Do investors interpret a change in dividend policy differently in different states of the economy?

An event study for companies listed at the New York Stock Exchange

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Name: Alexander Sinke
ANR: 301985

Supervisor: Dr. M.R.R. van Bremen
Graduation chairman: Dr. F. Castiglionesi

Abstract

A change in dividend policy is perceived differently by investors in different states of the United States' economy. This study examines if the abnormal returns surrounding announcement days of changes in dividend policies of firms listed on the New York Stock Exchange are different in different states of the economy. Four types of changes in dividend policy were taken into account: a cash dividend initiation, a cash dividend omission and a change, either positively or negatively, in the current dividend yield. The growth in Gross Domestic Product was used as a proxy for the state of the economy. The findings suggest that in the short run, after controlling for several factors such as the dividend yield, firm size, beta and residual variance, only a change in the current dividend yield is perceived differently in different states of the economy. The long run implications were examined by applying a one-year buy-and-hold strategy. All types of changes in dividend policy result in significantly different abnormal returns in different states of the economy. The findings reveal new information concerning stock behavior after a change in dividend policy and can be used for corporate finance policy setting purposes by managers.

Table of contents

1. Introduction 3
1.2 Problem statement 3
1.3 Relevance 4
1.4 Structure 4

2. Literature review 4
2.1 Dividend policy and different types of dividend 5
2.1.1 Cash dividends 5
2.1.2 Stock dividends 5
2.1.3 Share repurchases 6
2.1.4 Defining dividend policy 7
2.2 Investor's interpretation of a change in dividend policy 7
2.2.1 Dividend models 7
2.2.2 Empirical evidence 9
2.3 Theories explaining investor behavior 10
2.3.1 Agency theory 10
2.3.2 Signaling theory 11
2.3.3 Catering theory 11
2.3.4 Residual theory 12
2.4 Change in dividend policy in different states of the economy 12

3. Research question and hypotheses 14

4. Data 16
4.1 Time period 16
4.2 Sample selection 17
4.3 State of the economy 17
4.4 Defining events 17
4.4.1 Dividend initiation 18
4.4.2 Dividend omission 18
4.4.3 Change in the current dividend yield 19

5. Methodology 19

6. Results 23
6.1 Dividend announcement effects 23
6.2 Univariate analysis 25
6.3 Multivariate analysis 28
6.3.1 Short run performance 29
6.3.2 Long run performance 31
6.4 Robustness 33

7. Conclusions and discussion 33
7.2 Relevance 35
7.3 Limitations and further research 36

Bibliography 37

Appendix A 41

1. Introduction

Current literature still has not reached consensus about the rationale of the payment of dividends to shareholders by many companies. In the literature this search for consensus is referred to as 'the dividend puzzle' (Black, 1976), since many studies argue a different purpose of the dividend payment. Where Modigliani and Miller (1961) argue that shareholders should be indifferent when their company is facing the choice of paying dividends or not, other theories have emerged later on which state that shareholders should worry about the distribution of dividends (i.e.: Bhattacharya, 1979; Rozeff, 1982; Baker and Wurgler, 2004). According to these studies, dividends could signal some information about expected future performance or are a way to mitigate agency costs.

What most authors of papers concerning dividends have reached an agreement on, is that the initiation, omission and change in dividend yield evokes a response of investors in the form of a change in the determined firm value. Firms deciding to initiate a dividend payment or increasing their dividend payout will on average experience positive abnormal returns as opposed to firms deciding to omit or lower their dividend payments, which experience on average negative abnormal returns. The magnitude of these abnormal returns is different when the economy is in recession from when the economy is not in recession (Below and Johnson, 1996; Wann and Lobo, 2009). These studies show that the amount of information conveyed in the dividend announcement and the signal of the dividend announcement varies with the market phase.

While these studies focus on recessions and non-recessions only, this will study focus on different states of the economy expressed in the growth of Gross Domestic Product (GDP). The results will be used to examine different dividend relevance theories.

1.2 Problem statement

The main research question in this study will be: *Do investors interpret a change in dividend policy differently in different states of the economy?*

In this study it will be examined if shareholders of firms listed at the New York Stock Exchange react differently to a change in dividend policy in different states of the United States' economy. The reaction of investors will be captured by the observed abnormal return surrounding the

announcement day of the dividend policy change. Both the short and long run implications will be examined.

1.3 Relevance

The potential different reaction of investors to a change in divided policy has become more relevant since the world economy has dealt with multiple recessions in a relatively short notice, with the most recent financial crisis labeled as the worst since 'The Great Depression' in 1929. The recent financial crisis has a worldwide impact on the dividend policy of companies. Companies have to rely increasingly on their free cash flows to let the company operate in a proper way. Hauser (2013) concluded that firms have changed their dividend policies during the financial crisis of 2008 – 2009, even when taking their financial conditions into account. Most managers shun an omission or decrease of the firm's dividend payout since dividends are perceived as persistent and are mostly not subject to negative changes (Baker and Powell, 1999). This restrains managers from changing the dividend policy even if this could be in the best interest of the firm. This study will examine if manager's reluctance is just or that investors are more lenient towards changes in dividend policies when the economy is doing badly. The results of this study can also be used for investor's portfolio management. The short and long run impact of the changes in dividend policies will be investigated, revealing new information about stock behavior after a dividend policy change.

1.4 Structure

This study is organized as follows: the next section provides an overview of existing literature, elaborating on different parts of the research question. Thereafter there will be an extensive description of the research question and hypotheses. Subsequently it will be described which data is included in this study and how this data was retrieved followed by a description of the research methodology. The results will be displayed in the section after the methodology section and this study will end with the conclusion, including the relevance and limitations of this study.

2. Literature review

This study aims to find a relation between the state of the economy and the reaction of investors in terms of abnormal return to a change in dividend policy. In this section there will be an overview of research done concerning several parts of the research question. Firstly, dividend policy will be

defined more precisely and different types of dividend will be explained. Secondly, it will be examined if investors in the first place react to changes in dividend policy and how. Thirdly, investors' reactions will be explained in the light of established dividend theories. Finally, the effect of the economic state on investor behavior when the dividend policy has changed will be investigated.

2.1 Dividend policy and different types of dividend

The dividend policy encompasses the policy of firms concerning the distribution of earnings to their shareholders. A dividend distribution can either be done with cash or with stocks. Earnings can also be distributed with a share repurchase. In this section the different methods of distribution will be discussed and this information will be used to define a dividend policy for the remainder of this study.

2.1.1 Cash dividends

Cash dividends are often used as a consistent way to pay shareholders. As Lintner (1956) already concluded, cash dividends are expected to be stable or gradually growing and managers only initiate or increase cash dividends when they expect that firm's earnings will be stable. By initiating a cash dividend a firm can signal to fundamentally be less risky since firm's earnings and cash flows are perceived as more stable (Dyl and Weigand, 1998).

The regularity of the cash dividend payment can be used for multiple purposes that will be discussed in more detail in section 2.3. For example, with a cash dividend firms are able to convey some information about the firm's future prospects (Bhattacharya, 1979) (John and Williams, 1985), can mitigate agency problems (Jensen, 1976) or attract investors looking for a stable income from their stocks (Baker and Wurgler, 2004).

2.1.2 Stock dividends

Stock dividends are, compared to cash dividend, rarely used as a consistent way to pay shareholders quarterly or annually. While cash dividends are used to distribute some cash back from the firm to their shareholders, stock dividends are used to issue some extra equity and distribute this to existing shareholders. This is a highly useful method when companies' liquid capabilities temporarily fall short and they still want to maintain their payout policy. Stock dividends are mostly considered as a temporary substitute for cash dividends (Lakonishok and Lev,

1987). By comparing a control group that had not announced stock dividends with a test group that did announce stock dividends, they found that in the years preceding the stock dividend announcement the dividend yield ratios were statistically equal. Doing the same test a month before the announcement the dividend yield was lower in the test group, supporting the hypothesis that stock dividends are a temporary substitute.

With regard to taxes it may be expected that stock dividends are preferred above cash dividends since only realized gains are taxed in case of stock dividends. Long (1978) found a contradictory result in his study. He found that two classes of common shares of Citizens Utilities Company are identical, except for their dividend payout. These payout methods differ in terms of distribution method, cash dividend versus stock dividends. Although a requirement of the company's charter was that the stock dividend in the one class should be equal to the cash dividend in the other, the board decided to let the stock dividend be systematically 10% higher on average than the cash dividend. Long (1978) therefore stated that the price ratio of these stock classes should be at least 1.1. The reality was different from what was expected and the price ratio was consistently below 1.1 indicating that a cash dividend is preferred over stock dividend.

2.1.3 Share repurchases

A share repurchases cannot really be considered as dividend but it is a frequently used method to distribute some of the earnings to the shareholders. By initiating a share repurchase a firm decides to buy some of their shares back from their shareholders. This can be organized in an open market share repurchase, a tender offer or a Dutch auction. The shares that are bought lose their voting rights and the rights of receiving dividends. Share repurchases provide an increase in share value and therefore a capital gain for the investor, which is only taxed when the gain is realized.

While in 1978 66.5% of the United States' publicly listed firms were paying dividends to their shareholders, only 20.8% of firms paid dividends in 1999 (Fama and French, 2001). The decrease of the dividend payout ratio can be explained by the expanding payouts through share repurchases (Grullon and Michaely, 2002). In their paper they show that although the payout ratios of firms remain quite stable, there are major shifts in the way they payout. Share repurchases are a way to give managers more flexibility in their distribution policy since they are not expected to occur regularly or periodically (Guay and Harford, 1999). Compared to cash dividends, which are mainly

used to pay out sustainable cash flows, are share repurchases often used to pay out temporary cash flows (Jagannathan, Stephens and Weisbach, 2000).

2.1.4 Defining dividend policy

While cash dividends are part of the firm's policy, share repurchases and stock dividends occur more unexpectedly and more momentary (Guay and Harford, 1999). After initiation, a cash dividend is expected by investors to be paid regularly (mostly quarterly, semi-annually or annually). Initiating, omitting or changing the cash dividend is a visible change in the dividend policy. Stock dividends and share repurchases occur unexpectedly, the latter especially when managers expect undervaluation, so a visible change in dividend policy is hard to observe. Therefore this study will focus on cash dividends since these can be checked for regularity and periodicity and are therefore more part of the firm's corporate financial policy. In the remainder of this study the dividend policy refers to a periodical cash dividend payment.

This study will focus on the investors' reaction to a change in dividend policy. A change in dividend policy can occur in four different ways: an initiation of a regular cash dividend payment, an omission of the regular cash dividend payment, or a change in the current dividend yield either positively or negatively. These changes will be discussed comprehensively in section 4.4.

2.2 Investor's interpretation of a change in dividend policy

To determine the potential different reaction of investors to a change in dividend policy in different states of the economy it is important to ascertain that there is a relationship between dividend policy and firm value. Many models were created to show how a change in dividend policy affects firm value. Also many empirical studies have been conducted to find a relationship between the dividend policy and firm value.

2.2.1 Dividend models

Modigliani and Miller (1961) have shown in their study that dividends are irrelevant for the value of the investor's portfolio. This study is the foundation of the modern corporate finance literature and states that the payment of dividends should have no effect on the share price of the company. Investors should therefore be indifferent when facing the choice of receiving a dividend or not. If investors demand a cash flow, as is the case with dividends, they could easily sell a portion of their holdings in the company; this should yield the same for the investors according to Modigliani and

Miller (1961). They also argue that the opposite should apply to companies that do payout dividends; investors could buy additional shares with these funds in case they do not demand a cash flow.

The framework created by Modigliani and Miller (1961) is well supported and used but when a more realistic research environment is created, the results are contradicting and dividends seem to be more relevant than this theory predicts. To demonstrate the relevance of dividends in the early years after the world war era, different models were created. Lintner (1956) was amongst the first to conduct research to the (ir-) relevance of dividends for the value of a firm. Lintner (1956) found that the boards of companies are very conservative concerning a change in the dividend rate and that managers only adjust the dividend payout ratio when they believe earning levels can be sustained. They do so due to the management's belief that the market wants to pay a premium for stocks with a stable or gradually growing dividend rate. The model Lintner (1956) created consists of two parameters: the target payout ratio and the speed at which the current dividend yield adjusts to the target. The latter refers to how quickly the board's confidence in the sustainability of the earnings has its impact on the dividend yield.

Gordon (1963) created a model that determines the value of a company based on the company's expected dividend payouts. By discounting the future dividend payouts the value of a company could be obtained. Potential dividend decreases or increases will obviously influence the value of the company and therefore the dividend payout is extremely relevant in this model. The model is mostly used for mature companies with low growth rates since growth companies will retain most of their earnings, resulting in a potential undervaluation using the Gordon's model (1963).

In the same year Walter (1963) created a model that compares the return on investment with the return on equity to determine the payout of dividends. When the return on investment is higher (lower) than the return an investor gets when he reinvests the distributed dividends in the firm, than the company should retain (payout) earnings. When returns are equal the investor is indifferent. This model had to suffer from lots of critiques due to its assumptions. It assumes that there is no external financing and that the return on equity and investment remains constant.

2.2.2 Empirical evidence

Most studies conduct an event study focusing on the announcement day of a dividend initiation, omission or change (i.e.: Michaely et al., 1995; Jin, 2000) to determine the implication of the dividend policy change for firm value. The abnormal return is then statistically tested to see if returns are statistically different from zero during these events.

Black and Scholes (1970) were amongst the first scholars to deviate from existing literature's methodologies of finding a relation between dividend payouts and firms' excess returns. They argued that it's hard to find a causal relation by applying the cross-sectional methodology used in earlier studies. Most authors compared share prices of companies that differ only in dividend policy. For example price-earnings ratios were regressed on dividend payout ratios to find a relationship. It is hard to distinguish what relationship is conveyed in these results. The methodology of Black and Scholes (1970) was more comprehensive. They tried to find if the Capital Asset Pricing Model holds for stocks at all levels of dividend yield. If this was not the case, they wanted to know if this was due to the effect of the dividend yield or other factors. By using this methodology no significant results were found for dividend yield affecting the stock price of companies.

In a study by Pettit (1972) tests were done to see if the efficient market hypothesis holds around dividend announcement dates using an event study. By assessing the abnormal returns around the dividend announcement date he concluded that the market uses dividend announcements in assessing the value of a firm and therefore managers should fear reducing or omitting dividends payments. This paper was amongst the first to expose the information content of dividends empirically.

A comprehensive study by Michaely et al. (1995) suggests a short term wealth effect for investors on a dividend omission or initiation. By investigating the NYSE and AMEX from 1964 to 1988 a large sample of dividend omissions and initiations were analyzed. The main result is that both events lead to short term wealth effects for shareholders, a negative effect for omissions and a positive effect for initiations. According to this paper it seems that the negative effect of omissions is larger than the positive effect of initiations. A long run drift was also found for stocks initiating or omitting dividend payments.

The long run drift was also found by Van Eaton (1999), especially in dividend decreases and omissions. Van Eaton (1999) studied the abnormal returns of firms changing their dividend policy in the years after the announcement of the change. The incorporation of the announcement of the dividend decrease takes approximately a year and causes the stock price to decrease with 15-20% compared to same firm size benchmark. Dividend increases or initiations are incorporated more quickly since no long run abnormal return was found for these stocks.

Although cumulative results suggest that dividend initiations are positive for shareholders' wealth, still around 40% of the firms initiating a dividend experience negative returns around the event (Jin, 2000). This paper provides insight into the determinants of stock behavior after a change in dividend policy. According to this paper size has a negative effect on the abnormal return of firms, since more information is available for these firms and less is conveyed in the payment of dividends. Earnings volatility has a positive effect due to lack of information value of earnings, investors are looking for other information mechanisms, as dividends are one of these. By dividing the full sample into subsamples (positive abnormal returns and negative abnormal returns), a regression indicates that the initial dividend yield has a large impact on both groups.

2.3 Theories explaining investor behavior

While the just discussed dividend relevance models are mainly focusing on how to use the dividend payments to determine firm value, new theories emerged later on focusing on a specific function or task the payment of dividend has. These theories aim to explain why investors change their perception of firm value after a dividend policy change.

2.3.1 Agency theory

Ever since Jensen and Meckling (1976) showed that there is an extra cost associated with the separation of ownership and control in modern corporations, the implications of these costs are investigated. Agency costs also have implications for the dividend policy of companies around the world (La Porta, Lopez-de-Silanes, Shleifer and Vishny, 2000). Since interests of managers and shareholders are not always perfectly aligned, shareholders demand a dividend to reduce the free cash flow available to managers to invest in non-optimal opportunities or to use these funds for private benefits. This research found support for the agency hypothesis by comparing countries with weak protection of minority shareholders to countries where protection of minority shareholders is strong. They found that even though investment opportunities are available,

minority shareholders demand a dividend as a sort of insurance. In earlier work by Rozeff (1982) was also concluded that dividends are a way to mitigate agency costs. In the literature the agency cost hypothesis is closely related to the free cash flow hypothesis (Jensen, 1986). The latter states that managers provided with free cash flow will invest this free cash flow in projects with negative net present value instead of distributing it to the shareholders. Lang and Litzenberger (1980) concluded that if managers are overinvesting an increase in dividend will decrease the overinvestment and positively affects firm value.

2.3.2 Signaling theory

Instead of reducing agency costs many studies argue that dividends are a way to inform investors about the future prospects of the company, in this way the dividend functions as a signal. Due to the separation of ownership and control in corporations dividends are used for conveying inside information to shareholders (Bhattacharya, 1979) (John and Williams, 1985). The models developed in those papers provide evidence that dividends are a way to inform investors about current and future cash flows. Bernheim and Wantz (1992) found empirical support for the signaling theory. According to them the signaling hypotheses imply that the abnormal return surrounding the announcement day of a dividend change should be sensitive to the marginal costs of dividends. They found that if the marginal costs of dividends are higher (taxes, bond ratings), abnormal returns are also higher. Kale and Noe (1990) demonstrated that firms with more stable future cash flows pay higher dividends. According to them the dividend acts as a signal of stability.

Yoon and Starks (1995) examine whether the signaling theory or the agency theory is more consistent with the data concerning dividend announcements. They found that the data is more consistent with the signaling theory than with the agency theory. This is supported by the increase (decrease) of capital expenditures by the dividend-announcing firm over the three years after the dividend increase (decrease). A second form of evidence can be found in the revisions of earnings expectations by professional analysts. In forming an expectation of the firm's earnings they follow the direction of the dividend change. In earlier work Denis, Denis and Sarin (1994) already found the same empirical result by only examining changes in dividend yield.

2.3.3 Catering theory

A relative new theory concerning dividends was invented by Baker and Wurgler (2004). They state that the decision of managers to pay dividends is driven by the demand of investors. When

the demand for dividend-paying stocks is high then investors are willing to pay a premium for these stocks. Baker and Wurgler (2004) found that when the demand for dividend-paying stocks is high, managers of non-paying firms cater investors by initiating a dividend payment and when the demand for dividend-paying stocks is low, payers omit their dividend payments. Their main finding is that the catering of investors is due to two sentiment mechanisms, bird-in-hand fallacy and time-varying risk aversion. While investors are in a period where they are highly risk averse, they seek safer investments as dividend-paying stocks mostly are. Besides this, investors let their preferences depend on the perceived growth opportunities of firms. Reinvestment is preferred over payout in case they believe this decision will result in higher levels of growth.

Li and Lie (2006) extended the model and paper of Baker and Wurgler (2004) by including dividend decreases and dividend increases, in addition to dividend omissions and dividend initiations. They found that when the capital market wants to pay a premium for dividend-paying stocks, firms are more likely to increase their dividend payments. This results in larger positive stock market reactions than when demand for dividend-paying stocks is low. The reverse result was found for dividend decreases.

2.3.4 Residual theory

The dividend irrelevance model of Modigliani and Miller (1961) gets support from the 'residual theory', which also states that the dividend payout is irrelevant for the value of the company. This model assumes that managers first invest the earnings in projects with a positive net present value and what is leftover is distributed to the shareholders. Investing in projects with a positive net present value is in the best interest of shareholders and therefore investors should not bother when a firm pays little or no dividend. Due to lack of empirical support this theory is not widely used.

2.4 Change in dividend policy in different states of the economy

Research done to examine the implications of a recession or a bad state of the economy to a change in dividend policy is limited, especially when it concerns the long run implications. Although Hauser (2013) concluded that the recent financial crisis of 2008 – 2009 did change firms' dividend policy, only a few papers examined the implications of these changes during bad economic circumstances to firm value. These papers found a relationship between the economic phase and the abnormal returns surrounding the announcement day of the dividend policy change. This

section provides an overview of earlier studies linking the state of the economy to a dividend policy change.

Dividend-paying firms outperform non-paying firms in times of recession (Williams and Miller, 2013). This recent paper examines the returns of the S&P Dividend Aristocrat Index and the S&P 500 index from 1990 to 2010 with two identified business cycles including a recovery and recessionary phase in 2001 and 2008. The observed differences between the two indexes are large. In the recessionary phases in 2001 and 2008 the S&P Dividend Aristocrat Index outperformed the S&P 500 index with respectively 29.88% and 23.71% on a yearly basis. In the recovery phases the S&P DAI also outperformed the S&P 500 with respectively 3.6% and 4.59%, yearly.

There is a difference in reaction of investors to a change in the current dividend yield in a bull market phase or a bear market phase (Below and Johnson, 1996). By calculating the normal return using the pre-event beta, an increase in dividend evokes statistically significant larger abnormal returns in bear markets than in bull markets. No difference was found for a decrease in dividend. By using the post-event beta in the normal return calculations, both dividend increases and dividend decreases evoke statistically significant different reactions in bull and bear markets. The result using the post-event betas remains as it was with the pre-event beta for dividend increases, but dividend decreases now have larger negative abnormal returns in bull markets than in bear markets. This study shows that the amount of information conveyed by the announcement of a dividend change varies with the market phase.

Wann and Lobo (2009) separate all dividend announcements between 1962 and 2005 into two groups, a non-recession group and a recession group. In this time period six different periods of recession were identified. By doing this they can examine whether investors react differently on a change in dividend policy in times of recession or non-recession. By comparing the abnormal return of a change in dividend of the recession group with the non-recession group they found a significant difference. During recessions the value of the information content of dividend changes is larger according to these results, leading to higher (lower) abnormal returns after a dividend increase (decrease) during a recession.

Especially in times of recession where it is harder to attract external financing, it could be the case that a temporary cut in dividends fills the gap of necessary finance. This statement is contradicted

by Pruitt and Gitman (1991). In their paper they show that dividend decisions by a firm's management are not driven by the firm's investment and financing actions, but by profits and the dividend rate in prior years. This result is supported by Partington (1985), with evidence in his paper that investments and dividend are independent of each other, rejecting the residual hypothesis in the dividend literature. Insufficient funds will in most cases be at the expense of the investment opportunities instead of the dividend.

3. Research question and hypotheses

As seen in the previous section many studies conclude that there is an effect surrounding the dividend announcement on the value of the announcing firm. The main conclusions of these papers are that investors on average react positively to a dividend initiation or an increase and negatively on a dividend omission or decrease. This paper aims to provide evidence of these reactions of investors being different in different economic circumstances. These reactions will be explained in light of the several discussed dividend theories.

The main research question will be: *Do investors interpret a change in dividend policy differently in different states of the economy?*

To find evidence for this research question an event study will be conducted to answer the hypotheses stated below. First the short run impact of a dividend policy change will be investigated; subsequently this paper examines if the result of the investors' reaction is sustained or that investors overreact to the news of the event due to the economic conditions. In this case the performance of the companies changing their dividend policy in bad economic conditions should in the long run level the performance of the companies changing their dividend policy in better economic circumstances.

Hypothesis 1: *Firms initiating a regular cash dividend payment will experience a different change in firm value in different states of the economy.*

Hypothesis 2: *Firms increasing the current cash dividend yield will experience a different change in firm value in different states of the economy.*

Along with dividend relevancy theories, an initiation or an increase of dividend payments provide a signal to the market and changes the cash in hand of managers. A change in dividend policy is

expected to be prolonged and firms able to create those expectations in bad economic circumstances signal to be a more safe investment. This hypothesis is in line with Salminen (2008) who found that during the recent financial crisis the value of the signal of dividends is larger than in a stable period, resulting in larger abnormal returns when the economy is doing badly. On the other hand, the value of the signal could be marginal in recessions since more important news can suppress the signal and the signal could be less plausible.

When the economy is doing well, more free cash flows are available for managers. This could lead to higher agency costs and more opportunities for managers to not act in the best interest of shareholders. Increasing the dividend in this case will lower the risk of managers extracting cash from the firm.

Along with the catering theory of dividends, managers initiating or increasing dividends cater investors, which are looking more for dividend-paying stocks since they outperform non dividend-paying stocks in bad economic circumstances (Williams and Miller, 2013) and since these stocks provide a certain cash flow.

Hypothesis 3: *Firms omitting a regular cash dividend payment will experience a different change in firm value in different states of the economy.*

Hypothesis 4: *Firms decreasing the current cash dividend yield will experience a different change in firm value in different states of the economy.*

The value of the signal of the dividend is marginal in bad economic circumstances, since investors may be more lenient towards a (temporary) decrease of dividends as managers may need to hold extra cash as reserve due to the potential higher risk of financial distress. As the paper of Campello et al. (2011) suggests, firms have to deal more with the decision whether to save or to invest when access to credit lines is limited. They found that, especially when firms already planned to save some cash, investments are sharply cut. When investors are more accommodating managers in these circumstances the negative abnormal returns in bad states of the economy will be lower compared to good states of the economy.

It could also be the case that investors react more heavily on a change in dividend policy when the economy is doing badly. Dividends are perceived as persistent and prolonged by investors and therefore a negative change in policy is perceived as an unwanted occurrence by the investor.

Especially in a recession or in a bad economic state investors are looking for credible, safe firms and specific information that provides some information to forecast the firm's future earnings. Lowering or omitting the dividend payment by a company could be such information, which results in larger negative abnormal returns than in better phases of the economy. Along with the catering theory, the dividend-omitting firm will lose the premium that investors are willing to pay for firms paying dividends in recessions, which will also result in larger negative abnormal returns in bad states of the economy. This hypothesis is along with the result of Wann and Lobo (2009) who found that during recessions negative abnormal returns are larger for dividend decreasing firms.

4. Data

This thesis will focus on the potential different reactions of investors to changes in dividend policy during different phases of the economy. Previous studies focus mainly on one period of growth and one period of recession. This study is amongst the first to comprise a dataset with different periods of recession and growth.

4.1 Time period

When trying to find a relation between dividend announcements and phases of the economy it is important to have a sample where the economy is in recession, stable or in growth in different time periods. To not let the data be influenced by the Tax Reform Act (TRA) of 1986, the sample starts from 1989 and ends in 2013. In this reform the marginal top tax rate was lowered from 50% to 28%, aligning the tax rate of dividends with the tax rate of capital gains. Several papers concluded that managers setting the dividend policy take tax preferences of their investors into account (Papaioannou and Savarese, 1994), this was concluded by the observed change in dividend payout ratios by companies after the TRA. To not let the data be influenced by the immediate impact of the TRA and the trend following the TRA, the sample starts from 1989.

4.2 Sample selection

To collect all distribution information and information concerning returns of stocks The Center for Research in Security Prices (CRSP) database was used. This database includes a daily stock file for all firms on the New York Stock Exchange. This file contains end-of-day prices and comprehensive information concerning distributions. This study contains only information concerning ordinary common shares and therefore excluding among others, closed-end funds and units. Also American Depository Receipts and other foreign companies were excluded as in Michaely et al. (1995), since it might be difficult to check for regularity or periodicity of payments due to payment conventions in other countries. By using this database information was retrieved from 4857 firms listed on the New York Stock Exchange since 1989, creating a database with approximately 12.5 million daily observations. Among the 4857 listed firms, 3718 distributed at least once a dividend to their shareholders between 1989 and 2013. In total there were around 167.000 dividend payments in this time period. This study will only focus on cash dividend payments because they can be checked for regularity and periodicity (section 2.1.4). The dataset used in this research comprises around 157.000 cash dividend payments by 3262 different firms.

4.3 State of the economy

This research will compare reactions, in terms of abnormal returns, of investors to a change in cash dividend policy in different states of the economy. The measure of the state of the economy is the growth of the Gross Domestic Product (GDP) in the United States. GDP is a measure of the market value of all final goods produced and services provided to customers. This measure indicates the economic health of the country and is a criterion of a country's standard of living. Growth of the GDP indicates that the economy is becoming healthier and that the standard of living enhances. The quarterly growth rates of the GDP from 1989 to 2013 were retrieved from the Bureau of Economic Analysis website.

4.4 Defining events

The event of interest in this study is the change in a firm's policy concerning cash dividends. This change in policy can be defined in three ways. First, it could be that a firm never pays dividend or hasn't done so for some time and it initiates a dividend payment. Second, the opposite is also possible, where a firm pays regular dividends for some time, but suddenly omits the dividend

payment. Third, a firm can also pay the same amount of dividend in consecutive periods, but changes (either positively or negatively) the cash amount of dividend.

4.4.1 Dividend initiation

For all dividend payments in the database it was checked if the firm paid dividend before. A dividend initiation is only considered if the firm pays dividend for the first time and if it was listed on the New York Stock Exchange for more than a year already. By considering this condition all dividend-initiating firms have a period before the actual event in which performance of the security can be observed in absence of the dividend initiation. When this condition would not be considered it could also be that a firm was listed on another exchange and switched their listings to the New York Stock Exchange while paying dividends for a longer period.

A second way of initiating a dividend is when the dividend-paying firm did not pay dividend for more than a year and a quarter and starts paying a dividend over again. This period is chosen to make sure that firms paying yearly dividends are not yearly defined as a dividend-initiating firm.

In both cases the dividend initiation is only considered when the declaration date of the dividend is available. The efficient market hypotheses states that information is incorporated in the market as soon as it is perceived. To observe the investor's reaction on the initiation the period surrounding the declaration date has to be examined.

4.4.2 Dividend omission

A dividend omission is more difficult to define. Where dividend payments are all recorded in the daily stock file from CRSP, a dividend omission event is not recorded in such a database. A dividend omission is considered when a firm paid a cash dividend three times in a row and does not pay dividend in the following two periods. The length of the following two periods depends on the interval of the dividend payments, which could either be quarterly, semi-annually or annually.

As mentioned in the dividend initiation part, it is the stock movement around the declaration date that contains the perception of the event by the market. Where declaration dates are available in the CRSP database for dividend payments, there are no such dates for dividend omissions since there is nothing to declare. Therefore, the 'declaration date' has to be estimated. Most of the time, regular cash dividend payments are announced around the same day of the month as in the periods

before. When nothing is declared in the following period around the expected dividend declaration date, the market will perceive a dividend omission. Therefore the declaration date will be determined by looking at the last dividend declaration date before the omission and adding one period, depending on the interval of dividend payments (quarterly, semi-annually, and annually). In case the estimation of the declaration date involves a day during the weekend, the closest weekday will be used.

4.4.3 Change in the current dividend yield

A final way to change the firm's policy concerning dividends is by changing the cash amount distributed to the shareholders. This event is considered when a firm paid three similar dividends in a row and changed the amount paid by more than 10% in the following period, to only include changes that are significant enough to influence the behavior of investors.

For all three definitions of the event applies: when the announcement of interest is accompanied by other announcement of distributions the data will be biased. Therefore changes in dividend policy are only included in this research when no other distribution announcements such as stock dividends, stock splits or special dividends were made in the 60 days surrounding the announcement of interest.

5. Methodology

To determine the difference in reactions of investors in different states of the economy to a change in dividend policy, an event study will be conducted. The event study methodology is often used to measure the impact and implications of major decisions and events on firm value. These decisions can for example be mergers, acquisitions, earnings announcements as well as dividend announcements.

An event study involves several steps, of which defining the event of interest is the first. The event of interest is the announcement day of the change in the dividend policy since this is the day the market perceives the new information and potentially adjusts their opinion concerning firm value using this information. The effect of a change in dividend policy can only be examined if the market did not expect the change. Expected changes are already perceived by the market and these implications will differ from the unexpected changes. As shown before in the literature review

section, shareholders expect dividends to be persistent and rely on this piece of information. A description of the events of interest has been discussed in the data section of this paper.

To determine the impact of a dividend policy change, the abnormal returns surrounding the announcement date have to be determined. The abnormal return is the difference in the actual return in presence of the dividend announcement minus the expected return of the company when the company's management would have decided not to announce a change in dividend policy, hereafter referred to as *normal return*. Obviously the normal return cannot be observed and must be predicted. To calculate the normal return it has to be assumed that stock returns are predictable, where in reality this is not the case.

The determination of the normal return must be done along with a proper model. The model that will be used in this paper is the three-factor model by Fama and French (1993). This model is an extension of the well-known Capital Asset Pricing Model (Sharpe, 1964), which predicts stock returns solely on one risk factor: the past sensitivity of the individual stock return to the market excess return. The three-factor model adds two additional risk factors to predict stock returns: size and book-to-market ratio. Fama and French (1993) concluded that small firms tend to be more risky investments since it is often harder for these companies to attract funding compared to big firms and small firms tend to be more in volatile businesses. Value firms, firms with a high book-to-market ratio, are also more risky according to Fama and French (1993) due to more distress risk. The three-factor model tries to predict a company's expected return based on its sensitivity to the excess return of the market, its sensitivity to the excess returns of small capitalization stocks over big capitalization stocks and its sensitivity to the excess returns of value stocks over growth stocks.

In a function this would yield the following:

$$R_{it} - rf_t = \alpha + \beta_1(R_{mt} - rf_t) + \beta_2 * SMB_t + \beta_3 * HML_t + \varepsilon_t$$

Where:

R_{it} = Return of company i
rf_t = Risk-free rate
α = Active return (Portfolio actual return – benchmark actual return)
β_i = Coefficients determined by Ordinary Least Squares regression

$R_{mt} - rf_t$ = Excess market return

SMB = Additional return historically received by investing in small company stocks (Small-minus-Big)

HML = Additional return historically received by investing in companies with high book-to-market ratios

Using this model and formula the excess returns of stocks can be estimated on the basis of three variables: excess market return, SMB and HML. All of these input variables are available on the website of one of the founders of three-factor model, Kenneth R. French. This website contains daily values of these variables. After retrieving all data from the website, the coefficients can be estimated in a defined estimation window. The estimation window is a period preceding the event and is clear of other events. The event window starts one year before the actual event and ends half a year before the actual event, so the coefficients will be based on 126 trading day returns. In this period the values of the three variables will be regressed on the stock's excess return. The excess return is defined as the daily stock return minus the risk free rate. The one-year risk free rate was also retrieved from French's website for each day of the sample period and converted to a one-day risk free rate.

When regressing the excess return on the factors of the three-factor model, the 4 coefficients were determined. Using these coefficients, the abnormal returns surrounding the event period can be calculated.

$$Abnormal\ return_{it} = Excess\ return_{it} - (\ \alpha + \beta_{i1}(R_{mt} - rf_t) + \beta_{i2} * SMB_t + \beta_{i3} * HML_t\ )$$

The efficient market hypothesis states that information is incorporated into stock prices as soon as it is available to the market. Earlier empirical results show that information is already incorporated before the announcement of the event (inside information), but also after the event. Therefore abnormal returns will be calculated for each event day in the sample, but also for several days surrounding the event day. In this way a matrix is obtained with all abnormal returns for each event for several days. Each column represents the cross-section of abnormal returns on a specific day and each row is a time-series of abnormal returns for a specific event.

$$\begin{pmatrix} Abnormal\ return_{1,t-10} & \cdots & Abnormal\ return_{N,t-10} \\ \vdots & \cdots & \vdots \\ Abnormal\ return_{1,t} & \cdots & Abnormal\ return_{N,t} \\ \vdots & \cdots & \vdots \\ Abnormal\ return_{1,t+10} & \cdots & Abnormal\ return_{N,t+10} \end{pmatrix}$$

Where:

N = number of events

T = Event day

After obtaining the abnormal returns in presence of the events, the stock price changes surrounding the event can be examined. This can either be done separately for each event or on aggregate, where all events are included. Statistically the former is not very informative, therefore the event study methodology uses the event information in the aggregate by averaging the abnormal returns over the number of firms in the sample. The cross-sectional average of abnormal returns on a specific day is than obtained:

$$Average\ Abnormal\ Return\ (AAR)_t = \frac{1}{N}\sum_{i=1}^{N} Abnormal\ return_{it}$$

After averaging the abnormal returns across all events the average effect of the event is determined. By using the abnormal return instead of the excess return a first attempt was done to eliminate other information affecting the stock returns. By subsequently averaging the abnormal returns all other information unrelated to the event should cancel out on average. As soon as the average abnormal returns for each day involving the event are determined, the averages can be accumulated to obtain the cumulative average abnormal return.

$$Cumulative\ Average\ Abnormal\ Return\ (CAAR) = \sum_{T1}^{T2} Average\ Abnormal\ return_t$$

To determine the potential different reactions of investors to a change in dividend policy in different states of the economy, the CAAR will be linked to the quarterly growth in Gross Domestic Product (GDP). The quarterly growth rates of the GDP are linked to the declaration date of the event. The preceding two quarterly growth rates and the current quarter growth rates are added together since information about the current quarter is not always incorporated immediately and using only one quarter does not give a proper representation of the state of the economy.

6. Results

This study examines whether investors react differently to a change in dividend policy in different states of the economy. Firstly, it will be examined if the data found independent of the state of the economy reflects those of previous studies. Secondly, different states of the economy will be examined. The findings will be explained in light of the several discussed dividend theories.

6.1 Dividend announcement effects

In the sample period of 1989 to 2013 many more dividend increases occurred compared to dividend decreases, 4399 and 787 respectively. This difference is in line with Wann and Lobo (2009) and Below and Johnson (1996). Besides, dividend payments were initiated almost twice as much as omitted. As shown in the literature review section many studies found a positive abnormal return surrounding the announcement day of a dividend increase or initiation and a negative abnormal return surrounding the announcement day of a dividend decrease or omission (i.e.: Pettit, 1972; Michaely et al., 1995). The negative effect is often found to be larger than the positive effect (i.e.: Michaely et al., 1995; Van Eaton, 1999). The same results were found with the data collected in this study as shown in the graphs below.

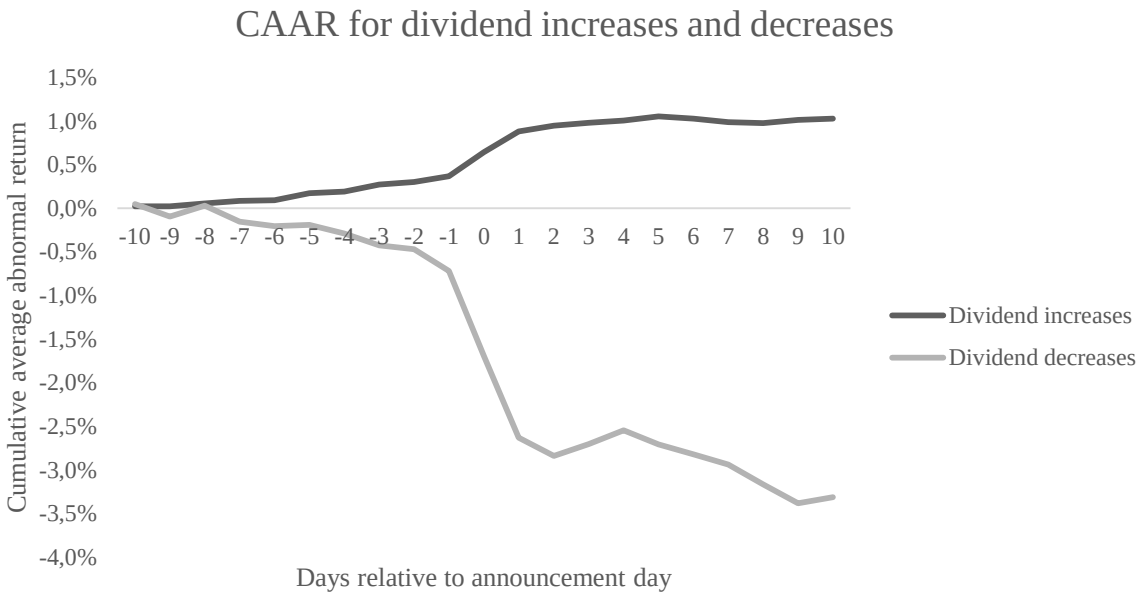

Figure 1: Cumulative average abnormal returns of dividend increases and decreases for ten days surrounding the announcement day of the dividend change.

	n	CAAR	T value
Dividend increase (-10, 10)	4399	1,03%	7,9433 ***
Dividend increase (-1, 1)	4399	0,58%	10,1591 ***
Dividend decrease (-10, 10)	787	-3,31%	-5,4661 ***
Dividend decrease (-1, 1)	787	-2,16%	-6,2123 ***

*Table 1: Descriptive statistics for total sample of dividend increases and decreases. The t-statistic was calculated by testing the CAAR to be significant different from zero. ***, ** and * significant at the 1%, 5% and 10% level respectively.*

The t-values were calculated to test if the cumulative average abnormal returns are statistically different from zero. All values are statistically significant at the 1% level and the signs are also in line with the literature, a positive sign for dividend increases and a negative sign for dividend decreases.

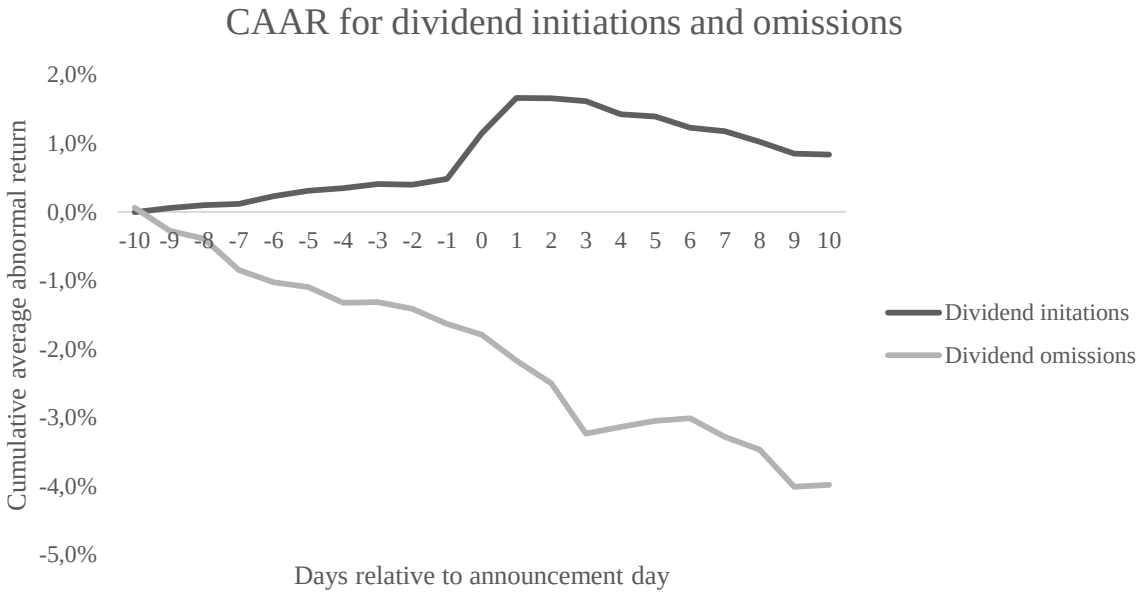

Figure 2: Cumulative average abnormal returns of dividend initiations and omissions for ten days surrounding the announcement day of the dividend change.

In the figure above, the cumulative average abnormal return for dividend initiations shows the same trend as in Uddin (2003) who also observed a large positive effect surrounding the announcement day followed by a decreasing line afterwards.

	n	CAAR	T value
Dividend initiation (-10, 10)	863	0,83%	1,9283 *
Dividend initiation (-1, 1)	863	1,27%	6,7353 ***
Dividend omission (-10, 10)	478	-3,98%	-3,2113 ***
Dividend omission (-1, 1)	478	-0,76%	-1,358

*Table 2: Descriptive statistics for total sample of dividend initiations and omissions. The t-statistic was calculated by testing the CAAR to be significant different from zero. ***, ** and * significant at the 1%, 5% and 10% level respectively.*

The only insignificant value in the two tables for a change in dividend policy is observed by the dividend omission with one day surrounding the announcement day. It seems reasonable that this is due to the fact that the announcement day for dividend omissions had to be estimated and therefore the true announcement day could deviate some days from the estimated announcement day.

6.2 Univariate analysis

Until now it was assumed that all abnormal returns are identically distributed. This assumption and the assumption that there is cross-sectional homoscedasticity (variance of all abnormal returns are equal) is often too strong and not likely to be true as some stocks are more volatile than others. Therefore the technique of standardization will be applied in the following sections. A weighted average of abnormal returns will be used that puts a lower weight on abnormal returns with a high variance. The technique that is used the most is the time-series estimate of the standard deviation of the abnormal returns.

First the time series standard deviation for each firm i in the estimation window (T_1-$T_{2)}$ have to be determined:

$$s_i = \sqrt{\frac{1}{T_2 - T_1} \sum_{t=T_1}^{T_2} Abnormal\ Return_{it}^2}$$

After obtaining the time series standard deviation for each firm, all standardized abnormal returns can be defined by dividing all abnormal returns by the newly obtained standard deviations.

$$SAR_{it} = \frac{AR_{it}}{s_i}$$

The average standardized abnormal returns can be obtained by dividing by the number of observations:$ASAR_t = \frac{1}{N}\sum_{i=1}^{N} SAR_{it}$

Therefrom follows the cumulative average standardized abnormal return (CASAR) by adding all average standardized abnormal returns in the event period (t_1-t_2):

$$CASAR = \sum_{t_1}^{t_2} ASAR_t$$

While this study aims to find a relationship between the state of the economy and the reaction of investors on a change in dividend policy the sample will first be divided into three subsamples. The observations are distributed over terciles according to the growth rates of the quarter of the announcement of the dividend change and the two preceding quarters.

	Dividend increases			**Dividend decreases**		
Tercile	1	2	3	1	2	3
Observations	1477	1505	1417	269	260	258
CASAR	0,2906	0,5798	0,6928	-1,4787	-2,8226	-2,1430
T-value	2,0006**	4,1263***	5,0922***	-2,0827**	-4,9775***	-4,6948***

*Table 3: Descriptive statistics for terciles, based on growth in GDP, of dividend increases and decreases. The t-statistic was calculated by testing the CASAR to be significant different from zero. ***, ** and * significant at the 1%, 5% and 10% level respectively.*

When observing the CASAR in the different terciles it can be observed that in case of dividend increases the CASAR increases when shifting to a better state of the economy. In case of dividend decreases the CASAR has a negative spike at the second tercile and also a lower CASAR in the third tercile, which represents the 33% best states of the economy, compared to the first tercile, which represents the 33% worst states of the economy.

	Dividend initiations			Dividend omissions		
Tercile	1	2	3	1	2	3
Observations	289	296	278	162	157	159
CASAR	-0,0197	1,1246	0,6451	0,0108	-2,2688	-2,3080
T-value	-0,0621	3,4678***	1,9956**	0,0098	-2,3863**	-3,0577***

*Table 4: Descriptive statistics for terciles, based on growth in GDP, of dividend initiations and omissions. The t-statistic was calculated by testing the CASAR to be significant different from zero. ***, ** and * significant at the 1%, 5% and 10% level respectively.*

Table 4 for dividend initiations and omissions shows an aberrant result. While in the dividend increases and decreases table the CASARs in all terciles were statistically significant, they are not when dividing the dividend initiations and omission samples into terciles. In both cases the value of the t-statistic in the first tercile is far from statistically significant. This would indicate that investors do not react on the news that firms are initiating or omitting dividends in the worst states of the economy. When both tables are compared it also follows that in case of dividend increases and decreases the CASAR in the first terciles are relatively much lower than in the following terciles, also indicating that investors react softer to an increase or decrease of dividends in terms of fluctuations in abnormal returns.

By running an Analysis of Variance (ANOVA) test it can be examined if the values of the CASAR in the different terciles differ significantly from each other. This type of test compares the variance between the terciles with the variance within the terciles, resulting in an F-value.

	F-Value	P-value
Dividend increases	2,16	0,1159
Dividend decreases	1,3	0,2722
Dividend initiations	3,24	0,0396**
Dividend omissions	1,97	0,1405

*Table 5: Results from testing the terciles to have a different CASAR by running an ANOVA test. ***, ** and * significant at the 1%, 5% and 10% level respectively.*

By examining Table 5 it seems that in all four groups there are some differences between terciles. Although the test of differences in groups is only statistically significant for dividend initiations (5% level), the other results also suggest some differences indicated by an F-value above 1.

6.3 Multivariate analysis

A shortcoming of the above method of analyzing the different terciles is the lack of control for factors that co-influence the abnormal return for a change in dividend policy. A regression model is able to control for other factors. Below and Johnson (1996) created a regression model which controls for the percentage change in yield, beta, residual variance, firm size and state of the economy. These control variables are also in line with the determinants found by Jin (2000). As in Farooq et al. (2012) in all regressions is controlled for industry, represented by its 3-digit SIC-code.

The percentage change in dividend payout is the relative change in the dollar value of the dividend. This value can only be determined for dividend increases and decreases, since in case of dividend initiations no prior yield exists and in case of dividend omissions this change would be 100% in all cases. For the latter two instances the dividend yield will be used, which can be obtained by dividing the dollar value of dividend by the market value of one share. For dividend omissions the last known dividend yield will be used as a control factor. A larger change in the dividend yield is expected to be associated with a larger abnormal return since a larger signal to the market is conveyed in the change in dividend policy (Asquith & Mullins, 1986; Ghosh & Woolridge, 1988).

Smaller firms are less followed by market analysts (Bhushan, 1989), therefore a change in dividend policy often comes more as a surprise for investors of small companies than for larger companies on which more information is available. Therefore it is expected that small firms have larger positive or negative abnormal returns. The size of the firm is determined by multiplying the amount of shares outstanding on the announcement day times the market value of one share on the same day.

Beta and residual variance are two factors related to risk, but have different purposes in the regression model. Beta is the degree to which the firm's returns are related to the market's returns. Below and Johnson (1996) argue that high beta stocks are often stocks with high expectations about future cash flows. A decrease or omission of dividends could be a valuable signal to the market that these expectations may be ungrounded. An increase or initiation of a dividend only provides a small piece of information since expectations are already high for high beta stocks. The residual variance on the other hand is associated with the uncertainty of future earnings (Grinblatt, Masulis and Titman, 1984). When residual variance is high, the earnings are also very variable

and hard to predict. In this case, changes in dividend policy may be more expected by investors and therefore less information is conveyed for these firms in the policy change.

The growth in GDP in the quarter of the announcement and the growth rates in the two preceding quarters are used as a proxy for the state of the economy in the regression model.

6.3.1 Short run performance

Table 6 shows the results of a regression with the ten day CASAR as dependent variable. Concluding from the regression table it seems that only a change in dividend yield (a decrease or an increase) has a different impact on firm value in different states of the economy. The decision to initiate or omit a dividend does not have to be influenced by the state of the economy since this does not provide a significantly different change in firm value in the short run, even after controlling for several factors. For the short run, only hypotheses 2 and 4 are supported.

Firms increasing their dividend will on average experience a larger increase in firm value when the economy is growing, resulting from the positive and significant 'Growth in GDP'-coefficient in the dividend increases regression. By increasing the dividend yield in times of economic growth firms can signal that after fully exploiting growth opportunities there is still some cash left to distribute otherwise. As Arnott and Asness (2003) show in their paper, higher dividends indicate higher future earnings growth. The value of the signal of the dividend is more valuable in times of economic growth than in recession since other news will suppress this signal and the signal seems less plausible. The same regression supports the agency and free cash flow hypotheses: in better economic states more free cash flows are available to waste, an increase in the dividend payment lowers the potential waste. The catering theory is not supported by this result since this theory suggests that investors are willing to pay a premium for dividends in times of economic downstate.

The positive and significant coefficient for 'Growth in GDP' in the dividend decrease regression shows a different result than the result found in table 1. While in table 1 a shift to a better economic state resulted in a lower CASAR, the regression coefficients show the opposite result in line with the dividend relevancy theories. Investors are looking for more credible and safe firms in times of economic uncertainty, lowering dividends can make investors mistrustful. The result is also along with the catering theory since firms (partly) lose the premium that investors are willing to pay for dividend-paying stocks in times of economic uncertainty.

	Estimated coefficients (t-statistic)					
	Intercept	*Growth in GDP*	*Size*	*Yield*	*Residual variance*	*Beta*
Dividend increases	1,8557	12,5743*	-0,0657	-0,0038	16,4191**	-42,5055**
	(1,33)	(1,75)	(-1,10)	(-0,04)	(1,99)	(-2,38)
Dividend decreases	-17.8352***	37,0575*	0,6626**	-0,3645	139,8807***	53,7429
	(-2,72)	(1,95)	(2,47)	(-0,45)	(2,95)	(0,63)
Dividend initiations	2,2970	6,7554	-0,l595	-0,4412	3,8292	-88,7419
	(0,70)	(0,35)	(-1,00)	(-2,83)	(0,56)	(-2,15)
Dividend omissions	-28,5247***	-36,2005	1,1441**	-1,3678*	-7,4525	-77,6853
	(-3,10)	(-1,09)	(2,32)	(-1,83)	(-0,14)	(-0,70)

*Table 6: Ordinary least square regression for all four types of dividend policy changes. Dependent variable is the ten day CASAR. In all regressions is controlled for industry, based on the 3-digit SIC-code. ***, ** and * significant at the 1%, 5% and 10% level respectively.*

6.3.2 Long run performance

In Table 7 the results can be found from a buy-and-hold strategy of stocks changing their dividend policy. The dependent variable is the standardized one-year buy-and-hold return (capital gain and dividend yield) for stocks changing their dividend policy. The return is based on holding the stock from the announcement day of the dividend policy change. The 'Growth in GDP' variable is statistically significant at the 1%-level in all groups except the initiations group, which is statistically significant at the 5%-level. The long run results support the four hypotheses.

Firms increasing their dividend or initiating a dividend payment will on average experience a higher abnormal return in the one year following the change in policy when the economy is in growth than when it is in recession. This result remains the same as the short run performance and supports the same theories as documented in the short run section. For dividend decreases the 'Growth in GDP'-sign changed from positive in the short run to negative in the long run. The sign is the same as for the dividend omission sample. The significant and negative result indicates that firms decreasing or omitting their dividend payout experience higher negative abnormal returns in the long run when the economy is doing well than when the economy is doing bad. The value of the signal of dividends is marginal in bad economic circumstances since investors may expect the dividends to decrease due to the increased distress risk and the decreased earnings. When firms are not able to hold to their dividend policy in advanced markets the value of the signal is large and investors react more heavily to a change in dividend policy.

A suggestion for the switch in sign for dividend decreases can be found in a paper by Ghosh and Woolridge (1989). They found that growth-induced dividend cuts are as bad as earnings-induced dividend cuts in the short run, but stocks cutting their dividends due to growth opportunities outperform the market in the long run. The same result can be found in this study where in the short run dividend cuts evoke lower abnormal returns in bad economic states, but larger abnormal returns in the long run. When the economy shifts to a temporary downstate firms might have to cut their dividend payments to hold on to their growth objectives, since free cash flows could temporarily fall short. By doing so, firms might assure the achievement of their growth targets and benefit from this in the long run. Holding on to the dividend policy will in the short run be advantageous for firm value, but when growth targets will therefore not be met, firms will destroy value in the long run.

	Estimated coefficients (t-statistic)					
	Intercept	*Growth in GDP*	*Size*	*Yield*	*Residual variance*	*Beta*
Dividend increases	-0.9124***	4.7087***	-0.0220**	-0,0147	28.7955***	-10.0800***
	(-3.65)	(3.65)	(2.06)	(-0,87)	(19.49)	(-3.15)
Dividend decreases	1.4056**	-6.8844***	-0.0792 ***	-0,0761	5.8967	-14.6170*
	(2.17)	(-3.68)	(-2.98)	(0.97)	(1.26)	(-1.73)
Dividend initiations	1.19229***	9.0254**	-0.0856***	0.0512*	-2.6230**	-3.5598
	(3.22)	(2.54)	(-2.93)	(1.76)	(-2.09)	(-0.47)
Dividend omissions	-0.1209	-6.0306***	0.0126	0.0527	7.5206**	-2.9396
	(-0.19)	(-2.68)	(0.38)	(1.04)	(2.06)	(-0,39)

*Table 6: Ordinary least square regression for all four types of dividend policy changes. Dependent variable is the standardized one-year buy-and-hold return. In all regressions is controlled for industry, based on the 3-digit SIC-code. ***, ** and * significant at the 1%, 5% and 10% level respectively.*

6.4 Robustness

Since stocks are known to be unpredictable, the estimation of the normal return is done as accurately as possible. While several methodologies are widely accepted for this purpose, this study applies the three-factor model of Fama and French (1993) as a benchmark, rather than the mean-adjusted return methodology, the market adjusted-return methodology, the market model residuals and Capital Asset Pricing Model methodologies. The three-factor model is used since it currently is the most comprehensive model and determines the normal return based on several factors instead of one (CAPM). As one of the factors in this model is the sensitivity to the market return, the business cycle wave is also incorporated in the determination of the long run performance as this could be of a major influence in the development of the stock prices. After the contraction phase in the business cycle usually follows the expansion phase, this phase usually moves stock prices up, creating a bias in the data of firms that changed their dividend policy in times of contraction. The three-factor model is robust against this bias.

One major concern to reject the null hypothesis unbiasedly is that the data is homoscedastic. When the data is not homoscedastic the estimate of the standard error will not be determined correctly, which would result in an unjustified rejection of the null hypothesis. To test for heteroscedasticity, the residuals of all observations are estimated and presented in a plot along with a regression line. The results are shown in Appendix A. The regression line is an almost flat line in all cases indicating homoscedasticity.

The several statistical tests used in this study assume that all variables are drawn from a normal distribution. This can be assumed based on the central limit theorem, which states that when the sample size is large enough, the sample follows an approximate normal distribution pattern. The samples used in this study are large enough to accept the central limit theorem.

7. Conclusions and discussion

This study examined the different reactions of investors in terms of abnormal returns to a change in dividend policy in different states of the economy. The results are obtained by linking the gathered data to the known dividend relevance theories such as signaling, agency and catering theory.

Although many studies aim to find a relationship between dividend announcements and firm value, not many studies examined the link between the state of the economy and the fluctuation in firm value after a change in dividend policy. This study has examined the impact of the growth in GDP on the abnormal returns of firms changing their dividend policy. The results indicate that there is a short run difference in reactions by investors in different states of the economy. This difference is only found to be statistically significant for dividend increases and dividend decreases, supporting hypothesis 2 and 4. The larger the growth in GDP, the larger the abnormal return on average will be for these events. It seems that the value of the dividend increases are more valuable and plausible when the economy is in growth, where the signal is less suppressed by other news as in recessions. Dividend increases also provide managers with less cash in hand, where especially in advancing markets this can be a concern. In the short run investors will move away from stocks lowering their dividend yield in times of recession since investors are mainly looking for more credible and safe firms. While the result of the dividend decreases regression is in line with Below and Johnson (1996) and Wann and Lobo (2009), the result of the dividend increases regression is not. The findings of these papers suggest that dividend increases evoke higher abnormal returns when the economy is doing badly. This contrast may be caused by the different definitions of the short run (respectively 2 days and 1 day) and the state of the economy (only recessions and non-recessions are taken into account).

In the long run regression, the 'Growth in GDP' variable is significant for all four types of dividend policy change, supporting the four hypotheses. The dividend initiation sample is in line with the dividend increases sample and the sign remains the same as in the short run regression. In the long run the dividend omission and dividend decreases sample have the same sign and almost equal coefficients. The sign for dividend decreases changed from positive in the short run to negative in the short run, indicating that dividend decreases/omissions in recessions have lower abnormal returns than decreases/omissions in economic growth. An explanation for this switch of sign follows from a paper by Ghosh and Woolridge (1989). In recession the free cash flows may fall short to fully maintain the firm's goals when the firm holds on to their dividend policy. In the short run the decrease or omission of dividends will be disapproved, but in the long run the firm benefits from this change due to an increased likelihood of meeting the firm's targets.

7.2 Relevance

This study linked the state of the economy to the abnormal returns surrounding dividend policy changes. Earlier studies only made a distinction between recessions and non-recessions and solely investigated the short run implications. This study provides new information concerning the short run implications of dividend policy changes in different states of the economy. This study also contributes by investigating the long run implications of a dividend policy change rather than just the short run implications.

The results have implications for both managers and investors. The result of the survey held by Baker and Powell (1999) implicates that managers are convinced that dividend policy affects firm value. The empirical results support the managers' thoughts about the relation of dividend policy and firm value (i.e.: Michaely et al., 1995; Jin, 2000). Therefore managers shun dividend decreases or omissions and carefully propose dividend initiations and increases. The results found in this study can contribute to the decision-making process concerning changes in dividend policy.

Managers mostly use dividends for several purposes such as to reduce agency cost and to convey inside information to the market. After reading this study, managers should keep in mind that the desired result of the distribution of cash to the shareholders is not the same in different states of the economy. As shown in the univariate analysis, when the economy is doing badly investors react barely to the news that dividends are initiated or omitted. In advancing economies the reactions to changes in dividends are relatively large.

For example one of the implications of the results is that in recessions, when revenues fall short, financial managers could prefer to decrease or omit dividends to increase liquidity but fear the implications for firm value. Although this will evoke negative abnormal returns in the short run, there's a larger likelihood that firm's targets can be met in the long run which will cause firm value to increase in the long run.

Another result for managers is that in case they want to send a signal to the market by initiating or increasing the dividend they might be better off doing this when the economy is in growth since the signal will be less suppressed by negative news as is the case in recessions. Also in better states of the economy agency costs are more of a concern. Increasing the dividend or initiating a dividend will reduce these costs.

For investors the results of this study can be used for portfolio management purposes. Firms increasing or initiating a dividend on average will have larger abnormal returns in the short and long run when the economy is in growth compared to recession. A decrease or omission of dividends will in the long run be incorporated in the share price more heavily when the economy is in growth. For example, by applying a buy-and-hold strategy for shares from firms decreasing their dividend when economic conditions are bad, investors will on average make a long run gain. The results also imply that when firms omit or decrease dividends when economic conditions are good, investors would be better off dropping these shares since the these stocks do on average not recover in the long run.

7.3 Limitations and further research

The determination of the abnormal return is extremely sensitive to the accuracy of the announcement day since the cumulative average abnormal return is determined by looking at the ten days preceding the announcement and the ten days following the announcement. For three of the four groups in this study this announcement date can be determined precisely, but it has to be estimated for the dividend omission group. This estimation procedure can cause some bias in the results. By using a ten day window, as in this study, instead of most studies' one day window this potential bias will be limited. The largest and most significant abnormal returns are found in the days closest to the announcement date. While using a large event window the probability of the presence of the announcement day in the window is high, limiting the bias.

It could be interesting to involve earnings announcements in future research concerning this topic. Earnings and dividends are often announced simultaneously making it hard to distinguish the individual effects of these two announcements. When including earnings announcements the most challenging task will be to determine the expected earnings. This result can be used to obtain the unexpected change in earnings and the individual effect of this change, but also the contemporaneous effect with the dividend announcement. Different studies have shown that dividend changes have an effect on itself (Asquith and Mullins, 1983; Aharony and Swary, 1980). Besides this, an increase of dividends does not imply unexpectedly high earnings in subsequent periods (Benartzi, Michaely and Thaler, 1997). Although there is a strong correlation found between dividends changes and earnings, there is no evidence found for dividend changes resulting in higher earnings in the years after the dividend change.

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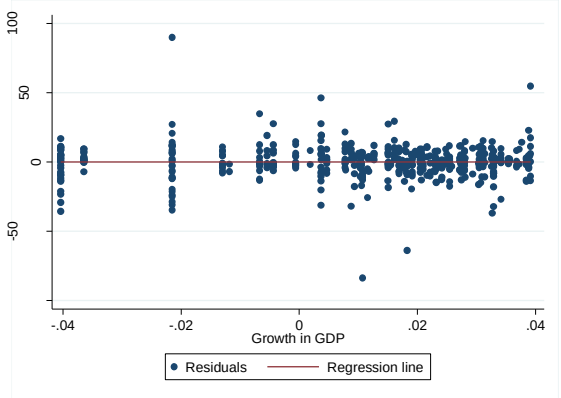
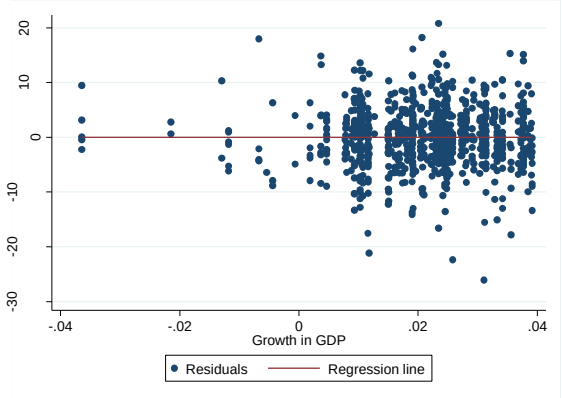
Appendix A

Dividend initiations



Dividend omissions



Dividend increases

Dividend decreases