Master Thesis

"Is a buyback program an effective instrument to create shareholder value?"

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Finish date: January 17, 2012
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Preface

The master's thesis "Is a buyback program an effective instrument to create shareholder value?" has been written to fulfill the requirements of the master's degree in Accounting, Auditing & Control. It is the final piece of my academic life and the next step is to start my career as a professional.

The first topic choice was to investigate the differences in performance between franchise and company stores. After a few conversations with companies, it became clear that companies would not release the essential data because the data was too sensitive.

In an attempt to find a new topic, I was guided by Professor De Groot who inspired me to write my master's thesis about share buybacks.

Finally, I would like to mention that I had a lot of support in writing my thesis from friends, family, and fellow students through their suggestions and criticism. In particular, I would like to acknowledge my supervisor E.A. de Groot for his extensive constructive criticism, my parents for making it possible for me to follow a study program at the Erasmus University Rotterdam, Miss J. Kruit for her efforts, and my girlfriend Anne for supporting me in tough times.

Delft, January 2012
Joost Hartholt

Abstract

Several studies have performed about repurchasing shares. The popularity of buybacks has been increasing since the 1970s. A part of the increase can be explained by the change of the reward and benefit system. Managers are rewarded with stock options; to cover the stock options the firms must have enough shares and repurchase shares. Another part can be explained by fiscal regulation. It is fiscally more interesting for shareholders to participate in a buyback than to receive dividends.

Many people exist who have criticism of buybacks. The main criticism is that a buyback creates no sustainable value. Results of prior studies show that the announcement of a buyback creates a positive, but temporary, effect in share price. The temporal effect is gone after thirty days.

In this research, several different variables and the impact of these variables on the share performance are examined. The buyback deals of listed DAX and Dow Jones firms, which took place between 2000 until 2010, are analyzed. The buyback size, motivation, and conjuncture are taken into account in relation to stock performance on abnormal returns in the end, from announcement date until completion date. No evidence is found that any of these variables has an impact on the share performance or abnormal returns. Further, the influence of the period on the companies' motivation is examined. In the different periods, no evidence is found of different patterns of motivation.

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1. Introduction

The thesis has been written to finish the master's degree in Accounting, Auditing, and Control. An element of this master's program is the course ´Seminar in Advanced Management Accounting´ taught by Professor de Groot. This course emphasizes the use of performance measurement, and during the course, this has aroused my curiosity. It is interesting to understand how to motivate everyone with the right incentives. That is why I have chosen to write my thesis on management accounting and in particular on performance management.

In the management accounting scene, performance measurement is a big issue. Performance measurement is a process of quantifying the efficiency and effectiveness of actions. Performance measures are used for quantifying actions. The performance measures can be defined as a metric used to quantify the efficiency and/or effectiveness of an action (Platts, 1995).

The central issue of this thesis will be the effectiveness of a share buyback program. What is the course of stock performance of firms that have had a stock buyback program? What in the short run and in the end is the impact on the share price of a firm that has had a buyback? Does it create value for the shareholders, either in the end or in the short run?

The thesis is structured in the following way: In the next paragraph, the research question is formulated. Additional followed with the motivations, the relevance, and the contribution to the existing studies. In chapter 3, a critical review of the literature is conducted: what has been written about the subject, what kind of buyback programs exist and what motivates management to set up a buyback program. This is followed by a discussion of the research design and hypothesis, and the research itself, conclusion, appendix and references.

1.1 Research question

This paper is the result of a study of the impact of the buyback program of shares by listed companies. Many firms have announced a buyback of shares with the intention of giving back value to the shareholders. The study tests the statement that a buyback creates value, and examines what an investor should do when a buyback program is announced.

The total value of a stock exchange quoted company can be divided in a value per share. If the firm has 1 million outstanding shares and the company is worth € 5 million, the value of each share is € 5.

Listed companies have outstanding shares that are traded on the stock exchange. When the management decides to use a buyback of shares, the number of outstanding shares will decrease. For example: the value of the total number of shares of a company is € 5 million. The total number of shares outstanding is 1,000,000, and the company decides to use a buyback. They pay for the shares and decrease the number of shares to, for example, 900,000. Because the value of the company is divided over fewer shares, the value of a single share should at least be the same. The value of one share of the company increases after the buyback:

€ 4.5 million divided by 900,000 shares = € 5.00. The increase in share value is caused by the EPS. Because the EPS rises if the profits are the same, since the profits are divided by fewer shares outstanding, the share should increase above € 5.00.

In this study the results of the buyback program of listed companies is examined. Are the results in line with the theory? Does it for shareholders create value, and what is the impact on the share price? Does it have an effect in the short run and/or long run? The central research questions in this study are:

"Is it financially interesting to participate in a buyback offer?"

"Is a buyback program an effective instrument to create shareholder value?"

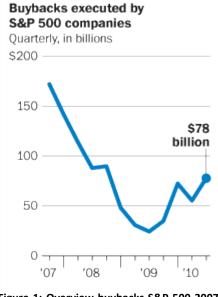(Pettit, 2001)

2. Motivation for research question

2.1 Relevance of the topic

On March 3, 2011, Ahold announced a buyback of shares for € 1 billion. The buyback program is expected to finish in 18 months. The purpose is to create value, but actually does it do this? IBM announced a huge buyback program in April 2011. The buyback plan of IBM covers the value of $ 50 billion until 2015.

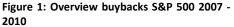Recently the buybacks of shares have become popular again. In the times of the financial crisis it was

Boosting shares

Firms are increasingly using their cash on hand to buy back shares of their own stock.

Buybacks executed by S&P 500 companies
Quarterly, in billions

less popular but a chart of the Washington Post shows the amounts of money that have been used for share buybacks over the last years. Before the financial crisis, it was above $ 150 billion a quarter and in the financial crisis, the amount decreased to fewer than $ 50 billion a quarter. In 2010 American companies bought shares back for $ 273 billion (Unknown, 2010).

The line in figure 1 is still going up in 2011. In January 2011 on the S&P 500 announcements exists of buybacks of $ 34 billion; in February announcements of $ 41 billion (Ogg, 2011). Companies are looking for ways to spend cash that they hold in uncertain times, as in the financial crisis. They are hesitant to invest, so they find a way to spend cash by using a buyback of shares to boost the share price (Yang, 2010).

Figure 1: Overview buybacks S&P 500 2007 - 2010

Because much money is spent on buybacks of shares by companies, people wonder why management is using buybacks. The opinion of stock guru Warren Buffet is that buybacks are a destruction of value. Companies buy shares back at too high share prices (Hoven, 2010). William Lazonick, a professor at the University of Massachusetts at Lowell, shares Buffet's opinion and communicates that is has no added value on the long-term (Yang, 2010).

It appears that the effect of a buyback is a short-term effect. Because buybacks happens regularly and people call it destruction of value, a waste of money, it is a relevant subject. Nevertheless, company managements keep announcing buybacks, consequently it is important to study whether it is interesting to participate in a buyback offer.

"What is the impact of a buyback on the stock price?"

Buybacks have become popular with publically listed companies. It is interesting to investigate what the managements' arguments are to repurchase shares. Another interesting element is to test the buybacks on different variables and check the influence of the variables. In chapter 3, the literature review about buybacks will present.

3. Literature review: buyback explained

In the literature review, the attention is on the background of buybacks. The information that is available in papers and in scientific articles is researched and used in this review. It presents an insight into managers' motivations for using a buyback and prior research.

3.1 Increasing popularity of buybacks.

Since 1970, the number of buybacks has increased over the years. Jolls researched the cause of this increasing popularity.

Jolls' explanation of this development is the change in the performance management and in the incentive plans. The reward for a part in options and shares since 1970 has been getting a more important role. The reasoning behind it is that the interests of the shareholder and managers are the same and that the managers act in the interest of the shareholders to maximize the shareholders' value. The stock option hypothesis could be an explanation for the increasing popularity. Firms in which managers are rewarded with stock options are more likely to take the decision to repurchase share than firms whose managers are not rewarded with stock options. This is one of Jolls' findings, but he in addition argues that if firms reward in stock options, they should repurchase shares to fund the reward system. If the managers desire to buy stocks, the firm must have shares to hand over (Jolls, 1998).

The opinion is that buybacks stay popular because stock options are a tool to motivate employees. If employees' interests are the same as the firm's, they will act in the firms' interest. The firms must have shares for their reward and compensation plan and this can be arranged with buybacks.

3.2 Types of buybacks of shares

Several ways exist to realize a buyback. These options are commented below. It is difficult to manage a buyback efficiently because the shareholders do not value their shares identically. A reason for a differing valuation of shares can be that the share was bought at different times and prices. The next possibilities exist, the fixed price tender offer, the Dutch auction tender offer, and the open market buyback. Each option has its own characteristics.

Targeted buyback

The targeted buyback is the planned number of shares that the firm wants to buyback.

Fixed price tender offer

To repurchase the shares the firm offers a fixed price for a fixed number of shares. The intended number of repurchased shares is called the target number of shares. If the tendered number of shares is larger than the target, the firm can choose how many shares it wants to repurchase. The success factor of the method depends upon choosing the appropriate offer. If the offer is too low, the buyback operation will fail because the tendered shares will be too low. If the price is set too high, the tendered amount of shares is too high and the firm buys only in proportion to each shareholder regardless the tendered price of the shareholder. The shareholders who value their share the lowest get some more and the people who value their share higher get some less. This has two big disadvantages. The first disadvantage is that is not efficient. The firm wants to pay as little as possible, but pays for some shares more than that is required. It is cost efficient to buy the tendered shares with the lowest price first before the firm starts with buying for higher prices. The second disadvantage is that the shareholder holds a fraction of the firm's stock. Especially when the firms needs the shares for a takeover and wants to reduce the number of shareholders, it is in their interest if the lowest reservation prices of the shareholders are bought out in total (Gay, Kale, & Noe, 1991).

Open market buyback

In an open market buyback, the firm can only buy 25% of the average trading day volume over the last four weeks a day. It takes a long time to repurchase all the shares. In a share buyback, huge amounts of shares are involved.

Dutch auction tender offer

The fundamental difference for the Dutch auction tender offer is that not one offer price exists. The Dutch auction uses a price range from which shares will be purchased. Shareholders are invited to tender their stock. If the price is stated within the price range, the firm gathers the response and creates a supply curve. The firm pays the lowest price for the desired amount of shares (Laurie Simon, 1992).

3.3 Reasons for management to use a buyback of shares

Buybacks are performing on a massive scale; however what behind them is the reasoning of management? The management teams have a purpose for using a buyback. To understand the purpose of a buyback, the various incentives for a buyback will be described.

Dittmar (2011) studied the reasons of management to undertake a buyback of shares. The study contains share buyback deals in the period 1977 – 1996. The study analyses the motives of

management. The results are that firms repurchase shares to take advantage of potential undervaluation, and another reason is to distribute excess capital without replacing dividend. To alter the leverage and as an anti-takeover mechanism in certain periods firms repurchase shares. Another reason for management to repurchase shares is to counter the dilution of stock options (Dittmar, 2000).

A more recent study in the UK exists about the motivations for a buyback. This study has published in 2008 and involved a survey of UK top 200 firms, which execute a share buyback. The study contains share buyback deals in UK from 1981, when it was legislated. The results show that the main motivation is to create the optimal capital structure (Dixon, Palmer, Stradling, & Woodhead, 2008). The researchers compared the results of the study, which also used the survey technique, with results from Wansley et al., who did similar research in the United States in 1989. The US study had as results that the main motivation of the management is undervaluation (Wansley, Lane, & Sarkar, 1989).

Motivation categories

Capital structure

A buyback can have as a purpose the creation of a more desirable capital structure. The share buyback influences the financial leverage. Firms with added debt capacity may repurchase shares in order to create a more desirable capital structure.

Anti-takeover mechanism

A buyback can be undertaken with a view to a defensive strategy. Managers are afraid that the firm is becoming a takeover candidate. To defend the company against the threat of a hostile takeover, the managers can decide to use a buyback. The threat can be dodged for the short term and the managers can focus on the long-term. To decrease the number of shares, fewer shares are available for takeover and the part of the major shareholder increases if he does not sell shares. Alternatively, the buyback can have as a purpose the decreasing of the liquidity and the increasing of the leverage. Studies exist that examine the impact of share buyback as a defense against a hostile takeover. Is it in the interest of the shareholder if management repurchases its own shares as a defense? The results of a study which examined 49 defensive buybacks of US companies in the period 1980 and 1987 are clear: the defense buyback of shares had a negative impact on the target companies (Ramsay, 2000).

Increasing earnings per share

Management can have the goal of increasing the earnings per share. Because the number of shares is reduced, the result can be divided over fewer shares. The EPS increases, and the increased earnings per share can make the stock attractive for shareholders (Ramsay, 2000). The study of Bens shows that a relationship exists between the growth rate of EPS and the repurchase of shares, if the growth of the earnings fell short. The diluted EPS is an incentive for executives to reach the necessary sustain growth rate in the EPS (Bens, Nagar, Skinner, & Wong, 2003).

Substitute for dividend

A motivation for managers to use a stock repurchase is to avoid the tax law dividend. If a firm pays out a dividend, 15% of the paid out dividend is taxed (in the Netherlands). The tax rate on capital gains is lower than the tax rate on dividend. If stocks are sell, less capital tax need to pay and some money is save. Share buybacks are a regulating instrument to return money to the shareholders (Dittmar, 2000). Increasing the dividend payment creates the expectation of continuing the payment in the future. Share repurchases are viewed as an on time cash distribution. Firms with excess cash flow can choose to repurchase shares instead of paying out dividend (Otchere & Ross, 2002).

Free cash

A free cash flow is a cash flow in excess that is required to fund all projects that have a positive influence on the net present values when discounted with costs of capital. Managers with free cash flow have opportunities to increase the level of dividend or repurchase stocks instead of investing in low return investments. Because this can be reversed in the future, increasing dividend is a weak announcement. If not an efficient fund exists to invest in, the best solution is to return it to the shareholders (Jensen, 1986).

Signal from management

A buyback program could also be a signal from management. The management team knows more than the shareholder does. With the buyback program the management communicates a signal to the shareholder that the stock is undervalued (Grullon & Michaely, 2002). The direction of the signal is ambiguous. If the offered repurchase price of the shares has a premium , the management signal indicates it that the shares are undervalued (Ramsay, 2000).

Stock option hypotheses

Firms can decide what kind of incentive plan they use to motivate the employees. In the 1950s, a salary was enough, but times are changing and in addition are the incentive plans. Shareholders' value has become more and more important over the years. To maximize the shareholders, reward and incentives plans are linked to the stock price. Shareholders align their interest with that of the

managers and find it wise to use a stock option based incentive system. It is in their interest to repurchase stock because it does not dilute the earnings. The stock is worth more after the repurchase than after the outflow of cash by a dividend payout.

When executives hold stock options, paying out dividend is less attractive and the option to repurchase shares is becoming more attractive. Jolls found evidence that executives with a large amount of stock options are likely to repurchase stock instead of paying dividend (Jolls, 1998).

The motivations will be used to categorize the motivations in the research. The different motivation categories present an insight into the motives of management.

3.4 Impact on performance measures, effect on stock prices

Stock performance

Short term effect, research I: India
The study investigated share buybacks in India, which took place in the period 1999 till 2001. The announcement of a buyback from the management resulted in an increase in the stock price. This was a short-term phenomenon. The prices of shares had no sustainable basis to stay higher than before the announcement. After the buyback, the price of a share decrease below the price before the announcement of the buyback. Mishra concludes with the results of quantitative and qualitative research that the buybacks were not successful in India and that a buyback could not ensure a sustained increase of the share prices (Mishra, 2005).

Short term effect, research II: Australia
The lead-up to the announcement of a buyback showed an increase in abnormally high return for days of 2 – 3 percent significance at 99 percent of confidence. The sample includes 136 buybacks in the period 1989 until 1995. The days after the announcement showed an increase of 0.5-1.2 percent with a confidence of 90 percent. This result of this study show that abnormal returns earned by resource companies announcing repurchase shares are higher than the abnormal returns earned by share buybacks announced by companies in the industrial and in the financial services sectors. Ramsay's conclusion is that while a share buyback has a positive influence on the stock price, a difference exists in the performance between the methods of the buyback (Ramsay, 2000).

Short term effect, research III: The Netherlands
The study researched share buybacks, which took place in the period January 1995 until January 2001. The announcement of a buyback created an average stock performance of 1.4%. The structural performances were examined. After 30 trading days, the positive performances had evaporated. The conclusion of this research is that buybacks do not create any sustained increase in the share price.

In this study, the share price performances are also measured and they show a similar pattern. On the announcement date, an increase in share price exists, which evaporated in the next 30 days. The average share price performances of 30 days after the announcement are shown in chart 3 (Roosenboom, 2001).

Chart: 3

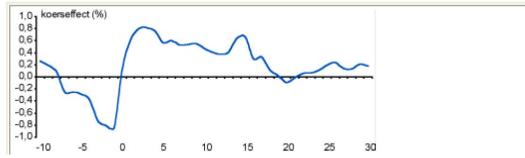

Figure 2: Share price effects, day 0 is day of announcement buyback/superdividend

Effect on rival firms

The stock price of the repurchasing firm increases when the repurchase is announced. Hertzel investigates the connection between other firms in the same industry when a firm announces a buyback and the impact on the share price. The study shows what the investors infer from the announcement of a buyback.

The signal of a buyback can convey information to rival firms for two reasons. The first reason is that it can reflect the economic status of the firm. The second reason is that the information reflects a change in competitive balance. The firm is becoming more efficient or a stronger competitor.

Hertzel (1991) found no evidence that a connection exists between the buyback firm and the rival firms in the same industry. His conclusion is that the buyback effect is firm specific (Hertzel, 1991).

Undervaluation

Another research study by Otchere investigates what the results were when the firm announced if the motivation of management was undervaluation. The result of his study are that the announcing firm influences the industry rivals if the motivation of the management of the announcing repurchasing firm is undervaluation. The repurchasing firms had on average abnormal returns of 1.25% on the announcement day and the rival firms had abnormal returns on day two of 0.39%, both statistically significant. For three days surrounding the announcement date, shareholders of the buyback firm earned on average 4.30% of abnormal returns while the rival firms earned on average 1.39% of abnormal returns. The conclusion of Otchere is that in the case of managers who announced a buyback motivated by undervalued share prices, the undervaluation was not just firm specific but an industry wide phenomenon (Otchere & Ross, 2002).

3.5 Dividends

As signaled in the theory, different ways exist to return funds of the company to the shareholders. A study shows the decline of paying dividends. In 1973, 52.8% of the firms listed on the NYSE, AMEX, and NASDAQ paid dividend. This increases to a high of 66.5% in 1978, and decreases to only 20.8% of the firms in 1999. The researchers suggest that three characteristics exist, which affect the decision to pay dividends: profitability, investment opportunities, and size. Large size firms and more highly profitable firms are more likely to pay out dividends. Dividends are less likely for firms, which have more investment opportunities. An explanation for the decreasing number of firms paying dividends is the increase in listed firms from 3,638 in 1978 to 5,670 in 1997. Newly listed firms tend to be small with extraordinary investment opportunities. The earnings of newly listed firms showed a decline from 1973 of 17.79% to 2.07% of the book value in 1999 against an average of all firms of 13.68% to 11.26% of the book value. In 1980, the share repurchases shot up. Fama and French (2001) argue that the companies became aware of the tax disadvantages of dividends at this time. Fama and French in addition argue that the firms learned to substitute repurchases for dividends in order to generate lower taxed capital gains for the shareholders (Fama & French, 2001).

Dividend versus buybacks

In an article of Johnson (2011) in the financial times, he refers to a research of Morgan Stanley, which investigated UK share buybacks in the period 1997 until 2006, the share prices rose on average 8.2 percent. The market average in this period was 10.3 percent. The share price of firms which paid dividend increased with 12.7 percent (Johnson, 2011).

Share buybacks are in much studies defined as an alternative for dividends. Low payout dividend ratios are defined as good for the growth of the firm. The firm can invest a much to provide for growth. On this manner, the firm creates value for the shareholder. Arnott and Asness investigated the dividend payout ratio as a predictor for future growth. The result of the study which central issue, low dividend payout ratios are a strong positive signal for future earnings growth´ are inconsistent with the historical evidence. Higher payout ratios create higher future earnings growth and profits(Arnott & Asness, 2003).

Super dividend

In the preceding paragraph, a discussion of dividend exists, but in addition, another kind of dividend exists: a special form of dividend called a super dividend. To decrease the excess cash reserves, a firm can decide to pay out a super dividend. The super dividends are characterized by their single pay out character. The super dividend comes in addition to the standard dividend payout.

3.6 Comparison literature results

Many studies exist concerning the topic share buybacks. It is interesting to research, but more interesting is to compare the results of the existing studies. This chapter contains the results of studies compared with other studies to investigate whether the researchers found the same results.

Share buyback motivations for management

The motivations of the management are investigated. In 1989, Wansley et al. published research about management motivations. In 2000, Ditmarr published his study about share buyback motivations and in 2008; Dixon et al. published a study of the management motivations. Ditmarr analyzed the motivations of the reasons for share buybacks.

Summary studies share buyback motivations

Research	Year	Country	Share buybacks took place in	Conclusion
Wansley et al.	1989	US	1983 – 1985	The finding of this study is that managers do use share repurchase to signal their confidence in the firm, which management believes is not being incorporated in stock price.
Ditmarr	2000	All data of listed firms in Compu-stat	1977 – 1996	Main motivations for firms to repurchase shares are to take advantage of potential undervaluation and to distribute excess cash.
Dixon et al.	2008	United Kingdom	1981 – 2008	Main motivation is to create the optimal capital structure.

Three different studies about the firms' motivations for a share buyback show two different outcomes. The studies of Ditmarr and Wansley found that undervaluation is the main reason for firms to do a share buyback. Dixon's study has shown a main motivation of optimizing the capital structure of the firm. An explanation for the different findings could be the different business culture in different countries. However, that is hard to decided, as the studies took place in different periods. There were more share buybacks in the 90's than in the period 1983 – 1985. Consequently, the change in motivation from undervaluation to optimizing capital structure could be explained by the increasing importance of the capital structure during the time.

Stock price effects

The short-term effects were investigated in the Netherlands by Roosenboom et al. in 2001, in Australia by Ramsey in 2000 and in India by Mishra in 2005.

Summary studies share price effects

Research	Year	Country	Share buybacks took place in	Conclusion
Ramsey	2000	Australia	1989 – 1995	Share buyback announcement had a positive influence on the stock price
Roosenboom, Goriaev, Beemt	2001	The Netherlands	1995 - 2001	Share buyback creates no sustained rise in stock price.
Mishra	2005	India	1999 – 2001	Share buyback creates no sustained rise in stock price.

Roosenboom et al. (2001) and Mishra (2005) had similar results in their studies. The share buyback does not create a sustained rise in stock price. The result of Ramsey's (2000) study is the opposite: in his study based on Australian share buybacks, he found evidence that the share buybacks had a positive influence on the stock price. This is an interesting fact, as Ramsey studied share buybacks, which took place in the period 1989 – 1995. The other two studies investigated share buybacks in the period 1995 – 2001 and in 1999-2001. It could be possible that the shareholders changed in assigning value to a share buyback during that time. It is noteworthy that the share buyback announcement had a positive influence in the period 1989 – 1995 and changed to no sustained rise in share prices in the period 1995 – 2001 and in 1999 – 2001.

3.7 Summary

Overview Literature

Article	Author	Year	Research / Hypotheses	Test used	Conclusion
An Empirical analysis of share buybacks in India	Mishra	2005	The main objective was to investigate the validity of long-term effect of share buyback program on a company´s share price and to assess which companies benefit more from these programs.	Analysis	The announcement of a buyback did bring about an increase in share prices but this was a short-term phenomenon.
Employee stock options, EPS dilution and stock repurchases	Bens, Nagar, Skinner and Wong	2003	Whether corporate executives' stock repurchase decisions are affected by their incentive to manage diluted EPS	Tobit model	They found that the dilutive effect of employee stock option plans on diluted EPS helps explain executives' stock repurchase decisions.
Why do firms repurchase stock?	Dittmar	2000	Investigate and understand why firms repurchase stock and how motives interrelate.	Tobit model	Firms repurchase stock investment, capital structure, corporate control, compensation policies. Firms take advantage of potential undervaluation, distribute excess of capital, to alter their leverage ratio, fend off takeovers, and counter dilution effects of stock options.
Stock repurchases and incentive compensation	Jolls	1998	Attempt to explain repurchase behavior focuses on the incentives of firms; this paper focuses on incentives of the agents who run firms, as determined by those agents´ compensation packages.	Regression	The results suggest that firms, whose managers have large stock option packages, are significantly more likely to repurchase share than firms with managers with small stock option packages are.
The effects of stock repurchase on rival firms	Hertzel	1991	This paper investigates the stock price behavior of rival firms in the same industry as firms announcing stock repurchases tender offers.	Cross-sectional study	This study finds no evidence of abnormal announcement period stock behavior for rival firms.

Article	Author	Year	Research / Hypotheses	Test used	Conclusion
Do share buyback announcements convey firm-specific or industry-wide information? A test of the undervaluation hypothesis	Otchere and Ross	2002	This paper investigates buybacks that are motivated by undervaluation and their signal of new share price information firms and their counterparts.	Univariate test, Correlation	The results of the study of the study show that, on average, shareholders of firms announcing share buyback that are motivated by undervaluation earned statistically significant abnormal returns of 1.25% on the announcing day, while those rival firms also earned significant abnormal returns of 0.39% on day +2.
An empirical survey of the motivation for share repurchases in the UK	Dixon, Palmer, Strading & Woodhead	2008	This paper aims to focus on the motivations of UK companies to repurchase shares and compares similar research in the USA.		The results indicate that a primary motive of share repurchase in the UK is to achieve an optimal capital structure, and that the requirement to cancel shares is fundamental to buyback decisions.
Aandeleninkoop nog niet gewaardeerd	Roosenboom, Goriaev, Beemt	2001	This paper focuses on whether the announcement of a buyback creates growth share performance.	Unknown	The conclusion of this study is that the announcement effect is positive and temporary; after 30 days, the positive effect is gone. They also looked at motivations but found different motivations for the same patterns.
Surprise! Higher Dividends = Higher Earnings Growth	Arnott & Arness	2003	This paper investigate the signal of a low payout ratio of dividend is a good signal for future growth.	Regression	The conclusion of the study is that a high payout ratio creates higher future earnings growth, so a high payout dividend ratio is a good signal.

Summary

In the literature review, several aspects of a buyback have been examined. The increase in popularity can be explained by the change in the reward and benefit system. Firms, which reward managers with stock options, are more likely to repurchase shares than firms, which reward managers without stock options. Firms use buybacks as a substitute for dividends to generate lower taxes for the shareholders. A study exists which found evidence that firms that pay dividend perform better than firms which decide to use a share buyback. Much research exists into the motivations of firms. Different motivations exist and the main motivation is to optimize the capital structure. In addition, the stock performance of the repurchasing firms has been examined. The announcement of a buyback has a positive effect but is disappear after 30 days.

Mishra studied the buyback operations in India in 2005. It is management's decision to invest or return funds to the shareholders by means of a share buyback. The results of his study were that a definitive judgment as to whether a buyback is good or bad for the company is problematic, as it depends on many factors. This study tests several variables/factors and their influence on the share performance. It is interesting to test the motivation, period, share buyback size in relation to share performance.

4. Variables, hypotheses

This chapter includes variables and hypotheses, provides an explanation of the dependent, independent, and control variables that will be considered for the research. The first section starts with the description of the research construction.

4.1 Construction

Many variables in the literature review are investigated; the short-term effects and the long-term effects, as well as the effects of buyback announcements on rival firms. In this research, other factors than those signaled in the literature review are investigated too, such as buyback size, conjuncture, and motivations. The impact of these variables on share performance is measured.

The study consists of an examination of a compilation of buyback information of American and German firms. The data is split up to test several hypotheses using SPSS to find statistical support for the hypotheses. The conclusion of the research and the conclusion of the literature study are compared and contrasted in the conclusion chapter.

In paragraph 4.2, the variables will comment. In paragraph 4.3, the hypothesis will comment, followed by the explanation of the research design and the data source in chapter 5.

4.2 Dependent variables and independent variables

To answer the research question, the question will be translated into dependent and independent variables. The dependent variable is the buyback decision of the management. The independent variable is the stock performance.

Dependent variable, buyback

This study investigates the impact of a buyback decision of the management. The executives want to return money to the shareholders and can perform this in several ways. Management can take the decision to pay out dividend but also to use a buyback. In a buyback, the firm repurchases shares from shareholders. The dependent variable is the decision of management to use a buyback.

<u>Independent variable, stock performance</u>

In this study, the stock price is followed from the beginning, from the announcement of the buyback until the end of the buyback operation. The focus in this study is the impact on the on the stock price. The firm wants to maximize shareholders' value and this study tests the results of a buyback. The theory explains that the stock price will increase: is this true, or is only theory; is the effect temporary or in addition long-term? The stock performance is measured on different dates: on the day of the announcement of the buyback, the opening of tendering, closing date of tendering and 3 months after the tender closing date for the long run. This will be compared with comparable stocks on the same dates.

4.3 Hypothesis

To find an answer to the research question different hypotheses have been formulated. Based on these hypotheses the study has to investigate if evidence exist the research statement.

Main hypothesis

"The buyback operation improves the performance of the stocks in the long-run"

Hypothesis 1

"The larger the size of the buyback, the better the stock performance of publicly listed companies is"

Hypothesis 2

 "The motivation has impact on the stock performance of publicly listed firms"

Hypothesis 3

 "Motivation has impact on the abnormal returns of publicly listed firms"

Hypothesis 4

 "The stock performance of publicly listed firms differs during the conjuncture"

Hypothesis 5

 "The time period has influence on the motivation of the publicly listed firms"

4.4 Control variables

May be variables exist that can influence the stock performance of the share buyback in a negative or in a positive way.

Index performance

The stock price performance could be very good after the announcement of a share buyback. At the same time, positive news exists, which affects the market positively. All share prices increase, but the

reason for the rising share price is not the share buyback but the positive news. The share price performance is corrected with the index performance and called the abnormal return.

Timing

The economy moves in cycles; good times are followed by hard times. The period can influence the performance of the share price. In good times, the shares performance is normally better than in hard times. The period can be split up into several periods. The share buybacks are investigated by period. The influence of the period is investigated.

5. Research design

5.1 Validity framework

The predictive validity model of Libby et al. (Libby, Bloomfield, & Nelson, 2002) is used to provide a description of the hypothesis and is an explanation of the internal and external validity.
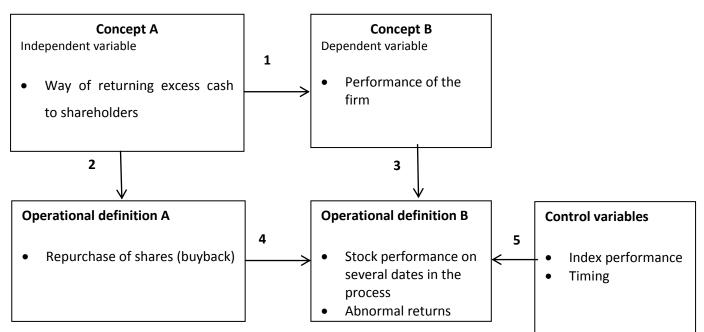

Figure 3: Validity framework of Libby, Bloomfield & Nelson 2002

Link 1 is the relation between the hypothesis and the theory. The theory suggests that a causal relationship exists between the decision of management to return cash to the shareholders and the stock performance. Internal invalidity exists when the stock performance is influenced by the decision of the management to repurchase shares. The theory suggests that when a firm uses a buyback, the stock performance increases because the earnings per share increase. The independent variables will made operational by link 2 and 3 with the use of a database where the theory is tested.

External validity exists when the results of the study can be generalized over a broader scope than the research. This is dependent on the size of the dataset.

Link 5 contains the control variables. These variables could influence both variables, for example, the index performance or the timing.

5.2 Dataset

The data used for the research consists of information from the stock exchanges of the New York ´Dow Jones 30´ in the United States, and the stock exchange of Frankfurt, de 'Deutscher Aktienindex´ in Germany.

The DAX index is a total return index and the Dow Jones 30 is a price index. The total return index assumes that all dividends and distributions are reinvested. Because the dividends and the distributions are not ignored, the method of the total return index is considered a more accurate measure of performance than the price index (unknown, 2011). The total return of the index will perform better than the price return of the same index.

In the database of Orbis, information is available about mergers and acquisitions and selected information with the following search criteria:

- Publicity listed companies
- Listed on stock exchange of New York / Frankfurt
- Listed on the stock exchanges Dow Jones 30 / DAX
- Selected merger & acquisitions deals
- Deal Type: Share buyback
- Current deal status: Completed
- Announced and Completed in time period 01/01/2000 – 01/01/2011

This resulted in 83 share buybacks in Germany and 55 share buybacks in the United States. The 138 deals will be analyzed. The deal reports contain the following information: rumor dates, announcement dates, completed dates, and information about the share prices on these dates. Concerning deal values and advisors, the deal reports may also contain deal comments and information in the press releases but it in most reports these are not filled in. Therefore, in order to trace the motivation for the buybacks, the press releases have been tracked down online.

5.3 Research methodology

This research consists of empirical research. The collected data has been analyzed with the statistical program ´statistical package for the social sciences´, further named as SPSS. Using several tools, the data has been analyzed and the results have been used to check the hypothesis with empirical evidence.

6. Results

6.1 Hypothesis 1: "The larger the size of the buyback, the better the stock performance of publicly listed companies is"

In this part, the first hypothesis is tested. The purpose of the research described in this chapter is to test the influence of the size of the buyback on the stock performance of the public listed companies. Does any relation exist between the size of the buyback and the stock performance?

Expected outcome

The expectation is that a relation exists between the buyback size and the stock performance. The larger the buyback, the better the stock performance stock performance is. The future earnings are divided into fewer pieces. The earnings per share raise more if more shares are repurchased if the profits stay at comparable level. This statement will be tested for validity.

Hypotheses

H0

No relationship exists between the size of the buyback and the share performance of the buyback between the announcement date and the completion date.

H1

A relationship exists between the size of the buyback and the share performance of the buyback between the announcement date and the completion date.

Test design

In this part of the research, the relationship is tested between two variables with the use of the Pearson´s correlation test. The size of the buyback could explain the stock performance of the repurchasing firm. The buyback size is the explanatory variable and the stock performance is the response variable. The Pearson's correlation measures the association between the two variables. The outcome is between +1 and -1. The outcome +1 is a positive perfect associate and -1 is a perfect negative associate between the variables. If the result is 0, no association exists between the variables. With the use of scatterplots, the results will comment.

Data

The data of the buyback size and the dates of the announcement and completion with share prices have been generated using the Orbis database.

The stock performances in percentages are calculated as: (stock price on date of completion – stock price on announcement date) / stock price on announcement date.

Because some firms did not present insight into the size of the buyback, not all data from the database is included. These firms are excluded from the comparison in this section.

Three tests have been carried out: the first for the correlation on the DAX, the second test for the correlation on the Dow Jones and the last correlation test is for the DAX and Dow Jones combined.

Results correlation DAX between the buyback size and stock performance announcement date and completion date

Table 1: SPSS Descriptive statistics DAX

	Mean	Std. Deviation	N
Buyback Size	.05476	.033449	74
Performance AD-CD	-.041946	.2725868	75

Table 2: SPSS results correlations DAX

		Buyback Size	Performance AC - CD
DAX	Pearson Correlation	1	-.143
Buyback Size	Sig. (2 tailed)		.237
	N	74	70
DAX	Pearson Correlation	-.143	1
Performance AC - CD	Sig. (2 tailed)	.237	
	N	70	75

The descriptive statistics in table 1 show that the mean of the buyback size on the Deutscher Aktienindex (DAX) is 5.476% of the total shares with a standard deviation of 3.3449%. The mean of the performance between the announcement date and completion date is – 4.19%.

Figure 4: SPSS Pearson correlation Buyback versus Performance AD – AC DAX

The left side of figure 4 is the size of the buyback. The results show that no relationship exists between the size of the buyback and the reaction of the stock price on the DAX market. If the Pearson correlation is 0, no relation exists and if it is (-)1 a perfect correlation exists. The Pearson correlation in table 2 is -.143 by a significance of .237. Figure 4 illustrates that no correlation exists, as the points are diffused.

Based on the analyses the size of buyback of shares is not a good predictor of the performance of the stock price as a reaction to the announcement date until the date of completion.

Results correlation Dow Jones between the buyback size and change in stock price announcement date and completion date

Table 3: SPSS Descriptive Statistics

	Mean	Std. Deviation	N
DJ Buyback size	.0620	.04231	35
DJ Performance AD -CD	-.0073	.18201	55

The descriptive statistics in table 3 show that 20 of the 55 companies on the Dow Jones listed did not release information about the size of the buyback. This decreases the sample for the test. All the data about the performance is available. The mean of the buyback size on the Dow Jones is 6.20% of
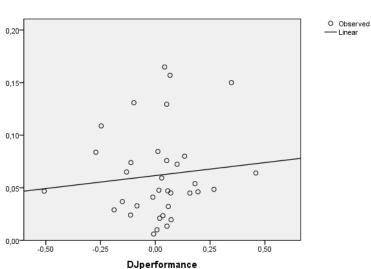
the total shares with a standard deviation of 4.231%. The mean of the performance between the announcement date and the completion date is – 7.30%.

Table 4: SPSS Share buyback Pearson Correlation Dow Jones

		Buyback Size	Performance AC - CD
DJ	Pearson Correlation	1	-.103
Buyback Size	Sig. (2 tailed)		.556
	N	35	35
DJ	Pearson Correlation	-.103	1
Performance AC - CD	Sig. (2 tailed)	.556	
	N	35	55

Figure 5: SPSS Pearson correlation buyback performance AD - CD Dow Jones

*AD = Announcement date, CD= Complete Date of buyback.

In table 4, the result of the Pearson correlation is shown. The Pearson correlation is -.103 with a significance of .556. Reasonable evidence is available to assume that no relationship exist between the performance and the buyback size with the buybacks on the Dow Jones. This is also shown in figure 5. The points are much diffused.
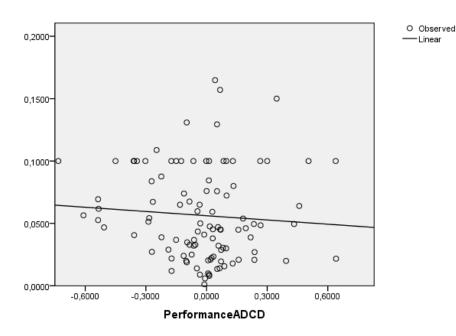
Results correlation DAX & Dow Jones between the buyback size and change in stock price AD and CD

Table 5: SPSS Pearson Correlation combined data Dow Jones and DAX

		Buyback Size	Performance AC – CD
DJ & DAX	Pearson Correlation	1	-.075
Buyback Size	Sig. (2 tailed)		.450
	N	108	104
DJ & DAX	Pearson Correlation	-.075	1
Performance AC - CD	Sig. (2 tailed)	.450	
	N	104	129

The Pearson´s correlation presented in table 5 is -0.075 with a significance of 0.450. This creates reasonable evidence to assume that between the buyback size and the performance no relationship exists.. Based on the plot, is visible that the points are not concentrated around the line, which implies that no correlation exists. This is in line with the results of the Pearson correlation plot in figure 6.

Figure 6: SPSS Pearson correlation buyback versus performance AD - CD combined DAX & Dow Jones data

An explanation for the test results showing no correlation could be that a number of other determining factors exist. Investors do not only investigate the size of the buyback, but in addition the motivations and the phase of the economy. The size alone does communicate the whole story behind the buyback concerning the performance from the announced date until the completion date.

The size of the buybacks in the DAX, and in the Dow Jones is not equal. The size of buybacks in the Dow Jones is a little bigger and differs more because the standard deviation of the Dow Jones is 4.231%, and of the DAX is 3.3449%.

Results difference in buyback size and performance between DAX and Dow Jones

Table 6: SPSS Group statistics

	Stock exchange	N	Mean	Std. Deviation
BuybackSize	Dow Jones	35	.061966	.0423058
	DAX	73	.054137	.0332494
	DJ & DAX	108	.056674	.0364166
Performance AD - CD	Dow Jones	55	-.007282	.1820106
	DAX	75	-.041946	.2725868
	DJ & DAX	130	-0.029948	.2372722
Days announcement till completion	Dow Jones	55	294.0545	296.889613
	DAX	82	219.4512	177.77459
	DJ & Dax	137	249.4015	234.88237

In this section, the data of the Dow Jones and the DAX is combined, and examined to investigate if the results match with the results of the separate data from each index. The group statistics in table 6 show that a buyback is completed on average in 249 days, measured from the date of announcement till completion. The mean of the buyback size on the Dow Jones is 6.20% and on the DAX 5.41%. Both have a negative performance mean, Dow Jones -.0073% and on the DAX -4.68%. This is remarkable because the expectation is that the share price would at least be the same.

Appendix B contains more share price statistics. The table 25 and 26 presents an overview of share performances at the different periods. The different periods are 3 months before the announcement, the announcement date, the completion date, and one week after the completion and 1 month after the completion.

Table 7: T-test for equality of means

Independent Samples Test		Levene's Test for Equality of Variances		t-test for Equality of Means						95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
BuyBackSIZE	Equal variances assumed	,798	,374	1,046	106	,298	,0078296	,0074838	-,0070079	,0226670
	Equal variances not assumed			,962	54,849	,340	,0078296	,0081413	-,0084870	,0241461
PerformanceADCD	Equal variances assumed	6,582	,011	,935	127	,352	,0395122	,0422628	-,0441182	,1231427
	Equal variances not assumed			,989	125,823	,325	,0395122	,0399503	-,0395494	,1185739

For the buyback size, equal variances are assumed; the significance level of Levene´s test for equity of variance in table 7 is .374. The significance level of different sizes between the DAX and Dow Jones is .298; consequently, no difference exists in the size of the buyback.

The value in table 7 of Levene´s test for equality of variance of performance on announcement date until date of completion is significant at 0.011, consequently equal variances are not assumed. No difference in performance exists; the significant level of the T-test for equality of means is .325.

Conclusion

H0

No relationship exists between the size of the buyback and the performance of the buyback between the announcement date and the completion date.

H1

A relationship exists between the size of the buyback and the performance of the buyback between the announcement date and the completion date.

The conclusion is that H0 is accepted and that no relationship exists between the size of the buyback and the stock performance on the announcement date and the date of completion. Consequently, Hypothesis 1 - the larger the size of the buyback, the better the stock performance is - is false. This applies for the DAX data, Dow Jones data, and the combined DAX & Dow Jones data. No differences have found between the results of DAX and of the Dow Jones.

Furthermore, no differences have found in the size of the buyback or the performance between the data of the DAX and the data of the Dow Jones.

Investors

For investors, is it important to know that the size does not matter when a company announces a buyback. No reason exists to buy shares when a company makes an announcement to repurchase x% of shares, because it is unrelated to the share performance from the announcement date until the date of completion. Consequently, perhaps other factors are relevant than the buyback size that have impact on the performance, and further in this chapter, this is tested.

6.2 Hypothesis 2: "The motivation has impact on the stock performance of publicly listed firms"

This chapter describes the research concerning the impact of the motivation of the repurchasing firm, and the effect on the stock performance of the repurchasing firm. Does any motivation categories exist, which outperform the other motivational categories?

Expected outcome

It is important for firms to display openness in their corporate strategy. The investors want to know what the motivations behind the buybacks are, so they can judge whether they think it is a good decision for the company. There could be a motivation which appeals to investors, or which guarantees a good performance. If so, motivation could be a predictor of performance. The expectation is that the different motivations do not result in the same stock performance.

Hypotheses

H0

In the population, all motivations have equal stock performances means.

H1

In the population, all motivations have equal stock performances means.

Test design

The design of the test is to investigate whether the means of performance of all motivations are equal. If they are not equal, then the reasons are sought, as well as which motivations create higher or lower performances. To compare the stock performance means of different motivation groups, the one-way ANOVA can be used. The one-way ANOVA test may only be used if all assumptions are met. The assumptions are:

1. Normality – Groups are normally distributed
2. Independence - Observations are independent of other groups
3. Homogeneity of variances – Groups have the same variances

If one of these assumptions is not met, the one-way ANOVA test results are not reliable. The normality is tested with Kolmogorov-Smirnov Test.

The first test is to determine whether it is useful to test with the one-way ANOVA. If the one-way ANOVA test may not be used, an alternative test, instead of the one-way ANOVA test, is the Kruskal-Wallis test. The Kruskal-Wallis test compares the medians of different independent motivation groups.

Data

The motivations have been found in the press releases and categorized. The hypothesis is tested against the stock performance from the company's announcement dates until the completion dates.

The stock performances in percentages are calculated as: (stock price on date of completion – stock price on announcement date) / stock price on announcement date. The dates with share prices have been loaded from the Orbis database.

Overview motivations

Investors want to know what the plans are. Using this hypothesis, this research investigates in which way motivation affects the performance. Table 8 shows an overview of the motivations released by the various announcements.

Table 8: SPSS Motivation * Stock exchange Cross tabulation

| | | Stock Exchange | | Total |
		Dax	Dow Jones	
Motivation	Capital structure	11	4	15
	Increasing earnings per share	8	2	10
	Substitute for dividend	1	0	1
	Free Cash	7	20	27
	Free Cash & Acquisition currency	1	0	1
	Free Cash & Stock Option hypotheses	4	0	4
	Signal from management	4	7	11
	Stock option hypotheses	13	11	24
	Stock option & Acquisition currency	4	0	4
	Acquisition currency	10	0	10
	unknown reason	17	10	27
Total		80	54	134

In table 8, a distinction has used between the stock exchange and the kind of motives for the share buyback. Several companies on the DAX exist that communicate two motivations. Furthermore, it is noteworthy that the motive ´returning of free cash´ to the shareholders on the Dow Jones is 37%, while on the DAX this is 15%.

An explanation for this could be cultural differences. In the United States, every company is focused on creating shareholder value. They like to emphasize this, while in Europe this is less. Another

curious point is that on the Dow Jones not a single company motivated to repurchase shares with the main motivation being Acquisition currency, while this is a popular main motivation on the DAX.

The popularity of the motivation of the stock option, where companies repurchase shares for the benefit and reward system of their employees, is not surprising. The trend towards rewarding employees in options and in shares had already been increasing in a certain period. The thought behind it is to motivate the employees while they can benefit while the company is running well. Therefore, it is in their interest to make the company to a success.

Results Dow Jones

To determine if it is useful to test with the one-way ANOVA, the data is checked for normality.

Table 9: Test of normality Dow Jones

	Kolmogorov-Smirnov [a]			Shapiro-Wilk		
	Statistic	Df	Sig	Statistic	df	Sig.
Performance AD-CD	.151	55	.003	.929	55	.003

a. Lilliefors Significance Correction

The results in table 9 show a significance of 0.003 and this is below the alpha value of 0.05. This indicates that no normal distribution exists. The first assumption of the ANOVA test is not met, so it is useless to run the ANOVA test. Instead, the Kruskal-Wallis test has been used.

Table 10: Kruskal-Wallis Test Dow Jones - Ranks

	Motivation	N	Mean Rank
Performance AD - CD	Capital structure	4	26.50
	Increasing EPS	2	37.50
	Free Cash	21	27.95
	Signal from management	7	25.57
	Stock option hypotheses	11	32.73
	unknown reason	10	23.30
	Total	55	

The motivation categories in table 10 on the Dow Jones are fewer than the motivations on the DAX because the DAX included companies that communicate two reasons. This is included in the motivation list as separate motivation.

Table 11: SPSS Kruskal Wallis test Dow Jones

	Performance Announcement date-completion date
Chi-Square	2.718
Df	5
Asymp. Sig.	.743

a. Kruskal Wallis Test b. Grouping Variable: Motivation

Table 11 shows the results of the Kruskal-Wallis Test; with a significance of 0.743, this declares that no evidence exists to reject the H0. Consequently, the H0 is accepted and the H1 is rejected, implying that no differences exist in stock performances from the announced date until the date of completion and the motivation of the company on the Dow Jones stock exchange.

Results DAX

To determine if it is useful to test with the one-way ANOVA, the data is first checked for normality.

Table 12: SPSS DAX Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Performance AD - CD	.108	75	.032	.975	75	.145

a. Lilliefors Significance Correction

The Kolmogorov–Smirnov test in table 12 shows that the stock performance of the DAX is not distributed normally: the significance 0.032 is smaller than the alpha value of 0.05; consequently, the first assumption of the ANOVA test is not met. The ANOVA test is not allowed and the Kruskal-Wallis is necessary.

Table 13: SPSS Kruskal-Wallis Test statistics [ab] DAX

	Performance Announcement date-completion date
Chi-Square	8.433
Df	7
Asymp. Sig.	.296

a. Kruskal Wallis Test b. Grouping Variable: Motivation

Table 13 shows the Kruskal-Wallis test results. The results show a significance value of 0.296, which indicates that the H0 is accepted. No difference exists between the means of stock performance and the companies' motivation for the buyback of shares on the DAX.

Results combined data Dow Jones and DAX
To determine if it is useful to test with the one-way ANOVA, the data is first checked for normality.

Table 14: SPSS Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Performance AD - CD	.115	129	.000	.956	129	.000

a. Lilliefors Significance Correction

The normality test results in table 14 of the combined Dow Jones and DAX data of the buyback deals show that the data is not normally distributed. In this case, the Kruskal-Wallis Test must be used instead of the one-way ANOVA-test.

Table 15: SPSS Kruskal-Wallis Test Statistics a, b

	Performance Announcement date- completion date
Chi-Square	7.757
Df	7
Asymp. Sig.	.354

a. Kruskal Wallis Test b. Grouping Variable: Motivation

The Kruskal-Wallis test results of the combined data do not differ from the separate findings from the Dow Jones and the DAX. The significance value in table 15 of 0.354 indicates that the performances are the same regardless the motivation of the companies.

Conclusion: "The motivation has impact on the stock performance"

In this part, the impact of the motivation on the stock performance has been tested. The motivation has collected in the press announcement of the companies and has categorized. The performance

period comprises the period from the date the company announced a repurchase of shares to the date the company completed the repurchase of shares.

The testing shows that no difference exists in performance regardless of the motivation. This has been tested for the Dow Jones and for the DAX separately, and combined. Unfortunately, no motivation exists which guarantees a good performance; otherwise there would have been a clear indicator for success. Consequently, hypothesis 2 - that the motivation has impact on the stock performance - is false.

Investors

The stock performance, as measured from the announcement date until the completion date, can be different for each company. Some companies need a few weeks for the repurchase of shares, while other companies need more than a year. The motivation has no impact on the stock performance of the buyback; it is not the case that when a company decides to return cash to the shareholders that they perform better than companies who decide to use it as acquisition currency, for example. Consequently, because of the expectation that they would perform better no reason exists to buy shares with a specific company motivation.

This section does not take into account the performance of the price index of the stock performance. This will be included in the next section.

6.3 Hypothesis 3: "Motivation has impact on the abnormal returns of publicly listed firms"

In this paragraph, the relationship between the motivations and the abnormal returns of the publicly listed firms is examined. The central question in this paragraph is whether motivations exist, which are cited by the management, which creates a significantly higher abnormal return than other motivations. By using the abnormal returns can detect whether the repurchasing companies beat the markets.

Expected outcome

The expectation is that motivations exist, which outperform others. The stock performance of a firm does not communicate everything. The share price can rise by 10% in the period from the announcement until the completion of the buyback. If the price indices rise in the same period with 15% because of positive economic news, the share price has underperformed by 5%. By using the abnormal return, a correction can be made. The expectation is that a difference exists in the abnormal returns based on the motivation.

Hypothesis

H0

In the population, all motivations have equal abnormal return means.

H1

In the population, all motivations have equal abnormal return means.

Test design

The design of the test involves examining whether the means of the abnormal returns of all motivations are equal. If they are not equal the reasons will examine, and which motivations create higher or lower performances. To compare the abnormal returns of the different motivation groups, the one-way ANOVA can be used. The one-way ANOVA test may only be used if all assumptions have been met. The assumptions are:

1. Normality – Groups are normally distributed
2. Independence - Observations are independent of other groups
3. Homogeneity of variances – Groups have the same variances

If one of these assumptions is not met, the one-way ANOVA test results are not reliable. The normality is tested with Kolmogorov-Smirnov Test.

The first test is employed to determine if it useful to test with the one-way ANOVA. If the one-way ANOVA test may not be used, an alternative test instead of the one-way ANOVA test is the Kruskal-

Wallis test. The Kruskal-Wallis test compares the abnormal returns medians of different independent motivation groups.

Data

The motivations have found in the press releases and have categorized. The hypothesis is tested against the stock performance from the company's announcement dates until the completion dates, using data loaded from Orbis.

The price index performance is calculated as: (price index on completion date of the buyback) – (price index on date of buyback announcement) / (price index on date of buyback announcement)

For the German shares, the price index of the DAX 30 has been used. For the American shares, the price index of the Dow Jones Industrial Average has been used.

The abnormal returns are calculated as = (stock performance) – (price index performance)

Overview abnormal returns

The abnormal return has been measured on the announcement date and on the completion date. In this section, a correction has been used for the change in the price index. The performance has been measured using the abnormal returns. The period is from the company´s buyback announcement date until the date of the completion.

The purpose of this test is to find out whether motivations have impact on the abnormal returns. Does differences in means exist of the abnormal returns between the motivations?

Table 16: SPSS Dow Jones and DAX - Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Abnormal Returns	136	-.53	.76	.0246	.20606
Performance AD – CD	129	-.7331	.6408	-.029948	.2372722
Valid N (listwise)	128				

The descriptive statistics in table 16 for the combined data show different means between abnormal returns and the stock performance. The abnormal returns mean is 2.46% while the stock performance mean is -2.99% is. This shows another view of the stock performance because the stock performance is benchmarked with a broader market portfolio. Consequently, it is clear whether the share has outperformed or underperformed.

Results combined data Dow Jones and DAX

In this section, the motivation is tested for impact on the stock performance measured in terms of abnormal returns. To decide which test to use, the test for the normality of the abnormal returns has first been employed.

Table 17: SPSS Dow jones & DAX - Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Abnormal Returns	.115	136	.000	.970	136	.004

a. Lilliefors Significance Correction

The results of the normality test of Kolmogorov-Smirnov in table 17 have a significance of 0.000, which implies that the abnormal returns are not normally distributed. The one-way ANOVA test may not be used but the Kruskal-Wallis Test is used.

Table 18: SPSS Kruskall-Wallis Test combined data

	Abnormal returns
Chi-Square	5.098
Df	7
Asymp. Sig	0.648

Grouping variable: Motivation

The results of the Kruskal-Wallis test displayed in table 18 have a significance value of 0.648, which implies that no differences exist between the medians of the abnormal returns from the different motivations.

An explanation for this result could be that investors are not interested in motives. Successful investors, such as Buffet, are of the opinion that a buyback is always a waste of money. In advance, because investors want to know what happens with their money, the expectation was that a difference exists in means; they want openness about the corporate strategy and plans. With the motivation for the buyback, a part of the strategy becomes clear. The expectation was that a difference in means exists by virtue of the different motivations, but the results prove that investors do not use a distinction between the various motivations.

Conclusion

This section has tested whether impact of motivation exists related to the abnormal returns. The stock performance has been measured over a period from the announcement until the completion date. The means of the abnormal returns do not differ, regardless of the motivation. This applies to the DAX, Dow Jones, and the combined data.

Investor

The mean abnormal return of a company, which announces a buyback, is 2.46%. The motivation does not influence the abnormal return. Consequently, the repurchasing company share beats the market and this could be a reason to buy the share.

6.4 Hypothesis 4: "The stock performance of publicly listed firms differs during the conjuncture"

The data used commences on 1 January 2000 and ends on 31 December 2010. In this paragraph, the conjuncture is taken into account. The purpose of this part of the research is to check the influence of the stage of the economy on the share performance and on the abnormal returns. It is interesting to investigate in which way the share price and the abnormal returns react in different stages of the economy. Do they differ from each other?

Expected outcome

During the conjuncture, the news of an announcement can be differently interpreted through different circumstances. The expectation is that announcements of buybacks are received more positively by investors by a rising economy.

Hypotheses

H0

In the population, all periods have equal stock performances means

H1

In the population, not all periods do have equal stock performances means

Test design

The design of the test involves examining whether the means of the stock performance and the abnormal returns of the periods are equal. If they are not equal, then the reason is sought, as well as which periods create higher or lower performances. To compare the stock performances and the abnormal returns of the different periods, the one-way ANOVA can be used. The one-way ANOVA test may only be used if all assumptions have been met. The assumptions are:

1. Normality – Groups are normally distributed
2. Independence - Observations are independent of other groups
3. Homogeneity of variances – Groups have the same variances

If one of these assumptions has not been met, the one-way ANOVA test results are not reliable. The normality is tested with the Kolmogorov-Smirnov Test.

The first test is employed to determine if it is useful to test with the one-way ANOVA. If the one-way ANOVA test may not be used, an alternative test instead of the one-way ANOVA test is the Kruskal-Wallis test. The Kruskal-Wallis test compares the stock performance and the abnormal returns medians of different periods.

Data

The different periods are classified using the statistics on the growth of the Dutch gross domestic product. The data is gathered from the central bureau of statistics of the Netherlands, CBS. The price indices of the DAX and Dow Jones are plotted in a chart to investigate the development.

The abnormal returns and stock performances are measured from the date the buyback is announced till the date the buyback is completed. The data has been loaded from the database Orbis.
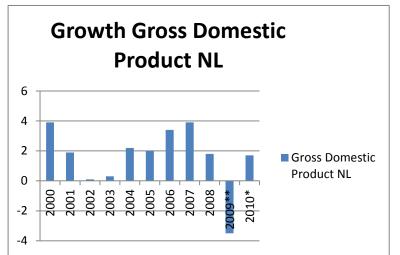
Overview price indices and periods

In figure 6, the price indices of the DAX and the Dow Jones Industrial Average are shown. The price indices decrease from 2000 – 2003 and 2008 – 2010, in addition the low conjuncture periods, and rise in the periods of high conjuncture from 2003 – 2008 and 2010 – 2011.

Figure 6: DAX & DJ Price indices 2000-2010

Table 19: Growth Dutch GDP

In this paragraph, the period has been split up into three periods. The periods have been determined using statistics of the central bureau for statistics in the Netherlands concerning the economic growth.

The economic GDP has been used to decide in which way to split the period.

Table 19 shows an overview of growth of Dutch GDP from 2000 till 2010. In the period, 2000 to 2003 a decrease in growth of the GDP exists. In the period, 2004 to 2007 an increase exists in the growth of the Dutch GDP. In the period 2008 to 2010, a decreasing growth of GDP exists, and in 2009, a negative growth of the GDP exists.

- Period 1: 2000-2003
- Period 2 : 2004 -2007
- Period 3: 2008-2011

Overview performance

In this section, the stock performance is measured related to a period further related to each economic period.

Table 20: SPSS Means Combined Dow Jones and DAX data

	Time Period		
Mean	**(1) 2000-2003**	**(2) 2004-2007**	**(3) 2008-2010**
Performance AD-CD (in %)	-0.2724	-5.3061	0.4527
Abnormal Returns (in %)	2.96	1.62	3.43

In table 20, the means are displayed. The mean of the share performance, measured from the announcement date until the completion date, in the period 2000-2003, is -0.2724% against a mean of abnormal return in the same period of 2.96%. In the period 2004-2007 the mean of the share performance is -5.3061% against an abnormal return of 1.62%. In the period 2008-2010, the mean of the share performance is 0.4527 and the mean of the abnormal return is 3.43%.

Results combined data Dow Jones and DAX

The Kruskal-Wallis test has been used to measure if the stock performance is the same in each period or if the stock performance is dependent on the period.

Table21: SPSS Data Dow Jones & DAX, Kruskal Wallis test results

	Stock performance AD - AC	Abnormal returns
Chi-Square	1.364	0.077
Df	2	2
Asymp. Sig	0.506	0.962

Grouping variable, Time period AD

In table 21, the results of the Kruskal-Wallis test are shown. The test result of the stock performance is 1.364 with a significance of 0.506 which implies that H0 is accepted, indicating that the means of the performances of shares of companies which announced a repurchase program during the periods do not differ significantly from each other regardless of the period.

The abnormal returns results of the Kruskal-Wallis test in table 21 are 0.077 with a significance value of 0.962. With an alpha value of 0.05, the results indicate that the period does not have an influence on the abnormal returns. H1 is rejected and H0 is accepted. This implies that the abnormal returns means do not differ in the differing periods of the conjuncture.

The share prices of companies, which announced repurchase shares, perform better than the price indices.

Conclusion: "The performance differs during the conjuncture"

The central issue in this section is hypothesis 4: "The performance differs during the conjuncture". The period 2000 – 2011 has been split up in 3 periods: two periods of decline from 2000-2003 and 2008-2010, and a period of increase from 2004-2007. Both stock performance and the abnormal returns means do not deviate significantly during the 3 periods.

6.5 Hypothesis 5: "The time period has influence on the motivation of the publicly listed firms"

The central issue in this paragraph is the research of the impact of the period on the motivation. What is the relation between the motivation and the period? The purpose of this paragraph is to find out if motivations change during the periods.

Expected outcome

It is possible that in declining markets the management wants to communicate a statement to shareholders, for instance, that the share price is low with good outlooks, or that no other good investment opportunities are arising. Consequently, it is interesting to investigate whether the motivations differ in the stated periods. The expectation is that the motivations differ during the different periods.

Hypotheses

H0

The period and motivations are independent of each other

H1

The period and the motivations are dependent of each other

Test design

Because two categorical variables are used, motivations and period, this will be tested with the Chi-square test. The Chi-square test tests the association between two variables and is used to analyze cross tables.

Data

The data of the Dow Jones and the DAX are combined. Do different motives exist for repurchasing shares in different periods? Table 19, showing the growth of the gross domestic product in the Netherlands, has been used to split the periods. The period 2000 – 2011 is split up into three periods:

- Period 1: 2000-2003
- Period 2 : 2004 -2007
- Period 3: 2008-2011

The motivations of table 1 are used and combined with the periods.

Results

The test result of the Chi-square test is presented in table 22. In appendix A, the total test results of SPSS are available.

Table 22: SPSS Chi-Square Test result DAX & DJ Motivation versus period

	Value	DF	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.506[a]	20	.368
Likelihood Ratio	24.467		.223
Linear-by-Linear Association	.403	1	.526
N of Valid Cases	134		

a. 23 cells (69.7%) have an expected count of less than 5. The minimum expected count is .17.

Table 22 shows the SPSS results: the Chis-square result has a value of .368. This implies that H0 is accepted and H1 is rejected. No significant relationship exists between the period and motivation. The result of the Chi-Square test is that the motivations for the repurchase of the shares are not influenced by the stage of the economy.

An explanation for this outcome is that the motivations are not time bound may be that motivations are linked to the strategy. A feature of strategy is that it is determined for the long term, to create a long-term target. If this grows through acquisitions, for example, then it explains why companies repurchase shares at different periods with the motivation of acquisition currency. This applies for the other motivations when they are linked to the strategy.

Conclusion "The time period has influence on the motivation"

This section demonstrates that the period has no influence on the motivation of the companies. The motivations are not time bound in the different periods. This is remarkable because the expectation exists that when the share price is quite low, the management might communicate more signals that the share is undervalued. An explanation could be that the motivations are bound to the long-term strategy of the company rather than being time bound.

Investors

Because no relation exists between both an investor should not use the measure motivation versus the period. A motivation should be used to verify the strategy path of the company.

6.6 Relation 10-year interest rates and relation of buyback

Companies, which announce a buyback, justify the choice for the buyback with a motivation. An overview of the motivations is presented in table 8 before. The present section examines the 10-year government bond rates and the number of buybacks to find out whether companies' decisions are triggered by a change in the 10-year interest of government bonds rates.

Test design

This test design plots the interest rates against the buyback announcements. Is the decision of firms driven by a change in interest rates? By plotting the interest rates against the number of buybacks, we can detect whether a change in interest rates results in a change of buyback announcements.

Data

For this paragraph, the interest rates of American government bonds have been used. The data is collected from the U.S. Department of Treasury. The data has been collected from 2000 – 2011.

Bond

A bond is a loan; by buying a bond, one lends the money. As compensation, interest is received in a coupon interest and at the end of the bond period; the total nominal lent amount is received. The risk of bonds is that the bond giver may not be able to repay the bond. The government bonds are almost risk free because, in general, the state always pays. The bonds can be traded, and they fluctuate in price; this depends on the 10-year bond interest rate and on the market interest rate. At the end of the bond term, the nominal lent amount will receive. If the bond is selling in the interim, the value of the bond depends on the market interest rate.

10-year interest rates United States

The 10-year interest is a measure for the financial market. A minimal risk exists that the United States will declare bankruptcy. The bank interest rates are almost the same as the 10-year interest rates; otherwise, no one would buy the bonds.
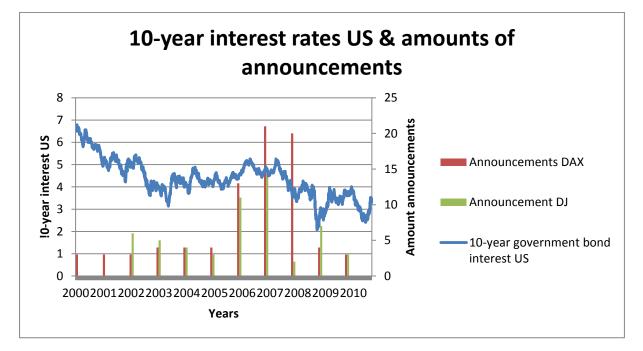
Reaction bondholders and shareholders

In uncertain times, people save their money. Because of this savings, the banks have an excess of money and the market interest rates decline, consequently, causing the 10-year interest rates to decline. If the bondholders expect declining interest rates, they hold their bonds because the 10-year interest rates are higher than the market interest rates. Chart 6 shows a deterioration of the market in the period 2000 – 2004. Chart 7 shows a declining of the 10-year government bonds interest rates. When the price indices of chart 6 are compared with the 10-year bond interest rates of the United States, the lines match with each other.

A deterioration of the market makes it harder for shareholders to create money. They try to earn money in another way and start investing in bonds instead of in shares.

Results

Figure 7: Chart of 10-year interest rates and number of buyback announcements

In figure 7, the 10-year interest rate of US bonds is shown and the bars show the number of buybacks. The interest rates of the government bonds are higher than the interest rates offered by banks. People put their money in government bonds because they want to earn some money on savings, which they do not need for a while. In rising economies, people buy shares and they want to earn more money on them than they can with interest from the bank or bonds. Listed companies can benefit from this kind of thinking by creating their shares attractive as a worthwhile alternative to bonds. One way to do this is to launch a repurchase program.

After a few good years, which are visible in the price indices in chart 6, a huge increase exists in share buybacks announcements on the DAX and on the Dow Jones. Figure 7 shows that the most popular period to launch buyback programs was 2006 – 2009. This was followed by a strong decrease of the 10-year bond rates at the end of 2008.

The 10-year interest rate of government bonds dropped at this time. In the period 2000 – 2004, in addition, the interest rate dropped but not a peak of the launch of buybacks exists.

Conclusion

This is not statistically tested but the data presents an overview. In the period 2000 – 2004, the price indices are declining. In this period, no outliers in the number of share buybacks exist. This period is

followed by increasing price indices in 2004 – 2008. From 2006 until 2008, a strong increase exists in the number of buybacks. In 2009, the share price decrease. This is a remarkable finding, as this is the exact criticism of Warren Buffet, the super investor who argues that share buybacks take place at the wrong moment. The shares are bought back at a share price, which is too high, and a waste of funds. His criticism is in accordance with the research findings.

The share buybacks bring risk for the long term. The firms reduce the liquid funds, which decreases the resistance of the firms in tough times, which then affects the continuity of the firm. Many firms had share buyback programs in the years before the financial crisis. Then they had some problems facing the financial crisis, or even worse, had no funds to face the financial crisis.

The example of ING

ING announced a share buyback program with a value of € 5 billion in May 2007 and completed this in May 2008. A few months later ING was in trouble because of the financial crisis. On 19 October 2008, ING received state aid for € 10 billion. This is a huge contrast: in May 2007, ING had decided that they did not need € 5 billion and used it for a share buyback program. Five months after the completion of the share buyback program, ING was in enough trouble to need state aid. Consequently, retrospectively, it would have been more useful for ING to hold the cash and increased the resistance. The motivation of ING was to increase the EPS and optimize the capital structure.

7. Conclusion

7.1 Overall conclusion

This study has attempted to find factors, which influence the share performance. Several factors have been tested and examined in relation to the share performance. Does factors exist which influence the performance? The buyback deals of the DAX and of the Dow Jones of the years 2000-2011 have been analyzed. The research was started to test the following main hypothesis:

"The buyback operation improves the performance of the stocks in the long run"

The overall conclusion is that a buyback operation does not improve the performance in the long run. The average buyback size is 5.6% of the shares. The average duration of a buyback operation is 249 days measured from the announcement date until the completion date. The stock performance in this period is on average -2.99%. The abnormal returns in this period are on average 2.46%. The conclusion is that a buyback creates no sustainable value for the shareholder. This is in line with the results of studies in India (Mishra, 2005) and in the Netherlands (Roosenboom, 2001).

Impact buyback size on the share performance
The first factor researched is the size of the buyback. The expectation was that the buyback size could have influence: the higher the buyback size, the higher the stock performance. No significant evidence is found that the buyback size has impact on the share performance, neither for the separate data of the DAX and of the Dow Jones nor for the combined data of the DAX and Dow Jones.

Impact motivation on the share performance
The second factor researched is the impact of the motivation on the stock performance. No evidence is found that the stock performance means differ between the different motivation categories. These results are in line with the study of Roosenboom et al. in 2001; they found no significant evidence that the performance differs due to the different motivations communicated by the firm.

Impact motivation on the abnormal returns
In the third tests, the abnormal return is measured between the different motivation categories. No significant evidence is found that the abnormal return means differ between the different motivation categories.

Impact conjuncture on the share performance and on the abnormal returns
The fourth variable tested is the conjuncture. The data used is from 2000 – 2010. The period is split up in three periods, 2000-2003, 2004-2007, and 2008-2010. The share performance and the

abnormal returns are tested to investigate if they differ during the different periods. Neither differs during the different periods.

In the last test, the motivations are tested against the periods. The motivations communicated by the firms have the same pattern in the three periods. No significant evidence is found that they differ during the conjuncture.

Conclusion in relation with literature

The table contains an overview of the literature findings, followed by the research findings overview.

Literature overview

Article	Author	Year	Research / Hypotheses	Test used	Conclusion
An empirical analysis of share buybacks in India	Mishra	2005	The main objective is to investigate the validity of the long-term effect of share buyback program on a company´s share price and to assess which companies benefit more from these programs.	Analysis	The announcement of a buyback did bring about an increase in share prices but it was a short-term phenomenon.
Employee stock options, EPS dilution and stock repurchases	Bens, Nagar, Skinner and Wong	2003	Whether corporate executives' stock repurchase decisions are affected by their incentive to manage diluted EPS	Tobit model	They found that the dilutive effect of employee stock option plans on diluted EPS helps explain executives' stock repurchase decisions.
Why do firms repurchase stock?	Dittmar	2000	Investigate and understand why firms repurchase stock and how motives interrelate.	Tobit model	Firms repurchase stock investment, capital structure, corporate control, compensation policies. Firms take advantage of potential under valuation, distribute excess capital, to alter their leverage ratio, fend off takeovers, and counter dilution effects of stock options.
Stock repurchases and incentive compensation	Jolls	1998	Attempt to explain repurchase behavior focuses on the incentives of firms. This paper focuses on incentives of the agents who run firms, as determined by those agents´ compensation packages.	Regression	The results suggest that firms whose managers have large stock option packages are significantly more likely to repurchase shares than firms with managers with small stock option packages are.
The effects of stock repurchase on rival firms	Hertzel	1991	This paper investigates the stock price behavior of rival firms in the same industry as firms announcing stock repurchases tender offers.	Cross-sectional study	This study finds no evidence of abnormal announcement period stock behavior for rival firms.

Article	Author	Year	Research / Hypotheses	Test used	Conclusion
Do share buyback announcements convey firm-specific or industry-wide information? A test of the undervaluation hypothesis	Otchere and Ross	2002	This paper investigates buybacks, which are motivated by undervaluation and their signal of new share price information firms and their counterparts.	Univariate test, Correlation	The results of the study show that, on average, shareholders of announcing share buyback firms, which are motivated by undervaluation, earned statistically significant abnormal returns of 1.25% on announcing day, while those rival firms also earned significant abnormal returns of 0.39% on day +2.
An empirical survey of the motivation for share repurchases in the UK	Dixon, Palmer, Strading & Woodhead	2008	This paper aims to focus on the motivations of UK companies to repurchase shares and compares similar research in the USA.	Survey	The results indicate that the primary motive for share buybacks in the UK is to achieve an optimal capital structure, and that the requirement to cancel shares is fundamental to buyback decisions.
Aandeleninkoop nog niet gewaardeerd	Roosenboom, Goriaev, Beemt	2001	This paper focuses on the announcement of a buyback, if it creates growth share performance.	Unknown	The conclusion of this study is that the announcement effect is positive and temporary; after 30 days, the positive effect is gone. They looked also at motivations but found for different motivations the same patterns.
Surprise! Higher Dividends = Higher Earnings Growth	Arnott & Arness	2003	This paper investigate the signal of a low payout ratio of dividend is a good signal for future growth.	Regression	The conclusion of the study is that a high payout ratio creates higher future earnings, so a high payout dividend ratio is a good signal.

Research findings overview

Hypotheses	Findings	Test
Is there a relation between buyback size and stock performance from announcement date till completion date?	The size has no impact on the stock performance	Kruskal Wallis test
Does the motivation have an impact on stock performance from announcement date till completion date?	There is no difference in stock performance regardless the motivation.	Kruskal Wallis test
Have motivations impact on abnormal returns from announcement date till completion date?	There is no difference in abnormal returns between the different motivations.	Kruskal Wallis test
Do performances from announcement date till completion date differ during the conjuncture?	Stock performance and abnormal returns do not differ during the conjuncture.	Kruskal Wallis test
Does the period influence the motivation?	The period has no influence on the motivation.	Chi-Square test

Based on literature is the conclusion that buyback announcement have only a short and limited effect on the share price. Management focuses on optimal capital structures and potential upward valuation of the share price.

All hypotheses tested show that: Although assumptions by management and conditions of the buyback vary: repurchase of shares show little or have limited effect on the share price.

The findings are very much related to the findings in the literature. Consequently, the conclusion is: Although assumptions by management and conditions of the buyback vary: Buy back of shares show little or have limited effect on the share price.

7.2 Advice for firms

In this research, the impact of a share buyback has been investigated. Part of this research consists of a literature study and a part consists of new research. Every year firms spend billions of funds on share buybacks. At the conclusion of this research, the question needs to be raised: why do firms still spend funds on share buybacks?

When people first think of a share buyback, they assume that a share buyback will increase the share performance; it will imply a boost for the share price. However, the results of this study show another view. The first study has performed over the period 1989 – 1995 and the share buyback had a positive influence on the share price. In two other studies concerning the share performance of a share buyback, the results showed that share buybacks do not create sustained value for the long term. These were studies in the period 1995 – 2001 and 1999 – 2001. The effect of increased share price after the announcement of a share buyback disappeared in 30 days and the share price had the same share price as prior to the announcement. The findings of the present study are in accordance with the two earlier studies. The underlying idea of a buyback is to create shareholder value in the long term. The conclusion of this research is that a buyback is not an appropriate tool to create long-term shareholder value. The buyback performance in the period from announcement until the completion has an average share performance of -2.99% and an abnormal return of 2.46%. The period has an average length of 249 days.

Share buybacks do not create value for the long term, but still many billions of funds are spent every year on share buyback programs. A reason need to be exists and this study has investigated whether motivations exist which create sustained value in the long term. Many different motivations exist; the two most cited motivations are returning free funds to the shareholder and the stock option hypothesis. The stock option hypothesis involves firms, which have a reward system to pay managers in stock options as an incentive to motivate people and align the managers' interests with the shareholders' interests. They repurchase shares to boost the share price or to meet their obligations to the stock options. The findings are that the motivations do not affect the share price performance.

Besides the intention of creating value for the shareholder, the firm should investigate if a buyback is achievable without affecting the long-term strategy of the firm. In most repurchase programs, firms use excess funds to buy the shares, or in fact, they call them excess funds. Through the decision to launch a share buyback program, the management creates risks. To reduce the liquid position, the firms reduce the resistance of firm in tough times. Remember ING, which in 2007 decided to launch a share buyback program of € 5 billion, then in 2008 needed € 10 billion in state aid to avoid a bankruptcy.

Super investor Buffet has always communicates that a buyback is a destruction of value because firms buy shares back at too high a share price. At the top of the economic cycle firms decide to buy Berkshire Hathaway shares back and that was the wrong moment according to Buffet. Remarkably, in September 2011 Buffet announced a repurchase plan. This was Buffet 's open end repurchase plan, in which Berkshire Hathaway may repurchase shares if the share price decrease below 110% of the book value as long the company has $ 20 billion in cash and equivalents on hand (Schroeder, 2011). It must be signaled that Buffet announced the stock repurchase plan after a value decrease of 17% of Berkshire Hathaway. His motivation was that the share was attractively priced, or undervalued. However, it is remarkable that one of the biggest critics of share buyback would start such a program.

Figure 8: Overview share price performance Berkshire Hathaway 1995 till 2011

Executives decide maybe too easily to repurchase shares. This study, and several others, proves that serious reasons exist to use alternatives for share buybacks. Executives have more information available than shareholder does. They should be careful with deciding to launch a share buyback program. The pitfall is that they are too optimistic about their own business. Consequently, they decide too easily to repurchase shares as a signal of confidence.

With the findings of this research, it is strongly recommended that firms avoid stock repurchases. It creates no sustainable value for the shareholder in the long term. The firm puts unnecessary risks on the firm itself and its long-term strategy because of the reduction in resistance. After all this accrued knowledge still wondering exists, "Why does firms still launch stock repurchase plans?"

7.3 Advice for investors

The investors are interested in company news. As a firm announces a repurchase of shares, what should an investor do? The effects of a buyback have been investigated In this research. A buyback creates a temporary positive effect; however, this effect is disappearing after 30 trading days. In this research, the factors, which could influence the share performance in the long run, have been examined. The buyback size, motivation, and the conjuncture are not appropriate to predict the impact of a buyback in the end.
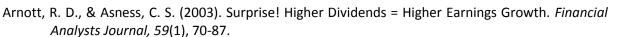
Shares held in a company, which intends to do a buyback, would best be sold well within the 30-day period after the announcement. For those who do not yet own shares, would not recommend investing in the firm because of the lack of sustained value creation and because of the increased risks incurred through the reduction of the firm's resistance.

7.4 Scope for further research

In this research, the impact of a buyback has been investigated. The share buyback creates no sustained value for the long term. A share buyback creates risks for the resistance of the company. The decision for a share buyback is a dubious one for these reasons. Further research should investigate the management's reasons and the formation of their motives. Why do firms still take the decision to repurchase shares if several studies have proven that the impact of a share buyback is limited? Are the decisions of firms driven by banks or consultancy firms? Banks and consultancy firms earn more money if firms repurchase their shares than paying out dividend. Consequently, they will more likely to advice firms to repurchase shares instead of paying out dividend.

References

Arnott, R. D., & Asness, C. S. (2003). Surprise! Higher Dividends = Higher Earnings Growth. *Financial Analysts Journal, 59*(1), 70-87.

Bens, D. A., Nagar, V., Skinner, D. J., & Wong, M. H. F. (2003). Employee stock options, EPS dilution, and stock repurchases. *Journal of Accounting and Economics, 36*(1-3), 51-90.

Dittmar, Amy K. (2000). Why Do Firms Repurchase Stock? *The Journal of Business, 73*(3), 331-355.

Dixon, R., Palmer, G., Stradling, B., & Woodhead, A. (2008). An empirical survey of the motivation for share repurchases in the UK (Vol. 34, pp. 886-886-906): Emerald Group Publishing, Limited.

Fama, E. F., & French, K. R. (2001). Disappearing dividends: changing firm characteristics or lower propensity to pay? *Journal of Financial Economics, 60*(1), 3-43.

Gay, G. D., Kale, J. R., & Noe, T. H. (1991). Share Repurchase Mechanisms: A Comparative Analysis of Efficacy, Shareholder Wealth, and Corporate Control Effects. [Article]. *FM: The Journal of the Financial Management Association, 20*(1), 44-59.

Grullon, G., & Michaely, R. (2002). Dividends, Share Repurchases, and the Substitution Hypothesis. *The Journal of Finance, 57*(4), 1649-1684.

Hertzel, M. G. (1991). The Effects of Stock Repurchases on Rival Firms. *The Journal of Finance, 46*(2), 707-716.

Hoven, M. v. (2010). Weggegooid geld. *Beleggers Belangen*.

Jensen, M. C. (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. *The American Economic Review, 76*(2), 323-329.

Johnson, S. (2011). Few reasons to cheer share buy-backs. *Financial times*. Retrieved 10-12-2011 from.http://cachef.ft.com/cms/s/0/22629d1e-7d8d-11e0-b418-00144feabdc0.html#axzz1gEp3M0p3

Jolls, C. (1998). Stock Repurchases and Incentive Compensation. *National Bureau of Economic Research Working Paper Series, No. 6467*.

Laurie Simon, B. (1992). Dutch Auction Repurchases: An Analysis of Shareholder Heterogeneity. *The Journal of Finance, 47*(1), 71-105.

Libby, R., Bloomfield, R., & Nelson, M. (2002). Experimental research in financial accounting. *accounting, organizations and society*, 775-810.

Mishra, A. (2005). An Empirical Analysis of Share Buybacks in India. *ICFAI Journal of Applied Finance, Vol.11*(Issue 5), 5-24.

Ogg, J. C. (2011). Over $40 Billion in Share Buyback Announcements in February. *24/7 wall str.*, from http://247wallst.com/2011/02/24/over-40-billion-in-share-buyback-announcements-in-february-kss-dox-dds-tjx-wlp-wat-lea-plxs-arg-cvc-klac-var-cop-mmm-chkp-isrg-all-cmi-gme-gd-rost-mhs-erts-pfe-tup/

Otchere, I., & Ross, M. (2002). Do share buy back announcements convey firm-specific or industry-wide information?: A test of the undervaluation hypothesis. *International Review of Financial Analysis, 11*(4), 511-531.

Pettit, J. (2001). Is a Share Buyback Right for Your Company? [Article]. *Harvard Business Review, 79*(4), 141-147.

Platts, K., Gregory, M., & Neely, A. (1995). Performance measurement system design: a literature review and research agenda. *Internal Journal of Operations & production management*, 1228-1264.

Ramsay, I. a. L., Asjeet S. (2000). Share Buy-backs: An Empirical Investigation. *SSRN*.

Roosenboom, P. G. J. G., A.P. ;Beemt, A., van den. (2001). Aandeleninkoop nog niet gewaardeerd. *ESB Economische Statistische Berichten, 4296*, 184.

Schroeder, A. (2011). The Buffett 'Put' Gives a Hint of What's Coming. *Bloomberg*. Retrieved from http://www.bloomberg.com/news/2011-09-29/buffett-put-gives-a-hint-of-what-s-coming-commentary-by-alice-schroeder.html

Unknown. (2010). Sigaar uit eigen doos. Retrieved 11 may 2011, from http://www.ftm.nl/copypaste/terugkopen-van-aandelen-populairder-dan-investern.aspx

unknown. (2011). Total return index. Retrieved 10-06-2011, 2011, from http://www.investorwords.com/5008/total_return_index.html

Wansley, J. W., Lane, W. R., & Sarkar, S. (1989). Managements' View on Share Repurchase and Tender Offer Premiums. *Financial Management, 18*(3), 97-110.

Yang, J. L. (2010, October 7). U.S. companies buy back stock in droves as they hold record levels of cash*. Washington Post*. Retrieved from http://www.washingtonpost.com/wp-dyn/content/article/2010/10/06/AR2010100606772.html?hpid=topnews&sid=ST201010060 7072

Appendix A: Test results

Table 24: SPSS Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
Motivation * Time PeriodAD	134	97.8%	3	2.2%	137	100.0%

Table 24: SPSS Motivation * Time Period AD Cross tabulation

			Time period			Total
			2000-2003	2004-2007	2008-2010	
Motivation	Capital structure	Count	1	9	5	15
		Expected	2.6	8.2	4.3	15.0
	Increasing EPS	Count	2	7	1	10
		Expected	2.7	5.4	2.8	10.0
	Substitute for dividend	Count	0	0	1	1
		Expected	.2	0.5	.3	1.0
	Free Cash	Count	3	16	8	27
		Expected	4.6	14.7	7.7	27.0
	Free Cash & acquisition currency	Count	0	1	0	1
		Expected	.2	.5	.3	1.0
	Free Cash & Stock Option hypotheses	Count	0	3	1	4
		Expected	.7	2.2	1.1	4.0
	Signal from management	Count	1	9	1	11
		Expected	1.9	6.0	3.1	11.0
	Stock option hypotheses	Count	7	11	6	24
		Expected	4.1	13.1	6.8	24.0
	Stock option & Acquisition currency	Count	1	2	1	4
		Expected	.7	2.2	1.1	4.0
	Acquisition currency	Count	0	5	5	10
		Expected	1.7	5.4	2.8	10.0
	unknown reason	Count	8	10	9	27
		Expected	4.6	14.7	7.7	27.0
Total		Count	23	73	38	134

Expected	23.0	73.0	38.0	134.0

Appendix B: share price statics at several times

In table 23, some descriptive statistics of the study is presented. In Appendix B are more statistics about the stock performance on different dates.

Table 25: Descriptive statistics

	Stock exchange	N	Mean
BuybackSize	DJ & DAX	108	.056674
Performance AD – CD	DJ & DAX	130	-0.029948
Abnormal Return	DJ & DAX	136	.0246
Days announcement till completion	DJ & Dax	137	249.4015

Table 26: Descriptive statistics

Share performance Period	N	Minimum	Maximum	Mean	Std. Deviation
Announcement date – Completion date	129	-.7331	.6408	-.029948	.2372722
3 months before announcement – 1 month after completion	124	-.74	1.05	-.0589	.30330
Announcement date – 1 month after	127	-.53	1.52	.0489	.24247
Completion date – 1 week after completion	127	-.82	.66	-.0310	.19721
Completion date – 1 month after completion	134	-.46	2.66	.0016	.25694
Announcement date – 1 week after completion	129	-.74151	.62222	-.0307170	.23578171
Valid N (listwise)	124				

Appendix C: Data set Share buyback deals Dow Jones and Deutscher Aktien Index 2000-2010

	Announced date	Completed date	Acquiror stock price 3 months prior to announcement	Acquiror stock price prior to announcement	Acquiror stock price after completion	EUR Acquiror stock price 1 week after completion	Acquiror stock price 1 month after completion
JOHNSON & JOHNSON	13-02-2002	01-08-2002	n.a.	65.40	53.08	56.00	53.57
MCDONALD'S CORPORATION	26-03-2002	26-03-2002	n.a.	31.02	32.01	31.29	31.45
EXXON MOBIL CORPORATION	31-03-2002	31-03-2002	n.a.	50.35	49.79	49.19	44.46
WAL-MART STORES INC.	14-08-2002	07-01-2004	62.98	49.79	42.15	41.64	45.40
UNITED TECHNOLOGIES CORPORATION	09-10-2002	09-03-2005	33.77	26.08	38.04	38.13	39.06
ALEXANDER & BALDWIN INC.	17-12-2002	31-12-2004	22.65	24.67	31.26	32.18	35.30
NISOURCE INC.	26-02-2003	07-03-2003	19.12	16.17	15.08	15.48	17.75
HOME DEPOT INC., THE	30-05-2003	11-12-2003	21.80	26.83	28.39	28.49	27.43
WILLIAMS COMPANIES INC., THE	11-06-2003	11-06-2003	3.35	7.18	7.44	7.22	6.85

RYDER SYSTEM INC.	02-10-2003	30-09-2005	21.69	25.69	27.93	27.65	32.90
KRAFT FOODS INC.	04-12-2003	31-12-2003	27.10	26.75	25.58	25.35	25.95
CHEVRONTEXACO CORPORATION	31-03-2004	09-12-2005	34.41	35.86	50.46	47.93	48.53
HEWLETT-PACKARD COMPANY	20-09-2004	20-09-2004	17.36	14.86	15.37	14.98	14.56
CHEVRONTEXACO CORPORATION	26-10-2004	24-11-2004	38.61	42.13	41.40	40.23	38.43
EXXON MOBIL CORPORATION	28-10-2004	28-10-2004	38.03	38.36	38.64	39.15	38.69
PROCTER & GAMBLE COMPANY	28-01-2005	31-05-2006	40.39	42.33	42.37	41.35	44.31
DUKE ENERGY CORPORATION (OLD)	24-02-2005	24-02-2008	19.81	19.88	12.42	11.69	11.67
PG&E CORPORATION	18-11-2005	18-11-2005	29.68	30.65	31.00	31.88	31.08
VERIZON COMMUNICATIONS INC.	19-01-2006	01-03-2007	24.58	25.78	27.63	27.77	28.39
VERIZON COMMUNICATIONS INC.	19-01-2006	19-01-2006	24.58	25.78	25.58	25.80	28.75
3M COMPANY	13-02-2006	28-02-2007	66.37	60.67	55.78	56.18	57.27
JP MORGAN	28-02-2006	31-03-2006	33.19	35.02	34.62	33.98	35.94
JP MORGAN	21-03-2006	18-04-2007	33.19	35.02	34.62	33.98	35.94

CON-WAY INC.	24-04-2006	30-06-2007	45.70	41.67	37.59	38.38	36.60
RYDER SYSTEM INC.	08-05-2006	07-05-2007	35.56	43.11	39.50	39.01	38.95
OVERSEAS SHIPHOLDING GROUP INC.	09-06-2006	24-04-2007	42.83	39.81	53.62	52.31	56.14
FIRSTENERGY CORPORATION	20-06-2006	10-08-2006	41.98	41.31	43.75	43.60	44.60
ALEXANDER & BALDWIN INC.	30-06-2006	30-06-2006	31.61	36.27	17.88	18.82	17.12
ALEXANDER & BALDWIN INC.	27-10-2006	31-12-2008	31.61	36.27	17.88	18.82	17.12
GENERAL ELECTRIC COMPANY	19-01-2007	31-12-2007	28.14	29.40	24.97	24.61	23.92
3M COMPANY	12-02-2007	31-12-2008	61.97	57.28	41.72	43.95	41.79
CSX CORPORATION	15-02-2007	31-12-2008	9.45	10.80	8.13	8.77	7.50
VERIZON COMMUNICATIONS INC.	01-03-2007	07-02-2008	26.26	28.32	25.12	26.09	22.85
HEWLETT-PACKARD COMPANY	16-03-2007	22-09-2008	30.26	30.07	31.78	30.84	27.28
IBM CORPORATION	24-04-2007	29-05-2007	75.04	70.08	79.44	78.77	78.20
OVERSEAS SHIPHOLDING GROUP INC.	24-04-2007	27-04-2007	45.28	49.32	51.88	52.09	57.66
OVERSEAS SHIPHOLDING GROUP INC.	24-04-2007	09-06-2008	45.28	49.32	51.88	52.09	57.66

SOUTHWEST AIRLINES COMPANY	16-05-2007	15-08-2007	11.95	10.50	11.24	11.49	10.53
WAL-MART STORES INC.	01-06-2007	05-06-2009	36.27	35.42	36.44	35.36	34.20
DOMINION RESOURCES INC.	28-06-2007	07-08-2007	33.20	31.03	33.11	32.16	30.64
DOMINION RESOURCES INC.	10-07-2007	07-08-2007	33.83	31.77	33.11	32.16	30.64
IBM CORPORATION	03-12-2007	30-09-2008	85.51	71.11	78.17	70.39	69.48
GENERAL ELECTRIC COMPANY	11-12-2007	25-09-2008	28.65	25.53	17.28	15.92	13.96
VERIZON COMMUNICATIONS INC.	07-02-2008	03-02-2011	29.34	25.31	26.65	26.54	26.23
OVERSEAS SHIPHOLDING GROUP INC.	09-06-2008	16-09-2008	38.46	50.15	44.55	43.42	31.82
JP MORGAN	30-01-2009	30-01-2009	28.82	19.43	19.82	21.61	18.03
JP MORGAN	25-05-2009	17-06-2009	16.88	24.75	24.51	23.77	26.09
WAL-MART STORES INC.	05-06-2009	04-06-2010	39.34	35.97	42.47	42.01	38.74
IBM CORPORATION	27-10-2009	30-03-2010	82.67	80.02	95.57	95.63	97.41
HEWLETT-PACKARD COMPANY	24-11-2009	31-07-2010	31.22	34.35	36.41	32.05	30.36
MERCK & COMPANY INC.	24-11-2009	27-04-2011	22.66	24.52	24.21	24.65	25.62

BANK OF AMERICA CORPORATION	02-12-2009	09-12-2009	11.44	10.59	10.32	10.51	11.75
IBM CORPORATION	27-04-2010	30-09-2010	89.73	97.94	99.53	99.61	102.98
WAL-MART STORES INC.	04-06-2010	03-06-2011	39.40	42.23	36.69	36.32	36.69
IBM CORPORATION	26-10-2010	31-03-2011	99.57	100.23	116.02	114.68	115.18

Share buyback deals Deutscher Aktien IndeX 2000-2010

	Announced date	Completed date	Acquiror stock price 3 months prior to announcement	Acquiror stock price prior to announcement	Acquiror stock price after completion	Acquiror stock price 1 week after completion EUR	Acquiror stock price 1 month after completion
E.ON AG	30-05-2007	31-12-2008	33.02	38.30	29.74	28.84	25.41
DAIMLER AG	29-08-2007	31-03-2008	66.95	62.70	54.83	53.60	49.87
DEUTSCHE BANK	24-05-2007	31-10-2008	106.20	117.45	31.35	30.36	27.92
E.ON AG	22-09-2000	01-11-2001	n.a.	n.a.	18.96	18.96	18.96
DEUTSCHE BANK	04-09-2003	30-06-2004	54.27	56.65	64.03	61.25	57.75
SIEMENS AG	17-08-2007	17-08-2007	88.88	85.84	88.70	92.70	86.21
DEUTSCHE BANK	02-06-2006	02-06-2006	93.35	90.60	87.49	85.14	88.40
DEUTSCHE BANK	27-06-2002	16-04-2003	73.45	66.15	46.14	48.10	49.15
BASF AG	22-02-2007	31-12-2008	35.10	38.12	28.00	26.39	22.88
DEUTSCHE BANK	30-06-2004	30-06-2005	67.60	65.22	65.25	64.20	71.50

RWE AG		20-02-2008	17-10-2008	91.26	88.08	63.10	59.00	66.05
DEUTSCHE BANK		18-04-2000	31-12-2001	n.a.	n.a.	79.75	80.75	72.12
SIEMENS AG		07-11-2007	14-04-2008	93.64	95.55	69.71	71.83	75.25
MÜNCHENER RÜCKVERSICHERUNGS-GESELLSCHAFT AG		04-05-2007	31-01-2008	123.78	132.85	121.65	115.70	116.20
BASF AG		18-12-2000	02-01-2002	n.a.	n.a.	21.54	21.53	22.45
SIEMENS AG		14-04-2008	22-07-2008	98.25	67.93	73.50	73.42	74.65
BASF AG		19-04-2005	22-02-2006	26.48	25.51	31.50	31.93	32.02
DEUTSCHE BANK		02-06-2006	24-05-2007	93.35	90.60	112.13	112.95	109.09
MÜNCHENER RÜCKVERSICHERUNGS-GESELLSCHAFT AG		25-02-2008	21-04-2010	120.03	115.93	119.55	112.45	102.30
SAP AG		31-12-2007	31-12-2007	37.48	31.70	26.22	26.80	27.95
MÜNCHENER RÜCKVERSICHERUNGS-GESELLSCHAFT AG		08-05-2008	22-04-2009	113.75	124.80	97.00	98.20	94.25
MÜNCHENER RÜCKVERSICHERUNGS-GESELLSCHAFT AG		07-11-2006	28-02-2007	111.70	131.00	118.45	117.40	124.91
SAP AG		25-01-2006	30-06-2006	36.04	36.72	41.47	41.42	35.82
SAP AG		20-07-2006	31-12-2006	45.38	36.88	40.50	42.49	35.45
DEUTSCHE BANK		21-08-2008	19-11-2008	74.00	56.68	19.75	24.30	26.40
DEUTSCHE TELEKOM AG		10-08-2006	28-08-2006	13.59	12.08	11.50	11.42	12.44

THYSSENKRUPP AG	03-07-2006	24-08-2006	23.89	26.77	25.94	26.58	25.39
THYSSENKRUPP AG	31-01-2008	10-03-2008	45.87	33.54	35.97	34.85	36.90
BASF AG	26-07-2002	08-01-2003	22.62	18.00	18.45	18.34	16.77
BASF AG	22-01-2003	31-12-2003	22.62	18.00	18.45	18.34	16.77
BASF AG	04-10-2004	31-03-2005	21.92	24.38	27.67	28.11	25.06
BASF AG	16-02-2004	04-10-2004	21.15	20.98	24.32	24.03	24.85
BASF AG	22-02-2006	31-10-2006	31.08	31.50	34.29	34.13	34.84
SAP AG	30-01-2008	31-12-2008	37.48	31.70	26.22	26.80	27.95
ADIDAS AG	29-01-2008	22-10-2008	45.20	41.10	29.29	26.60	23.67
THYSSENKRUPP AG	19-05-2003	19-05-2003	9.99	9.41	8.89	8.70	10.33
SAP AG	28-09-2001	31-10-2001	n.a.	n.a.	35.79	35.79	35.79
DEUTSCHE TELEKOM AG	27-07-2010	09-12-2010	9.75	10.22	9.88	9.85	9.71
SAP AG	12-05-2005	12-05-2005	30.90	31.73	32.13	32.92	34.38
THYSSENKRUPP AG	14-07-2008	13-08-2008	36.96	33.66	33.93	33.82	26.20
VOSSLOH AG	15-10-2008	20-03-2009	78.84	63.91	80.89	80.61	74.20
CEWE COLOR HOLDING AG	21-10-2008	15-12-2008	58.54	23.22	33.28	32.17	25.85
UNITED INTERNET AG	23-05-2006	11-08-2006	11.00	10.37	9.71	10.69	10.24
FUCHS PETROLUB AG	09-05-2007	30-04-2008	19.20	22.90	21.91	21.59	21.79
UNITED INTERNET AG	24-07-2007	21-01-2008	13.69	14.06	12.64	13.03	13.19
TAKKT AG	15-01-2009	13-02-2009	8.26	7.62	7.61	7.70	5.13
UNITED INTERNET AG	14-01-2010	19-04-2010	10.58	9.93	12.28	12.03	10.17
KUKA AG	18-03-2008	29-08-2008	25.44	18.68	15.88	15.44	16.50

UNITED INTERNET AG	15-08-2006	14-05-2007	13.26	9.71	13.53	14.13	14.48
RWE AG	26-09-2008	31-10-2008	78.43	68.64	67.90	67.00	65.75
WINCOR NIXDORF AG	03-12-2007	22-01-2008	62.85	59.02	53.25	53.50	53.75
KRONES AG	21-01-2009	19-06-2009	31.77	24.26	25.90	26.98	27.30
SOFTWARE AG	03-02-2010	01-03-2010	20.04	28.46	30.30	30.21	29.78
UNITED INTERNET AG	01-10-2004	16-12-2004	5.70	4.33	4.75	4.90	5.25
LEONI AG	14-10-2008	11-12-2008	24.33	16.57	10.87	11.07	11.60
GERRY WEBER INTERNATIONAL AG	12-09-2005	13-10-2006	4.85	6.18	8.04	8.11	8.05
UNITED INTERNET AG	14-05-2007	24-07-2007	14.87	13.43	13.61	13.28	14.46
KRONES AG	28-03-2001	28-03-2001	n.a.	n.a.	87.60	87.60	87.60
WINCOR NIXDORF AG	15-03-2007	21-09-2007	n.a.	n.a.	59.80	58.32	63.45
WINCOR NIXDORF AG	20-12-2006	15-01-2007	n.a.	n.a.	70.69	70.69	70.69
ALSTRIA OFFICE REIT-AG	06-11-2007	14-09-2008	13.53	10.90	10.10	10.56	5.50
GERRY WEBER INTERNATIONAL AG	09-09-2008	10-02-2009	10.83	9.70	9.10	8.95	7.45
ADCAPITAL AG	20-11-2007	30-12-2008	11.80	11.65	5.40	6.00	5.85
SCHLOTT GRUPPE AG	09-11-2007	30-09-2008	19.80	18.10	9.95	8.53	7.83
WASHTEC AG	17-09-2007	21-11-2008	15.95	13.39	6.21	6.54	6.15
CEWE COLOR HOLDING AG	27-04-2007	14-11-2007	34.40	40.20	25.81	25.16	26.14
ENERGIEKONTOR AG	24-07-2007	23-11-2008	4.43	5.33	3.41	3.40	4.23
AUGUSTA TECHNOLOGIE AG	11-12-2007	24-11-2008	16.79	15.55	7.25	8.65	9.43
CEWE COLOR HOLDING AG	07-08-2006	02-02-2007	28.42	30.05	36.61	37.81	38.35
CEWE COLOR HOLDING AG	27-10-2005	10-02-2006	48.40	45.10	37.25	37.00	27.46

AUGUSTA TECHNOLOGIE AG	20-07-2007	31-12-2007	14.80	15.72	16.20	16.14	15.18
BECHTLE AG	09-10-2008	30-09-2009	17.70	10.55	17.31	17.06	16.25
ENERGIEKONTOR AG	31-08-2006	24-07-2007	4.53	3.29	4.95	5.13	4.62
HELIAD EQUITY PARTNERS GMBH & CO. KGAA	06-08-2009	05-05-2010	3.21	4.02	3.84	3.72	3.46
MAGIX AG	15-10-2008	07-11-2008	2.45	1.73	1.90	2.20	2.01
AD PEPPER MEDIA INTERNATIONAL NV	02-06-2009	02-06-2009	n.a.	0.95	1.03	1.01	0.86
UMS UNITED MEDICAL SYSTEMS INTERNATIONAL AG	23-04-2008	15-09-2009	3.40	3.60	5.90	5.84	6.02
DRESDNER FACTORING AG	10-01-2008	12-12-2008	4.98	3.85	3.60	3.37	3.24
HOCHTIEF AG	30-05-2001	30-05-2001	n.a.	n.a.	16.42	16.42	16.42
SIEMENS AG	18-01-2002	16-07-2003	n.a.	72.95	46.81	47.35	53.68
MG TECHNOLOGIES AG	26-08-2003	30-11-2004	8.67	8.70	8.81	8.80	8.69
FUCHS PETROLUB AG	30-04-2008	10-03-2009	16.30	21.67	8.48	9.10	31.02