



**DO SHARE REPURCHASE PROGRAMS CREATE SHAREHOLDER VALUE IN  
THE NORDIC STOCK MARKETS?**

Lappeenranta–Lahti University of Technology LUT

Master's Programme in Strategic Finance and Business Analytics, Master's Thesis

2022

Karri Koivisto

Examiners: Associate Professor Sheraz Ahmed,

Professor Eero Pätäri

## ABSTRACT

Lappeenranta–Lahti University of Technology LUT  
LUT School of Business and Management  
Business Administration

Karri Koivisto

### **Do Share Repurchase Programs Create Shareholder Value In The Nordic Stock Markets?**

Master's thesis

2022

52 pages, 15 figures, 7 tables

Examiners: Associate Professor Sheraz Ahmed, Professor Eero Pätäri

Keywords: Share repurchases, shareholder value, Nordics, efficient market hypothesis

The purpose of this thesis is to study share repurchase programs of Nordic companies and the effects on shareholder value. In this study, 467 Norwegian, Finnish, Danish, and Swedish companies and their buyback programs were studied. The purpose was to find out, whether these companies were able to generate long-term value for their shareholders. Companies that did not see their share count decrease after the buyback were excluded from the study. Shareholder value was measured with market excess returns, ROE-% & ROIC-% -statistics, liquidity, and the book value of equity. Companies were separated into companies that have completed their programs and companies that are still in the process of completing their program.

Based on the results, most of the Nordic companies did not attempt to create shareholder value, as the number of shares did not decrease during the process. Companies that completed their programs were able to generate more value compared to companies that did not complete their program yet. Companies that completed their programs were able to produce 11.92 % average market excess returns during a three-year holding period.

Nordic companies had differences among them. Only Danish companies were able to produce market excess returns in every period in both buyback categories.

## TIIVISTELMÄ

Lappeenrannan–Lahden teknillinen yliopisto LUT

LUT-kauppakorkeakoulu

Kauppatieteet

Karri Koivisto

### **Luovatko omien osakkeiden takaisinostot omistaja-arvoa pohjoismaisilla osakemarkkinoilla?**

Kauppatieteiden pro gradu -tutkielma

52 sivua, 15 kuvaa, 7 taulukkoa

Tarkastajat: Apulaisprofessori Sheraz Ahmed ja Professori Eero Pätäri

Avainsanat: Omien osakkeiden takaisinosto, omistaja-arvo, Pohjoismaat, Tehokkaiden markkinoiden hypoteesi,

Tämän tutkielman tarkoituksena on tutkia Pohjoismaisten yhtiöiden takaisinosto-ohjelmia ja niiden vaikutusta omistaja-arvoon. Tutkimuksessa tarkasteltiin 467 Norjan, Suomen, Tanskan sekä Ruotsin osakemarkkinoilla toimivan yrityksen takaisinosto-ohjelmien vaikutuksia. Tarkoituksena oli selvittää, tuottivatko osakkeiden takaisinosto-ohjelmat omistaja-arvoa pitkällä aikavälillä. Yhtiöt, joiden osakkeiden lukumäärä ei laskenut osto-ohjelman aikana jätettiin pois tarkastelusta. Omistaja-arvoa mitattiin markkinatuoton yltävällä tuotolla, ROE-% ja ROIC-% -tunnusluvuilla, likviditeetin muutoksella sekä kirja-arvon kehityksellä. Tutkimuksessa markkinatuottona käytettiin jokaisen maan omaa vertailuindeksiä. Osto-ohjelmia toteuttavat yhtiöt ja otettiin yhtiöihin, jotka olivat toteuttaneet ohjelmansa ja yhtiöihin, joiden ohjelma oli vielä kesken.

Tulosten perusteella, suurin osa pohjoismaisista takaisinosto-ohjelmista ei pyrkinyt luomaan omistaja-arvoa, sillä niiden osakkeiden lukumäärä ei laskenut tarkastelu-periodilla. Yhtiöt, jotka toteuttivat osto-ohjelman täysimääräisesti, tuottivat paremmin, kuin yhtiöt, joiden ohjelma oli vielä kesken. Yhtiöt, jotka toteuttivat ohjelmansa täysimääräisesti, tuottivat kolmen vuoden pitoajalla keskimäärin 11.92 % yli markkinatuoton.

Pohjoismaiden välillä oli eroavaisuuksia. Ainoastaan tanskalaiset yhtiöt pystyivät tuottamaan markkinaa parempia tuottoja jokaisella aikaperiodilla molemmissa osto-ohjelma luokissa.

## ACKNOWLEDGEMENTS

After unforgettable five years of studying, it feels amazing to put finishing touches to my Master's thesis. I want to thank a few people that have played an important role in this process. I would like to thank my thesis supervisor Sheraz Ahmed, who supported me throughout the process with a lot of constructive feedback and responded swiftly whenever I had questions.

I wish to thank my girlfriend Santra, who has always supported me and helped me remain positive, despite occasional times of frustration. Also, I would like to thank my family and friends for always believing in me and supporting me along my journey these past five years.

## Table of contents

Abstract

Acknowledgments

<b>1.</b>	<b>Introduction.....</b>	<b>1</b>
1.1	Objectives of the research.....	4
<b>2.</b>	<b>Theoretical framework.....</b>	<b>7</b>
2.1	Buyback legislation in Nordic countries .....	7
2.2	Share repurchase process .....	8
2.3	Share repurchase methods in practice .....	9
2.4	Commonly accepted theories on buybacks .....	10
2.4.1	Tax arbitrage.....	10
2.4.2	Buybacks as a substitute for dividends.....	12
2.4.3	Free cash flow theory.....	13
2.4.5	Controlling dilution.....	15
2.4.6	Clientele effect .....	16
2.4.7	Signaling theory .....	17
2.4.8	Defending from hostile takeovers.....	18
2.4.9	Buying stocks for employee stock compensation plan.....	19
2.4.10	Enhancing liquidity .....	19
2.5	Indifference between dividends and repurchases.....	20
2.6	Dividends as a way of distributing capital .....	21
2.7	Efficient market hypothesis .....	24
<b>3.</b>	<b>Previous research.....</b>	<b>27</b>
3.1	Previous research on buybacks and market value .....	27
3.2	Previous research on buybacks and book value .....	31
<b>4.</b>	<b>Data and methodology .....</b>	<b>32</b>
4.1	Data .....	32
4.1	Portfolio construction.....	36
4.2	Methodology .....	37
<b>5.</b>	<b>Results .....</b>	<b>40</b>
5.1	Post-buyback results with portfolios consisting of all countries .....	40
5.2	Post-buyback results in the Nordic countries separately.....	41
5.3	Analysing post-buyback returns with linear regression .....	45
5.4	Economic justifications for differences among Nordic countries .....	47

<b>6. Conclusions</b> .....	<b>49</b>
<b>References</b> .....	<b>53</b>

# 1. Introduction

Capital allocation might be one of the most influential aspects of a company's success. It refers to determining the most efficient way of using a company's financial resources to improve the company's long-term financial stability and future value creation. Shareholders should be interested in the company's ability to allocate capital effectively as it directly affects the generation of shareholder value. Assessing the capital allocation skills of a company's management is vital for shareholders as the manager's decisions influence the company's future. Vermaelen (1984) stated that managers should maximize the market value of the outstanding securities as it is the main principle of corporate finance.

The most common way for a company to allocate capital is to invest it into future growth and it is usually in the best interest of shareholders, as long as the growth is profitable. This has become even more important in the 21st century, as companies must grow, or they will be surpassed by their competitors in this highly competitive era. If a company has no reasonable investments in sight that would have a positive net present value, it should according to theory, distribute the excess capital to shareholders. At this point, companies have a decision to make. They may distribute the capital via dividends or invest the money back into the company by repurchasing their shares.

One of the greatest examples of capital allocation has been legendary value investor Warren Buffet's company, Berkshire Hathaway. They have chosen not to pay out dividends to shareholders at all, despite the company being large and mature with loads of excess cash. The "Oracle of Omaha" believes that the company can generate shareholder value by reinvesting retained earnings into new investments and acquisitions and especially in recent years, share repurchases. (Rosenbaum, 2018)

Manconi et al. (2019) studied buybacks in 31 non-US countries and found out that on average, share repurchases are associated with significant positive short- and long-term excess returns. Previous studies have revealed that US companies tend to have significant positive excess returns following buybacks. Lewis and White (2021) studied over 17,000 US companies and found out that share repurchases had a significant positive effect on stock liquidity and reduced volatility. This thesis focuses on Nordic countries and seeks to find out whether or not similar results can be found.

Share repurchases are a way for a company to bet on itself. Markets tend to view share repurchases as a positive sign about the company's future outlook. However, compared to the United States, share repurchases are not that common in the Nordic countries. This could be explained mainly due to legislation not allowing Finnish, Norwegian, and Swedish companies to repurchase their shares until the 1990s and differences between tax codes among countries.

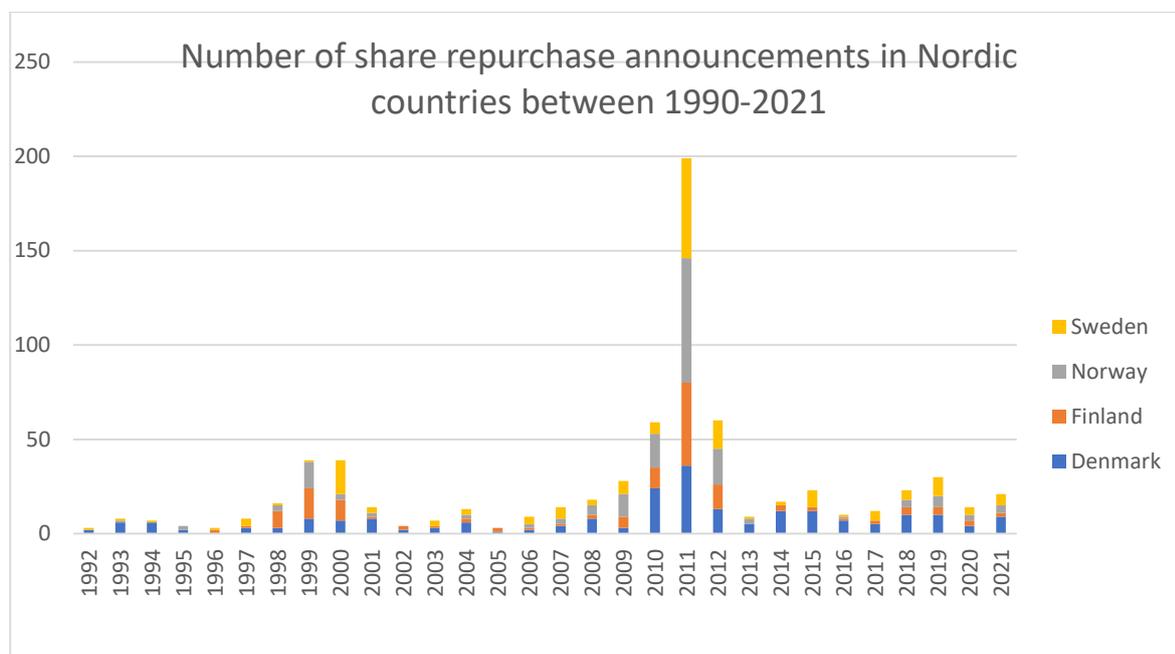


Figure 1 Number of share repurchase announcements in Nordic countries between 1990-2021. (Data gathered from Eikon, 2022)

Figure 1. illustrates how the number of share repurchase announcements has evolved during the last 30 years. The data in figure 1. is gathered from the Eikon Refinitiv database. It can be observed that between 1998-2001 there was a first significant spike in the number of announcements. After a couple of years of increased buyback activity, it seems that the activity stagnates for 2002-2005. After 2006 the number of announced buybacks starts to increase once again and during 2010-2012 over 300 buybacks programs are announced. During that period, many European countries were affected by the sovereign debt crisis (Alessi & McBride, 2015). The crisis caused a lot of volatility in the markets which could have opened up windows of opportunity for Nordic managers.

However, these are just announced programs, that may or may not have been fully completed or even started. Overall, the number of announced buybacks was much higher between 2010-2020 compared to the period between 2000-2010.

By looking at figure 1, one could conclude that companies tend to announce more share repurchase programs when financial crises occur. During global financial crises, the

management of a company might view that the company's stock is incorrectly priced and that buying back their shares is in their shareholders' best interests.

However, Nordic companies did not announce significantly more share repurchase programs during the 2019-2020 Covid crisis period despite stock prices experiencing significant draw-downs. This may be due to the extreme amount of uncertainty that Covid-19 caused to the companies and especially for many supply chains. Many managers decided that it is better to hold out on dividends and share repurchases until the future seems clearer. Preserving capital during financial uncertainty might be the safest way to proceed. The preservation of capital also has a signaling effect, as it signals to shareholders that the company has uncertainty regarding its business in the future.

Also, some sectors such as the financial sector and banking sector experienced regulatory restrictions on their ability to distribute cash to their shareholders. In a report published by the IMF, Awad et al. (2020) state that it is recommended that banks preserve capital resources and limit the distribution of capital (dividends, buybacks, bonus payments) until the impact of the pandemic becomes clearer.

This thesis focuses on share repurchase programs in the Danish, Finnish, Norwegian, and Swedish or the Nordic countries, and stock markets during 2010-2020. The objective of this thesis is to gain insight into the different characteristics of these Nordic countries and find out whether share repurchases have created value for shareholders. Share repurchase programs are not as common as dividends in the Nordics, and therefore more research on the subject needs to be done. This can be observed in figure 2, when we look at the historical development of buybacks and dividends in Finland.

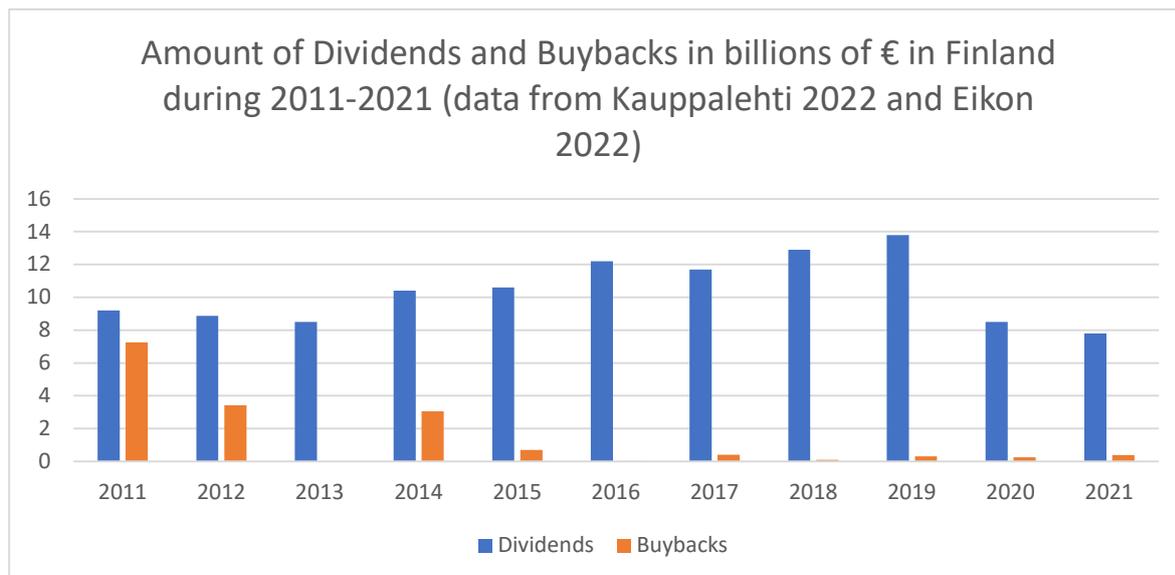


Figure 2. Dividends and buybacks in Finland during 2011-2021 (data from Kauppalehti 2022 and Eikon 2022)

Also, much of the research on repurchases is based on researching short-term profits after a company has announced a share repurchase program. This study aims to seek information about the effects on the generation of long-term shareholder value.

## 1.1 Objectives of the research

The objective of the research is to find out whether Nordic companies that have repurchased their shares in 2010-2020 managed to generate long-term shareholder value and how significant is the amount of value that they have managed to create. This study was done by comparing Danish, Finnish, Norwegian, and Swedish companies and trying to capture the different characteristics of these four Nordic countries. In this study, the Icelandic stock market is not included due to its particularly small size compared to the other four countries. The differences between the market capitalizations can be seen in figure 3.

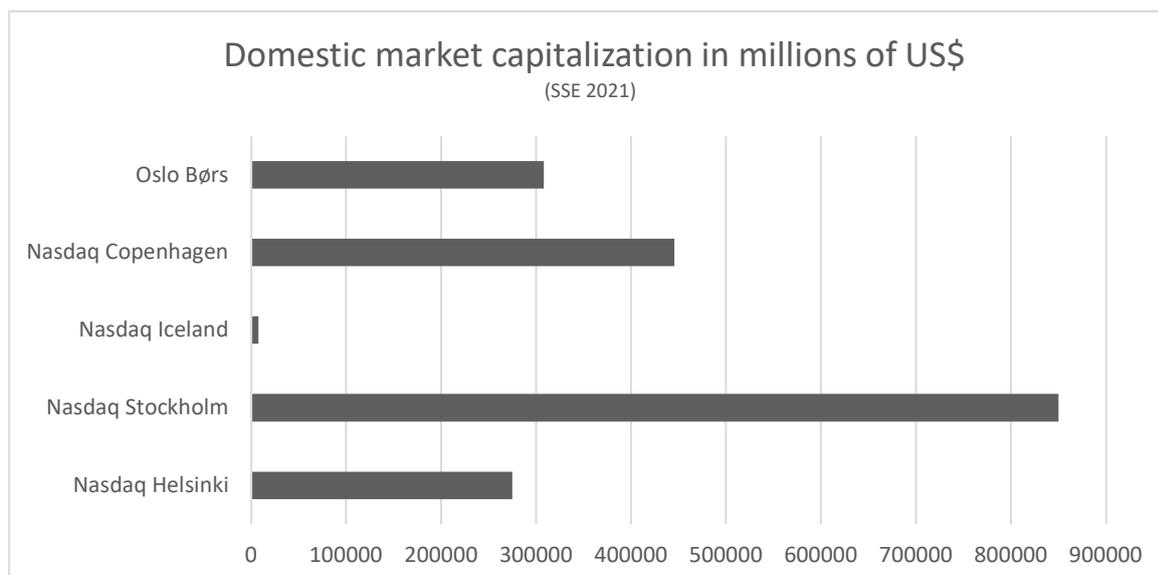


Figure 3. Domestic market capitalization in millions of USD (Sustainable Stock Exchanges initiative, 2022)

It is desirable to compare Nordic countries to each other as they have many similarities in regulation, such as all Nordic countries having the same maximum number of shares that companies may repurchase. The number of repurchased shares shall not exceed 10% of the company's total number of shares. Companies also require shareholders' meeting's permission to authorize the board to buy back their shares. All Nordic countries analysed in this study are also part of the European Union (EU), except Norway, and they are governed by EU laws and regulations.

The size of their respective financial markets is also close to each other, except Sweden is the biggest capital market out of the four as can be seen in Figure 3. The four countries have many differences in taxation considering capital gains and dividends. These differences are explained in the further sections of this thesis.

For benchmark indexes, this study includes all country indices from the four countries in consideration. The Finnish, Swedish and Danish indices are owned by Nasdaq. Oslo Børs is owned by Euronext while the other Nordic stock exchanges are owned by Nasdaq (Solsvik, 2019).

The main research question of this thesis is:

*“Do share repurchase programs create long-term value for shareholders in the Nordic stock markets?”*

The creation of shareholder value is measured with market excess returns, changes in financial performance ratios such as Return on Invested Capital-% (ROIC-%), Return on equity

(ROE-%), Book value of Equity (BVE), and stock liquidity. Linear regression is used to measure how different variables affect post-buyback returns. In linear regression analysis, explanatory variables such as size and leverage ratio are also used to see whether these variables have a relationship with market excess returns. These statistics should give us an insight into whether the generation of shareholder value is sustainable overall and whether companies that have bought back shares have benefitted their shareholders.

## 2. Theoretical framework

In this chapter, we look at the theoretical framework behind theories that affect share repurchases and dividends. The chapter consists of practical examples of repurchases, legal background in Nordic countries, and theoretical propositions.

### 2.1 Buyback legislation in Nordic countries

Share repurchase programs are prescribed by laws regarding stock markets. In Finland, the legislation consists of the Limited Liability Companies Act (*Osakeyhtiölaki*), Securities Market Act (*Arvopaperimarkkinalaki*), and OMX Helsinki Stock exchange's guidelines regarding share repurchases. Share repurchases were made legal in Finland in 1997. Companies may only use free equity for purchases i.e., proceedings that could also be used to pay out dividends. Repurchases shall not jeopardize the company's solvency. The repurchase program can start one week after the announcement by the company has been made.

Swedish share repurchase legislation can be considered rather similar to the Finnish legislation. Buybacks were considered illegal from 1895 to March 2000 when Swedish Limited Companies Act was changed in a way that allowed companies to repurchase their shares. (Råsbrant, 2011).

Share repurchase programs were legalized in Norway in 1999 after the new Limited Companies Act was published. The value of the company's outstanding shares must be at least one million Norwegian Kroner, excluding shares that the company itself owns, for the company to be allowed to repurchase its shares. (Skjeltorp, 2004)

Share repurchases have never been illegal in Denmark. However, the Danish Limited Companies Act (*Lov om aktieselskaber*) sets some restrictions on share repurchases.

All Nordic countries have similarities in their legislation regarding the maximum number of shares that companies may repurchase. The number of repurchased shares shall not exceed 10% of the company's total number of shares. Companies also require shareholders' meeting's permission to authorize the board to buy back their shares. The one exception among the countries is that while Denmark, Finland, and Sweden are in the European Union (EU), Norway is not part of it. That means that Denmark, Finland, and Sweden are also governed by EU laws

and regulations. However, because the Nordic countries have rather similar legislative backgrounds, it can be justified to compare them in this study.

## 2.2 Share repurchase process

As stated in the previous chapter, Nordic countries have rather similar legislation considering share repurchases. In this chapter, we are going to look at the actual share repurchase process for Finnish companies as an example and see what steps are taken.

Authorization for share repurchases is given at the shareholders' meeting and the authorization is valid for up to 18 months. When a decision to repurchase shares is made, the specific amount of shares to be acquired or the largest amount of shares by share type shall be expressed formally. If the acquisition is made outside the open market, the company must disclose from where and in which order they are going to acquire intended shares.

Finnish Limited Companies Act chapter 15 section 10 states that articles of association of the company may state that the company has the right or obligation to acquire or redeem its shares. In this case, the law states that the company by-laws must determine:

1. whether the matter is of acquisition or redemption;
2. whether the company has the right or the obligation to acquire or redeem;
3. which shares the provision concerns and, if necessary, in which order the shares are to be acquired or redeemed;
4. the procedure to be observed;
5. the consideration to be paid for the shares or the basis for the calculation of the consideration; and
6. the assets that can be used for the payment of the consideration.

In a public company, the shareholders' meeting shall decide on the exercise of the right of the company to acquire or redeem shares. The shareholders' meeting may authorize the Board of Directors to make the decision. This authorization must be made public within a month of the decision and the authorization is valid for up to five years from the authorization date. (Limited Companies Liability Act, Chapter 15 § 5, 2022)

After the repurchase program is accepted and authorized, companies are allowed to start executing their program after one week has passed since the announcement. After a company starts to repurchase its shares, they have to publicly announce the quantity and price of its trades. This announcement has to be made before the next trading day. (Liljeblom &

Pasternack, 2006) According to the Helsinki stock exchanges (Nasdaq OMXH) instructions, companies are allowed to buy their shares in such an amount, that would not differ largely from their ordinary daily trading volume. The main reason for this is that repurchases made by the company should not weaken the investors' trust in the company or the stock exchange. (Nasdaq, 2020)

### 2.3 Share repurchase methods in practice

A company that chooses to repurchase parts of its shares may use various approaches. The three most widely known methods are open-market repurchases, fixed-price self-tender offers, and Dutch-auction self-tender offers. (Lücke & Pindur, 2002) Out of the three previously mentioned methods, open-market repurchases are the most common. Grullon and Michaely (2004) studied repurchases in the U.S between 1984-2000 and concluded that over 90 percent of buybacks were open-market repurchase programs. In an open-market repurchase, the company announces to acquire a specific number of shares from the open market at the current market price. However, if a company announces for example to repurchase 5 percent of its share float, they do not have an obligation to purchase the whole 5 percent. (Lücke & Pindur, 2002) Open-market repurchases increase demand for shares in the market and this should increase the share price as there is a temporary imbalance between supply and demand.

The second method is called fixed price self-tender offer. This refers to a one-time offer by the company to purchase a certain number of its shares from existing shareholders, usually at a premium over the current market price. The premium over the current share price is called the tender premium. Depending on the number of shares that current shareholders are willing to sell, the company might repurchase more shares than they originally intended. If the number of tendered shares exceeds the number in the offer, the company might purchase shares on a pro-rata basis. If the number of shares tendered is lower than the number sought, the company might extend the buyback period. (Lücke & Pindur, 2002)

The third method is called the Dutch auction self-tender offer. In this arrangement the price is predetermined, but it is set with the auction process. The "auction" is controlled by the issuer, who selects the lowest-priced offers to fulfill the amount of the total stated buy-back. If there are not enough shares offered at the lowest price to accomplish the desired repurchase amount, the issuer may accept offers from the next higher-priced tier. Essentially, the firm compiles shareholders' responses and creates a demand curve for the stock. Dutch-auction

tenders reduce the risk of failure of the repurchase process compared to the fixed-price tender offer. (Lücke & Pindur, 2002) However, Comment and Jarrell (1991) suggest that Dutch-auction tenders have lower signaling power compared to Fixed-price tender offers.

In this thesis, share repurchase methods are not segregated, and all repurchases listed in the Refinitiv Eikon database are considered. This is done mainly due to there not being sufficient information available on the buyback method in the data.

## 2.4 Commonly accepted theories on buybacks

There are many widely accepted reasons in finance literature for a company to repurchase its shares. Most of these hypotheses are well known and are widely researched. The reasoning for these following hypotheses is explained in the following chapters:

- tax arbitrage,
- buybacks as a substitute for dividends
- free cash flow theory,
- maintaining desirable capital structure,
- controlling dilution,
- signaling theory,
- defending hostile takeovers,
- buying shares for the stock compensation plan,
- enhancing liquidity and
- clientele effect.

### 2.4.1 Tax arbitrage

Tax arbitrage can be referred to as a practice of profiting from differences between taxing various types of income and capital gains. Different tax codes between countries allow for individuals to seek out legal loopholes or restructure their transactions in a way that minimizes their tax burden. For an investor, it is reasonable to aim for the lowest possible amount of paid taxes.

Share repurchases provide a tax arbitrage opportunity for shareholders, as a means to delay or potentially fully-avoid tax on their share of corporate gains. Investors have the option to hold

on to their shares and only pay capital gains taxes when they choose to realize their position. Contrary to repurchases, taxes on dividends are usually paid when they are distributed to shareholders. This means that in some countries, the tax code might favor dividends over repurchases and vice versa.

As we can see from table 1, the capital gains tax rates are very different in the four countries. Denmark has the highest tax rate and it in fact has the highest effective capital gains tax rate in Europe (Asen, 2021). Sweden has the lowest effective tax rate among the four countries. Norway's tax rate is lower compared to Finland, due to Finnish individuals having to pay 34% tax on the excess after the 30 000€ mark. Norway has an effective capital gains tax rate of 31.68 %.

<b>Top Capital Gains Tax Rate in the Nordics (Asen, 2021):</b>	
<b>Denmark</b>	27% up to 56 500 DKK (about 7600 €) and 42 % for the excess
<b>Finland</b>	30% up to 30 000 € and 34 % rate on the excess
<b>Norway</b>	The effective rate of 31.68 %
<b>Sweden</b>	Flat rate of 30%

*Table 1. Taxes on capital gains in the Nordics*

Taxes on dividends are more complex compared to capital gains taxes in these four countries. However, the order among countries is still the same as with capital gains. Denmark has the highest and Sweden the lowest effective tax rate. Finland has the exception that 15 % of dividends are tax-exempt.

*Table 2. Taxes on dividends in the Nordics*

<b>Taxes on dividends in the Nordics (PWC 2021):</b>	
<b>Denmark</b>	27% up to 56 500 DKK (about 7600€) and 42 % for the excess
<b>Finland</b>	85 % of dividends from publicly quoted shares are taxed as capital income, 30% up to 30 000€ and 34% on the excess. 15 % of dividends are tax-exempt.
<b>Norway</b>	22% tax on dividends calculated with an adjustment factor of 1.44, effective tax rate on dividends 31.68%.
<b>Sweden</b>	30 %

Based on these statistics, we could assume that Danish investors would be indifferent between capital gains and dividends as the rates are the same. Repurchases would give shareholders more flexibility as they could delay the payment of taxes. Based on this fact, Danish investors should prefer buybacks over dividends.

For Finnish investors, there is an incentive for dividends as 15 % of dividends are tax-exempt. This could explain why dividends are more popular in Finland compared to share repurchases. Norwegian investors should be indifferent between dividends and share repurchases as the effective tax rate does not differ between these two options. Sweden has the simplest tax rate system for investors and Swedish investors should also be indifferent between dividends and repurchases.

#### 2.4.2 Buybacks as a substitute for dividends

A Substitute in economics refers to something that is viewed to be essentially the same or similar to another good or service. Substitutes can be either perfect substitutes or imperfect substitutes. In a finance context, buybacks and dividends can be viewed as substitutes. Essentially, buybacks can be viewed as a substitute for dividends because firms are paying fewer dividends and conducting more buybacks than before (Dittmar & Dittmar, 2002). Grullon and Michaely (2004) found out that US firms finance their share repurchases with funds that otherwise would have been used for dividends. In their study, especially young firms tend to pay cash through repurchases while established old firms are generally not willing to cut their dividends. This is because markets tend to have a negative view of dividend cuts.

Buybacks cannot be viewed as complete substitutes for dividends due to there being tax and transaction cost differences between the two. In a world with no taxes and transaction costs, the two would be perfect substitutes for each other and investors would have no preference for one another.

The subject has been widely researched, however, there is still not a clear reason why some companies pay dividends and other companies pay dividends. Grullon and Michaely (2004) suggest that before 1983, regulatory constraints forced US firms not to aggressively repurchase shares.

Baker and Wurgler (2004) proposed a seminal theory of why firms pay dividends. They propose that demand for dividend-paying stocks is time-varying. This causes the relative prices of dividend-paying and non-dividend-paying stocks to fluctuate. Managers cater to investors

by paying dividends when investors put a stock price premium on payers and by not paying when investors prefer nonpayers. This theory is called the Catering Theory of Dividends.

### 2.4.3 Free cash flow theory

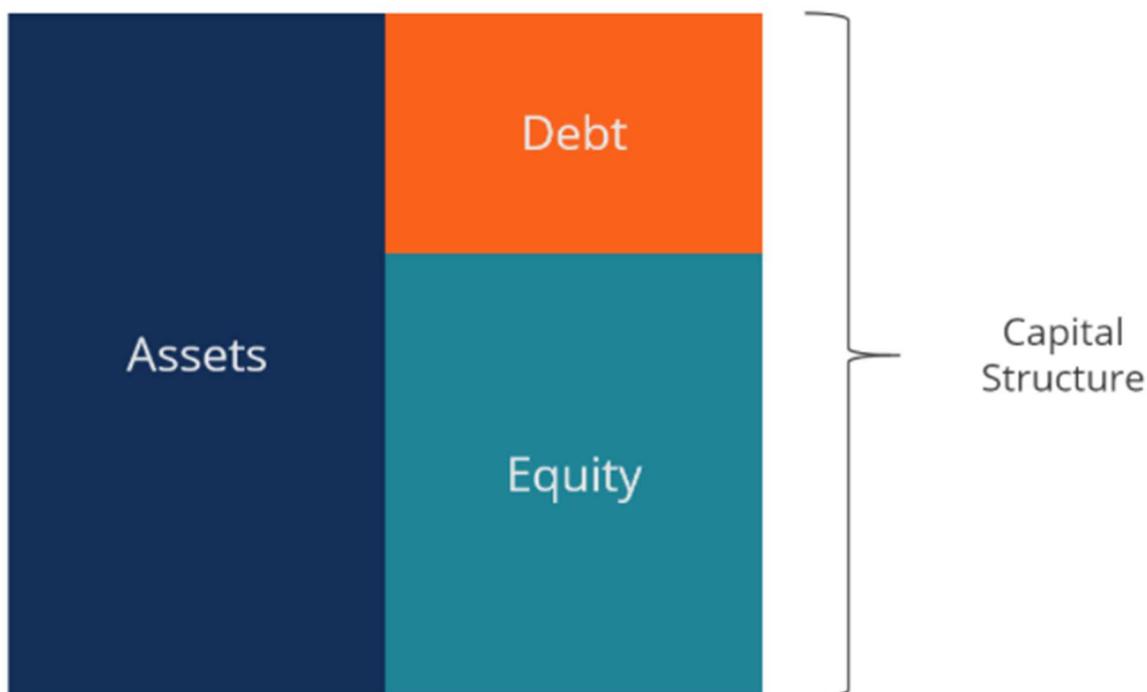
Free cash flow (FCF) can be defined as cash flow that is left over when a firm has financed all projects with positive net present value. Firms should invest only in projects that have a positive net present value. A possible problem arises when the firm has too much FCF available. The theory suggests that this might lead to overinvesting which means investing in non-positive net present value projects. This kind of behaviour is not economically rational, and it essentially destroys long-term shareholder value.

The free cash flow theory presented by Jensen (1986), suggests that management may have an interest in investing free cash flow into these projects as the firm grows and they can consume more salary and therefore it favors their objective as they gain power, prestige, and promotion. Jensen (1986) suggests that firms must distribute excess FCF to their shareholders to reduce management resources which leads to a more efficient way of capital allocation as the money is more of a scarce asset now. This should lead to aligning the interests of shareholders and managers of the firm. The problem has been widely researched, and studies show that managers tend to invest surplus capital unproductively if left to their own devices. (Jensen & Meckling, 1976; Blanchard et al. 1994; Harford, 1999; Bates, 2005; Richardson, 2006; Dittmar & Mahrt-Smith, 2007)

Conflicts of interest between the management of the firm and shareholders is one important field of study in economics. Agency theory or principal-agent theory can be used for explaining these kinds of relationships and to seek solutions for possible conflicts of interest. In these kinds of relationships, shareholders act as principals, and the managers of the firm are the agents that represent them. For this relationship to work, the interests of the principal and agent need to be in line with each other. Possible conflict of interests between the two parties creates agency costs. The costs might come in form of inefficiencies, dissatisfactions, and disruptions. The key is to minimize these agency costs between the two parties. (Shapiro, 2005) One way to alleviate agency costs of surplus cash is to restrict management's possibility to waste corporate cash (Oswald & Young, 2008)

#### 2.4.4 Maintaining desirable capital structure

The capital structure of a firm is the amount of debt and equity used by the firm to fund its operations and finance its assets. Maintaining an optimal ratio of debt and equity is crucial for a firm looking to succeed in the future.



*Figure 4. The capital structure of a company*

Figure 4. illustrates how firms need to choose the amount of debt and equity which they plan to use to finance their assets. Choosing the optimal amount might be difficult but it is very important as there are trade-offs firms have to make when choosing between debt and equity. The optimal capital structure varies a lot between different industries. For example, banks and financial institutions use significant amounts of leverage as their business model demands it.

Modigliani and Miller (1958) presented a revolutionary theory at the time that in a world with no bankruptcy costs, no corporate taxes, and unlimited arbitrage opportunities, the total market value of a firm is unaffected by the amount of debt that it issues. It can be essentially stated that the capital structure of a company is irrelevant when the aforementioned conditions apply. Theory about the irrelevance of capital structure only applies under perfect market conditions and is not directly applicable in real-life. However, it is still to this day one of the most influential theories about capital structure in the finance literature.

Optimal capital structure is the optimal amount of debt and equity that maximizes the company's market value while at the time minimizing the company's cost of capital. Yarram (2014) found out in his study in Australian markets, that evidence suggests that firms repurchase their shares to reach their target optimal capital structure.

Theory suggests that companies should aim for a high Debt-to-Equity ratio (D/E-ratio) because debt is tax-deductible and thus the high amount of debt should lower the weighted average cost of capital (WACC) as can be seen from the equation 1 below:

$$WACC = (E/V * Re) + ((D/V * Rd) * (1 - T)) \quad (1)$$

Where:

*E* = market value of firm's equity

*D* = market value of firm's debt

*V* = total value of capital

*Re* = Cost of equity

*Rd* = Cost of debt

*T* = tax rate

If a company desires to alter its capital structure, it may increase its debt or lower the D/E-ratio, by repurchasing its shares for example. This essentially increases the equity of a company and alters its capital structure. The company could prefer to increase its equity due to debt having the trade-off of higher bankruptcy costs. Companies also might have covenants on their debt. These covenants can require for example that the company keeps its D/E-ratio under 60/40. The higher the amount of debt, the higher the possibility that the company could find itself in financial distress.

#### 2.4.5 Controlling dilution

Dilution occurs when a company issues new shares which result in a decrease in existing shareholders' ownership of the company. This happens because their percentage-wise ownership is smaller than before the issuance of new shares. As the number of outstanding shares increases, each existing shareholder has their ownership dilute thus making each of their share less valuable. Dilution also means that the owner of the share has less voting power.

Shares can be diluted when holders of optionable securities converse their options to stocks. Also, secondary offerings to raise additional capital and offering of new shares in exchange for acquisitions or services cause dilution.

Another effect of dilution is that earnings-per-share (EPS) also decreases. This happens as the company's earnings do not change but the outstanding number of shares increases. In the United States, Generally Accepted Accounting Principles (GAAP) require firms to report basic and diluted EPS. Diluted EPS considers all potentially dilutive securities such as warrants, convertible debt, and employee stock option programs. (Bens et al. 2003)

Investors should be interested when the company informs that the number of shares increases as it directly affects their investment. However, for example, young companies that desire rapid growth may be forced to finance their acquisitions by issuing new shares as they typically do not have large excess cash reserves to pay for the acquisition. In this case, it may be justifiable to use shares as payment, but investors should still know what they are signing up for.

The company may control the amount of dilution with repurchases. As the company repurchases its shares, the number of outstanding shares decreases thus existing shareholders see their ownership increase or in other words, not dilute that much. For example, if a company has issued new shares two years ago and now, they have excess cash to spend, it might be reasonable to repurchase some shares to control dilution.

#### 2.4.6 Clientele effect

Proposed by Miller and Modigliani (1961), the clientele effect hypothesis is used to explain corporate dividend payout policies. According to this hypothesis, firms opt for different dividend payout ratios to attract specific investor profiles, i.e., unique groups of investors with different preferences for receiving dividend income. Firms that do not pay dividends or tend to issue buybacks are likely to attract high-tax-bracket investors, whereas firms that pay generous dividends are likely to attract tax-free institutions and low-marginal-tax-bracket investors.

An example of two different clienteles could be retired investors and young investors. Retired investors prefer stability and high dividends, and young investors could prefer growth stocks that they hope would increase in value rapidly. These two clienteles have very different preferences and risk profiles.

There are a lot of differences between tax brackets in different countries thus clientele effect might vary drastically between countries. Due to this, studies on the clientele effect are very mixed among different countries.

Allen et al. (2000) propose a theory of why some firms prefer to pay dividends rather than repurchase shares. According to their study, firms paying dividends attract relatively more institutions, which have a relative advantage in detecting high firm quality and in ensuring firms are well managed. They conclude that it is the tax difference between institutions and retail investors that determine the dividend payments. (Allen et al. 2000) Contrary to this study, based on another study in 2005 where 384 financial executives were interviewed, they believe that institutions are indifferent between dividends and repurchases. Most executives in the study also believe that they do not use payout policy as a tool in an attempt to alter the proportion of institutions among their investors. (Brav et al. 2005).

#### 2.4.7 Signaling theory

Firms signal different kinds of information to the stock market through corporate announcements, which include news about events such as mergers and acquisitions, earnings, and changes in payout policy (Bonaime, 2012). Firms have different obligations to make announcements to the market guided by legislation in different countries. In today's world, the news is available in a heartbeat and algorithms pick up news instantly from the news flow. Due to this, markets tend to react to news almost instantly.

Signaling theory can be used to describe a situation where two parties have access to different information. One party that has more information, must choose whether and how to communicate that information and the other party must choose how to interpret the signal. (Connelly et al. 2011) This kind of information has this two-way effect, where for information to be passed efficiently, both parties have to be on the same page.

This theory can be applied to financial markets also. Managers of a firm have a good understanding of the company and investors are only able to make their decisions based on publicly available information. This essentially means that information between managers and investors is asymmetric. Stiglitz (2002) noted that, because some information is private, information asymmetries arise between those who hold that information and those who could potentially make better decisions if they had it. Managers of a firm cannot however give insider information to investors because trading with inside information is illegal. Due to this, there is a dilemma for managers, as to what and how much information can they give to investors.

If managers think that the firm's stock is undervalued, they have an incentive to signal this undervaluation to investors. The firm benefits from the rise in stock price and in many companies, managers' salaries might include stock options and the unwind of undervaluation also benefits them. One way of signaling this undervaluation is for the company to repurchase its shares. This is thought to decrease the amount of information asymmetry between two parties as repurchase can be seen as a positive signal. If investors interpret the firm's signal correctly that the stock is undervalued, they might choose to buy more of it.

Signaling also works in both ways, as sometimes insiders selling their stock can be viewed as a negative signal. This kind of behaviour comes down to the fact that investors think that managers know something that they don't. However, there is an old saying on Wall Street: there are many reasons to sell a stock, but only one reason to buy. A sale could be prompted by numerous personal reasons for the need for cash. But the only reason why insiders would invest their hard-earned cash is that they expect to make money out of it. (Forbes, 2011)

#### 2.4.8 Defending from hostile takeovers

Hostile takeovers can be referred to as an adverse relationship between the current board of directors of the target company and the hostile company trying to acquire the target company. When a hostile takeover attempt is happening, the management of the target company can use defence strategies involving the acquisition of company shares or the amendment of articles of incorporation. Share repurchases are one way for a company to defend itself from a hostile takeover.

Kang (2008) summarizes hostile takeover defence through share repurchases in five steps as follows:

1. though treasury shares do not have voting rights, the voting rights can be revived if the shares are sold to friendly third parties;
2. the repurchase of shares can raise the price of shares by decreasing their number in the market, thereby increasing the cost and risk for the acquiring company, and reducing potential gains from the acquisition;
3. stock repurchase would reduce the cash held by the target company, the target company will appear less attractive if the aggressor company's goal is to acquire the target company's liquid assets;
4. although the repurchase of shares would not increase the number of voting rights held by the company due to limitations on the number of voting rights that can be acquired

through stock repurchase, the proportion of the company's voting rights will increase and thereby allow the company to indirectly defend the management control and;

5. as other kinds of defence strategies are more limited in their effectiveness, it is relatively more advantageous to use stock repurchases for the defence of management control.

#### 2.4.9 Buying stocks for employee stock compensation plan

Companies may create employee stock option plans (ESOs) for their employees to encourage them to have ownership of the company. Employees sign an agreement that allows them to purchase a certain amount of the company's shares at a fixed price. If the stock price is higher than the fixed price, the employee has an incentive to exercise the option to buy shares. (Christiansen et al. 2003)

These plans are used to reward and attract employees as the options give employees an incentive to behave in a way that is in line with the company's objective. This behaviour also tends to have a positive impact on the company's stock price. Companies must either give existing shares to employees that exercise their option or issue new shares. Some share repurchase programs are executed just to meet the company's needs for stock option plans. This kind of behaviour should not increase or decrease shareholder value as the number of shares does not change. However, if a company issues new shares for a stock option plan, it faces the problem of dilution.

Bens et al. (2003) studied ESOs to find out whether share repurchase decisions are affected by the incentive to manage diluted EPS. They found out that firms increase stock repurchases when the dilutive effect of outstanding ESOs on diluted EPS increases. However, according to their study repurchase decisions are not associated with actual ESO exercises. (Bens et al. 2003)

#### 2.4.10 Enhancing liquidity

Liquidity refers to the level of difficulty with which an asset or in this case security, can be converted to cash. Cash is seen as the most liquid asset as it has immediate purchasing power. In the stock market, poor liquidity results in an increase in transaction costs for investors, and vice versa good liquidity is beneficial for investors. The most common ways of measuring liquidity in the stock market are trading volume and the wideness of bid-ask spread. The bid-

ask spread refers to the range of prices in which buyers are willing to buy and sellers are willing to sell.

High trading volume indicates that there are more buyers and sellers at current price levels which leads to more efficient price discovery. With these highly liquid stocks, the bid-ask spread is very narrow. This is due to the supply and demand mechanics of the market. Stocks with poor liquidity can have a very high bid-ask spread which leads to investors having to pay a premium when they want to buy certain stocks. It is also difficult to sell large numbers of illiquid stocks because if there are not enough buyers, the price will plummet. As there may be a large spread between the bid and ask prices, illiquid stocks tend to experience high volatility.

The existing literature argues that open market share repurchases can both improve and deteriorate stock liquidity. According to Barclay et al. (1998), repurchasing firms can by placing limit buy orders, establish a lower bound on the bid price and in doing so reduce the bid-ask spread. Some studies argue that due to asymmetric information, open market share repurchase programs could lead to an adverse selection that presents itself in the form of reduced stock liquidity (Copeland & Galai, 1983; Glosten & Milgrom, 1985).

According to one of the most recent studies on buybacks by Lewis and White (2021), share repurchases in the US have an overlooked beneficial effect on stock liquidity and stock volatility. They studied over 10,000 US companies over 17 years and their studies present six key benefits associated with buybacks:

1. Greater liquidity
2. Reduced volatility
3. Retail investor benefits from saved transaction costs
4. Proactive repurchase activity to stabilize stock prices
5. Response to uncertainty
6. Strategic liquidity supply

They conclude that knowing that buybacks positively influence stock price stabilization, limiting or taxing corporate buybacks will ultimately result in harm. (Lewis & White, 2021).

## 2.5 Indifference between dividends and repurchases

In this simplified example below in figure 5. we can see the indifference between dividends and share repurchases in a world with no taxes and transaction costs. In this example, the value of the company is value per share times the number of shares outstanding. In this case,

the total shareholder equity per share is 10 €. Then we can see what happens when a company either issues a dividend of 10 € per share or buys back 10 shares with 10 €. In the case of dividends, the shareholder is left with the same amount of shares that are now worth 9 € per share and 1 € cash per share. In the case of share repurchases, the shareholder is left with fewer shares, making each share more valuable as the company now has 90 shares so ten shares are still worth 10 € per share.

	Dividends	Share repurchase
Value of company	1,000 €	1,000 €
Number of shares	100	100
Value per share	10 €	10 €
<b>Total Shareholder equity per share</b>	10 €	10 €
Paid dividend	10 €	0
Share repurchase	0	10 €
Value of company	900 €	900 €
Number of shares	100	90
Value per share	9 €	10
Cash	1 €	0 €
<b>Total shareholder equity per share</b>	10 €	10 €

Figure 5. A simplified example of dividends vs. repurchases when there are no taxes and transaction costs (Brealey et al. 2008).

However, as we can see from figure 5, the result for both situations are the same. In both cases, money leaves the company but the result for shareholders is indifferent. (Brealey et al. 2008)

## 2.6 Dividends as a way of distributing capital

As mentioned in previous chapters, dividends are an alternative way for a company to distribute excess cash to its shareholders. One false conception of recreational investors about dividends is that they are this so-called “free lunch” for investors. This means that some may think that dividends are a gift from the company to the investor. This is an understandable misconception as many people do not plan on selling their stocks for a while and they just prefer to enjoy dividends.

However, when a dividend is paid, the stock price tends to decrease the same amount as the issued dividend. This happens because dividends are essentially just a way for the company to move excess cash to shareholders. The cash is transferred from the company's balance sheet to shareholders' wallets.

Lintner (1956) was one of the first scholars who proposed that dividends present a problem in a company's payout policy. He found out that companies tend to use long-term dividends policies. Mature companies with steady profits tend to issue a large number of their excess profits as dividends to shareholders compared to growth companies. Growing companies tend to use profits to grow their business and they generate shareholder value that way. These companies may not pay out dividends to their shareholders at all. Lintner (1956) also states that one of the primary goals for a company is to keep dividends steady. This means that the dividends issued by a company should be predictable and not change much between years. These findings were seminal at the time, and they had a great influence on corporate managers' decision-making on dividends in the following years.

Dividends also have a signaling effect in the markets. Markets tend to react positively to increasing dividends and negatively to decreasing dividends. This might indicate that the markets are not interested in the number of dividends paid, but specifically, the magnitude of change in the number of dividends paid over the years. Companies that have increased their dividends for 25 years straight are often called "dividend aristocrats". There are also "dividend kings", companies such as Coca-Cola that have increased their dividend payout for 50 years straight. (Gobler, 2022)

Markets may see increasing dividends as a positive indication of the company's long-term profitability and decreasing dividends tend to cause an opposite reaction. Due to this, unexpected changes in dividends cause volatility in the stock markets as investors have to form a new opinion about the company's outlook. (Brealey et al. 2006,420)

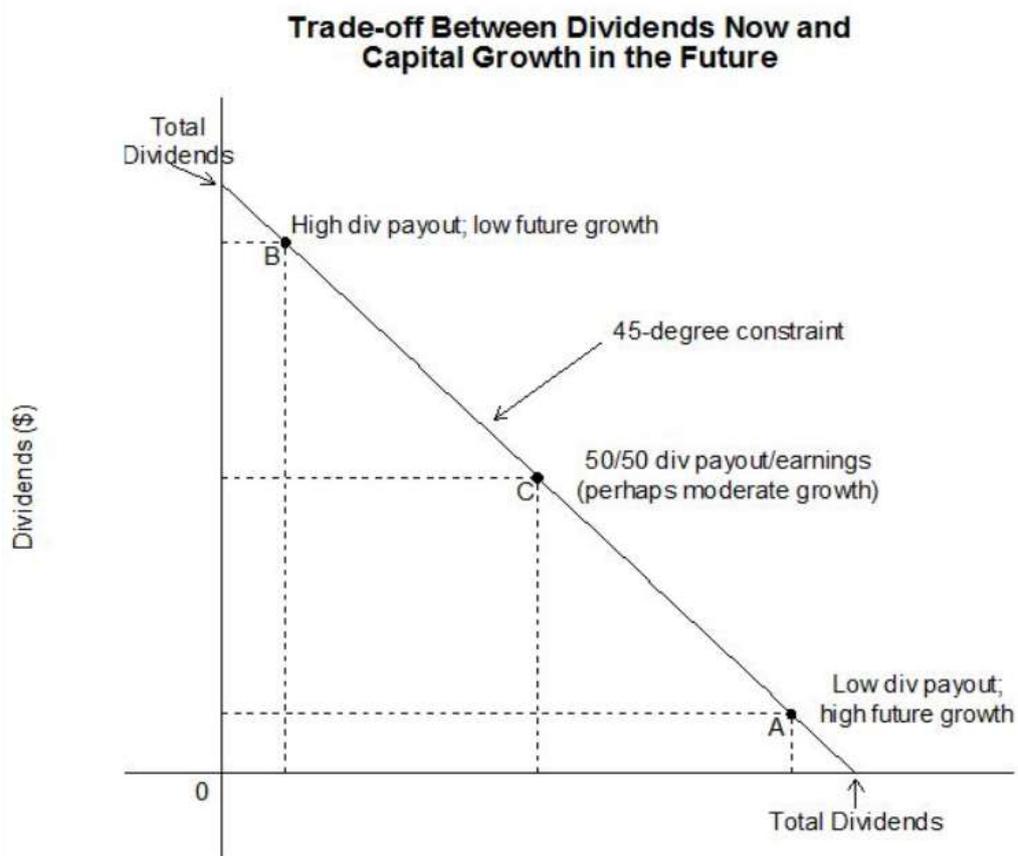


Figure 6. Trade-off Between Dividends and Capital Growth

Figure 6. illustrates an example of dividend trade-off theory. Point A represents a growth company that uses most if not all of its excess cash to grow. Point B represents a mature company with stagnated growth and low future growth possibilities, so they choose to pay out most of its excess cash via dividends. Point C represents a company that sits in the middle and pays out earnings while maintaining moderate growth.

## 2.7 Efficient market hypothesis

The efficient market hypothesis can be derived from rational expectations theory. Theory suggests that investors base their future expectations on three aspects: rationality, available information, and their previous experiences. Radner (1986) describes that balance in rational expectations can be found when investors come to market with a certain amount of information and after seeing current prices, they alter their previous expectations. This implies that investors come to market with a certain amount of information and the amount of information that they possess increases over time. Thus, it can be expressed that rational expectations are the best forecast for the future.

The efficient market hypothesis is a model which suggests that in an efficient market the price of security perfectly represents all the publicly available information and future expectations. In an efficient market, the price of a security is equal to its intrinsic value. However, in the real world, it is impossible to figure out the intrinsic value of security perfectly. (Fama 1965) From a theoretical perspective, this suggests that the price of a security should never be incorrectly priced, but the price should react based on available information.

Figure 7 can be used to illustrate how efficient and inefficient markets react to positive news regarding a company. In efficient markets, newly available information is immediately priced correctly. According to Fama (1965), there are so many rational profit-maximizing investors, and their active competition sets the prices in equilibrium and due to this, the pricing of securities should be efficient.

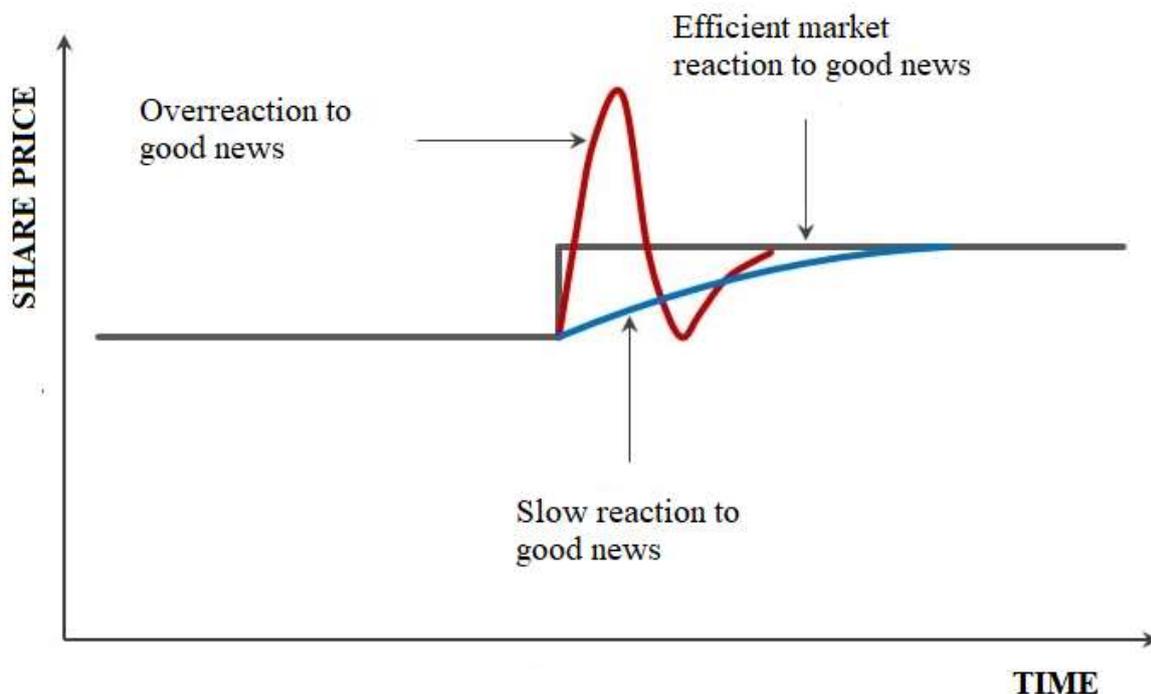


Figure 7. Market reaction to positive news

Random walk theory is also connected to the efficient market hypothesis. Random walk theory suggests that price changes of securities are not connected to previous price changes. This means that it is not possible to predict future prices based on historical price changes. Malkiel (2003) states that stock prices do not have a memory as yesterday's news should not be relevant for today's price. One anomaly that has challenged random walk theory is called momentum anomaly. A momentum anomaly means that trends tend to stay for longer periods. Increases in prices are followed by increases and decreases are followed by decreases in price. In a strategy based on momentum anomaly, an investor buys "winners", stocks that are in an uptrend, and sells them as soon as the trend changes and price starts to decrease. There has been evidence in studies that past price changes can be used to predict future price changes. (Knüpfer & Puttonen 2018, 176)

In his groundbreaking article, Fama (1970b) presents three different conditions for efficient markets based on the characteristics of information. Efficient market conditions can be either weak, semi-strong, or strong. The weak form of the efficient market hypothesis assumes that future prices cannot be predicted using historical price data. In these kinds of markets, technical analysis cannot be used to outperform the overall market. Technical analysis refers to a strategy that tries to predict future stock prices with mathematical models based on historical price data (Knüpfer & Puttonen 2018, 264).

The semi-strong market efficiency is present when stock prices reflect all publicly available information such as news and financial statements. In semi-strong efficient markets, prices adjust quickly to any news public information and therefore fundamental analysis cannot be used to outperform the market. In strong form, efficient markets stock prices reflect all available information, even insider information. (Fama 1970a)

Some studies have shown that markets tend to be at least weak-form efficient, but the subject is controversial. However, the efficient market hypothesis is a building block for most models in the finance literature, and therefore it is an important assumption. (Fama 1970b)

Fitzherbert (2000) states that one of the reasons for the acceptance of weak-form efficiency in the markets is that it enables the use of standard deviation of stock returns, and volatility, to be used as a measure of risk. Without the assumption of weak-form efficiency, he thinks that volatility does not accurately represent risk. Various examples of market inefficiency are anomalies that point out short periods of inefficiency in the markets. Based on these anomalies, several scholars such as Basu (1975), Lakonishok et al. (1994), and Piotroski (2000) have criticized the efficient market hypothesis.

Behavioral finance and psychological view have also been part of studies assessing market efficiency. De Bondt and Thaler (1985) found out in their studies that investors tend to overreact to unexpected and dramatic news. They constructed two portfolios, one consisting of "winners" and the other one consisting of "losers". During the three-year holding period, the "losers" portfolio outperformed the "winners" portfolio by 25 percent. Based on this they concluded that stock markets tend to move towards equilibrium after overreactions. This effect is also known as a mean reversal, which means that in a long enough time period, stock prices tend to converge to their fair value.

Malkiel (2003) describes that stock markets tend to have pricing inefficiencies, but these inefficiencies tend to disappear swiftly after they appear. Knüpfer and Puttonen (2018, 171) also conclude that realized returns and expected returns can differ from each other during a short time period.

### 3. Previous research

In this chapter previous research about buybacks and dividends is revisited. The chapter is divided into two subchapters. The first subchapter is about previous research on buybacks and market value and the second subchapter revisits research done on buybacks and the effects on book value.

#### 3.1 Previous research on buybacks and market value

Share repurchases have been widely researched in the United States. This is mainly because of the legislative environment which has allowed the purchases to take place for quite some time. The financial markets in the US are also the largest in the world so it is a common area for research. President Ronald Reagan's administration allowed share repurchases in the USA in 1982. Before 1982 it was considered illegal for a US company to repurchase its shares and such an act was widely thought of as a way to manipulate the share price. In 1982 the United States Securities and Exchange Commission (SEC) adopted rule 10b-18 which provided companies with the framework for share repurchases (Brettell et al. 2015).

Share repurchases have been increasing in popularity since the 1990s in the rest of the world due to regulation changes. (Manconi et al. 2019) Brav et al. (2005) conclude that many managers prefer buybacks over dividends due to their flexibility. Managers seem to think that buybacks can be used in an attempt to time the equity market or to increase earnings per share.

One of the first and the best-known studies regarding stock buybacks was Theo Vermaelen's article in 1981. In the article, Vermaelen (1981) researched long-term stock market returns of companies that have bought back their shares and found out that the average returns were larger compared to the period before the buyback. Vermaelen (1981) concluded that the most influential explanatory factor for these large returns is underappreciation of the stock and buybacks would signal this to investors. However, he could not exclude whether the effect of fiscal policy or bond holders' demands also affected the long-term share price. Dann (1981) came to the same kind of conclusion and stated that significant increases in firm values happen within one day of the buyback announcement. Dann (1981) concluded that the change in value appears to happen due to an information signal from the repurchasing firm.

Signaling theory assumes that firm managers know more about the value of their firm than outside investors. The most popular explanation for share repurchases is their signaling effect,

which means firms repurchase their shares to signal to investors that the shares are undervalued at the current market price (Vermaelen, 1981; Asquith & Mullins, 1986; Stephens & Weisbach, 1998). Alternative reasoning for buybacks is the free cash flow theory. Theory suggests that free cash flow rises conflicts between shareholders and managers. Managers have incentives to invest in projects that may not have positive net present value. Shareholders want the company to invest only in projects that have a positive net present value, or they want the excess cash in their pocket. When a company returns this free cash flow to shareholders, it reduces the possibility of these conflicts of interest. (Jensen 1986)

Research has also been done on share repurchase authorization announcements. Comment and Jarrell (1991), Stephens and Weisbach (1998), and Grullon and Michaely (2004) find companies that announce share repurchases tend to experience an excess return of approximately 3 % compared to the period before repurchases. This means that the announcements themselves have a positive short-term benefit for shareholders. Interestingly repurchase announcements do not obligate the company to acquire these shares, but it seems that even the announcement provides a positive market reaction.

Ikenberry et al. (1995) found out that repurchase announcements tend to affect positively on stock prices, but markets ignore a substantial portion of the company's possible undervaluation. However, this undervaluation unwinds in the longer period after the buyback.

Studies suggest that programs should not be seen as commitments as they do not oblige the managers to complete the buyback program. Skilled managers that are concerned about maximizing shareholder value use repurchases for flexibility. They provide managers the option to repurchase shares if they view them as undervalued, otherwise, they do not fulfil the repurchase program. (Ikenberry & Vermaelen 1996).

Dittmar (2000) found out that firms aim to take advantage of potential periods of undervaluation. He also states that other reasons such as altering leverage ratio, fending off takeovers, and countering dilution explain share repurchases.

According to Chen et al. (2013) IPO firms that announced repurchases within three years of IPO, achieved poor long-run operating performance compared to peer IPO firms. These firms also experienced poor stock return performance and analysts tended to revise forecasts downward. Bonaime (2015) concluded that smaller firms and firms with more volatile stocks have greater announcement returns, on average. He also found out that the larger the announced repurchase plan, the greater the announcement return, on average. However,

Actual repurchase days are not disclosed daily in most countries, and this makes it difficult to study the actual daily effects of repurchases. Skjeltorp (2004) and Zhang (2005) studied actual share repurchases in Norway and Hong Kong. They found positive excess returns on repurchase days. McNally et al. (2006) studied actual share purchase days in Canada and find evidence that repurchases support share price and that companies tend to have excellent timing for repurchases. These results seem intuitive as no one should be better aware of the company's value better than the managers of the company.

One key statistic regarding share repurchases is the completion rate. This statistic refers to the number of shares repurchased divided by the number of shares mentioned in the share repurchase announcement. Bonaime (2012) finds that historical repurchase completion rates are positively correlated with current completion rates and announcement returns. Companies may announce that they intend to repurchase for example 100 million euros worth of their shares, but they do not have an obligation to fulfil that amount. Bhandari et al. (2021) studied buybacks between 2004-2015 and found a positive relationship between completion rate and financial reporting quality. Their study suggests that higher stock repurchase completion rates reflect good business morality and that the firm is committed to its investors.

Ota et al. (2019) examined how firms "repurchase reputation" affected the returns after the company announced a new repurchase program. They found out that firms do have a reputation that is based on completion rates and a firm's forecast reputation which includes the accuracy of firm management in forecasting future earnings. They also state that firms with lower repurchase reputations react more to repurchase announcements.

One explanation for share repurchases is the tax treatment of foreign and domestic investors. Liljeblom and Pasternack (2006) concluded in their study that higher foreign ownership served as a determinant for share repurchases in Finland.

The effects of stock options on the decision to repurchase shares have also been studied. Firms announce repurchases when managers have large numbers of options outstanding and when employees have a large number of options exercisable. These results were in line with the theory that managers repurchase both to maximize their wealth and to fund employee stock option exercises. (Kahle, 2002)

Recent studies in the Nordics have proposed that higher ownership concentration is associated with payout policy. Khalfan and Wendt (2020) found out that high ownership concentration leads to a lower propensity to pay dividends in Finland and to repurchase shares in Norway and Sweden, while higher ownership concentration increases the propensity to pay dividends

in Denmark and Norway. According to their study, concentrated ownership has a negative impact on dividend amounts in Denmark, Finland, and Sweden. (Khalfan & Wendt, 2020)

Buybacks have received criticism from the financial press, the popular press, and even from the politicians in many countries. The main argument is that companies use buybacks to pursue short-term objectives and prop up their stock price at the expense of long-term shareholder value. (Manconi et al. 2019) The criticism that buybacks harm long-term shareholder value is controversial to most studies regarding the subject as most studies suggest that this is not the case. While some studies have argued that buyback anomalies have disappeared over time (Lakonishok & Vermaelen 1990; Ikenberry et al. 1995) studies on open market repurchases indicate that the anomaly still exists (Peyer & Vermaelen (2009). However, recent studies by Lin et al. (2014) and Barger et al. (2017) argue that the long-term shareholder value generation could be explained by increasing take-over activity or as a compensation for takeover risk exposure thus no real value would have been created in the process.

Reda (2018) argues that repurchases increase executive compensation levels, regardless of the operational success of the company. Managers can get their bonuses even with the company not meeting its financial demands. The problem with this is that Gruber and Kamin (2017) argue that companies could reduce their investments, to spend the money on buybacks. Brennan (2020) argues that managers could also have an incentive to borrow money and use the leverage to repurchase shares. In these scenarios, the risk is shifted to shareholders and managers get to enjoy the short-term benefits. This happens because managers might not work for the company when the effects of financial distress start to show. Buybacks are also said to promote social inequality, as executives get paid more, but non-share-owning employees do not directly benefit from buybacks. (Shilon, 2020)

Shilon (2020) argues that these kinds of buybacks sacrifice long-term firm value, elevate financial risk excessively and manipulate the stock price. This leads to buybacks transferring value from the firm to executives at the expense of shareholders.

The never-ending debate between dividends and buybacks has also sparked a lot of discussions. One interesting result is that dividend aristocrats perform better in the long-term compared to other companies, which includes non-payers and repurchases. According to Springer (2022) dividend aristocrats outperformed the S&P 500 over long periods with lower volatility. This means that dividend aristocrats would offer downside protection and stability, especially during financial distress. This effect was also studied by Williams and Miller (2013), and they also found out that during the last two recessions before 2013, S&P 500 dividend aristocrats Index outperformed the S&P 500 Index by 6.45 % per annum.

## 3.2 Previous research on buybacks and book value

Although many empirical studies have been conducted on short-term market reactions to buyback announcements, few assess the longer-term shareholder value creation.

Repurchases have a direct effect on a company's financial valuation metrics. As companies repurchase shares and terminate them, earnings per share increase *ceteris paribus*. Keasler and Byerly (2015) studied the impact of buybacks on shareholder wealth in longer periods such as three, five, and ten-year reference periods. They conclude that the long-term effects of buybacks on shareholder value are questionable.

Chandren et al. (2017) found out that there is a relationship between long-term firm performance and earnings management through an accretive share buyback. They refer to earnings management as an opportunistic behavior to enhance a firm's financial performance and to give a more positive view of a company's business and financial position. Almeida et al. (2016) found out that the probability of share repurchases that increase EPS is higher for firms that would have otherwise missed analyst's EPS estimates.

Reda (2018) explains the mechanism of how buybacks affect financial performance metrics as follows: on a balance sheet, share repurchases reduce the company's cash and consequently its total assets base. Simultaneously, buybacks shrink shareholder's equity on the liabilities side thus performance metrics such as ROE, ROA and ROIC tend to increase following a buyback.

## 4. Data and methodology

In this chapter methodology and data collection in the study are explained. The data part explains how and where the data is collected and what are the characteristics of the data. After this, details about how portfolios in the study are constructed are presented.

### 4.1 Data

Data used in this study is collected from the Eikon Refinitiv database. The first thing was to filter out companies from Denmark, Finland, Norway, and Sweden that have announced a buyback program between 2010-2020. There were 467 share repurchase programs announced in the Nordic stock markets during the years 2010-2020. In this study, 15 companies that have announced share repurchase programs are removed from consideration because their historical data is not available on Eikon. There are some common characteristics of these transactions as most of the acquirers are private companies or subsidiaries in these cases. Companies that have missing data are also removed as these missing data points could lead to false conclusions.

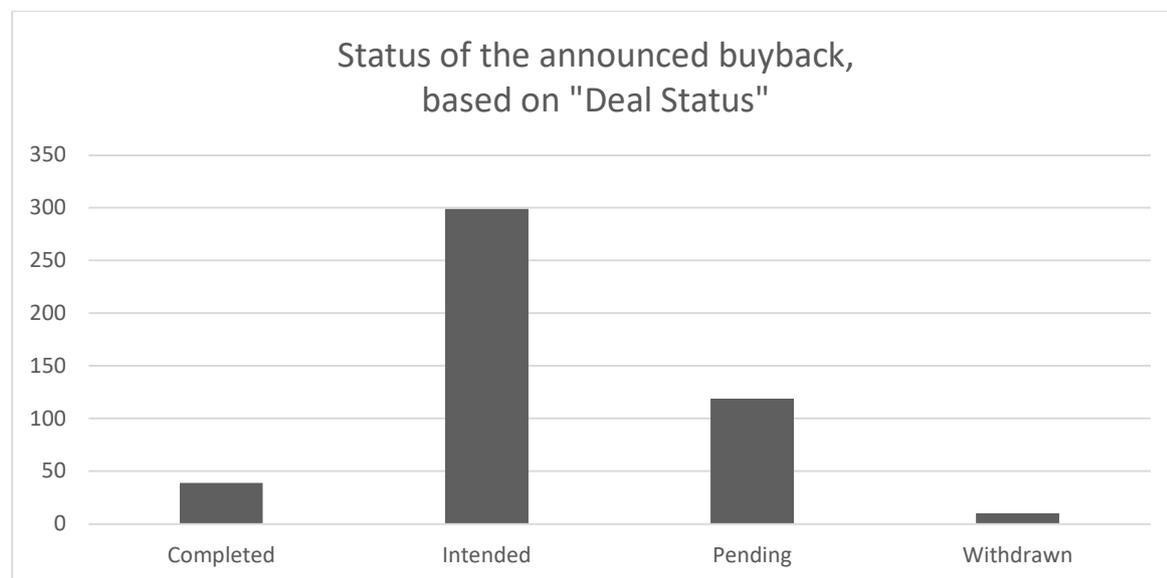


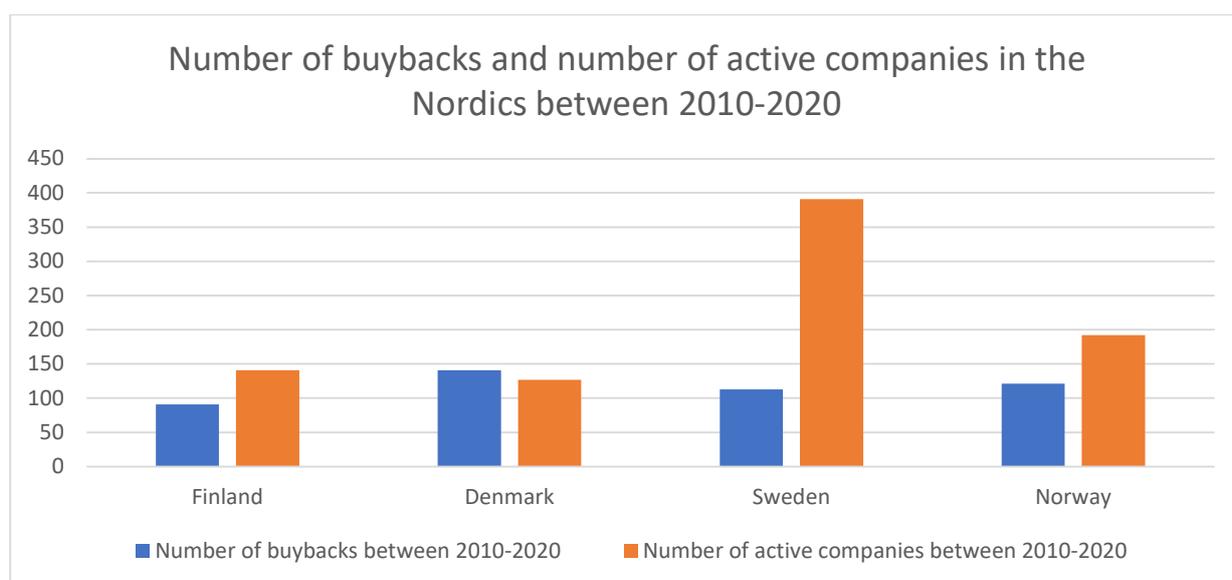
Figure 8. Status of share repurchase programs

As illustrated in figure 8. Eikon Refinitiv has categorized share repurchase program announcements into four categories based on their deal status: Completed, Intended, Pending, and Withdrawn. Completed status means that the company has completed its announced share

repurchase program to the full extent. This means that they have announced to repurchase a specific amount of shares and they have bought back that said amount.

Intended status means that the company has announced its program and started buying back its shares but has not yet finished the program. These programs can be such that the company has announced to repurchase five percent of the outstanding shares from the market but has so far purchased only three percent. These companies may or may not purchase shares to the full extent of the program. Some companies that have their deal status as intended, might now have defaulted, or gone private for example which means that their deal status will never be completed. Pending status means that the company has announced its program but has not yet purchased any shares. In this case, the company may decide not to repurchase shares at all. Withdrawn status means that the company has announced its program but has decided to withdraw the announcement for an unspecified reason. As we can see from figure 8, withdrawing the announcement is uncommon as it represents only 2 % of the repurchase programs.

As can be observed from figure 8, most of the programs have started but are still in progress. The 299 intended programs represent most of the data. Only 39 announced programs have been completed and just 10 out of all programs have been canceled. 119 programs are still pending and waiting for companies to start repurchasing shares. In this study, the greatest focus is on companies that have either completed their repurchase program and can see their share count decrease, and companies that have started their program and we can see their share count decrease.



*Figure 9. Number of announced buybacks among Nordic countries*

In figure 9. we can see how many repurchase programs are announced in the Nordic countries and how many active companies there were during 2010-2020. As we can see, Sweden is the biggest capital market out of the four based on total market value and the number of active companies. Based on the data, Danish companies have announced the most buyback programs and many companies have also announced multiple programs between 2010-2020. Finnish companies have announced the lowest number of buyback programs during the same period. Norwegian companies have the second-highest number of buybacks and active companies during the same period.

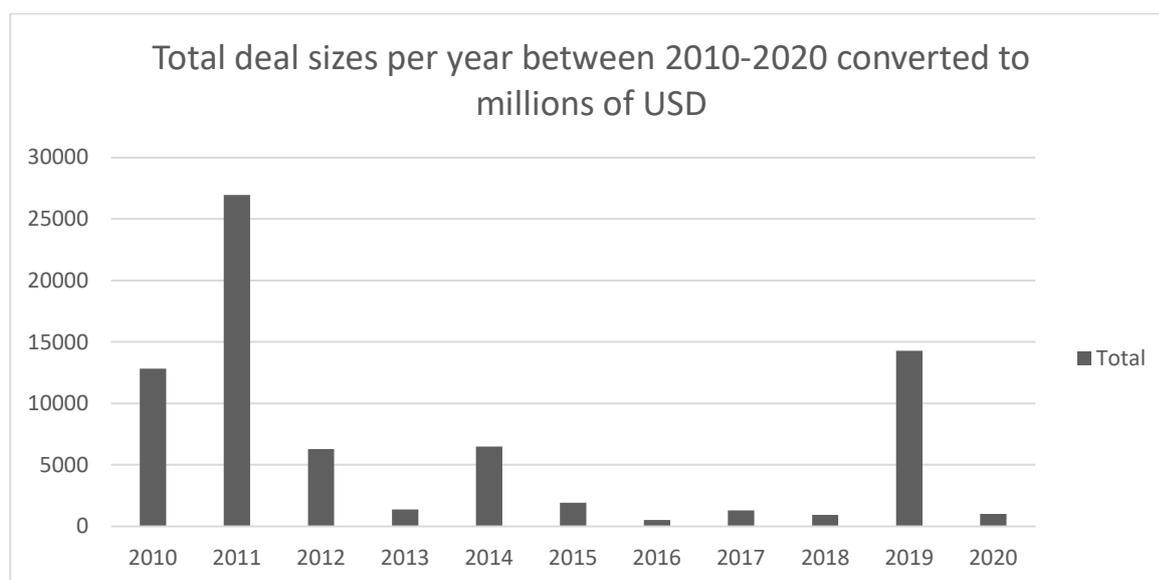


Figure 10. Total deal sizes per year between 2010-2020 in millions of USD.

Figure 10 represents the value of bought back shares converted to millions of US dollars between the years 2010-2020. The total value of repurchased shares between 2010-2020 in USD is 73 882 million or 73.8 billion.

The years between 2010-2012 seem to have a high amount of announced buybacks, 2011 being the year when the deal sizes of buybacks exceeded over 25 000 million USD. After those years, the activity decreased significantly. However, in 2019 we see a significant spike in the value of announced buybacks during the year. This spike is caused by a couple of particularly large buyback announcements which explains that the number of announced deals does not significantly differ in 2019.

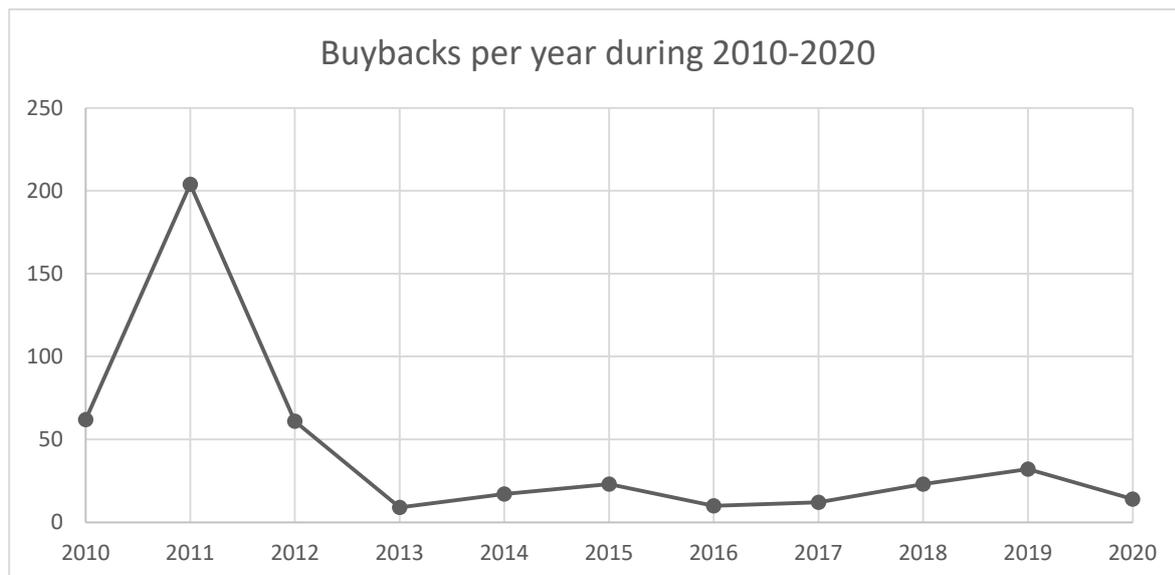


Figure 11. Buybacks per year in the Nordics

As can be seen from figure 11, a large number of the share repurchase program announcements take place from 2010 to 2012. The subprime crisis in the United States and the European debt crisis took place just before 2010. The results seem reasonable as, during 2010-2012, the valuation of many companies was extremely attractive from a buyback perspective.

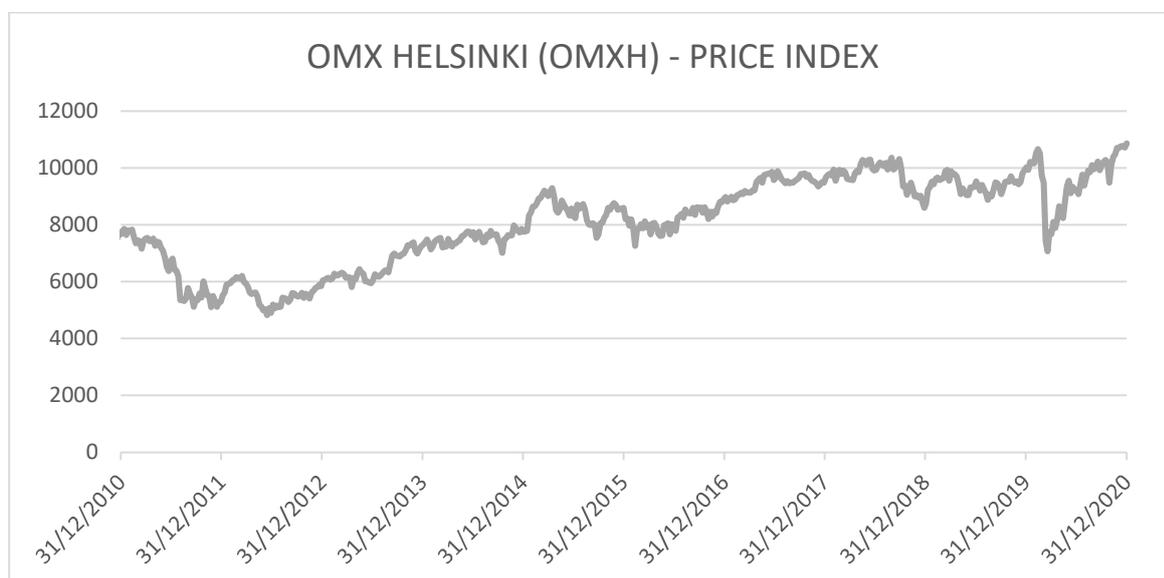


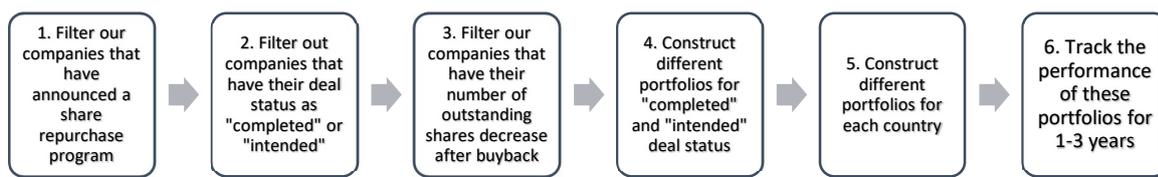
Figure 12. OMX Helsinki price index between 2010-2020.

Between 2013-2020 number of announced buyback programs has stagnated and mostly moved sideways. This is an interesting observation because it might indicate that Nordic managers have thought that during 2013-2020 the stocks have been correctly priced, and therefore buybacks would have not created shareholder value. To gain more insight into this finding, we

may look at the evolvment OMX Helsinki price index between those years. Since 2012 there has been a long bull market and it seems that Nordic managers have thought that buybacks would not be a good way to generate shareholder value.

#### 4.1 Portfolio construction

After gathering the data needed for the study, portfolios are constructed. In this chapter, the choice of companies for each portfolio is explained.



*Figure 13. Portfolio construction process*

Figure 13. explains the portfolio construction process in six steps. As we want to see how buybacks affect the creation of shareholder value, we construct portfolios of companies that have completed a buyback in a given year and track their performances for one to three years. The same process is done for companies that have started their repurchase program as they represent most of the data.

It is also important to see whether the number of outstanding shares is lower after the buyback as companies may purchase shares only to control dilution. This means that the company issues new shares at the same time as it purchases its own. If for example 100 new shares are issued and none are bought back, the dilution affects existing shareholders, and each of the existing shares is worth less than before and has less voting power. However, if a company

purchases 50 shares of its own at the same time, the effect of dilution is smaller than if no shares were bought back at all. This essentially does not create shareholder value, because dilution still affects shareholders. The portfolios in this study are constructed with companies that have their share count decreased after the buyback.

When going through the data, it can be observed that most of the companies that have their buyback deal status as “Intended” do not have their number of outstanding shares decrease, or in most cases, the number of outstanding shares is higher than in the beginning. This might indicate that the buybacks are performed just to control dilution. Out of 299 buybacks that have deal status as “Intended”, 99 have their number of shares decrease during the process. This indicates that about 66 percent of these buybacks have been done for some other reason than creating shareholder value.

For companies that have completed their buyback program, the numbers are different. Out of 39 buybacks, 32 companies have their number of shares decrease during the process. This might indicate that most of these programs are done to increase shareholder value. However, we cannot make this justification without further research and the sample size is also rather small for completed buyback programs.

The completion rate can be used to measurement of the amount of stock repurchased as a percentage of the announced amount (Bonaime, 2015). Data obtained from Datastream does include the deal size in millions of USD, but the data is imperfect regarding how many shares have been repurchased by each program.

After sorting out which companies have their share count decreased after the buyback, we construct portfolios of these companies based on the year that the buyback has been announced. Portfolios are also be constructed based on countries to see whether there are differences among the Nordic countries.

## 4.2 Methodology

In this study, the key statistic for measuring shareholder value creation is market excess returns. Market excess returns are calculated for each stock as follows:

$$\alpha = (p_t/p_{t-1} - 1) - (Rm_t/Rm_{t-1} - 1) \quad (2)$$

where  $\alpha$  is the market excess return for trading month  $t$  and  $p_t$  and  $p_{t-1}$  are monthly closing prices for trading days  $t$  and  $t - 1$ , respectively.  $Rm_t$  and  $Rm_{t-1}$  are the monthly closing price

for the market index for trading days  $t$  and  $t - 1$ . Market return in this study represents the return of the country's stock market index from the same period.

Excess returns are analyzed as pure figures, but it is also important to figure out which factors could affect excess returns. This is why regression analysis needs to be conducted.

If we suppose that the response variable  $Y$  is quantitative and that at least one predictor variable  $x$  is quantitative. Then the multiple linear regression model can be a very useful model for explaining the relationship between response and predictor variables. (Olive, 5, 2017)

In this thesis, we want to see how different variables affect post-buyback excess returns in different countries. This gives us more insight into what affects the return and what factors do not have statistical significance. Linear regression is performed in Microsoft Excel using its built-in linear regression tool. Regression is done separately for each country to see whether there are differences among the four Nordic countries.

In linear regression, we are trying to explain a certain variable with one or more explanatory variables. In this study, we are trying to explain post-buyback excess returns with six different variables. Explanatory variables are the following and the calculation method is explained in table 3 below:

Table 3. Variables used in multiple linear regression

	<b>Variable</b>	<b>Calculation method explained by Refinitiv Eikon</b>
1	Return on invested capital-% (ROIC)	$(\text{Net Income} - \text{Bottom Line} + ((\text{Interest Expense on Debt} - \text{Interest Capitalized}) * (1 - \text{Tax Rate}))) / \text{Average of Last Year's and Current Year's (Total Capital} + \text{Short Term Debt} \& \text{Current Portion of Long Term Debt)} * 100$
2	Return on Equity-% (ROE)	$(\text{Net Income} - \text{Bottom Line} - \text{Preferred Dividend Requirement}) / \text{Average of Last Year's and Current Year's Common Equity} * 100$
3	Book value of equity (BVE)	Common equity / outstanding shares
4	Liquidity (measured with monthly trading volume)	Average monthly trading volume
5	Size (measured as total assets)	Sum of total assets
6	Leverage (measured as total debt-%)	$(\text{Long Term Debt} + \text{Short Term Debt} \& \text{Current Portion of Long Term Debt}) / \text{Common Equity} * 100$

Before performing the analysis, it is vital to make sure that explanatory variables are not highly correlated with each other. This problem is called multicollinearity. If there is a strong linear relationship among the predictor variables, multicollinearity is present (Olive, 144, 2017).

Multicollinearity might cause the linear model to give us results that look better than they should which is usually represented in inflated R-squared statistics. Due to this, ROIC was removed from the model because it has a very high correlation with ROE. ROE does not have a high correlation with the other variables, so regression is performed with variables 2-5.

The regression equation used in this study is represented in equation 3:

$$Y_t = \beta_0 + \beta_1 ROE_t + \beta_2 BVE_t + \beta_3 LIQUIDITY_t + \beta_4 SIZE_t + \beta_5 LEVERAGE_t + \varepsilon_t,$$

$$t = 1, \dots, T \tag{3}$$

where  $Y_t$  represents excess returns of the portfolio,  $\beta_0$  represents the intercept,  $\beta_1$ -  $\beta_5$  are the explanatory variables explained in table 3. and  $\varepsilon_t$  is a random error term.

## 5. Results

In this chapter, key findings of the research are presented with illustrative tables and figures. This chapter is divided into separate subchapters. Buybacks from different countries are analyzed as a whole and also separately between countries to find out possible country-based effects. Companies that have completed their buyback programs and companies that are still in the process are separated.

### 5.1 Post-buyback results with portfolios consisting of all countries

After sorting out suitable companies for the research, portfolios of companies that have either started or completed buyback programs were formed. The most interesting group in this study was companies that have completed their share repurchase programs and we can see the share count going down. This behaviour could imply that the management has tried to increase value for shareholders in this way. For these companies, annual market excess returns were analyzed for one, two, and three-year holding periods.

*Table 4. Average annual market excess returns for companies that have completed their share repurchase programs during 2010-2020 using equal weight portfolios.*

Market excess returns - completed buybacks	
	Buyback Portfolios
Average 1-year excess return	12.40%
Average 2-year excess return	12.29%
Average 3-year excess return	11.92%

In table 4. we can see that returns in every holding period outperform the Nasdaq Nordic benchmark index by a reasonably wide margin. Returns in every holding period are over 11 percent and it seems that these companies have been able to generate a lot of value for their shareholders. However, it is important to acknowledge that the sample size is rather small in this study and because the portfolios are equally weighted, some companies may skew results in extreme directions. Also, it is extremely important to remember that these results are post-event returns, and investors could not have predicted that these companies are going to complete their buyback programs. Managers of these companies have no obligation to complete the buyback program and investors should know this fact.

*Table 5. Average annual excess returns for companies that have started their share repurchase programs during 2010-2020 using equal weight portfolios.*

Market excess returns - Intended buybacks

	Buyback Portfolios
Average 1-year excess return	-0.37%
Average 2-year excess return	0.31%
Average 3-year excess return	2.40%

In table 5 we can see the portfolio returns for companies that have not yet finished their share repurchases during the holding period. Portfolio returns are negative in one year holding period, but they overperform the benchmark index in two and three-year holding periods. These results are more mixed compared to results from companies that have completed their share repurchase programs. It is important to note that the sample size is much larger for companies that have not yet completed their repurchase program. This suggests that outliers do not change the returns too drastically. As one could predict, returns for companies that have not yet completed their programs were lower compared to the portfolio that consisted of companies that had completed their buyback program.

## 5.2 Post-buyback results in the Nordic countries separately

In this chapter, we are going to take a closer look at the differences between the Nordic countries. First, we examine how portfolios have fared against their respective country indices. Annualized returns for one-to-three-year periods from buybacks are calculated and the average represents the average annualized returns from all these periods.

Table 6. Country by country data on completed buybacks between 2010-2020

<b>Market excess returns</b>				
	FINLAND	SWEDEN	DENMARK	NORWAY
Average annualized 1 year excess return	(-33.70%)	2.70%	17.50%	18.70%
Average annualized 2 year excess return	(-30.30%)	(-11.80%)	21.10%	16.50%
Average annualized 3 year excess return	(-23.60%)	(-13.80%)	18.80%	18.40%
Number of companies from the country during the time period	2	3	14	8
t-test t static	-0.764	-1.167	0.845	0.854
Critical value at 5 % rejection region	1.691	1.691	1.691	1.691
Significance	No	No	No	No

In table 6. we can see that especially the Danish and the Norwegian companies that have completed their share repurchase programs have outperformed their benchmark indices by quite a wide margin. On the contrary, Finnish companies have had negative annualized returns every year between 2010-2020. Swedish companies have had success following the first year but in two- and three-year periods the returns are negative. The sample size is very limited for Finnish and Swedish companies, but it can be observed that Danish and Norwegian companies outperform their benchmarks by a wide margin.

Table 7. Country by country data on intended buybacks between 2010-2020

<b>Market excess returns</b>				
	FINLAND	SWEDEN	DENMARK	NORWAY
Average annualized 1-year market excess return	15.00%	(-8.60%)	6.50%	(-7.50%)
Average annualized 2-year market excess return	7.30%	(-5.60%)	6.30%	(-4.10%)
Average annualized 3-year market excess return	4.90%	(-1.00%)	7.90%	(-2.50%)
Number of companies from the country	9	23	24	16
t-test t static	0.927	-0.059	0.935	0.276
Critical value at 5 % rejection region	1.691	1.691	1.691	1.691
Significance	No	No	No	No

In table 7. we can see the results with companies that have started their share repurchase programs. The sample size is much larger, and it seems that Finnish and Danish companies did outperform their benchmarks. Swedish and Norwegian companies achieve positive returns but are not able to outperform their respective indices. These results suggest that share repurchases are associated with positive returns and in some countries even excess returns.

Table 7. Shareholder value creation statistics with companies that have completed their buyback programs

	<b>FINLAND</b>	<b>DENMARK</b>	<b>NORWAY</b>	<b>SWEDEN</b>
	<b>ROE-%</b>			
1-year change %	-31.5%	-0.4%	-11.8%	-136.3%
2-year change %	-47.7%	4.9%	-31.7%	-32.8%
3-year change %	-47.7%	9.1%	-31.7%	-32.8%
	<b>ROIC-%</b>			
1-year change %	-20.9%	-9.4%	-10.9%	111.5%
2-year change %	-27.2%	-28.1%	-26.0%	104.3%
3-year change %	-32.0%	-18.6%	-26.0%	103.9%
	<b>Book value of equity</b>			
1-year change %	-12.6%	4.1%	0.4%	0.8%
2-year change %	-32.8%	10.4%	3.6%	0.8%
3-year change %	-39.3%	55.6%	2.1%	-4.1%
	<b>Liquidity</b>			
1-year change %	-28.8%	-17.2%	-10.2%	-12.1%
2-year change %	19.2%	-35.9%	-7.4%	-2.2%
3-year change %	-34.4%	-57.3%	45.6%	-36.8%

In table 7. we can see how statistics from the companies from different countries have increased or decreased. The change-% represents the yearly change in statistics after the buyback was announced. Two- and three-year change % represents the change for 2- and 3-year holding periods.

As mentioned before, the sample size for especially Finland and Sweden is very low. If we look at ROE-%, we can see that every country except Denmark has an ROE-% decrease during all periods. The next statistic is ROIC-% and the numbers indicate that companies from Sweden were able to increase their ROIC-% during the three-year period by a significant amount. The next statistic is the book value of equity. Here we can see that Danish and Norwegian companies have been able to increase their BVE, especially Danish companies which see a 55,6 % increase in three years. The last statistic is liquidity which is measured by looking at the monthly turnover volume. Overall, it seems that only Norwegian companies have been able to increase liquidity long-term. One key takeaway from these results is that the first-year numbers set a very strong benchmark and it seems that the statistics seem to fall off during longer periods. Based on these results, it can be said that there is no clear pattern among Nordic countries. Some companies from different countries seem to be performing better, but there is no overall trend for shareholder value generation in the long term.

Table 7. Shareholder value creation with companies that have started but not yet finished their buyback programs

	<b>FINLAND</b>	<b>DENMARK</b>	<b>NORWAY</b>	<b>SWEDEN</b>
	<b>ROE-%</b>			
1-year change %	-31.5%	-0.4%	-11.8%	-136.3%
2-year change %	-27.2%	-26.7%	-10.9%	-109.8%
3-year change %	114.9%	11.1%	-48.3%	-21.3%
	<b>ROIC-%</b>			
1-year change %	-20.9%	-9.4%	-10.9%	111.5%
2-year change %	-27.2%	-26.7%	-10.9%	109.8%
3-year change %	87.4%	-15.3%	-37.8%	118.0%
	<b>Book value of equity</b>			
1-year change %	-6.1%	8.4%	4.3%	-7.9%
2-year change %	-10.2%	17.8%	19.5%	-29.6%
3-year change %	-21.1%	27.1%	25.4%	-13.9%
	<b>Liquidity</b>			
1-year change %	-4.2%	-10.5%	-44.0%	16.9%
2-year change %	-17.8%	-28.7%	-55.2%	-13.3%
3-year change %	-28.9%	-4.6%	-37.8%	-11.7%

In table 7. we can see how statistics from the companies from different countries that have started but not yet finished their buyback programs have changed. If we first observe the changes in ROE-%, we can see that Finnish and Danish companies have been able to increase their ROE-% significantly during the three years. For Norwegian and Swedish companies, the change percentages have been decreasing in every period.

ROIC-% has increased in three years for Finnish companies and it has increased in every period for Swedish companies. For Danish and Norwegian companies, the ROIC-% has changed negatively in every period. For the book value of equity, the results are very different. BVE has increased significantly in all periods for Danish and Norwegian companies and decreased for Finnish and Swedish companies.

Last statistic in liquidity. Liquidity has decreased for all companies in every period. This is an interesting observation as many previous studies suggest that buybacks should increase liquidity. However, as was the case for companies that have completed their buybacks, turnover volumes were very high after initial buybacks, but they decreased drastically after. This could imply that the positive liquidity effect of buybacks is rather short-term.

### 5.3 Analysing post-buyback returns with linear regression

After analysing excess returns and changes in performance statistics, it is important to analyse the causes of these changes. Linear regression is used in this study to gain more insight into which factors affect excess returns statistically significantly.

#### Completed buybacks

	FINLAND				DENMARK		
Multiple R	0.95			Multiple R	0.97		
R Square	0.89			R Square	0.94		
Adjusted R Squared	0.88			Adjusted R Squared	0.93		
	Coefficients	t Stat	P-value		Coefficients	t Stat	P-value
Intercept	-32.9358	-0.7447	0.4623	Intercept	-8.0215	-0.8169	0.4202
ROE	16.9676	1.2481	0.2216	ROE	0.8787	0.8625	0.3950
BVE	81.7478	4.5238	0.0001	BVE	1.2792	4.4469	0.0001
Volume	-0.0116	-2.3146	0.0277	Volume	0.000035	0.1679	0.8677
Size	-0.0002	-1.3531	0.1861	Size	0.000333	1.0001	0.3250
Leverage	3.6054	0.5800	0.5662	Leverage	-0.8442	-0.3714	0.7129
	SWEDEN				NORWAY		
Multiple R	0.98720			Multiple R	0.96962		
R Square	0.97455			R Square	0.94016		
Adjusted R Squared	0.93901			Adjusted R Squared	0.90018		
	Coefficients	t Stat	P-value		Coefficients	t Stat	P-value
Intercept	-60.6978	-5.6407	0.0000	Intercept	51.2347	0.1067	0.9157
ROE	12.3848	5.7605	0.0000	ROE	-21.3471	-0.3373	0.7382
BVE	-2.4346	-2.9278	0.0063	BVE	1.2143	0.0131	0.9896
Volume	-0.0002	-1.0355	0.1763	Volume	-0.000019	-0.0500	0.9605
Size	-0.0316	-5.9321	0.0000	Size	0.000035	0.0384	0.9696
Leverage	23.3427	5.7463	0.0000	Leverage	8.7013	1.9850	0.4264

Figure 14. Regression results on completed buyback programs<sup>1</sup>

In figure 14. we can see the linear regression results between the four Nordic countries. The first thing that can be observed is R-squared and Adjusted R-squared statistics. These statistics tell us, how much of the variability in value Y (Portfolio market excess returns) the explanatory variables explain. Every country has a very high R-squared with all countries having their number at close to 0.90 or even higher, as 1.0 is the maximum that can be achieved. This indicates that the explanatory variables explain a lot of the variability in post-buyback returns. However, it is important to remember that the sample size is rather low, and it could inflate the R-squared statistic. Next, we may observe the statistical significance of explanatory variables. In this study, we set the confidence level to 95 %. In figure 14. p-values of under 0.05, tell us that the variable is statistically significant in explaining variability in portfolio excess returns, variable Y.

<sup>1</sup> Frequency of observations for each country is 36.

For Finland, BVE and volume are statistically significant. For Denmark, we see that BVE is statistically significant. Results for Norway suggest that none of the explanatory variables are statistically significant with a 95 % confidence level, as the p-values are over 0.05. For Sweden, we can see that ROE, size, and leverage are variables that explain post-buyback market excess returns for the portfolio.

### Intended buybacks

	FINLAND				DENMARK		
	Coefficients	t Stat	P-value		Coefficients	t Stat	P-value
Multiple R	0.83			Multiple R	0.97		
R Square	0.69			R Square	0.94		
Adjusted R Squared	0.64			Adjusted R Squared	0.93		
Intercept	-27.3207	-1.7878	0.0836	Intercept	-8.0215	-0.8169	0.4202
ROE	0.2942	1.6599	0.1070	ROE	0.8787	0.8625	0.3950
BVE	11.9591	1.6034	0.1190	BVE	1.2792	4.4469	0.0001
Volume	-0.00014	-1.1592	0.2552	Volume	0.00004	0.1679	0.8677
Size	0.00004	1.8824	0.0692	Size	0.00033	1.0001	0.3250
Leverage	0.5074	4.4377	0.0001	Leverage	-0.8442	-0.3714	0.7129
	SWEDEN				NORWAY		
Multiple R	0.91			Multiple R	0.97		
R Square	0.83			R Square	0.94		
Adjusted R Squared	0.80			Adjusted R Squared	0.93		
Intercept	9.10651	2.02086	0.05200	Intercept	14.3453	1.3931	0.1735
ROE	-0.60905	-1.11627	0.27288	ROE	0.8787	0.8625	0.3950
BVE	-2.43464	-2.92777	0.00635	BVE	1.2792	4.4469	0.0001
Volume	-0.00040	-1.38387	0.17628	Volume	0.0000	0.1679	0.8677
Size	0.00009	2.77982	0.00916	Size	0.0003	1.0001	0.3250
Leverage	-4.10157	-1.42290	0.16475	Leverage	-0.8442	-0.3714	0.7129

Figure 15. Regression results on intended buyback programs<sup>2</sup>

In figure 15, we can see the results of intended buyback programs among the countries. The first thing to observe is that the R-squared statistic is much lower for all countries except Norway. Notably, Finland's R-squared is only 0.69 compared to 0.89 in completed buybacks.

Next, we can observe the statistical significance of explanatory variables based on t-test p-values. For Finland, only leverage seems to be statistically significant. For Denmark, only BVE is statistically significant. For Norway, BVE is statistically significant. For Sweden, we have two statistically significant explanatory variables which are BVE and Size.

As we can see, the results are very inconclusive and there seems to be no clear pattern for statistically explaining post-buyback returns with these variables. For completed buybacks, the results are more robust compared to companies that have started their programs.

<sup>2</sup> Frequency of observations for each country is 36.

## 5.4 Economic justifications for differences among Nordic countries

As it could be seen from the results in the previous chapter, there were differences among the four Nordic countries on post-buyback market excess returns. In this chapter, economic justifications that could explain differences in the magnitude of post buyback returns are addressed.

As stated earlier in chapter 2.4.1, the four Nordic countries have differences in capital gains tax rates. Capital gains tax is directly linked to the attractiveness of buybacks in the view of investors. The lower the capital gains tax is, the more favourable will buybacks be for the shareholders as they have to pay fewer taxes on their profits.

For Danish investors, capital gains and dividends are taxed at 27 % up to about 56 600 DKK (about 7600 €) and 42 % for the excess. This would make them indifferent between dividends and buybacks, while buybacks would give the investors more flexibility to choose when and how much tax they want to pay. Especially wealthy investors would most likely get hit with the higher 42 % tax on dividends. As Miller and Modigliani (1961) proposed, companies that issue buybacks tend to be favoured by investors that are in high tax brackets.

Also, a Danish investor could choose to limit their realized profits under the 7599 € mark and get taxed at a lower rate. With this in mind, it seems justifiable that many Danish companies chose to complete their buyback programs and they also had many buyback programs in progress. Thus, attracting investors resulting in appreciating stock prices. These buybacks also decreased the total number of outstanding shares. Also, these companies that issued buybacks were able to deliver value to their shareholders in one to three-year holding periods as they had positive market excess returns. Danish companies were also able to increase ROE-% and Book value of equity in three-year holding periods at the same time as they achieved market excess returns. This indicates that repurchases were able to boost financial performance figures for these companies also.

For Finnish investors, the number of completed buyback programs that decreased the number of outstanding shares was very low. The tax system in Finland favors dividends, as 15 % of dividends are tax exempt. This could explain the low buyback activity.

Overall, Finnish companies issued the least amount of buyback programs in the Nordics. Only two companies had completed their buyback program, and they were not able to produce market excess returns, destroying shareholder value in the process. On the other hand, companies that had buyback programs in the process were able to produce market excess

returns in one to three-year holding periods. This suggests that buyback programs were able to generate value for shareholders. Because dividends are favoured in the tax system, it seems justifiable that most investors would prefer them therefore companies cater to investors' demands. Finland is also the only country that has tax exemptions on a percentage of dividends. Finnish companies that had started buyback programs, were also able to increase ROE-% and ROIC-% statistics by a significant amount in one to three-year holding periods at the same time as they achieved market excess returns. An increase in these statistics justifies the increase in stock prices.

For Swedish investors, the tax rates are the same for capital gains and dividends. They should be indifferent among the two. However, the results were not admirable for Swedish investors, as Swedish companies were only able to produce excess market returns in one year holding period for completed buybacks. This essentially means that Swedish shareholder value was destroyed in the buyback progress. Swedish companies also had the second-lowest number of completed buybacks and the second-highest number of started buyback programs. Swedish buyback companies were only able to increase the ROIC-% statistic by a significant amount. The increase in this statistic did not boost stock prices, as the companies were not able to achieve market excess returns.

For Norwegian investors, the effective tax rates on capital gains are the same and the investors should be indifferent to them. Norwegian companies had the second-highest amount of completed buybacks, and the results were exceptional for the investors. These Norwegian companies were able to produce over 16 % market excess returns in one to three-year holding periods. This could mean that Norwegian companies cater to investor demand and issue buyback programs to create shareholder value. Investors could prefer the flexibility on taxes that buyback programs make possible. For companies that had not completed the buyback program, the results were the opposite. These companies essentially destroyed shareholder value. Norwegian companies were able to increase the book value of equity in both buyback groups and every period.

## 6. Conclusions

In this chapter, I discuss the conclusions of this thesis. Results are compared to previous research on this subject, limitations of the research are stated, and I also present possible future research proposals.

It was noticeable how large the portion of buyback programs was not intended to decrease the number of shares, or in other words, they were done to control dilution, alter the capital structure or buy shares for stock-based compensation programs.

When looking at companies that had started their buyback program but not yet finished it, only 33 % had their share count decrease. When looking at companies that had completed their program, the same figure is 82%. What these results could imply, is that companies that complete their buyback programs tend to create shareholder value by decreasing their number of outstanding shares. There is a possibility that if the companies that have started their programs would complete them, these companies could see their share count decrease in the process. However, this is just speculation and would require more studies on these companies in the next five or more years.

Results of this thesis suggest that a portfolio of companies that had their number of outstanding shares decrease tends to produce market excess returns for shareholders. Average market excess returns in one-to-three-year holdings periods were 12.40 %, 12.29 %, and 11.92% respectively. Some of these companies also saw the liquidity of their shares increase via higher monthly turnover volume, but this effect was rather short-term. Higher liquidity can be seen as a benefit for existing shareholders and in that respect, some of the companies repurchasing were able to generate value for their shareholders.

These results are mostly in line with previous research. Like Comment and Jarrell (1991), Stephens and Weisbach (1998), and Grullon and Michaely (2004) found in their studies, companies that bought back their shares were able to generate excess returns compared to the benchmark index. However, when looking at the country-based data, results were mixed among the four Nordic countries. This would suggest that the buyback anomaly does not exist in every market, which is not in line with studies by Peyer and Vermaelen (2009). Also, it is important to notify that most of the studies have discussed short-term excess returns after the buyback program announcement compared to this study, where long-term effects were studied. As one could expect, many other aspects can affect long-term share price movements.

Also, recent studies by Lewis and White (2021) suggest that buybacks enhanced liquidity for the company's shares. In this study, it seems that companies saw their liquidity increase shortly after the repurchases, but the effect falls off over time. Short-term effects were not studied in this thesis. These results suggest that repurchases were not able to enhance long-term liquidity. In this study, possible negative effects of buybacks could not be assessed. A recent study by Shilon (2020) suggests that buybacks sacrifice long-term firm value, elevate financial risk excessively and manipulate the stock price.

When taking a closer look into different Nordic countries separately the results were mixed. Companies that had completed their buyback program were able to produce market excess returns in Denmark and Norway compared to Finland and Sweden whose companies were not able to produce excess returns, and the returns were instead negative. Companies that had started their buyback program were able to produce market excess returns in Finland and Denmark while Swedish and Norwegian companies were not able to produce added value for their shareholders.

When looking at country-by-country changes in statistics that might imply the generation of shareholder value such as ROE-%, ROIC-%, the book value of equity, and liquidity, results were mixed. One could conclude that there are no significant patterns regarding these statistics. However as in this study we concentrated more on the long-term generation of shareholder value, some statistics such as liquidity seemed to be inflated before the buyback and shortly after it, but the effect would wear off during a longer period.

It is also noteworthy to mention, based on this study, that managers of Nordic companies attempted to take advantage of the volatile market situation in 2010-2012. Many companies saw their share price decrease rapidly and for some companies, the decrease might have been too drastic. It seems that many managers thought that their company's shares were undervalued and decided to propose buyback programs. Another interesting point is that during the recent years between 2013-2020 the number of announced buyback programs in the Nordics has remained rather stable and the activity has been low. During that period the markets have experienced a period of a bull market and stock prices have surged to all-time highs. One could think that managers of Nordic companies have been rational and did not want to be very active with buyback programs. It seems that the managers know that their company's shares are not under-priced thus buying back their shares would not generate shareholder value.

General implications for investors are that buybacks do not always create value for shareholders, and they can even destroy shareholder value. It is important to know, whether or not the share count is going to decrease following the buyback or is the buyback done just to

control dilution or pay stock-based compensation. Based on theory and previous empirical studies presented in this thesis, the share price tends to appreciate following a buyback, especially following an open market repurchase, but long-term effects are more mixed.

Countries also have differences, especially if there are differences in tax brackets. Some countries, such as Finland, incentivize dividends with percentage-wise tax exemptions. In countries with high capital gains tax such as Denmark, companies issue and complete a lot of buyback programs to cater to investors.

This master thesis has some limitations and characteristics that should be considered when evaluating results. First of all, the sample size of companies that had completed their buyback program was rather small and the country-by-country analysis was done with very small sample size. A low sample size can lead to extreme outcomes and averages may shift because of a couple of outliers. This also lead to regression analysis being done with small sample size.

Another limitation was that some parts of the data were not available for companies that had performed their buybacks. Due to this, some companies had to be removed from consideration to make results more robust, this essentially means that the dataset is not complete. This study also might suffer from survivor bias which refers to only looking at the performance of companies that still exist and disregarding companies that are no longer active. Some companies that had announced buyback programs were bought out, went bankrupt, or for some other reason are not active anymore.

Based on this study, I suggest that managers of Nordic companies should look into buybacks especially when the intrinsic value of a company is higher than the current market value. This action requires that the company can assess the underlying value of its business and if the value is higher than the current market capitalization, a buyback program can be financially justified. Buybacks are a way of generating shareholder value and based on this study they can provide benefits to existing shareholders.

Further research on this subject should be done, especially in the Nordic markets. It would be important to understand the clientele effect more throughout. Studies on what kind of companies in the Nordics tend to prefer buybacks and who prefers dividends would be important to understand the clientele effect better. Also, studies on what kind of investors prefer buybacks over dividends is an important subject to study.

Studies on completion rate (shares bought back/shares announced to be bought back) would be interesting to see in the Nordics. Especially, as Nordic companies are authorized to disclose

the number of shares that they have bought, it would be possible to perform these kinds of studies in the future.

## References

- Alessi, C. and McBride, J. (2015). "The Eurozone in Crisis". *Council on Foreign Relations*. (Visited 24.4.2022). Website available: <https://www.cfr.org/background/eurozone-crisis>
- Allen, F., Bernardo, A. E. and Welch, I. (2000). "A theory of dividends based on tax clienteles". *The journal of finance*, 55(6), 2499-2536.
- Almeida, H., Fos, V. and Kronlund M. (2016). "The real effects of share repurchases". *Journal of Financial Economics* 119(1): 168-185.
- Asen, E. (2021). "Capital Gains Tax Rates in Europe". *Tax foundation*. (Visited 3.1.2022). Website available: <https://taxfoundation.org/capital-gains-tax-rates-in-europe-2021/>
- Asquith, P. and Mullins Jr, D. W. (1986). "Equity issues and offering dilution". *Journal of financial economics*, 15(1-2), 61-89.
- Awad, R., Ferreira, C., Jociene, A. and Riedweg, L. (2020). "Restriction of Banks' Capital Distribution during the COVID-19 Pandemic (Dividends, Share Buybacks, and Bonuses)". *Monetary and Capital Markets* 11: 1-8.
- Baker, M. and Wurgler, J. (2004). "A Catering Theory of Dividends". *The Journal of Finance (New York)* 59 (3): 1125-1165.
- Barclay, M. J., Smith Jr, C. W. and Watts, R. L. (1998). "The determinations of corporate leverage and dividend policies". *Dalam The New Corporate Finance*. 2nd Edition. Malaysia: Irwin Mc-Graw-Hill.
- Bargeron, L., Bonaime, A. and Thomas, S. (2017). "The Timing and Source of Long-Run Returns Following Repurchases". *Journal of Financial and Quantitative Analysis; J.Financ.Quant.Anal* 52(2): 491-517.
- Basu, S. (1975). "The Information Content of Price-Earnings Ratios". *Financial Management* 4(2): 53-64.
- Bates, T. (2005). "Asset Sales, Investment Opportunities, and the Use of Proceeds". *The Journal of Finance (New York)* 60(1): 105-135.

- Bens, D., Nagar, V., Skinner, D. and Wong, M. (2003). "Employee stock options, EPS dilution, and stock repurchases". *Journal of Accounting & Economics* 36(1): 51-90.
- Bhandari, A., Golden, J., Walker, K. and Zhang, JH. (2021). "The relationship between stock repurchase completion rates, firm reputation and financial reporting quality: a commitment-trust theory perspective". *Accounting and Finance (Parkville)*.
- Blanchard, O., Lopez-de-Silanes, F. and Shleifer, A. (1994). "What do firms do with cash windfalls?". *Journal of financial economics*, 36(3), 337-360.
- Bonaime, A. (2012). "Repurchases, Reputation, and Returns". *Journal of Financial and Quantitative Analysis; J.Financ.Quant.Anal* 47(2): 469-491.
- Bonaime, A. (2015). "Mandatory Disclosure and Firm Behavior: Evidence from Share Repurchases". *The Accounting Review* 90(4): 1333-1362.
- Brav, A., Graham, J. R., Harvey, C. R. and Michaely, R. (2005). Payout policy in the 21st century. *Journal of financial economics*, 77(3), 483-527.
- Brealey, R., Myers, S. C., and Allen, F. (2006). "Principles of corporate finance" (8th ed.). *McGraw-Hill/Irwin*.
- Brealey, R., Myers, S. C. and Allen, F. (2008). "Principles of corporate finance" (9th ed.). *McGraw-Hill/Irwin*.
- Brennan, P. (2020). "Buybacks have few detrimental effects on long-term company value" – *BIS. The SNL Insurance Daily*.
- Brettell, K., Gaffen, D. and Rohde, D. (2015). "As stock buybacks reach historic levels, signs that corporate America is undermining itself". *Reuters*. (Visited 24.12.2021). Website available: <https://www.reuters.com/investigates/special-report/usa-buybacks-cannibalized>
- Chandren, S., Ahmad, Z. and Ali, R. (2017). "The Impact of Accretive Share Buyback on Long-term Firm Performance". *International Journal of Economics & Management*, 11(1).
- Chen, S., Ho, K., Huang, C. and Wang, Y. (2013). "Buyback behavior of initial public offering firms". *Journal of Banking & Finance* 37(1): 32-42.

Christiansen, P., Schleithoff, C. and Pujalte, E. (2003) "Employee Stock Options". *European Commission – Final Report of Expert Group*. (Visited 20.1.2022). PDF available: [http://www.efesonline.org/LIBRARY/2003/final\\_report\\_stock\\_options\\_en\\_3709.pdf](http://www.efesonline.org/LIBRARY/2003/final_report_stock_options_en_3709.pdf)

Connelly, B., Certo, T., Ireland, R. and Reutzel, C. (2011). "Signaling Theory: A Review and Assessment". *Journal of Management* 37(1): 39-67.

Comment, R. and Jarrell, G. (1991). "The relative signalling power of Dutch-auction and fixed-price self-tender offers and open-market share repurchases". *The Journal of Finance*, 46(4), 1243-1271.

Copeland, T. and Galai, D. (1983). "Information Effects on the Bid-Ask Spread". *The Journal of Finance (New York)* 38(5): 1457-1469.

Dann, L. (1981). "Common stock repurchases: An analysis of returns to bondholders and stockholders". *Journal of Financial Economics* 9(2): 113-138.

De Bondt, W. and Thaler, R. (1985). "Does the Stock Market Overreact?" *The Journal of Finance (New York)* 40(3): 793-805.

Dittmar, A. (2000). "Why do firms repurchase stock". *The Journal of Business*, 73(3), 331-355.

Dittmar, A. and Dittmar, R. (2002). "Stock repurchase waves: An explanation of the trends in aggregate corporate payout policy". Available at SSRN 346548.

Dittmar, A. and Mahrt-Smith, J. (2007). "Corporate governance and the value of cash holdings". *Journal of Financial Economics* 83(3): 599-634.

Fama, E. (1965). "Random Walks in Stock Market Prices". *Financial Analysts Journal* 21(5): 55-59.

Fama, E. (1970a). "Multiperiod Consumption-Investment Decisions". *The American Economic Review* 60(1): 163-174.

Fama, E. (1970b). "Efficient Capital Markets: A Review Of Theory And Empirical Work." *The Journal of Finance (New York)* 25(2): 383-417.

Fitzherbert, R. (2000). "Inefficient markets and irrational investors: looking for logic in the mathematics of value". *JASSA: The Journal of the Securities Institute of Australia*.

Forbes (2011). "Many Reasons For Insiders To Sell, Just One Reason To Buy". *Forbes* (Visited 5.2.2022). Website available: <https://www.forbes.com/2011/11/17/many-reasons-for-insiders-to-sell-just-one-reason-to-buy-marketnewsvideo.html?sh=79c0ff752609>

Glosten, L. and Milgrom, P. (1985). "Bid, ask and transaction prices in a specialist market with heterogeneously informed traders". *Journal of financial economics*, 14(1), 71-100.

Gobler, E. (2022). "What Are Dividend Kings? See the List of 37 Stocks That Made the List in 2022". *Time*. (Visited 15.2.2022). Website available: <https://time.com/nextadvisor/investing/dividend-kings/>

Gruber, J. and Kamin, S. (2017). "Corporate buybacks and capital investment: An international perspective" (No. 2017-04-11). *Board of Governors of the Federal Reserve System (US)*.

Gullon, G. and Michaely, R. (2004). "The Information Content of Share Repurchase Programs". *The Journal of Finance* 59(2): 651-680.

Harford, J. (1999). "Corporate Cash Reserves and Acquisitions". *The Journal of Finance (New York)* 54(6): 1969-1997.

Ikenberry, D., Lakonishok, J. and Vermaelen, T. (1995). "Market underreaction to open market share repurchases". *Journal of Financial Economics* 39(2): 181-208.

Ikenberry, D. and Vermaelen, T. (1996). "The option to repurchase stock". *Financial Management*, 9-24.

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

Jensen, M. and Meckling, W. (1976). "Theory of the firm: managerial behavior, agency costs and ownership structure". *Revista De Administração De Empresas* 48(2): 87-125.

Kang, H. (2008). "Stock Repurchase as a Defense against Hostile Takeovers". *J.Korean L.* 8: 349.

Kahle, K. (2002). "When a buyback is not a buyback: Open market repurchases and employee options". *Journal of Financial Economics*, 63(2), 235-261.

Kauppalehti (2022). "Osinkohistoria". (Visited 21.4.2022). Website available: <https://www.kauppalehti.fi/porssi/osinkohistoria>

Keasler, T. and Byerly, R. (2015). "An examination of corporate stock buybacks: do they really create value?" *Economics, Management, and Financial Markets*, 10(4), 11–28.

Khalfan, T. and Wendt, S. (2020). "The impact of ownership concentration on payout across Nordic firms". *Journal of Multinational Financial Management* 56: 100640.

Knüpfer, S. and Puttonen, V. (2018). "Moderni rahoitus". 10. uud. p. Helsinki: WSOYpro.

Lakonishok, J., Shleifer, A. and Vishny, R. (1994). "Contrarian Investment, Extrapolation, and Risk". *The Journal of Finance* 49(5): 1541-1578.

Lakonishok, J. and Vermaelen, T. (1990). "Anomalous price behavior around repurchase tender offers". *The Journal of Finance*, 45(2), 455-477.

Lewis, C. and White, J. (2021). "Corporate Liquidity Provision and Share Repurchase Programs". *Center for capital markets competitiveness*. (Visited 10.3.2022) Website available: [https://www.centerforcapitalmarkets.com/wp-content/uploads/2021/09/CCMC\\_Stock-Buy-backs\\_WhitePaper\\_10.2.21.pdf](https://www.centerforcapitalmarkets.com/wp-content/uploads/2021/09/CCMC_Stock-Buy-backs_WhitePaper_10.2.21.pdf)

Liljeblom, E. and Pasternack, D. (2006). "Share Repurchases, Dividends and Executive Options: the Effect of Dividend Protection". *European Financial Management : The Journal of the European Financial Management Association* 12(1): 7-28.

Limited Liability Companies Act Finland (2022). "Unofficial translation of Osakeyhtiölaki". *Ministry of Justice, Finland*. PDF Available: <https://www.finlex.fi/fi/laki/kaanonokset/2006/en20060624.pdf>

Lintner, J. (1956). "Distribution of incomes of corporations among dividends, retained earnings, and taxes". *The American economic review*, 46(2), 97-113.

Lin, J., Stephens, C. and Wu, Y. (2014). "Limited attention, share repurchases, and takeover risk". *Journal of Banking & Finance*, 42, 283–301. <https://doi.org/10.1016/j.jbankfin.2014.02.004>

Lücke, M. and Pindur, D. (2002). "Riding the hat curve — Why shareholders should tender their shares in fixed price tender repurchase programs". *Financial Markets and Portfolio Management* 16(3): 358-377.

Malkiel, B. (2003). "The Efficient Market Hypothesis and Its Critics". *The Journal of Economic Perspectives* 17(1): 59-82.

Manconi, A., Peyer, U. and Vermaelen, T. (2019). "Are Buybacks Good for Long-Term Shareholder Value? Evidence from Buybacks around the World". *Journal of Financial and Quantitative Analysis* 54(5): 1899-1935.

McNally, W., Smith, B. and Barnes, T. (2006). "The Price Impacts of Open Market Repurchase Trades". *Journal of Business Finance & Accounting* 33(5-6): 735-752.

Miller, M. and Modigliani, F. (1961). "Dividend Policy, Growth, and the Valuation of Shares". *The Journal of Business*, 34(4), 411–433.

Modigliani, F. and Miller, M. (1958). "The Cost of Capital, Corporation Finance and the Theory of Investment". *The American Economic Review*, 48(3), 261–297.

Nasdaq (2020). "Pörssin säännöt osakkeiden liikkeeseenlaskijoille". Nasdaq. (Visited 1.2.2022). PDF available: <https://www.nasdaq.com/docs/2020/03/06/Luonnos-5.3.2020-Nasdaq-Helsinki-P%C3%B6rssiin-s%C3%A4nn%C3%A4nn%C3%B6t-osakkeiden-liikkeeseenlaskijoille.pdf>

Olive, D. (2017). "Linear Regression". Cham: Springer International Publishing.

Oswald, D. and Young, S. (2008). "Share reacquisitions, surplus cash, and agency problems". *Journal of Banking & Finance* 32(5): 795-806.

Ota, K., Kawase, H. and Lau, D. (2019). "Does reputation matter? Evidence from share repurchase". *Journal of Corporate Finance*, 58, 287-306.

Peyer, U. and Vermaelen, T. (2009). "The nature and persistence of buyback anomalies". *The Review of Financial Studies* , 22(4), 1693-1745.

Piotroski, J. (2000). "Value Investing: The Use of Historical Financial Statement Information to Separate Winners from Losers". *Journal of Accounting Research* 38: 1-41.

PwC (2021). "Tax summaries in the Nordics". PwC. (Visited 12.1.2022). Website available: <https://taxsummaries.pwc.com/individual/income-determination>

Radner, R. (1986). "Repeated Partnership Games with Imperfect Monitoring and No Discounting". *The Review of Economic Studies; the Review of Economic Studies* 53(1): 43-57.

Reda, J. (2018). "Executive Compensation and Stock Buybacks: The Pros and the Cons". *The Corporate Governance Advisor* 26(4): 1-7.

Richardson, S. (2006). "Over-investment of free cash flow". *Review of Accounting Studies* 11(2): 159-189.

Rosenbaum, E. (2018). "Warren Buffett explains the enduring power of stock buybacks for long-term investors". CNBC. (Visited 24.4.2022) Website available: <https://www.cnbc.com/2018/08/31/warren-buffett-explains-the-enduring-power-of-stock-buy-backs.html>

Råsbrant, J. (2011). "The Price Impact of Open Market Share Repurchases". *Uppsala University – Department of Business studies*.

Shapiro, S. (2005). "Agency Theory". *Annual Review of Sociology* 31(1): 263-284.

Shilon, N. (2020). "Pay for Destruction: The Executive Compensation Arrangements That Incentivize Value-Decreasing Stock Buybacks". Available at SSRN 3678734.

Skjeltorp, J. (2004). "The market impact and timing of open market share repurchases in Norway". *Norges Bank*.

Springer, L. (2022). "5 Low-Vol Dividend Aristocrats to Survive a Stormy Market". *Kiplinger*. (Visited 21.4.2022) Website available: <https://www.kiplinger.com/investing/stocks/dividend-stocks/604409/low-vol-dividend-aristocrats-to-survive-this-stormy-market>

Stephens, C. and Weisbach, M. (1998). Actual share reacquisitions in open-market repurchase programs. *The Journal of finance*, 53 (1), 313-333.

Stiglitz, E. (2002). "Information and the Change in the Paradigm in Economics." *American economic review* 92.3 (2002): 460-501.

Sustainable Stock Exchanges initiative SSE (2022). "Oslo Bors". SSE. (Visited 30.1.2022). Website available: <https://sseinitiative.org/stock-exchange/oslo-bors/>

Solsvik, T. (2019). "Nasdaq pulls out of Oslo Bors battle, handing Euronext victory". *Reuters*. (Visited 10.2.2022) Website available: <https://www.reuters.com/article/us-oslo-bors-vps-m-a-euronext-nasdaq-idUSKCN1SX0JE>

Vermaelen, T. (1981). "Common stock repurchases and market signalling: An empirical study". *Journal of financial economics*, 9(2), 139-183.

Vermaelen, T. (1984). "Repurchase tender offers, signaling, and managerial incentives". *Journal of Financial and Quantitative Analysis*, 19(2), 163-181.

Williams, A. and Miller, M. (2013). "Do Stocks with Dividends Outperform the Market during Recessions?" *Journal of Accounting and Finance*, Vol. 13, Is. 1, pp. 58 – 69

Yarram, S. (2014). "Factors influencing on-market share repurchase decisions in Australia," *Studies in Economics and Finance*, Emerald Group Publishing, vol. 31(3), 255-271.

Zhang, H. (2005). "Share price performance following actual share repurchases". *Journal of Banking & Finance* 29(7): 1887-1901.