

# **Share repurchase programs of AEX-listed companies**

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Appendix A

## 1. Introduction

During the last ten years more and more Dutch companies have been adopting share repurchase programs. Multiple large AEX-listed companies have used this method to let millions of euros flow back to their shareholders. Royal Dutch Shell for example had a buyback<sup>1</sup> program of 4 billion euro in 2005 en continued in 2006 with a 6 billion share repurchase program. Besides Royal Dutch Shell, 14 other AEX listed companies were buying back their own shares over the last 2 years.

The popularity of share repurchase programs began in 1982 in the USA after the SEC adopted rule 10b-18 which made it a lot easier for companies to repurchase shares. In 2001 a change in the Dutch regulatory environment followed and share repurchase became also attractive for Dutch companies.

Apparently, many Dutch companies seem to have superabundant cash, which they don't want to pay to their shareholders through dividend only. This calls for the question what the advantages of share repurchase programs are over dividend-payouts.

To explore this question we will look at 15 Dutch companies who run share buyback programs. Among these are Royal Dutch Shell, Phillips and ING who run the largest buyback programs. First we outline a brief history of share buyback programs and see what the different buyback methods are that companies mostly use. Thereafter we will explore the different possible motives for share repurchase programs and test them theoretically. After the theoretical part we will look at Dutch share repurchases from firms listed on the AEX. The buyback programs of 15 companies will be described and we look at the consequences of their share repurchase program for the value of the firm. The main question will be: Does a buyback program create shareholders value? This is researched by looking for abnormal share price returns around the announcement date of a buyback program.

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<sup>1</sup> The terms 'share repurchase' and 'share buyback' are synonyms and are both used throughout this thesis.

## 2. General information about share repurchases

The mechanism for companies to buy back their own shares is a relatively new phenomenon. There are many articles<sup>2</sup> written about this subject, but not much is known about Dutch companies repurchasing their own shares. While ten years ago no one talked about share repurchase, in 2006 more than 50% of the AEX-funds adopted buyback programs. How did this phenomenon get so popular and what motives are to be found? Part of this question will be answered in the next paragraph.

### 2.1 Historical developments

In the past, dividend payments and stock price appreciation were the most common methods to increase a company's shareholders wealth. Stock price appreciation was supposed to be a consequence of retaining profits and investing these profits in positive-NPV<sup>3</sup> projects. Nowadays there is another method which popularity is growing rapidly. With this method companies are buying back shares from their own shareholders. This phenomenon started to gain popularity in the United States in 1982 when there was a major change in the regulatory environment and the SEC adopted rule 10b-18<sup>4</sup>. This change made it a lot more attractive for US companies to start a buyback program. In the 1990s other countries adopted rules that allowed or were favourable for companies willing to buy back their own shares. To give an example of its popularity: in 1998 U.S. companies distributed more money to their shareholders through share repurchases than through cash dividends. (Grullon & Ikenberry, 2000) When the Dutch law –concerning share repurchase- changed in the late 90's, Royal Dutch Shell was the first company to start a share repurchase program. In the years thereafter, a lot more companies followed Shell. In 2006 more than 50% of the AEX-funds bought back their own shares.

The upcoming phenomenon of share repurchases was followed by a lot of research on this topic. Researchers tried to find possible motives for companies to buy back their own shares. This led to the development of different hypothesises like the Signalling Hypothesis and the Free Cash flow Hypothesis. These theories will be further explored in later chapters.

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<sup>2</sup> See bibliography.

<sup>3</sup> Net Present Value of future projected cash flows.

<sup>4</sup> This rule provides an issuer with a voluntary "safe harbour" from liability of manipulation (i.e., they will not be deemed to have violated anti-fraud provisions of the Securities Exchange Act of 1934).

There are different methods for companies to repurchase shares; these will be reviewed in the following paragraph.

## **2.2 Different buyback methods**

A company can't be its own shareholder, so when a company buys its own shares these shares are absorbed and the number of outstanding shares is reduced. As said in the previous paragraph, there are several methods that companies use to buy back their own shares. There is one method that is by far the most popular: open-market repurchase. Two other less used methods are: fixed price tender offers and the Kempen-route.

### *2.2.1 Open-market*

Open-market share repurchases are characterized by a firm's gradual acquisition of some of its shares through a broker, for normal commission fees, over periods of several months or even years (Eli Bartov, 1991). This means that a company buys its shares for the current market price like any other investor. Buyback programs are open-market programs 95% of the time. Most companies will release a press message with the information that they are going to start a buyback program. They will announce when they start the program and how many shares the company will buy. It is also possible for companies to start buying without letting the public know. A typical open market repurchase program means that a company buys roughly 5% of its own shares in a period of several months or even years (Grullon & Ikenberry, 2000). Open-market repurchases in the U.S. show abnormal returns of 2% to 3% after the announcement of the program as a result of the signalling hypothesis (Murali Jagannathan, Clifford Stephens, 2003). This well known signalling hypothesis will be discussed in paragraph 2.3.2.

The open-market method is clearly preferred by companies, but not only over other buyback methods; in 1998 in the US the value of open-market repurchases exceeded the value of dividend payments for the first time (Grullon and Michaely, 2002).

In May 2007, a change in the Dutch law concerning open-market share repurchases was approved. Currently, companies are only allowed to repurchase for up to 10% of the placed share capital. This maximum will disappear when this law is adopted.

### *2.2.2 Tender offer*

Next to the open-market method, companies can use a tender offer to repurchase shares. When a company decides to use this method, the company specifies the number of shares it wants to buy and a price for which it wants to buy these shares (the price is generally above the current share price). The shareholders are presented with this offer and they can accept it within a specified time frame.

Tender offers typically involve a larger buyback sum than open-market buybacks with an average of 15% of the number of shares outstanding (Grullon and Ikenberry, 2000). The tender offer is very rare among Dutch companies and is not included in this thesis' research when looking for abnormal returns.

### *2.2.3 Kempen-route*

Another option for companies willing to repurchase shares is the Kempen-route. This is a method first developed in 1998 for Buhrmann by the merchant bank Kempen&Co. Ahold and ASML use this method in 2007 to repurchase shares for €3 billion and €60 million respectively.

The process of the Kempen-route is fairly complicated. ASML for example has a large share premium reserve, if they convert €2,10 per share into nominal capital, then they will reduce their nominal capital with €2,04 per share which they give back to their shareholders. This kind of transaction would normally lower the share price just like a dividend payment, but to counter this effect they will also do a reversed stock-split in which for every nine shares, one will be cancelled. (Het Financieel Dagblad, 24 May 2007)

The Kempen-route is a relatively fast method to transfer excess cash to shareholders. It is also the most tax friendly method for companies that don't qualify for an open-market repurchase program.

## **2.3 Motives and theory on share repurchases**

Paragraph 2.1 mentioned that a lot of research has been done about share repurchases. Different researchers came up with several theories or hypotheses about possible reasons to substitute dividend payments for share repurchase programs. Strangely enough, although share repurchase is very popular nowadays, there isn't a single really strong reason that makes

share repurchase so favourable. An often-heard reason is: “share repurchase increases the price/earning ratio, this makes the share more attractive for investors”. Paragraph 2.3.6 provides an example that proves that this argument is flawed. So what are the most commonly used motives for companies to repurchase shares?

The five most used motives are: 1) Signalling 2) Agency costs 3) Dividend substitution 4) Change capital structure 5) Improve financial ratios. These five points will be explained in later paragraphs, but the next paragraph is about Modigliani and Miller. These two very important researchers wrote their Modigliani & Miller Capital Structure Irrelevance Theory in 1958, which claimed among other things that a company’s payout policy doesn’t affect shareholders wealth. In other words, it doesn’t matter if a company pays their shareholders through dividends or through a buyback program.

### 2.3.1 Modigliani and Miller

In 1958 Modigliani & Miller wrote their Capital Structure Irrelevance Theory. A company’s value doesn’t change when it’s capital structure changes, they claimed. This implicates that the shareholders of a company should be indifferent towards their company’s payout policy because their wealth would change with the same amount, whether or not dividend is paid. Dividend policy would only change the allocation between income and capital gains.

The following example will show that shareholders value isn’t affected by a company’s payout policy:

Company X balance sheet (x 1m)

Assets	130	Shares	100
Cash	20	Debt	50
Total	150	Total	150

Company X has 10 million shares outstanding; this means that the initial nominal share price is 10,-

#### **Dividend payment**

Assume that Company X pays 15 million in dividends. This results in a drop of the ex-

dividend share price to 8,50<sup>5</sup>. However, shareholders were given 1,50 per share in dividend payments so there isn't any change in shareholders value.

### **Share repurchase**

Now suppose that Company X uses the 15 million to buy back 1,5 million shares instead of paying dividends. After the repurchase, the company has 8,5 million shares and a total value of 85 million; the share price doesn't change (share price  $85/8,5 = 10,-$ ), neither does the shareholders value.

In the example above, the capital structure changed when Company X repurchased shares instead of paying dividends, but like Modigliani & Miller claimed, shareholders value didn't change.

However, this theory is limited to a simplified world with some constraints like: capital markets are perfect, there is no asymmetry of information, managers seek to maximise shareholders value, and there is no tax. It is obvious that this model doesn't hold in the real world.

In 1961 they revised the Capital Irrelevance Model and added taxes to their simplified world. This resulted in their Capital Relevance Model. In this model they showed that an optimal capital structure would be close to 100% leveraged. Again, this is only possible in a simplified world because 100% leveraged would mean that its debt holders own the company. Nevertheless, the Modigliani & Miller theorems are the basis of modern thinking on capital structure.

### *2.3.2 Signalling*

The basis of signalling theory is that a firm's management is better informed about the company's true value than outside shareholders. (Baker, Powell and Veit, 2003) This implicates that when a company announces a share repurchase program, it could very well be a reason that the firm's management thinks their company is undervalued (i.e. share price too low). Several studies show that after a firm announces a buyback program, the share price has

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<sup>5</sup> Dividend payments result in a drop in equity. When divided by the same number of shares, the share price will also drop with the amount of dividend per share.

abnormal returns, which show that investors see repurchasing firms as a positive signal and react accordingly. This is known as the ‘signalling hypothesis’.

In the early years of share repurchase Vermaelen (1981) found that share repurchase through tender-offers are followed by a positive unexpected annual earnings. Also, Bartov (1990) finds evidence that indicates that open-market repurchase announcements convey information about both earnings and risk changes. Ikenberry et al. (1995, 2000) find that share buy back announcements are associated with significantly long-run positive abnormal returns.

In my research on repurchasing firms in 2006/2007 (section 3) I will try to find abnormal returns in stock prices of companies listed on the AEX that confirm the signalling hypothesis.

### *2.3.3 Agency costs*

The ‘free cash flow hypothesis’ by Jensen (1986) rests on the assumption that managers may not try to maximise shareholders wealth when a company has large excessive cash holdings. For example, it’s possible that they rather serve other stakeholders like themselves. This principal-agent problem could be a serious problem for large companies with large cash flows. Not only is this a direct problem because managers choose to neglect the best NPV-decisions, it also discounts the share price of a firm if investors suspect a problem like this.

A very simple solution for a company to this problem is to return the excessive cash holdings to its shareholders. Traditionally this would be done by increasing dividends or paying out a ‘super dividend’<sup>6</sup>, but like already said in a previous paragraph; share repurchase is the dominant method to return cash nowadays.

### *2.3.4 Dividend substitution*

Traditionally a company pays dividends to its shareholders and they must pay a dividend tax over that amount. When a company repurchases shares from a shareholder, that shareholder has a capital gain over which he owes capital gain tax. At the same time non-selling shareholders receive a pro-rata increase in their ownership but pay no immediate taxes. (Grullon, Ikenberry, 2000)

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<sup>6</sup> Superdividend is a one-time payout next to a company’s yearly dividend. For example Unilever recently announced a superdividend of 26 cent per share.

The possible differences in cash dividend taxes and capital gain taxes result in a ‘dividend substitution hypothesis’, which tries to give an explanation for the reaction in a stock price followed by two different tariffs of taxes (Grullon, Michaely, 2002)

The hypothesis described above applied mostly in the US because their tax system used to favour share repurchases. However, with the passing of the Jobs and Growth Tax Relief Reconciliation Act of 2003, the tax rate on dividends is now equivalent to the rate on capital gains. Since the Dutch tax reform in 2000, after which capital gains are taxed in the same way as dividends, Dutch shareholders also don’t gain by substituting share repurchase for dividends. As seen in Dutch literature about this subject as well as annual reports of repurchasing companies, possible tax-advantages of a buyback program are not mentioned.

### *2.3.5 Change capital structure*

When a company buys back its own shares, the company’s equity declines and the debt/equity ratio rises. As Modigliani & Miller proved in their Capital Relevance Structure Theory (1961) a 100% debt financed company is optimal. This is of course only true in a simplified world. However, companies with more debt still have an advantage because of the fact that interest costs are tax deductible while dividend payments aren’t. This tax-advantage increases when the debt/equity ratio increases.

According to Grullon & Ikenberry (2000) this motive is especially important for tender offer buybacks. The reason for this is that in the case of a tender offer, the company absorbs a large fraction of equity. There is less evidence that this motive is true for an open-market repurchase. This is because open-market repurchases is typically for only 5% of the shares and take a long while to complete. However, companies may use open-market repurchases as a way to fine-tune their leverage over time. (Grullon & Ikenberry, 2000)

Related to this, is the fact that companies often start a buyback program to offset dilution<sup>7</sup>. This dilution is generally caused by employee stock options plans and has exactly the opposite effect of a buyback program.

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<sup>7</sup> Dilution is caused by for example the conversion of convertible bonds into stocks or the exercise of employee stock options. This causes the shares to dilute, because the underlying value is divided by more shares outstanding.

### 2.3.6 Improve financial ratios

One of the most heard reasons for buyback programs is that it increases the earnings per share, which is seen as good news by investors. The amount of outstanding shares is reduced, so profits are divided among fewer shares and EPS goes up. Consequently, share prices are expected to rise. However, a very simple example proves that this assumption is flawed. While the EPS increases, the risk increases because the firm's leverage ratio also increases. A lot of investors neglect the last part of the previous sentence. The following example will make this clearer:

Company XYZ has the following balance sheet:

Balance Company XYZ			
Asset	900	Equity	400
Cash	100	Debt	600
Total	1000	Total	1000

- Company XYZ Asset generates a cash flow of 90, - every year and has a beta ( $\beta$ )<sup>8</sup> of 1,5. This beta is associated with the sum of cash and operational assets.  
 $1.5 = 0,9 \beta (\text{operational assets}) + 0,1 \beta (\text{Cash})$   
As  $\beta (\text{Cash}) = 0$ ,  $\beta (\text{operational assets}) = 1.5/0.9 = 1.6667$
- The firm's equity is divided in 40 shares, nominal value per share is 10,-.
- Risk free interest is 5% (also the rate on debt) and the beta of cash and debt is both 0.
- The market generates an expected return of 8%
- Total cash flow is  $90 + 5\% * (100-600) = 65$ , -

$$\beta (\text{assets}) = 400/1000 * \beta (\text{equity}) + 600/1000 * \beta (\text{debt}) = 1,5$$

$$\rightarrow \beta (\text{equity}) = 3,75$$

Now we use the CAPM<sup>9</sup> formula to calculate the required return on equity:

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<sup>8</sup> Beta measures how sensitive a share is to market movements. Stocks with a beta of 1.0 tend to amplify the overall movements of the market. Stocks with betas between 0 and 1.0 tend to move in the same direction as the market, but not as far (Principles of Corporate Finance by Brealey and Meyers, page 160-161).

<sup>9</sup> Capital Asset Pricing Model

$$E(\text{Rev}) = 5\% + 3,75 * (8\% - 5\%) = 16,25\%$$

The cash flow (=profit in this simplified example) of 65, - is divided by 40 shareholders so **the expected profit per share is 1,625 with an expected Price/Earning ratio of 6,2.**

When we assume no growth of cash flows, on the basis of the present value of profits per share, the stock price will be:  $1,625/0,1625 = 10$ .

When the company uses 100 Cash to repurchase shares for 10 per share, the balance sheet changes:

Balance Company XYZ			
Asset	900	Equity	300
		Debt	600
Total	900	Total	900

$$\beta (\text{assets}) = 300/900 * \beta (\text{equity}) + 600/900 * \beta (\text{debt}) = 1,5$$

$$\rightarrow \beta (\text{equity}) = 4,5$$

The corresponding required return on equity:

$$E(\text{Rev}) = 5\% + 5 * (8\% - 5\%) = 18,5\%$$

After the share buyback, the number of shareholders decreases from 40 to 30 and profit decreases from 65, - to 60, - because there is no interest income anymore. **The EPS goes up to 2, correspondingly the P/E ratio falls to 5.**

	EPS	P/E	$\beta_e$	Re
Before buyback	1,625	6,2	3,75	16,25
After buyback	2,0	5,0	4,5	18,5

**Table 1. Financial ratios before and after a buyback program**

We see that the EPS increased, but so did the beta on equity which means that risk increases. Many investors only look at the EPS but fail to see that these earnings are not risk-corrected. The P/E ratio might be the most popular ratio for investors and the market often thinks a

lower P/E ratio is better. As seen in the previous example: the P/E ratio decreases after a buyback.

Another important ratio is the return on assets (ROA)<sup>10</sup>. If we use the same numbers as in the previous example the ROA improves from 6,5% to 6,7%. Again, these earnings aren't risk-corrected.

## **2.4 Alternatives for buyback programs**

When a company has excess cash, the management has a decision to make on how to spend this money. In recent years companies' cash balances increased tremendously so the importance of this decision grew. Companies have a large amount of excess cash, which is increasingly used to repurchase shares, but it is obvious that there are a lot of alternatives. The next few paragraphs focus on the advantages and disadvantages of some of these alternatives compared to share repurchases.

### *2.4.1 Dividend*

A company that earns money has to decide if they want to reinvest this money or pay its shareholders through dividends. The company can pay dividend in the form of cash, stock or property. This is described in the company's payout policy. A company can try to realize stock price appreciation by investing their profits in positive NPV projects instead of paying their shareholders. When a company pays out a lot of their profits through dividends a smaller part can be used to invest in the company itself, so growth is limited.

The proportion of U.S. firms that paid dividends decreased from 66,5% in 1978 to 20,8% in 1999 (Fama & French, 2001) and in 1998 U.S. firms distributed more money to their shareholders through share repurchases than through cash dividends. (Grullon & Ikenberry, 2000) It seems obvious that there are some disadvantages of paying dividends, but first look at why shareholders want dividends.

Dong, Robinson and Veld (2005) investigated the question of why investors want dividends by submitting a questionnaire to a Dutch investor panel. The respondents indicate that they want dividends partly because the cost of cashing in dividends is lower than the cost

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<sup>10</sup> Return on assets can be calculated as (net income)/(total assets). ROA tells us how much profit a company is able to generate for each euro of assets invested (Business Analysis & Valuation, Palepu, Healy, Bernard and Peek, page 200)

of selling shares. This seemed particularly true for low-income investors. Note that this investors panel consist of Dutch households, it doesn't include institutional investors. Another important reason for the demand for dividends is signalling. Bhattacharya (1979) and Miller & Rock (1985) show that dividend payments communicate private information in a fully revealing manner. Most importantly, companies must pay dividends regularly because a drop in dividend payments also signal investors, but in a negative way.

In paragraph 2.3.4 we already saw that there isn't a taxation difference in The Netherlands between dividend payments and share buybacks. So why is there such a large substitution of dividends by share buybacks? The most important reason seems to be that share buybacks are much better able to give a positive signal to investors than dividends do. Another argument is that dividends decrease the value of executive stock options, which gives the companies management an incentive to reduce the dividends (de Jong, van Dijk and Veld, 2003).

Lamber, Lanen and Larcker (1989) show in their study about dividend behaviour that firms decrease the level of dividends, relative to their expected dividend payments, right after the adoption of an executive stock option plan. Therefore de Jong, van Dijk and Veld (2003) hypothesize a negative relation between dividend payments and management stock options, but they also hypothesize a positive relation between share buybacks and management stock options because share buybacks tend to increase stock prices (Signal hypothesis).

#### *2.4.2 Pay off debt*

When a company has excess cash, it can choose to pay off debt. This decision would be an alternative for paying dividends or repurchasing shares. To see if this is a good alternative we first need to know why companies use debt and what are some of the advantages and disadvantages of debt.

There are two ways you can finance a company: with debt or with equity. Obviously all public companies listed on stock exchanges use equity in the form of shares. Also practically all public companies use debt over which they are owed interest. For example: the Dutch AEX-listed company KPN has a long-term debt of 13 billion euros and Heineken has a net debt position of 1,9 billion euros. (2006 annual reports) If a lot of debt is used to finance operations (high debt to equity), the company could potentially generate more earnings than it would have without this outside financing. If this were to increase earnings by a greater amount than the interest cost, then the shareholders benefit as more earnings are being spread among the same amount of shareholders. Another advantage of debt financing is the existence

of a tax shield. This means that the interest paid over debt is tax deductible. As already said in paragraph 2.3.1 Modigliani & Miller claimed in their Capital Structure Relevance Theory that the optimal financing ratio would be 100% debt. This theory is obviously only true in a simplified world because the cost of debt financing may outweigh the return that the company generates on the debt through investment and business activities and become too much for the company to handle. This can result in a bankruptcy.

For companies with a healthy debt/equity ratio, there would be less reason to pay off debt and this alternative is worse than returning the money to shareholders through a share buyback or dividend payment. If a company has too many debt and therefore very large interest obligations relative to the cash flow, paying off debt is obviously a good alternative.

### *2.4.3 Invest*

The two previous paragraphs mentioned alternatives for share buybacks with excess cash, which doesn't provide direct growth opportunities for a company. A whole other way for a company to spend money is to invest in itself. This can be done in many ways like investing in machines, buildings, promotion, R&D etc. Most importantly, these investments have to have a positive net present value to guarantee growth for the company. It is obvious that most companies in the start-up phase use practically all of its money to invest in itself, but large public companies are mostly in their mature phase where there may be less investment opportunities. When these large companies have superabundant cash and can't find good investment opportunities, the most logic way to spend this money is to give it back to their shareholders. This also prevents managers from taking on negative NPV projects as discussed in paragraph 2.3.3, the Free Cash Flow Hypothesis.

### 3 Buyback programs of AEX-stocks

After the previous theoretical part about share repurchases, this section provides an overview of share repurchase programs in The Netherlands in the period 2006-2007. Furthermore, the goal is to find evidence for the signalling hypothesis (paragraph 2.3.2) by looking at share prices around the announcement date of a share repurchase program. Question will be if these share prices show an abnormal return and consequently create shareholders value which will answer the main question of this thesis, stated in the introduction: “Does a buyback program create shareholders value?”

#### 3.1 Data description

The sample covers a 2-year period, 2006 – 2007 where press messages and annual reports of all companies, listed on the AEX were examined to find announcements of a buyback program and their possible motives. The website LexisNexis™ was used to find archived news messages in ‘Het Financieel Dagblad’ about buyback programs. Companies that didn’t announce their program are excluded. Daily stock prices were obtained from DataStream.

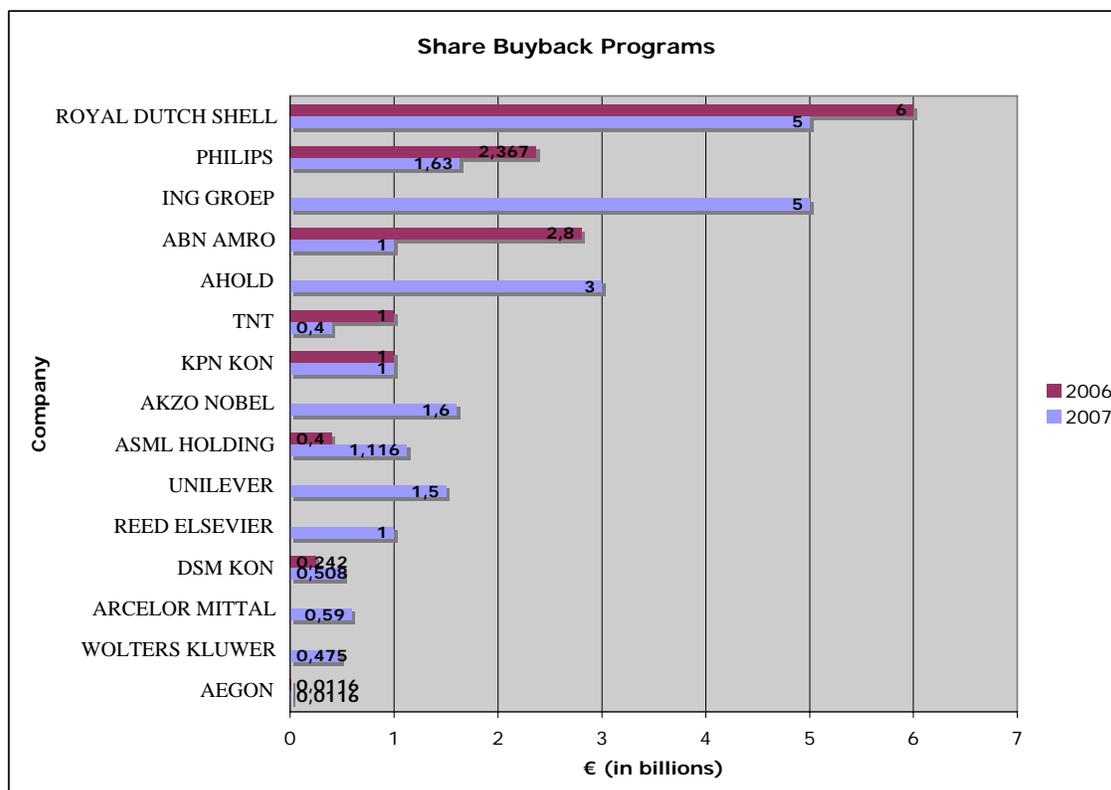
#### 3.2 Overview of Share Buybacks

The result of this research was the finding of 30 buyback announcements. Some of these were for completely new programs, others were announcements for a second stage program. For example DSM KON announced on 27 September 2006 to initiate a buyback program of €750 million. DSM KON bought share for €242 million in 2006 and announced on 27 April 2007 that it would start in May with the second stage of its program for €508 million. A special case is ROYAL DUTCH SHELL. This company is buying around 300.000 of its own shares every day without having made a clear announcement in 2007 of a buyback program. Their last announcement was on 2 February 2006 in which they stated to start a buyback program of €5 billion (the actual amount in 2006 was €6.4 billion). However, ROYAL DUTCH SHELL is frequently releasing press messages telling how many shares they bought that day and also provides an overview of their buyback activity on their corporate website.

The number of announcements and the amounts of the buyback programs are growing rapidly over the years. To illustrate: in 2004 the buyback amount was around €2 billion, in 2005 it

grew to €6.5 billion, in 2006 it more than doubled to almost €14 billion. The amount of 2007 is obviously not yet known, but companies already announced buyback programs for around €8 billion, this would be far over €20 billion if ROYAL DUTCH SHELL is included.

The following chart gives an overview of the 15 AEX-listed companies that are running buyback programs.



**Figure 1. Buybacks of AEX-listed companies**

*Note that the buyback of ROYAL DUTCH SHELL is estimated by looking at their current progress of repurchasing in 2007.*

When looking at Figure 1 it is clear that the amount of companies that announced a buyback program increased. In 2007 it already doubled compared to 2006 while only buyback announcements up to July are included. Although some companies like AKZO NOBEL and KPN KON have buyback programs that run through to the end of 2007, others like ABN AMRO already finished their buyback program and may likely announce another program later this year. Companies that have never started a buyback program may also initiate one, so it is likely that the buyback amount in 2007 triples the amount of 2006.

The following table gives an overview of the 30 announcement dates:

<b>ABN AMRO</b>	8 februari, 2007	30 juni, 2006	14 december, 2005
<b>AEGON</b>	25 mei, 2007	10 augustus, 2006	
<b>AHOLD</b>	22 maart, 2007	6 november, 2006	
<b>AKZO NOBEL</b>	24 april, 2007		
<b>ARCELOR MITTAL</b>	12 juni, 2007	27 september, 2006	
<b>ASML HOLDING</b>	31 mei, 2007	14 februari, 2007	19 april, 2006
<b>DSM KON</b>	27 april, 2007	27 september, 2006	
<b>ING GROEP</b>	16 mei, 2007		
<b>KPN KON</b>	6 februari, 2007	7 februari, 2006	
<b>PHILIPS</b>	9 januari, 2007	15 augustus, 2006	3 augustus, 2005
<b>REED ELSEVIER</b>	16 februari, 2006		
<b>ROYAL DUTCH SHELL</b>	2 februari, 2006		
<b>TNT</b>	26 februari, 2007	20 april, 2007	6 november, 2006
<b>UNILEVER</b>	8 februari, 2007	30 maart, 2007	12 maart, 2007
<b>WOLTERS KLUWER</b>	26 maart, 2007		

Table 4. Announcement dates

Note that some of these dates are in 2005. These are possibly all the announcements in 2005, but because that isn't 100% sure these are excluded from figure 1.

### 3.2.1 Companies motives

In the first part of this thesis (paragraph 2.3) several motives for share buybacks were discussed. This paragraph will look at what motives have been given by the companies itself. The most given reason to initiate a buyback program is to return excess cash to shareholders. Some companies, like UNILEVER explain that this is a more flexible way to return cash to shareholders than through dividends. For AKZO NOBEL, their excess cash balance is a result of not finding suitable acquisitions. Another motive that ASML gives is to cover for short-term obligations that arise from share-based compensation for employee.

Remarkably, most companies don't give much information about their motives. It is mostly one sentence or a very short paragraph in an annual report. In the announcing press-message, the underlying motive is also not always given. Another very remarkable finding is that none of the announcing companies give the reason that their stock is undervalued. This is remarkable because research by Baker, Powell and Veit (2003) about motives for share buybacks in the U.S. shows that for almost 75% of the respondents an undervalued stock is most important motive to repurchase shares. Not only is investing in an undervalued stock a good investment, it is also a positive signal to investors.

### 3.3 Abnormal stock returns

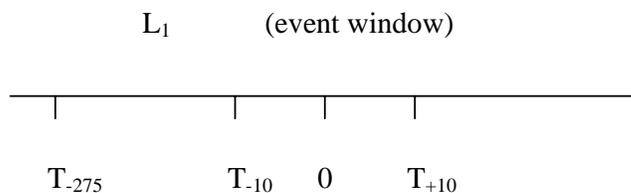
The definition of an abnormal return: “the difference between the return of a single stock and the return of a reference portfolio” (Barber & Lyon, 1997) in which case the reference portfolio is an index most of the time. For example, if a daily return of ABN AMRO is 4% and the daily return of the AEX-index is 3%, the abnormal return for ABN AMRO is 1%.

The goal of this thesis is to find significant abnormal returns after the announcement dates of a buyback program. The way to find these abnormal returns is to conduct an event study.

#### 3.3.1 Event study

An event study measures the economic effect of an event on the value of firm (MacKinlay, 1997). Perhaps the first event study was by James Dolly in 1933. He examined the price effect of stock splits. In the same way, price effects of buyback announcements will be examined here.

Mackinlay (1997) gives the following procedure for an event study:  
*The initial task of conducting an event study is to define the event of interest and identify the period over which the security prices of the firms involved in this event will be examined—the event window.* In the case of this thesis, the event of interest is the buyback announcement and the period over which the security prices will be examined is 275 days prior to the announcement until 10 days after the announcement (days when the market is open). This is illustrated by the following timeline:



Where 0 represents the announcement date,  $T_{-275}$  is 275 days prior to the announcement date,  $T_{-1}$  is one day before the announcement date etc. The event window is the period  $T_{-10}$  to  $T_{+10}$ . Share prices in this window will be tested for abnormality in return.  $L_1$  is the estimation window; daily stock prices from  $T_{-275}$  to  $T_{-10}$  are used to calculate the parameters that are necessary to perform a test in the event window.

Next, Mackinlay (1997) chooses a model for the reference portfolio. This will be the market model in this research, where the used market portfolio is the AEX-Index. The abnormal returns can be calculated, using the following function:

$$AR_{it} = R_{it} - E(R_{it} | R_{mt}) \quad (1)$$

Where  $AR_{it}$  is the abnormal return of stock  $i$  on event date  $t$ ,  $R_{it}$  is the actual return and  $E(R_{it} | R_{mt})$  is the expected return on stock  $i$ . In this thesis the market model is used to determine the expected return. The market model is given by:

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

Where  $R_{mt}$  is the return on the AEX-index on time  $t$ .

(The calculations used to estimate  $\alpha_i$ ,  $\beta_i$  and  $\varepsilon_{it}$  are given in appendix A.)

Next, the abnormal returns in the event window have to be aggregated. This aggregation is not only for abnormal returns for a single stock, but also for all the 30 events (buyback announcements). The result is the average Cumulative Abnormal Return (CAR):

$$\overline{CAR}(t_1, t_2) = \frac{1}{N} \sum_{i=1}^N \hat{CAR}(t_1, t_2) \quad (3)$$

Where  $T_{-10} > t_1 \geq t_2 \leq T_{+10}$

$N$  = number of events

With variance:

$$\text{var}(\overline{CAR}(t_1, t_2)) = \frac{1}{N^2} \sum_{i=1}^N \sigma^2(t_1, t_2) \quad (4)$$

Where

$$\sigma_i^2(t_1, t_2) = (t_2 - t_1 + 1) \sigma_{\varepsilon_i}^2 \quad (5)$$

### 3.3.2 Results

After performing the event study described above, the following results were obtained:

#### 1. The Cumulative Abnormal Returns (CAR) & Abnormal Returns (AR) in the event window:

<b>t</b>	<b>Mean CAR</b>	<b>Mean AR</b>
-10	0.11%	0.11%
-9	0.15%	0.04%
-8	0.01%	-0.14%
-7	0.03%	0.02%
-6	-0.24%	-0.27%
-5	-0.25%	-0.01%
-4	-0.52%	-0.27%
-3	-0.52%	0.00%
-2	-0.93%	-0.41%
-1	-1.10%	-0.17%
0	-0.33%	0.77%
1	0.05%	0.38%
2	0.15%	0.10%
3	-0.06%	-0.21%
4	-0.12%	-0.06%
5	0.01%	0.13%
6	-0.16%	-0.17%
7	0.20%	0.36%
8	0.13%	-0.07%
9	0.48%	0.35%
10	0.17%	-0.31%

**Table 5. CAR and AR in the event window**

These numbers are calculated with the following formulas:

$$\overline{CAR}(t_{-10}, t_{+10}) = \frac{1}{N} \sum_{i=1}^N \hat{CAR}(t_{-10}, t_{+10}) \quad \& \quad \overline{AR}(t_{-10}, t_{+10}) = \frac{1}{N} \sum_{i=1}^N \hat{AR}(t_{-10}, t_{+10})$$

#### 2. The variance and standard deviation of the mean CAR and AR for different intervals

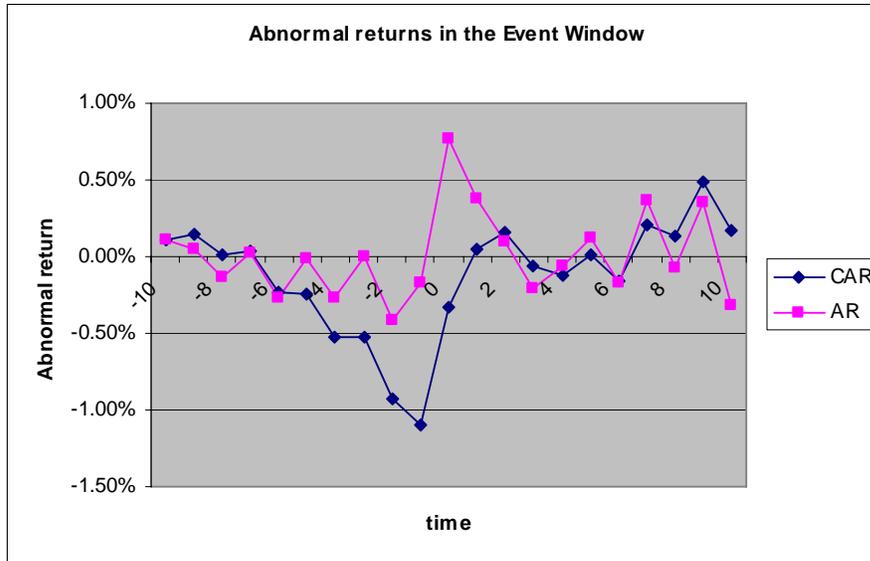
Variance	Standard deviation	Interval
0.01050%	1.02472%	-10 to +10
0.00350%	0.59162%	-5 to +5
0.00150%	0.38731%	-1 to +1
0.00050%	0.22361%	1-day

**Table 6. Variance and SD of mean-CAR and mean-AR (1-day)**

These numbers are calculated with the following formulas:

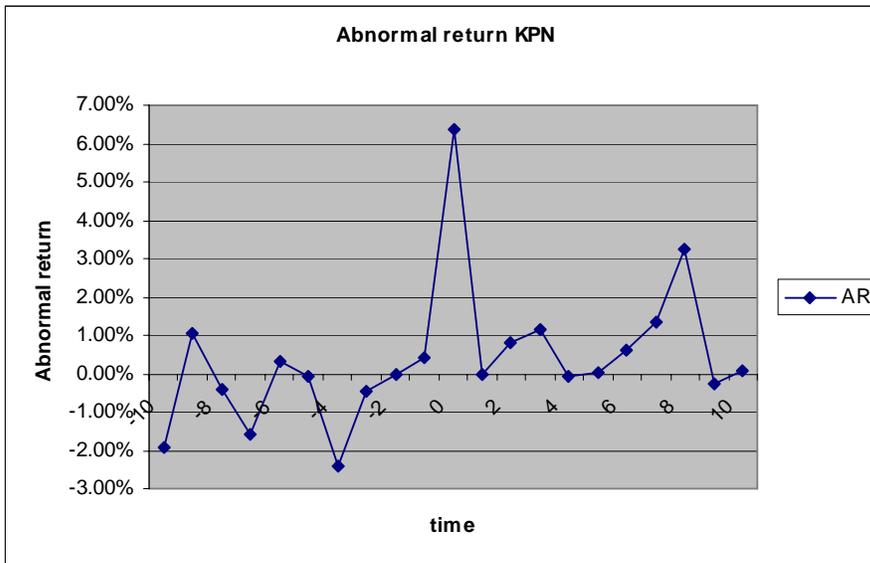
$$\text{var}(\overline{CAR}(t_1, t_2)) = \frac{1}{N^2} \sum_{i=1}^N \sigma^2(t_1, t_2) \quad \& \quad SD(\overline{CAR}(t_1, t_2)) = \sqrt{\frac{1}{N^2} \sum_{i=1}^N \sigma^2(t_1, t_2)}$$

When using the data in Table 5, the following graph shows the mean CAR and AR for all the events in the event window:



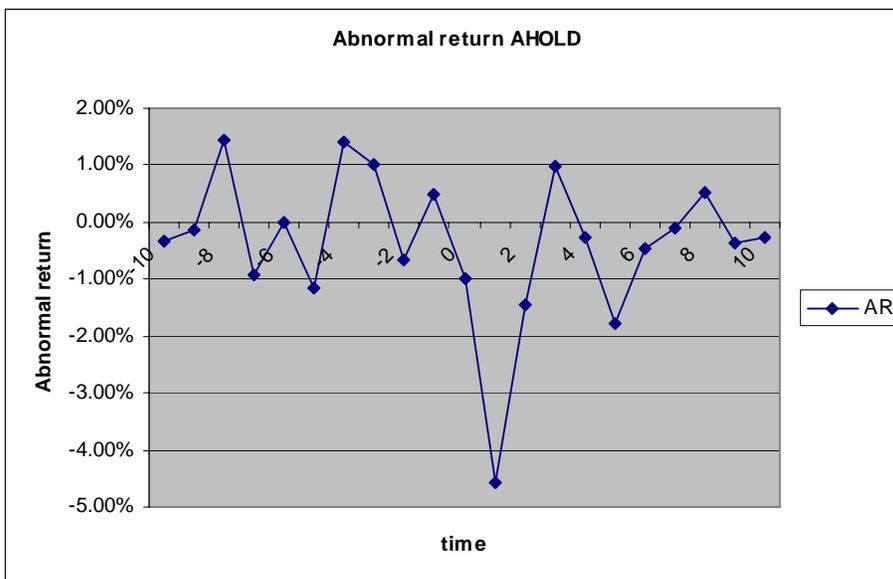
**Figure 2. Abnormal returns in the event window**

The AR line shows a peak at t = 0 (announcement date) and the CAR line rises correspondingly. This may suggest that there is an abnormal return after the announcement of a buyback program. When looking at abnormal returns for events individually, KPN (2006 announcement) shows the biggest peak at t = 0:



**Figure 3. Abnormal returns of KPN in the event window**

On the other hand, there are also firms that don't show this trend at all. This could be a result of an announcement on the same day as disappointing (quarterly) results. Ahold (2006 announcement) shows the following graph:



**Figure 4. Abnormal returns of Ahold in the event window**

### 3.3.3 Hypothesis testing

In paragraph 3.3.1 an event study to determine positive abnormal returns after a buyback

announcement was described. In this paragraph, the results of this event study will be tested. The first step is to define the null hypothesis: the assumption that there isn't an abnormal return after the announcement of a buyback program (within a specified confidence interval).

The used test statistic is the following:

$$H_0 : \frac{\overline{CAR}(t_{-10}, t_{+10})}{\sqrt{\text{var}(CAR((t_{-10}, t_{+10})))}} \text{ with } N(0,1)$$

The result of this formula shows if there is an abnormal return in the event window as a whole. When using the data displayed in table 5 and 6, the mean CAR of 0,17% is divided by the mean standard deviation of 1,02%. The corresponding Z-value of 0,17 lies in the 95% confidence interval, therefore the null-hypothesis is not rejected and there is no evidence for an abnormal return in a ten-day interval around the announcement date.

Focussing on different intervals, the following results are obtained:

Interval	CAR	Standard deviation	Z-value
-10 to +10	0.17%	1.02%	0.17
-5 to +5	0.46%	0.59%	0.78
-1 to +1	0.98%	0.39%	2.53
1-day	0.77%	0.22%	3.44

**Table 7. Z-values for different intervals around the announcement**

When using a 95% confidence interval the critical value of 1,96 is exceeded in the last two intervals. **In a 3-day and a 1-day interval around the announcement date of a buyback program, the null-hypothesis of no abnormal return is rejected and therefore, there is reason to believe that there exists an abnormal return in the share price.**

### 3.4 Conclusion

Part three of this thesis focused on the main question: “Does a buyback program create shareholders value?” This question was investigated by looking for abnormal returns in different intervals around the announcement date. Thirty announcement dates of fifteen firms were examined and tested for abnormality in return. The conclusion of this research was

presented in table 7. There is clear evidence for an abnormal return on the announcement date and also for the 3-day interval around the announcement. There is no significant evidence for an abnormal return in a wider interval. Therefore I conclude that there is only a short term (positive) effect on the share price, when a firm announces a buyback program.

## 4 Summery/Conclusion

This thesis aimed to answer the question: “Does a buyback program create shareholders value?” This was done by looking for abnormal share price returns in different intervals around the announcement date of a buyback program. The thesis was organized into two parts: 1) General information about share buybacks 2) Analysis of buybacks of companies listed on the AEX.

The first part of this thesis concerned the theoretical side of share buybacks. General information was provided by giving a brief overview of the historical developments that has led to the popularity of share buybacks. After this, a paragraph about the different buyback methods: 1) Open-market 2) Tender offer 3) Kempen-route was given. The next paragraph addressed different motives and hypothesis’ for share buybacks: 1) Signaling hypothesis 2) Free cash flow hypothesis 3) Dividend substitution 4) Change in capital structure 5) Improve financial ratios. The last paragraph of this section provided three alternatives for buyback programs: 1) Dividend 2) Pay-off debt 3) Invest.

The second part contained the actual research that was aimed to answer the central question. An overview of 30 recent share buybacks was provided which was followed by a definition of abnormal returns and a description of the used research method: the ‘event-study’. Historical data was used in an event-study to look for abnormal returns and a few significant results were discovered: 1) There is clear evidence for an abnormal return on the announcement date and also for the 3-day interval around the announcement 2) There is no significant evidence for an abnormal return in a wider interval.

The central question of this thesis is thereby answered. Share buybacks create shareholders value because there is a positive short term effect on the share price after the announcement of a buyback program.

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## Appendix A

OLS estimators:

$$\hat{\beta}_i = \frac{\sum_{t=T_0+1}^{T_1} (R_{it} - \hat{\mu}_i)(R_{mt} - \hat{\mu}_m)}{\sum_{t=T_0+1}^{T_1} (R_{mt} - \hat{\mu}_m)^2}$$

$$\hat{\alpha}_i = \hat{\mu}_i - \hat{\beta}_i \hat{\mu}_m$$

$$\hat{\sigma}_i^2 = \frac{1}{L_1 - 2} \sum_{t=T_0+1}^{T_1} (R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt})^2$$

Where

$$\hat{\mu}_i = \frac{1}{L_1} \sum_{t=T_0+1}^{T_1} R_{it}$$

and

$$\hat{\mu}_m = \frac{1}{L_1} \sum_{t=T_0+1}^{T_1} R_{mt}$$