. Other factors that might affect share price could be investors overreaction to dividends, other news, or trendy stocks. Companies mostly decide on their dividend policy by attempting to increase their value. Jensen (1986) and Easterbrook (1984) proposed that possible agency conflicts between shareholders and managers could be decreased by dividend pay-outs. The decision of a manager to distribute free cash flow to the shareholders as on dividend payment could have a positive increase to the share price (Easterbrook, 1984).

When dividends are taxed in an institutional setting, removing information asymmetries could be costly as the dividend size announced depends on how good the news are (Bhattacharya, 1979). Miller and Rock (1985) argue that it is not a wise thing to do for a company with bad future expectations to announce high dividend and only company with positive expectation should commit to increase the dividend. There is no united agreement about profitability of dividends for shareholders, but still the most profitable stock companies do distribute dividends (Brav et al. 2005).

1.2. Dividend Policy Theories

There are different theories that address dividend policy and how it might affect share prices. Some of the relevant theories for this study is gone through.

1.2.1. Irrelevancy Theory

One of the earliest theories regarding dividends is the irrelevancy theory by Miller and Modigliani in 1961. Their theory was based on the assumption of perfect markets, where financial markets are smooth and there are no taxes or transaction costs. Same goes for the company's future cash flows,

in which the dividend policy does not affect the shareholders return requirement and companies' investment decisions are ahead of their time and do not change due to a change in dividend policy (Ross et al 2005, 507). In such a market, the dividend policy has no bearing on the value of the company and the dividend policy does not in any way influence investment decisions. Regarding the distribution of dividends, the main message of Miller and Modigliani (1961) is that the distribution of dividends does not increase the welfare of the owner, as the company's investments has to be financed by issuing new share capital or borrowing, instead of using gained profits.

In their study, Modigliani and Miller (1961, 424-425, 430) also commented on the change in the company's dividend distribution. According to them, companies are reluctant to lower their dividends and therefore do not raise their dividends to a level they are unable to maintain. The reluctance is due to the signal associated with the rise in dividend levels. If companies were unable to maintain the elevated dividend level, investor confidence in the company would collapse and therefor the share value would drop.

Modigliani's and Miller's theory was based on the assumption of a perfect capital market. In reality, there is an imperfect market and as so, various thing are taxed, trading includes transaction costs and information is incomplete. These factors mean, that Miller and Modigliani's theory of dividend irrelevancy is no longer fully valid. (Gordon 1989, 19-20)

1.2.2. Signalling Theory

The theory that companies change the size of their dividends to signal changes is very old. A study by Lintner (1956) had suggested that company increases their dividend only if they believe that their profitability has improved over the longer term. Signalling theory also assumes that the market has limited information about the company's profitability and that the dividend payment is more expensive for tax purposes than the return resulting from the increase in the value of the share (Bhattacharya, 1979).

Signalling theory is based on the idea that company management has better knowledge of company's profitability, investment opportunities and potential returns on investment than external investor. Company's management consciously raises or lowers dividends as a result of its own knowledge and views (Benarzti et al. 1997). Investors are also able to take into account the fact that company management may abuse their position by paying excessive dividends with the

intent of raising the share price (Miller, Rock 1985). The market seeks to assess the current and future profitability of a company based on dividends, as at the same time companies report on their success in their quarterly and annual report. Kim et al. (2002) sees dividend raising as particularly useful for companies whose share is undervalued. Investors compare past dividend policies with current dividend policy and thereby seeks additional information (Miller, Rock 1895).

Based on this theory, it can be concluded that as the company lowers its dividend, the company's future prospects must have declined or possibly the current return on investment may have decreased. This has often been considered as a last resort for a company management. Based on a study by Jensen et al. (2010), company is in a situation where there is not much room for financial manoeuvre. Raising the dividend again points to improved profitability and improves future prospects. If a company seeks to maintain its dividend at the same level during a weak period of profitability, it may lead to lower investments or the realization of assets in order to maintain the dividend payability.

Dividends are relatively more expensive way of informing a company's financial situation. It would be simpler to provide information regarding company's financial situation, by for example through annual reports and quarterly reports (John, Williams 1985).

A change in the dividend payment can also lead to a misunderstanding by the market. Benartzi et al. (1997) found that the change in the dividend payment is mostly a result of how well a company has performed in the previous years before the dividend payment is changed. In this case, it can be interpreted that shareholders misinterpret the dividend payment as a prediction of a better or worse future, even if it is only a consequence of past success. Even if the company's management believes that the company will be more successful in the future, but the company has low liquidity due to past poor success, the chance to pay higher dividend is difficult.

1.2.3. Efficient Market Theory

When looking at the efficient market theory, Fama (1965) concluded one of the most well-known theories. He found out that small changes in share prices were independent from changes of the previous day, but large changes were also followed by large changes on the next date (Fama 1965: 80–81). A significant finding regarding to future studies was that random changes on the stock market indicated that the market is efficient, which means that at any given time share prices

represents their best fair value. When a company's value changes, the stock market immediately reacts to it. (Fama 1965, 94)

In his 1970 study, Fama (1970), claimed that large abnormal returns around a specific given date is a mark about inefficiency in the market. He also proposed three different states to the efficient market. In the weak market form (1), the share prices are based on old information that is available to the market, thus it is impossible to win the market by using old data. In the semi-strong form (2), share prices includes all the publicly available data, like earning announcements and dividends. It also includes the terms from weak form as old price changes are public information. This enables the investors to earn abnormal returns by buying shares immediately after the new information has come out. The strong form (3) would include all terms from the previously mentioned forms. In such form, the share prices would also include all information regarding them, both unpublished and published. This would remove inside information altogether. The company's management would still have information which would enable achieving abnormal return, especially before earning announcement and acquisitions. (Fama 1970)

1.2.4. Agency Theory

Agency theory explains that the company's management and shareholders often have different interest. Shareholders have hired the company's management to act in their best interest. From the perspective of dividend payment, agency theory applies to companies that have high free cash flow. (Jensen, 1986)

It may be tempting for a corporate management to invest company's cash to low-yield targets, just to make the company larger, this means that the management of the company does not necessarily try to achieve the optimal size for the company in terms of profitability. Growing a company beyond what would be optimal, would increase company's management power and potentially increase their rewards. Similarly, the company's management can use the funds from the shareholders point of view to unnecessary investments, such as a private helicopter. (Jensen 1986)

Theoretically, the agency problem can be approached from the perspective, that each party seeks to maximize their own interests. Shareholders can create various arrangements to guide management to work closer to interest of the owners. Those could be for example be, various stock options and share-based reward plans. If stock options are profitable, then the corporate

management can avoid risky projects and seek to safely reap the benefits of their stock option rewards. (Bebchuk, Fried 2005) Similarly, shareholders can arrange various supervision, which is used to monitor the usage of company's funds. However, all of these actions come at a cost, but this can prevent inefficient use of funds for various items that are irrelevant to company's operation (Jensen, Meckling 1976).

From the shareholders' point of view, it is often better for the funds available to the company to be transferred to the shareholders either as dividends or as purchases of own shares. This reduces the risk that corporate management would make poor quality investment decisions. Smaller amount of cash would lead to more considered high-yielding investment decisions (La Porta et a. 2000).

There is also typically a difference in risk willingness between company management and owners. A rational shareholder diversifies his portfolio and at the same time its risk. As a result, shareholders are generally more willing than corporate management to take a risk on an individual company, as only the capital invested in that company is lost when the potential risk materializes. However, in the case of corporate management, the situation is different as a failed investment can jeopardize their entire livelihood. The problem is that corporate management does not reap the full benefits of successful projects, but still has to bear the cost of it's failures. (Harris, Raviv 1991, 300)

1.3. Dividend Policy in Finland

The Helsinki Stock Exchange is small by international standards, and only a few shares can be considered liquid in addition to the largest companies. Many small shares may not be traded every week, and their price data cannot be used for short-term research. Due to the small size of the stock exchange and the small number of large international companies listed there, the Helsinki stock exchange is a so-called secondary area for the largest international investors, where they invest last and leave first. This intensifies price reactions on the Helsinki Stock Exchange. As large international investors increase their investments, the Helsinki stock exchange rises faster than larger stock exchanges as turnover increases, and correspondingly, when large investors sell their holdings, the stock exchange falls steeper. Stronger share price reactions than other stock exchanges are also explained by the cyclical industry structure of the Helsinki stock exchange. Many of the largest and at the same time most traded companies are machine shops manufacturing

investment goods and companies related to the construction and electronics industries. (Jokipii et al. 2006, 962–963.)

Dividend distribution in Finland is regulated by Osakeyhtiolaki, which is translated as Limited Liability Companies Act, Finnish translation is used in this study, when referred to it. Osakeyhtiolaki regulates that the dividend distribution has to be based on the company's financial statement. Dividends cannot be distributed by a company if it can cause insolvency. (Osakeyhtiölaki 2006)

The amount of dividend is proposed on companies' financial statements by the board of directors and the propositions are then accepted, declined, or changed on the annual general meetings, although, the decision cannot be made without the approval of the board of directors, neither the amount of distributed dividend can be higher than the proposed dividend amount made by the board of directors (Osakeyhtiölaki 2006). The stockholders get invited to the annual general meetings and they usually take place 1-2 months after the invitations to the annual general meetings has taken place. A payment date is determined by the companies to define who is eligible for the dividend payment.

Commonly, the Finnish and other Nordic countries pay dividends once a year and usually the annual general meetings take place in the spring (Oksaharju 2014). In the United States of America, dividends are usually paid quarterly and in Great Britain they are usually paid twice a year (Brealey et al. 2011, 392-393; Watson, Head 2013, 317). To be able to receive any dividend payments in Finland, you have to own a share before the ex-dividend day, which is usually the day after the annual general meeting has taken place. Selling the share, on or after the ex-dividend day, still authorises you to get a dividend payment as the seller is still registered as the company's shareholder on the dividend payment day.

1.4. Event Study Methodology

The event study methodology is a very common method which is used when studying information's effect on the stock market. It studies abnormal returns around a specific event day. With help of the event study the goal was to get the answer how a specific event effects company's value and its representation on the stock market. These events could for example be dividend

announcements, announcement of mergers, announcement of earnings or share repurchases. (MacKinley 1997, 13-14). However, for this particular study the dividend announcement day is specifically used as the event day.

There has been a long history for usage of the event study, which can be recorded going as far as to 1930. The first person that used the method was Dolley (1933) when he studied the effect of stock splits to price of the share. In the end of 1960, there were two studies that had major effect on the event study development, those studies were made by Fama (1969) and Ball and Brown (1968). Fama studied the effect of stock splits after removing simultaneous effect of rising dividends and Ball and Brown studied information content of income. Event study methodologies made by these two different studies are still widely used (MacKinley 1997, 13-14).

The event study methodology is based on the assumption that an individual company's stock returns are somewhat predictable (Wells 2004). When this methodology is used, the researcher observes the actual revenues within a specific time frame and calculates the difference of the expected revenues and realized returns to get the abnormal return. If the calculated abnormal return is significant, then it can be assumed that the selected event had an impact on share price.

There is not one absolute or right way to construct an event study, but one way to describe it is following the method by Mackinlay (1997):

1. Identifying the event and event windows
2. Data gathering and selection criteria
3. Calculate abnormal and normal returns
4. An empirical analysis
5. Conclusion based on the event study

The first step of the event study is to decide on the event and event window. An event window is the time frame where the expected event will happen, and its minimum length should be the event day and the day after that. Longer event days can also be used, but if too long event window is selected there can be other factors in the selected window that will affect the abnormal returns.

(Mackinlay 1997, 14-15). More than one event window can be used when conducting an event study.

When calculating normal returns, a window is needed which usually takes place before the event window (Peterson 1989, 37). This is called as the estimation window. An estimation window is normally between 100 and 250 days. The selection of the estimation window is up to the researcher but there are certain aspects that should be considered when selecting the data that will be used. It is important to select an estimation window that does not overlap with the event window because then the normal return would be affected by the event. An estimation window can also be ended, for example 20 or 40 days prior the selected event, which would diminish information leakage and insider trading effect on the calculations. (MacKinlay 1997, 18 – 20).

When conducting an event study, it can be difficult to identify the event day. Companies can make an announcement in many different ways and the announcement can therefore have other information regarding the company that has no relevancy to the studied event. After the event days are determined, the criteria for selecting observational data can be determined. Criteria for selecting companies for construction an event study could for example be the selected index or size of the company Wells 2004, 63-64).

1.5. Previous Studies

All of the studies reviewed here has used the event study methodology. Following studies support the idea, that dividend changes should be followed by share price change, whereby an increase in the dividend size should have react positively to share prices and the other way round. The studies will be analysed by using examples from different countries' stock exchanges.

Petit (1972) wound out that after a dividend increase announcement, significant increase on share price followed. On the other hand, a significant price drop followed an announcement of decreased dividend pay-outs. This was the case even if the earnings performance was either positive or negative. He used 625 companies from the New York Stock Exchange. Aharony and Swary (1980) also discovered that a dividend increase announcement increased the positive abnormal returns around the 20 days surrounding the announcement day. There was an average abnormal return of 0.36% for the announcement day if dividends were increased and an average abnormal return of -

1.13% if the dividend was decreased. The sample size inspected was 384 listed companies from the United States of America. Following studies also found significant abnormal reaction around the dividend announcements (Aharony et al. 1988; Divecha, Morse, 1983; Eddy, Seifert, 1992; Nissim, Ziv, 2001; WoolRidge, 1982).

Lintner (1956) studied 28 different companies and discovered that all of the dividend paying companies had common characteristic. It is not favourable to dividend paying companies to decrease their dividend per share, even if the earnings would decrease. It was concluded that reduction in dividend would negatively affect the company by giving negative news about the company's performance and that most important factor determining the amount of a company's dividend is the profit made during the financial year (Litner 1956). Healy and Palepu (1988) also found that the dividend decrease has a larger effect than a dividend increase on a price.

(Bozos et al. 2011) used data from the London Stock Exchange and tested dividend signalling hypothesis. Interaction between earnings and dividends under steady and adverse economic conditions was also studied. It was found that there were significant and positive average abnormal share price returns around the announcement day. Dividend was found to have less information content that earnings in period of growth and stability.

There have not been many studies regarding dividend announcements made in Finland, but the first one doing this was Korhonen (1976). In his study he couldn't find any price effect caused by the dividend announcement. Kasanen, Kinnunen and Niskanen (1992) other hand found positive effect when studying the effect of tax reform of 1969. When studying share repurchases and dividend announcements in Finland during 1997-2012, Duinker (2013) found out that dividend decrease had larger effect than dividend decrease, but it was not statistically significant.

2. DATA AND METHODOLOGY

In this part, the used data and methodologies are scrutinized to understand the function of the mathematic formulas. In the first part the data used in this study and the time period they have been gathered are told. In the second and third subchapter an event study proses is examined to understand the process of this study.

2.1. Data

The used data in this thesis consist of companies that were listed on NASDAQ Helsinki and had announced their dividend pay-outs during years 2014-2019. A company that was selected to this study had to have dividend announcements from previous years. After taking this into account, this study ended up having 66 companies and 330 dividend announcements in total. All the data that was used was available on the NASDAQ OMX Nordic website. which had disclosure dates for the time period this study uses. The dividend amounts were individually checked from the companies' annual reports. The financial statement announcements were also separately reviewed to make sure that the correct dividend announcement i.e., event dates were collected.

After selecting companies to this study, the daily closing share price for every company was gathered for 5 years period. Same data was gathered for OMX Helsinki Benchmark GI which represents the market index. Also, the company's yearly data were divided into three different groups depending on whether their dividend decreased, increased or was constant. There were 236 announcements with dividend increase, 37 announcements with dividend decrease and 57 announcements where dividend remained constant, which altogether made 330 individual announcements. For each of these three individual groups and additionally fourth group which consisted all the full sample data, there was calculations made which is discussed further on the event study process subchapter.

2.2. Event Study Process

Event study methodology is used for this study to examine the effect dividend announcements have on share prices. This study will use the dividend announcement date as an event day and if the dividend announcement didn't happen on trading day, then the next trading day was selected, also seven particular event windows has been selected, which are; (-10, +10), (-5,+1), (-3, +3), (-1, +1), (-1, +5), (-1, 0) and (0, +2). These event windows were selected as they are the most common ones used in similar studies and literature. The selected length of the estimation window used in this study is 100 days and the considered time frame will end 31 days before the event day. There is a 20 day gap between the estimation window and event window and this is to diminish information leakage and insider trading.

In this study, the effect on dividend changes was studied in four different groups which were, full sample, dividend increase, dividend decrease and dividend constant. To find out these changes a simple calculation was conducted as shown in (equation 1).

$$DIV = \frac{(DIV_1 - DIV_0)}{DIV_0} \cdot 100\% \quad (1)$$

where
DIV1 - represents the amount of dividend at time 1,
DIV0 - represents the amount at time 0.

As a next step, daily stock return is calculated for every company throughout five-year period. To accomplish this, (equation 2) was used.

$$R_{i,t} = \ln(P_{i,t}) - \ln(P_{i,t-1}) \quad (2)$$

where,
$R_{i,t}$ - actual return of share i on day t,
$P_{i,t}$ - price of share i on day t,
$P_{i,t-1}$ - price of share i on day t-1.

To be able to evaluate the event, abnormal return (AR) needs to be calculated. Abnormal return shows the effect that event has on share price. It is calculated by difference of actual return and return prediction of the market model. (MacKinlay 1997, 15).

$$AR_{i,t} = R_{i,t} - E(R_{i,t}) \quad (3)$$

where,
AR_{it} - stock i abnormal return at time t,
R_{it} - actual return of stock i at time t,
$E(R_{it})$ - expected return of stock i at time t.

This study uses the CAPM-model to calculate normal returns as it is more precise than other models and it gives more accurate results. The advantage of the CAPM-model to others is that it takes into account the stocks' market risk, meaning that it takes into consideration the market's general movement when looking stocks earning per share (MacKinlay 1997, 26; Wells 2004, 65).

Return data prior the event day was used for calculations of the expected return which included 120 daily returns. A stocks daily expected return can be calculated by following the CAPM-model:

$$E(R_{i,t}) = a_i + \beta_i R_{m,t} + e_{i,t} \quad (4)$$

where,
$E(R_{it})$ - expected return of stock i at time t,
R_{mt} - market return at time t,
e_{it} - random error term,
β_i - market model parameter
α_i - market model parameter.

After abnormal return is calculated for every stock, the abnormal returns are calculated together to get an average abnormal return (AAR). The average abnormal return is calculated by using (equation 5). This is done so that the events effect can be examined more broadly (Campbell et al. 1997, 160).

$$AAR_t = \frac{1}{N} \sum_{i=1}^{N} AR_{it} \quad (5)$$

where,
N - number of observations,
AR_{it} - stock i abnormal return at time t.

The next step included the calculations on cumulative returns. Firstly, cumulative average abnormal return ($CAAR_p$) was calculated for the portfolio, which is the sum of average abnormal returns (AAR) for specific event window (equation 6). Then, individual cumulative abnormal returns (CAR) were calculated for each individual company and specific event by summing event-

specific individual abnormal returns (AR) (equation 7). Lastly, cumulative average abnormal return (CAAR) was calculated for every event window using (equation 8).

$$CAAR_p(T_1, T_N) = \sum_{T=t_1}^{T_N} AAR_t \quad (6)$$

$$CAR_i = \sum_{t=T_1+1}^{t_2} AR_{i.t} \quad (7)$$

$$CAAR = \frac{1}{N}\sum_{i=1}^{N} CAR_i \quad (8)$$

After all of the calculations, the results are assessed, and a significance test is conducted to find the necessary t-values for average abnormal return and cumulative abnormal return. Excel was utilised when t-test was calculated by using two sample based assuming unequal variances. Hypothesis mean was zero. For this study the significance level of five percent was selected and following (equations 9-10) was used to calculate the t-statistics.

$$t_{AAR_t} = \frac{AAR_t}{S_{AR_t}} \quad (9)$$

where
tAARt - t-statistic for AAR at day t around announcement,
AAR_t - average abnormal return at day t around announcement,
S_{ARt} - standard deviation of the individual abnormal returns at day t around announcement.

$$t_{CAAR_T} = \frac{CAAR_T}{S_{CAR_T}} \quad (10)$$

where
$tCAAR_T$ - t-statistic for CAAR during the estimation window T,
$CAAR_T$ - cumulative average abnormal return during the estimation window T,
S_{CART} - standard deviation of the individual cumulative abnormal returns during the estimation window T.

2.3. Regression Analysis

A regression analysis was used to get a better understanding if there are variables which influence the abnormal returns in addition to dividend announcements. A separate regression was run for all the event windows used and for four different dividend groups. These groups were dividend increase, dividend decrease, dividend constant and full sample. An OLS regression was used where

the dependent variable was cumulative abnormal return (CAR) all event windows. Explanatory variables were selected based on the previous literature and which are shown below. The following regression model was used:

$$CAR_i(T0, T+t) = \alpha + \beta_1 AVR_i + \beta_2 LNPRICE(T)_i + \beta_3 DIV_i + \varepsilon \quad (11)$$

where,
AVRi - the five-day average absolute returns on the stock i before announcement day,
LNPRICE(T)i - the natural logarithm of stock price at the day of the announcement.
DIVi - the change in dividend per share divided by Pi, where Pi is share price 10 days before the dividend announcement.

LNPRICE(T) was included as high transaction costs could cause market inefficiencies in response to dividend announcement (Bernard, Thomas 1989). Market inefficiency is a state, where share prices do not reflect all relevant information, and which can cause a situation where the share prices will become higher or lower than its fair value. It enables investors to take advantage of it and gain excess or negative returns. Because the aim of this paper is to check the variables' reaction to dividend announcements, taking the effect that those transactions cost might have on cumulative abnormal return is reasonable. This was also included in an article by (Bozos et al. 2011) where they claimed that transaction costs could impact excess returns, so it is sensible to remove the effect that those transaction costs possible have on CAR. The five-day average abnormal return is included as a proxy for share price moment, and it was also used by Bozos et al. (2011), with addition to variable DIV.

One separate regression was run for full sample, where DDUMMY variable was added, which is a dummy variable having a value one if a company's dividend payments were increasing. Variable DIV was also removed as this variable correlates with the variable DDUMMY. Corresponding regression looks as follow:

$$CAR_i(T0, T+t) = \alpha + \beta_1 DDUMMY + \beta_2 LNPRICE(T)_i + \beta_3 AVR_i + \varepsilon \quad (12)$$

The correlation analysis is used to show the linear association among variables and is useful when trying to detect multicollinearity among independent variables. From the table 1, it can be seen that there is a correlation between DIV and DIVINCREASE as the absolute value of the correlation coefficient is greater than 0.5.

Table 1. Correlation matrix of variables used in regression analysis

	DIVINCREASE	*LNPRICE*	*AVR*	*DIV*
DIVINCREASE	1			
LNPRICE	0.196	1		
AVR	0.024	-0.021	1	
DIV	0.528	0.000	0.0169	1

Source: Author's calculations

From table 2, we can see that panel A explanatory variables, AVR and DIV mean value are close to zero. Then again, the LNPRICE has the largest volatility as the standard deviation is 0.857. This also reflected by the great difference between min max values of LNPRICE. Panel B dependent variables mean are all close to zero.

Table 2. Descriptive statistic for the explanatory and dependent variable

A. Explanatory variable

	Mean	**Median**	**StDev**	**Minimum**	**Maximum**
DIVINCREASE	0.715	1	0.452	0	1
LNPRICE	2.325	2.305	0.857	-1.465	3.832
AVR	0.001	0.001	0.008	-0.024	0.032
DIV	0.002	0.003	0.015	-0.063	0.071

B. Dependent variable

	Mean	**Median**	**StDev**	**Minimum**	**Maximum**
(-10, +10)	0.008	0.007	0.087	-0.238	0.324
(-5, +1)	0.007	0.006	0.062	-0.157	0.199
(-3, +3)	0.007	0.002	0.067	-0.171	0.224
(-1, +1)	0.004	0.000	0.055	-0.197	0.177
(-1, +5)	0.001	0.000	0.064	-0.246	0.193
(0, +1)	0.000	-0.004	0.052	-0.235	0.189
(-1, 0)	0.001	-0.003	0.049	-0.137	0.182

Source: Author's calculations

3. RESULTS AND DISCUSSION

3.1. Event Study

Table 3 presents the Average Abnormal Return (AAR) from the period (-10) to (10) and table 4 the Cumulative Average Abnormal Return (CAAR), which has 6 different event days (-10, 10), (-5, 1), (-3, 3), (-1, 1), (-1, 5) and (0, 1). For CAAR the aim is to capture information around the dividend announcement day. To find statistical significance the t-statistics was calculated for every single day. Three different significance level were taken to consideration. Significance level of 10% is considered to be slightly significant and not given to much weight, significance level of 5% is seen to have potential difference and significance level of 1% is considered to have a high significance. Data was divided to four different groups which represents the dividend change compared to the previous year, whereby the first column contains all announcements, second contains dividend increase announcements, third contains dividend decrease announcement and last one contains dividend constant announcements. Colum representing all cases has 330 announcements, dividend increase column has 236 announcements, dividend decrease has 37 announcements and finally dividend constant has 57 dividend announcements.

Now when looking at the full sample at table 3, which has 330 dividend announcements, it can be seen that AAR is 0.20% and 0.36%, two or one day prior to the announcement day and are statistically significant. During the announcement day the AAR is negative by –0.30%, but it is not significant. One day after the announcement day the AAR is 0.30% and it is slightly significant at level 10%.

The dividend increase group has also significance two days prior the announcement day by having AAR 0.22% and 0.56%, where by two days prior of the event day has significance of 5% and one day prior has high significance of 1%. On the dividend announcement day, the AAR is negative but is insignificant, after that AAR is positive after going to negative. Five and six days after the dividend announcement day the AAR has significance of 5%. There is also slight significance at level of 10% seen on the column.

Table 3. NASDAQ OMX Helsinki Dividend paying companies Abnormal returns (AR) around dividend announcement days

t	Full sample	t-statistic	Dividend increase	t-statistic	Dividend Decrease	t-statistic	Dividend constant	t-statistic
-10	0.03%	0.369	-0.04%	-0.476	*0.43%	1.745	0.06%	0.277
-9	*0.15%	1.735	*0.18%	1.845	0.27%	0.825	-0.03%	-0.149
-8	-0.06%	-0.647	-0.15%	-1.448	0.09%	0.293	0.23%	1.044
-7	-0.02%	-0.218	-0.12%	-1.226	0.10%	0.369	*0.31%	1.713
-6	0.05%	0.546	0.13%	1.376	**-0.52%	-2.370	0.06%	0.254
-5	-0.13%	-1.636	-0.15%	-1.560	-0.16%	-0.611	-0.03%	-0.181
-4	0.16%	*1.623*	*-0.02%*	-0.247	**0.90%	2.041	0.46%	1.491
-3	0.14%	1.579	0.09%	0.863	*0.44%	1.667	0.15%	0.673
-2	**0.20%	2.009	**0.22%	2.062	0.11%	0.314	0.18%	0.593
-1	***0.36%	3.216	***0.56%	4.302	-0.09%	-0.354	-0.19%	-0.634
0	-0.30%	-1.197	-0.03%	-0.106	-0.59%	-0.915	**-1.20%	-2.219
1	*0.30%	1.940	0.28%	1.578	0.60%	1.159	0.19%	0.479
2	0.06%	0.511	0.01%	0.111	0.21%	0.543	0.16%	0.414
3	-0.09%	-1.059	-0.10%	-0.962	0.13%	0.578	-0.23%	-0.870
4	-0.12%	*-1.369*	*-0.20%*	*-1.860*	*0.16%*	*0.829*	*0.00%*	-0.012
5	-0.14%	-1.452	**-0.21%	-2.069	0.02%	0.065	0.05%	0.192
6	*0.14%	1.708	**0.23%	2.473	0.01%	0.045	-0.16%	-0.800
7	-0.05%	-0.654	-0.05%	-0.563	0.00%	0.005	-0.09%	-0.379
8	***0.19%	2.580	*0.17%	1.848	0.15%	0.859	*0.32%	1.828
9	0.01%	*0.176*	*-0.01%*	*-0.113*	*-0.25%*	*-1.013*	*0.29%*	*1.888*
10	-0.10%	-1.409	*-0.15%	-1.809	-0.20%	-0.879	0.16%	0.803

*Significant at 10%
**Significant at 5%
***Significant at 1%
Source: Author's calculations

Contrarily to the previous groups, dividend decrease shows no significance two days prior the dividend announcement day. Average abnormal return is negative but insignificant during day prior and on the dividend announcement day by –0.09% and –0.59%. Negative market reaction is expected in case of dividend decrease announcement. Market seems to recover quickly from negative average abnormal return by having abnormal return of 0.60%.

Looking at dividend constant group, average abnormal return of -1.20% can be seen which is larger than other dividend groups average abnormal returns. It has significance of 5%. This is only group where there is any significance at dividend announcement day. It seems that not increasing dividend has more negative effect on share price than decreasing dividend, which is quite surprising.

Considering table 4, which presents the cumulative average abnormal return, there seems to be no significant significance on any dividend groups event window. Six different event windows were represented. Aim of the CAAR is to capture the entire information content of the announcement and allow the analysis of slower responses.

Table 4. NASDAQ OMX Helsinki Dividend paying companies Cumulative average abnormal return (CAAR) around dividend announcement days, and t-statistics for all dividend groups

Event window	Full sample	t-statistic	Dividend increase	t-statistic	Dividend Decrease	t-statistic	Dividend constant	t-statistic
(-10, 10)	0.78%	1.043	0.64%	0.721	1.81%	1.147	0.68%	0.445
(-5, 1)	0.73%	1.164	0.93%	1.467	1.20%	0.892	-0.44%	-0.308
(-3, 3)	0.66%	*1.095*	*1.03%	1.723	0.80%	0.787	-0.95%	-0.711
(-1, 1)	0.36%	0.570	0.80%	1.567	-0.09%	-0.084	-1.20%	-0.966
(-1, 5)	0.06%	0.096	0.31%	0.421	0.44%	0.462	-1.22%	-0.962
(-1, 0)	0.06%	0.093	0.53%	0.891	-0.69%	-1.376	-1.39%	-1.367
(0, 1)	0.00%	-0.001	0.24%	0.790	0.01%	0.005	-1.02%	-0.731

*Significant at 10%
**Significant at 5%
***Significant at 1%
Source: Author's calculations

Cumulative average abnormal returns are mostly positive for full sample, dividend increase, and dividend decrease. Ranging from –0.69% to 1.81%, although there is no high statistical significance, a part of event window (-3, 3) has slight signification at level of 10%. The market seems to react to dividend changes quickly as the changes are exploited by the market participants. The market's reaction to the dividend increases is not as sharp as to dividend decrease. Constant dividend group was mostly negative ranging from –1.39% to 0.68%. Compared to the other groups the market seems to react more pronouncedly to constant dividend announcement. There is no significant significance and market respond looks more random. For full sample, the highest positive CAAR was achieved on event window (-10, 10), for dividend increase sample, the highest positive CAAR was achieved at event window (-3, 3), for dividend decrease the highest positive CAAR was achieved on event window (-10, 10) and lastly, for dividend constant sample the highest positive CAAR was achieved on event window (-10, 10).

3.2. Regression Analysis

In the regression analysis, three different significance levels are considered. Variable is significant at 10% level if P-value < 0.1, significant at 5% if P-value < 0.05 and significant at 1% level if P-

value < 0.01. Different variables are used which influence CAR in addition to dividend announcement. Significance F shows if the regression was significant as a whole model.

Table 5. NASDAQ OMX Helsinki Dividend paying companies Regression analysis for CAR, with variables AVR, LNPRICE and DIV

	Full sample				
	Significance F	***Variable***	***Coefficients***	***t Stat***	***P-value***
(-10, 10)	***0.000	LNPRICE	-0.003	-0.560	0.576
		AVR	3.296	5.871	***1E-08
		DIV	0.245	0.784	0.433
(-5, 1)	***0.000	LNPRICE	0.002	0.502	0.616
		AVR	3.619	9.793	***5E-20
		DIV	0.242	1.174	0.241
(-3, 3)	***0.000	LNPRICE	0.003	0.837	0.403
		AVR	2.307	5.264	***3E-07
		DIV	0.320	1.314	0.190
(-1, 1)	***0.005	LNPRICE	0.004	1.243	0.215
		AVR	0.916	2.486	**0.013
		DIV	0.478	2.332	**0.020
(-1, 5)	*0.077	LNPRICE	0.003	0.813	0.417
		AVR	0.875	2.011	**0.045
		DIV	0.356	1.473	0.142
(0, 1)	0.289	LNPRICE	0.004	1.076	0.283
		AVR	-0.187	-0.529	0.597
		DIV	0.301	1.528	0.127
(-1, 0)	***0.000	LNPRICE	0.004	1.163	0.246
		AVR	1.258	3.868	***0.000
		DIV	0.415	2.296	**0.022

*Significant at 10%
**Significant at 5%
***Significant at 1%
Source: Author's calculations

When considering the outcomes of regressions in Table 5, we can see that there is statistical significance at significance level 5% and 1%. All tested event windows expect (0, 1) have significant explanatory variable AVR. Whereas variable DIV is significant at 5% in event windows (-1, 1) and (-1, 0). Variable LNPRICE is statistically insignificant having large P-value. From variable AVR we can see that if the 5-day absolute return increases then the CAR will also increase. When looking at AVR it can be seen that in case of (-10, 10), if the AVR increases 1% then CAR would increase by 3.296 percentage points. At the same significance level, CAR for (-5, 1) would increase 3.619 percentage points, for (-3, 3) would increase 2.307 percentage points and for (-1, 0) would increase 1.258 percentage points. In case of event windows (-1, 1) and (-1, 5), if the AVR would increase 1%, then the CAR would increase 0.916 and 0,875 percentage

points. Explanatory variable DIV is significance at level of 95%, in case of event windows (-1, 1) and (-1, 0), where if the DIV increases 5% then CAR would increase 0.478 and 0.415 percentage points. Lastly, the significance F shows that event windows (-10, 10), (-5, 1), (-3, 3), (-1, 1) and (-1, 0) are as a whole model highly significant at significance level 1%. Event window (-1, 5) is significant at level of 5% and event window (0, 1) did not show any significance.

Table 6. NASDAQ OMX Helsinki companies that increased dividend payment amount compared to previous year, with variables AVR, LNPRICE and DIV

	Dividend increase				
	Significance F	***Variable***	***Coefficients***	***t Stat***	***P-value***
(-10, 10)	***0.000	LNPRICE	-0.005	-0.708	0.480
		AVR	3.539	5.230	***0.000
		DIV	1.250	2.495	**0.013
(-5, 1)	***0.000	LNPRICE	0.001	0.282	0.779
		AVR	3.680	8.114	***0.000
		DIV	0.888	2.647	***0.009
(-3, 3)	***0.000	LNPRICE	0.002	0.279	0.781
		AVR	2.700	5.286	***0.000
		DIV	0.975	2.579	**0.011
(-1, 1)	***0.001	LNPRICE	0.001	0.204	0.838
		AVR	1.087	2.406	**0.017
		DIV	1.066	3.192	***0.002
(-1, 5)	***0.002	LNPRICE	0.001	0.202	0.840
		AVR	1.196	2.262	**0.025
		DIV	1.102	2.817	***0.005
(0, 1)	**0.047	LNPRICE	0.005	1.014	0.312
		AVR	0.091	0.210	0.834
		DIV	0.885	2.770	***0.006
(-1, 0)	***0.001	LNPRICE	-0.003	-0.656	0.512
		AVR	0.986	2.413	**0.017
		DIV	0.811	2.683	***0.008

*significant at 10%
**Significant at 5%
***Significant at 1%
Source: Author's calculations.

Regression analysis run from only dividend increased companies Table 6, shows statistical significance at significance level of 5% and 1%. It can be seen that in this case event window (0, 1) also has significance when looking at variable DIV. Variable LNPRICE still has high P-value when variables AVR and DIV has P-value lower than 0.05 and 0.01. From the table 6 we can see that if the AVR increases 1% the CAR would change 3.539 percentage points for event window (-10, 10), for event window (-5, 1) CAR would change 3.68 and for event window (-3, 3) CAR would change 2.700 percentage points. If the AVR would increase 1% then event window (-1, 1)

CAR would change 1,087 percentage points, event window (-1, 5) CAR would change 1.196 percentage points and event window (-1, 0) CAR would change 0.986 percentage points. In case of 1% increase of DIV event window (-1, 1) CAR would change 1.066, event window (-1, 5) CAR would change 1.10, event window (0, 1) CAR would increase 0,885 and event window (-1, 0) CAR would change 0.811 percentage points. 1% increase on DIV would change event window (-10, 10) CAR 1.250 percentage points and event window (-3, 3) CAR 0.975 percentage points. Lastly, the significance F shows that event windows (-10, 10), (-5, 1), (-3, 3), (-1, 1), (-1, 5) and (-1, 0) are as a whole model highly significant at significance level 1% and event window (0, 1) was significant at level of 5%.

Table 7. NASDAQ OMX Helsinki companies that decreased dividend compared to last year, with variables AVR, LNPRICE and DIV

	Dividend decrease				
	Significance F	***Variable***	***Coefficients***	***t Stat***	***P-value***
(-10, 10)	0.324	LNPRICE	-0.015	-0.847	0.403
		AVR	-0.463	-0.279	0.782
		DIV	-1.761	-1.831	*0.076
(-5, 1)	***0.007	LNPRICE	0.000	0.012	0.990
		AVR	2.819	2.835	***0.008
		DIV	-1.010	-1.750	*0.089
(-3, 3)	*0.088	LNPRICE	-0.006	-0.503	0.618
		AVR	-1.245	-1.074	0.291
		DIV	-1.768	-2.629	**0.013
(-1, 1)	0.261	LNPRICE	0.001	0.064	0.949
		AVR	-0.495	-0.508	0.615
		DIV	-1.125	-1.990	*0.055
(-1, 5)	0.156	LNPRICE	-0.006	-0.491	0.627
		AVR	-2.194	-1.843	*0.074
		DIV	-1.286	-1.863	*0.071
(0, 1)	0.283	LNPRICE	0.002	0.195	0.847
		AVR	-1.297	-1.421	0.165
		DIV	-0.847	-1.600	0.119
(-1, 0)	**0.015	LNPRICE	0.007	0.906	0.371
		AVR	1.187	1.570	0.126
		DIV	-1.012	-2.308	**0.027

*Significant at 10%
**Significant at 5%
***Significant at 1%
Source: Author's calculations

Table 7 shows that there is less significance in dividend decreasing group as in the previous tables. P-values are rather high expect of event window (-5, 1) which is smaller than the significance level 0.01 and 1% increase on AVR would increase CAR by 2.819 percentage points. Variable

LNPRICE is still statistically insignificant. It can be seen that if DIV would increase 1% then event window (-10, 10) CAR would decrease by 1.761 percentage points, for event window (-5, 1) CAR would decrease 1.010 percentage points, for event window (-1, 1) CAR would decrees 1.125 percentage points and for event window (-1, 5) CAR would decrees 1.27 percentage points. If DIV would increase 1% then CAR would decrease 1.768 percentage points for event window (-3, 3) and for event window (-1, 0) CAR would decrease 1.012%. 1% increase on AVR would decrease event window (-1, 5) by 2.194 percentage points. Lastly, the significance F shows that event windows (-10, 10), (-1, 1), (-1, 5) and (0.1) are not as a whole model significant. Event window (-5, 1) was most significant at level of 1% were by event window (-3, 3) and (-1, 0) is significant at significance level of 10% and 5%.

Table 8. NASDAQ OMX Helsinki companies that had same level of dividend compared to last year, with variables AVR, LNPRICE and DIV

	Dividend constant				
	Significance F	***Variable***	***Coefficients***	***t Stat***	***P-value***
(-10, 10)	**0.019	LNPRICE	0.012	1.262	0.212
		AVR	3.597	2.886	***0.006
		DIV	0.000	65535	0.000
(-5, 1)	***0.004	LNPRICE	0.006	0.957	0.343
		AVR	3.030	3.579	***0.001
		DIV	0.000	65535	0.000
(-3, 3)	0.113	LNPRICE	0.011	1.363	0.179
		AVR	2.021	1.802	*0.077
		DIV	0.000	65535	0.000
(-1, 1)	0.202	LNPRICE	0.013	2.161	**0.035
		AVR	0.074	0.092	0.927
		DIV	0.000	65535	0.000
(-1, 5)	0.217	LNPRICE	0.014	1.987	*0.052
		AVR	0.548	0.577	0.566
		DIV	0.000	65535	0.000
(0, 1)	0.452	LNPRICE	0.005	0.880	0.383
		AVR	-1.206	-1.445	0.154
		DIV	0.000	65535	0.000
(-1, 0)	**0.024	LNPRICE	0.012	2.458	**0.017
		AVR	1.155	1.770	*0.083
		DIV	0.000	65535	0.000

*Significant at 10%
**Significant at 5%
***Significant at 1%
Source: Author's calculations

Table 8 demonstrates that for the constant dividend group the variables AVR and LNPRICE are statistically significant. Variable AVR P-values are lower than 0.01. When the event window (-

10, 10) AVR increases 1%, the CAR would in turn increase by 3.597 percentage points and comparably if the event window (-5, 1) CAR would increase by 1% then the CAR would in turn increase by 3.030 percentage points. Event windows (-3, 3) and (-1, 0) both have P-value lower than 0.10, whereby 1% increase to AVR would change CAR by 2.021 percentage points and 1.155 percentage points. With variable LNPRICE there is significance at 5% level. This means that if the share price increases by 1% at the event day, the CAR, in case of event windows (-1, 1) and (-1, 0) would increase by 0.012/100 = 0.000012 percentage points and 0.013/100 = 0.000013 percentage point. Lastly, the significance F shows that event windows (-5, 1), (-3, 3), (-1, 1) and (-1, 5) and (0, 1), are not as a whole model significant. Event window (-5, 1) is highly significant at level of 1%, were by the event window (-10, 10) and (-1, 0) is significant at significance level of 5%.

Table 9. NASDAQ OMX Helsinki companies' full sample with variable with variables AVR, LNPRICE and DIVINCREASE

	All Companies				
	Significance F	***Variable***	***Coefficients***	***t Stat***	***P-value***
(-10, 10)	***0.000	DIVINCREAE	-0.005	-0.526	0.599
		LNPRICE	0.002	-0.445	0.657
		AVR	3.312	5.895	***0.000
(-5, 1)	***0.000	DIVINCREAE	0.005	0.785	0.433
		LNPRICE	0.001	0.338	0.736
		AVR	3.618	9.776	***0.000
(-3, 3)	***0.000	DIVINCREAE	0.011	1.375	0.170
		LNPRICE	0.002	0.550	0.583
		AVR	2.300	5.248	***0.00
(-1, 1)	***0.000	DIVINCREAE	0.014	2.109	**0.036
		LNPRICE	0.003	0.802	0.423
		AVR	0.909	2.462	**0.014
(-1, 5)	0.135	DIVINCREAE	0.007	0.937	0.349
		LNPRICE	0.003	0.612	0.541
		AVR	0.874	2.005	**0.046
(0, 1)	0.422	DIVINCREAE	0.008	1.176	0.241
		LNPRICE	0.003	0.823	0.411
		AVR	-0.190	-0.536	0.592
(-1, 0)	***0.000	DIVINCREAE	0.015	2.551	**0.011
		LNPRICE	0.002	0.640	0.523
		AVR	1.247	3.841	***0.000

*Significant at 10%
**Significant at 5%
***Significant at 1%
Source: Author's calculations

When taking Table 9 into consideration, we can see that both the AVR and dividend increase variables has significance at significance level 5% and 1%. Also, P-value for AVR for most event windows are lower than 0.01. Whereby, 1% increase for AVR would increase CAR for event window (-10, 10) by 3.312 percentage points, for event window (-5, 1) by 3.618 percentage points, for event window (-3, 3) by 2.300 percentage points and for even window (-1, 0) by 1.247 percentage points. Dividend increase variable has significance at two event windows. If a company increases its dividend compared to the previous year, then in case of event window (-1, 1) the CAR would increase by 0.014 percentage points and for event window (-1, 0) CAR would increase by 0.015 percentage points. LNPRICE variable does not have any statistical significance on any event window and has no statistical effect on CAR. Lastly, the significance F shows that event windows (-10, 10), (-5, 1), (-3, 3), (-1, 1) and (-1, 0) are as a whole model highly significant at significance level 1%. Event window (-1, 5) and (0, 1) are not significant.

3.3. Discussion

Based on the event study, we can see that there was no significant effect on individual share prices AR and CAAR, based on table 3 and 4. Although, event window (-3, +3) had slight significance in CAAR, but was only event window to show any significance, which means that it can be regarded as a random occurrence.

Dividend increase group had no significance effect on share price during the dividend announcement day and the abnormal return was only -0.03% and next day it is 0.28%. Two days before the dividend announcement, dividend increase group had significant abnormal return, which could imply that market has already anticipated increase on dividend. During the dividend announcement day, the dividend decrease group had negative abnormal return of -0,59%, but it did not have any significance and the abnormal return rose by 0,60 percentage points on the next day. But still, if we take a look at table 6 and 7 regression, we can see that there is an effect on CAR. Dividend constant groups had significant negative abnormal return during the dividend announcement day. This could be explained by markets expectation of higher dividends. From table 8, we can see AVR to be significant, which means that the share prices were already going up before the announcement. From these it can be concluded that dividend decrease, and constant is seen as negative news and leads to negative abnormal return in dividend announcement day. Abnormal return is also small on previous day which could mean that they were more unexpected.

Change in dividend has various effects on share price when looking at the regression analysis. DIV does have a positive effect on CAR if dividend is increased. If we look at table 6, we can see that DIV has a significant positive effect during all other than one event. Table 9 shows that, having dividend increased does have a very small effect on cumulative abnormal return CAR when compared to events where dividends were either constant or decreased. Yet, Healy and Palepu (1988) had found that dividend decrease has a larger effect on share price. With this information we can accept the first hypotheses which implies that increasing dividend has a positive effect on share price. From the table 7 we can see that, if the dividend is decreased, then DIV has a negative effect on CAR. There is significance on seven event windows at level of 10% and 5%. This also confirms the second hypothesis which implies that decreasing dividend has a negative effect on share price.

Other studied variables did have effect on the cumulative abnormal return in addition to dividend announcement day. DIV had effect on the cumulative abnormal returns when dividend is increased and decreased. LNPRICE has some positive significant effect on CAR during three event windows when dividend was constant but does not show any significance in any other table. DIVINVREASE does also affect the abnormal return. AVR shows that there is already movement before the dividend announcement day in all groups. This could mean that there are other factors in addition to dividend announcement influencing the abnormal return.

Significance f shows if the regression was significant as a whole model and when looking at regression with variables, AVR, LNPRICE and DIV, it can be stated that 13 models were highly significant as significance F was below 0.01%. While four models were moderately significant at a value below 0.05 and two model were slightly significant at a value below 0.001. Regression with variables LNPRICE, DIV and DIVINCREASE had five models that can be seen to have high significance level as their significance F was below 0.01.

Based on table 3 and 4, it could be beneficial for the investor to buy the shares during the announcement day as the abnormal return is lower from the previous day. The market does also quickly react to this and positive abnormal return can be seen right after the dividend announcement. This could mean that the market adjusts the share price to its correct value. Based on previous analysis and efficiency theory, Finnish stock market does not seem to approach semi-strong effectiveness initially, as there will be an opportunity for the investors to earn abnormal

returns by buying/selling shares near dividend announcement days. But this opportunity does not last long as the market reacts, and public information will then soon be reflected on the share price. So basically, the market reacts to dividend announcement rather quickly and it makes the market approach a semi-strong efficiency.

Signalling theory suggest that dividend policy effects the share price, and it is visible in this study as the dividend increase has a positive effect on the share prices and dividend decrease has a negative effect on the share prices. In case of Finnish stock market, dividends do have an effect but announcement day appear to be irrelevant like Miller and Mogul (1961) suggested. This is seen at table 4, where dividend announcement day has no significant abnormal return, and it is already changing before the announcement day like regression variable AVR shows.

This study has different result than some of the previous studies made by (Aharony et al. 1988; Divecha, Morse, 1983; Eddy, Seifert, 1992; Nissim & Ziv, 2001; WoolRidge, 1982) where the dividend announcement day was found to have significant abnormal return. This study also had negative abnormal return during the dividend increase announcement. Aharony and Swary (1980) had positive abnormal return in dividend announcement day when studying companies in United States of America, also other studies had same findings. Bozos et al. (2011) had similar findings when studying London Stock Exchange. Dividend decrease announcement does support other studies which also have found negative abnormal return during the announcement day, although in this study it was not significant.

Based on the previous Finnish studies, the study shows similar result by not having abnormal return during the dividend announcement day (Korhonen 1976; Duinker 2013). Duinker (2013) also found that dividend decrease has larger effect than dividend decrease, and they were not statistically significant.

One limitation for this study was the regression analysis and more variables could be studied in the future. Some of these variables could be number of shares traded, earnings and other economic factors. Event study could also be used to study other events than dividend announcement day, like the actual dividend payment day or ex dividend day. Investor's behaviour could be taken into consideration more. The effect of corona virus should also be studied in future studies as it has had major effect on stock market.

In 1.1.2020, Finland authorized new equity saving account. This account allows investor to buy and sell shares inside the account without any taxation, dividend can also be investment inside this account without taxes. Profit is only taxed when the account owner transfers his or hers funds out of the account. Currently the investor can invest 50,000 euros inside it and use it freely. This is fairly new thing in Finland and for future studies it would be interesting to see if this has had any effect on abnormal returns surrounding dividend payments and dividend announcement or Finnish stock market overall.

CONCLUSION

According to irrelevancy theory, investors act rationally and have all information regarding the future of the company and know future dividend beforehand, because of this the dividend does not have relevant change on share prices. Efficient market theory presents that all the new information spreads quickly and is reflected on the share prices instantly. Signalling theory supports the idea that dividend signals new information to the market and changes the share prices according to dividend change.

The aim of this paper was to investigate the effect of dividend announcement in Finnish stock market. Companies investigated were listed to NASQAD OMX Helsinki between 2015-2019 and had to have a dividend announcement from previous year, with these requirements the study ended with 66 companies and 330 different announcement days. After this, dividend announcements were divided to four different groups which are, full sample, dividend increase, dividend decrease and dividend constant.

The first research question was whether and how does dividend announcement effect share prices of Nasdaq OMX Helsinki companies. Based on the results it can be concluded that dividend announcement does not over all have a significant effect on share price as event study did not show any significance during the event day, neither did the event windows. Even if the abnormal return is negative during the announcement day, it is corrected the next day as the market reacts to it rather quickly.

The second research question was, how dividend change in dividend effect the share prices of Nasdaq OMX Helsinki companies. The study shows that increase in dividend has positive effect on share prices and dividend decrease has negative impact on share prices. Having dividend unchanged, has a negative effect on share price.

The third research question was, are there other variables which might influence abnormal return in addition to dividend announcement day. Regression analysis showed that dividend change had

positive effect on CAR if dividend is increased and negative if dividend is decreased. AVR shows that there is price movement. Based on regression analysis, dividend increased does have a very small effect on cumulative abnormal return CAR when compared to events where dividends were either constant or decreased.

There were also two hypotheses presented, which were:

H1: Increasing dividend has a positive effect on share price.

H2: Decreasing dividend has a negative effect on share price

First hypotheses can be accepted based on the regression analysis where dividend increase was found to have positive effect on CAR. Second hypotheses can also be accepted as dividend decrease had negative effect on CAR when regression was run. This founding is in par with other similar studies.

There were more abnormal and significant results before dividend increase announcement, which can be interpreted that market is already expecting it. Dividend decrease and constant does not have similar result and has larger negative abnormal return than dividend increase compared to previous day. Which could mean that they are more unexpected. Furthermore, the study shows that there is an opportunity for the investors to earn extra returns near dividend announcement day.

Dividend announcements impact is not very studied topic in Finland. It is important to provide new information to investors in Finnish stock market. New equity saving accounts effect on Finnish market should be studied and it would give new relevant information as it limits the effect of taxation. For new studies a larger data could be used, and different variables could be explored when doing regression analysis. Investors behaviour around the announcement day could be taken into account more meaningfully. New event windows could be explored, especially longer ones as this study mainly had short event windows. Impact of the recent corona virus to NASQAD OMX Helsinki stock market could be studied as it would be interesting to see how Finnish market would react to it. Also, further studies regarding ex-dividend and other events should be researched.

LIST OF REFERENCES

Campbell, J.Y., Lo, A. W. & Mackinlay, A. C. (1997), The Econometrics of Financial Markets. New Jersey: *Princeton University Press*, 149-169

Bebchuk, L., Fried, J. (2005). Pay Without Performance: Overview of the Issues. *Journal of Applied Corporate Finance*, 17, (4), 8-23.

Benartzi, S., Michaely, Roni et Thaler, R. (1997) Do changes in dividends signal the future or the past? *The Journal of Finance*, 52, (3), 1007-1034

Bernard, V. L., Thomas, J. K. (1989). Post-earnings-announcement drift: Delayed price response or risk premium? *Journal of Accounting Research*, 27(3), 1–36.

Bhattacharya, S. (1979). Imperfect information, dividend policy, and "The Bird in the Hand" fallacy. *The Bell Journal of Economics*, 10(1), 259–270.

Bozos, K. Nikolopoulos, K,. Ramgandhi, G. (2011). Dividend signaling under economic adversity: Evidence from the London Stock Exchange. *International Review of Financial Analysis*, 20, 364-374

Brav, Alon, John R. Graham, Campbell R. Harvey, Roni Michaely (2005). Payout Policy in the 21st century. *Journal of Financial Economics*. 77, 483–527.

Brealey, Richard A., Steward C. Myers and Franklin Allen (2011). *Principles of Corporate Finance*. (10th ed) New York: The McGraw-Hill Companies Inc.

Brealey, R.A., Myers, S.C. (1991). *Principles of Corporate Finance.* (4th ed). New York, USA. McGraw-Hill.

Duinker, R. (2013) Share Repurchase and Dividend Announcements in Finland, *master's thesis*, Tilburg University, Tilburg

Easterbrook, F. H. (1984). Two agency-cost explanations of dividends. *The American Economic Review*, 74(4), 650–659

Fama, E. F. (1970, May). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance*, 25(2), 383-417.

Fama, Eugene F. (1965). The Behavior of stock-market prices. The Journal of Business. 38, (1), 34–105.

Gordon, M.J (1989). *Corporate Finance Under the MM Theorems. Financial Management* 18, (2), 19-28.

Gordon, M. J. (1963). Optimal Investment and Financing Policy. *Journal of Finance*, 18(2), 264-272.

Harris, M. and Raviv, A., 1991. The Theory of Capital Structure. *Journal of Finance*, 46(1), 297-355

Healy, P. M., Palepu, K.G. (1988). Earnings information conveyed by dividend initiations and omissions. *Journal of Financial Economics,* 149-75.

Hunjra, A. I., Ijaz, M. S, Chani, M. I., Hassan, S. and Mustafa, U. (2014). Impact of Dividend Policy, Earning per Share, Return on Equity, Profit after Tax on Stock Prices. *International Journal of Economics and Empirical Research.* 2(3), 109-115.

Jensen, Gerald R., Lundstrum, Leonard L. et Miller, Robert E. (2010) What do dividend reductions signal? *Journal of Corporate Finance*, 16, 736-747

Jensen, M. C. (1986). Agency costs of free cash flow, corporate-finance, and takeovers. *The American Economic Review,* 76, (2), 323–329.

Jensen, M., Meckling, W. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, (4), 305-360.

John, K., Williams, J. (1985). Dividends, Dilution, and Taxes: A Signalling Equilibrium. *Journal of Finance,* 40, (4), 1053-1070.

Jokipii, A,. Vähämaa, S. (2006). The Free Cash Flow Anomaly Revisited: Finnish Evidence. *Journal of Business Finance & Accounting*. 33, (7), 961–978.

Kasanen, E. Kinunnen J. and Niskanen J. (1996). Dividend-based Earnings Management: Empirical Evidence from Finland. *Journal of Accounting and Economics,* 22, 283–312.

Kim, Yu K., Pandit, J., Viswanath, P. V. (2002), Dilution, Dividend Commitments and Liquidity: Do Dividend Changes Reflect Information Signaling? *Review of Quantitative Finance and Accounting,* 18, 359-379

Kinkki, S. (1998). *Dividend Theories and the Agency Theory Based Control, Benefits Model On Factors Affecting Cash Dividend Decisions in a Corporation, Finnish evidence*. Helsingin Kauppakorkeakoulu. Laskentatoimen ja rahoituksen osasto

Korhonen, A. (1976): Dividends, Information and Stock Prices: Empirical Evidence. *Liiketaoustieteellinen aikakauskirja*, 25, (2)

La Porta, R., Lopez-de-Silanes, F., Shleifer, Andrei et Vishny Robert W. (2000) Agency problems and Dividend polices around the World. *The Journal of Finance*, 55, (1), 1-33

Lintner, J. (1956), Distribution of Incomes of Corporations among Dividends, Retained Earnings, and Taxes, *The American Economic Review*, 46, (2), 97-113

MacKinlay, A. (1997) Event Studies in Economics and Finance. *Journal of Economic Literature*, 35, (1), 13-39.

Miller, M., & Modigliani, F. (1961). Dividend Policy, growth and the valuation of Shares. *The Journal of Business, 34*, 411-433.

Niskanen, J., Niskanen, M. (2007). *Yritysrahoitus.* (5th ed), Helsinki, Edita.

Nordnet. Oksaharju, J. (2014, Feb 7) Pari sanaa osingoista vol.2. [Blog post]. Retrieved from https://www.nordnet.fi/blogi/pari-sanaa-osingoista-vol-2/ , 10 December 2020.

Osakeyhtiölaki 21.7.2006/62

Peterson, P.P (1989). Event studies: A review of Issues and Methodology. *Quarterly Journal of Business and Economy,* 28, (3), 36-66.

Petit, R. (1972). Dividend announcements, security performance and capital market efficiency. *Journal of Finance*, 27, 993−1007.

Ross, S.A., Weterfield, R.W., Jaffe,J. (2005) *Corporate finance.* (7rd ed.) Singapore, The McGraw-Hill companies Inc

Ross, S.A., Westerfield, R.W., Jordan, B.D. (1993). *Fundamentals of Corporate Finance*. (2th ed) s.l, The Irwin series in finance.

Ross, S. (1977). "The determination of financial structure: The incentive signaling approach". *Bell Journal of Economics* 8, 23-40.

Watson, D., Head, A. (2013). Corporate Finance: *Principles and Practice*. (6th ed). s.l. Harlow: Pearson Education Limited.

Wells, W.H. (2004). A beginner's Guide to Event Studies. *Journal of insurance regulation*, 22, (4), 61-70

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