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ENGELSK TITTEL: **Stock Market Reactions to Dividend Announcements: An Event Study of the Norwegian Capital Market**

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Preface

This thesis was written during the spring semester of 2013, and concludes my Master program in Economics and Business Administration at the University of Stavanger.

The process has been both challenging and educational. Collecting the necessary data and applying the statistical program STATA turned out to be a very time consuming and demanding process. However, the process has above all been rewarding and highly educational. It has been performed with great devotion throughout the semester. I acknowledge that the sample is not large enough to be able to generalize my results. Thus, my findings must be treated with caution.

It is with great gratitude that I acknowledge my supervisor Professor Lorán Grady Chollete for his guidance, good feedback and support throughout this study.

Finally, I owe my deepest gratitude to my mother Målfrid Boganes Strøm for her encouragement, moral support, and for always being my biggest supporter. This thesis would probably have remained a dream had it not been for you.

Stavanger, 14.06.2013

Elisabeth Strøm

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Abstract

The dividend signaling hypothesis is one of the most prominent theories attempting to explain why firms distribute dividends. This study investigates the Norwegian stock markets reactions to dividend change announcements of firms listed on the Oslo Stock Exchange during the period January 2007 to March 2013. The majority of previous research within this area has been conducted using U.S. data. This study attempts to investigate whether the empirical results from the U.S. also apply to the Norwegian stock market where the tax system as well as other institutional and economic characteristics is significantly different. Knowledge of the impacts of dividend changes is of importance to managers of Norwegian listed firms, investors and other market participants. The results show that announcements of dividend increases are associated with insignificant increased stock prices, while announcements of dividend decreases are associated with significant decreased stock prices. These results are in line with the dividend signaling proposition and contradict the tax-based signaling proposition, which states that higher taxes on dividends relative to capital gains are a necessity for dividends to be informative.

1. Introduction

The effects of a firms dividend policy have been the subject of a majority of both empirical and theoretical research through the years. Miller and Modigliani (1961) were the first to conclude that dividend was irrelevant under perfect capital markets. Since then, the finance literature has provided several explanations, leading to numerous hypotheses regarding the effects of a firms dividend policy. One of the most prominent hypotheses is the dividend signaling hypothesis, initially proposed by Lintner (1956), and further developed by Bhattacharya (1979), John and Williams (1985), and Miller and Rock (1985). The dividend signaling hypothesis states that dividend announcements contain information about the management's assessment on the firms future prospects. Hence, dividend change announcements convey important information to the market about the firms future prospects. This suggests that an announcement of a dividend increase/decrease should be followed by an increase/decrease in stock prices.

According to the efficient market hypothesis (EMH), an assets current price fully reflects all available information. The hypothesis was developed by Eugene Fama and has been a part of the finance literature since the 1960's. It is argued that because markets are efficient and current prices fully reflect all available information, attempts to outperform the market essentially relies on luck, rather than skills. The efficient market hypothesis has led to a powerful financial research methodology, namely event studies. If stock prices reflect all currently available information, then price changes must reflect new information. The efficient market hypothesis can be tested by examining the effects of an event that supposedly conveys price altering information to the market. If capital markets are efficient, dividend change announcements should be incorporated almost immediately in stock prices.

There is an extensive amount of previous research on the subject of stock market reactions to dividend announcements employing the event study methodology. The majority of this research stems from the U.S. Some of the most important previous research within this field will be reviewed in chapter 3.

The primary purpose of this paper is to empirically test the signaling theory assumption that dividend announcements convey information to the market about firms future profitability using data for Norwegian firms listed at the Oslo Stock Exchange. Consistent with this theory, a positive relation should exist between dividend changes and the subsequent stock price reaction. In addition, the event study methodology is applied to provide evidence on the semi-strong form of market efficiency in the Norwegian capital market.

The Norwegian capital market differs from both the U.S. capital market, as well as other large well developed capital markets. While the U.S. stock market has multiple exchanges there is only one exchange in Norway, the Oslo Stock Exchange. The Oslo Stock Exchange is relatively small with only 166 currently listed stocks, and a regulatory system that differs from the one in the U.S. The Norwegian Government heavily regulates business in attempt to ensure stockholders rights.

The Norwegian capital market is also characterized by a significant level of Government ownership. By the end of 2012, Government ownership accounted for approximately 36,3 % of the market value on the Oslo Stock Exchange. This suggests that Norwegian firms may experience fewer agency problems due to the high degree of Government ownership and regulations. In addition Norway has a dual income tax system which differentiates taxation based on the type of income. This system imposes higher tax rates on non-capital income e.g. wage, while all capital income is subject to a flat tax rate of 28 %.

The differences between the Norwegian capital market and the U.S. capital market suggest that the empirical results documented in the U.S. may not apply to the substantially smaller Norwegian stock market. Strict government regulations, a significant level of Government ownership and a different tax system may reduce the signaling effect of a firms dividend policy. A further specification of the research problem is presented in the following section.

1.1 Research Problem

Most Norwegian firms announce dividend once a year with the publication of the annual report. This creates a scenario in which dividend changes can work in corroboration with earnings news to generate market reactions. Several previous studies have investigated dividend policy together with earnings performance and reported both significant singular and synergy effects. However, because all firms listed on the Oslo Stock Exchange are required to disclose quarterly earnings reports to the public, information regarding earnings that are presented in the annual report have most likely already been presented to the market in the final quarterly report and are thus not considered as new information.

The purpose of this paper is to examine the relation between dividend change announcements of Norwegian firms listed at the Oslo Stock Exchange and the subsequent stock market reaction. Employing the event study methodology, this study seeks to investigate if dividend change announcements of Norwegian firms convey information to the market in line with the signaling theory. At the same time, the purpose is to provide evidence on the semi-strong form of market efficiency by examining whether the Norwegian capital market is able to efficiently incorporate the dividend change announcements.

The scope of the study is ordinary cash dividend. It is reasonable to believe that the information content of ordinary dividend may differ from the equivalent of an extraordinary dividend as the latter does not represent a long term commitment.

Consistent with many studies in this domain the following hypotheses are defined:

H_0: $AAR = 0$

H_1: $AAR \neq 0$

The null hypothesis states that dividend change announcements are not associated with average abnormal return (AAR). While the alternative hypothesis states that the AAR is statistically different from zero, and reflects the signaling theory assumption that dividend announcements convey information to the market.

1.2 Thesis structure

The remainder of the paper is structured as follows. Chapter 2 provides a review of basic theories with regards to capital market efficiency and the information content of dividends. Chapter 3 provides a review of previous research on the effect of dividend announcements, emphasizing dividend announcement event studies. In Chapter 4 empirical methods, and more specifically the event study methodology is presented. Chapter 5 provides a presentation of the data included in the analysis as well as a definition of the event study parameters. The empirical results are presented in Chapter 6, and Chapter 7 provides the conclusion of the study.

2. Theory

2.1 Introduction

There is a body of literature that examines the relation between dividend announcements and market reactions. This chapter provides a brief presentation of relevant basic theories related to market efficiency and the informational content of dividends.

2.2 The Efficient Market Hypothesis

2.2.1 Introduction to the Efficient Market Hypothesis

The efficient market hypothesis is the proposition that an assets current price fully reflects all available information. According to the efficient market hypothesis asset prices will only change when new information occurs. Because new information is unpredictable, price changes will also be unpredictable, meaning that asset prices will evolve randomly. As a result, no investor will benefit from trying to predict stock performance. Since dividend change announcements convey new information to the market, the theory of market efficiency is relevant with regards to predicting the effects of this new information.

Eugene Fama (1970) provided a thorough description of an efficient market and defined three informational subsets of market efficiency based on the amount of information reflected in asset prices: weak form, semi-strong form, and strong form.

The weak form of market efficiency states that prices reflect all information contained in historical returns. Hence, future stock price movements are independent of historical stock price movements. This implies that trend analysis is fruitless since the benefit from analyzing historical data is already reflected in the price (Bodie, Kane, Marcus, 2009).

The semi-strong form of market efficiency asserts that prices reflect all publicly available information regarding the firm's prospects. Hence, both historical prices and fundamental data on e.g. the firm's product line, quality of management, and balance sheet composition are reflected in the price (Bodie et. al., 2009).

Finally, the strong form of market efficiency in which prices even reflect information that is not publicly available such as insiders information. This version of market efficiency is considered as quite extreme since it is difficult to argue that insiders won't benefit from trading based on insider information. According to Fama (1970) the strong form of market efficiency is best viewed as a benchmark.

If the market is efficient, prices will instantly adjust to and fully reflect new available information without tendency for further increases or decreases. However, previous research has revealed price movements that are not consistent with the efficient market hypothesis. Studies by e.g. De Bondt and Thaler (1990) implied that markets overreact to new information, causing prices to increase/decrease dramatically beyond the true value before returning to the equilibrium price. Research by Bernard and Thomas (1989) disclosed a delayed market reaction where prices not immediately fully respond to new information. Figure 2.1 illustrates the different stock market reactions to new information.

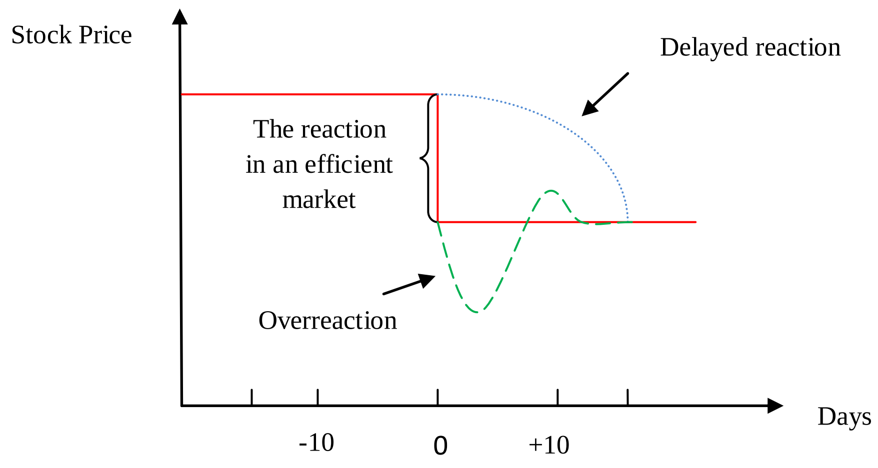

Figure 2.1. Stock Market Reactions to New Information

Anomalies: Contradictions of the Efficient Market Hypothesis

The efficient market hypothesis has been widely tested and found consistent with data from several markets. Fama concludes “in short, the evidence in support of the efficient markets model is extensive and contradictory evidence is sparse” (1970, p. 416).

However, there have also been empirical findings that contradict the efficient market hypothesis. For example the size effect, originally documented by Banz (1981). The size effect refers to the empirical evidence indicating that small firms had a higher return than predicted by the Capital Asset Pricing Model (CAPM).

In later studies (Keim, 1983, Reinganum, 1983) it became evident that the size effect almost entirely occurred in January. This is known as the small-firm-in-January effect. According to Schwert (2002) the size effect seems to have disappeared, or at least decreased substantially after it was documented in the 80’s. But unlike the size effect, the small-firm-in-January effect has not completely disappeared since its first discovery.

Empirical research (e.g. Basu, 1977) also discovered a tendency for portfolios of value stocks[1] to earn higher return compared to portfolios of growth stocks[2]. This is referred to as the value effect, but according to Ball (1978) the effect was more likely to be caused by the CAPM not being able to fully adjust for risk than an inefficient market.

2.2.2 The Efficient Market Hypothesis and Event Studies

The efficient market hypothesis has led to a powerful financial research methodology that is event studies. If stock prices reflect all currently available information, then price changes must reflect new information. Hence, an event study enables one to assess the impact of a particular event on a firm’s stock price by examining price changes during the period in which the event occurs (Bodie et. al., 2009). According to Fama “Event studies are the cleanest evidence we have on efficiency” (1991, p. 1602).

In earlier work (e.g. Fama, 1970) an event study was referred to as a semi-strong-form test of market efficiency. The purpose was to examine how fast security prices reflected new public information. Information disclosures related to e.g. earnings announcements, stock repurchase

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[1] Value stocks are stocks that have a low price relative to fundamentals
[2] Growth stocks are stocks that have a high price relative to fundamentals

announcements and announcements of mergers and acquisitions have previously been examined in attempt to test the semi-strong form of market efficiency.

During the past decades event studies has become a growing industry, and the literature on event studies has become an important part of financial economics (Kothari, Warner, 2007). However, according to Kothari et. al., “the basic statistical format of event studies has not changed over time” (2007, p.8); the purpose is still to measure the mean and the cumulative mean return around the time of the event.

The implications of the efficient market hypothesis have great impact for investors who spend their time searching for mispriced securities. If current prices reflect all available information, then attempts to outperform the market essentially relies on luck rather than skills. Accordingly, whether security markets are informational efficient is of great interest to both investors as well as other market participants. Kothari (2001) argue that the interest originate from the fact that allocation of wealth among market participants is determined by security prices. This creates a demand for empirical research on market efficiency.

Market efficiency is an important prerequisite when investigating the effects of an event. In an efficient market new information will provide a shift in firm value. Thus, factors affecting individual stock prices and more importantly the market as a whole can be identified by performing an event study.

A more comprehensive review of the event study methodology will be presented in Chapter 4.

2.3 The Information Content of Dividends

2.3.1 Introduction to the Information Content of Dividends

The effect of a company’s dividend policy has been debated substantially in finance literature, and has motivated a significant amount of theoretical and empirical research (Raposo, Vieira, 2007). Deciding upon a dividend policy is one of the most important financial decisions a company faces. The responsibility for determining a company’s dividend policy lies on the board of directors and the management group. Although formally the general assembly initially takes the decision with regards to dividend it cannot decide on a higher dividend than what the board has proposed.

The question of how dividend policy affects firm value has been the subject of several both empirical and theoretical studies throughout the years. Several theories have evolved, but no single theory has emerged as the dominant explanation. Empirical research has provided two contradictive results; dividend is irrelevant and dividend is relevant. These theories will be reviewed briefly in the following sections.

2.3.2 Dividend is Irrelevant

Miller and Modigliani (1961) showed that in perfect and complete capital markets, a firms dividend policy does not affect firm value. They argued that firm value is determined by investment policy and choosing the optimal level of investment, whereas its dividend policy is irrelevant. Hence, the dividend policy will not affect neither current stock price nor increase shareholders wealth.

Miller and Modigliani (1961) argued that when dividends are paid, the market price of the stocks will decrease and a potential gain by the investors as a result of the increased dividend will be neutralized by the reduction in the market value of the stocks. A firms dividend policy would affect neither firm value, nor its cost of capital. Their analysis is based on assumptions of perfect and complete capital markets, rational investors, symmetric information, and no taxes nor transaction costs. The dividend irrelevance proposition is based on the argument that dividend is only a financing decision. However, empirical evidence has also suggested that dividend policy is anything but irrelevant.

2.3.3 Dividend is Relevant

In the real world, perfect and complete capital markets as proposed by Miller and Modigliani (1961) do not exist. In the real world there are taxes, transaction costs, and investors who do not have access to all information. This can possibly cause dividend policy to affect firm value.

In response to Miller and Modigliani's (1961) dividend irrelevance proposition Gordon (1963) and Lintner (1962) argued that dividend policy affects a firms cost of capital. They claimed that lower dividend payouts would result in a higher cost of capital. Gordon (1963) and Lintner (1962) claimed that investors prefer current dividends above potential future capital gains because they are less risky. The proposition that dividends are preferred above capital gains has become known as the Bird-in-the-Hand theory. This theory was criticized by Miller and Modigliani (1961) who called it a Bird-in-the-Hand fallacy. They argued that most investors intend to reinvest dividends in the stock of a similar or even the same company making them exposed to the same risk as if the firm had retained and invested the earnings. Counter to the Bird-in-the-Hand theory is the tax preference theory by Litzenberger and Ramaswamy (1979) which states that in the presence of taxes, capital gains are preferred over current dividends due to the favorable tax treatment of capital gains. The tax preference theory is based on the assumption that dividends are taxed at higher rates than capital gains. According to this theory, low dividend payout ratios maximize firm value by contributing to lower cost of capital and increased stock prices. It is also considered as a disadvantage that dividends impose taxation immediately while investors can postpone taxation of capital gains until realization. Thus, in an environment where capital gains are taxed at a lower rate, investors will prefer non dividend stocks.

Another well known theory of why firms distribute dividends is the agency theory of dividend policy. Easterbrook (1984) suggest that dividends may act as a device that aligns managers interest with those of the investor. By distributing dividends managers must approach the capital market to raise funds. This subjects the firms management to external scrutiny and disciplining effects, and since managers not are perfect agents, the distribution of dividends will accordingly reduce the agency costs of management. Jensen (1986) provides a similar agency theory based explanation. In particular, Jensen (1986) contends that the presence of a large free cash flow can worsen a firms agency problem by protecting managers from external scrutiny. According to Jensen (1986) dividend distributions will reduce the firms free cash flow that otherwise could have been used to fund investments that might be beneficial for the managers but not for the shareholders.

However, one of the most prominent theories attempting to explain the effects of a firms dividend policy is the dividend signaling hypothesis. This theory was initially proposed by Lintner (1956) who surveyed managers from 28 US companies regarding dividends and dividend policy. Lintner (1956) examined a period of seven years from 1947 to 1953, and based on the findings of his study, several facts about dividend policy were established. First, according to Lintner (1956), managers are reluctant either to cut or to raise existing dividends. Managers only reduce dividends when they have no choice, and raise dividends only when they are certain that the new dividend level can be sustained in the future. Second, the dividend level is tied to substantial long term earnings, and finally dividend payments are smoothed over time in order to move towards a long term target dividend payout ratio.

The dividend signaling theory classic models was further developed by Bhattacharya (1979), John and Williams (1985), and Miller and Rock (1985). According to the dividend signaling hypothesis, dividend announcements contain information about the management's assessment on the firms future prospects. Bhattacharya states that "Cash dividends function as a signal of expected cash flows of firms in an imperfect-information setting" (1979, p. 259). He argued that in an imperfect-information setting where cash dividends are taxed, the size of the announced dividend will depend on how good the news is.

Under the dividend signaling models of Bhattacharya (1979), John and Williams (1985) and Miller and Rock (1985) it is argued that in a world of asymmetric information, insiders have a better knowledge of the firms true worth than its shareholders. The insiders use dividends as a costly signal to convey information about a firms real value and its economic prospects to the market. According to this theory dividend increases signal an improvement in the firms future situation, which should be reflected by an increase in stock prices while dividend decreases signal deterioration of the firms future situation and thus should be reflected by a decrease in stock prices (Raposo, Vieira, 2007).

3. Previous Research

3.1 Introduction

This study attempts to explore how the Norwegian stock market reacts to dividend announcements using the event study methodology. There is abundant empirical and theoretical research on the relevance of dividends and the relationship between dividend announcements and shareholders reaction. Some of the main findings will be presented in the following sections.

3.2 Previous Research on Dividend Announcements

The impact of dividend announcements on stock prices has been broadly documented. Pettit (1972) was the first to empirically study the abnormal returns from dividend announcements. Conducting a study on 625 firms listed on NYSE[3] in the period January 1964 through June 1968 he discovered a strong positive relationship between dividend changes and stock price changes. In his study he showed that positive (negative) changes in dividend lead to positive (negative) abnormal returns, and that the size of the stock price reaction depended heavily on the size of the dividend change. His study demonstrates that announcements of dividend changes convey considerable information, and Pettit himself concludes "The result of this investigation clearly supports the proposition that the market makes use of announcements of changes in dividend payments in assessing the value of a security" (Pettit, 1972, p. 1006).

Aharony and Swary (1980) used a sample of 149 U.S. listed industrial firms to investigate if quarterly dividend changes provided information beyond that already provided by quarterly earnings announcements. These authors used a naive model of expectations to measure unexpected change in dividend. The sample data were divided into three groups: favorable, unfavorable, and stable dividends. In order to isolate the dividend effect from the earnings effect, only firms where dividends were announced at least eleven trading days prior to or after earnings announcements were considered. Similar to Pettit (1972) their empirical findings suggested that cash dividend announcements convey information beyond the corresponding quarterly earnings announcements.

Similar to Aharony and Swary (1980), Asquith and Mullins (1983) also employ a naive dividend forecasting model when examining the impact of dividend initiations. Asquith and

[3] The New York Stock Exchange

Mullins (1983) investigate the impact of dividends on shareholders wealth by analyzing 168 U.S firms that either pays their first dividend or initiate dividends after a 10 years interruption. According to their findings, dividend initiation has a significant positive impact on firms stock prices, and contributes to significant abnormal returns. Their evidence is consistent with the signaling hypothesis.

Woolridge (1982) performed an empirical study to determine if investors reassessed their expectations about future profitability in reaction to unexpected dividend changes. Using the event study methodology Woolridge (1982) investigated unexpected dividend change announcements for a random sample of 200 firms listed on NYSE over the period 1971 to 1977. The study revealed a significant relationship between the sign of unexpected dividends and abnormal stock returns, which gave support to the proposition that dividends contain information about future earnings.

The information content of dividends hypothesis was further tested by Watts (1973) who disputed the results of Petit (1972). Using monthly closing price of 310 firms obtained from the CRSP[4] tapes during June 1945 to June 1968, he tested if dividends contained information about future earnings of a firm. By conducting a regression analysis with next year's earnings on this year's dividend he discovered that while the average coefficients across firms were positive, the average t-statistics were very low. Accordingly he states that "all of the tests suggest that on average the relationship between future earnings changes and current unexpected dividend changes is positive and therefore consistent with the information hypothesis" (Watts, 1973, p. 211). The main conclusion of his study is that in general, the information content of dividends can only be trivial.

More recent studies by Benartzi, Michaely and Thaler (1997) supports the early findings of Watts (1973), namely that dividend only contribute to a trivial change in future earnings. Benartzi et. al. (1997) found sparse empirical evidence for the information content of dividend hypothesis. Using a linear regression model and data for 1025 US firms listed on either NYSE or the AMEX[5] during 1979 to 1991 they find no evidence to support the view that dividend contain information about future earnings changes. They conclude that "While there is a strong past and concurrent link between earnings and dividend changes, the predictive value of changes in dividends seems minimal" (Benartzi et. al., 1997, p. 1031). According to

[4] The Center for Research in Security Prices at the University of Chicago
[5] The American Stock Exchange

Benartzi et. al. (1997) changes in dividend primarily tell us what has happened rather than what is going to happen.

3.3 Previous Research on Dividend Announcements outside the U.S.

The majority of the research in the field of dividend announcements and stock market reactions has been performed using U.S. data. Empirical evidence outside the U.S. stock market is limited.

Lonie, Abeyratna, Power, and Sinclair (1996) examined capital market reactions to joint earnings and dividends announcements for 620 UK firms. By performing an event study they identified abnormal returns in reaction to dividend announcements during the period January to June 1991. Second, they used a regression model to determine whether there existed an interaction effect between unexpected dividends and unexpected earnings. Their empirical findings confirmed the interactive effect of both unexpected announcements on stock prices. However the cross-sectional regression analysis revealed that earnings announcements had a greater impact on stock prices, constituting the dominant signal to capital markets. Gunasekarage and Power (2002, 2006) performed a similar study on UK firms during the period from 1989 to 1993, and confirmed Lonie et. al (1996) previous results.

Evidence from Germany was provided by Amihud and Murgia (1997) who analyzed how the German stock market reacted to dividend announcements. Unlike the US market, and similar to the Norwegian market, allocation of dividends did not impose higher taxes on shareholders in Germany at the time of the analysis. Amihud et. al. (1997) examined if dividend announcements made during 1988 through 1992 by the 200 most traded companies at the German stock market was associated with significant abnormal returns. The empirical results showed that dividend news in Germany generated significant stock price reactions, similar to the findings from US data, despite the tax advantage in Germany. They found support for the dividend signaling theory, and suggested that dividend changes contained information beyond that contained in earnings.

In Japan, Harada and Nguyen (2005) examined the dividend policy of Japanese firms. In their research, they used a sample of industrial firms listed on TSE[6] from 1992 to 2002, constituting a total of 13 708 observations of dividend change / no change. Harada et. al. (2005) argued that the information content of dividends depends on the context in which the

[6] The Tokyo Stock Exchange

dividend change occurs. In particular, firms that increase dividends in favorable conditions (e.g., a positive earnings trend) experience a significant higher earnings growth than firms who increase dividends in unfavorable conditions (e.g. a poor earnings trend). Considering the context in which the dividend change occurs, Harada et. al. (2005) discovers a significant link between dividend changes and subsequent earnings changes. Hence, dividend announcements are reported to have information content.

Gurgul, Mestel and Schleicher (2003) examined the reaction of stock prices and trading volume on dividend changes for firms listed on the Austrian stock market between January 1992 and April 2002. Their findings support the information content of dividends hypothesis, and they conclude "We find that dividend increases induce a significant positive reaction in stock prices, whereas announced dividend decreases lead to a significant fall in stock prices" Gurgul et. al. (2003, p. 346). In addition they found evidence that news on dividend changes was quickly incorporated into stock prices.

More recently, Al-Yahyaee, Pham and Walter (2011) investigated stock price reactions to dividend announcement of firms listed at the Muscat Securities Market in Oman between 1997 and 2005. Oman is an emerging market where neither dividends nor capital gains are taxed, there is a high concentration of share ownership and low corporate transparency. Al-Yahyaee et. al. (2011) find that dividend increase announcements are associated with increased stock prices while dividend decrease announcements are associated with decreased stock prices. Their results provide support to the signaling hypothesis and contradict the tax-based signaling model which states that higher taxes on dividends relative to capital gains are necessary for dividends to be informative.

3.4 Norwegian Managers View on Dividend Policy

Baker, Mukherjee and Paskelian (2006) surveyed 33 managers of Norwegian dividend-paying firms listed on the Oslo Stock Exchange in 2004 about their views on dividend policy.

Based on the finding of their study, several facts about Norwegian managers view on dividend policy were presented. First, according to Baker et. al. (2006) the most important factor influencing the dividend policy of Norwegian firms is the level of current and expected future earnings as well as the stability of earnings. Second, the results of their survey also indicated that managers of Norwegian firms place great importance on legal rules and constraints.

Third, Norwegian managers seem ambivalent with regards to the importance of a firms dividend policy. According to the results from the survey Norwegian managers show a high level of agreement with the statement that firms should device its dividend policy in order to produce maximum value for its shareholders. However, they do not show the same level of agreement with the statement that a change in dividend affects stock prices.

4. Empirical Methods

4.1 Introduction

In this study a naive dividend expectation model is used to proxy expected dividends, and the event study methodology is applied in order to investigate the Norwegian capital markets reaction to dividend change announcements. This chapter provides a description of the empirical methodology applied in this study.

4.2 Dividend Expectation Model

In order to investigate the Norwegian stock markets reactions to dividend change announcements it is necessary to derive a measure of the unexpected change in dividend. This study employs a naive dividend expectation model as a proxy for expected dividend. This is in line with previous research by e.g. Aharony and Swary (1980), Bernheim and Wantz (1995) and Amihud and Murgia (1997). If the Norwegian stock market is semi-strong form efficient, stock price reactions will only occur when dividend changes deviate from their expected change.

The naive expectation model predicts no change in dividends from on period to another, that is:

$$\widehat{D}_{j,q} = D_{j,q-1} \qquad (1)$$

Aharony and Swary (1980) define the parameters in this model as follows. $\widehat{D}_{j,q}$ is the expected dividend per share for firm j in period q and $D_{j,q}$ is the actual dividend per share announced by firm j in period q. Thus, a dividend change announcement is considered favorable if $D_{j,q} > \widehat{D}_{j,q}$, neutral if $D_{j,q} = \widehat{D}_{j,q}$, and unfavorable if $D_{j,q} < \widehat{D}_{j,q}$.

Justification for the naive expectation model is according to Aharony and Swary (1980) derived from firms being reluctant to change dividends unless they expect a significant change in the firms future prospects. Thus, a dividend increase signals a favorable change in the managements expectations, whereas a dividend decrease indicates a pessimistic view of the firms future prospects.

4.3 Event study Methodology

4.3.1 Introduction to the Event Study Methodology

This analysis seeks to investigate the impact of dividend announcements at the Norwegian capital market using the event study methodology. As mentioned briefly in section 2.2.2 the basic method of conducting an event study has not changed notably, it is still based on the classic studies from the late 1960's. The main intention is to evaluate the impact of a particular event by measuring the associated abnormal returns.

This analysis is performed using the event study methodology described in MacKinlay (1997). In the following sections, the event study methodology will be reviewed.

4.3.2 Models for Measuring Normal Returns

Before being able to estimate the abnormal performance associated with an event, a model of normal returns must be specified. MacKinlay (1997) describes two categories of approaches to calculate the normal return, namely statistical models and economic models.

Statistical models rely on statistical assumptions regarding the behavior of stock returns. According to MacKinlay (1997, p.17), "the assumption that asset returns are jointly multivariate normal and independently and identically distributed through time is imposed". There are two common choices when using statistical models to estimate the normal return; the constant mean return model and the market model.

The constant mean return model is considered to be the perhaps simplest statistical model. Within this model a constant return parameter and a disturbance term is used to define normal returns. It is assumed that the mean return of a given stock is constant through time. The market model is considered as an improvement compared to the constant mean return model (MacKinlay, 1997), and relates stock return to the return of the market portfolio. Within this model a stable linear relation between stock return and market return is assumed. A more detailed description of the market model will be presented in the following section.

Economic models rely on assumptions regarding investor behavior in addition to statistical assumptions. The two most common economic models are the Capital Asset Pricing Model (CAPM), where individual stock return is related to its covariance with the market portfolio, and the Arbitrage Pricing Theory (APT), where normal return is estimated with multiple explanatory risk factors. Empirical findings have however suggested "that the validity of the restrictions imposed by the CAPM on the market model is questionable" (MacKinlay, 1997, p. 19). Brown and Weinstein (1985) examined the power of multifactor models such as the APT and found that event studies with multifactor model were not more powerful than those using the market model.

4.3.2.1 The Market Model

As mentioned in the previous section, empirical findings have provided evidence indicating that the most beneficial model for estimating normal returns is the market model; this model have been shown to exhibit a high degree of explanatory power. The market model is a statistical single-factor model, which assumes a stable linear relationship between the return on the market portfolio and the return on each security i. For each security i, the market model assume that security returns are given by:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (2)$$

$$E(\varepsilon_{it} = 0) \quad Var(\varepsilon_{it}) = \sigma^2_{\varepsilon i}$$

Where R_{it} and R_{mt} are the period t returns on security i and the market portfolio respectively, and ε_{it} is the error term with expectation value zero. The market model parameters α_i and β_i can be estimated econometrically for each security i via ordinary least square regression. The closest approximation to the return on the market portfolio is a broad based stock index, e.g. the S&P 500 Index and the CRSP Value Weighted Index in the US.

According to MacKinlay (1997) the market model represents a potential improvement over the constant mean return model by removing the portion of the return that is related to the return on the market portfolio. Consequently, the variance of the abnormal returns is reduced, making it easier to detect event effects. The R^2 of the market model regression will indicate how beneficial using the market model as opposed to the constant mean return model is. The higher the R^2, the greater is the reduction in the variance of abnormal returns, which increases the potential of detecting abnormal performance.

4.3.3 Event Date, Event Window and Estimation Window

Before being able to estimate the market model for each security i, one need to identify the event date, and define the event window and the estimation window. The timing sequence of an event study is illustrated in Figure 4.1.

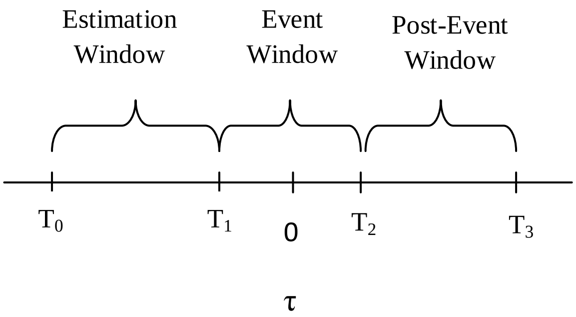

Figure 4.1 Time line for an event study (MacKinlay, 1997, p.20)

The event date ($\tau = 0$) is the date on which the market gains knowledge of the relevant new information. It is important to specify the event date as accurately as possible in order to obtain a precise measurement of the impact of the event. Strong (1992, p.550) argues that "in many event studies in practice, accuracy of event dates is likely to be more important than sophistication in modelling or statistical techniques."

When conducting an event study, the event window constitutes the period over which the stock prices of the firms involved in the event is examined. According to MacKinlay (1997) it is common to define an event window that is larger than the specific period of interest. This enables the researcher to capture if the market participants acquire information prior to the announcement, as well as identifying whether there is a quick vs. delayed price response.

The estimation window constitutes the period over which the parameters in the selected normal return model are estimated. The most common choice of estimation window is the period prior to the event window according to MacKinlay (1997). However, it is important to avoid an overlap between the event window and the estimation window in order to prevent the event from affecting the estimation of normal returns in the event window.

4.3.4 Abnormal Returns

MacKinlay defines the abnormal return as "the actual ex post return of the security over the event window minus the normal return of the firm over the event window" (1997, p. 15), accordingly it is the difference between the returns that occurs because of the event and the returns that would have occurred without the event. The daily abnormal returns can be calculated by taking the difference between the actual and the predicted return for each security i, at each point during the event window.

The abnormal returns for security i and event date τ is defined as:

$$AR_{i\tau} = R_{i\tau} - \widehat{\alpha}_i - \widehat{\beta}_i R_{m\tau} \tag{3}$$

Given the market model, the variance of the abnormal returns is:

$$\sigma^2 (AR_{i\tau}) = \sigma^2_{\varepsilon i} + \frac{1}{L_1} \left[1 + \frac{\left(R_{m\tau} - \hat{\mu}_m\right)^2}{\hat{\sigma}_m^2} \right] \tag{4}$$

Equation (3) illustrated that the conditional variance consist of two components; the disturbance variance, $\sigma^2_{\varepsilon i}$ from (1) and additional variance from sampling error in the market model parameters α_i and β_i. L_1 is the length of the estimation window, and as L_1 becomes large, the second component will approach zero, hence the variance of the abnormal returns can be approximated by:

$$\sigma^2 (AR_{i\tau}) \approx \sigma^2_{\varepsilon i} \tag{5}$$

4.3.5 Cumulative Abnormal Returns

In order to draw any conclusion about the event of interest, it is necessary to aggregate the abnormal return observations. The abnormal return observations are aggregated across two dimensions, through time, and across securities.

First the abnormal returns observations are aggregated across time for each security i. This constitutes the securities cumulative abnormal return (CAR). As illustrated in figure 4.1, T_1 represents the final day of the estimation window, and T_2 represents the final day of the event window. The CAR is estimated from τ_1 to τ_2, where $T_1 < \tau_1 \leq \tau_2 \leq T_2$ (MacKinlay, 1997).

The cumulative abnormal return for security i from τ_1 to τ_2, is defined by:

$$\mathrm{CAR_i}\ (\tau_{1,}\tau_2) = \sum_{\tau=\tau_{1,}}^{\tau_2} \mathrm{AR_{i\tau}} \tag{6}$$

The sample of abnormal returns also needs to be aggregated across securities before one can conduct tests on the sample. Performing tests with only one event observation is unlikely to provide overall inference about the event effects. The sample average abnormal returns are estimated by aggregating the abnormal returns from (2) for all N securities at each time t in the event window. The sample average abnormal returns for each event period τ, $\tau = T_1 + 1, \ldots T_2$ is:

$$\overline{\mathrm{AR}}_\tau = \frac{1}{\mathrm{N}} \sum_{i=1}^{N} \mathrm{AR_{i\tau}} \tag{7}$$

For large L_1, the variance of the sample aggregated abnormal returns is:

$$\mathrm{Var}(\overline{\mathrm{AR}}\tau) = \frac{1}{\mathrm{N}^2} \sum_{i=1}^{N} \sigma_{\varepsilon \mathrm{i}}^2 \tag{8}$$

Finally the sum of the average abnormal returns over the t days in the event window constitutes the cumulative average abnormal return. The sample cumulative average abnormal returns are useful with regards to a statistical analysis, because it illustrates the effect of the abnormal returns. For any interval in the event window, the cumulative average abnormal return is:

$$\overline{\mathrm{CAR}}(\tau_{1,}\tau_2) = \sum_{\tau=\tau_{1,}}^{\tau_2} \overline{\mathrm{AR}}\tau \tag{9}$$

The variance of the cumulative average abnormal returns is:

$$\mathrm{Var}(\overline{\mathrm{CAR}}(\tau_{1,}\tau_2)) = \sum_{\tau=\tau_{1,}}^{\tau_2} \mathrm{Var}(\overline{\mathrm{AR}}_\tau) \tag{10}$$

4.3.6 Determination of Statistical Significance

In order to test the null hypothesis that the cumulative average abnormal returns are zero, meaning that the event does not affect return, a two-sided test is used. The statistical properties of the cumulative average abnormal returns are assumed to be:

$$\overline{\text{CAR}}\left(\tau_{1,}\tau_2\right) \sim \text{N}[0, \text{var}\left(\overline{\text{CAR}}\left(\tau_{1,}\tau_2\right)\right)] \qquad (11)$$

The tests being used to test the hypothesis that the cumulative average abnormal returns equals zero is based on some assumptions. It is assumed that there is no correlation across the abnormal returns of the different securities. If there is clustering, i.e. overlap in the event window of the included securities, correlation between the abnormal returns across the events can occur. With no clustering, and the maintained distributional assumptions the abnormal returns across securities will be independent.

The real value of $\sigma^2_{\varepsilon i}$ is unknown, and accordingly it is necessary to use an estimator when calculating the variance of the average abnormal returns as in (8). According to MacKinlay (1997), the sample variance measure of $\sigma^2_{\varepsilon i}$ from the market model regression for each security i, is an appropriate choice.

The null hypothesis (H_0) can be tested by estimating θ_1, using the following equation:

$$\theta_1 = \frac{\overline{\text{CAR}}\left(\tau_{1,}\tau_2\right)}{\text{Var}(\overline{\text{CAR}}\left(\tau_{1,}\tau_2\right))^{1/2}} \sim \text{N}(0,1) \qquad (12)$$

In order to investigate if the market participants acquire information prior to the event date, and to identify whether there is a quick or delayed price response in the Norwegian capital market, the estimator θ_1 in (12) is estimated for each individual day over the event window.

5. Data

5.1 Data Description

This study investigates the Norwegian stock markets reactions to dividend change announcements during the period of January 2007 to March 2013. The sample consists of 67 firms listed on the Oslo Stock Exchange, and is not confined to a particular sector. The firms in the study are constituent of either the OBX index, the OB Match or the OB Standard.

A total of 277 dividend change announcements were identified during the sample test period. The dividend changes in the final sample is distributed as follows; 140 dividend increases, 60 constant dividends, and 77 dividend decreases. The yearly distribution of the dividend change announcements in the sample is presented in table 5.3.

As mentioned in Chapter 3, the majority of previous research in the field of dividend announcements and stock market reactions has been conducted using U.S. data. Thus, empirical evidence outside the U.S. is limited. This study employ data from Norwegian firms listed on the Oslo Stock Exchange in attempt to investigate whether the dividend effects that were reviewed in section 2.3.3 are unique to the U.S. or if they also apply to countries with a significantly different tax regime as well as different institutional and economic characteristics.

5.1.1 The Oslo Stock Exchange

The firms in the sample are listed on the Oslo Stock Exchange which is the only regulated securities market in Norway. Oslo Stock Exchange offers trading of stocks, bonds, equities, derivatives and other financial instruments.

There are currently 166 stocks listed on the Oslo Stock Exchange. The 25 most liquid stocks constitute the OBX-index, while the additional stocks are categorized as a part of either the OB Match or the OB Standard. The OB Match consists of listed stocks with a minimum of 10 trades per day, or an approved liquidity provider scheme. The additional stocks constitute the OB Standard.

The Norwegian stock market possesses some unique characteristics. As previously mentioned Oslo Stock Exchange is characterized by a significant level of Government ownership which in 2012 accounted for approximately 36,3 % of the total market value on the Oslo Stock Exchange. In addition, the industry breakdown on the Oslo Stock Exchange reflects the fact that Norway is a leading nation with regards to both production and trade of energy. Measured by the number of listed companies, the Oslo Stock Exchange is the second largest in Europe for energy companies in general, and the second largest in the world for companies in the oil service sector in particular.[7] Approximately 41 % of the stocks listed on the Oslo Stock Exchange are energy companies, followed by industrial companies which accounts for 21 % of the total number of listed stocks. Accordingly more than half of the stocks listed on the Oslo Stock Exchange are either an energy or an industry company.

5.2 Data Selection and Collection

As already clarified, the final sample consists of 277 dividend change announcements of firms listed on the Oslo Stock Exchange between January 2007 and March 2013. However, not all firms have been listed on the stock market for the whole period.

The dividend announcements data were manually collected from Oslo Stock Exchange's NewsWeb. The announcements were identified by examining NewsWeb messages for all listed firms during the sample test period. In line with the empirical literature, and to prevent the impact of other announcements, events where other important financial news occurs in the event window were excluded from the sample.

Stock price data for the sample firms and the corresponding market index data were manually collected from Oslo Stock Exchange[8]. Oslo Stock Exchange's website gives access to daily historical prices for all listed stocks. This event study is performed using daily data, which according to Fama (1991) allows for a precise measurement of how quickly the stock prices responds to new information. Employing daily data is also the most common in event studies (Kothari and Warner, 2006). The primary advantage of using daily data in this study as opposed to monthly data is to isolate information that the dividend change announcements may contain.

Daily individual stock return and the corresponding daily market return were estimated using daily historical closing prices for all sample firms and the market index across the sample test period. A considerable number of stocks listed on the Oslo Stock Exchange are thinly traded. If there are no trades for a stock on a particular day that day is blank in Oslo Stock

[7] http://www.oslobors.no/ob_eng/Oslo-Boers/Listing/Energy-shipping-and-seafood/Energy
[8] www.oslobors.no

Exchange's historical prices. For the purpose of this study the historical price data is applied as it transpires in Oslo Stock Exchange's data, where days without trading are left open.

A complete list of the final sample and the event date for each dividend change announcement is presented in Appendix A and Appendix B. To be included in the final sample, the dividend announcements must satisfy the following criteria:

1) The firm is listed on the Oslo Stock Exchange.
2) The firm paid an ordinary dividend in the current and previous year. This criterion excludes dividend initiation, and firms that has never paid dividend.
3) The announcement date is available at Oslo Stock Exchange's Newsweb.
4) The firm's stock data is available at Oslo Stock Exchange's website.

The data collection and the selection criteria's above resulted in 67 sample firms. The Oslo Stock Exchange groups the listed firms using the industry categories of the Global Industry Classification Standard (GICS). The sample consists of firms from each of the 10 industry categories as specified by the standard. In table 5.1 the industry breakdown of the firms included in the sample is presented. The industry breakdown is also illustrated graphically in figure 5.1.

Industry	**# Firms**
Energy	15
Industrials	13
Information Technology	4
Financials	15
Health Care	1
Consumer Discretionary	5
Consumer Staples	7
Materials	4
Utilities	2
Telecom	1
Total	**67**

Table 5.1 Industry Breakdown of Sample Firms

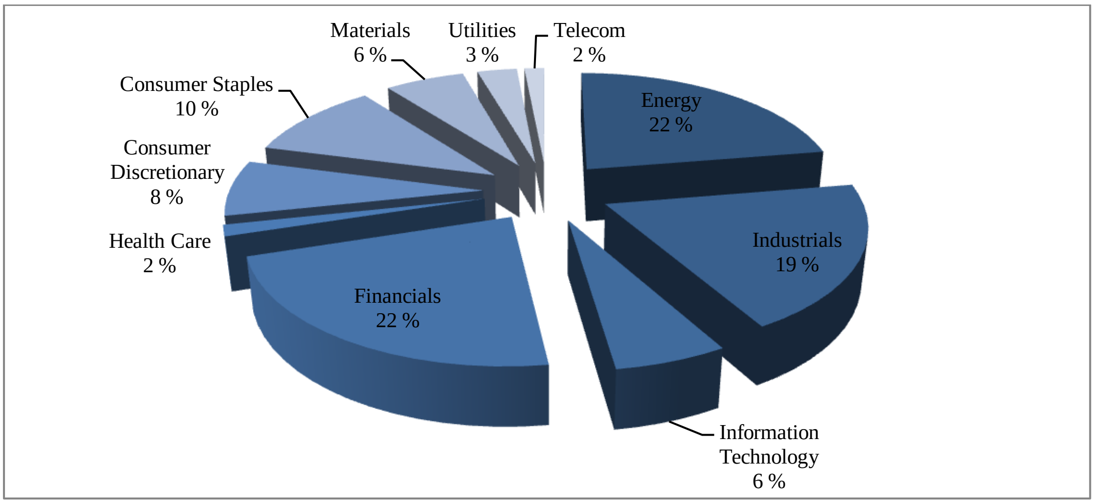

Figure 5.1 Industry Breakdown of Sample Firms

Table 5.1 and figure 5.1 illustrates that the industry breakdown of firms included in the sample differs from the industry breakdown on the Oslo Stock Exchange. While approximately 62 % of the stocks listed on the Oslo Stock Exchange is categorized as an energy company or an industrial company, these categories accounts for 41 % in the sample selection. Thus, the sample does not entirely represent the composition of firms listed on the Oslo Stock Exchange.

The firms included in the sample can also be categorized according to the respective stocks trading frequency, namely as OBX, OB Match and OB Standard. In Table 5.2 the number of sample firms in each category is presented.

	# Firms	**%**
OB Match	35	52 %
OB Standard	18	27 %
OBX	14	21 %
Total	**67**	**100 %**

Table 5.2 Oslo Stock Exchange Categorization of Sample Firms

It is an advantage when conducting the event study that approximately 73 % of the firms included in the sample are constituent of either the OBX or the OB Match. Since firms in these categories are traded more frequently than constituents of the OB Standard it provides a more accurate measure of the parameters in the normal return model.

For each dividend announcement, data on the announced cash dividend per share (DPS) was collected from Oslo Stock Exchange's NewsWeb. The total average yearly DPS of the firms included in the sample is illustrated in Figure 5.2.

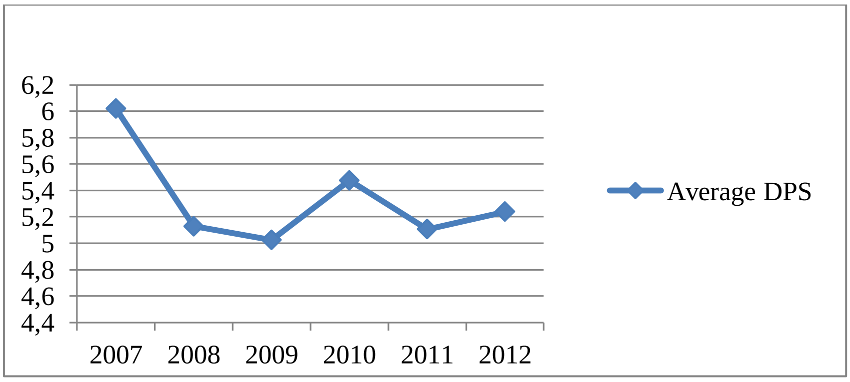

Figure 5.2 Yearly Average Dividend Per Share (DPS), 2007 – 2012.

There was a significant decrease in DPS in 2008 compared to the previous year. This decrease was presumably caused by the global financial crisis that hit the world and generated worldwide market crashes in the latter part of 2008. Although there was an increase in 2010, the figure illustrates that the DPS is far from the level it was prior to the crisis.

After identifying the dividend announcement date and the associated DPS, the sample was divided into three subsamples of dividend change announcements. This separation was performed prior to applying the event study methodology. In accordance with the dividend expectation model reviewed in section 4.2 a naive dividend expectation model is employed as a proxy for expected dividend:

$$\Delta DPS = DPS_{it} - DPS_{i,t-1} \qquad (13)$$

Based on the estimation of (13) the final sample of dividend announcements is separated according to the change in dividend. This constitutes three subsamples, dividend increases, where $\Delta DPS > 0$, constant dividend, where $\Delta DPS = 0$, and dividend decreases, where $\Delta DPS < 0$.

The yearly distribution of dividend changes for the 277 dividend change announcements in the sample is presented in table 5.3.

Year	Dividend Increases	Constant Dividend	Dividend Decreases
2007	25	5	5
2008	16	7	11
2009	13	2	23
2010	21	12	8
2011	28	7	7
2012	18	10	19
2013	19	17	4
Total	**140**	**60**	**77**

Table 5.3 Yearly Distributions of Dividend Changes

5.3 The Event Study

This section provides a brief description of the choices made with regards to the event study methodology that was explained more thoroughly in Chapter 4. In the event study, normal returns are estimated using the market model described in section 4.3.2.1. The market model was preferred since it has proven to exhibit a high degree of explanatory power, and because alternative models such as e.g. the Capital Asset Pricing Model (CAPM) have been found to provide similar results. Figure 5.2 illustrates the time dimension of this event study.

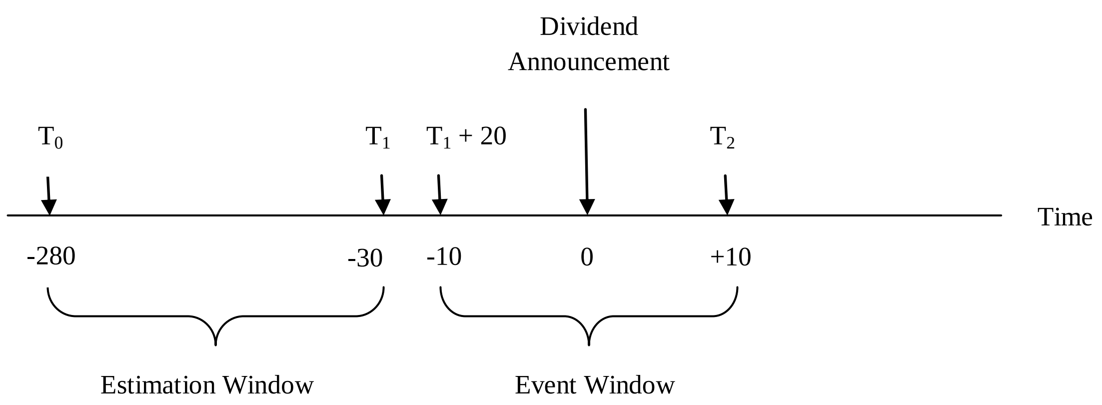

Figure 5.3. Timeline for the Event Study

5.3.1 The Event and Event Date

As already stated, the event of interest is dividend announcements of firm listed on the Norwegian stock market. The event date ($\tau = 0$), is the moment when the market gains knowledge of new information. For the purpose of this study, the event date is defined as the day the sample firms announces dividend payments on Oslo Stock Exchange's NewsWeb.

5.3.2 The Marked Index

In order to estimate abnormal returns across the event window, it is necessary to select data to represent the true return on the market as a whole. The closest approximation to the return on the market is a broad based stock index. In this study, the all-share index, OSEAX is used as a proxy for the return on the market portfolio. The OSEAX-index is an appropriate choice because it is the most extensive index at the Oslo Stock Exchange, and includes all listed stocks. The benchmark index, OSEBX could alternatively been used as a proxy, but because it only consist of the (currently) 55 most traded stocks, it might not capture the movements of the market as a whole.

5.3.3 Event Window

In order to capture the effect of the dividend announcement both prior to and after the announcement, the event window constitutes 10 trading days prior to the event date, the event date ($\tau = 0$), and 10 trading day's posterior to the event date. This constitutes a 21-day event window. By including trading days prior to the event date the aim is to investigate if information may have leaked into the market, while trading days after the event date are included as the market tends to take some time to adjust when new information is made available.

5.3.4 Estimation Window

The marked model parameters α_i and β_i are estimated via ordinary least square regression (OLS) using daily returns from days -280 to -30 relative to the dividend announcement for each event. This constitutes an estimation window of 250 trading days, i.e. one calendar year as suggested by MacKinlay (1997). I assume that an estimation window, L_1 equal to 250 trading days is sufficiently large to apply the variance definition in (5).

5.3.5 Estimation of the Market Model

The market model was applied when estimating normal returns of the events; this is equivalent to 277 individual market models. As mentioned in section 4.1.2.1 the R^2 of the market model regression will indicate how beneficial using the market model compared to the constant mean return model is. For the stocks included in the sample, the value of R^2 is variable. Some of the stocks are traded infrequently which can cause an uncertain estimate of the normal returns and a low R^2, while the more liquid stocks have a high R^2. The higher the R^2, the greater is the reduction in the variance of abnormal returns. However, since daily returns are used in the study, the choice of normal returns model will not affect the estimations significantly.

6. Empirical Results

The purpose of this study was to examine stock price reactions to announcements of cash dividend by firms listed on the Oslo Stock Exchange. The event study methodology was applied in order to test the null hypothesis that the daily average abnormal return (AAR) is zero. Hence, that cash dividend change announcements have no systematic impact on the corresponding stock prices. The daily cumulative average abnormal return (CAAR) is also beneficial when analyzing stock price reactions because it illustrates the aggregated effect of the abnormal returns. In this chapter, the empirical results of the analysis are presented.

6.1 Full Sample Results

The full sample consists of 277 dividend change announcement during the period January 2007 to March 2013. These announcements were distributed as follows; 140 dividend increase, 60 constant dividend, and 77 dividend decrease. Prior to applying the event study methodology, the full sample was separated into three subsamples according to the change in dividend. Thus, the empirical result of the full sample consists of three subsamples which will be presented in the following sections.

6.1.1 Dividend Increases

Table 6.1 displays daily abnormal returns and daily cumulative abnormal returns around the dividend announcement day for the sample of 140 dividend increase announcements. Furthermore, the daily test estimator θ_1 from (12) is presented. The AAR and the CAAR for the ten days prior to, and ten days after the dividend increase announcement is also illustrated graphically in Figure 6.1.

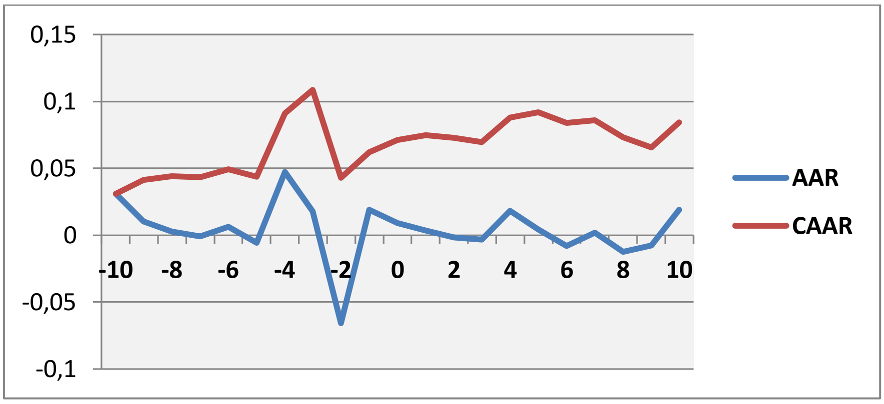

Figure 6.1 AAR and CAAR for the Dividend Increase Category

For the dividend increase announcements, Figure 6.1 indicates that the AAR and the CAAR drifts upwards one day prior to the dividend announcement without any further upwards drift on the dividend announcement day. On the contrary it appears that both the AAR and the CAAR drifts downwards on the dividend announcement day before stabilizing during the following days.

According to Table 6.1 the results show a positive stock price reaction on the dividend announcement day of 0,0091. However, the corresponding θ_1-value is 0,4815 and thus, the abnormal returns on the announcement day are statistically insignificant. There are positive abnormal returns on the day before and on the day after the dividend announcement. Specifically, the abnormal return one day prior to the announcement is positive and of larger magnitude than the abnormal return on the announcement day. This implies that some information may have leaked into the stock market prior to the announcement.

In the period preceding and subsequent to the announcement day the abnormal returns are mostly insignificant and appear random. With the exception of the abnormal returns two days prior to the announcement which is negative and significant. However, this it is most likely caused by the impact of other important information regarding one or several of the stocks included in the sample. Thus, there is not sufficient evidence to reject the null hypothesis for the dividend increase sample.

The results of the dividend increase sample are not in line with the theoretical proposition that dividend increase announcements convey information to the market, and do not corroborate the findings of previous research which suggests that dividend increases are associated with significant positive stock price reactions.

t	AAR	θ1	CAAR	θ1	N
-10	0,0309	1,6262	0,0309	1,6263	119
-9	0,0104	0,547	0,0413	2,1733*	117
-8	0,0027	0,143	0,044	2,3163*	122
-7	-0,0008	-0,0395	0,0433	2,2767*	123
-6	0,0062	0,324	0,0494	2,6007**	120
-5	-0,0057	-0,3024	0,0437	2,2984*	119
-4	0,0474	2,4926**	0,091	4,7910***	116
-3	0,0177	0,9335	0,1088	5,7244***	116
-2	-0,0658	-3,4627***	0,043	2,2617*	116
-1	0,0189	0,9927	0,0618	3,2544***	118
0	**0,0091**	**0,4815**	**0,071**	**3,7359*****	**125**
1	0,0036	0,1915	0,0746	3,9274***	131
2	-0,0017	-0,0911	0,0729	3,8363***	128
3	-0,0033	-0,1748	0,0696	3,6616***	126
4	0,0183	0,9622	0,0879	4,6238***	124
5	0,0042	0,2188	0,092	4,8426***	122
6	-0,008	-0,4235	0,084	4,4191***	123
7	0,0018	0,0934	0,0857	4,5126***	122
8	-0,0126	-0,6654	0,0731	3,8472***	122
9	-0,0077	-0,4032	0,0654	3,4440***	122
10	0,019	0,9978	0,0844	4,4418***	119
			σ = 0,0190		

*, **, ***; Significantly different from zero at 95 %, 98 %, and 99 % respectively

Table 6.1 The Norwegian Stock Markets Reaction to Dividend Increase Announcements

6.1.2 Constant Dividends

Table 6.2 displays daily abnormal returns and daily cumulative abnormal returns around the dividend announcement day for the sample of 60 constant dividend announcements. For the sample of firms that did not change their dividends, no new information is being signaled to the market, thus, one should expect that there are no significant abnormal stock price movements. Figure 6.2 illustrates the AAR and the CAAR for the constant dividend category.

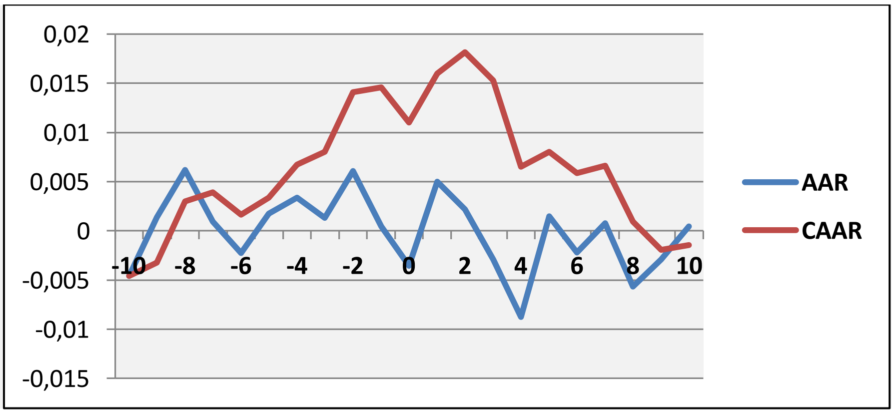

Figure 6.2 AAR and CAAR for the Constant Dividend Category

t	AAR	θ1	CAAR	θ1	N
-10	-0,0046	-1,5802	-0,0046	-1,5788	55
-9	0,0014	0,4679	-0,0032	-1,111	55
-8	0,0062	2,1386*	0,003	1,0276	57
-7	0,0009	0,3201	0,0039	1,3477	54
-6	-0,0023	-0,7805	0,0016	0,5672	52
-5	0,0017	0,5963	0,0034	1,1635	55
-4	0,0034	1,1621	0,0067	2,3255*	57
-3	0,0013	0,4473	0,008	2,7728***	56
-2	0,0061	2,0915*	0,0141	4,8643***	55
-1	0,0005	0,1637	0,0146	5,0280***	55
0	**-0,0036**	**-1,2318**	**0,011**	**3,7962*****	**57**
1	0,005	1,7195	0,016	5,5157***	58
2	0,0022	0,7452	0,0182	6,2609***	58
3	-0,0029	-0,9923	0,0153	5,2686***	57
4	-0,0088	-3,0168***	0,0065	2,2518*	56
5	0,0015	0,5146	0,008	2,7664***	55
6	-0,0022	-0,7502	0,0058	2,0162	55
7	0,0008	0,2719	0,0066	2,2880*	56
8	-0,0057	-1,956	0,001	0,332	56
9	-0,0029	-0,9979	-0,0019	-0,6658	56
10	0,0005	0,1642	-0,0015	-0,5017	55
σ = 0,0029					

*, **, ***; Significantly different from zero at 95 %, 98 %, and 99 % respectively

Table 6.2 The Norwegian Stock Markets Reaction to Constant Dividend Announcements

Figure 6.2 illustrates that the AAR and the CAAR of the firms in the unchanged dividend category are in line with this proposition. For the constant dividend category there are no significant abnormal returns on the announcement date. Abnormal returns in the period prior and subsequent to the announcement are mostly insignificant. The abnormal returns do not follow any particular pattern and appear to fluctuate randomly.

6.1.3 Dividend Decreases

For the sample of 70 dividend decrease announcements, Table 6.3 provides a presentation of the empirical results. Figure 6.3 illustrates the AAR and the CAAR for the dividend decrease category. For the decreasing dividend announcements abnormal returns appears to be close to zero up until one day prior to the announcement date. One day prior to the dividend decrease announcement, both the AAR and the CAAR begin to drift downwards.

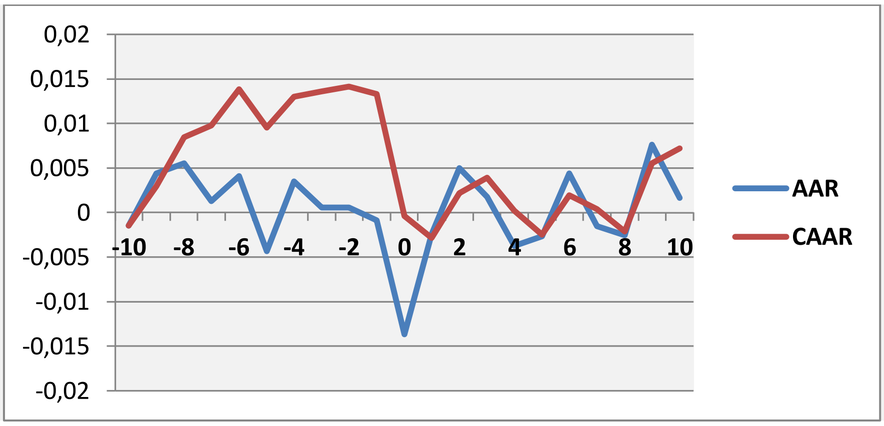

Figure 6.3 AAR and CAAR for the Dividend Decrease Category

According to Figure 6.3 and Table 6.3 the markets major reaction takes place on the announcement date. For the dividend decreasing category the average market reaction is negative as expected. Specifically, on the dividend announcement date the negative stock price reaction equals -0,0137 with a corresponding θ_1-value of -3,5817. Hence, the largest abnormal return in the event period occurs on the day of the announcement.

The negative average abnormal return on the dividend announcement date is highly significant. Dividend decrease announcements are associated with significantly negative abnormal returns. Thus, the null hypothesis is rejected for the dividend decrease sample. These results are consistent with the proposition that dividend decreases conveys negative information about the firms future prospects, and implies that relevant information is transmitted to the market when a dividend decrease is announced.

There is also negative abnormal return one day after the dividend decrease announcement. Although this is statistically insignificant it implies that there might be delayed reactions in the markets adjustment to the informational content of the announcements. After day 1, the AAR and the CAAR do not follow any particular pattern which suggests that the informational content of the dividend decrease announcement have been incorporated in the stock prices by this point.

t	AAR	θ1	CAAR	θ1	N
-10	-0,0014	-0,3764	-0,0014	-0,3769	72
-9	0,0044	1,1469	0,0029	0,77	68
-8	0,0055	1,4434	0,0085	2,2134*	67
-7	0,0013	0,34	0,0098	2,5533**	69
-6	0,0041	1,0671	0,0138	3,6205***	68
-5	-0,0043	-1,1276	0,0095	2,4929**	68
-4	0,0035	0,9092	0,013	3,4021***	71
-3	0,0006	0,1553	0,0136	3,5574***	71
-2	0,0006	0,1462	0,0142	3,7035***	70
-1	-0,0009	-0,2245	0,0133	3,4790***	71
0	**-0,0137**	**-3,5817*** **	**-0,0004**	**-0,1027**	**69**
1	-0,0024	-0,6335	-0,0028	-0,7363	68
2	0,005	1,3074	0,0022	0,5711	67
3	0,0017	0,4551	0,0039	1,0262	68
4	-0,0037	-0,9744	0,0002	0,0518	69
5	-0,0027	-0,6975	-0,0025	-0,6457	68
6	0,0044	1,1576	0,002	0,5118	68
7	-0,0015	-0,4053	0,0004	0,1065	69
8	-0,0025	-0,6582	-0,0021	-0,5517	70
9	0,0077	2,0024*	0,0055	1,4507	69
10	0,0017	0,4365	0,0072	1,8872	65
			σ = 0,00382		

*, **, ***; Significantly different from zero at 95 %, 98 %, and 99 % respectively

Table 6.3 The Norwegian Stock Markets Reaction to Dividend Decrease Announcements

The results in Table 6.1, 6.2 and 6.3 implies that the stock markets reactions to dividend change announcements are rapidly averaged out. Thus, the informational content of the dividend change announcements are most visible during the days closest to the announcement. In order to capture the entire informational content of the dividend change announcements the average abnormal returns are aggregated around the announcement date. Table 6.4 presents the cumulative average abnormal returns (CAAR) for three separate event windows, namely (T_{-1}, T_{+1}), (T_{-1}, T_0) and (T_0, T_{+1}).

Event Window	ΔDPS > 0	ΔDPS = 0	ΔDPS < 0
T_{-1}, T_{+1}	0,0316	0,0019	-0,017***
T_{-1},T_0	0,028	-0,0031	-0,0146***
T_0, T_{+1}	0,0127	0,0014	-0,0161***

***; Significantly different from zero at the 1% level

Table 6.4 The Cumulative Average Abnormal Return (CAAR) for Different Event Windows

The results in Table 6.4 show that for all three dividend change categories i.e. dividend increases, constant dividend and dividend decreases the signs are as expected. Dividend increase announcements lead to positive CAAR for each of the three event windows, and adversely dividend decrease announcements cause negative CAAR for each of the three event windows.

For the dividend decrease announcements the CAAR is negative and statistically significant across all three event windows. This is in line with previous empirical findings. However, the CAAR of neither dividend increase announcements nor constant dividend announcements are statistically significant. This result applies to all three event windows. For firms that do not change their dividend this results is as expected since no new information is conveyed to the market. Meanwhile, that is not the case for firms that announce increased dividends. According to theoretical predictions and previous findings in the U.S. dividend increases should be accompanied by increased statistically significant stock returns.

6.2 Difference in Trading Frequency

As mentioned in Chapter 5, the full sample consists of 14 OBX firms, 35 OB Match firms and 18 OB Standard firms. The OBX firms constitute the stocks with highest trading frequency, while the OB Standard firms constitute the stocks that are least traded. The full sample was categorized according to the respective stocks trading frequency in attempt to investigate whether differences in trading frequency affected the abnormal returns related to the dividend announcements.

For the most liquid stocks in the OBX category one should expect that new information is quickly incorporated in the price, while the more illiquid stocks in the OB Standard category should experience a more delayed reaction where prices not immediately adjust to the new information. The complete results of the sample categorized according to trading frequency is presented in Appendix C. Table 6.4 summarizes these results with respect to the statistical significance of abnormal returns three days prior to, and three days after the dividend announcement.

t	OBX			OB Match			OB Standard		
	θ1 Dividend Increase	θ1 Constant Dividend	θ1 Dividend Decrease	θ1 Dividend Increase	θ1 Constant Dividend	θ1 Dividend Decrease	θ1 Dividend Increase	θ1 Constant Dividend	θ1 Dividend Decrease
-3	-0,856	0,253	0,444	0,066	0,465	0,116	1,209	0,880	-0,422
-2	1,045	-0,071	0,180	-0,945	1,253	-0,065	-4,490*	3,373*	0,493
-1	0,903	3,724*	-0,303	0,856	-1,053	-0,070	1,176	-0,442	-0,171
0	-0,152	-1,773	-2,251*	3,987*	-0,946	-2,820*	0,242	0,526	-0,968
1	1,390	0,945	1,420	1,233	1,492	-1,075	0,023	0,294	-0,991
2	0,072	0,661	0,353	-0,044	1,077	1,322	-0,107	-1,342	-0,020
3	0,640	0,493	-1,176	0,758	-1,381	1,273	-0,284	0,230	-1,082

* Significantly different from zero at the 5% level

Table 6.5 Results of sample categorized according to trading frequency

The results in Table 6.5 indicate that the abnormal returns related to dividend change announcements are affected by differences in trading frequency.

In the OBX category, the results show that abnormal returns are significantly negative when a dividend decrease is announced. In case of dividend increases, the abnormal returns on the announcement date are in fact negative. This result is not in line with the signaling theory which suggests that a dividend increase should be accompanied by an increase in stock prices. However, the abnormal returns on the announcement date are not statistically significant. In fact, none of the abnormal returns of the dividend increasing firms are statistically significant. For firms that did not change their dividends there is a significant positive abnormal return one day prior to the announcement date. Since only 14 firms are included in the OBX category, this is most likely to be caused by other important news about one or several of the included firms affecting the results.

The OB Mach category consists of stocks that are less traded than the OBX category, and accounts for approximately 52 % of the firms included in the sample. In this category abnormal returns are significantly positive when a dividend increase is announced and significantly negative when a dividend decrease is announced. For firms that did not change their dividend, no significant abnormal returns are achieved. These results are in line with the dividend signaling proposition.

For the OB Standard category there are no significant abnormal returns on the announcement date in response to any of the dividend changes. However, two days prior to the announcement there are significant abnormal returns both for the dividend increasing firms and for the firms that did not change their dividend. Again, since this sample only consists of 18 firms this might be due to other important news besides the dividend announcement. Firms that announced dividend decreases did not obtain any significant abnormal returns on any of the days surrounding the announcement.

To summarize, when the sample is categorized according to trading frequency both the OBX firms and the OB Match firms achieve significantly negative abnormal returns in response to dividend decrease announcements. In contrast, the OB Standard firms have insignificant abnormal returns for all types of dividend change announcements. This suggests that less frequently traded firms might experience a delayed reaction to new information. Although it is statistically insignificant it should also be mentioned that while the OB Match firms experience negative abnormal returns on the day after the dividend decrease announcement, this is not the case for the OBX firms. Thus, firms that are traded more frequently might adjust more efficiently to new information.

7. Conclusion

In alignment with the dividend signaling theory this study intended to examine the signaling effects of dividend change announcements by firms listed on the Oslo Stock Exchange. Simultaneously, the study attempted to provide evidence of the semi-strong form of market efficiency in the Norwegian capital market.

The sample consisted of 67 firms listed on the Oslo Stock Exchange between January 2007 and March 2013, constituting 277 final dividend change announcements. The naive dividend expectation model was applied as a proxy for expected dividends, and the full sample was categorized according to deviates from expected dividends as specified by the naive model. Three subsamples were defined; dividend increases, constant dividend, and dividend decreases.

By employing the standard event study methodology abnormal returns surrounding the dividend change announcements were identified. The results indicate that dividend change announcements do convey some information to the market. For both dividend increase announcement and dividend decrease announcements the abnormal returns on the day prior to the announcement (t = -1) the announcement date (t = 0) and the day after the announcement (t = +1) are accentuated in the same direction as the change in dividend. For the constant dividend sample consisting of firms that did not change their dividends, the results mainly reports insignificant average abnormal returns that appear to evolve randomly.

Surprisingly, none of the positive abnormal returns in the dividend increase sample are statistically significant. Neither are the cumulative average abnormal returns for different event windows surrounding the announcement date. Thus, there is not sufficient evidence to reject the null hypothesis for the dividend increase sample. Hence, firms that announce an increase in their dividends experience a positive but statistically insignificant price reaction.

Firms that announce a decrease in their dividends experience a negative statistically significant price reaction. The cumulative average abnormal returns for different event windows surrounding the announcements are also significantly negative. The empirical results of the sample consisting of dividend decrease announcements confirm that dividend decreases are associated with significantly negative abnormal returns, and thus the null hypotheses can be rejected at the 1% level. Furthermore, the average abnormal returns on the announcement date are of larger magnitude for the dividend decrease announcements than those of the dividend increase announcements. This result implies that dividend decreases may generate larger price responses than dividend increases in the Norwegian capital market.

Overall, the empirical evidence from the Norwegian capital market is ambivalent. The abnormal returns caused by the dividend increase announcements are positive but statistically insignificant. Thus, it is not possible to draw a statistical inference between dividend increases and positive stock price reactions. The results of the dividend decrease announcements on the other hand, are in line with those found in the U.S. as well as in other large well developed capital markets.

The study reports evidence of the semi-strong form of market efficiency in the Norwegian capital market. According to the results of the analysis, with no significant abnormal returns on the day following the announcement it appears like the stock market efficiently incorporates the information conveyed from dividend change announcements of Norwegian listed firms. This result is in line with empirical evidence from the U.S. and other well developed capital markets.

The findings in the dividend decrease announcements sample support the notion that dividend decreases conveys negative information to the capital market causing a subsequent negative stock market reaction. However, since all capital income in Norway is subject to a flat tax rate of 28 %, these results contradict the tax-based dividend signaling hypothesis which states that higher taxes on dividends relative to capital gains are a necessity for dividends to be informative.

As an extension of the initial analysis, the full sample was categorized according to the respective stocks trading frequency in attempt to investigate if differences in trading frequency affected the abnormal returns. The results of this separation implied that the insignificant reaction to dividend increases in the full sample might be caused by the OBX firms in the sample. The OB Match firms results are in line with the dividend signaling proposition with abnormal returns that are significantly positive when a dividend increase is announced and significantly negative when a dividend decrease is announced. Meanwhile, the OBX firms achieve insignificant negative abnormal returns on the announcement date in response to dividend increases. Obviously, this result is not in line with the signaling proposition. Furthermore, the results of the separation according to trading frequency suggests that less frequently traded firms might experience delayed reactions where prices not immediately fully respond to new information.

The empirical findings in this study have important practical implications for both investors and other market participants in the Norwegian capital market. In particular, knowledge of the fact that dividend change announcements generate significant abnormal returns is valuable to investors who can exploit this knowledge by trading around dividend announcement dates.

The findings can also be useful to managers of Norwegian listed firms with regards to deciding upon a dividend policy. The results from the survey of Baker et.al (2006) regarding managers of Norwegian listed firms views on dividend policy suggested that managers did not view the relation between dividend changes and stock prices as significant. Knowledge of the fact that dividend decrease announcements generate significant negative abnormal returns should make managers of Norwegian listed firms more reluctant to cut dividends. At the same time, the result from the dividend increasing firms which suggested that dividend increases do not generate positive abnormal returns implies that firm should aim to obtain a constant dividend level, because increasing the dividend level do not significantly enhance firm value.

Overall, the study findings are of importance for the body of research on dividend policy as they partially confirm the dividend signaling proposition on the Norwegian capital market. In addition the findings provide evidence of the efficient market hypothesis in a capital market that differs significantly from the U.S. where the majority of the previous research stems from. The results of the study might have come out differently if consensus analyst forecast of dividends had been applied instead of the naive dividend expectation model. The ambivalent results of this study suggest that further research on the impact of dividend change announcements on the Norwegian stock market is needed.

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Appendix A: List of Sample Firms

#	Company Name	Industry	OSE Group	Ticker
1	ABG Sundal Collier Holding	Financials	OB Match	ASC
2	AF Gruppen	Industrials	OB Match	AFG
3	Aker	Financials	OB Match	AKER
4	Aker Solutions	Energy	OBX	AKSO
5	Arendals Fossekompani ASA	Utilities	OB Standard	AFK
6	Atea ASA	Information Technology	OB Match	ATEA
7	Austevoll Seafood	Consumer Staples	OB Match	AUSS
8	Bakkafrost	Consumer Staples	OB Match	BAKKA
9	Bonheur ASA	Energy	OB Match	BON
10	Borgestad ASA	Financials	OB Match	BOR
11	Byggma ASA	Materials	OB Standard	BMA
12	BW Offshore Ltd.	Energy	OB Match	BWO
13	BWG Homes	Consumer Discretionary	OB Match	BWG
14	Cermaq ASA	Consumer Staples	OB Match	CEQ
15	DNB ASA	Financials	OBX	DNB
16	Eidesvik Offshore ASA	Energy	OB Match	EIOF
17	Ekornes ASA	Consumer Discretionary	OB Match	EKO
18	Evry ASA	Information Technology	OB Match	EVRY
19	Farstad Shipping ASA	Energy	OB Match	FAR
20	Fred Olsen Energy ASA	Energy	OBX	FOE
21	Fred Olsen Production ASA	Energy	OB Standard	FOP
22	Frontline Ltd.	Energy	OB Match	FRO
23	Ganger Rolf ASA	Energy	OB Match	GRO
24	Gjensidige Forsikring ASA	Financials	OBX	GJF
25	Grieg Seafood ASA	Consumer Staples	OB Match	GSF
26	Gyldendal ASA	Consumer Discretionary	OB Standard	GYL
27	Hafslund ASA	Utilities	OB Standard	HAFS
28	Hexagon Composites ASA	Industrials	OB Match	HEX
29	Imarex ASA	Financials	OB Standard	IMAREX
30	Infratek ASA	Industrials	OB Match	INFRA
31	Kitron ASA	Information Technology	OB Standard	KIT
32	Kongsberg Gruppen ASA	Industrials	OB Match	KOG
33	Lerøy Seafood Group ASA	Consumer Staples	OB Match	LSG
34	Medi-Stim ASA	Health Care	OB Standard	MEDI
35	Norsk Hydro ASA	Materials	OBX	NHY
36	Norwegian Property ASA	Financials	OB Match	NPRO
37	Odfjell SE	Industrials	OB Match	ODF
38	Olav Thon Eiendomsselskap ASA	Financials	OB Standard	OLT
39	Orkla ASA	Industrials	OBX	ORK
40	Polaris Media ASA	Consumer Discretionary	OB Standard	POL
41	Prosafe SE	Energy	OBX	PRS

#	Company Name	Industry	OSE Group	Ticker
42	Protector Forsikring ASA	Financials	OB Standard	PROTCT
43	PSI Group ASA	Information Technology	OB Match	PSI
44	Rieber & Søn ASA	Consumer Staples	OB Match	RIE
45	SalMar ASA	Consumer Staples	OB Match	SALM
46	Scana Industrier ASA	Materials	OB Match	SCI
47	Schibsted ASA	Consumer Discretionary	OBX	SCH
48	Skiens Aktiemølle ASA	Financials	OB Standard	SKI
49	Solstad Offshore ASA	Energy	OB Standard	SOFF
50	Solvang ASA	Industrials	OB Standard	SOLV
51	Sparebank 1 SR-Bank	Financials	OB Match	SRBANK
52	Spectrum ASA	Energy	OB Standard	SPU
53	Statoil ASA	Energy	OBX	STL
54	Storebrand ASA	Financials	OBX	STB
55	Storm Real Estate ASA	Financials	OB Match	STORM
56	Subsea 7 S.A	Energy	OBX	SUBC
57	Telenor ASA	Telecom	OBX	TEL
58	TGS-NOPEC Geophysical Company ASA	Energy	OBX	TGS
59	Tide ASA	Industrials	OB Standard	TIDE
60	Tomra Systems ASA	Industrials	OB Match	TOM
61	Tribona ASA	Financials	OB Standard	TRI
62	TTS Group ASA	Industrials	OB Match	TTS
63	Veidekke ASA	Industrials	OB Match	VEI
64	Voss Veksel- og Landmandsbank ASA	Financials	OB Standard	VVL
65	Wilh. Wilhelmsen ASA	Industrials	OB Match	WWASA
66	Wilh. Wilhelmsen Holding ASA	Industrials	OB Match	WWI
67	Yara International ASA	Materials	OBX	YAR

Appendix B: List of Event Dates

B1. Dividend Increase Announcement Dates

Company Name	Event Date	Company Name	Event Date
BW Offshore Ltd.	19.02.2013	Hexagon Composites	18.03.2010
BWG Homes	21.02.2007	Imarex	17.02.2011
BWG Homes	15.02.2011	Infratek	24.02.2010
Byggma	27.02.2007	Infratek	05.02.2009
Cermaq	15.02.2007	Infratek	17.02.2012
Cermaq	16.02.2011	Kitron	29.03.2012
Cermaq	19.02.2010	Kongsberg Gruppen	13.02.2009
DNB	10.02.2011	Kongsberg Gruppen	07.02.2008
DNB	11.02.2010	Kongsberg Gruppen	13.02.2007
DNB	07.02.2013	Kongsberg Gruppen	14.02.2011
DNB	14.02.2008	Lerøy Seafood Group	26.02.2007
DNB	22.02.2007	Lerøy Seafood Group	23.02.2011
Eidesvik Offshore	27.02.2009	Lerøy Seafood Group	25.02.2010
Eidesvik Offshore	28.02.2011	Lerøy Seafood Group	26.02.2009
Ekornes	15.02.2011	Medi-Stim	25.02.2010
Ekornes	15.02.2010	Medi-Stim	27.02.2009
Evry	30.01.2007	Medi-Stim	26.02.2008
Evry	30.01.2008	Medi-Stim	22.02.2007
Evry	09.02.2012	Medi-Stim	28.02.2013
Farstad Shipping	12.02.2009	Norsk Hydro	16.02.2011
Farstad Shipping	26.02.2008	Norsk Hydro	17.02.2010
Farstad Shipping	16.02.2011	Norwegian Property	29.02.2012
Farstad Shipping	16.02.2012	Norwegian Property	14.04.2011
Fred Olsen Energy	13.02.2007	Olav Thon Eiendomsselskap	27.02.2007
Fred Olsen Production	15.02.2011	Olav Thon Eiendomsselskap	14.02.2011
Fred Olsen Production	13.02.2013	Olav Thon Eiendomsselskap	15.02.2010
Frontline Ltd.	21.05.2010	Olav Thon Eiendomsselskap	14.02.2013
Ganger Rolf	29.02.2008	Orkla	14.02.2007
Ganger Rolf	16.02.2007	Orkla	09.02.2012
Ganger Rolf	20.02.2013	Orkla	10.02.2011
Gjensidige Forsikring	14.02.2013	Prosafe SE	27.08.2009
Grieg Seafood	22.02.2011	Prosafe SE	05.11.2009
Gyldendal	11.02.2010	Prosafe SE	26.08.2010
Hafslund	08.02.2008	Prosafe SE	25.08.2011
Hafslund	07.02.2007	Prosafe SE	02.11.2011
Hafslund	02.02.2011	Prosafe SE	23.05.2012
Hafslund	03.02.2010	Prosafe SE	08.02.2013

Company Name	Event Date	Company Name	Event Date
Protector Forsikring	24.02.2011	Telenor	08.02.2012
Protector Forsikring	25.02.2010	Telenor	08.02.2011
Protector Forsikring	26.02.2009	Telenor	10.02.2010
Protector Forsikring	28.02.2013	TGS-NOPEC	07.02.2013
PSI Group	17.02.2012	TGS-NOPEC	09.02.2012
Rieber & Søn	25.01.2007	TGS-NOPEC	10.02.2011
Rieber & Søn	28.01.2010	TGS-NOPEC	11.02.2010
Rieber & Søn	29.01.2009	Tide	25.02.2010
SalMar	24.02.2011	Tomra Systems	15.02.2013
SalMar	24.02.2010	Tomra Systems	17.02.2012
Scana Industrier	28.03.2008	Tomra Systems	18.02.2011
Scana Industrier	28.02.2007	Tomra Systems	19.02.2010
Schibsted	15.02.2008	Tomra Systems	19.02.2009
Schibsted	16.02.2007	Tomra Systems	20.02.2008
Schibsted	16.02.2012	Tomra Systems	14.02.2007
Schibsted	18.02.2011	Tribona	24.01.2013
Skiens Aktiemølle	30.01.2008	Tribona	16.02.2012
Skiens Aktiemølle	31.01.2007	TTS Group	14.02.2008
Solstad Offshore	21.02.2007	TTS Group	15.02.2007
Solstad Offshore	01.03.2010	TTS Group	14.02.2013
Solstad Offshore	26.02.2013	Veidekke	14.02.2008
Spectrum	15.02.2013	Veidekke	16.02.2012
Spectrum	17.02.2012	Voss Veksel- og Landmandsbank	17.01.2007
Statoil	17.02.2009	Wilh. Wilhelmsen	14.02.2013
Statoil	27.02.2008	Wilh. Wilhelmsen Holding	15.02.2007
Statoil	12.02.2007	Wilh. Wilhelmsen Holding	28.04.2011
Statoil	07.02.2013	Yara International	17.02.2009
Statoil	08.02.2012	Yara International	14.02.2008
Statoil	09.02.2011	Yara International	09.02.2007
Storebrand	16.02.2011	Yara International	12.02.2013
Subsea 7	16.03.2012	Yara International	07.02.2012
Telenor	13.02.2008	Yara International	15.02.2011
Telenor	15.02.2007		
Telenor	13.02.2013		

B2. Constant Dividend Announcement Dates

Company Name	Event Date	Company Name	Event Date
BW Offshore Ltd.	30.08.2011	Norsk Hydro	12.02.2013
BW Offshore Ltd.	18.11.2011	Norsk Hydro	16.02.2012
BW Offshore Ltd.	10.05.2012	Norwegian Property	15.02.2008
BW Offshore Ltd.	26.11.2012	Norwegian Property	24.03.2010
BWG Homes	11.02.2010	Norwegian Property	15.02.2013
BWG Homes	14.02.2013	Odfjell	02.02.2007
Byggma	27.02.2008	Olav Thon Eiendomsselskap	14.02.2008
Eidesvik Offshore	27.03.2007	Olav Thon Eiendomsselskap	15.02.2012
Eidesvik Offshore	27.02.2010	Orkla	11.02.2010
Eidesvik Offshore	26.02.2013	Orkla	19.02.2009
Eidesvik Offshore	28.02.2012	Orkla	07.02.2013
Ekornes	15.02.2008	PSI Group	14.02.2013
Ekornes	15.02.2007	SalMar	28.02.2013
Evry	08.02.2011	Scana Industrier	17.02.2010
Evry	03.02.2010	Schibsted	13.02.2013
Evry	08.02.2013	Solstad Offshore	26.02.2008
Farstad Shipping	15.02.2007	Solvang	14.02.2008
Frontline Ltd.	28.08.2009	Solvang	07.02.2007
Frontline Ltd.	27.08.2010	Sparebank 1 Sr-Bank	07.02.2013
Frontline Ltd.	25.05.2011	Storebrand	17.02.2010
Ganger Rolf	23.02.2011	Storebrand	13.02.2013
Ganger Rolf	19.02.2010	Storm Real Estate	16.02.2012
Grieg Seafood	15.02.2013	Subsea 7	14.03.2013
Gyldendal	15.02.2008	TTS Group	30.04.2010
Hafslund	07.02.2013	TTS Group	30.04.2012
Hafslund	02.02.2012	TTS Group	28.04.2011
Kongsberg Gruppen	08.02.2013	Veidekke	10.02.2011
Kongsberg Gruppen	10.02.2012	Veidekke	11.02.2010
Lerøy Seafood Group	26.02.2013		

B3. Dividend Decrease Announcements Dates

Company Name	Event Date	Company Name	Event Date
BW Offshore Ltd.	14.02.2012	Norsk Hydro	19.02.2008
BW Offshore Ltd.	30.08.2012	Norsk Hydro	19.02.2007
BWG Homes	15.02.2008	Norwegian Property	12.02.2009
BWG Homes	12.02.2009	Odfjell	08.02.2010
BWG Homes	14.02.2012	Odfjell	04.02.2009
Cermaq	14.02.2008	Odfjell	03.04.2008
Cermaq	13.02.2009	Olav Thon Eiendomsselskap	13.02.2009
Cermaq	12.02.2013	Orkla	14.02.2008
Cermaq	09.02.2012	Prosafe SE	04.11.2010
DNB	12.02.2009	Prosafe SE	01.03.2012
DNB	09.02.2012	Prosafe SE	23.08.2012
Eidesvik Offshore	26.02.2008	Prosafe SE	01.11.2012
Ekornes	12.02.2009	Rieber & Søn	29.04.2008
Ekornes	14.02.2013	Rieber & Søn	02.02.2012
Ekornes	14.02.2012	SalMar	25.02.2009
Evry	04.02.2009	SalMar	29.02.2012
Farstad Shipping	17.02.2010	Scana Industrier	19.02.2009
Farstad Shipping	14.02.2013	Scana Industrier	23.02.2011
Fred Olsen Production	14.02.2012	Schibsted	19.04.2010
Frontline Ltd.	27.11.2009	Schibsted	27.02.2009
Frontline Ltd.	26.02.2010	Solstad Offshore	26.02.2009
Frontline Ltd.	24.11.2010	Solstad Offshore	28.02.2012
Frontline Ltd.	22.02.2011	Solstad Offshore	28.02.2011
Frontline Ltd.	26.08.2011	Statoil	26.03.2010
Frontline Ltd.	22.11.2011	Storebrand	11.02.2009
Ganger Rolf	12.02.2009	Storebrand	13.02.2008
Ganger Rolf	23.02.2012	Storebrand	14.02.2007
Gjensidige Forsikring	09.02.2012	Storebrand	14.02.2012
Grieg Seafood	15.02.2012	Telenor	11.02.2009
Gyldendal	15.02.2007	Tide	26.02.2009
Gyldendal	10.02.2009	Tide	28.04.2008
Hafslund	09.02.2009	Tide	10.05.2007
Hexagon Composites	23.03.2012	TTS Group	26.02.2009
Hexagon Composites	18.03.2011	Veidekke	15.02.2007
Infratek	18.02.2011	Veidekke	12.02.2009
Kongsberg Gruppen	19.02.2010	Veidekke	14.02.2013
Lerøy Seafood Group	26.02.2008	Voss Veksel- og Landmandsbank	16.01.2008
Lerøy Seafood Group	23.02.2012	Wilh. Wilhelmsen Holding	12.02.2009
Norsk Hydro	18.02.2009		

Appendix C: Results, Sample According to Trading Frequency

Tables of average abnormal returns, cumulative average abnormal returns, and values of the test estimator θ_1 for the OBX sample, the OB Match sample and the OB Standard sample. The one day standard deviations are listed the bottom of the tables.

C1. OBX Sample

	Dividend Increase			Constant Dividend			Dividend Decrease		
t	**AAR**	**CAAR**	**θ_1**	**AAR**	**CAAR**	**θ_1**	**AAR**	**CAAR**	**θ_1**
-10	0,00001	0,00001	0,002	-0,00559	-0,00559	-1,06531	0,003059	0,003059	0,54669
-9	0,00283	0,00283	1,176	-0,00365	-0,00924	-1,06531	0,001013	0,004071	0,181
-8	0,00386	0,00669	1,606	0,002607	-0,00664	0,496613	0,011988	0,016059	2,14279
-7	-0,00077	0,00592	-0,320	0,000499	-0,00614	0,095041	-0,01302	0,003041	-2,3268
-6	0,00318	0,00910	1,322	0,003137	-0,003	0,59761	0,004818	0,007859	0,86112
-5	0,00098	0,01008	0,409	0,002813	-0,00019	0,535785	-0,00398	0,003884	-0,7105
-4	-0,00353	0,00655	-1,470	-0,00686	-0,00704	-1,30621	0,004392	0,008276	0,78501
-3	-0,00206	0,00449	-0,856	0,001329	-0,00571	0,253153	0,002486	0,010762	0,44437
-2	0,00251	0,00700	1,045	-0,00037	-0,00609	-0,07093	0,001009	0,01177	0,18026
-1	0,00217	0,00917	0,903	0,019552	0,013465	3,724449	-0,0017	0,010075	-0,3031
0	-0,00036	0,00881	-0,152	-0,00931	0,004157	-1,77316	-0,01259	-0,00252	-2,2508
1	0,00334	0,01215	1,390	0,004963	0,009119	0,945359	0,007944	0,005426	1,41993
2	0,00017	0,01232	0,072	0,003471	0,01259	0,661167	0,001972	0,007399	0,35254
3	0,00154	0,01386	0,640	0,002589	0,01518	0,493245	-0,00658	0,00082	-1,1758
4	-0,00302	0,01084	-1,257	-0,00641	0,008769	-1,22118	0,001575	0,002396	0,28158
5	-0,00201	0,00883	-0,838	-0,00179	0,006976	-0,34161	-0,00215	0,000241	-0,3851
6	-0,00226	0,00656	-0,942	-0,00112	0,005854	-0,21357	0,000447	0,000688	0,07993
7	0,00526	0,01182	2,187	-0,00189	0,003966	-0,35973	0,000527	0,001215	0,09417
8	-0,00058	0,01124	-0,243	-0,00498	-0,00101	-0,94854	-0,0023	-0,00108	-0,4109
9	0,00138	0,01262	0,574	0,006342	0,005329	1,208136	0,001691	0,000607	0,30219
10	-0,00105	0,01157	-0,436	-0,0084	-0,00307	-1,59956	-0,00149	-0,00089	-0,2669
σ			**0,00240**			**0,0052**			**0,00559**

C2. OB Match Sample

	Dividend Increase			Constant Dividend			Dividend Decrease		
t	AAR	CAAR	θ1	AAR	CAAR	θ1	AAR	CAAR	θ1
-10	0,00153	0,00153	0,4884	-0,0048	-0,0048	-1,245	-0,00129	-0,00129	-0,238
-9	0,00372	0,00525	1,1858	0,002018	-0,00278	0,5241	0,005912	0,004626	1,0933
-8	-0,00337	0,00188	-1,0756	0,009338	0,00656	2,4247	0,003191	0,007817	0,59
-7	-0,00249	-0,00061	-0,7942	0,000521	0,007081	0,1352	0,006461	0,014278	1,1947
-6	0,00173	0,00111	0,5508	-0,00475	0,002335	-1,232	0,003454	0,017732	0,6387
-5	-0,00226	-0,00115	-0,7218	0,001713	0,004048	0,4448	-0,00464	0,013087	-0,859
-4	0,00087	-0,00028	0,2788	0,00569	0,009738	1,4776	0,004916	0,018004	0,9091
-3	0,00021	-0,00007	0,0657	0,001792	0,01153	0,4654	0,000628	0,018631	0,1161
-2	-0,00296	-0,00303	-0,9446	0,004825	0,016355	1,2529	-0,00035	0,018281	-0,065
-1	0,00268	-0,00035	0,8558	-0,00405	0,012301	-1,053	-0,00038	0,017901	-0,07
0	0,01250	0,01215	3,9865	-0,00364	0,008657	-0,946	-0,01525	0,002648	-2,82
1	0,00387	0,01602	1,2331	0,005745	0,014403	1,4919	-0,00581	-0,00317	-1,075
2	-0,00014	0,01588	-0,0442	0,004149	0,018552	1,0773	0,00715	0,003984	1,3221
3	0,00238	0,01826	0,7584	-0,00532	0,013232	-1,381	0,006883	0,010867	1,2728
4	0,00175	0,02001	0,5578	-0,00952	0,003712	-2,472	-0,00438	0,006489	-0,81
5	0,00174	0,02175	0,5556	0,001071	0,004783	0,2781	-0,00251	0,00398	-0,464
6	0,00149	0,02324	0,475	-0,00129	0,003496	-0,334	0,007496	0,011476	1,3862
7	-0,00233	0,02091	-0,7438	-0,00072	0,002774	-0,188	-0,00367	0,007804	-0,679
8	-0,00272	0,01819	-0,8681	-0,00565	-0,00288	-1,467	-0,00101	0,006797	-0,186
9	0,00133	0,01952	0,4244	-0,00682	-0,0097	-1,771	0,010723	0,01752	1,9829
10	-0,00138	0,01814	-0,4401	0,001068	-0,00863	0,2774	0,003253	0,020774	0,6016
σ			**0,0031**			**0,0039**			**0,0054**

C3. OB Match Sample

	Dividend Increase			Constant Dividend			Dividend Decrease		
t	**AAR**	**CAAR**	**θ1**	**AAR**	**CAAR**	**θ1**	**AAR**	**CAAR**	**θ1**
-10	0,15646	0,15646	2,034	-0,00262	-0,002617	-0,444	-0,01420	-0,0142	-1,555
-9	0,04104	0,1975	0,533	0,004559	0,001942	0,774	0,00425	-0,0099	0,4657
-8	0,012684	0,210185	0,165	-0,00458	-0,002637	-0,778	0,00328	-0,0067	0,3593
-7	0,002763	0,212947	0,036	0,002641	0,000004	0,449	0,00661	-0,0001	0,7237
-6	0,019656	0,232603	0,255	0,002429	0,002433	0,413	0,00700	0,0069	0,7665
-5	-0,02479	0,207816	-0,322	0,000454	0,002888	0,077	-0,00361	0,0033	-0,396
-4	0,243907	0,451723	3,17	0,004942	0,007830	0,839	-0,00766	-0,0043	-0,839
-3	0,093047	0,544769	1,209	0,005181	0,013011	0,88	-0,00386	-0,0082	-0,422
-2	-0,34544	0,19933	-4,49	0,019863	0,032874	3,373	0,00450	-0,0037	0,4926
-1	0,090502	0,289832	1,176	-0,00261	0,030268	-0,442	-0,00156	-0,0053	-0,171
0	0,018645	0,308477	0,242	0,003094	0,033363	0,526	-0,00884	-0,0141	-0,968
1	0,001766	0,310243	0,023	0,001733	0,035096	0,294	-0,00906	-0,0231	-0,991
2	-0,00821	0,302031	-0,107	-0,0079	0,027192	-1,342	-0,00019	-0,0233	-0,02
3	-0,02184	0,280192	-0,284	0,001354	0,028547	0,23	-0,00989	-0,0332	-1,082
4	0,085535	0,365727	1,112	-0,00819	0,020356	-1,391	-0,01544	-0,0487	-1,69
5	0,01932	0,385048	0,251	0,007551	0,027907	1,282	-0,00640	-0,0551	-0,701
6	-0,03554	0,349507	-0,462	-0,00761	0,020295	-1,293	-0,00494	-0,0600	-0,54
7	0,003817	0,353324	0,05	0,009975	0,030270	1,694	0,00754	-0,0525	0,8248
8	-0,05196	0,301361	-0,675	-0,00654	0,023728	-1,111	-0,01489	-0,0674	-1,63
9	-0,04279	0,258568	-0,556	0,002986	0,026714	0,507	0,00520	-0,0622	0,5687
10	0,094833	0,353401	1,233	0,008831	0,035544	1,5	0,00086	-0,0613	0,0939
σ			**0,077**			**0,006**			**0,0091**

Appendix D: STATA Codes

```
clear
cd "C:\Users\Els\Documents\master\analyse"
capture log close
set more off
set memory 200m

*/preparing the data for the event study */

xmluse
"C:\Users\Els\Documents\analyse\event_dates.xml", doctype(excel) firstrow
clear

format event_date %d

sort company_id event_date

save event_dates.dta, replace

use event_dates, clear
by company_id: gen eventcount=_N

by company_id: keep if _n==1
sort company_id
keep company_id eventcount
save eventcount

use stockdata, clear
sort company_id
merge company_id using eventcount
tab _merge
keep if _merge==3
drop _merge

expand eventcount

drop eventcount
sort company_id date
by company_id date: gen set=_n
sort company_id set
save stockdata2

use eventdates, clear
by company_id: gen set=_n
sort company_id set
save eventdates2

use stockdata2, clear
merge company_id set using eventdates2
tab _merge
drop _merge

egen group_id = group(company_id set)
```

```
*/ The Analysis */

sort group_id date
by group_id: gen datenum=_n
by group_id: gen target=datenum if date==event_date
egen td=min(target), by(group_id)
drop target
gen dif=datenum-td

*/ Determination of the event window and the estimation window */

by group_id: gen event_window=1 if dif>=-10 & dif<=10
egen count_event_obs=count(event_window), by(group_id)
by group_id: gen estimation_window=1 if dif<-30 & dif>=-280
egen count_est_obs=count(estimation_window), by(group_id)
replace event_window=0 if event_window ==.
replace estimation_window=0 if estimation_window==.

*/Control of number of observations */

tab group_id if count_event_obs<21
tab group_id if count_est_obs<250

drop if count_event_obs < 21
drop if count_est_obs < 250

*/Estimation of normal performance */

gen predicted_return=.
egen id=group(group_id)
forvalues i=1(1)N {
        l id group_id if id==`i' & dif==0
        reg ret market_return if id==`i' & estimation_window==1
        predict p if id==`i'
        replace predicted_return = p if id==`i' & event_window==1
        drop p
}

*/Estimation of Abnormal and Cumulative Abnormal Returns */

sort id date
gen abnormal_return=ret-predicted_return if event_window==1
by id: egen cumulative_abnormal_return = sum(abnormal_return)


*/Testing for Significance */

sort id date
by id: egen ar_sd = sd(abnormal_return)
gen test = (1/sqrt(21)) * (cumulative_abnormal_return / ar_sd)
list group_id cumulative_abnormal_return test if dif==0

save result.dta, replace
```