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Impact of share repurchase announcement in Nordic indexes

Case: OMXH, OMXS & OMXC from 2013 to 2022

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ABSTRACT:

The objective of this study is to examine if long-term abnormal returns follow the share buyback announcements especially in the Nordic markets. Share buyback is relatively new form of payout policy but also seen as a substitution for more mature dividend policy. Investigation gathers information how capital structure and payout policy incorporate into the price changes over two-year horizon.

Theoretical framework is primarily focusing on efficient market hypothesis but also giving perspective on how signalling theory and information asymmetry might play crucial role when management is doing decisions payout policies. Additionally, multiple key financial figures are utilized to confirm how optimal capital structure and agency costs is built to obtain excess returns from the Nordic indexes.

The empirical analysis explores leading indexes in Nordic markets from Finland, Sweden and Denmark (OMXH25, OMXS30 and OMXC25). Empirical analysis is using sample of 167 from the firms listed in the Nordic indexes. The methodology is focusing on Buy and hold abnormal returns to explain the long-term performance of the corporates announcing the share buyback policies over one-year and two-year horizons. Furthermore, multiregression analysis gives a deeper understanding on whether optimal capital structure or different aspects such as free cash flow or liquidity ratios explains the abnormal returns.

Results from the empirical analysis suggest that there is some statistical significance after the companies announce the share buybacks over the two-year horizon and the abnormal returns, where median reaching 5.97 percent. Firms that are included in the study are all included in the leading index on the respective Nordic markets and are required to announce these changes publicly to all the investors. Therefore, the results are challenging the semi-strong form of market efficiency. Additionally, country-specific observations deliver more profound aspect how even in the relatively homogenous markets are still behaving differently over a two-year period.

KEYWORDS: Payout policy, Signalling theory, Information asymmetry & Efficient market hypothesis

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1 Introduction

Classic theories such as Modigliani and Miller (1961) suggest that the payout policy is irrelevant in the perfect market conditions. Whereas newer studies like Jensen and Meckling (1976) understand that dividends can have multiple reasonings, for example to be used to maintain the agency costs. Furthermore, there is multiple research which suggest that dividends and share repurchase can be used to signal asymmetric information between the management and the investors. Where Miller and Rock (1985) confirm that the growing dividend can signal stable future cash flows, Baker and Wurgler (2015) states the importance of share repurchases as a flexible substitution for dividends. Although share repurchases are flexible, future theories will probably be united while having characteristics from the old but also adding features from modern theories.

There have been significant changes over the last decades on how corporate payout their retained earnings to their investors. Where cash dividends had significant proportion of payouts totalling 66.5 percent in 1978 the percent has been reduced dramatically to be only 20.8 percent in 1999. Dividends and share repurchase have been seen to be substitutions for each other for multiple decades already, but there are different explanations including the undervaluation of stocks, flexibility and the signalling effect from managers (Skinner, 2008). Ikenberry et al. (1995) is one of the most predominant articles, which study abnormal returns after the announcement of share repurchase. Even though they find out that open market announcement resulted approximately 3.5 percent on average during the announcement, there is high abnormal returns after the short period but also give evidence long lasting abnormal returns. on a four-year span, the average performance was found to be 12 percent, where highest book to market quintile had an abnormal return of 45.3 percent which is significantly higher than average returns.

1.1 Background

Purpose of this study is to examine the Nordic indexes share repurchases announcements from 2013 to 2022 and the market reactions after the announcements on a 1-year and 2-year span. Study focuses on Finland Index OMXH25, Sweden index OMXS30 and Denmark index OMXC25. Share repurchases is widely used in the United States and there is various research from the U.S, but there are only a few research focusing into the Nordic context. The study is relevant since there are increasing interest in paying out the retained earnings through share repurchases in the Nordic indexes.

1.2 Research questions

The main research objective is to see if there is an abnormal return long-term after the repurchase announcements by corporates in the Helsinki stock exchange, Stockholm stock exchange and Copenhagen stock exchange between 2013 to 2022. Thesis is trying to answer to whether there are any abnormal returns for the stocks which uses repurchases as part of their payout policy strategy. Corporates who have announced their share repurchases and their returns on 1-year and 2-year periods are compared to the peer indexes on the same period.

Research questions are as follows:

1. Does share buyback announcements lead to statistically significant abnormal returns in the long term?
2. Do the abnormal returns vary between the Nordic countries?
3. Do financial fundamentals and share buyback announcements explain the abnormal returns?

As the first research question implies, it is highly acknowledged that market has some sort of asymmetric information between the investors and management. Therefore, share repurchases have been seen to be an effective and attractive way to signal specific information to investors. There have been multiple studies abroad which shows the

abnormal returns following the share announcements (Vermaelen 1981; Dann 1981; Ikenberry et al. 1995; Ikenberry et al. 2000; Grullon & Michaely 2004)

Second research question is to see whether there are differences in the relatively homogenous markets such as Nordic countries. Even though Nordic countries are similar in many ways from laws and culture, indexes on the other hand varies a lot depending on if you are investigating for example Finland OMXH25 and Denmark OMXC25.

Third research questions are mainly focusing on whether multivariate analysis can be utilized with connecting the share buyback announcements and specified financial key ratios to obtain abnormal returns against the indexes and if investor or portfolio manager can use these ratios to beat the market and obtain abnormal returns.

Multifactor regression model is used to see whether the results are having significance levels in the study. Variable used in thesis are Book value per share, Debt to equity ratio, Return on equity, Current ratio, Price to earnings and free cash flow. These variables measure the possible correlation between the abnormal returns and the share repurchases.

1.3 Structure of the study

Thesis consists of eight chapters, where each of the parts are contributing to the study closely from either empirical perspective or theoretical.

Chapter two, Literature review presents the capital structure which is following the classical Modigliani & Miller's theory but also goes through the newer ones such as Trade-off theory, pecking order theory and market timing theory. These theories are the main theories for the explanation why organization's capital structure as it is now. Additionally, literature review presents the payout policy which takes into consideration for dividends and share repurchases. In addition, there is chapters for widely known efficient market hypothesis, which are the explanation that there should be no abnormal

returns because the stock prices should reflect all the possible information in the markets.

Chapter three reviews the development of hypothesis which are divided into three perspectives: Market efficiency, financial fundamentals and Country-Specific variations.

Chapter four consist of the used methodologies and describes the data. It analyses the variable and measure but also gives a justification for the study. It will also go through the Multifactor regression model and how it is built. Lastly, the chapter goes through how the validity, and the reliability is considered during the study.

Chapter five showing the research results and goes through the robustness check where we will remove the extreme examples from the data and check how it affects to results. Moreover, the chapter five reflect directly into the hypothesis mentioned in the chapter 3.

Chapter six and seven are discussion part including the comparison of the theories and prior studies. Additionally, chapters go through the possible explanations for the differences but also gives practical implications.

Chapter eight consists of possible future research which give additional value to the market research and to reflect and validate the study's results.

2 Theoretical framework

Literature review will give a comprehensive overview for reader to understand the basics of what needs to be taken into consideration, when corporates announce share buybacks and what effects do they have. First literature review will go through the history knowledge of capital structure and how different theories have been taken their places. This chapter consists also payout policies and the differences between stock repurchases and dividends. Although, payout policies are often referred as substitutes for each other, repurchases have huge signalling effect which is seen as asymmetric information between the managers and investors. Also, literature review will take into consideration investors and dive deep into the impacts on financial ratios, investor returns and taxes and how repurchases affect to those.

2.1 Capital Structure

In a capital market where risk or the value is not affected by the costs such as taxes, transaction costs or financial distress costs, the total corporate risk is decided by the firm's ability to make a profit and earnings. Multiple prior studies suggest that the capital structure may have a significantly impact for the corporate's outcomes and therefore show that above mentioned have influence for the risk. In general, when economic shock appears, firms that have a lot of loans typically are growing slower, have less interest in future investments and therefore are at highest risk of going bankrupt (Baker & Martin, 2011).

Mix of debt and equity are varying widely between industries and firms. There is no single rule for the firms to follow strictly. Nonetheless, companies have higher book debt ratios these days than they were in history for example 50 years ago (Brealey, Myers & Allen, 2020).

According to Brealey and Myers (2020) capital structure have a crucial value when considering maximizing the future value of the company and its overall cost of capital.

For example, if the company need to borrow money from the bank, it immediately affects to the capital structure and how the rights are divided. However, contract between the corporate and the bank borrowing will never restrict the shareholders right to operating and other decisions made in the company.

Baker and Martin (2011) represent three different capital structure theories which are Trade-off theory, pecking order theory and market timing theory.

2.1.1 Modigliani & Miller

Helbaek, Lindset and McLellan (2010) using Modigliani-Miller theory, which states that there are no applicable value differences if you consider the right side of the balance sheet but also understand that imperfection markets, there is a lot of costs which may have importance when considering corporate's value.

Modigliani and Miller (1958) state on their article that the corporate values has primarily been dependent on firms' real assets and how they are able to generate profit, but in addition to firm's management decision making in investments. These statements are usually referred to as the Capital structure irrelevance proposition.

Like mentioned above, Modigliani and Miller constructed their suggestion for the perfect markets. After all, Modigliani and Miller can be seen as a founder of the optimal capital structure and current present assumption of the modern theories (Constantinides, Harris & Stulz, 2003).

Modigliani and Miller (1963) made correction statement for their first assumptions and firms' capital structure since the first models did not consider corporate income taxes. the article added tax shield effects to the calculations because the last model was criticized of not considering previously mentioned. They add that even though there are tax advantages if the corporate is highly leveraged with borrowed money, it is not necessarily the best idea for firm to maximize the amount of debt financing their capital

structure. Lastly, Modigliani and Miller (1963) acknowledge that there is a way for retained earnings to be cheaper if investors own personal taxes will be calculated too and that there might be limitations imposed by lenders. Nonetheless, Modigliani and Miller's correction paper can be seen as a huge reason why the trade-off theory was founded.

2.1.2 Trade-off theory

Trade-off theory mainly focues on how to fully optimize deductible interests from debt. In other words, corporate prefer debt more than equity. Overall, trade-off theory favour tax shield to increase company value based on if there are not any other costs from borrowing which led to maximizing debt financing. There are multiple reasons, why full debt financing can be hard to fully optimize. Firstly, bankruptcy on an economic shock which will lead to harder borrowing negotiations and bigger costs. These costs will increase even if the firm is not yet in a bankruptcy. Secondly, managers have been seen to favour riskier strategies when free cash flow looks to be available more easily. Similarly, when the overinvestment strategies happen, there is evidence for underinvestment during corporates with high debt financing because the gains from investments will roll to the bondholders (Baker & Martin, 2011).

As discussed in 2.1.1 Trade-off theory have similarities, how Modigliani and Miller described the capital structure theory in 1963. One of the main differences is that there is a focus on fiscal consequences with the debt. After all, Corporates tend to choose specific debt ratios which they are being followed to achieve maximised tax shield in opposition to the costs of bankruptcy and straitened circumstances (Constantinides, Harris & Stulz, 2003).

Sunitha (2024) made research for Gulf cooperation council (GCC countries) and their ability to adjust their optimal debt to equity ratio. Compared to developed and emerging markets, GCC countries were faster on their adjustments rather than previously mentioned. Sunitha (2024) found that There are multiple ratios which are the drivers for

the corporate's debt to equity target ratios. Additionally, study resulted that corporate size has a positive impact on debt ratio, mainly since balance sheet and especially asset side is larger than what it is in smaller corporates. These findings are lining with the trade-off theory to give companies the strongest explanatory power on which explains GCC ability to adjust optimal capital structures quite rapidly.

2.1.3 Pecking order theory

Pecking order theory is using an asymmetric information between insiders and outsiders when trying to optimize the debt-to-equity ratio. Usually there is a simple hierarchy in how corporates are funding their businesses. Internal funding is the first option, secondary option is the external debt, and the last possible option is issuing a new share. In other words, corporate managers can issue new shares when they feel that the value of the stock is overvalued. Secondly, managers are trying not to issue new shares when they feel that stock value is undervalued (Baker & Martin, 2011).

Myers and Majluf (1984) propose and accept the above-mentioned corporations have ideal hierarchies to make a perfect decision in finance related questions resulting to the information asymmetricity. Even though issuing shares to market can be a good move from the management, it is often seen very negatively and often drop the stock prices. That kind of asymmetric information usually skew the optimal debt to equity ratio standards. Even though Pecking order theory is using own equity financing regularly, Myers and Majluf (1984) adds that the primarily used hierarchy for financing operations should go as follow: free cash flow, debt financing and the last option would be issuing new shares.

Myers (1984) states that not a single capital structure theory fully explain the firm's financial behaviour trade-off theory often give optimal debt ratio to companies in all industry. despite this, empirical evidence shows that corporate usually deviate significantly from the debt-to-equity ratios trade-off theory gives. Additionally, Myers states that pecking order theory gives better results if one compares how the actual

firms usually finance their businesses. Especially it can be seen in corporates preferences for internal financing and the low amount of share issues. Myers' article has been argued to be used as a cornerstone when comparing different capital structures benefits.

Fama and French (2004) examine what are the corporates who make a practice of issuing new shares to market and what are the triggers for such behaviour. Furthermore, they add that modern finance literature is mainly focusing on two models already described: Trade-off theory and pecking order theory. Fama and French (2004) also found out that both ruling theories have their flaws but suggest based on their result that issuing new equity is not that rare which goes against the pecking order theory. Moreover, equity issues is often seen regularly by the corporates which are not necessarily required to issue new shares. In addition, study suggests that pecking order theory's financing hierarchy takes place. Investments are commonly financed with the retained earnings and debt first and lastly by issuing new shares for the market.

2.1.4 Market timing theory

Baker and Martin (2021) describe market timing to be highly focused on market conditions to be the determining factor for when to issue new shares or using leverage. Moreover, if interest rates are low, borrowing is usually attractive option and when the stock value is high, which is followed by issuing new shares. In addition, Baker and Martin findings support that market timing theory can be used as a short-term strategy with the robust trade-off theory with a good usage of tax shield.

Baker and Wurgler (2000) study support that there is an asymmetric information between market and managers. Additionally, managers are getting their market timings correctly on average and therefore there are evidence of low long period of returns after the equity issues and on contrary, higher long period returns after repurchases. Moreover, the study suggest that the highest incentive reason for market timing is indeed the mispricing in the stock's market price. Although trade-off theory and pecking order theory have received bigger audience as traditional theories of capital structure,

Baker's and Wurgler's study suggest that corporates tend to use market timing as one of the optional alternatives when making financing decisions.

Graham and Harvey (2001) have similar results with Baker and Wurgler (2000). Their study suggests that corporate CFOs are using informational asymmetricity such as stock over- or undervaluation as one of the most important metrics when issuing shares but also use EPS dilution as one of the criteria. What comes to the capital structure analysis, managers utilize financing flexibility and credit ratings to make the best practices in debt policy.

Even though every theory has their own perspective for capital structure, these theories overlap. All the theories above have some acknowledgement on, how cost of financial shocks have impact on companies at high debt ratios and therefore cannot be counted out entirely (Constantinides, Harris & Stulz, 2003)

2.2 Dividend policy

2.2.1 Dividend irrelevance

Modigliani and Miller (1961) have a crucial role in dividend irrelevance subject. They are stating that the major systematic imperfection which happens occasionally in the market is the tax difference between the investors. However, they suggest that managers should give less interest to specify their dividend policy directly to one specific shareholder group just because one investor group can exploit this tax differential advantage.

In other words, Brealey et al. (2020) quoted to the Modigliani and Miller's original text as following:

> MM insisted that one must consider dividend policy only after holding the firm's assets, investments, and borrowing policy fixed. Suppose they were not fixed. For example, suppose that the firm decides to reduce capital investment and to pay out the cash saved as a dividend. In this case, the effect of the dividend on shareholder value is tangled up with the profitability of the foregone investment. Or suppose that the firm decides to borrow more aggressively and

to pay out the debt proceeds as dividends. In this case, the effect of the dividend can't be separated from the effect of the additional borrowing.

2.2.2 Bird-in-hand theory

In certain studies, current dividends are preferred to be more valuable than the future cash flows. In other words, Bird-in-hand theory suggest that stable dividends may have impact on share values and reduce the external leverage since the investors are often willing to pay premium for the stock to be more constant (Lintner, 1962). The study itself is examining the relationship between payout policy, earnings, external debt and the total price of the share. Nonetheless, the results support the idea of bird-in-hand theory and found out that there is a premium in certain kind of stocks, which value stability more than future cash flows.

Bird-in-hand theory is often paralled with the agency- and signalling theories rather than being strictly its own theory. Even though Lintners studies have been done in 1960, dividend policies have not changed dramatically in managers views. Sustained dividend growth is necessary, and lower dividends will lead to lower share prices and therefore done only if necessary (Frankfurter & Wood Jr, 2002).

2.2.3 Tax-based theories

As Mentioned in section 2.2.1, Modigliani and Miller found out that tax advantages are the major market imperfection. Miller and Scholes (1978) argue that there is negative relationship between higher tax rate for dividend and the premium for dividend stocks. Study suggest that tax planning might be a reasonable matter for corporate dividend policy. Even though there are investors who might to benefit from the earlier mentioned, the case is not that straightforward. There are lot of investors who cannot optimize such tax planning to minimize the difference between the dividend and capital gains tax differences.

Additionally, Elton and Gruber (1970) suggested that taxes impact the investors who prefer dividends specifically. Since capital gains are restricted to be used as an income for tax advantage purposes, there are managers who would like to have the right to the dividend. Furthermore, there are several institutional investors who have tax benefits of some sort from dividend and therefore support the analysis results.

Poterba (2004) give empirical evidence for the tax-based theory and give the modern view for the payout policies. The study suggest that corporate tend to change their vision and preferences between the dividends and share repurchases based on what is the current situation with the tax policies from the government.

2.2.4 Signalling effect

Signalling with the payout policy is widely known from the perspective of investors. Miller and Rock (1985) developed a model where dividend policy can be utilized as a message for the corporate managers to signal the asymmetric information gathered by corporate leaders. Furthermore, firms which have a lot of trust for future cash flows can utilize higher dividend to increase the stock value. Even though, higher future expected dividends will increase the total costs for the corporate's also, the firm can put to account increased dividend. Nevertheless, the study shows strong evidence for signalling effect in theory.

Bhattacharya (1979) has similar results with Miller and Rock. Asymmetric information can be signalled to investors with higher future dividends. Proposed model confirms rising costs but also understand that high quality corporates with strong expected cash flows can maintain higher and growing dividends which will signal corporate future value plausibly.

Increasing dividends can be more likely to be seen from corporates which are more stable. On the other hand, there are lesser evidence of a dividend increases from a corporate which are on a more volatile state. Thus, dividend raises will often lead to

higher stock prices where dividend cuts on the other hands lead to lower share prices. Even though higher dividend is reflected in higher share prices, investors are mainly focused on the changes in the dividend policy, not the level of dividend in general. Although, Investors can not only rely on that cuts are always bad for the firm. There is evidence of increase stock values after dividend cuts (Brealey et al. 2020).

Similarly with Miller and Rock (1985) and Bhattacharya (1979), John and Williams (1985) created a model to investigate the signalling effect of dividend and future cash flows. They add to equilibrium the dividends, shareholders dilution but also study the share repurchases. Study goes through why corporate pay higher dividends even though stockholders are diluted when issuing new shares. Furthermore, the study suggest that signalling equilibrium can be found especially when considering the firms with more valuable asymmetric information which will lead to premium prices and higher dividends. On the contrary, corporate with the worse inside information should be priced lower. After all, future cash flow gives reliable results for the outsiders to consider, which corporate management is reliable, and which are not.

2.2.5 Agency theory

Jensen and Meckling (1976) created a ground for the agency theory which observe the shareholders and manager differences on their objectives for corporate which results to the agency costs. Accordingly, to the study, these costs can be narrowed down with debt, but also with capital structure and stock-based compensation.

Jensen (1986) adds that agency costs from debt is often acknowledged but there is no little effort given to research the efficiency of debt as a motivator for managers to control their consumption. Jensen states that managers tend to have a control over the future free cash flow, which can lead to coverless promises of permanent dividend growth. Even more, meaningful free cash flow can end up in a situation where managers are distracted to projects which are not giving solid returns and may even hurt the investors. Therefore, Jensen believes that the corporate borrowing can be a substitute for payouts.

Furthermore, borrowing money to repurchase stocks can end up making organization's management more effective if managers are set up with stock-based compensation or similar contracts. Additionally, interest is tax deductible for the corporation. Lastly, Jensen confirms that waste of free cash flow hurts corporate which have enormous free cash flow piles but have very little to no high-growth projects to invest the most.

Similarly with the ideas given by Jensen, Vernimmen et al. (2017) see Agency theory's main point to be the usage of debt as a leverage to control the corporate management. Since debt is the obligatory to pay, managers are willing to work harder for the payments to be fulfilled. Furthermore, the firms which are on a late state of the corporate cycle, debt can be used to make sure managers are not making highly risky decisions which may harm the company. In addition, managements are highly focused on their ability to do the repayments because of the bonuses given on their compensation plans which are usually given as a stock-based compensation. Moreover, theories made for the dividend policy and capital structure are far from the original simplistic view provided by Modigliani and Miller.

Easterbrook (1984) study the agency theory from a different perspective. Even though his study acknowledges the previously mentioned points in section 2.2.5, it recognises that dividends have a substantial role in monitoring and making risk adjustments. For example, if corporate is in a situation where continued dividends are expected. Therefore, the firm can adjust the capital structure by issuing a new share or borrowing leading to a situation where dividend policy can play a significant role in adjusting the debt-to-equity ratio. Nonetheless, these adjustments tend to transfer to the benefit of a stockholder which leads to lower expenses in agency costs of management.

Rozeff (1982) study the relationship between the growth prospect, beta and the agency costs. Similarly with Jensen (1986) he acknowledges that corporate which are on a newer state and growing ending up to a lower dividend. Furthermore, corporate which are on

a late state cycle of the corporate world tend to pay higher dividends which result in higher agency costs.

La Porta et al. (2000) research the dividend policy considering the differences between the countries. Study suggests that countries where investors are protected more thoroughly with different kinds of laws and regulations end up in a situation where dividends are higher and paid more frequently. Furthermore, study gives promising evidence for agency theory to have an impact in a global world.

2.2.6 Clientele effects

Modigliani and Miller (1961) recognized already in 1961 about clientele effect and made a statement which they highly anchored to perfect market standpoint from their previous studies. Even though they understood that dividend policy might be a reason to abandon the perfect market assumption. About clientele effect they understood that there are people who prefer low-dividend payers, usually young people while on the other hand there is people who prefer higher dividends from the corporate such as retired investors. Additionally, Modigliani and Miller (1961) stated that even if there is payout ratio shortage of one clientele range, investors can adjust their dividend objectives to achieve their target payout ratios by weighting payout ratios from range to range which will end up into a situation where we cannot abandon the perfect market case and therefore approving the statement in section 2.2.1.

Elton and Gruber (1970) confirm the clientele effect, which Modgliani and Miller stated. They also add that it might be costly for corporations to change their clientele which means the differences in dividend policy. Furthermore, Elton and Gruber tested the existence of the clientele effect by using two hypothesizes. Firstly, they analysed the corporate's dividend yield. The second hypothesize they analysed was the payout ratio from the previously used dividend behaviour. Their study supporting the existence of clientele effect, but also support investors' market rationality, where dividend and capital gains are monitored by investors based on their tax brackets.

On contrary, what previously mentioned studies recognized, Clientele effect is not recognized from everyone. Brav et al. (2005) made an empirical study which resulted that there is no supporting evidence of consistent measures from managers to follow the clientele effect, but the study found out that the managers expecting share repurchases to be equally attractive with the dividends for most of the institutional investors. They also added that most of the corporate decisions are made using very straightforward rules, on how the investors would react to different management decisions.

2.3 Payout policy

2.3.1 Substitution hypothesis

Dividend and share repurchase are often described as payout controversy. Where both payout policies indicate a lot about the management's confidence in the market, repurchase announcement have been found to be fluctuating stock market price averaging about 11 percent. MM which are referration from Miller and Modigliani have argued that there is no real value change in payout policy when all the imperfection market conditions have been eliminated. Therefore, Dividends and share repurchase can be seen as a tactical move. Additionally, when considering payout policies, one must consider the investment policy. If there are only a few investment opportunities, shareholders might have trust-related issues about how wisely the manager can use the free cash flow and that may lead to a demanding higher payout number (Brealey et al. 2020).

Similarly with the above explanation, Fama and French (2001) looks U.S corporates and especially changes in the payout policies. Study suggests the significant change in the amount of dividend paying companies compared to corporates practicing share repurchase policy. There is multiple research which gives evidence that confirms the Fama and French's statements. Offering the explanation for the current phenomena,

they find that there are increasing number of firms which are on the growing cycle new firms which are not yet doing any payout policies. Additionally, they find that dividends are not an equally desirable method of distributing profits to the shareholders anymore. Current study is one of the original versions which starts the conversations in substitution hypothesis.

Jagannathan et al. (2000) states that repurchases and dividends are seen as an equivalent type of payout. However, they explore multiple reasonings for why firms choose their payout policy. They understand the basic concept of tax advantages but suggest that payout policy is also made on a different business cycle and suggesting the importance of stock valuation. In other words, repurchases have not yet replaced dividends but these have become an alternative and important source of payout.

2.3.2 Flexibility and market reactions

Lindtner (1956) who was a pioneer in a way for the studies in dividend policies shows over 10 characteristics of how the payout policy have been seen on academic level but also nonacademically written literature and how they affect to the corporate current policies. He also declares about the stability of dividends and made a model on how the firms are making the adjustments to the dividend cautiously. Lindtner found out on his study that there was no significant correlation between the postwar investments and lesser dividend payouts. Like previously mentioned, Lindtner found out that the dividend payouts were quite stable and were linked primarily to profits, sales and free cash flows. Dividend policies were also explained thoroughly in his model which strictly follows the management payout rules. However, Brealey et al (2020) stated that payout policy has currently moved more towards repurchases rather than dividend payments and one explanation could be the tax benefits of repurchases.

Growing share repurchases cannot be explained solely with one theory but rather it can be seen as a product of many reasons for example, tax benefits, signalling and flexibility of share repurchase announcements. From 1 980 the stock repurchases have seen to be

growing exponentially compared to the dividend payout growth and it have been seen a substitute for dividends. Empirical evidence suggests that there are multiple reasons for the specific payout policies and how they change between corporate to corporate. For instance, information asymmetry, taxes are differentiating on a country basis but also one factor could be how the corporate governance have been built on a country level and on a corporate level (Brealey et al. 2020).

Baker and Weigand (2015) suggest that future theories are probably united theories which have characteristics from both, the old classic styles and modern theories. Study shows that the well-known theories of MM dividend irrelevancy, signalling effect and costs from agency are still somewhat relevant, modern corporates are using share repurchases as a flexible alternative increasingly.

Dividends are less volatile than repurchases due to their consistency. Repurchases on the other hand appear more often in the rising markets but drop in the recessions even though their flexibility and importance of the valuation when using repurchases as a payout is widely known at least in the phase between 1980 and 2000. In addition, dividends are paid usually from the firms with sustainable cash flows. On the contrary, repurchases are used especially, when there are temporary cash flows available and therefore can be seen as a short-term strategy. Furthermore, repurchases are often seen from the firms who tend to have significantly higher standard deviation on their cash flows resulting to the suggestion that there are continuously lower retained earnings on the firms repurchasing than those firms who have sustainable dividend growth (Jagannathan et al. 2000).

There are several studies which focus on the relationship between share repurchases and market reactions in United States. Repurchase tend to have some abnormal positive returns which can be explained with the signalling effect. taking consideration that managers usually have asymmetric information, but also considering the flexibility of the share repurchases, that can signal the possible underappreciation in the stock price. On

the side, repurchases can lead to decreasing agency costs but also can be useful tool to control the firm's capital structure (Vermaelen 1981).

Similarly, Ikenberry et al. (1995) give evidence to the abnormal returns affecting not only short-term, but also long-term if the corporate is undervalued. Additionally, they find that managers are often very good at timing the market with the share issues but also when buying back their own shares. Even though the top book-to-market quintile have given an exceptional 45,3 percent on their study in a four-year period, there are managers who are overestimating their stocks' actual fair value resulting to lower long-term returns. Furthermore, the study suggest that the market response is relatively small when corporate announces the share repurchase totalling only a 3,5 % move in the stock price.

Likewise, the research from 1995, Ikenberry et al. (2000) study the abnormal returns in Canada and find the comparable returns in the stocks. The study suggests that there is similar behaviour in investors, where the abnormal returns can be found not only short-term, but also long-term, at least in corporates who are undervalued on the market. Both studies from Ikenberry et al. from 1995 and 2000 shows that the share repurchase can be found to be a very effective way to correct the mispriced share prices.

2.3.3 Empirical evidence on payout trends

Grullon and Michaely (2002) have research that share repurchases have been seen lately to be a better option for payout policy than what dividend would have been. Especially that has been seen in a younger corporate. They also acknowledge that stock repurchases have been primarily funded what would otherwise have been used to make dividends larger. In addition, payout policy saw a turning point in 1999 and 2000 where share repurchases was used more frequently than dividends. Moreover, study suggest that share repurchase is a replacement for dividends rather than complementary to each other. Also, the study approved that the firms which announce dividend cuts tend to

have smaller negative stock price drop if company announces dividend cut and replace it with stock repurchase.

Taxes have been seen as a primary reason for share repurchases to becoming more popular. Even though, taxes are more favourable in share repurchases, only about 20 % of the U.S. Financial managers says that it has any effect on the payout policy. However, there are some evidences where financial managers are taking it seriously when government chances their tax policy. In 1987 case Australia where tax penalty was taken out, it increased the dividends thoroughly. Additionally, in 2011 Japan, where marginal tax rates were changed for individuals owning a large part of the company's shares, it immediately affected to the dividend policy. Nevertheless, In United States, there was a high dividend payout in 1960-1970 even though the taxes were higher back then. Like previously mentioned, share repurchases have been accelerating in 2000 (Brealey et al. 2020).

Skinner (2008) finds that the common dividends can be shortly replaced by flexible share repurchases. He suggests that there are still large profitable corporates who payout their retained earnings as dividend because there is lesser high-return project to invest in. Even though the dividends are high on these corporate, they are moving towards share repurchases also. Nowadays there are firms that only payout most of the retained earnings as repurchases and have not ever paid any dividends. One of the main reasons found for the old corporates to pay dividends is due to the history of dividends they have. Furthermore, Skinner (2008) discusses that here might be a time where normal dividends are completely disappeared and will be replaced by share repurchases.

2.4 Efficient Market Hypothesis

2.4.1 Forms of market efficiency

Fama (1970) Presents efficient market hypothesis using three different levels. Firstly, there is a strong form which consist of all the market information but have all the

monopolistic information which can be important for individuals to make a price assumption. Secondly, Fama introduced the semi-strong form. This kind of form includes all the information which are easily obtained by individual from market. Lastly, there is a weak form, where individuals only have the share's historical prices or return fluctuations.

Later Fama (1991) updated his view with 20 years of empirical evidence. The most important evidence are the daily returns event studies. Especially this kind of study reveals, how fast the adjustments are when market receives the new information and therefore supports the idea of efficient markets. Additionally, he finds that joint-hypothesis problem and the different asset-pricing models' inconsistency are the main reasons why performance evaluation tests are no warranted. Also, since market efficiency are researched increasingly, the need for performance evaluation methods is necessary increasing. That said the reason for the importance is the passive investment strategies and their popularity. Lastly, there are statistically significant result evidence for the correlations between previous returns predictability and macro changes on a short period of time, but the correlation fades away when researching the longer periods. However, more reliable information can be gathered for example with the D/P, E/P, interest spreads and the risk premiums. These variables explain the differences in returns more precisely.

2.4.2 Implications for share repurchases

Efficient market hypothesis is widely argumented topic, which have empirical evidence to support the idea but also having a lot of newer studies which challenge the original idea. Jegadeesh and Titman (1993) study the momentum strategy and find a positive return in 12-year period if investors buy winners but also find negative returns when investing to the stocks going to the opposite directions which challenge the original idea. Similarly, the later study from Ikenberry et al. (1995) find supportive evidence to market underreactions to open market share repurchases and therefore also challenge Fama's semi-strong form. Malkiel (2003) confirms the basic Efficient market hypothesis but

recognize the anomalies such as momentum and value investors. Malkiel finds the marginal amount of evidence which support the idea of low market efficiencies in market. Although, active investing strategies are making systematic abnormal returns, for most of the investors passive investing strategies tend to be the better options which support the efficient market hypothesis.

Later, Chan et al. (2010) find supportive evidence that corporate can use the share repurchase announcements to gain access to market overreactions. Therefore, asymmetric information can be used to boost the share returns even though share repurchase announcement will not be used or used very minimally. Additionally, this confirms behavioral finance which is comparatively very new research topic. Similarly, Shiller (2003) study behavioral finance. Empirical evidence from price bubble, overreactions and irrational behavior by investors have challenged the efficient market hypothesis regularly. Even though efficient market hypothesis argues the prices to reflect all the available data, the abnormal movements in stocks negatively or positively are affected by investors psychological factors such as confidence or herd behavior. Lastly, Shiller argues that these factors have more impact on price reflections rather than the original efficient market hypothesis.

2.5 Literature summary

Theoretical framework gives a brief overview of the commonly known theories which affects the investors behaviour when companies announce the share repurchase decision. Even though it is highly recognized that announcements are mirrored to asymmetric information of highly potential undervalue of the stocks, results vary because corporates might overestimate their stock's value.

Modigliani and miller (1958) are the most recognized study of how the capital structure is established. Hypothesis that corporate's decision in the financial structure is not relevant in the perfect markets are challenged with the theories such as trade off or

pecking theory. Previously mentioned theories were considering varying variables such as taxes, information asymmetric and imperfection markets. Even though the classical point of view is highly advocated, newer studies about optimal capital structure tend to prefer moving variables to be explanatory.

Dividend policy is widely studied, but the results are very contradictory. Where Modigliani and Millers (1961) classical study are augmenting that in a perfect market, the dividend policy does not affect corporate's value there are theories such as signal theory and agency theory which are against the classical view of Modigliani and Miller. For example, Jensen and Meckling (1976), Jensen (1986) and Vernimmen et al (2017) argue that dividend policy can be used as a leverage to control the corporate management but mainly acknowledge the differences between the management and the shareholders targets.

Difference between the dividend policy and the payout policy is that the latter is considering the share repurchases also as a profit-sharing tool. Jagannathan et al. (2000) study that corporates payout policy may vary because the different corporate lifecycle but understand also the tax advantages which follow the share repurchases. Additionally, Ikenberry et al. (1995) and (2000) show evidence of the abnormal returns in shorter and longer time periods when corporate announces the share repurchases.

Efficient market hypothesis is commonly used literature point of view when considering about the stock returns in general. Fama (1970) and Fama (1991) are frequently used research which advocate the market efficiency. On the other hand, previously mentioned studies such as Ikenberry et al. (1995) (2000) present the market inefficiency since abnormal returns can be achieved with the information which market have received.

All the mentioned literature headlines used above are tangled together. Where capital structure, dividend policy and payout policy reflect the management strategic choices

which considers risks but also acknowledge the capital structure and different point of view by management and the investors. On the contrary, Efficient market hypothesis give the theoretical framework that argues that markets are very efficient. Nonetheless, empirical studies suggest that information asymmetricity and investors' behaviour can lead to different results compared to what was expected by market participants.

3 Development of hypotheses

The theoretical part of the study with the previous empirical findings suggests that the all the available information in the market is not fully priced in the stock market immediately after the announcement. Empirical part of the study is testing the efficient market hypothesis and signalling theory to better understand if the share buyback announcements are completely priced in the stocks.

3.1 Market efficiency

Prior studies related to semi-strong efficiency in the market suggests that all the information available in the market are being reflected in the stock prices immediately after the announcements. In contrary, several behavioural finance studies suggests that the previously mentioned is not necessarily true if the announcements are complex such as share buyback announcements or complicated capital structure changes for example following delays in the price movements.

H_1: Positive abnormal returns are following the share buyback announcements over a two-year horizon in the Nordic companies.

3.2 Financial fundamentals

Market reactions are varying based on the creditability of management. Where signalling theory only suggest the previously mentioned, investors and portfolio managers can use key figures from corporate financial to measure if the notification from the company is plausible. Based on role of information asymmetry, announcements should be thoroughly investigated through financial figures to understand how announcements could possibly offer the abnormal returns.

H_2: There is a significant correlation between how financial fundamentals such as free cash flow or debt to equity ratio is formed over a long period of time and how the abnormal returns changes based on the key financial figures.

3.3 Country-specific variations

While the Nordic countries behave very similarly in many ways, differences in laws, market behaviourism and industries do have an impact on the abnormal returns. If considered the semi-strong market efficiency, publicly shared information should be integrated quickly and therefore no huge variations should exist. Nonetheless, prior studies suggest that the local market dynamics have a crucial role in the way market works.

H_3: The variation in specified Nordic countries varies based on the industries included in the leading Nordic indexes.

4 Data and Methodology

The purpose of this chapter is to go through in depth the data and to strengthen the reader's reliability for the current study. Additionally, this chapter is trying to improve the readers ability to validate the data.

Chapter three offer data research approaches. This is followed with the data gathering methods. Furthermore, data interpretations and propose the general reliability of the results are shown. Subsequently, the different kind of repurchase reasons are considered. Lastly, chapter analyze the multivariate analyses and how it is being built but also explain previously mentioned in detail.

4.1 Data gathering and event study

Nasdaq's website and the companies' releases are mainly used to find the repurchases from the period of 2013 to 2022. The indexes consist of three large indexes from Nordic countries, OMXH25, OMXC25 and OMXS30. Two other Nordic indexes are excluded from the data. The data is mainly hand-picked thoroughly using Nasdaq's website as main tool to find the share repurchase and after finding the company releases from their websites or investor relations to be exact to make sure that the data is valid.

The study is not taking consideration whether the share repurchases have been used for example to retire the shares, to compensate the employee or executives or to use them as mergers and acquisitions and so on.

Event study is the main goal for this thesis. Therefore, Mackinlay's (1997) widely known methods are used to investigate if the event has been occurred. Since the study is based on the share repurchase announcements, the date of the announcement release is the date t-0. Additionally, t+1 and t+2 will be the determining factors, how much the returns are from the period of year 1 and year 2. In other words, the event windows are 365 and 730 days. The reason why the event windows are quite long is that the current study is

investigating whether there are changes in the abnormal returns of the 1 and 2 years periods after the announcements mainly due to the fact that if the announcements have worked properly if you consider the agency theories and if the market likes the payout policies of current corporates included in the indexes. Additionally, since the markets are not open the entire year, therefore event windows are 252 for 1 year and 504 for 2 years.

4.2 Abnormal returns

Study is researching Nordic indexes and therefore the abnormal returns are calculated based on the average returns of the indexes during the period of 2013 to 2024 and the returns of the stocks are then compared to their respective indexes. The indexes' returns are calculated based on the share repurchase announcement and the abnormal return is then calculated compared to how much the original stock returned during the period of 1 year and 2 years.

Since the study is investigating longer than 1-year period, it is more meaningful to use buy and hold abnormal returns (BHAR-method) instead of cumulative abnormal return (CAR-method). Therefore, the equation is as follows:

$$BHAR_{i(0,T)} = \left[\prod_{t=0}^{T}(1 + R_{it}) - 1\right] - \left[\prod_{t=0}^{T}(1 + E(R_{it})) - 1\right]$$

- $T = 252\ (1\ Year)\ or\ T = 504\ (2\ years)$
- $R_{it}\ is\ the\ return\ of\ firm\ i\ on\ day\ t$
- $E(R_{it}) is\ the\ return\ of\ the\ reference\ index\ on\ day\ t.$

For the multivariate analysis, all the data was gathered from the Orbis to get similar results from the corporates. Since Nordic indexes have lot of Banks and insurance corporates, D/E ratio, current ratio and Free cash flow are not necessarily the best key figures to take to describe the current position for these companies. For that reason, observations averages were used in the multivariate analysis for these corporates.

4.3 Data interpretation

total amount of 27 repurchase amount were excluded from the data, and the reasons are as follows: DSV A/S data was excluded. DSV A/S was excluded because they announced total amount of 26 repurchase announcements resulting it to be almost informed on a quarterly basis which makes it hard to validate the abnormal returns to happen because of share repurchases announcements. Also, one of the Simcorp A/S from 15.2.2022 announcement was excluded because the corporate delisted and therefore the stock was removed from trading. The stocks' last trading day was 30.10.2023 and the full 2-year timespan would not have been fulfilled.

Because two-year period will have multiple other factors which affects the prices constantly such as dividend announcements, result warnings, Mergers & acquisitions, the abnormal returns cannot be fully explained by the share repurchase announcements. Even though above-mentioned reasons might have impacts on returns, it can be known by the managements who are considering the share repurchases and be a factor why the share repurchases are being made in the first place.

4.4 Multivariate analysis

To get access to more versatile and extensive results, multivariate regression analysis is used. Statistically this method is used to examine the relationship between a dependent variable and different kind of independent variables together. Multivariate analysis is widely used tool to measure statistical significance of the variables. For the comparability, each country will be done separately and will be replicated to maintain the similarity. The multivariate models used for the thesis is as follows:

$$Return_{\{1Y,i\}} = \beta_0 + \beta_{1(BookValuePerShare_i)} + \beta_{2(DebtToEquity_i)} + \beta_{3(CurrentRatio_i)} + \beta_{4(ROE_i)} + \beta_{5\left(\frac{P}{E_i}\right)} + \beta_{6(Free\ Cashflow)} + \varepsilon_i$$

Where β_0 is the intercept term, β_1 to β_6 equals to independent variables and lastly the error term is ε_i.

4.4.1 Book value per share

All the independent variables will be thoroughly introduced this subchapter. All the independent variables are measuring different aspect of corporates financial status and are used when making investment decisions.

$$Bookvalue\ per\ share\ (BV\ PS) = \frac{Total\ equity - Preferred\ Equity}{Total\ shares\ outstanding}$$

Book value per share is used to determine the baseline for whether the price of the stock is undervalued when compared to the total shares outstanding. It measures the situation where all the corporate assets and liabilities are realized, and the firm is terminated. Basically, higher book value per share indicates the undervaluation where lower book value per share suggests the opposite. Lower book value might indicate that the corporate is on a high growth phase where future cashflows and equities are expected to rise quickly and therefore future profitability is following.

4.4.2 Debt to equity

Debt-to-Equity (D/E) are measuring capital structure which is the one main point in the study literature review. There are many ways to finance the business, but debt seems to be a good option, for example based on the agency theory where management must consider debt ratios when making financial decisions. Debt to Equity is calculated as follows:

$$\frac{D}{E} = \frac{Total\ liabilities}{Total\ shareholders' equity}$$

In other words, D/E calculates the amount of debt divided by the amount of total shareholders' equity. Additionally, the measure is good when thinking about the corporate's possible insolvencies. Where higher D/E ratio suggests the corporation to fund their business with external funding, lower D/E ratio therefore means lower direct financial costs and lesser financial risks. Even though agency theory justifies debt to be an encouraging way to avoid agency costs, lower D/E ratio can give flexibility for the company's profit-sharing methods.

4.4.3 Current ratio

Current ratio is very good ratio to measure whether corporates can pay all their short-term debts. Similarly with the D/E, the main purpose for the ratio is to understand whether the corporate is going to insolvency or else can survive the requirements from creditors. Current ratio is calculated as:

$$Current\ ratio = \frac{Current\ assets}{Current\ liabilities}$$

Elevated current ratio can reveal a few questions to the investor. Firstly, high current ratio can suggest well-positioned company with extensive excess cash and receivables. Secondly, it can signal to investors that corporation might be ineffective when considering investment possibilities. Even though there are multiple ways to think about the high current ratio, in bad financial times, well positioned corporates tend to surpass downturns. In addition, good liquidity can be used and shared with investors through share repurchases. Lastly, low current ratio corporates will have hard time meeting obligations by the creditors.

4.4.4 Return on equity

Return on Equity (ROE) is commonly used to measure how well the owners' capital is being utilized by the managers. In other words, return on equity calculates the amount of profit made by the company for invested equity. Roe is calculated as:

$$ROE = \frac{Net\ Income}{Total\ shareholders' Equity}$$

There are multiple ways to interpret the ratio. Typically, good return on equity shows strong utilization of a business where shareholders are recognized with a significant net income compared to the Equity invested by the shareholders. However, the ratio can show corporates with a big debt burden where firms' capital structure is leaning towards debt money. Additionally, very high return on equity can still be a good measure where the corporate has very high net income compared to the total equity.

Furthermore, low ROE can indicate weak profitability. Another note of the weak return on equity is that the corporate can show inconsistent incomes which may lead the investors to a bad spot. Firms may have a few good financial years where profitability seems to be remarkably good, which leads to a good return on equity but when considering the return on equity, investors tend to calculate the ratio from multiple years so that the inconsistency can be eliminated from the equation.

By the same token as the current ratio, return on equity is a good measurement whether the corporate is in a spot where it can purchase its own shares to recognize its' investors. Improving ROE may indicate that further payouts from corporations may be more generous. Alternatively Low return on equity may indicate that the future payouts might be stagnant.

4.4.5 Price to earnings

Price to Earnings (P/E) are being used by analysts and investors to determine if the company's share is overvalued or undervalued compared to its earnings. Additionally, it is often compared to share historical data to analyze the above mentioned. The ratio measures the price of the single share to its earnings. Equation is as follows:

$$Price\ to\ Earnings\ \left(\frac{P}{E}\right) = \frac{Market\ value\ per\ share}{Earnings\ per\ share}$$

High Price to earnings ratio can be seen often when investors are expecting future earnings to increase. In contrast, Low P/E ratio can indicate stock undervaluation. There can be multiple justifications for the ratio to be lower such as low expected growth potential, low risk business with low potential upside but also declining earnings or market situation.

Additionally, when considering Price to earnings, it shows the investors' willingness to purchase the stock at certain value. Furthermore, P/E ratio is not a useful tool when considering the corporates' payout policies since it will not give any meaningful tools for management to make the decision based on the fluctuation of Price to earnings ratios.

4.4.6 Free cash flow

Free cash flow is the 6th variable for the multivariate analysis. It is a useful measurement for the corporates to make payout policy decisions. Free cash flow is the amount from where all the operational costs and capital asset maintenance have been removed. Furthermore, the free cash flow measures the amount which is left and can be utilized to pay dividends or other capital expenditures. The following equation is used to calculate free cash flow:

$$Free\ cash\ flow\ (FCF) = Operating\ cash\ flow - Capital\ expenditures$$

Where low free cash flow may indicate that the corporate is having hard time funding their operations, mandatory additional investments from the shareholders or lenders but it can also indicate inefficiency corporate. On the other hand, High free cashflow gives flexibility to managers to make decisions on their payout policies since the operational funding has been managed with consistent and effective operational business.

From the above-mentioned variables, free cash flow might be the most important factor. The most meaningful reason is the flexibility which comes from the good free cash flow. Moreover, Jensen's (1986) study examines the free cash flow hypothesis. It argues that the difficulties with the overinvestments or agency costs can be reduced with strong free cash flow since the surplus of money can be utilized to engage in a certain kind of payout policy and to pay out extra for the shareholders.

4.5 Reliability and validity

To taking into consideration the reliability of the thesis, results were investigated thoroughly. There were multiple actions to consolidate the results reliability and validity.

During the data collection, factors such as the effectiveness of the share repurchase announcements were considered which caused the exclusion of the data points. Additionally, almost 10 years of data gathering eliminates extreme cyclical fluctuations. Moreover, as mentioned in the chapter 3.2 data gathering, data was gathered thoroughly considering all the available data from the NASDAQ, which were collected and analysed but also corporates' websites were used if needed to maximize the reliability of the data.

Internal validity is strengthened with the thoroughness of the multivariate analysis. It considers multiple independent variables which may cause stock prices to fluctuate differently than what was anticipated. Firm-specific characteristics such as capital structure and the status for corporates' ability to do free cash flow are thoroughly considered. Moreover, the current variables try to boost the confidence that the

observed differences on 1- and 2-year stock performances are somehow attached to the announcements rather than some other aspects of macroeconomic shifts or corporate individual figures.

External validities are often strengthened by using prior peer-reviewed studies where similar cases are investigated. Longevity of the research improves the validity of the research because it excludes most of the economic fluctuations. Additionally, the period is including notable volatility periods where return of the stock varies a lot for example the covid crash of 2020 or trade war positioned in 2018. For that reason, robustness check is done by removing the outliers from the sample meaning a total of 4 observations were removed during the test.

5 Results

The following chapter will investigate the empirical findings from the analysis. Firstly, we go through the descriptive statistics and the overall picture of the findings and state the biggest found outliers. Secondly, we analyse the sample's abnormal returns and statistical significance. Lastly, we dive deep into country-specific findings but also rising the robustness and how the results would change if the extreme results were removed from the findings but also study results from multivariate analysis.

5.1 Descriptive statistics

The study examined Nordic companies that are listed on the stock exchange but also included in the country's indexes. Finland's OMXH25, Sweden's OMXS30 and Denmark's OMXC25. The sample begins from 2013 to 2022 and goes through all the publicly noticed share buyback announcements from the corporate's included in the indexes. The total amount of share buyback announcements was 167 after the excluded observations mentioned in the chapter 3.3. The following table below show the findings:

Taulukko 1 Results after 1-year and 2-years

	Year 1	Year 2
Average abnormal return	4,06 %	5,65 %
Median abnormal return	1,97 %	5,97 %
Standard Deviation	0,31	0,44
Kurtosis	6,47	0,60
Skewness	1,52	0,55
Min abnormal return	-57,57 %	-75,97 %
Max abnormal return	185,46 %	148,37 %

An examination of the full sample (N=167) showing the abnormal results to be positive on a one-year and two-year observations. Average abnormal return after the year 1 was

4,06 % growing moderately to 5,65 % for year 2. Even though the returns were higher, which can be explained with the growing standard deviation. Mentioned results reflecting modest growth in variability but also differences if comparing only corporates.

Table 1 shows the variability in the results. Minimum abnormal return during the period was -57,57 % for the year 1 and -75,97 % respectively for the year 2. After the covid crash of 2020, few of the companies benefited the global market fluctuations and difficulties. For example, Maersk A/S was one of the main characters because of the cargo challenges but then returns were normalising at the beginning of 2022 leading to a massive decline in abnormal returns in one year period. Similar story explained the GN store Nordin decline in 2-year period, specifically the period from 2021 to 2023. Furthermore, challenges in monetary policy and the inflation resulted rising interest rates which made people to reassess the market situation dramatically. Additionally, the results shows that even though, management tend to have asymmetric information and should signal the information, Jagannathan et al. (2000) argued that repurchases appeared more often in a long bull run rather than bear market. Maersk had a long bull run, which might have led to huge losses in firm's capital if the announcement had been poorly executed in wrong time span.

Maximum abnormal return during the same periods were 185,46 for year 1 and 148,37 for the year 2. Both maximum and minimum results emphasize the risk profiles for the stocks in general rather than profits to be only consequence of the announcement.

Observations' Skewness and kurtosis suggest that the data points to have a high positive skewness and kurtosis where the first-year's skewness to be 1,52 meaning a long right tailed observations to occur. In other words, few of the data points explaining the results received. Additionally, kurtosis after first year is significant being 6,47 which suggest that the data is significantly different than normal distribution are expecting. However, multiple global events explaining the huge movement in the market, for example Trade war in 2018 which was affecting the whole global market even though it was mostly

related to China and United States. Also, many of the datapoints was before and after Covid and therefore the market fluctuations occurred more often.

Even though the first year's skewness and kurtosis are higher than normal distributions expect, the interesting part from these numbers is the fact that both numbers normalise drastically in the second year where skewness is 0,55 and kurtosis 0,6. This could be related to the fact that immediate reactions in market may happen during the first year but the uncertainty would disappear the following year.

5.2 Empirical evidence

This subchapter investigates whether the empirical evidence suggest the null hypothesis(H_0) to be correct and the Fama (1970) Presented efficient market hypothesis efficient market hypothesis is real over the fact that there should indeed not be any abnormal returns and BHAR to be zero after the share buyback announcements.

5.2.1 Market reaction to announcements

To test the hypothesis, the frequently used one-sample t-test was utilized. The following table shows result's significance levels:

Taulukko 2 Summary of one sample T-test

	Year 1	Year 2
Finland (N = 47)	0,127	0,392
Sweden (N = 48)	0,308	0,763
Denmark (N = 72)	0,614	0,120
Full sample (N = 167)	0,093*	0,100

Notes: Significance levels are denoted by * for p < 0,10, ** for p < 0,05 and *** for p < 0,01

For the first year, average buy and hold abnormal returns were 4,06 percent resulting the significance level of 0,093* where second year average abnormal return to be 5,65 percent and

full sample resulting 0,10, which are at the threshold of marginal significance. Other sample approaching the marginal significance levels and being indicative are Finnish 1-year BHAR being 0,127 and Danish 2-year BHAR being 0,120 but do not cross the threshold mainly due to the high return variance of the data. Nonetheless, the results are showing weak evidence of statistical significance of the results, announcements seem to have some positive effect on the corporate's market value on the tested sample.

As previously mentioned in subchapter 5.1 about high kurtosis (6,47) and positive skewness (1,52), these numbers are directly affecting the power of one sample t-test and the significance levels. Even though the normalising skewness and kurtosis on the second year, rising standard deviation on the second year minimizes or even removes the effect of normalised kurtosis and skewness. As (Lyon et all. 1999) states about the long-term studies, this phenomenon typically occurs in the long-term studies rather than results to be extraordinary.

Additionally, the table 3 shows the differences between median and mean:

Taulukko 3 Means and Medians of the sample

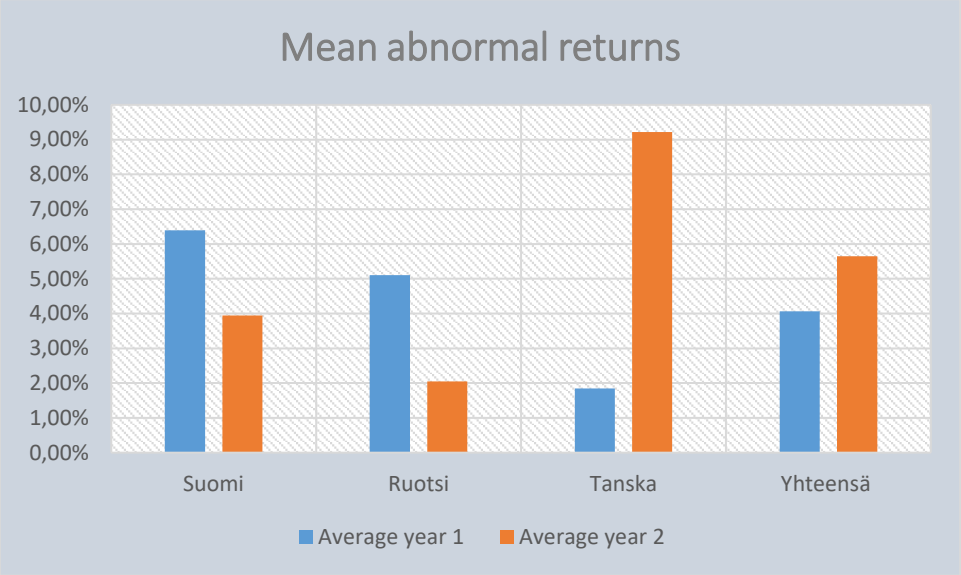
	Median year 1	Mean year 1	Median year 2	Mean year 2
Finland (N = 47)	1,47 %	5,56 %	5,56 %	3,94 %
Sweden (N = 48)	4,46 %	5,40 %	5,40 %	2,05 %
Denmark (N = 72)	-4,48 %	11,49 %	11,49 %	9,21 %
Full sample (N = 167)	**1,97 %**	**5,97 %**	**5,97 %**	**5,65 %**

Based on the results, null hypothesis cannot be discarded on the significance level of 0,05, individual corporates have significant positive affect on the results. As table 3 show, first year median for the first year is closer to zero and being 1,97 showing that the null hypothesis cannot be rejected. Additionally, the fact that median is higher than the mean for the second year suggest that announcement may lead to abnormal returns after all. However, Denmark's median 11,49 and the total median being higher than mean suggest that the sample is skewed on the left. Therefore, the next subchapter 5.3 will investigate country-specific numbers more deeply to understand whether the full year returns for first and second year are primarily focused on the specific markets.

5.3 Country-specific numbers

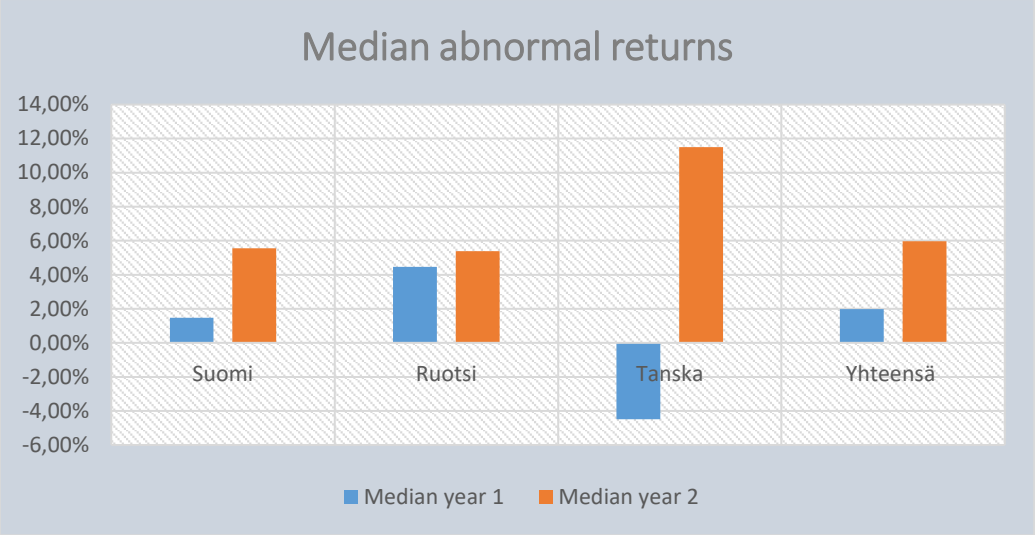
Subchapter 5.3 is mainly focusing on the differences between the Nordic countries which tries to show the most extreme cases which may affect to the significancy levels. Table 4 shows the mean abnormal returns country by country.

Taulukko 4 Country-specific Mean AR



Additionally, table 5 shows the median values and give more perspective to the extensive changes in the review if comparing the returns country by country:

Taulukko 5 Country specific Median AR



5.3.1 Finland

Part sample from Finland shows few of the interesting points. Firstly, the abnormal return was the highest for the first-year being 6,4 percent even though the median was only 1,47 percent. Since the mean is drastically higher than the mean, suggesting that there were few of the corporates, which made a successful announcement in the right moment which lead to higher abnormal returns than the index itself without taking These numbers shows that there was few corporates which managed to accomplish their announcement policy without taking a position on what the share buybacks were ultimately used for. For example, Sanoma Oyj made extraordinary well with the announcement in 2015 and 2020. Furthermore, March 2020 announcement from Sanoma Oyj was highly successfully timed because of the covid crash due to the rise that came later.

Even though Finland's first year's P-value (0,127) doesn't have statistical significancy, it is indicative level. For the second year, results came stable indicating that the Corporates from Finland tend to have faster and sustainable realisation period from the announcements.

5.3.2 Sweden

Sweden's part sample was highly marked by volatility, which explain the kurtosis shown in chapter 5.1. Numbers show extreme success stories, but also failures which were rising standard deviation from its mean. The most significant datapoint were the Evolution (EVO) which made highest abnormal returns being 185,46 percent for the first year and 142,01 percent respectively for the second one.

Sweden part sample's Buy and hold abnormal return 5,10 (1-year) percent and 2,05 (2-year) percent were higher than in Denmark. Despite the sample size of Sweden, the results show no statistical significance (0,343) for the first year and (0,468) for the second due to the higher standard deviation.

5.3.3 Denmark

Part sample from Denmark for the first year looks very inconsistent. Even though the sample was the biggest with the most observations (72) and the median abnormal return to be only -4,48 percent with the P-value of (0,614) shows indeed that the numbers occurrence were random. However, situation changed significantly for the second year where the median went from negative to 11,49 percent positive and the p-value to dropping nearly at the threshold of the significancy levels. One could argue that the Efficient market hypothesis by Fama (1991) starting to occur more meaningfully in the second year resulting such differences in the P-value and therefore the significant abnormal returns on the second year.

The results from Denmark highly suggest that the markets were reacting gradually to the information about the share buyback announcement and the actual abnormal realised on the second year.

5.4 Regression analysis

Under chapter 3.4 study went through the multivariate analysis and the variables which was under investigation behind the corporates to have better understanding how different key figures might affect to the companies' payout policy and how the Buy and hold Abnormal returns (BHAR) are connected to these firm-specific characteristics. Especially this study was interested in how the capital structure and liquidity affect to the payout policy.

Firstly, the correlation analysis was conducted to estimate multicollinearity among the explanatory variables. The correlation matrix can be seen on the table 6 below:

Taulukko 6 Correlation matrix

Correlation matrix	*Book value per share*	*D/E ratio*	*Current R*	*ROE using P/L before tax*	*P/E*	*FCF -->1 000*
Book value per share	1					
D/E ratio	-0,09935	1				
Current R	0,002365	-0,25467	1			
ROE using P/L before tax	0,027481	0,023786	-0,2863	1		
P/E	-0,11114	-0,08214	-0,0626	0,029901	1	
Free cash flow	0,838647	-0,05104	-0,02751	0,175534	-0,1136	1

Most of correlations between the variables are not significant. Correlation between Debt-to-equity ratio and Price to earnings ratio is negligible at -0,082. Moreover, correlation between free cash flow and book value per share approaches the significancy levels (0,839) which indicates stronger relationship than other variables.

Hair et al. (2010) states that 0,90 significance level is often used to measure the strong significancy levels in financial literature. Even though the relationship is strong in the correlation matrix, it does not be enough to reach the general critical threshold of 0,90 which is used regularly.

5.4.1 Regression model estimates

Regression model was estimated using Buy and hold abnormal return for the 2-year period as the dependent variable to see if there is statistical significancy on the long term. Above model estimates whether there are any prediction possibilities if the profitability, and geographical location is considered. Adjusted R^2being 0,0248 meaning consistency if considered the prior long-term stock performance studies. Although, small portion of the total variance received are explained by the model itself, the significance F (0,089) meaning that described model is statistically significant at the 10 percent level.

Taulukko 7 Regression coefficients and significance levels

Variable	Coefficient (β)	T-statistic	P-value	Significant level
Intercept	0,079100	1,136200	0,257600	-
Book value per share	-0,000013	-2,067000	0,040300	**
D/E ratio	-0,060900	-1,548000	0,123600	-
ROE	0,001500	1,078500	0,282400	-
Dummy variable	0,041000	0,531600	0,595700	-

From the table 7 above, predictions can be made from book value per share since the significancy level for the abnormal return of 2-year period is at the 5 percent significancy levels (p = 0,0403). Additionally, Lower book values tend to have higher abnormal returns rather than the more mature balance sheets. Even though if that is the case, market had low interest rates and favourable market situation for growth stocks in general. Negative coefficient suggesting the investors willingness to place a higher premium on growth rather than traditional less risk balance sheets during the announcement periods.

Even though model predicts book to value to be less favourable for the abnormal returns during the 2-year period, liquidity can be seen as an advantage with the negative coefficient of -0,0609 meaning that the firm's ability to generate abnormal returns might be impeded with the higher financial leverage. In other words, investors might be more cautious if the corporates having higher leveraged positions when they announce share buyback policies.

Interestingly Return on equity or dummy variable (Denmark) did not show significancy levels on this model implementing firm's country or historical profitability did not have meaningful influence on this model.

5.5 Robustness check

Since the data had few of the deviated observations, robustness check is done by excluding the outliers (1 percent) of the observations from both ends. Thus, the total amount of observations was 167, total amount of observations excluded was 2 from both ends. The key figures after the removal are shown in the table below:

Taulukko 8 Robustness check

Robustness check	Year 1	Year 2
Average	3,10 %	4,924 %
Standard deviation	26,23 %	40,787 %
Median	1,97 %	5,974 %
Kurtosis	0,216253	0,092346
Skewness	0,495195	0,362197
T-Test	0,132845	0,126335

As we can see from the table above, outliers had very big impact on the averages to both studied years by dropping the average to 3,10 percent for the first year and 4,924 percent to the second one. Interestingly t-test and standard deviation behave differently in this robustness check analysis. However, lower standard deviation suggests that the original data was more volatile. Second years high standard deviation (40,787) indicates that in longer term, individual aspects of the corporate and general market position spread the volatility even more and suggesting that it is more difficult to explain excess returns by the share buyback announcements only.

Another meaningful information received from the robustness check is that the kurtosis and skewness normalised heavily when the outliers was taken out. Kurtosis dropping from 6,47 and 0,60 to 0,216 for the first year and 0,092 for the second year is important notice with the idea of median. Since the median did not make any changes emphasizing

the importance of the median in this study. In other words, the fact that the median abnormal returns remain high even though the extreme values were removed suggests that the abnormal returns after the share buyback announcement was larger scale event rather than being only driven by few of the outlier corporates.

Additional information received after the robustness check is that the T-test giving values of 0,133 and 0,126 are close to threshold of significancy levels, but both years were outside of the significance levels. It is very important to notice that the sample was somewhat small, and the results could have been more significant with higher observation numbers.

6 Interpreperation of results

The following chapter will elaborate on whether the results are meaningful by using current financial literature and widely recognized studies by connecting the modern theories and older literature. The goal is to understand whether the abnormal returns can be achieved by conneting specific firm-related financial measures and the share buyback announcements and how the results could be linked to the previous theories.

6.1 Efficient market hypothesis

As Fama (1970) states about the efficient market hypothesis, the stock price performance should reflect the available information from the market almost immediately, the result from the study says otherwise. Research findings suggest that abnormal returns can be achieved in the Nordic markets by using share buyback announcements as an indicator to buy and hold certain stocks even though the announcements are widely known by the market. Especially, the secondary year abnormal returns (average 5,65 percent and median 5,97 percent) emphasize that phenomenon is in contradiction against the study by Fama.

Since the announcement are public and announced to everyone, market should not reward any shares with such abnormal returns and that the expected value of excess returns should be zero. Additionally, it seems that investors cannot fully price in the long-term possibilities, if corporate changes the payout policies or capital structure and the price reflect the possibility slower.

Interestingly, even though the observations consisted only countries' leading indexes, there was a lot of abnormal returns. Since all the biggest institutions and analytics are covering the indexes regularly and that reason the prices should reflect the highest level of price efficiency, there should not be many ways to receive excess returns meaning results are in contrary to previously mentioned. One could argue against the completely efficient markets.

6.2 Capital structure

According to the studies of capital structure, Modigliani and Miller (1958) that the corporate values are primarily focused on the firms' real assets rather than the capital structure. This was also referred to be a capital structure irrelevance proposition.

Additionally, as stated in chapter 2.1.2. Baker & Martin (2011) trade-off theory was organized by the Modigliani and Miller's (1963) study. Baker and Martin suggest that the corporates should fully optimize the deductible interest from debt and use tax shield as good as possible to receive the most out of the capital structure. Even though, as mentioned in the chapter 2.1.2., financial distress can be an obstacle to use the most favourable amount of debt.

As seen from the regression analysis in this study, the negative coefficient of the D/E ratio of -0,0609 aligns with the pecking order theory and the concept of the optimal order of fundraising mentioned in the chapter 2.1.3. Where Baker & Martin (2011) suggested that the first option to raise a fund is the internal funding and secondary to be external debt, Myers and Majluf (1984) added the free cash flow to be the first option in fundraising. Additionally, Myers and Majluf (1984) acknowledged the asymmetric information owned by management. Correlation matrix on the study gave somewhat reasonable confirmation for Myers and Majluf free cash flow idea. However, the findings were not statistically significant with this model.

Connecting these theories and the received results mentioned above, it seems that investors favour firms with moderate leverage. Moreover, too highly leveraged firms may signal the tighter flexibility and therefore the firms' ability to execute the promised payout policy changes can be questioned resulting share buyback announcements to have lesser impact on the abnormal returns. Lastly, it is very important to notice the idea of optimal capital structure where excessive leverage could be seen as a burden for the corporates.

6.3 Dividend and payout policy

Although research is not primarily focusing on dividend policy, signalling theory can be linked to the study directly. Where Miller and Rock (1985) and Bhattacharya (1979) is noticing dividend policy as a tool to show asymmetric information from corporate leaders, 2.3.1 mentioned substitution idea is widely recognized in future studies. Dividend and share repurchase have been seen to be controversy. Fama and French (2001) showing significant change in the payout policy from dividends to share repurchases because of their flexibility and argue that the dividends are not equally desirable method to distribute the profits to investors anymore. Also, if one considers that the growing dividends have been seen to be a good signal for the stable business corporates are being in similarly with the substitutions of the share buybacks. Therefore, the signalling theory can be directly linked to the study.

Research received the buy and hold abnormal return median to be 5,97 percent suggesting that the received share buyback announcements can be utilized to receive signal from management to be credible evidence of possible robust cash flow in the future.

Furthermore, analysing the results through agency theory. Where most of previous studies consider debt as a tool to reduce the agency costs and to reduce the managements harmful ideas for the corporates such as Jensen and Meckling (1976) and Jensen (1986) payout policy is also acknowledged way to lower the agency costs. Moreover, as mentioned in the 2.2.5, Easterbrook (1984) stated that dividends have a substantial role in monitoring and making risk adjustments and therefore benefitting the investor by lowering the expenses in agency costs from management and this can be directly linked to the agency theories.

From the above-mentioned conclusions, if considering the results of the current study and especially the second years results, management’s ability to invest in sub-optimal ideas can be lowered meaning that the market can be more convinced that the

management's commitment to efficient capital allocation for shareholders can be received by using such payout policies.

6.4 Book value per share and valuation

The most significant finding of the regression model was received in the book value per share. Observations gave the negative impact of book value per share (P-value - 0,0403) which can be connected to the debate between companies in different positions such as dividend or growth stocks. Theoretically the negative results of the book value relative to market price P/B value emphasize the idea that there is growth in future.

From the results from regression model estimates in 4.4.1 suggest that the asset light companies tend to have stronger positive reaction after the share buyback announcements rather than the stable, more static physical assets corporates received.

Therefore, Modigliani and Miller (1958) statements about the corporate values to be primarily dependent on firms' real assets and how they can generate profits are in contrary against the findings of the study. In other words, study suggesting that the most optimized capital structures are not necessarily the ones receiving the biggest abnormal return in such cases.

6.5 Country-specific asymmetry

The empirical analysis in section 4.3 revealed notable differences between relatively homogenous Nordic countries with the differences in median returns such as Denmark's median fluctuation between the first and second year. Differences between the Denmark results can be explained by what kind of corporates are included in the indexes. Since the R&D heavy OMXC25 the information weight of share buyback announcements are completely different and therefore industrially diversified Finnish or Swedish markets returns may vary against Denmark.

Even though multivariate regression in 4.4 suggested that the dummy variable lost some significancy when firm-specific financial fundamentals was considered univariate results still point toward geographic differences. These results lean toward signalling theory because investors might weight the corporates more thoroughly when R&D heavy corporates in Denmark change their capital structure and change the payout policy. Therefore, the investors might have weighted the buyback changes to be negative for the future growth of the companies resulting the first year and second year are to be completely different.

7 Conclusion

Chapter 6 summarizes the empirical findings providing the answers to the research questions mentioned in chapter 1.2. Additionally, it goes through the practical implications but also confirms the difficulties in the study.

7.1 Summary of findings

The primary objective of the research was to find out whether there are long-term abnormal returns following the corporate announcements of share buybacks in the Nordic markets (Finland, Sweden and Denmark). The findings are summarized through the research questions are as follows:

1. Does share buyback announcements lead to statistically significant abnormal returns in the long term? Results indicate that the abnormal returns after the 1-year period is moderate where mean value after trimming is 3,10 percent. Even though the moderate returns after first year, there is a significant positive buy and hold abnormal returns over the 2-year period for median abnormal return to be 5,97 percent. As a conclusion, the initial market reaction tends to be underreaction, and the total value of the share buyback announcements is combined with the share prices more significantly in longer time periods.

2. Do the abnormal returns vary between the Nordic countries? Univariate analysis confirms there is differences between the Nordic countries. Study reveals significant differences between the countries shorter term (1-year period) but also longer term (2-year period). Where Finland and Sweden showing moderate returns in the long term, Denmark exhibited stronger with the median 2-year to be 11,49 percent. However, the median of -4,48 for the first year for Denmark changes the layout for the second year if comparing only the second years' medians. Divergence results suggest that the country-specific factors are playing crucial role in many ways. Thus, industry concentration and

financial fundamentals can be explanatory when investors digest the corporate payout changes and signals.

3. Do financial fundamentals and share buyback announcements explain the abnormal returns? Received results from multivariate analysis suggested that book value per share is statistically significant predictor (P=0,0403). The negative relationship received in the analysis suggests that the share buyback announcements from asset-light corporates outperforms the ones with the more "mature" corporates. Furthermore, Debt to equity ratio showed a negative trend. Consequently, firm's high debt ratios may be indicative to the future abnormal returns.

7.2 Practical implications

For the investors and portfolio managers, the study reveals semi-strong evidence from efficiency market in the Nordic markets. Additionally, 2-year post announcements on the study suggest that corporate announcing the share buybacks could potentially yield to abnormal returns. Lastly, investors who execute the purchase immediately after the announcements can beat the markets average returns by using such strategy.

Few of the notification should be considered when choosing firms such as low book value per share and moderate leverage. Both values were associated with the highest abnormal returns received during the analysis and could be potentially used to receive better returns long term.

7.3 Limitations

Even though the study provides useful information, there is some notable limitations received during the research. The sample size (N = 167) is totally sufficient to make such analysis; robustness check still had quite large sensitivity in significance levels. Additionally, low adjusted R^2 implying that long-term returns are affected by other meaningful factors such as macroeconomic shifts, but also many fundamental changes

in the markets and therefore it is hard to justify the returns to be only because of the share repurchase announcements.

Additionally, the fact that study did not specify which sort of share buybacks the announcement was related to is a limitation since returns may vary if the corporate buyback shares to mitigate the amount of shares available in the market or is the buyback related to the reward system for personnel.

8 Suggestion for future research

While evidence from empirical research opened multiple future academic inquiry possibilities, this study established a visible picture of how the combination of share buyback announcements and various financial figures can produce excess returns in the market. However, following areas remain to be studied and are open for future exploration:

While we investigated multiple sectors included in Nordic indexes, it is beneficial to be able to recognize if the abnormal returns vary between specified sectors. Moreover, it would be interesting to see if the abnormal returns follow for example the mature banking sector or is that the high Research & development corporations losing to the market if they are announcing share buyback announcements. In other words, if the highly sensitive R&D corporates interest some certain investors who are willing to wait for the payouts and rather preferring the future growth.

Since this study revealed semi-strong evidence of abnormal returns if corporate announce payout policies, it is beneficial to understand whether the abnormal returns were related to the specified announcements, for example if the share buybacks are related to the mitigation of the share available in the market. The future research could potentially choose to compare different kind of share buyback announcements and evaluate how the abnormal returns vary between announcements.

In addition, publicly traded corporations have to announce to every investor, it would be interesting to see how the announcements of personnel changes or even ESG- changes in the corporate's policy compares for the notifications examined in this study and if the announcements have similarities or differences.

Lastly, the observation amounts were limited, the future research could increase the number of indexes to investigate but also increase the timespan to start from 1990 for

example. However, share buyback announcements are relatively new way to share the profits to the market and personnel. it would also be beneficial to compare, how the Nordic indexes compare to other European regions or even United states.

References

Baker, M., & Wurgler, J. (2000). The equity share in new issues and aggregate stock returns. The Journal of Finance, 55(5), 2219-2257. **https://doi.org/10.1111/0022-1082.00285**

Baker, H. K., & Martin, G. S. (2011). Capital structure and corporate financing decisions: Theory, evidence and practice. John Wiley & Sons.

Bhattacharya, S. (1979). Imperfect information, Dividend Policy, and "The bird in the hand" Fallacy. The Bell Journal of Economics, 10(1), 259-270. https://doi.org/10.2307/3003330

Brealey, R.A., Myers, S., Allen, F. (2020). Principles of Corporate Finance. 13th edition. McGraw-Hill

Brav, A., Graham, J. R., Harvey, C. R., & Michaely, R. Payout policy in the 21st century. Journal of Financial Economics, 77(3), 483-527. https://doi.org/10.1016/j.jfineco.2004.07.004

Myers, S. C. (2003). Capital Structure. Teoksessa G. M. Constantinides, M. Harris, & Stulz, R. M., Hankbook of the Economics of Finance (Vol. 1, s. 459-504) Elsevier.

Elton, E. J., & Gruber, M. J. (1970). Marginal stockholder tax rates and the clientele effect. Review of Economics and Statistics, 52(1), 68-74. https://doi.org/10.2307/1927599

Fama, E.F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. Journal of Finance, 25(2), 383–417. https://doi.org/10.2307/2325486

Fama, E.F. & French, K.R. (2001). Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay? Journal of Financial Economics, 60(1), 3–43. https://doi.org/10.1016/S0304-405X(01)00038-1

Fama, E.F. (1991). Efficient Capital Markets: II. Journal of Finance, 46(5), 1575–1617. https://doi.org/10.2307/2328565

Frankfurter, G., M., & Wood Jr., B., G. (2002). Dividend policy theories and their empirical tests. International Review of Financial Analysis. 11(2), 111-138. https://doi.org/10.1016/S1057-5219(02)00071-6

Grullon, G. & Michaely, R. (2002). Dividends, Share Repurchases, and the Substitution Hypothesis. The Journal of Finance, 57(4), 1649-1684. **https://doi.org/10.1111/1540-6261.00474**

Graham, J. R., & Harvey C. R., (2001). The theory and practice of corporate finance: Evidence from the field, Journal of Financial Economics, 60(2-3), 187-243. https://doi.org/10.1016/S0304-405X(01)00044-7

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). Multivariate Data Analysis: A Global Perspective.

Helbaek, M., Lindset, S., & McLellan, B. (2010), Corporate Finance.

Ikenberry, D., Lakonishok, J., & Vermaelen, T. (1995). Market underreaction to open market share repurchases. Journal of Financial Economics, 39(2-3), 181-208. https://doi.org/10.1016/0304-405X(95)00826-Z

Ikenberry, D., Lakonishok, J., & Vermaelen T. (2000). Stock Repurchases in Canada: Performance and Strategic Trading. The Journal of Finance 55(5), 2373-2397. **https://doi.org/10.1111/0022-1082.00291**

Jagannathan, M., Stephens, C. P., & Weisbach, M. S., (2000). Financial Flexibility and the choice between dividends and stock repurchases, Journal of Financial Economics, 57(3), 355-384. https://doi.org/10.1016/S0304-405X(00)00061-1

Jensen, M. C., & Meckling, W. H., (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure, Journal of Financial Economics, 3(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X

Jensen, M. (1986) Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers, 76(2), 323-329. https://www.jstor.org/stable/1818789

John, K., & Williams, J. (1985). Dividends, Dilution and Taxes: A Signalling Equilibrium, The Journal of Finance, 40(4), 1053-1070. https://doi.org/10.2307/2328394

Lyon, J. D., Barber, B. M., & Tsai, C-L. (1999). Improved Methods for Tests of Long-Run Abnormal Stock Returns, The Journal of Finance, 54(1), 165-201. **https://doi.org/10.1111/0022-1082.00101**

Lopes-de-Silanes, F., Shleifer, A., La Porta, R., & Vishny, R. W. (2000). Agency Problems and Dividend Policies Around the World, The Journal of Finance, 55(1), 1-33. **https://doi.org/10.1111/0022-1082.00199**

Lintner, J. (1956). Distribution of Incomes of Corporations Among Dividends, Retained Earnings and Taxes, The American Economic Review, 46(2) 97-113. https://www.jstor.org/stable/1910664

Malkiel, B. (2003). The Efficient Market Hypothesis and Its Critics, The Journal of Economic Perspectives, 17(1), 59-82. https://doi.org/10.1257/089533003321164958

Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. The American Economic Review, 48(3), 261-297, https://www.jstor.org/stable/1809766

Modigliani, F., & Miller, M. H. (1961). Dividend Policy, Growth, and the Valuation of Shares. The Journal of Business, 34(4), 411-411, https://doi.org/10.1086/294442

Miller, M. H., & Rock, K. (1985). Dividend Policy under Asymmetric Information. The Journal of Finance, 40(4), 1031-1051. https://doi.org/10.2307/2328393

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have, Journal of Financial Economics, 13(2), 187-221, https://doi.org/10.1016/0304-405X(84)90023-0

Myers, S. C. (1984). The capital structure puzzle. The Journal of Finance, 39(3), 574-592. https://doi.org/10.1111/j.1540-6261.1984.tb03646.x

Poterba, J. (2004). Taxation and Corporate Payout Policy. The American Economic Review, 94(2). https://www.jstor.org/stable/3592877

Rozeff, M. S. (2005). Growth, Beta and Agency Costs as Determinants of Dividend Payout Ratios. Journal of Financial Research, 5(3), 249-259. https://doi.org/10.1111/j.1475-6803.1982.tb00299.x

Shiller, R. J. (2003) From efficient markets theory to behavioral finance. Journal of Economic Perspectives, 17(1), 83-104. https://doi.org/10.1257/089533003321164967

SimCorp. (2023, October 2). Nasdaq A/S accepts delisting of SimCopr A/S' Shares [Press release]. Cision https://news.cision.com/simcorp/r/nasdaq-a-s-accepts-delisting-of-simcorp-a-s--shares,c3846387

Skinner, D. J. (2008). The evolving relation between earnings, dividends, and stock repurchases. Journal of Financial Economics, 87(3). https://doi.org/10.1016/j.jfineco.2007.05.003

Sunitha, K. (2024). Targeting behavior and capital structure theories: An empirical analysis of gulf cooperation council countries. Journal of Behavioral and Experimental Finance, 43. https://doi.org/10.1016/j.jbef.2024.100944

Vermaelen, T. (1981). Common stock repurchases and market signalling: An empirical study. Journal of Financial Economics, 9(2), 139-183. https://doi.org/10.1016/0304-405X(81)90011-8

Appendices

Appendix 1. Date of announcement

Ticker	Date of announcement	Country
Nokia	**18.6.2014**	**Finland**
Nokia	**15.11.2016**	**Finland**
Nokia	**3.2.2022**	**Finland**
Nokia	**8.12.2022**	**Finland**
Kone	**25.2.2013**	**Finland**
Kone	**10.11.2021**	**Finland**
Kone	**2.11.2022**	**Finland**
Neste	**24.4.2014**	**Finland**
SAMPO	**10.9.2021**	**Finland**
SAMPO	**30.3.2022**	**Finland**
SAMPO	**9.6.2022**	**Finland**
NDA-FI	**20.10.2021**	**Finland**
NDA-FI	**14.3.2022**	**Finland**
NDA-FI	**18.7.2022**	**Finland**
KESKOB	**4.2.2014**	**Finland**
KESKOB	**25.4.2018**	**Finland**
METSO	**8.8.2022**	**Finland**
ORNBV	**23.4.2013**	**Finland**
ORNBV	**27.4.2016**	**Finland**
ORNBV	**25.4.2019**	**Finland**
ORNBV	**25.8.2022**	**Finland**
WRT1V	**22.4.2021**	**Finland**
VALMT	**20.12.2018**	**Finland**
VALMT	**19.12.2019**	**Finland**
VALMT	**17.12.2020**	**Finland**
VALMT	**20.12.2021**	**Finland**
VALMT	**20.12.2022**	**Finland**
CGCBV-FI	**16.9.2015**	**Finland**
CGCBV-FI	**31.10.2016**	**Finland**
CGCBV-FI	**19.7.2018**	**Finland**
CGCBV-FI	**19.12.2018**	**Finland**
CGCBV-FI	**24.2.2021**	**Finland**
OUT1V	**13.5.2016**	**Finland**
OUT1V	**2.2.2017**	**Finland**
OUT1V	**30.4.2018**	**Finland**
OUT1V	**3.11.2022**	**Finland**
TIETO	**14.2.2020**	**Finland**
TIETO	**17.2.2021**	**Finland**
TIETO	**17.2.2022**	**Finland**

FSKRS	**9.3.2016**	**Finland**
FSKRS	**30.4.2018**	**Finland**
FSKRS	**26.8.2019**	**Finland**
FSKRS	**4.2.2022**	**Finland**
SANOMA	**29.10.2015**	**Finland**
SANOMA	**21.8.2018**	**Finland**
SANOMA	**25.3.2020**	**Finland**
SANOMA	**8.11.2021**	**Finland**
ABB	**22.7.2020**	**Sweden**
ABB	**25.3.2021**	**Sweden**
ABB	**24.3.2022**	**Sweden**
ALFA	**27.4.2021**	**Sweden**
ATCO-A	**30.4.2013**	**Sweden**
ATCO-A	**30.4.2014**	**Sweden**
ATCO-A	**29.4.2015**	**Sweden**
ATCO-A	**27.4.2016**	**Sweden**
ATCO-A	**27.4.2017**	**Sweden**
ATCO-A	**25.4.2018**	**Sweden**
ATCO-A	**25.4.2019**	**Sweden**
ATCO A	**25.4.2020**	**Sweden**
ALIV-SDB	**15.11.2021**	**Sweden**
ELUX-B	**27.10.2021**	**Sweden**
ELUX B	**29.4.2022**	**Sweden**
EVO	**16.3.2020**	**Sweden**
EVO	**3.12.2021**	**Sweden**
HM-B	**29.6.2022**	**Sweden**
HEXA-B	**8.12.2020**	**Sweden**
HEXA-B	**4.5.2021**	**Sweden**
HEXA-B	**11.5.2022**	**Sweden**
INVE-B	**15.5.2013**	**Sweden**
INVE B	**24.10.2013**	**Sweden**
INVE-B	**7.5.2014**	**Sweden**
INVE B	**5.12.2014**	**Sweden**
INVE-B	**13.5.2015**	**Sweden**
INVE-B	**2.12.2015**	**Sweden**
INVE-B	**11.5.2016**	**Sweden**
INVE-B	**5.12.2016**	**Sweden**
INVE-B	**4.5.2017**	**Sweden**
INVE B	**8.5.2018**	**Sweden**
INVE-B	**17.6.2020**	**Sweden**
INVE-B	**5.5.2021**	**Sweden**
INVE-B	**24.5.2022**	**Sweden**
KINV-B	**11.2.2016**	**Sweden**
KINV-B	**25.4.2022**	**Sweden**
KINV-B	**2.6.2022**	**Sweden**
SECU-B	**5.6.2019**	**Sweden**
SECU-B	**3.6.2021**	**Sweden**
SEB-A	**19.10.2021**	**Sweden**

SEB-A	**25.10.2022**	**Sweden**
TELIA	**22.4.2014**	**Sweden**
TELIA	**28.4.2015**	**Sweden**
TELIA	**29.4.2016**	**Sweden**
TELIA	**27.4.2017**	**Sweden**
TELIA	**20.4.2018**	**Sweden**
TELIA	**16.4.2019**	**Sweden**
TELIA	**1.6.2022**	**Sweden**
MAERSK-B	**19.8.2014**	**Denmark**
MAERSK B	**24.5.2019**	**Denmark**
MAERSK-B	**5.5.2021**	**Denmark**
MAERSK-B	**12.8.2022**	**Denmark**
COLO-B	**26.2.2014**	**Denmark**
COLO-B	**16.2.2016**	**Denmark**
COLO-B	**20.2.2018**	**Denmark**
COLO-B	**21.2.2020**	**Denmark**
COLO-B	**19.2.2021**	**Denmark**
COLO-B	**18.2.2022**	**Denmark**
DANSKE	**20.3.2015**	**Denmark**
DANSKE	**2.2.2016**	**Denmark**
DANSKE	**2.2.2017**	**Denmark**
DANSKE	**2.2.2018**	**Denmark**
GN	**21.2.2013**	**Denmark**
GN	**14.8.2013**	**Denmark**
GN	**14.2.2014**	**Denmark**
GN	**6.11.2014**	**Denmark**
GN	**20.3.2015**	**Denmark**
GN	**30.10.2015**	**Denmark**
GN	**11.3.2016**	**Denmark**
GN	**4.5.2017**	**Denmark**
GN	**2.5.2018**	**Denmark**
GN	**1.5.2019**	**Denmark**
GN	**6.5.2021**	**Denmark**
ISS	**2.3.2016**	**Denmark**
JYSK	**6.11.2015**	**Denmark**
JYSK	**1.7.2016**	**Denmark**
JYSK	**1.3.2017**	**Denmark**
JYSK	**27.3.2019**	**Denmark**
JYSK	**28.1.2021**	**Denmark**
JYSK	**4.10.2021**	**Denmark**
NKT	**26.2.2016**	**Denmark**
NKT	**23.2.2022**	**Denmark**
NOVO-B	**5.11.2019**	**Denmark**
NOVO-B	**11.5.2020**	**Denmark**
NOVO-B	**3.11.2020**	**Denmark**
NOVO-B	**5.11.2021**	**Denmark**
NOVO B	**4.11.2022**	**Denmark**
NSIS-B	**17.2.2014**	**Denmark**

PNDORA	**7.2.2017**	**Denmark**
PNDORA	**6.2.2018**	**Denmark**
PNDORA	**13.3.2019**	**Denmark**
PNDORA	**4.5.2021**	**Denmark**
PNDORA	**17.8.2021**	**Denmark**
PNDORA	**14.9.2021**	**Denmark**
PNDORA	**9.2.2022**	**Denmark**
SIM	**27.2.2013**	**Denmark**
SIM	**27.8.2013**	**Denmark**
SIM	**25.2.2014**	**Denmark**
SIM	**1.9.2014**	**Denmark**
SIM	**17.2.2015**	**Denmark**
SIM	**19.8.2015**	**Denmark**
SIM	**10.5.2016**	**Denmark**
SIM	**27.2.2017**	**Denmark**
SIM	**24.8.2017**	**Denmark**
SIM	**20.2.2019**	**Denmark**
SIM	**5.2.2020**	**Denmark**
SIM	**10.2.2021**	**Denmark**
SIM	**13.8.2021**	**Denmark**
TRYG	**13.3.2013**	**Denmark**
TRYG	**27.4.2022**	**Denmark**
ORSTED	**1.11.2018**	**Denmark**
ORSTED	**1.5.2019**	**Denmark**
ORSTED	**29.4.2020**	**Denmark**
ROCK-B	**6.2.2020**	**Denmark**
BAVA	**26.5.2016**	**Denmark**
BAVA	**18.5.2017**	**Denmark**
BAVA	**22.5.2019**	**Denmark**
BAVA	**26.8.2020**	**Denmark**
BAVA	**27.5.2021**	**Denmark**