THE EFFECT OF STOCK REPURCHASE ANNOUNCEMENTS ON STOCK PRICE PERFORMANCE

Empirical evidence from the U.K.

Master Thesis Finance

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Abstract

In this paper, the stock price effects of share repurchase announcements for firms listed in the U.K. are investigated. This is done specifically for firms listed on the London Stock Exchange.

The estimation window is set on the past ten years with an event window changing from one day before the share repurchase announcement and one day after, to four days before the share repurchase announcement and four days after.

With a sample of 65 different companies which all made a share repurchase announcement within this event window an increase in the abnormal return of 0.73% has been found on the day the share repurchase announcement took place. Furthermore, the cumulative abnormal return increased with 0.9 % with an event window of four days before and after the share repurchase announcement was made. These results are statistically significant and in line with the undervaluation signal theory explained in different publications. However, the free-cash-flow hypothesis is not supported by the research in this paper.

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1. Introduction

Corporate repurchase of their own stock has become an increasingly important phenomenon. Share repurchasing has been highlighted increasingly in the financial literature. Already in the previous decade share repurchasing became more popular. An example to emphasize the importance of share buybacks nowadays is Home Depot, an American home-improvement chain. Home Depot has spent 52 cents of every dollar on share repurchases besides the 28 cents of every dollar of excessive cash on dividends since 2008 (Brawn and Sevǐc, 2015). A 2-billion-dollar bond has been issued to pay for even more share repurchases, because Home Depot was able to benefit from low interest rates. Since 2010 Home Depot has tripled the value of its shares and the shares were at an all-time high. So the stock market seemed to agree with the plan of Home Depot to repurchase shares. While in America this trend continues, also in Europe and Asia share repurchases have become more popular. Dividends tend to be the best option in these continents, but nowadays share repurchases are more common.

While a lot of information is available on the effects of share repurchasing on the firms in the U.S, less information is available about firms listed in the U.K. repurchasing its shares and the corresponding effects. The conclusion that can be drawn from the existing researches, is that the advantage of stock repurchases relative to the payment of cash dividends is a more complex issue than has previously been recognized. Interesting would be to zoom in on the effects of the announcement of share repurchasing on the stock price and therefore firm value of companies listed in the U.K.

The focus of this research will be on the effect of repurchasing shares on firms listed in the U.K. Therefore, the main question of this research is: Does the announcement of share repurchases have a positive effect on the stock price performance of firms listed in the U.K.? By answering this question, there can be evaluated whether it is a good decision as a firm listed in the U.K. to repurchase shares in general.

To make accurate claims we decided to narrow this research down to only firms listed in the U.K. We will answer the main question by an event study and give a more complete view of share repurchasing by literature study.

To do research in the different fields of effects we investigate to find an overall effect on the firm value of firms listed in the U.K., we need accurate data about those firms repurchasing shares. In this research, the effects of an economic event on the value of these firms are examined. When looking at the definition of share repurchasing, how to repurchase shares, the motivations for share repurchasing with corresponding advantages and disadvantages, and the market development regarding share repurchasing, literature study will be used. To examine the effect of a share repurchase announcement on the stock price, event study methodology is the right approach. ''Event studies focus on the impact of particular types of firm-specific events on the prices of the affected firm's securities'', noticed by Brown and Warner (1980). In general, the effects of an event directly are reflected in a firm's share price. Fama, Fisher, Jensen and Roll (1969) found that this method shows if share prices generate a different result surrounding an event as opposed to the absence of an event. With this method the effect of a share repurchase announcement on the share prices of firms listed in the U.K. can be demonstrated. First the event of interest will be defined and the period of the event in which the share prices are examined. After this, the selection criteria for including a certain firm in the study will be described (MacKinlay, 1997). As last, a benchmark-model is determined as a basis on which the comparison between the share price return and the normal expected return can be made. Thereby the abnormal returns around the event date will be calculated and analyzed.

The data to give a more complete overview of share repurchasing regarding the market development concerning share repurchasing, how to repurchase shares, and the motivations for share repurchasing, will be retrieved from previous research. By means of papers written by experts in the field of these specific topics the necessary knowledge will be gathered.

The other data for the research will be retrieved from companies listed in the U.K. that repurchased shares during the period January 2008 up to January 2018. Only firms listed on the LSE (London Stock Exchange) are considered and those companies must be part of this index during the whole sample period. The moment a company a share repurchase announcement is what matters.

This research shows with the help of an event study that share repurchase announcements have a positive effect on the stock performance.

The abnormal return as well as the cumulative abnormal return show significant positive effects when share repurchase announcements took place. The results are largely statistically significant and the regression between the variables firm's size, cash, debt-to-capital, and the return on equity and the AR and the CAR show statistically significant results. The firm's size, cash, debt-to-capital and return on equity as variable all are negatively correlated with the AR and CAR.
This means the firm's size, cash, debt-to-equity and return on equity all are positively correlated with the likelihood of a firm to repurchase shares and therefore announce a share repurchase.

Different papers described different effects of repurchasing shares and motivations for repurchasing shares.
Elton and Gruber (1968) found in their research that there is a tax advantage associated with share repurchase for most but not all investors. The effect of the form cash disbursement (stock repurchase or cash dividend) on the value of the firm is discussed. The tax advantage of a share repurchase may be more than off-set by an increase in transaction costs for the stockholders in certain corporations. Also demonstrated is how the relative advantage of share repurchase varies with a change in the length of time investors hold their stock and the original price at which they purchased their stock. Tax advantage therefore can be one of the motivations for repurchasing shares.

Besides tax advantages or disadvantages, Bradley and Wakeman found in 1982 that the repurchase of a single block implies an average wealth loss for the remaining stockholders of the repurchasing firm. Evidence is presented that is consistent with the view that a single block repurchase from another corporation is used by the managers of the repurchasing firm to eliminate a threat to their control over the firm. Bradley and Wakeman (1982) found that firms use the repurchase premium to bribe the selling stockholder into giving up his interest in the firm and, by implication, cease monitoring the firm's activities. As a result, the managers of the repurchasing firm are able to pursue an operating strategy that is more in line with their own interests and less in line with those of the stockholders. Furthermore, share buybacks are also used by firms to deter hostile takeovers. Repurchase increases the cost that a potential acquirer pays to attain control by altering the distribution of shareholder reservation values.

In a study (Bagwell, 1991) the crucial insight was obtained that repurchase eliminates shareholders with the lowest reservation values, leaving the acquirer facing those with relatively higher valuations.
Bagwell (1991) found that if the manager can make a responsive offer before shareholders tender to the acquirer, he can outbid the acquirer for low-reservation shareholders. The repurchase, unlike the takeover, need not buy half of all share; only enough are needed such that the median shareholder now is of higher type, with a valuation sufficiently high that the takeover is no longer profitable.

As we can see from the papers above, share repurchases have a significant influence on the firm. Interesting would be to create more insight in what effect the share repurchase announcement creates for the firm's value, focused on firms listed in the U.K.

On this research the conclusion can be formulated that share repurchase announcements have a positive effect on the stock price performance of the corresponding firms i.e. the AR and the CAR. The results from this event study were mostly statistically significant and indicated also the type of relationships between the different variables mentioned above and the AR and the CAR.
The data sample in a possible next research could be increased to create regressions and results with a higher level of statistically significance. Also, the event window used in this research is nine days in total; four days before the share repurchase announcement, the day of the share repurchase announcement itself, and four days after the share repurchase announcement. This event window could be increased in a next research in this topic to create an even better and more detailed view on the effect of share repurchase announcement on the stock price performance.

The rest of the thesis is organized as follows; first more insight will be given in the procedure and the different options of repurchasing shares in section 2. This section creates a general view of the procedures of share repurchasing, but also the market developments regarding share repurchasing. In the final part of section 2 the original purposes of repurchasing shares by the firm will be discussed. This also means that different share repurchase motivations and the corresponding theories will be explained and analyzed. In section 3, after creating some more background about repurchasing shares, a hypothesis will be formulated based on the information gathered from the theory in section 2.

After formulating a hypothesis in section 3, section 4 will give more insight in the event study and formulas used in this research.

Section 5 will tell us more about the actual data used in this event study and section 6 will give us the empirical results gathered from the event study used in this research. In this section is explained what the empirical results are regarding the abnormal return and the cumulative abnormal return, but also the results from the regressions with the market value, free cash flow, total debt divided by total capital and the return on equity as variables. Finally, in section 7 the conclusions made from this research will be displayed and proposals for future research will be done.

2. Theoretical Framework

2.1 How to repurchase shares

Firms with profit motive, in general, use the profit partly for the payment of dividends to its shareholders. The amount that is left within the firm after this procedure can be kept as stockholder's equity. With this stockholder's equity a firm is able to do investments in lucrative projects and the net-present-value (NPV) of these projects determines whether the firm really will invest in these projects.
However, a situation can occur where the amount of lucrative investment opportunities is too limited, and the firm must decide what to do with the retained earnings. If such a situation occurs the company can decide to use the remaining amount of retained earnings to repurchase its shares. In that case, the company reduces the number of shares outstanding.

But how do firms repurchase its shares? Three ways in which companies can repurchase its shares are known. Open market repurchases is the first option. This is the most common method and mainly used by firms when a small number of shares are repurchased. The firm announces with open market repurchases that it may or may not decide to repurchase its shares in a given timeframe. Depending on the market conditions, the concerned firm will or will not repurchase its shares (Stephens and Weisbach, 1998).
Another option for a firm to repurchase its shares is with a tender-offer.

This is a non-open-market share repurchase and the company announces beforehand the number of shares it is going to repurchase, the corresponding price, but also the timeframe. This method is used for repurchasing an average amount of shares.
The last method is another non-open-market way of repurchasing shares. Here the company uses the Dutch auction, and it is very similar to the tender-offer repurchases. Except, the company does not give a fixed price for the shares it is going to repurchase, but it gives a price range. The shareholders themselves can decide for which price they are willing to sell their shares. In the end, the final price for which the shares will be repurchased is the price that allows the company to repurchase the number of shares it announced beforehand. All the shareholders that tendered at or below this price will sell their shares. This method is used for repurchasing many shares (Comment and Jarrell, 1991).

2.2 Overview of market developments and motives for share repurchasing

Now we have more insight into how to repurchase shares, more information about the market developments will be given and about the actual motives for share repurchasing.

Market Developments

The last years, share repurchases have become more and more popular and an important option for companies to return cash to shareholders. Among the several options of repurchasing shares, the non-open-market way of repurchasing shares is most popular in the U.S. with almost 95 percent of the companies using this method. As mentioned before, the empirical studies on share repurchasing have mostly focused on the U.S. market, looking at the effect of share repurchase announcements on the abnormal returns of the companies. Comment and Jarrel (1991) and Vermaelen (1981) found that on average a share repurchase announcement displays a positive effect on the abnormal return of the firm. Also share repurchase announcement via tender offers creates a larger positive effect on the abnormal return on average. They also found that the abnormal return reacts even more for the Dutch auction option of repurchasing shares.
Empirical research does not say that dividends are replaced by repurchasing shares, but it does state that companies consider repurchasing shares as a serious alternative. For companies it is an interesting other way of returning cash to shareholders, and it offers more flexibility compared to issuing dividends.

No strict commitments come with share repurchases and the amount committed to the share repurchase programs can vary highly in years.

A company can spend billions on repurchasing shares in one year, but can choose to spend nothing at all on repurchasing shares the following year.
On the other hand, when not issuing dividend anymore as a firm, the share price is likely to go down. Michaely, Thaler and Womack (1995) found that when a firm announces to not issue dividends, the share price drops with approximately 7 percent. This negative impact on the share price is congruent with the conclusions of earlier research done by Healy and Palepu (1988). However, most researches agree on repurchase announcements having a positive effect on the share price and compensating for the negative effect omission announcements have on the stock price. Jagannathan, Stephens and Weisbach (2000) found out that the amount of share repurchase announcements by U.S. firms has increased significantly with 650 percent. The announcement value also increased with 750 percent, showing positive trend regarding the popularity of share repurchase announcements. Interesting is to look at the trend regarding dividends. Dividends have risen, but with a significant lower percentage than share repurchasing announcements have done in the previous years.
In 1998 share repurchases were more used as option to return cash to shareholders than using dividends (Grullon and Michaely, 2004). Ikenberry, Lakonishok and Vermaelen (1995) found that often when share prices are low due to a market crash, firms are more likely to repurchase shares. They found that the collapse of the market in 1987 gave the companies on that market the opportunity to buyback their shares for a low share price and most companies indeed increased the amount of the repurchase share program with an average amount of over $ 45 billion. And again, after the securities market crash in 2001, many U.S. companies decided to announce share repurchases of their outstanding shares.
According to Dealogic the amount of share repurchases executed in 2007 reached a quarterly record of $172 billion. These share repurchases were done by S&P 500 companies and show the increasing popularity also in recent years. Other results from Dealogic show the consistent high amounts of cash used by firms to repurchase shares in the U.S.

But not only in the U.S. have share repurchases been popular, also in Europe and Asia do firms believe that repurchasing shares is a serious option to consider regarding returning cash to shareholders.

In both continents share repurchase programs have been executed increasingly by companies, and the belief in the positive effects of share repurchase programs is present. This is visible by looking at charts presenting the amount of share repurchases in Europe as well as Asia.
As discussed above, the number of companies issuing dividend has decreased over the last years in the U.S, but this trend is also present in Europe. The number of companies in Europe repurchasing shares also surged, but increased (Von Eije and Megginson, 2008).

Tax reforms made it easier for companies in Europe and Asia to repurchase large quantities of shares in the recent decade. After the slowdown of the economy in Asia in 1992, Japan and South Korea for example made it easier to repurchase shares. As result, the average amount of repurchased shares by companies in Europe increased from 2 billion euros to 12 billion euros, from 2004 to 2006. In 2007, an amount of 18 billion euros was spent on repurchasing shares. During the economic slowdown in 2009 the total value of share repurchases dropped significantly. This shows that companies became more cautious regarding acquiring their own shares.

In the end previous research shows that firms are more into repurchasing shares nowadays, but that the effect of repurchasing shares is not always the same for every firm. Paying dividends is still an option to return cash to shareholders, although the amount of dividend paid by firms has declined significantly in the last decade.
But what then are the specific motivations to repurchase shares? This will be explained in the next chapter.

Share repurchase motivations

Tax advantages

A firm which repurchases shares can have tax advantages. A tax advantage in this case depends on whether the firm decides to repurchase its shares or to pay out dividend.

The normal income tax rate applies to the dividend that is paid, but for repurchasing shares no additional tax has to be paid. This means that for a firm it can be a lot more beneficial to repurchase shares instead of paying out dividends (Grullon & Michaely, 2002). Tax advantage as a motive therefore is grounded.

There are papers which do not support the view that tax advantage is a motive for share repurchasing and claim that other motives drive share repurchasing. Dittmar (2000) for example states that ''repurchasing firms do not have to pay income tax on the dividends immediately, but pay the capital gain tax when the stock is sold''. Dittmar (2000) also found that repurchasing firms do not have lower payout ratios. This indicates that repurchases do not replace dividends and that the tax benefit of repurchases does not cause firms to repurchase stock. However, more papers indicate that a tax advantage is indeed a driver for share repurchasing than papers that do not recognize this. A firm that can substitute dividends for share repurchases can indeed benefit from a more favorable tax rate on share repurchases than the rate on dividends.

The Tax Reform Act was introduced in 1986 and focused on the tax advantage. It reduced the tax advantages, but it never made it disappear.

This means that tax advantages because of share repurchasing are still there and furthermore investors can by postponing the realization of capital gains create tax advantages (Grullon & Michaely, 2002).

Distribution of excessive cash

Excessive cash within a firm can be used to invest in lucrative opportunities. What if there are no interesting growth opportunities available for a firm with excessive cash? A possible solution is to use this excessive cash for repurchasing shares. This affects the current shareholders, but also gives a signal to other stakeholders of this firm. It could mean that the firm's future is not as bright as expected beforehand, because of the few growth opportunities available (Nohel & Tarhan, 1998).

Jensen (1986) however mentions that it could also give a positive signal. If the market already knows that there is a lack of growth opportunities, the decision to repurchase shares can be perceived by the market as a well-made decision.

By repurchasing shares the excessive cash is no longer available for the managers within this company, and therefore helps to reduce the agency costs and the risk of managers investing in wrong areas (Oswald & Young, 2004). According to Dittmar (2000) these motives therefore are present and are one of the main drivers to repurchase shares. Share repurchasing is an efficient way of distributing cash and helps the firm to create higher abnormal returns. Oswald & Young (2008) also did research in the effect of share repurchasing on agency costs.

This research indeed found that the agency costs are reduced by share repurchasing, because the need for monitoring managers is less when the amount of excessive cash is reduced.
Out of these different researches there can be concluded that share repurchasing is a way of distributing excessive cash and can be beneficial for the firms executing this.

Capital Structure

This motivation fits well regarding the agency costs we discussed in the previous paragraph. To limit these costs the excessive cash can be limited, but also the amount of leverage can be increased. This means that the more leverage the firm has, the less the manager can use cash for private benefits and therefore the agency costs will be reduced. The reason we address this is because by repurchasing shares the leverage ratio will increase (Bagwell & Shoven, 1988).

The capital structure a firm desires determines whether a firm will repurchase its shares or not. So, in the search for the optimal leverage-ratio, share repurchasing can be a good solution. Especially if a company's leverage ratio is below the desired target, this company can decide to repurchase its shares.
Dittmar (2000) did find that a company indeed repurchases its shares in the case of a leverage-ratio that is too low compared to their target-ratio. Busch & Obernberger (2016) on the other hand found that companies with a leverage-ratio higher than their target are less likely to repurchase its shares. From the literature, as we can see above, we can conclude that the capital structure indeed can be an influence on the decision whether to repurchase shares or not. The leverage-ratio and therefore the capital structure can be seen as one of the primary reasons to repurchase shares (Dixon R., Palmer, Stradling, & Woodhead, 2008)

Price Manipulation

Over the year's managers' compensation has changed. The authentic salary managers used to get has been partly substituted by stock options. This means that repurchasing shares not only could be executed by the firm itself, but also by the managers of the firm. In reducing agency costs firms often come up with stock options as a solution. These stock options are worth more if the stock price of these options increases and share repurchasing can have an increasing effect on the stock price (Hayes, Lemmon & Qiu, 2012).

These incentives motivate the managers not only to act in firm's interest, but also in this case to support share repurchasing. In the literature can be found that indeed these stock options have a positive influence on actual share repurchasing (Kahle, 2002).
Moreover, Bebenko (2009) also found that firms that which give employees a larger proportion of shares, repurchase more shares than do firms which give employees fewer or no proportion of shares.
However, this could also lead to manipulation of the stock prices by managers. If share repurchasing is beneficial for the stock price and therefore the stock options of managers, these managers could see opportunities to manipulate these stock prices via share repurchasing and agency costs would be increased. To prevent this from happening different rules are created and Busch & Obernberger (2016) found that with these rules share repurchasing reduces idiosyncratic risk and makes stock prices efficient. Idiosyncratic risk is a type of investment risk endemic to for example a company's stock.

These results show that with the created rules regarding share repurchasing for managers, managers cannot manipulate stock prices excessively anymore.

The literature shows that price manipulation by managers can be a motivation to repurchase shares. The rules that limit the managers in their ability to manipulate prices, help to keep the stock prices efficient and to let the firm benefit from stock repurchases.

Signaling

Another motivation of share repurchasing is to signal information from inside the firm to the outside world or market. Vermaelen (1981) was able to find a conclusion regarding this procedure which he called the ''signaling hypothesis''.

This signaling hypothesis reflects the idea that managers think the stock currently is undervalued in the market conditions at that moment. When a firm's stock is undervalued, the stock should be worth more and the firm desires the real value of the stock to be recognized by the market. Different literature that zooms in on the relation between this undervalued stock and repurchases, almost all find that share repurchases has a positive effect on the abnormal returns.
These positive abnormal returns support the view that share repurchasing is used to signal undervaluation of the shares to the market.

Therefore, there can be concluded that share repurchasing is used as explained by the signaling hypothesis (Dittmar & Field, 2015; Jagannathan & Stephens, 2003; Bargeron, Bonaime, & Thomas, 2017; Stephens & Weisbach, 1998; Ikenberry, Lakonishok, & Vermaelen, 1995).

But is there also a difference in signaling with share repurchasing for different firms? When firms decide to repurchase shares to signal the undervaluation of their shares, the price of these repurchased shares should indeed be lower than the average market price. Literature that did research in the relation between share repurchasing and stock price, primarily focused on S&P 500 firms. Ben-Rephael, Oded & Wohl (2013) found that specifically smaller firms repurchase shares at a lower price than the average market price. This is an indication of smaller firms repurchasing shares more strategically and large firms repurchasing shares to distribute excessive cash as explained before, according to the authors. This is an indication based on the difference in size of the firms. Dittmar & Field (2015) also find that there is a relation between the share repurchasing activities and the corresponding stock price.

However, in their research not a relation was found between the difference in firm's size and stock price, but between the frequency with which a firm repurchases shares and the stock price. The authors find that firms repurchasing shares with low frequency can make use of a price discount in comparison with firms repurchasing shares with high frequency. So, with share repurchasing stock prices react on the size of the firm and the repurchase frequency.

However, Obernberger (2013) does not find that share repurchases result in positive abnormal returns.

This author concludes that share repurchases are driven by negative returns a firm endured the past period, like the conclusions from Ben-Raphael, Oded, & Wohl (2013). Negative returns have a negative effect on the stock price and therefore give the firms the ability to repurchase shares for a price below the average market price.
Share repurchasing in this way helps firms to benefit from the negative past results and can have a stimulating effect on the stock price.

Also, some literature states that no private information is given by repurchasing shares. This means that private information of the firm which is repurchasing shares is not immediately incorporated after a repurchase.

Ben-Rephael, Oded, & Wohl (2013) describe that only when the repurchase activity is mentioned in the quarterly fillings, the private information is incorporated.

According to the authors private information is not revealed in the U.S. when shares are repurchased.
Also, Busch & Obernberger (2016) have done research in the revealing of private information via share repurchasing. Their results again could indicate that private information is not shared by share repurchasing, but the authors do not give a decisive answer.
If share repurchases do reveal private information about the firm which is repurchasing shares, this information would be embedded in the stock price. This means that the market can draw conclusions about the firm's status by focusing on the stock prices. This could increase or decrease the idiosyncratic risk, and therefore could be beneficial or not for a firm.

After reviewing the different literature above, we can conclude that the signaling hypothesis can be viewed as true. Firms can use share repurchasing to signal private information to the market and could benefit from the lower stock prices due to negative past abnormal returns. Different literature draws different conclusions about what affect share repurchasing has on a firm's idiosyncratic risk.

Price support

Intervention by firms in their stock price is common and is what is meant for price support. In other words, firms intervene after a decline of their stock price in the stock market by share repurchases (Busch & Obernberger, 2016; Keswani, Yang, & Young, 2007). Brav, Graham, Harvey, & Michaely (2005) state that firms are likely to repurchase shares in turbulent times, as for example a market crash or the attack on 11/9/2011.

The same authors also claim that as well managers as institutional brokers are more likely to repurchase shares when the stock performance is weak. This is in line with other research describing weak stock performance as a motivation to repurchase shares (McNally, Smith, & Barnes, 2006).
Many literatures describe that the likelihood of repurchasing shares increases when the past abnormal returns were negative. On top of that, many literatures also mention firms intervening in the stock market to prevent the price of their stock from dropping. (Busch & Obernberger, 2016; Stephens & Weisbach, 1998; Ben-Rephael, Oded, & Wohl, 2013). These two phenomena are both correlated to the stock price and therefore there can be concluded that share repurchasing can be a procedure that supports the stock price. After repurchasing shares the stock price stabilizes according to research done in the U.S. (Cook, Krigman, & Leach, 2003).

Keswani, Yang, & Young (2007) have looked further into this topic and did research in variability of stock prices in times where trading was not allowed. This means that when firms were not allowed to repurchase shares, the stock prices declined. This finding is in line with the price support argument, as when the firm is not allowed to repurchase shares and therefore support their stock price, the prices will fall. This research is done with data from the S&P 500 and not specifically for firms listed in the U.K.

Hong, Wang, and Yu (2008) decided to further research the relation between share repurchasing and share price support. If firms are not prohibited from intervening at the stock market and therefore are able to repurchase shares, these firms can prevent stock prices from falling extensively. The firm in this case can stabilize the stock price if the stock price threatened to fall, because of for example an exogenous demand shock.
Based on this research repurchasing shares is a solution for a firm, in times in which the stock price seems to or will fall, to make this price more efficient and reduce idiosyncratic risk.

Busch & Obernberger (2016) decided to investigate what effect share repurchasing specifically has on the efficiency of the stock price and the idiosyncratic risk. As mentioned above, the stock price efficiency indeed rises when a firm decides to repurchase shares, but also the idiosyncratic risk decreases. So, when the stock price decreases below the desired value, a firm can repurchase its shares to support this price.

However, managers can also repurchase shares to support the price even when the current stock price is above the desired value. The motivation here is purely egocentric and meant to drive up the price as much as possible to extract private benefits when managers are rewarded with stock options. This could also be entitled as price manipulation. Furthermore, this research is also focused on share repurchasing and the corresponding effect on idiosyncratic risk. The results showed that when firms repurchase shares the volatility is lower, which is consistent with the view that firms try to support the prices and therefore try to stabilize the stock price.

Busch & Obernberger (2016) conclude therefore that share repurchases is indeed a solution to support the stock price to make the price more stable and efficient.

Incorporation of information into stock price

Hou & Moskowitz (2005) tried to find another reason for the price efficiency of a stock to increase, besides using the price support argument at lower bound. These authors used a model to investigate the relation between new information available in the market or private information from within the firm and the delay with which a share price reacts. The delay measure the authors used compares the R-squared of two different market models. With the results from applying this measure the authors could conclude that when new information is incorporated with a large delay, this stock prices is a less efficiently priced stock compared to a stock that incorporates information with few delays. Inattention of investors can be a reason for stocks to be priced less efficiently. The authors' reasoning behind this is based on the results that firms with a larger delay in incorporation of new information obtain significant premium returns.

As mentioned above, inattention of investors could cause undervaluation of shares. If attention is created for the shares of a firm, this firm could e able to incorporate new information in the share's price and therefore stabilize and support the share's price. Busch & Obernberger (2016) constructed the hypothesis that share repurchasing improves the speed with which new positive information is incorporated in the share's price. When firms decide to repurchase shares this could signal undervaluation of the shares and with fast incorporation of this information the stock price could be supported with the attention created by the announcement to repurchase shares.

This hypothesis in other words states that if the stock is undervalued and therefore the price lies under the desired level, new positive market information could support the price with the incorporation of this information in the stock price. Managers by repurchasing shares can attract attention from investors to increase price efficiency. A firm is able to turn this attention into a higher price efficiency through the incorporation of this positive information with which the stock price will be supported. The stricter the rules of share repurchasing are, the more attention the firm could get if it actually repurchases shares.

Hacekthal & Zdantchouk (2006) and Bonaime (2015) discuss the difference in rules regarding share repurchasing in different countries and conclude that a stronger signal is send to investors when firms announce share repurchases in stricter regulated countries. UK has stricter regulations regarding share repurchases than the U.S. and therefore more attention could be raised in the U.S. for share repurchases of a firm than in the UK.

In the end Busch & Obernberger (2016) cannot give a decisive answer on the question whether firms are able to use share repurchases to improve the speed of incorporation of new information. The authors found different types of relation between share repurchases and price efficiency based on positive or negative market returns. Results showed that with negative market returns a firm can increase the price efficiency of their stock significantly with share repurchases whereas with positive market returns firms do not increase the price efficiency of their stock with share repurchasing. The effect of the market information incorporated in the stock price should also be found in markets with positive returns. The results of the research of Busch & Obernberger (2016) show that this effect is not consistent for markets with negative results compared to markets with positive results.

Share repurchases also decrease the volatility of the stock price, while in markets with positive returns we would expect to see the volatility of these prices to rise.
However, the argument of share repurchasing causing faster market information incorporation is not fully rejected.

As mentioned before, research done in the effect of share repurchasing and the effect on the firm's value is primarily focused on U.S. firms. The results from the literature described above, show that share repurchasing can be used to boost the stock price and make the price more aligned with the market.

This thesis will focus on the effects of share repurchasing announcements on the firm value of firms listed in the U.K. This firm's value will be measured with the share price of the firms announcing to repurchase shares. In most researches about firm's value, the share price is chosen to measure this. The stock price is one of the main indicators for measuring firm performance and therefore the value of a firm, and it changes because of information related to the firm and the market as a whole. This is the reason the stock price will be used to indicate the firm's value after a share repurchase announcement has been made.

3. Hypothesis Development

In this section will be explained what the hypotheses will be for the consequences share repurchase announcements have on the firm value. This means that a hypothesis will be created for what relation exists between share repurchase announcements and the share price.

So, does share repurchase announcements have a positive effect on the share price of a firm listed on the London Stock Exchange?
Well, share repurchasing has grown a lot in the previous years. As we can read before, there are several reasons for a company to repurchase shares. Several authors did research in the effects of share repurchase announcements on the stock price and all discovered a positive effect for the firm. Although the authors disagree about the cause of this positive effect, all conclude that the results are consistent with the shareholders' interest and the firm gets positive influenced by the share repurchase announcements regarding the stock price.

One fact that can be recorded is that the liquidity of the corporation will decline when this corporation repurchases shares. Chen and Wang (2012) divided in their research firms in constrained and unconstrained firms and looked at the difference between the two types of firms and the way they are influenced by share repurchasing and the corresponding announcements. Constrained firms face more risk in financing future improvements if excessive cash is used for repurchasing shares compared to unconstrained firms. For constrained firms this could lead faster to financial distress and decreasing likelihood of financing future improvements.

When looked into the cases where constrained firms do repurchase shares, other investments are diminished and abnormal stock returns are less compared to unconstrained firms. A reason for repurchasing shares for constrained firms however is the managerial hubris. This means that these firms prevent managers from overestimating the firms' future returns and therefor do not postpone exercising stock options. The second reason for unconstrained firms to repurchase shares is still an overall increase in firm's value afterwards.

Based on the literature, an overall positive effect by share repurchase announcements can be concluded. A lot is written about the effect of share repurchasing and the share repurchase announcements on the stock price of firms listed on the NYSE. However, this thesis will investigate the effect of share repurchase announcements on the stock price of companies listed on the London Stock Exchange (LSE).

Hypothesis: A share repurchase announcement from companies listed on the LSE has a positive effect on the share price.

4. Event Study

This research is about the effect the share repurchase announcements of firms listed in the U.K. have on the stock prices of these corresponding firms. Although various other aspects can be researched, the focus in the research will solely lie on the share price of the firms which have done the share repurchase announcements.

4.1 Methodology

In this thesis the effects of an event on the firm's value will be investigated. This is economic event is the share repurchase announcement. With a research like this, an event study methodology is the most ideal approach to examine the effects.

Event studies has been used for investigating the relation between firm-specific events and the firm's value or share price (Binder, 1998). This means that this type of study can be perfectly used to investigate what kind of effect share repurchasing has on the share price of firms listed in the U.K.

Important when conducting an event study, is to take into consideration how the share price would have been fluctuated if no share repurchase announcement had taken place. The share price return in this study has been investigated within the event window, so when a share repurchase announcement has taken place, but also outside the event window, so when a share repurchase announcement had not taken place. This method shows you the difference and gives you the opportunity to draw accurate conclusions based on the event study.

The returns of the share prices of the firms participating in the research will be compared with the normal expected returns if the economic event (share repurchasing) had not taken place. The difference between these two outcomes is called ''the abnormal return''.

The research has been done according to three steps. First, we defined the event of interest and the period on which is focused during the study. The second step in this research was the selection criteria used to select firms which have done share repurchase announcements in the previous years. The last step was to find a model that helped to draw conclusions about the abnormal return, and therefore the difference between the share price when a firm did a share repurchase announcement and when a firm did not (MacKinlay, 1997).

4.1.1 Event of interest

So defining the event of interest in this case was zooming in on firms that were listed in the U.K. and did share repurchase announcements in the last ten years. The period of focus was from 1-1-2008 till 1-1-2018, ten years. After the firm did such an announcement, the share price of this firm in the 4 days after the share repurchase announcement has been investigated as well as the share price in the 4 days before the share repurchase announcement. This method is used for every firm used in the data sample and we looked at the average effect in the end.

4.1.2 Criteria

So on what criteria were the firms selected? The firms needed to be listed in the U.K. This means that we gathered information from firm listed on the LSE, London Stock Exchange. As mentioned before, all the firms that were selected were investigated for a period of ten years.

Firms that were not listed anymore on the LSE during the period which was investigated, were not included in the data sample.

4.1.3 Estimation window and formulas

With an Event Study methodology, it is important to compare the stock price of the firms in the data sample with the projected stock price in the case of no share repurchase announcement. With the ''estimation window'' model the stock prices in the case of no share repurchase announcements will be simulated.

The CAPM (Capital Asset Pricing Model) is used to consider the Beta differences. With the help of the estimation window and the corresponding stock prices and the Ordinary Least Square model, the market model is estimated. MacKinlay (1997) in his research advised to execute an Event Study with this method.
This formula is shown as follows:

(1) $R_{it} = \alpha i + \beta_i R_{mt} + \varepsilon_{it}$ for t = -4,-3,…,+3+4

with $E(\varepsilon_{it}) = 0$ *and* $Var(\varepsilon_{it}) = \sigma^2(\varepsilon_{it})$

Datastream provided the share price data and the returns are calculated by subtracting the share price after the share repurchases from the share price from before the share repurchases and divide this outcome by the share price from before the share repurchases. A regression is created with the help of the OLS estimates resulting from (1). This regression (2) is used to calculate the expected returns for the different firms in the data sample in the case of no share repurchase announcements.

(2) $R_{it^*} = \alpha i + \beta_i R_{mt}$

for t = -4,-3,…,+3+4

Furthermore, to calculate the effect of the event, we have to calculate abnormal returns. These returns are calculated by deducting the returns that in the case of no share repurchase announcements would have been realized from the actual returns of the stock.

(3) $AR_{it*} = R_{it} - R_{it*}$

for t = -4,-3,…,+3+4

To examine the results from different time series it is useful to use Cumulative Abnormal Return (CAR). With this CAR we can address an event window for multiple periods.

(4) $CAR_i\ (t_1, t_2) = \sum(t_2, t=1)\ AR_{it}$

Then, it is also useful to find out whether the results are difficult from zero. With the help of the ‘’null hypothesis’’ this can be done.

(5) $H_0 : E\ (CAR_{it}) = 0$

The ‘’null hypothesis’’, as shown in equation 6, is also used to test whether the abnormal returns are not significantly different from zero. This means that the CAR and the abnormal returns for a certain period are checked with the ‘’null hypothesis’’ with the help of the last two equations (7) and (8).

(6) $T = AR_{it}/\sigma(AR_i)$

Here the $\sigma(AR_i)$ *is equal to the standard error of the estimate from (1)*

(7) $T = CAR(_{t+n,\ i}) / ((\sqrt{n})\ \sigma(AR_i)$

Here with $AR(_{t+n,i}) = \sum(_{t+n,\ j=t})AR_{i,j}$

4.2 Regression

With the formulas described above the abnormal returns were calculated. With Stata we were able to find an overall effect of share repurchase announcements on stock prices of the companies in the data sample.

But this research not only focused on the relation between the repurchase announcements and the abnormal returns, but also other variables.

The abnormal returns from the repurchase announcements were regressed with other variables. These other variables can have a significant influence on the abnormal return of the firms and are mentioned below.

Free Cash Flow (FCF): Regarding the ''excessive cash'' argument discussed earlier; the amount of free cash flow can be of significant influence on the stock price of the firm. The variable ''free cash flow'' here is used to describe the amount of cash that is available for the managers within the firm. The more the amount of free cash flow present within the firm, the higher the chance of a repurchase announcement creating a positive effect on the stock price. As discussed before, excessive cash in this case is used to repurchase shares and not for in vesting in negative NPV-projects. This is a positive signal to investors and therefore it can be expected that the price will go up. Also, by investing the excessive cash in repurchasing shares, the risk of managers extracting money for private benefits decreases. In this way the managers will focus on creating money for the shareholders instead of creating money for themselves.

Return on Equity (ROE): The Return on Equity is used as a measure of how effectively a company is using its assets to create profits. So, to look from an investor's view, the higher the return on equity the more profit a company creates, and therefore the higher the stock price will be. As known in the financial world, the stock price will be influenced positively when the firm is profitable and has a strong balance sheet.

As discussed before, excess cash used for repurchasing shares is considered as a good and healthy signal. This shows that the firm is able to use the cash to repurchase shares without having negative consequences.
But, if the period before the announcement has been shadowed by negative NPV investments, a stock price mostly gets influenced negatively. However, if the firm has participated in profitable investment options, the stock price mostly gets influenced positively. So, this means that if the announcement of repurchasing shares follows a profitable period, the stock price is likely to increase. Therefore, the ROE-ratio is used.

This ratio as explained partly before, indicates whether the firm arranges investments in profitable opportunities and therefore will influence the stock price.

Debt-to-capital (TDTC): This total debt-to-capital ratio is a tool that indicates the total amount of outstanding debt a company has as a percentage of the firm's total capitalization. In other words, this ratio is an indicator of the leverage a firm has, which is debt used to purchase the company's assets. So, this ratio tells more about the capital structure of the firm, and therefore gives an indication about how much debt the company chose to use for acquiring the assets. A low ratio shows that this company has not adopted a capital structure ideal for itself. However, a high ratio would suggest the company has used a lot of debt and therefore needs to pay a lot of interest, affecting the profit. With the option to repurchase shares, firms can move towards a targeted debt-to assets ratio.

Firm Size (MV): The last variable, which is interesting to look at, is the size of the firm. Larger firms are in general more analyzed by analysts and have more investors whom invested in the firm. The public's eye is more focused therefore on the larger firms than on the smaller firms. This is the reason that a smaller firm can be expected to have larger tendency to send strong signals to the market and therefore public's eye than the larger firms.

Larger firms are already analyzed as mentioned before, so the public will know certain changes or effects of procedures from within the large firm without the large firm having shown strong signals of its own to the outside world.
Important here is to define the variable ''Firm Size''. After reviewing various literature about measuring firm size, this paper will use the market value of equity (MV) to measure the firm size of the firms included in the data sample.

The regression that will be executed to explain what the relation is between the variables mentioned above and the abnormal return is:

*AR (0) = b1*FCF + b2*ROE + b3*TDTC + b4*MV + c*

To explain the cumulative abnormal returns the following regression is used:

*CAR (-4, +4) = b1*FCF + b2*ROE + b3*TDTC + b4*MV + c*

The regressions formulated above are used for this research and for the entire sample. Furthermore, an important side note here is that the logarithm is used for the two variables MV and FCF. This is because of a substantively reason, because some concepts are better thought of in terms of ratios than differences.

This means that the differences between the results within this variable were relatively big i.e. between the companies. Therefore, for these two variables it is better to use the logarithm to create concepts in terms of ratios. For the other two variables this is not necessary, because these variables are already thought of in terms of ratios.

So, what can be expected as results when regressing with the variables discussed above? The free cash flow and therefore b1 is expected to have a positive sign. The explanation here is that the more the amount of free cash flow present within the firm, the higher the chance of a repurchase announcement creating a positive effect on the stock price. This is in line with the excessive cash argument mentioned in the theoretical framework, which explained that the amount of free cash flow within the firm can be of significant influence on the stock price of the firm. This would explain the expected positive sign of b1.

In the case of the return on equity, b2 is expected to have a negative sign. According to the undervaluation signal explained in the theoretical framework, companies are more likely to buy back their shares after a decrease in the stock price. This offers the opportunity to buy back more shares and a negative ROE will cause a decrease in the stock price in general. This means that if the ROE is negative, the share price will decrease, and therefore the firm is more likely to repurchase its shares and announce share repurchases. The price support argument mentioned in the theoretical framework is supporting this reasoning.

The total debt divided by the total capital is the next variable measured with the regression. The more the amount of debt a company has, the more the balance sheet of that firm is viewed as weaker in theory. According to the capital structure argument mentioned in the theoretical framework, the more leverage a firm has, the more limited the resources of the firm are to repurchase its shares. This means that if the TDTC is high, the capability of the firm to repurchase its shares and therefore announce a share repurchase is lower in theory. Therefore, the b3 is expected to have a negative sign.

The last variable in this regression is the market value of the firm and therefore the size of the firm. In general, larger firms have more investors whom invested in the firm, and therefore have more resources to use regarding repurchasing shares. When looking at the signaling argument used in the theoretical framework, smaller firms are in general more motivated to send strong signals to the public's eye.

This is because the public already knows more about larger firms and analysts focus more on the larger firms than on the smaller firms. This means that a smaller firm can be expected to have more tendency than the larger firm to repurchase its shares with the aim of sending a signal. Therefore, b4 is expected to show a negative sign, because the smaller the firm, the larger the tendency of this firm to show a strong signal by repurchasing its shares.

5. Data

A data sample for this research has been constructed by identifying all share repurchases made by listed firms in the U.K. This data sample is based on a period of ten years, this means from 2008 until 2018. The type of share repurchases has not been considered, just the fact that a share repurchase announcement had taken place. The companies used for this research are listed on a type of index during the sample period. These companies are listed on the London Stock Exchange (LSE), and only the companies listed on the LSE and which made the announcements in the media are incorporated.
This study is about the announcement of repurchasing shares, as mentioned before. This is because a lot of researches are focused on the repurchase itself, but the announcement often has already a significant influence on the firm's value. So, all the companies which did a repurchase announcement in the period from 2008 until 2018 and which are listed on the LSE, are included in the data sample.

Only the moment of a share repurchase announcement is what matters and not whether this company actual repurchased shares. The focus is only on what kind of influence the announcement of share repurchasing has on the abnormal return and not on announcements about whether the company actually completed the share repurchase program.

The gathering of the necessary information has been done via Datastream. With this source 65 companies were found which made repurchase announcements in the period from 2008 until 2018. To create an accurate data sample, Datastream was not only searched with the words ''Share repurchasing'' but also with ''Share buyback'', ''Share repurchase program'', ''Share buyback program'' and the Dutch translations for these words.
A total of 65 observations have been done in this sample regarding share repurchases.

The official press releases provided the announcement dates and potential more information about the repurchase program the company announced to do.

6. Empirical Results

In this part the main results will be shown. In the table below the abnormal return with regard to the share repurchase announcements will be shown together with the different cumulative abnormal returns with different estimation periods. In the second part, the regression analysis will be deepened with the different variables used mentioned before.

6.1 Abnormal Return and Cumulative Abnormal Returns

Variable	**Coefficient**	**t-statistic**
AR	0.0073	2.43***
CAR(-1,+1)	0.0039	1.67*
CAR(-2,+2)	0.0045	2.65***
CAR(-4,+4)	0.0091	5.71***

*Table 1. Shows the coefficient of the different variables used and the corresponding level of statistical significance. *** Coefficient is significant at the 1% level. ** Coefficient is significant at the 5% level. * Coefficient is significant at the 10% level*

The first part of the research consisted of the effect a share repurchase has on the abnormal return of the firm. All these variables measured regarding the share repurchase announcement showed a positive sign. This means the return rises when a share repurchase announcement takes place. In the 65 share repurchase announcements made from the companies listed on the LSE, a significant positive effect can be deducted from the regression made.

From this table can be concluded that a share repurchase announcement will increase the abnormal return with 0.73%. Also, the t-statistic of 2.43, shows that the research can be indicated as statistically significant.

As mentioned before, also the CAR with different estimation windows show significant positive effects. The cumulative abnormal returns with an event window of (-1,+1), (-2,+2) and (-4,+4) will be increased with 0.39%, 0.45% and 0.91% respectively by a share repurchase announcement. Furthermore, the significance level increases when the event window increases, from 1.67 to 5.71.

An interesting fact to notify here is that the effect of share repurchasing gets relatively bigger when looking at the AR, CAR (-1,+1), CAR (-2,+2) and CAR (-4,+4) respectively. This can be explained by taking a closer look at the definitions of these subjects. The AR(0) takes into consideration the normal abnormal return at the date of announcement. As shown in the table, the AR gets positively effected by the share repurchase announcement, but relatively less than the CAR. This is because the CAR is the cumulative abnormal return over the event window as a whole. The bigger the event window, the bigger the effect measured. The cumulation of these abnormal returns result in this higher statistical significance and the higher positive effect.

To make it more visual a graph is created to project the cumulative abnormal returns with the time regarding the share repurchase announcement.

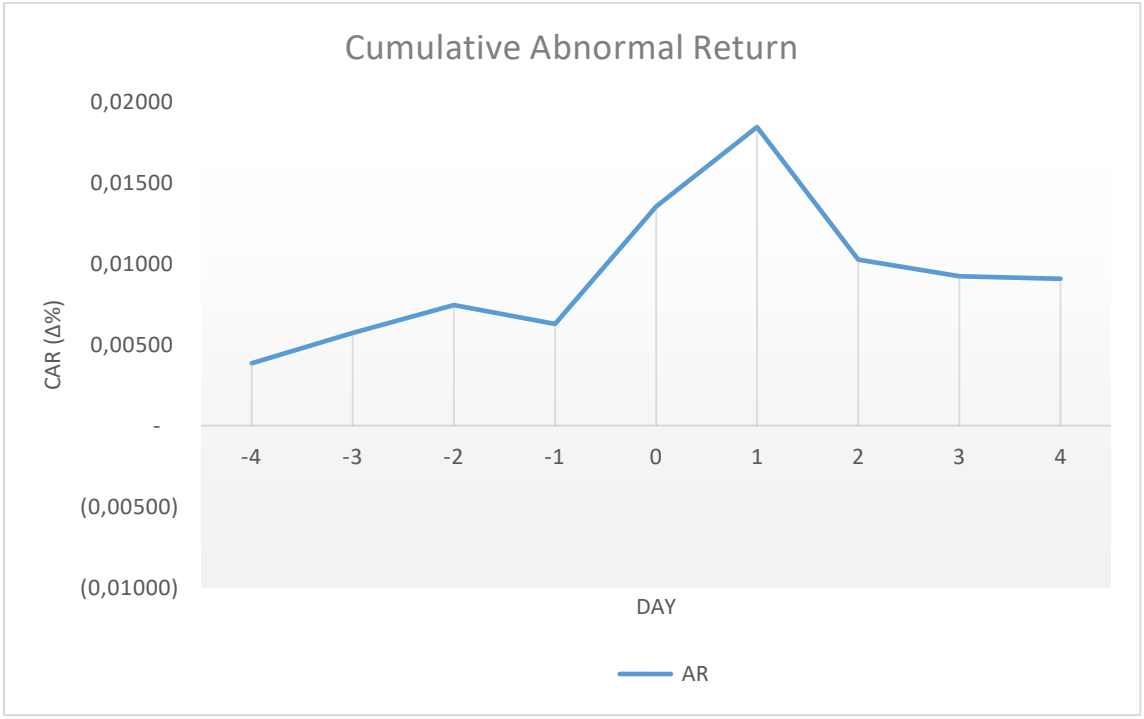

Figure 1. The cumulative abnormal return in days with regard to the share repurchase announcement

As shown in this figure in the first three days before the share repurchase announcement the abnormal return increases. Then after the first day before the share repurchase announcement the increase in the CAR is relatively big, while the increase in CAR after the second day after the share repurchase announcement slowly attenuates.

As expected, the abnormal return has the highest percentage increase in one day after the announcement, because many investors will react in that period on the share repurchase announcement. In this week the CAR has increased with almost 2%.
An explanation for the small decrease in the increase of the cumulative abnormal return between the second and first day before the share repurchase announcement, could be the uncertainty about the firm actually repurchasing shares. The share price, and therefore the abnormal return, could react on this.

6.2 Regressions

6.2.1 Regression with AR

The share price returns regressed with the different variables described before, will be explained in this section. This is done in order to create more insight in what drives these returns. The different variables are regressed with the abnormal return, but also with the cumulative abnormal return. Here will be examined what the results indicate and will be given a broad analysis of the regression results.

In Table 2 the results are shown regarding the abnormal return. This means that for every of these variables the effect on the abnormal return is measured at the moment of the share repurchase announcement. In Table 2 is shown the effect of every variable on the AR separately, but also regressed all together. The first four columns the results of every variable regressed individually on the AR is shown and in the fifth column the results of the regression of all the variables with the AR is shown.

Independent Variable AR (0)	**Model 1 AR**	**Model 2 AR**	**Model 3 AR**	**Model 4 AR**	**Model 5 AR**
Dependent Variable(s)					
(log)MV	-0.0006*** (-20.03)				-0.0006*** (4.24)
(log)FCF		-0.0003*** (-15.37)			-0.0001*** (-2.55)
TDTC			-0.0000 (-0.50)		-0.0000*** (-3.17)
ROE				-0.0001*** (4.17)	0.0000*** (3.53)
Constant	0.0027 (9.07)	0.0012 (4.18)	-0.0032 (4.36)	-0.0033 (2.35)	0.0030 (8.55)
N	65	65	65	65	65
Root MSE	0.0151	0.0148	0.0150	0.0150	0.0150
R-squared	0.0024	0.0016	0.0000	0.0001	0.0027
R-squared adjusted	0.0013	0.0005	-0.0000	0.0001	0.0021

*Table 2. The results of the regression with the different variables and the AR. *** Coefficient is significant at the 1% level. ** Coefficient is significant at the 5% level. * Coefficient is significant at the 10% level.*

As shown in this table, the firm size (MV) has a negative relationship with the AR. This is what was expected if the undervaluation signal hypothesis holds and in addition this regression is statistically significant.

An interesting fact to notice here is the negative relationship the FCF has with the abnormal return. This means that the more cash, the less the abnormal return will be. At first, the expectation was that it would hold a positive sign, because of the agency problems that can be reduced by reducing the excessive cash. Normally excessive cash is appreciated by the market and would therefore have a positive sign.

No theories are found for this inverse relation, but a reason for this negative sign could lie in the risk aversity of the firms in this data sample to invest in certain opportunities. Eventually the reason for this negative sign is an interesting topic to do further research in.

The TD/TC variable correlates negatively as expected beforehand. This is in line with the view that the more debt a company has, this can be seen as negative by the market. However, this not statistically significant.

The last variable mentioned in this table is the ROE. This variable is positively correlated as expected according to the undervaluation signal hypothesis and is statistically significant. The constant is statistically significant with every regression.

The last column of this table shows the result of the regression of all the different variables at once with the abnormal return. Here you see the same kind of relations the variables had with the individual regressions with the abnormal return. The statistical significance slightly decreases, but this can be explained by the type of regression executed here. Because of the regression of all the variables at once, the option exists that the variables interfere with each other within the regression and therefore influence each other's result and statistical significance. Furthermore, the explanations of the type of relationships the variables have with the abnormal return will be the same here.

6.2.2 Regression with CAR

In Table 3 the results are shown from the regression between the variables and the CAR individually and all at once in an event window of four days before the share repurchase announcement and four days after (-4,+4).

Independent Variable CAR (-4,+4)	**Model 1 CAR**	**Model 2 CAR**	**Model 3 CAR**	**Model 4 CAR**	**Model 5 CAR**
Dependent Variable(s)					
(log)MV	-0.0082*** (-6.18)				-0.0060 (-4.90)***
(log)FCF		-0.0051*** (-5.46)			-0.0022 (-1.19)
TDTC			-0.0004*** (-5.48)		-0.0004 (-5.42)***
ROE				-0.0001 (0.24)	0.0001 (1.34)*
Constant	0.0868 (6.85)	0.0753 (6.12)	0.0236 (7.28)	0.0080 (4.36)	0.1433 (4.52)
N	65	65	65	65	65
Root MSE	0.0373	0.0390	0.0384	0.0400	0.0380
R-squared	0.0615	0.0549	0.0526	0.0001	0.1416
R-squared adjusted	0.0599	0.0530	0.0508	-0.0018	0.1346

*Table 3. The results of the regression with the different variables and the CAR. *** Coefficient is significant at the 1% level. ** Coefficient is significant at the 5% level. * Coefficient is significant at the 10% level.*

The type of relationship between the various variables and the CAR remain the same compared to those of the variables with the AR.

The difference here is that in terms of significance, all the regressions of these variables with in this case the CAR are more statistically significant than with the regression of the variables with the AR. The explanation for this result is explained before and is because of the cumulation of the values of each of the variables i.e. CAR.

Furthermore, the increase in the coefficients can also be explained because of the cumulation of the values over the event period i.e. 9 days. Besides the statistical significance for the variables, the explanations for the type of relationships for in this case the CAR remains the same compared to the one given for the AR. Besides the different variables, the constant is statistically significant with every regression.

Also, regressions are made with an event window of one day before and after the share repurchase announcement and with an event window of two days before and after the share repurchase announcement. Because four days before and after the repurchase announcement already gives a sufficient view on the effect of a share repurchase announcement on the CAR, the other two regressions are shown in the appendix.

7. Conclusion

In this final section with the help of the main empirical findings the concluding remarks will be made. Furthermore, suggestions for future research will also be mentioned.

7.1 Concluding remarks

With the help of this research an analysis has been done on the effects of share repurchase announcements on the firm's stock price. The focus here was on the firms listed on the London Stock Exchange to gather more information about stock prices influenced by stock repurchases besides the studies done in this field with U.S companies. The results have given new insights in the reaction in abnormal returns and cumulative abnormal returns. There can be noted that a share repurchase announcement results in an increase in the abnormal return of 0.73% and in an increase in the cumulative abnormal return of 0.91% with an event window of eight days (four before the announcement and four after).

Also, a regression has been done between the different variables (MV, FCF, TDTC and ROE) and the share repurchase announcements. The results from this regression are on average significant and fits in the theory explained the theoretical framework in section two. However, the FCF as variable has a negative sign whereas a positive sign was expected. Normally the amount of cash is appreciated in the market, but this gives an indication of the opposite. As explained in section six already, no theories which indicate a specific theory for this phenomenon are found. The risk-averseness of the companies which are looking for investment opportunities could explain the negative sign.

The hypothesis formulated can be confirmed with this research. The empirical evidence from this research confirms that the firm's stock price does get influenced positively by share repurchase announcements.
Also, the statistical significance of the results has been relatively high throughout this research and therefore has been no blemish on the conclusions drawn.

7.2 Future research

In this section the opportunities for future research will be discussed. First of all, the event window has been set to the short-term focus, and therefore leaves space for research with the focus on the long-term i.e. the effect share repurchase announcements have in the long-term, where a method by Khotari and Warner (2005) fits well.

Furthermore, it would be interesting to find more about the reason why the FCF has a negative sign in the regression made in this research. The possibility exists that this has been noticed more frequently and the different reasons for this phenomenon has not been researched widely so far.

Finally, it would be interesting to investigate whether the firms that actually repurchase shares, show abnormal returns more strongly. When a firm announces a share repurchase, the effects have been showed in this research, and this is assumed to be a credible signal. But are the abnormal returns of firms that do repurchase shares different from the firms that only announce share repurchases? By incorporating ex-post returns of firms that do repurchase shares, the signaling effect and repurchase motivations can be better measured and explained.

8. Appendix

Independent Variable CAR (-1,+1)	**Model 1 CAR**	**Model 2 CAR**	**Model 3 CAR**	**Model 4 CAR**	**Model 5 CAR**
Dependent Variable(s)					
(log)MV	-0.0067*** (-3.41)				-0.0005 (-0.19)
(log)FCF		-0.0064*** (-4.89)			-0.0071 (-3.97)
TDTC			-0.0001 (-1.41)		-0.0003 (-2.30)
ROE				-0.0000 (0.23)	0.0001 (0,88)
Constant	0.0673 (3.59)	0.0869 (5.01)	0.0088 (1.80)	0.0020 (0.74)	0.1117 (4.85)
N	65	65	65	65	65
Root MSE	0.0319	0.0318	0.0333	0.0337	0.0317
R-squared	0.0567	0.1240	0.0111	0.0003	0.1573
R-squared adjusted	0.0518	0.1188	0.0055	-0.0055	0.1362

In this table is shown the results of the regression with CAR and the different variables in an event window of (-1,+1)

Independent Variable CAR (-2,+2)	**Model 1 CAR**	**Model 2 CAR**	**Model 3 CAR**	**Model 4 CAR**	**Model 5 CAR**
Dependent Variable(s)					
(log)MV	-0.0037*** (-2.49)				-0.0015 (-0.74)
(log)FCF		-0.0041*** (-4.12)			-0.0049 (-3.60)
TDTC			-0.0001 (-1.1)		-0.0002 (-2.10)
ROE				-0.0001 (0.14)	0.0001 (0.77)
Constant	0.0394 (2.80)	0.0581 (4.38)	0.0070 (1.95)	0.0030 (1.49)	0.0622 (3.50)
N	65	65	65	65	65
Root MSE	0.0309	0.0314	0.0318	0.0320	0.0316
R-squared	0.0189	0.0565	0.0040	0.0001	0.0648
R-squared adjusted	0.0158	0.0532	0.0007	-0.0034	0.0509

In this table is shown the results of the regression with CAR and the different variables in an event window of (-2,+2)

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