

ERASMUS UNIVERSITY ROTTERDAM

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Bachelor thesis

**The effect of share repurchase announcements in the United
Kingdom**

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ABSTRACT

In this paper the effect of share repurchase announcements on the stock price for companies listed in the United Kingdom is being tested. The data contains a total of 84 share repurchase announcements that all took place between 2000 and 2016. The effect is being tested in two periods; the short-term (21 trading days surrounding the announcement) and the long-term (four-year period after the announcement). The CAR approach is being used in both the short-term and the long-term, and in addition the BHAR approach is being used for the long-term. The announcement return that resulted from the short-term CAR approach is 0.88%. The four-year CAR and BHAR approach resulted in an abnormal return of respectively 40.6% and 45.5%, both significant at a 1% level. This makes it interesting from an investor's perspective to invest in the long-term in FTSE companies after a share repurchase announcement, especially if the announcement took place during a crisis which to yield even higher returns.

Keywords: Share repurchase announcement, CAR, BHAR, United Kingdom

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CHAPTER 1 Introduction

Throughout history cash dividends have been the main pay-out policy for companies. Companies have been permitted to buy back their own shares for a long time, but it was not until the 1980s that US companies started to buy back their own shares on a large scale. In the years following this shift the importance and magnitude of share repurchases kept rising (Grullon & Ikenberry, 2000), in contradiction to dividends of which the importance declined. In 1998 share repurchases surpassed cash dividends and became the most important method for companies in the US to distribute cash to their shareholders (Allen & Michaely, 2003).

From a historical point of view share repurchases have not been very important in European countries, in contradiction to the US where share repurchases have been popular for a while. Between 1980 and 1998 not even five hundred share repurchases announcements have been reported by European companies. Most of these share repurchases have been conducted by UK listed companies. More recently, share repurchases are becoming more popular in Europe due to an increase in acceptance (Rau & Vermaelen, 2002). With the exception of the US, the UK is the country with the most share repurchase activity. However, in contrast to the US, very little research has been conducted on the effect of share repurchases in the UK (Benhamouda & Watson, 2010).

The increase in popularity of share repurchases as pay-out policy began with the change of the SEC (Securities and Exchange Commission) safe harbour Rule 10b-18 in 1982. This rule is the only guidance companies have for open market share repurchase. It protects companies from stock price manipulation based on price or timing of the share repurchase, resulting in the increasing popularity of share repurchases (Cook, Krigman, & Leach, 2003). The four main rules companies have to oblige to are: manner of purchase, timing, price and volume. The manner of purchase obligates a company to buy back the shares in a single day from a single deal or broker. There is no trading allowed in the last thirty minutes of trading and the price should not exceed the last transaction price or the highest independent bid. Lastly, the share repurchase must not exceed 25% of the average daily volume.

However, the UK rules around share repurchase activity are slightly different than in the US. UK listed companies have to oblige to the Companies Act of 1985 and the Listing Rules. There are three big differences between US and UK share repurchase regulation. First of all, in compliance with the Listing Rules, a company is required to report all details of the transaction before 7:30 a.m. on the first business day after the execution of the share repurchase. This report includes the share repurchase date, the number of repurchased shares and the paid price or the lowest and highest paid prices.

Secondly, the share repurchase price must not exceed 5% of the average stock price of the five (business) days before the share repurchase. This restriction on the paid price limits the possibility for companies in the UK to manipulate share prices through share repurchases. Finally, companies are not allowed to conduct a share repurchase in the one- or two-month “close periods” prior to preliminary announcements of operating results. These “close periods” help prevent UK companies from taking advantage of the information asymmetry between insiders and investors (Wang, Strong, Tung, & Lin, 2009). Since UK regulation is stricter than US regulation, it is worthwhile to investigate whether the announcement effect will be lower for UK companies.

The purpose of this paper is to examine the effect of share repurchase announcements in the UK. It is highly relevant to conduct research on the effect of share repurchases of UK listed companies, due to the increase in popularity of share repurchases as pay-out policy and the lack of research on share repurchases of UK listed companies. All of this results in the following research question:

What is the effect of a share repurchase announcement on the stock price between 2000 and 2016 in the UK?

The final dataset contains a total of 84 share repurchase announcements and their stock prices over the following four years. All these share repurchase announcements are conducted by companies listed on the *Financial Times Stock Exchange Index, FTSE*, between 2000 and 2016.

The abnormal returns are calculated for the short-term and the long-term. Where the short-term lasts for one trading day before the share repurchase announcement until twenty trading days after the announcement. The long-term effect is measured monthly for a total of four years. This research contains two separate methods to calculate the abnormal returns, firstly, the *cumulative abnormal return* (CAR) is used for both the short-term and the long term. The second method used is the *buy-and-hold abnormal return* (BHAR) approach, which is used to calculate the long-term abnormal returns.

The findings of this research are as follows, the CAR approach in the 1-day window surrounding the announcement resulted in a return of 0.88%. The total short-term period, the 21 trading days surrounding the share repurchase announcement resulted in a CAR of 2.24%. For the long-term effect two different methods were used, first of all the CAR approach which resulted in a CAR of 40.6%. The second method, the BHAR approach, had similar results a BHAR of 45.5%. Including the crisis effect resulted in a CAR of 31,6% before the crisis and 31.1% after the crisis. The CAR during the crisis was 66.5%, over twice as higher. Similar results were found with the BHAR approach. From an investor's perspective investing in FTSE companies after a share repurchase announcement yield high abnormal returns, especially if the announcement took place during a crisis.

CHAPTER 2 Literature review

This section describes the main literature around share repurchases. The first part of the literature review will describe the different methods of share repurchase. The second part is about the different motives firms have to conduct a share repurchase. In the following part, the effect of share repurchase announcements in previous research is discussed. The final part will include the hypotheses.

2.1. Share repurchase methods

There are five different methods companies can use to repurchase their own shares: open market share repurchase, fixed price tender offer, Dutch auction tender offer, private or targeted share repurchases and repurchase involving derivatives (Vermaelen, 2005).

2.1.1. Open market share repurchase

With this method the company buys back its own shares on the market at market price. This is the most common way for a company to buy back its own shares; over 90% of the US share repurchases between 1984 and 2000 used this method. Open market share repurchase is the most used method mainly because it is the cheapest way for companies to buy back their shares (Grullon & Michaely, 2004). But there are downsides to this method, there are several restrictions on the paid price and the buyback volume. Because the market is unpredictable open market share repurchase results in uncertainty about the price companies have to pay for the shares. Most countries have regulations around share repurchase activity. Restrictions on the buyback volume have been installed to prevent companies from taking too much advantage of underpricing. In the UK there are even more restrictions, when it is likely for the managers to have superior information about the prospects of the company they are not allowed to conduct a share repurchase (Rau & Vermaelen, 2002).

2.1.2. Fixed price tender offer

In the fixed price tender offer method, a firm offers to buy back a specific number of shares at a fixed price. The specific number of shares is referred to as the *target* number of shares. If the shareholders offer more shares to buyback for the company than the target number, the company will buyback any number of shares between the target number and the number of shares offered by their shareholders. If the shareholders offer less shares to buyback for the company than the target number, the company will buyback all the shares the shareholders offered. The fixed price the company offers is usually higher than the market price which makes this share repurchase method more expensive than an open market share repurchase.

2.1.3. Dutch auction tender offer

This share repurchase method is similar to the fixed price tender offer method but instead of a signal price offer there is a range of prices. The shareholders can choose their minimal selling price within the range if they wish to sell. The shareholder then needs to decide the number of shares he is willing to sell and at what price. The company then buys the number of shares it wants to buy at the lowest possible price, each shareholder will get the same price for the offered shares. This method is more favourable for companies than the fixed price tender offer for several reasons. First of all, this method is usually cheaper. Secondly with this method pessimistic shareholders will leave sooner, because they will agree to sell their shares for a lower price than the optimistic shareholders.

2.1.4. Private or targeted share repurchases

With this method a company directly approaches a large shareholder to buy back shares. The price of these shares will be negotiated between the company and the shareholder. There are several reasons for this method. First of all, as a protection for a possible takeover attempt, when this is the case the price is usually larger than the market price. Secondly to buy back shares from their own employees, in this case the market price will be paid.

2.1.5. Synthetic repurchases or repurchases "enhanced with derivatives"

This method mainly differs in the use derivatives instead of cash. The synthetic repurchases are generally divided into three different programs: writing put options, buying collars and buying forward contracts. These transactions are done with investment banks who hedge their risk.

2.2. Share repurchase motives

The main reasons for a share repurchase can be divided into four different hypotheses: the dividend substitution hypothesis, the leverage hypothesis, free cash flow hypothesis and information signalling hypothesis.

2.2.1. The dividend substitution hypothesis

This hypothesis suggests that share repurchases could be more favourable than dividends as a pay-out policy. The reason for this is that share repurchases are historically lower taxed than dividends. According to Brennan and Thakor (1990) shareholders prefer a dividend payment when it comes to small distributions. However with large distributions most shareholders prefer a share repurchase.

2.2.2. The leverage hypothesis

Managers can use a share repurchase to create a more desirable capital structure for the firm. By using the additional debt capacity of the firm to buy back shares and in turn reducing equity (Wansley, Lane , & Sarkan, 1989).

2.2.3. Free cash flow hypothesis

It is in the best interest of the shareholders to maximize the shareholder wealth. On the other hand, with a lot of excess cash the manager can put its own interests ahead of the interests of the shareholders. By buying back shares there is no excess cash for the managers to use for their own interests. A share repurchase shows that his interest aligns with the interests of the shareholders, which leads to a reduction of agency costs (Grullon & Ikenberry, 2000).

2.2.4. Information signalling hypothesis

The information signaling hypothesis is the main reason for managers to conduct a share repurchase. Managers can use a share repurchase to signal favorable information to the shareholders that is not known to the market about the future of the company. The share repurchase announcement also gives a signal to the public that the company's stock price is undervalued, in the eyes of the managers (Banbenko, Tserlukevich, & Vedrashko, 2012). The greater the undervaluation of the stock price according to the managers the greater the value of the released information through a share repurchase announcement (Wansley, Lane , & Sarkan, 1989). The information that the management signals through a share repurchase announcement results in a redistribution of wealth among investors. Wealth is being redistributed from the small, uninformed investors, to the large, informed investor. Usually only the large investors have the possibility to become informed, this is mainly the case because becoming an informed investor is costly. Uninformed investors have the tendency of selling stocks at a too low price and holding on too long when the stock price is high (Stephens & Weisbach, 1998).

2.3. The effect of share repurchase announcements

2.3.1. Short-term effect in the United States

Most of the research on the short-term effect of a share repurchase announcement looked at the announcements effect. They looked at the market reaction to a share repurchase announcement over a three day period around the event date. The daily abnormal returns were calculated and later cumulated, CAR[-1,+1]. Ikenberry and Vermaelen (1996) found a three-day CAR of 3.42%. Comment and Jarrell (1991) found a lower CAR of 2.30%. Similar short-term results were found by Peyer and Vermaelen (2008) where the three days around the announcement resulted in an average CAR of 2.39%. Most research shows that the expected return of a share repurchase announcement is around 3% in

the US. In contradiction to most research Lakonishok and Vermaelen (1990) used a longer short-term period, a week, which resulted in an cumulative abnormal return of 9%. Concluding that not all information is directly incorporated by the market.

2.3.1.2. Short-term effect in Europe

Several research has been done on the effect of share repurchase announcements across different countries in Europe. Andriosopoulos and Lasfer (2015) found that the market reaction is different than in the US, resulting in significantly lower announcement returns. The announcement returns were still positive but lower; 1.68% in the UK, 2.32% in Germany and even lower 0.80% in France. Several reasons are stated for the lower returns in Europe. First of all, Europe has a relatively large number of recurring announcements. These announcements have the tendency to generate lower results than the initial announcement. Secondly, the UK has different regulations around share repurchases. Companies are allowed in the UK to keep their repurchased shares as treasury stock, which results in less impact on the market. The relative low returns in France can be allocated to corporate cultural issues and their specific governance. Similar findings were found by Manconi, Peyer and Vermaelen (2013); the share repurchase announcements lead to a positive return outside the US, but the cumulative returns are around 50% lower. The average announcement return of the 15 European countries they conducted the research on is 1.24%. UK's announcement return is even lower at 0.83%.

2.3.2. Long-term effect in the United States

Ikenberry, Lakonishok and Vermaelen (1995) conducted one of the first researches about the long-term effect of share repurchase announcements on the stock price. They found a four year average *abnormal return* of 12.1% after the share repurchase announcement. They used an buy-and-hold strategy to calculate the abnormal return for each month. But when they looked at the returns of 'value' stocks, companies with high book-to-market ratio, they found an even higher long-term abnormal return of 45.3%. According to Ikenberry, Lakonishok and Vermaelen 'value' stocks can be seen as undervalued. The share repurchase can then be seen as a signal to the market, resulting in even higher abnormal returns. The opposite of 'value' stocks: 'glamour' stocks are stocks with a low book-to-market ratio. These stocks can be seen as overvalued, and result therefore in no abnormal returns. Peyer and Vermaelen (2008) found evidence that was in line with the hypothesis that share repurchases are a response to an overreaction to bad news by the market. These announcements resulted in a long-term¹ CAR of 24.25%, a much higher CAR than was found by Ikenberry, Lakonishok and Vermaelen (1995).

¹ Four-years

2.3.2.2. Long-term effect in Europe

Manconi, Peyer and Vermaelen (2013) conducted a research on the 48-month period following a share repurchase announcement on countries across the world, including European countries. Similar to the short-term results the CAR of the US, 43.63%, was higher than in the European countries. Where an average CAR of 23.86% was found. The abnormal returns were slightly higher in the UK with 27.14%. Besides this research not much research has been done on the long-term effect of share repurchase announcements in European countries.

2.4. Hypotheses

2.4.1. Hypothesis 1

The signaling hypothesis is the main reason for managers to conduct a share repurchase. According to this hypothesis managers use a share repurchase for two reasons. First of all to release favorable information about the prospect of the company that is not known by the market yet. And secondly to signal to the market that in the eyes of the managers the stocks are undervalued (Banbenko, Tserlukevich, & Vedrashko, 2012). Because a share repurchase gives a positive signal to the market the stock price will increase leading to a short-term abnormal return. This leads to the following hypothesis:

Hypothesis 1: There is a short-term abnormal return after a share repurchase announcement.

2.4.2. Hypothesis 2

Ikenberry, Lakonishok and Vermaelen (1995) and Peyer and Vermaelen (2008) both found an long-term abnormal return after a share repurchase announcement. Twenty-five years have past since the buyback anomaly was documented first. According to Schwert (2003) anomalies often seem to disappear after they are found. Because many years have past since the buyback anomaly was documented first, the expectation is that investors have made investment strategies to take advantage of the buyback anomaly. These investment strategies would cause the long-term buyback anomaly to disappear. Which leads to the following hypothesis:

Hypothesis 2: There is not a long-term abnormal return after a share repurchase announcement.

CHAPTER 3 Data

This section describes how the data is collected and which databases are being used. The dataset consists of all the share repurchase announcements on the *Financial Times Stock Exchange Index*, FTSE, from 2000 till 2015. The FTSE contains the hundred biggest companies that are listed on the *London stock exchange*, LSE.

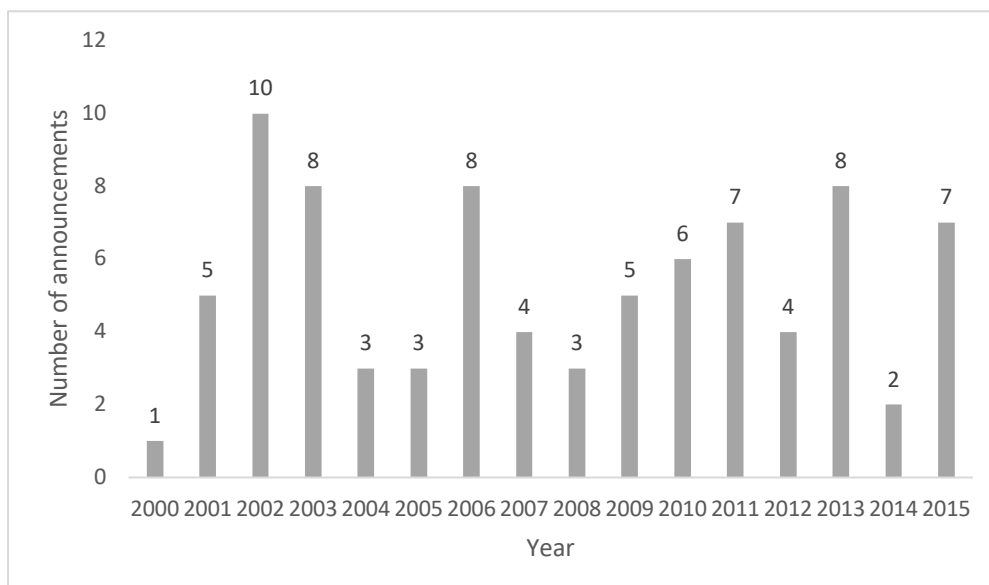
3.1. ZEPHYR

First the share repurchase announcements were collected from the ZEPHYR database from Bureau van Dijk. ZEPHYR is a database which is designed for tracking business rumours and performing event studies. It contains information about events and deals like Share Repurchases, Mergers and Acquisitions, Initial Public Offerings and Equity announcements. The data can be collected while implementing all kinds of criteria. For this research the following criteria were used: deal type (share buyback), deal status (announced), time period (2000-2015) and inserting the ISIN numbers of the FTSE companies. This resulted in a total of ninety share repurchase announcements, six of which were dropped because these companies had become private, resulting in 84 remaining share repurchase announcements.

3.2. Yahoo Finance

The historical stock prices were collected from the Yahoo Finance database. To calculate the daily and monthly returns the adjusted closing price is used. The adjusted closing price is adjusted for both dividends and stock splits; this adjustment will result in a better understanding of the effect of a share repurchase announcement.

Figure 1: Number of share repurchase announcements on the FTSE each year from 2000 until 2015.



CHAPTER 4 Methodology

4.1. The abnormal return

The abnormal return will be calculated for each company in two different periods, the short-term and the long-term. For both of these periods the CAR approach will be used. The CAR approach is the most common method to calculate the abnormal return. An event study is used for the short term, in which is looked at the return in trading days. Hereby the CAR is calculated for different moments in time: CAR[-1,+1], CAR[+2,+5], CAR[+5,+20] and CAR[-1,+20]. Most research only focuses on the announcement return, CAR[-1,+1]² but to see if all information will be directly incorporated by the market I added a few extra periods.

For the long-term effect of a share repurchase announcement the abnormal returns are calculated each month for a total of four years, CAR[+1,+48]³. The data is collected at the first day of each month. First the expected/normal return has to be predicted:

$$(1) E(R_{it}) = \alpha_i + \beta_i R_{m,t}$$

Where α_i is a constant and β_i is the coefficient between the return of stock i and the market return ($R_{m,t}$) at day and month t . A higher β_i means a higher correlation to the market return. The six months prior to the share repurchase announcement will be used to calculate α_i and β_i . For the market return the daily and monthly return of the FTSE is used. To predict the expected return the market model is used:

$$(2) R_{it} = \alpha_i + \beta_i R_{m,t} + \varepsilon_i$$

Where ε_i is the error term, the expected $\varepsilon_i = 0$. According to Damodaran (1999) the betas of all companies have the tendency to go towards one. The use of different time periods results in different betas for the same company. This can be taken into account by adjusting the betas toward one:

$$(3) \text{Adjusted } \beta_i = \text{Regression } \beta_i * 0.65 + 0.35$$

² Used by Ikenberry, Lakonishok & Vermaelen (1995), Barber & Lyon (1997), Zhang (2005) and Peyer & Vermaelen (2008).

³ The CAR[+1,+48] is used by Ikenberry, Lakonishok & Vermaelen (1995) and Peyer & vermalen (2008)

To calculate the abnormal return (AR_{it}), the actual return (R_{it}) will be subtracted by the expected return $E(R_{it})$, as in *formula 4*. The actual return is the price change of the stock price at day t for the short-term and month t for the long-term.

$$(4) AR_{it} = R_{it} - E(R_{it})$$

$$(5) \text{ Price change} = \frac{\text{New stock price} - \text{Old stock price}}{\text{Old stock price}} * 100\%$$

4.2. The cumulative abnormal return

The abnormal returns are cumulated for each company resulting in the CAR, as in *formula 6*. After this the cumulative average abnormal return (CAAR) is calculated with *formula 7*. Where N stands for the number of companies.

$$(6) CAR_i = \sum_{t=1}^t AR_{it}$$

$$(7) CAAR = \frac{1}{N} \sum_{t=1}^t CAR_i$$

4.3. The buy-and-hold abnormal return

Another commonly used method to calculate the abnormal returns is the buy-and-hold approach. In contradiction to the CAR approach the abnormal returns are not cumulated, instead a product function is used. The buy-and-hold abnormal returns are calculated for each company with *formula 8* (Bessler, Holler, & Seim, 2010). After this the average BHAR is calculated using *formula 9*.

$$(8) BHAR_{it} = \prod_{t=1}^T (1 + R_{it}) - \prod_{t=1}^T (1 + R_{m,t})$$

$$(9) BHAR = \frac{1}{N} \sum_{t=1}^t BHAR_i$$

4.4. The crisis effect

The sample period includes a crisis, namely the banking crisis, which could have a big impact on the results. If the prospects of the company are despite the crisis still positive, undervaluation of the stock price could lead to large long-term abnormal returns. These large abnormal returns could have an upward bias for the results. To measure the impact the crisis has on the stock performance after the share repurchase announcement the sample period is divided into three separate periods; before the crisis, during the crisis and after the crisis. The crisis started in the summer of 2007 and ended in the summer of 2011⁴. By doing so the effect on the abnormal returns caused by the crisis could be singled out, giving a clearer understanding on the effect of the share repurchase announcement itself.

4.5. Significance testing

4.5.1. T-test for the CAR

To test if the cumulative average abnormal returns are statistically significant a cross-sectional t-test is used, *formula 9*, with the following null and alternative hypotheses:

$$H_0: E(CAAR) = 0$$

$$H_a: E(CAAR) \neq 0$$

The following formulas are being used to calculate the average standard deviation of the CAAR and the cross-sectional t-test:

$$(10) \sigma_{CAAR}(T1, T2) = \sqrt{\frac{1}{N(N-d)} \sum_{i=1}^N (CAR_i(T1, T2) - CAAR(T1, T2))^2}$$

$$(11) T_{cross} = \frac{CAAR(T1, T2)}{\sigma_{CAAR}(T1, T2) * \sqrt{N}}$$

⁴ The exact dates of the beginning and end of the crisis are not stated in this research, however this is not a problem due to the absence of share repurchase announcement at the time of the beginning and the end of the crisis.

4.5.2. T-test for the BHAR

To test whether the average buy-and-hold abnormal returns are statistically significant a cross-sectional t-test is used with the following null and alternative hypotheses:

$$H_0: E(BHAR) = 0$$

$$H_a: E(BHAR) \neq 0$$

To calculate the standard deviation and the cross-sectional t-test for the average BHAR the following formulas are being used:

$$(12) \sigma_{BHAR}(T1, T2) = \sqrt{\frac{1}{N(N-d)} \sum_{i=1}^N (BHAR_i(T1, T2) - BHAR(T1, T2))^2}$$

$$(13) T_{cross} = \frac{BHAR(T1, T2)}{\sigma_{BHAR}(T1, T2) * \sqrt{N}}$$

CHAPTER 5 Results

This section will describe the empirical findings and results of this research. First the short-term effect on the stock price following the share repurchase announcement will be discussed. Next, the same analysis is performed for the long-term effect. Finally, these results will be compared with empirical findings found in previous research.

5.1. Descriptive statistics

Table 1 contains the descriptive statistics of the short-term and long-term CAR and BHAR approach. Most noticeable are the extreme max values found in the long-term with abnormal returns of over 300%. For most results the median is similar to the mean, however, the median of CAR[-1,+20] is much lower than the mean which suggest a few big positive outliers. A similar result is found for the three- and four-year BHAR where the median is much lower than the mean, this could suggest that a few positive outliers create an upwards bias for the results.

Table 1: Descriptive statistics

The table shows the descriptive statistics of the different methods across the used periods. Where the short-term event window is measured in trading days and the long-term event window is measured in months.

	Mean	Median	Min	Max	σ	Kurtosis	N
Short-term							
CAR[-1,+1]	0.88	0.98%	-14.5%	20.0%	0.006	5.32	84
CAR[1,+20]	2.24%	0.45%	-16.6%	83.0%	0.005	26.18	84
Long-term							
CAR[+1,+12]	13.7%	12.3%	-48.2%	196.6%	0.006	20.85	84
CAR[+1,+24]	18.6%	18.0%	-44.7%	258.1%	0.008	14.22	84
CAR[+1,+36]	28.8%	28.4%	-99.4%	303.7%	0.008	9.76	84
CAR[+1,+48]	40.6%	41.5%	-80.8%	331.7%	0.008	8.45	84
BHAR							
BHAR[+1,+12]	10.6%	8.3%	-44.2%	53.9%	0.007	-0.39	84
BHAR[+1,+24]	14.2%	10.0%	-63.5%	116.2%	0.008	0.27	84
BHAR[+1,+36]	28.1%	19.3%	-74.1%	251.2%	0.010	1.99	84
BHAR[+1,+48]	45.5%	35.0%	-80.6%	371.5%	0.009	4.19	84

5.2. Short-term results

5.2.1. Short-term CAR

Table 2 shows the short-term CAR across different periods around the share repurchase announcement. First of all, the announcement effect results in a CAR of 0.88% which is significant at a 10% level. This result is lower than is found on previous research of US companies. However, previous research suggests a lower announcement return for UK companies. The results are quite similar when comparing them with the findings of Manconi, Peyer and Vermaelen (2013) who found an announcement return of 0.83% for UK companies.

The other event periods show a still positive CAR, which suggests that not all information is immediately incorporated by the market. Which resulted in a CAR of the event periods [+2,+5] and [+6,+20] of respectively 0.21% and 1.16%. However both these results are statistically insignificant. The total short-term period, CAR[-1,+20], resulted in a CAR of 2.24%, which is significant at a 5% level. This delayed market reaction may be due to a too small weight given to the share repurchase announcement at time of the announcement (Fama, 1998).

Table 2: Short-term cumulative average abnormal returns.

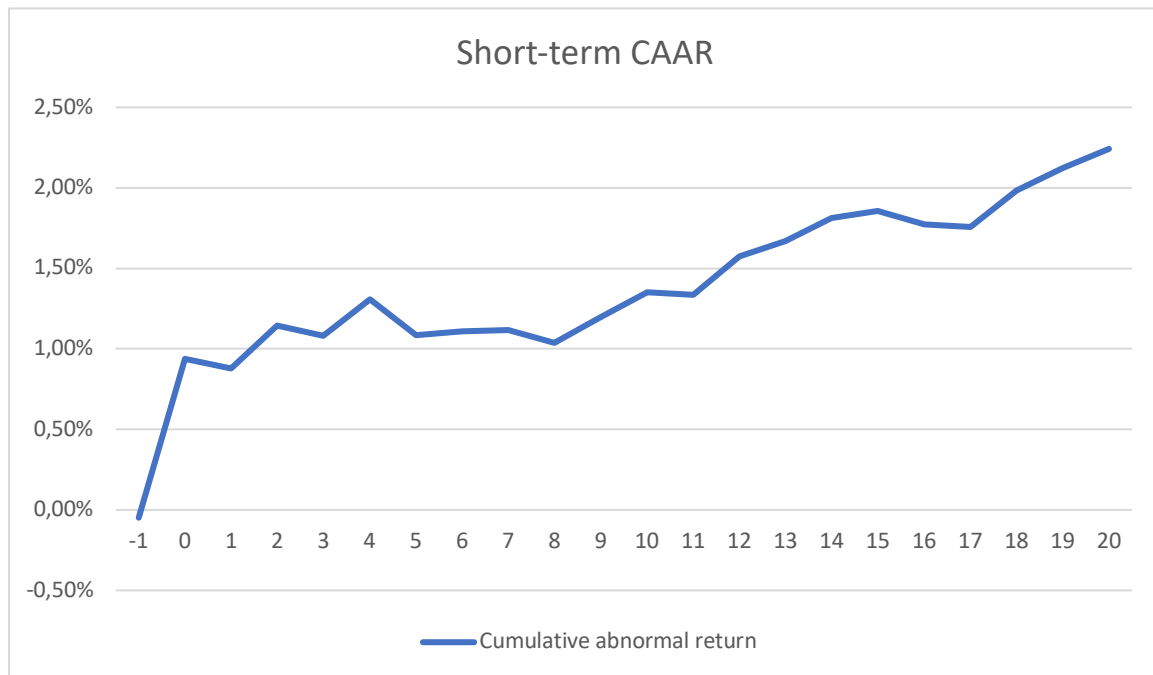
*The table shows the cumulative average abnormal return over a different set of time periods surrounding the event date. The event window is measured in trading days. The *, ** and *** denote the significance level of respectively 10%, 5% and 1%.*

Event window	CAAR	t	P-value
[-1,+1]	0.88%	0.84	0.488
[+2,+5]	0.21%	0.44	0.688
[+6,+20]	1.16%	2.90	0.134
[-1,+20]	2.24%**	2.03	0.017

Figure 2 shows the cumulative abnormal return by trading day, which shows a slightly negative abnormal return on the day before and after the announcement return. The abnormal return on the day of the announcement is by far the highest. After the first three trading days the abnormal returns are on average slightly positive, which can be seen as the line shows a slow but steady increase.

Figure 2: Short-term cumulative abnormal return.

This figure graphically shows the development of the cumulative average abnormal return over a period of 21 trading days. Where 0 denoted the announcement date.



5.3. Long-term results

5.3.1. Long-term CAR

Table 3 shows the long-term CAR, analyzed per year for a total of four years. The CAR after four years is 40.6% with a highly significant p-value of 0.000. The four-year CAR is higher than the CAR found by Manconi, Peyer and Vermaelen (2013) who found a four-year CAR of 23.84% when looking at UK companies. However their research also includes US companies; the CAR of US companies, 43.63%, is similar to what was found here. Because of the lack of research on the long-term effect of share repurchase announcements in Europe it is not possible to say for certain if it is in line with previous research. However Ikenberry, Lakonishok and Vermaelen (1995) found a four-year CAR of 45.3% for US companies whose shares could be considered as 'value' stocks. The similar height of the cumulative abnormal returns may be due to the fact that for this research the *FTSE* is used which contains the biggest one hundred companies on the *London Stock Exchange*. By using the *FTSE* only big companies have been incorporated in this research. Without small companies there were probably no 'glamour' stocks incorporated, whose share repurchase announcement results in a CAR of zero⁵. Besides the absence of 'glamour' stocks the presence of big companies who have a higher tendency of having 'value' stocks could be an explanation for the high four-year CAR. This because these big companies

⁵ According to Ikenberry, Lakonishok and Vermaelen (1995)

will only conduct a share repurchase when their stock price is being undervalued. On top of that big companies are more stable, which results in less bankruptcies and less extreme stock price decreases.

Table 3: Long-term cumulative average abnormal returns.

*The table shows the cumulative average abnormal return by year. The event window is measured in months. The *, ** and *** denote the significance level of respectively 10%, 5% and 1%.*

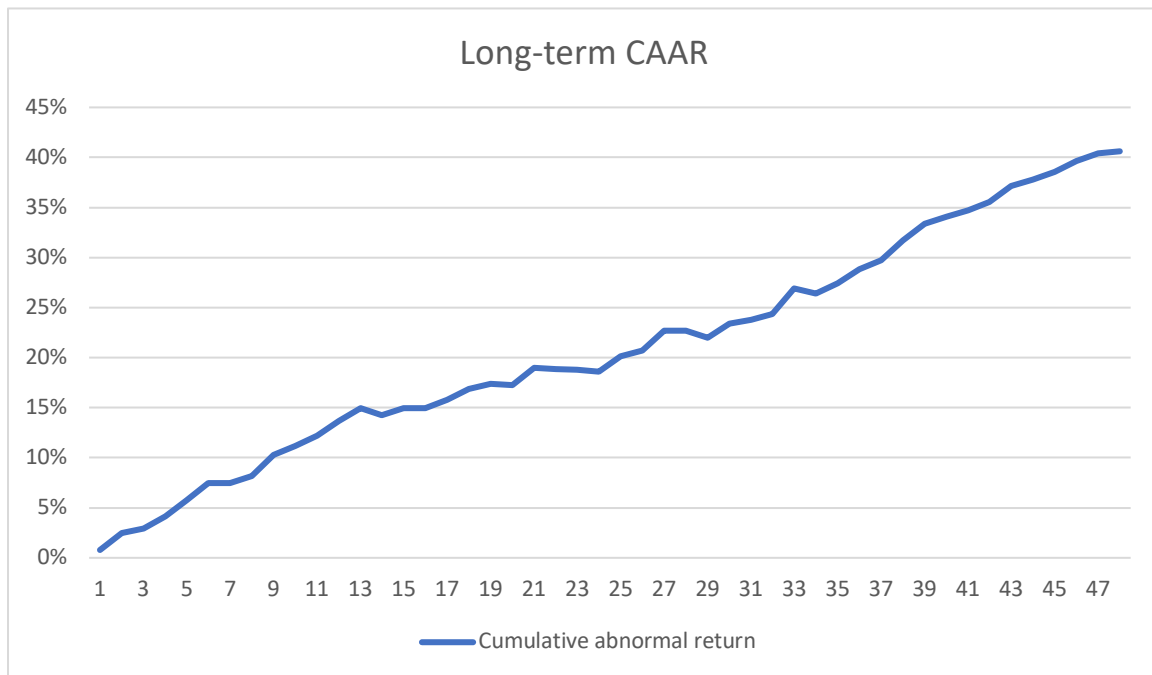
Event window	CAAR	t	P-value
[+1,+12]	13.7%**	2.45	0.032
[+1,+24]	18.6%**	2.70	0.013
[+1,+36]	28.8%***	3.83	0.001
[+1,+48]	40.6%***	5.87	0.000

The CAR after a one-, two- and three-year period are respectively 13.7%, 18.6% and 28.8%⁶, the first two years are significant at a 5% level and the third year at a 1% level. The CAR in the first year is the highest which could be expected because this was the year the share repurchase announcement took place. Figure 3 shows the CAR by month, in which a steady increase can be seen. Managers tend to conduct a share repurchase when they are confident about the prospects of the company; these positive prospects will be about a longer period of time. This could explain the steady increase of the CAR over a four-year period.

⁶ Table 3

Figure 3: Long-term cumulative abnormal return.

This figure graphically shows the development of the cumulative average abnormal return over a four-year period. Where each number on the x-axis is the number of months after the announcement.



5.3.2. Long-term BHAR

Table 4 shows the long-term buy-and-hold abnormal returns per year for a total of four years. The BHAR over four years is 45.5%, which is significant at a 1% level. This abnormal return is slightly higher than the abnormal return found with the CAR approach. In contradiction with the four-year abnormal returns the one- and two-year abnormal returns, respectively 10.6% but not significant and 14.2% significant at 5% with the BHAR approach, are slightly lower than the abnormal returns found with the CAR approach. For the three-year BHAR, 28.1% which is significant at a 1% level, is similar to the abnormal return found with the CAR approach. The BHAR approach uses the product function instead of the sum function used by the CAR approach. The product function gives more weight to more extreme values, positive and negative. When the observed period is longer the chance of more extreme values is higher, this could explain why the BHAR is higher than the CAR after four years and lower after the first two years. The market return consists of a lot of companies, which results in less extreme values than single companies' returns.

Table 4: Long-term buy-and-hold abnormal returns.

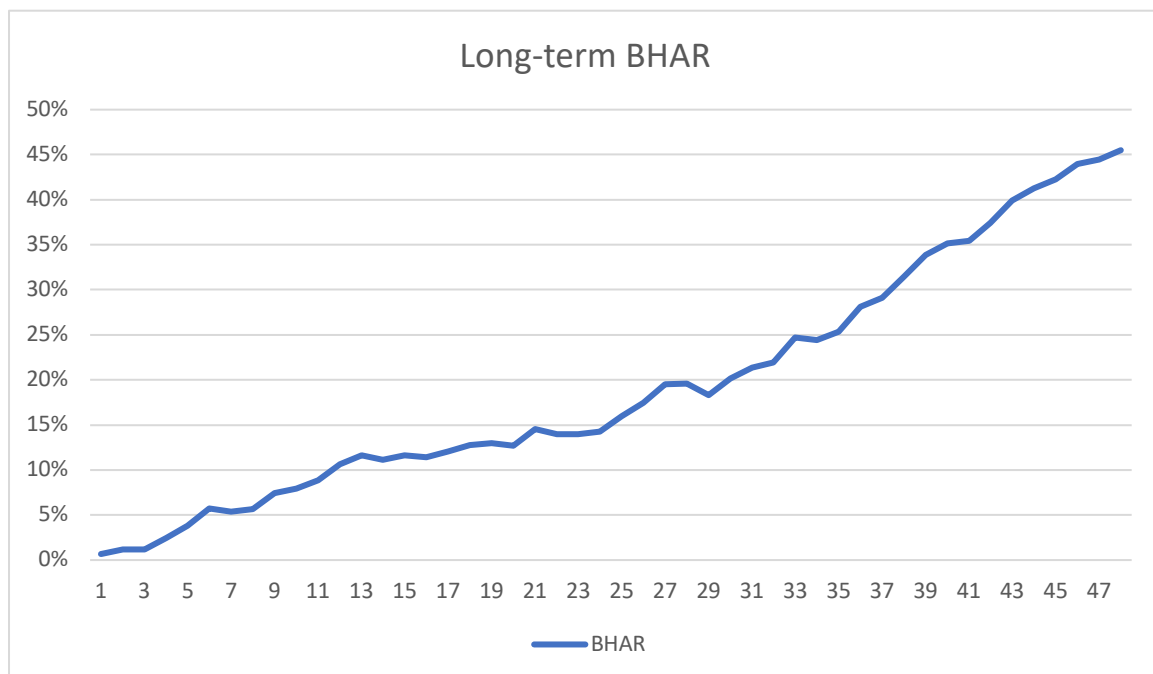
The table shows the average buy-and-hold abnormal return by year. The event window is measured in months. The *, ** and *** denote the significance level of respectively 10%, 5% and 1%.

Event window	BHAR	t	P-value
[+1,+12]	10.6%	1.57	0.145
[+1,+24]	14.2%**	2.04	0.053
[+1,+36]	28.1%***	3.20	0.003
[+1,+48]	45.5%***	5.25	0.000

The development of the BHAR can be seen in Figure 4, in contradiction with the CAR approach the highest abnormal returns are not found in the first few months but in the last months. After the first year the abnormal returns seem to decline, until month 29 when the abnormal returns seem to increase drastically. The growth of the BHAR seems to be exponential over time which may be due to the product function used with the BHAR approach.

Figure 4: Long-term buy-and-hold abnormal returns.

This figure graphically shows the development of the average buy-and-hold abnormal return over a four-year period. Where each number on the x-axel is the number of months after the announcement.



5.4. Crisis effect

Table 5 shows the cumulative abnormal returns before, during and after the crisis. Before and after the crisis the four-year CAR has similar results, respectively 31.6% and 31.1%, both significant at a 1% level. Share repurchase announcement during the crisis resulted in much higher cumulative abnormal returns, a four-year CAR of 66.5%, significant at a 1% level. The CAR over a four-year period is over twice as high as in the period before and after the crisis. This difference can be partially explained by undervaluation of the stock price at the time of the announcement. Another noticeable result is the relatively low abnormal returns in the first three years before the crisis followed by high abnormal returns in the fourth year (Figure 5). This was not found after the crisis where the first three years show a steady growth in the abnormal returns followed by a slightly negative fourth year.

Table 5: Long-term cumulative average abnormal returns before, during and after the crisis.

*The table shows the cumulative average abnormal return by year before, during and after the crisis. The crisis started in the summer of 2007 and ended in the summer of 2011. The event window is measured in months. The *, ** and *** denote the significance level of respectively 10%, 5% and 1%.*

	N	Event window	CAAR	t	P-value
Before crisis	39	[+1,+12]	9.8%	1.70	0.118
	39	[+1,+24]	6.3%	1.04	0.309
	39	[+1,+36]	11.9%*	1.87	0.070
	39	[+1,+48]	31.6%***	4.62	0.000
During crisis	21	[+1,+12]	19.9%*	2.07	0.063
	21	[+1,+24]	34.7%***	4.39	0.000
	21	[+1,+36]	52.1%***	6.65	0.000
	21	[+1,+48]	66.5%***	9.04	0.000
After crisis	24	[+1,+12]	14.2%**	2.58	0.026
	24	[+1,+24]	24.3%***	4.25	0.000
	24	[+1,+36]	35.4%***	6.14	0.000
	24	[+1,+48]	31.3%***	4.56	0.000

Figure 5: Crisis effect on long-term buy-and-hold abnormal returns.

This figure graphically shows the development of the average buy-and-hold abnormal return over a four-year period, before, during and after the crisis. Where each number on the x-axel is the number of months after the announcement.

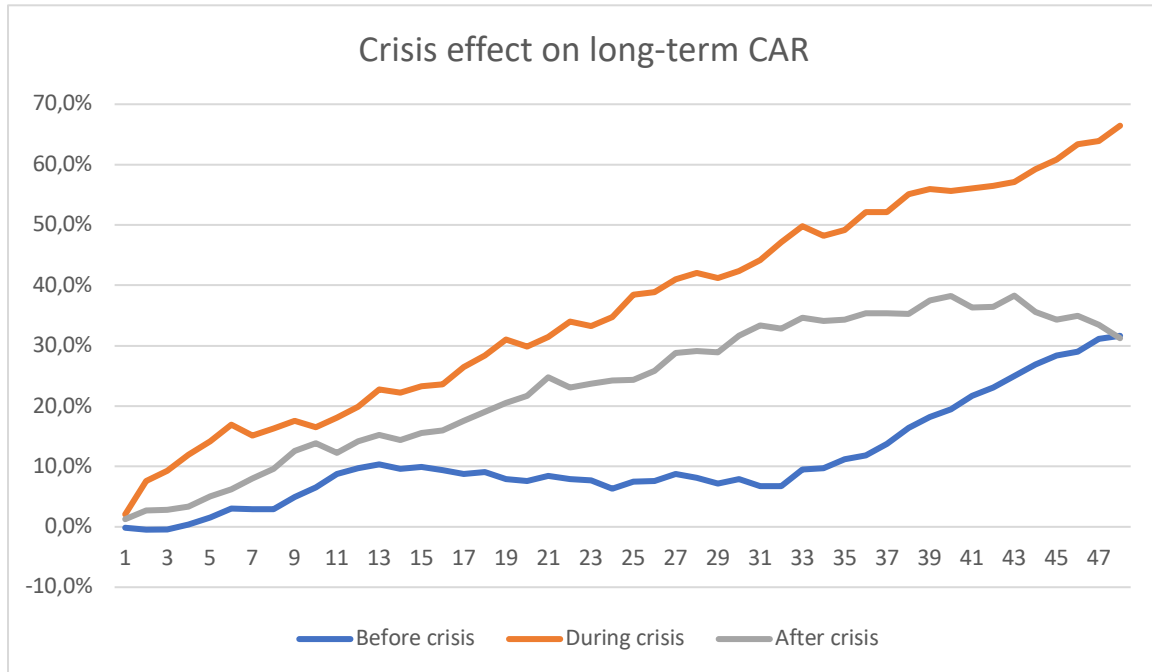


Table 6 shows the buy-and-hold abnormal returns before, during and after the crisis. As was found with the CAR approach, the BHAR approach resulted in similar results before and after the crisis, with a four-year BHAR of respectively 38,9% and 32.3%, both significant at a 1% level. The four-year BHAR whose share repurchase announcement took place during the crisis resulted in a BHAR of 88.4%, significant at a 1% level. A result which is over twice as high as the returns before and after the crisis. In the first few years after the announcement the results during and after the crisis are similar, as can be seen in Figure 6. However, after month thirty the returns of the announcements during the crisis increase, and the two lines drift apart. Similar to the CAR approach the results of the companies whose announcement was before the crisis were relatively low followed by a big increase in the fourth year.

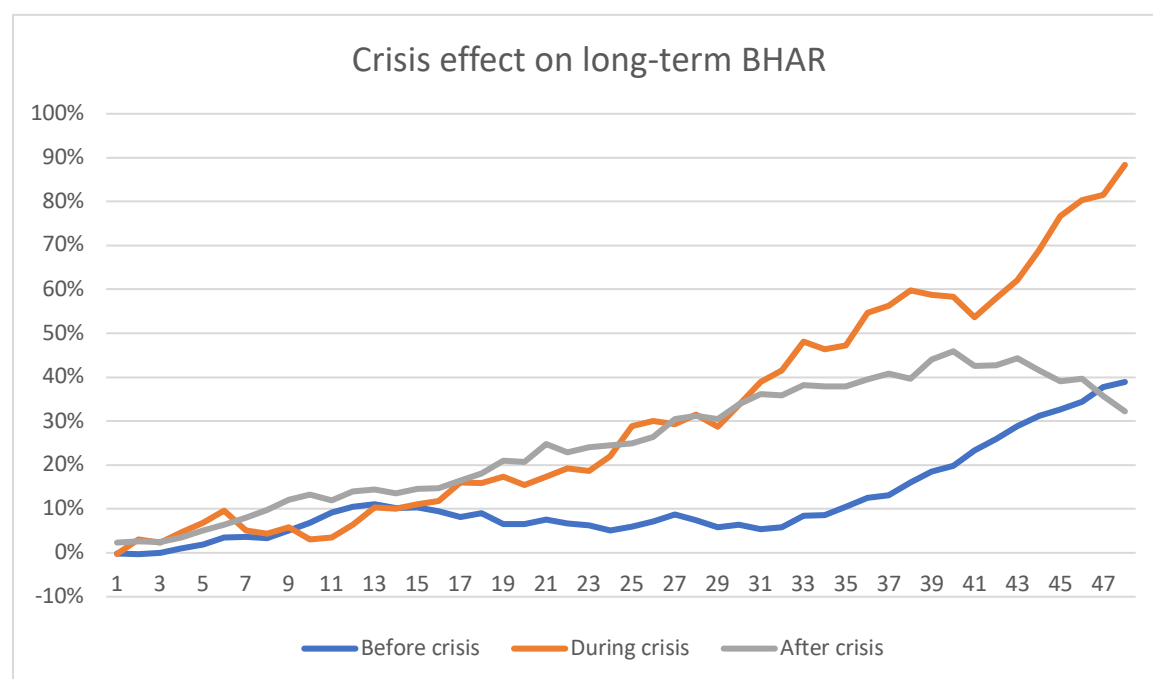
Table 6: Long-term buy-and-hold abnormal returns before, during and after the crisis.

The table shows the average buy-and-hold abnormal return by year before, during and after the crisis. The crisis started in the summer of 2007 and ended in the summer of 2011. The event window is measured in months. The *, ** and *** denote the significance level of respectively 10%, 5% and 1%.

	N	Event window	BHAR	t	P-value
Before crisis	39	[+1,+12]	10.5%*	1.84	0.093
	39	[+1,+24]	5.1%	0.72	0.479
	39	[+1,+36]	12.5%	1.66	0.107
	39	[+1,+48]	38.9%***	4.45	0.000
During crisis	21	[+1,+12]	6.4%	0.57	0.580
	21	[+1,+24]	22.0%**	2.20	0.038
	21	[+1,+36]	54.6%***	4.29	0.000
	21	[+1,+48]	88.4%***	6.36	0.000
After crisis	24	[+1,+12]	14.0%**	2.62	0.024
	24	[+1,+24]	24.5%***	3.68	0.001
	24	[+1,+36]	39.5%***	5.71	0.000
	24	[+1,+48]	32.3%***	3.43	0.000

Figure 6: Crisis effect on long-term buy-and-hold abnormal returns.

This figure graphically shows the development of the average buy-and-hold abnormal return over a four-year period. Where each number on the x-axel is the number of months after the announcement.



CHAPTER 6 Conclusion

In this research paper the effect of share repurchase announcements on the stock price for UK companies is examined. The data contains a total of 84 share repurchase announcements from companies all listed on the *FTSE*, which contains the hundred biggest companies listed on the *London Stock Exchange*. To investigate the effect of share repurchase announcements the following research question is formulated:

What is the effect of a share repurchase announcement on the stock price between 2000 and 2016 in the UK?

To answer the research question the effect is looked at in two different periods: the short-term and the long-term. The short-term stands for the trading day before the share repurchase announcement until twenty trading days after the announcement. The long-term lasts for a total of four years, looked at monthly. This research contains two hypotheses, the first hypothesis is the following:

Hypothesis 1: There is a short-term abnormal return after a share repurchase announcement.

To check whether this hypothesis is true the CAR approach was being used. The CAR approach resulted in an average announcement return⁷ of 0.88%. However, the result is not significant. The effect of the total short-term period⁸ of 21 trading days resulted in a CAR of 2.24%, which is significant at a 5% level. These results are in line with *hypothesis 1*, so the first hypothesis is true. The share repurchase announcements result in a short-term abnormal return for companies listed in the UK. The second hypothesis is referring to the long-term period and is as follows:

Hypothesis 2: There is not a long-term abnormal return after a share repurchase announcement.

This hypothesis was tested with two different methods to calculate the abnormal returns, the CAR approach and the BHAR approach. The cumulative abnormal return approach resulted in a four-year CAR of 40.6%, which is significant at a 1% level. Similar results were found with the buy-and-hold abnormal return approach, a BHAR of 45.5% which is also significant at a 1% level. However, these results are not in line with the second hypothesis, stating that the share repurchase announcement will not generate long-term abnormal returns. In this research both methods resulted in a significant

⁷ [-1,+1]

⁸ [-1,+20]

abnormal return for the long-term period. Concluding that the second hypothesis is wrong and that there will be a long-term abnormal return after a share repurchase announcement.

To conclude, the share repurchase announcements between 2000 and 2016 in the UK resulted in abnormal returns in both the short-term and the long-term. The short-term CAR is positive but relatively low compared to the return on US companies, however these results are similar to research on UK companies. The long-term CAR and BHAR are both positive, respectively 40.6% and 45.5%. The abnormal returns of the companies who conducted a share repurchase announcement in the crisis years yielded even higher returns, 66.5% for the CAR approach and 88.4% for the BHAR approach both over a four-year period. The CAR with the absence of the companies who conducted their share repurchase during the crisis is around 30%. Similar results were found by Manconi, Peyer and Vermaelen (2013) who found a four-year CAR of 27.14% when looking at UK companies. The existence of the long-term abnormal returns is in conflict with Schwert (2003) who said that anomalies tend to vanish over time, however, this anomaly still exists. The extreme abnormal returns after a share repurchase announcement during a crisis are in conflict with the market efficiency hypothesis, which states that all information is incorporated by the market. From an investor's perspective it is interesting to invest in the long-term⁹ in FTSE companies after a share repurchase announcement, especially if the announcement took place during a crisis which could yield even higher returns. Investors can take advantage of these anomalies causing them to disappear.

⁹ Four-year period

CHAPTER 7 Limitations

This paper has a few limitations, first of all, this research only contains 84 share repurchase announcements. This number of announcements is sufficient to get a clear understanding of the effect, however outliers could have a big impact on the results. The impact of the outliers is even bigger in the part with the crisis effect, because the total number of announcements was divided into three different periods. Including more share repurchase announcements will result in less impact by the outliers.

Secondly, this research consists of FTSE companies, the FTSE contains the hundred biggest companies listed on the *London Stock Exchange*. Because this research only contains big companies it is not representative for all UK companies. The effect of average or small size companies could differ. For future research I suggest not using the FTSE but the whole *London Stock Exchange*, if you take into account all sizes of companies you will get a clearer understanding of the effect of a share repurchase announcement.

Finally, companies often state in their share repurchase announcement the size of the share repurchase. This could differ from small share repurchases, under 5%, to large share repurchases, over 25%. The stated size of the share repurchase could have a huge impact on the effect on the stock price. A larger share repurchase suggests more confident managers and a better expected future of the company. The better signal will most likely result in higher returns. To get a clear understanding whether this is the case the size of the announcement should be taken into account.

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Appendix

Appendix A: Table A1: Descriptive statistics of crisis effect.

The table shows the descriptive statistics of the different methods across the used periods with the crisis effect.

Where the long-term event window is measured in months.

		Mean	Median	Min	Max	σ	Kurtosis	N
Before crisis	CAR[+1,+12]	9.8%	7.1%	-24.8%	41.6%	0.009	-0.67	39
	CAR[+1,+24]	6.3%	3.6%	-44.7%	52.5%	0.010	-0.95	39
	CAR[+1,+36]	11.9%	10.3%	-99.4%	85.3%	0.010	0.32	39
	CAR[+1,+48]	31.6%	31.4%	-80.8%	108.4%	0.011	0.04	39
During crisis	CAR[+1,+12]	19.9%	14.1%	-22.7%	196.6%	0.021	14.34	21
	CAR[+1,+24]	34.7%	19.1%	-21.2%	258.1%	0.017	11.48	21
	CAR[+1,+36]	52.1%	33.6%	-27.4%	303.7%	0.017	6.71	21
	CAR[+1,+48]	66.5%	46.7%	-39.3%	331.7%	0.016	4.01	21
After crisis	CAR[+1,+12]	14.2%	19.6%	-48.2%	48.5%	0.011	0.34	24
	CAR[+1,+24]	24.3%	27.8%	-37.6%	81.2%	0.012	-0.28	24
	CAR[+1,+36]	35.4%	45.5%	-23.0%	94.0%	0.012	-0.84	24
	CAR[+1,+48]	31.3%	43.6%	-61.1%	86.5%	0.014	-0.64	24
Before crisis	BHAR[+1,+12]	10.5%	6.5%	-25.3%	53.4%	0.009	-0.50	39
	BHAR[+1,+24]	5.1%	0.8%	-41.9%	66.6%	0.011	-0.87	39
	BHAR[+1,+36]	12.5%	11.6%	-74.1%	98.2%	0.012	-0.51	39
	BHAR[+1,+48]	38.9%	34.5%	-80.6%	181.8%	0.014	-0.10	39
During crisis	BHAR[+1,+12]	6.4%	5.5%	-28.2%	41.6%	0.025	-0.08	21
	BHAR[+1,+24]	22.0%	20.3%	-23.4%	80.3%	0.022	-0.69	21
	BHAR[+1,+36]	54.6%	28.3%	-33.0%	251.2%	0.028	1.21	21
	BHAR[+1,+48]	88.4%	44.4%	-43.0%	371.5%	0.030	0.38	21
After crisis	BHAR[+1,+12]	14.0%	16.6%	-44.2%	53.9%	0.011	-0.54	24
	BHAR[+1,+24]	24.5%	24.6%	-63.5%	116.2%	0.014	-0.13	24
	BHAR[+1,+36]	39.5%	46.1%	-56.7%	148.7%	0.014	-0.36	24
	BHAR[+1,+48]	32.3%	39.4%	-64.7%	112.2%	0.019	-1.24	24

Appendix B: Table A2: Descriptive statistic of raw data.

The table shows the descriptive statistics of the raw data, the average YAHOO Finance returns. Where the short-term event window is measured in trading days and the long-term event window is measured in months.

	Mean	Median	Min	Max	σ	Kurtosis	N
Short-term							
[-1,+1]	0.97%	0.95%	-14.2%	27.3%	0.006	10.16	84
[1,+20]	3.17%	2.56%	-18.4%	78.6%	0.003	20.63	84
Long-term							
[+1,+12]	16.3%	16.1%	-48.2%	207.7%	0.008	16.38	84
[+1,+24]	23.9%	23.8%	-70.3%	267.4%	0.008	11.39	84
[+1,+36]	37.3%	39.3%	-143.9%	304.5%	0.009	8.51	84
[+1,+48]	54.7%	52.1%	-59.8%	330.0%	0.008	7.13	84