



# Impact of business cycles on share repurchases in the Finnish stock market

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**Abstract**

Share repurchases have been studied in-depth from the perspective of the firm management's motivation and shareholders' wealth maximization. Recently, there has been done studies examining share repurchases from the perspective of the business cycle. Such studies motivated the researcher to examine the abnormal returns accrued from share repurchase announcements done by Finnish companies in short- and long-term based on the business cycle. Thus, the author had three objectives to explore. First was to determine the short- and long-term returns caused by share repurchases on the Finnish market. Second was to examine if there is a significant difference in the abnormal returns earned through buybacks in economic downturn and upturn in the Finnish market. Third objective was to explore motivation of the company management to announce a share buyback program with regards and/or regardless of business cycle.

A quantitative approach was chosen to study the objectives. Since the subject of the study was the share repurchases done on the Finnish market as a market portfolio index OMX Helsinki 25 was utilized. The information about share repurchase announcements was gathered manually from the Nasdaq OMX Nordic's website. The financial data was derived from reports published by companies on their websites. As an indicator of the business cycle, composite monthly indicator of business cycle, which is tailored for the Finnish market by the National Audit Office of Finland, was used. To understand if the sample is representative of the normal population, parametric and non-parametric tests were used: one-sample t-test, the independent samples t-test and one-sample Wilcoxon signed-rank. To investigate the relationship between abnormal returns and multiple hypotheses that are potentially explaining the source of the abnormal returns the multiple linear regressions were utilized.

Based on the developed knowledge base and statistical analysis techniques, researcher explored the objectives. The analysis showed that share repurchases contribute to the abnormal returns in the short- and long-term. Regression model proved the free cash flow and signaling hypotheses to be explanatory for the abnormal returns on the general level. Though, the results of the regression analysis were limited when analyzing motives by business cycle. Due to the lack of events, researcher was not able to conclude if returns differ in expansion and recession. Other limitations of the present research were discussed, and recommendations were made for future research.

**Keywords/tags (subjects)**

Share repurchase, buyback, business cycle, Finland, stock market, earnings announcement.

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# 1 Introduction

The objective of the following chapter is to present the research purpose of the thesis as well as the motivation of the author to undertake the research. Besides, the first chapter presents and clarifies the research objectives. Lastly, it declares the structure of the thesis.

## 1.1 Research motivation

The subject of share repurchases has been studied thoroughly after being enabled in the US in 1981. Most studies investigating share repurchases have focused on either motivation of management to start a share repurchase program or short- and long-term consequences of the buybacks to the wealth of shareholders. In the last few years, scholars have also been focusing on the subject of share repurchases with respect to the stages of the business cycle, a fundamental macroeconomic factor.

A share repurchase or a buyback, is a transaction in which a company buys back its own shares (Noronha & Troughton, 2021). Typically, market reacts positively to buybacks and treats them as an alternative to cash dividends as both instruments use corporate cash. Shares that are repurchased can be either reissued, consequently classified as treasury shares, or retired, accordingly, called cancelled shares. The cause of the positive market reaction lies in recognition that in either case those shares are not utilized for calculating earnings per share, voting, or paying out dividends. In the share repurchase event number of shares decreases, consequently increasing earnings per share, what in turn makes company more appealing to investors as company's performance strengthens. Furthermore, buybacks can be considered as a signal of management's confidence in the prospects of the firm. Generally, these factors foster investors to purchase shares, what leads to boosting of the share prices and at the same time creating abnormal returns.

Although majority of scholars agrees on the positive short-term abnormal returns, some still emphasize the feasible alarming nature of the long-term consequences. Hopkins et al. (2020) concluded that share repurchases do not promote the productive capabilities of the enterprise and erode the company's growth. Consequently, company may be noncompetitive on the global scale because of the underinvestment in R&D and employees. Share repurchase may deprive company of liquidity what could be threatening for the firm the event of an impending recession. (Hopkins

et al., 2020.) Nonetheless, other studies contradict the presented arguments. For example, Mancini et al. (2013) proved that companies that utilize share repurchase as a mean of cash distribution outperform their competitors in the long term. Such observation can be explained by the fact that companies that decide to do buyback do not have investment projects that could earn a higher return. Hence, if firm has no growth opportunities or profitable investments, company decides to return cash to shareholders through share repurchase, granting an opportunity to shareholders to make their own financial decisions.

There is a number of motives that company may consider, varying from averting takeover activities to signaling undervaluation. Moreover, management's motives are changing over the business cycle. Wang et al. (2021) stated that in recession companies are more eager to start a buyback because of the undervaluation or low liquidity while in expansion the core reason is to distribute cash. Furthermore, scholars found that return are lower in expansion than in recession. The goal of the present thesis is to test mentioned theory base on the Finnish market.

### **Share Repurchases in Finland**

In Finland, buybacks were legalized significantly later than in USA. Law 145 about the limited liability companies legitimated share repurchases in 1997 (Osakeyhtiölaki, 1997). Back then investors considered share repurchases positively and already by October 1999, around 50 buybacks were authorized. Firms planned to return around EUR 1,4 billion in total and subsequently bought back share of total worth equaling EUR 500 million. (Karhunen, 2000.) Share repurchases are still used actively in the Finnish stock market. It can be observed further in figure 2. Based on the data depicted in figures 1 and 2, it can be concluded that the number of buybacks increase in the downturn of economy.

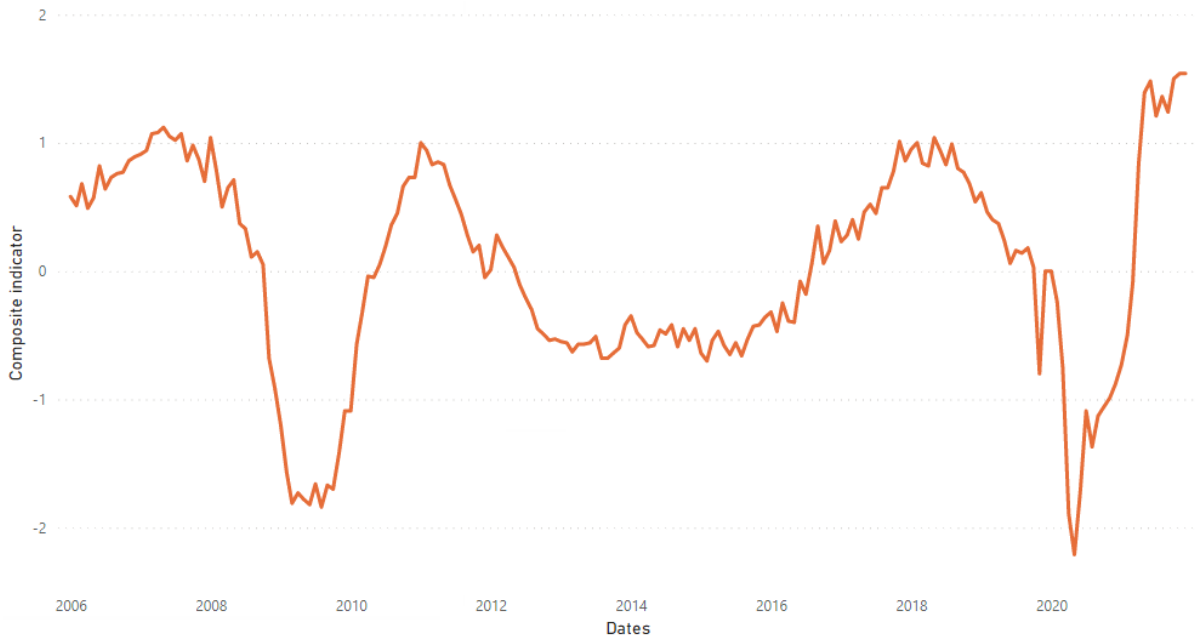


Figure 1 - Composite indicator, adapted from National Audit Official of Finland (Business cycle heatmap, 2022)

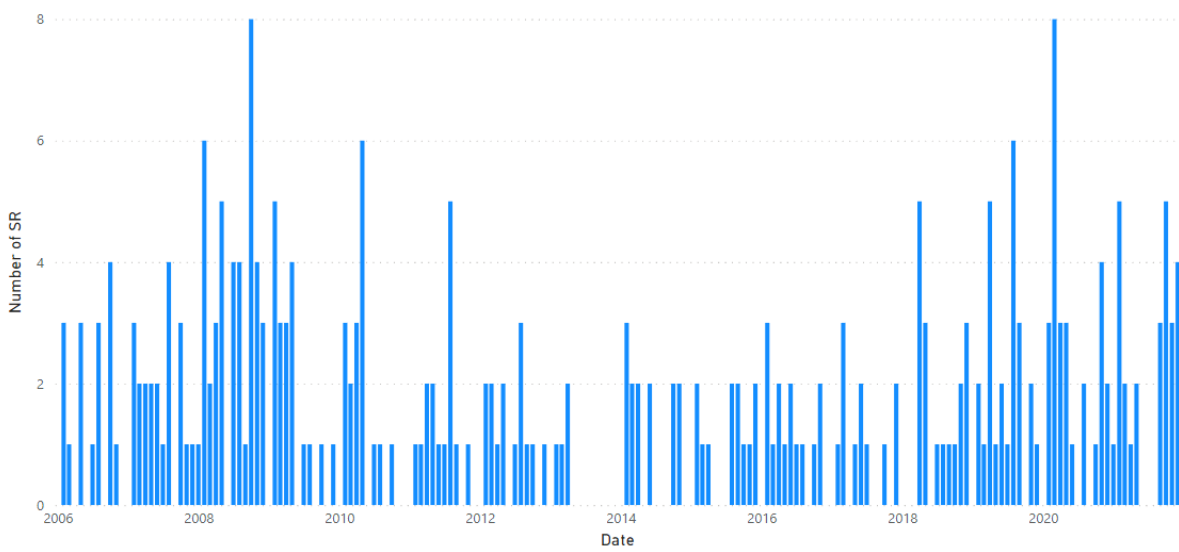


Figure 2 - Number of share repurchases by date, compiled by author

## **Motivation**

Share repurchase acts as a form of firm's payout policy and is one of the fundamental topics in the corporate governance and finance literature. While corporate governance entails meeting the interests of all stakeholders of the firm, corporate finance is concerned with funding the operations to maximize profits. Both aspects need to be considered when analyzing share repurchases, therefore researching the topic helps to strengthen the knowledge base of the writer. The particular focus of the thesis is dictated by the works of Wang et al. (2021), Luk and Zeng (2020), Hamouda (2021) and Adam and Merkel (2019) who analyze in their studies buybacks in terms of business cycle on the international or US scale. The presented studies motivated researcher to figure out if share repurchases in Finland have the same nature and hold the same characteristics as the ones done in the USA or on the global arena.

The present research is beneficial for people who want to understand how business cycles affect the share repurchases in Finland: whether buybacks announced in the recession have higher returns than in expansion and whether motives of the management to have a buyback change over the cycle. Furthermore, the research explores abnormal returns independently from the business cycle. This knowledge is beneficial for market participants, management of the Finnish companies and students who want to deepen their knowledge in Corporate Finance.

### **1.2 Research objectives**

There has been done a lot of research studying the consequences of buybacks in various markets, as well as in Finland. However, to the best knowledge of researcher, there has not been done any significant studies on the topic of buybacks in Finland in terms of business cycle, acting as a motivation to explore the topic. The present study firstly examines both the short- and long-term abnormal returns after the share repurchase announcement and management's motivation to start a buyback program despite the stage of the business cycle. Thenceforth, the researcher attempts to analyze the mentioned objectives on the basis of business cycle's stage. Hence, the core research objectives of the present work can be summarized as follows:

1. to investigate the short- and long-term returns of the buybacks after the share repurchase announcement on the Finnish market,



2. to analyze the presence of the significant differences in the abnormal returns gained through share repurchases during the economic upturn and downturn in the Finnish market,
3. to examine the motives of the company management to announce a share buyback with regard or/and regardless of business cycle's stage.

### **1.3 Structure of the thesis**

The introduction of the thesis presents motivation of the researcher and introduces the background information regarding the share repurchase practices in the world and in Finland. Furthermore, the author introduces the research objectives. The second chapter named "Literature Review" familiarizes the reader with theory related to the topic of research and develops hypotheses that are explored in the later chapters. The third chapter "Research Framework" covers the research design, research methods, data collection methods, and data analysis techniques. Fourth chapter, called "Research Results", provides the outcomes of the research. Finally, in the last chapter "Discussion, limitations, and conclusion" researcher finalizes the findings and discusses their practical implication, as well as recommendation for the future research and limitations of the study.

## **2 Literature review**

The following chapter presents an extensive summary of prior research on the subject related to the objectives of the thesis. In the first subchapter, concept of the payout policy is described. The second subchapter deliberates payout forms, dividend payout and share repurchase program. Third subchapter presents considerable studies done regarding the development of the payout policy. Fourth subchapter exhibits the motives of the management to announce a share repurchase program of the share repurchases. Fifth subchapter introduces the term business cycle as well as discusses the influences of distinct stages of the cycle on share repurchases. In conclusion, in the last subchapter the author declares hypotheses that are tested in the subsequent chapters.

## 2.1 Description of the payout policy

As Kalay and Lennon (2008, p. 6) summarized: “Payout policy refers to the ways in which firms return capital to their equity investors”. At the same time, board of directors and managers bear responsibility for setting the policy that would benefit company and shareholders the most (Noronha & Troughton, 2021). To lay the foundation, firstly author describes the alternatives of the free cash flow distribution to shareholders. Principally, Berk and DeMarzo (2020) emphasized that when an all-equity company has free cash flows, as can be observed from figure 3, there are two alternative pathways of free cash flow (FCF) usage: to retain cash or to pay it out. Company can retain FCF either by accumulating, implying an increase of the cash reserves, or by investing in new projects with positive Net Present Value<sup>1</sup> (NPV). The second line of FCF management by a firm can be done in a form of payouts to shareholders through share repurchase, specially designated dividends (Baker & Weigand, 2015) and ordinary dividend payouts. (Berk & DeMarzo, 2020.) Therefore, Meldrum (2021) summarized that the decision about the form of payout provides shareholders either with a stream of income in case of dividends or with capital gains in the event of share repurchase.

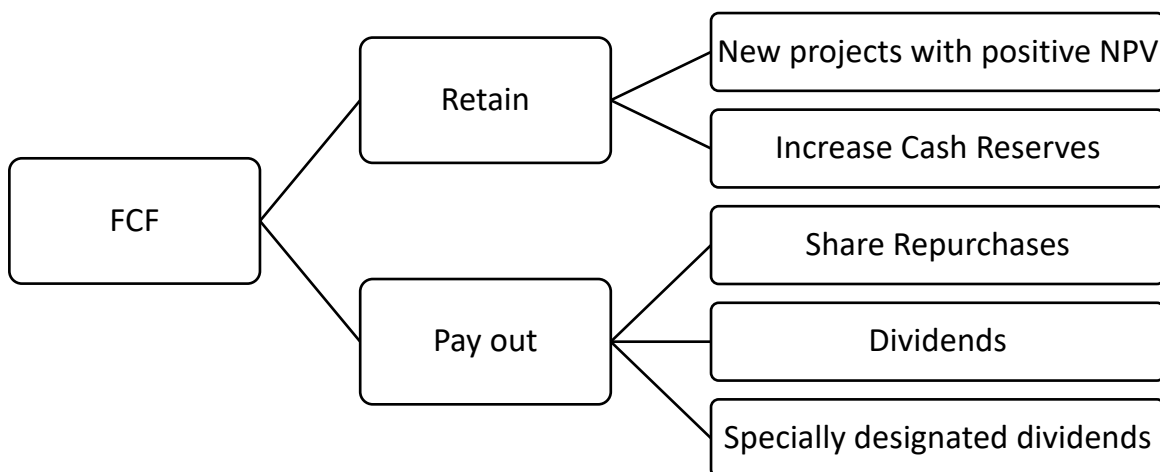


Figure 3 - Payout Policy adapted from Berk & DeMarzo (2020) and Baker & Weigand (2015)

<sup>1</sup> Net present value, formalized by Fisher (1907), assists in evaluation of the costs and benefits of different projects at a common point in time. NPV of an investment decision is:

$$NPV = PV(\text{benefits}) - PV(\text{costs}) = -\text{Initial investment} + \sum_{t=0}^n \frac{\text{Cash Flow}_t}{(1+i)^t},$$

where  $PV$  is a present value,  $i$  is a discount rate and  $t$  is number of periods (Berk & DeMarzo, 2020).

## 2.2 Rationale behind dividends and share repurchases

Pursuant to financial theory, the objective of management is to provide shareholders with value, particularly to magnify shareholder wealth (Jensen, 2001). Likewise, O’Connel and Ward (2020) upheld that shareholder theory declares that the goal of the management is to maximize shareholder value. The theory assumes shareholders as owners of the firm’s assets, therefore, prioritizing the protection and growth of the assets for the benefit of shareholders. The theory also stresses that shareholders measure the attractiveness of the investment through two metrics, share price and dividends. Accordingly, management should act in the interest of shareholders and make decisions that will positively influence the value of dividends and share prices. (O’Connel & Ward, 2020.) This subchapter deliberates two payout forms – dividend payout and share repurchase.

Baker and Weigand (2015, p.1) advocated that “Dividend policy refers to the payout policy that a firm follows in determining the size and pattern of distribution to shareholders over time”. Frankfurter and Wood (1997) attempted to trace how dividend policy has evolved from total to symbolic liquidation of the firm, firstly appearing in the first half of the 16th century. Initially, the firm was liquidated, and residual cash in the form of dividends was distributed among the owners. Subsequently, the procedure was refined, and the shareholders of the joint stock company received dividends only from net profits. Thereafter, companies started to retain earnings to react upon rising investment opportunities and therefore, dividend payout started to act as a symbolic liquidation. Payouts were determined by management and dividends started to be paid from both – profits and retained earnings, unlike before when all current profits were distributed among shareholders. The latter emergence of payouts to shareholders initiated the first dividend payment regulations. (Frankfurter & Wood, 1997.)

Dividend payouts have deep roots in the past and following piece of history elaborates this. Al-Malkawi et al. (2010) recapitulated knowledge regarding the development of the dividend payouts in their work. In 1613, the first company that issued joint stock shares with a nominal value was the British East India Company. Over the 16th and 17th century, this type of company proved its viability, therefore promoting its spread to other industries, such as clothing, utilities, banking, and mining. Inherently, in the beginning of the 17th century the enthusiasm regarding the new type of trading company was in a speculative format leading to the collapse of the market after the South

Sea Company went bankrupt. (Al-Malkawi et al., 2010.) In 1711, in Britain, the Bubble Act was enacted, slowing down the development of the corporate form (Walker, 1931). Al-Malkawi et al. (2010) asserted that already then, management underscored the importance of stable and high dividend payments. Corporate managers were drawing an analogy to government bonds, which paid stable and regular interest payment. In the 19th century, dividends started to be viewed as a form of information, consequently, emerging the corporate dividend policy further. It was noticed that investors prefer to invest based on the analysis of dividend payments rather than on the unreliable and scarce data reported by companies. Consequently, an announcement of the dividend payout led to an increase in stock prices. Once companies have noticed such interconnection, they started to signal strong earnings prospects via dividend payouts. Since the 1950s, the connection between dividend policy and firm value has been actively debated among professionals. (Al-Malkawi et al., 2010.)

Company can also employ an alternative way, called share repurchase or buyback, to return cash to the company's shareholders – repurchase some of its own outstanding shares using corporate cash (Berk & DeMarzo, 2020). In the absence of transaction costs and taxes, if company is buying proportionately equal number of shares from each shareholder, share repurchases should not differ to shareholder from dividend payout as buyback program acts in the presented case as an extraordinary dividend (Karhunen, 2000). If compared to dividend payout, buyback is a new mechanism, which required enabling regulation to grow in usage (Berk & DeMarzo, 2020). For example, Noronha and Troughton (2021) stated that share repurchase became legitimate in the UK only in 1981. Similarly, in 1982, the US endorsed pervasive usage of buybacks when it added US Securities and Exchange Commission rule 10b-18, which protected repurchasing companies against accusations if done within the regulations. Enabling legislation was also introduced in Europe and Asia. (Noronha & Troughton, 2021.) However, buybacks were also used before enabling regulations, although rarely due to potential accusations in price manipulation according to the Securities Exchange Act of 1934 (Chen & Obizhaeva, 2022). Even though buybacks are becoming increasingly common in some markets, Noronha and Troughton (2021) remarked that they are exposed to more limitations in other, as for instance, in the USA. Researchers clarified that restrictions include, for instance, limitations to the protection of creditors, mechanisms of repurchases, approval of shareholders of the buyback program, and allowed fractions of outstanding shares to be repurchased. (Noronha & Troughton, 2022.)

Historically, dividend payouts were dominating as a form of corporate payout (Luk & Zeng, 2020). However, share buybacks in US surpassed dividends in 1977 (Hopkins et al., 2020; Luk & Zeng, 2020). The proportion of the companies doing share buybacks in US rose from 28% in 1980 to 53% in 2018 and similarly the proportion of companies utilizing dividend payouts dropped from 78% to 43% over the same period. Zeng and Luk (2020) explained the trend by the advantages that share repurchases bring such as financial flexibility and tax benefits. Lastly, in 2021 in the 3rd quarter US companies hit a record by repurchasing \$234,5 billion in shares compared to the previous record set (\$223 billion) in the 4th quarter of 2018 (Langley, 2021).

There are five transaction types for a buyback, including open market repurchase, tender offer, Dutch auction, a targeted repurchase (Noronha & Troughton, 2021) and accelerated share repurchase (Chen & Obizhaeva, 2022). Kalay and Lemmon (2008) stated that open market repurchase is the most used method that is used by companies and entails the share buyback in the open market. Grullon and Ikenberry (2000) also presented the same opinion regarding popularity of the open market share repurchase. They stated that open market buybacks compile to approximately 95% of all repurchase events (Grullon & Ikenberry, 2000). AnalystPrep (2021) explained that this method gives company maximum flexibility since the company can choose the transaction's timing as no legal obligation to complete or undertake such program exists. It also allows company to scale down the program, for instance, if company needs cash liquidity or requires cash for capital expenditures (Noronha & Troughton, 2021).

Other methods, however, are used when firm chooses to buyback a considerable part of its shares outstanding, normally as a recapitalization scheme (Kalay & Lemmon, 2008). A tender offer is a buy back of a specified number of shares at a fixed price, normally at a premium to the current market price (Noronha & Troughton, 2021), usually 20% above (Kalay & Lemmon, 2008). Dutch auction is like a tender offer except that the firm envisages a range of acceptable prices instead of specifying a number of shares at a specific price (Noronha & Troughton, 2021). Investors are invited to submit offers to the company, indicating the number of shares they would be willing to buy and their allowable price. Then the firm compiles orders of investors and chooses to fulfil orders with the lowest proposed prices. (Kalay & Lemmon, 2008.) Typically, the market premium for share is averaged at 14% (AnalystPrep, 2021). Another way to buy back shares is a repurchase by

direct negotiation or a targeted repurchase, which is a purchase of shares from a major shareholder normally above the current market price (Kalay & Lemmon, 2008). Noronha & Troughton (2021) proposed that company may exercise this strategy to keep a big set of shares from overhanging the market and therefore depress the share prices. Lastly, the firm can execute an accelerated share repurchase to buy back a specified number of shares at a specific price from a financial intermediary. The distinctive peculiarity of this method is immediate execution and rapid pace. (Chen & Obizhaeva, 2022.)

Firms do buyback for a number of reasons. Some companies want to signal undervaluation (Vermaelen, 1981; Babenko et al., 2012). Other companies use stock repurchases to return cash to shareholders (Jensen, 1986; Lin et al., 2009). Other firms repurchase stock to execute capital structure decisions (Harris & Raviv, 1991; Baker & Wurgler, 2002). Some firms utilize buybacks as to avert takeover activities (Billett & Xue, 2007). Additionally, some companies do a share repurchase to countervail the dilution that is caused by the exercising of the stock options (Vermaelen, 1984; Babenko, 2009). Some firms utilize buybacks as it gives a greater flexibility to management. Lastly, another reason for a share repurchase could be accumulated free cash flows and limited investing opportunities. (Luk & Zeng, 2020.)

Brav et al. (2005) surveyed 384 CFOs to determine the key factors driving the payout policy decisions. Their findings correspond to the findings of Linter (1956), which stated that stability of earnings affects the dividend policy. Researchers have also noted that the relationship has weakened over time. Another conclusion is that share buybacks are made from the retained earnings after investment-related expenses. Furthermore, companies tend to cut investments in the new projects when firms are generating less cash to maintain the same historical dividend level to shareholders. Additionally, researchers also noted that most CFO prefer buybacks to dividends due to a higher flexibility of repurchases. 88% of managers expected a negative market reaction when cutting dividends along with just 22% in case of cutting share buybacks. The study also finds that the primary motivation for initiating payouts by enterprises is the presence of institutional investors. (Brav et al., 2005.) Study done by Custodio and Metzger (2014) showed that more financially competent managers hold less cash and consequently are more probable to do a buyback than to pay out dividends. Similarly, Faulkner et al. (2020) found that more cautious CEOs are more likely

to repurchase shares than pay dividends as they prefer to have a more conservative payout program. Meanwhile, Chen and Wang (2012) compared the financially constrained companies that pursue share repurchases. Researchers stated that firms with overconfident managers have worse financial results after the program pursuance. They concluded that overconfident managers overestimate the prospects of the firms. (Chen & Wang, 2012.)

### **Regulation of share repurchases in Finland**

In Finland, share repurchases are strictly regulated from both perspectives: the way firms must inform the market about the buyback and the way company needs to announce its intentions to start the program. To start a share buyback program, firm must get approval by the shareholders' meeting. After that, the company must inform the market about the intention to start repurchasing shares. After starting the program, the company must notify about the daily repurchase activity. (Högholm & Högholm, 2017.)

## **2.3 Dividends as a form of payout policy**

To understand the current trends in the payout policies, researcher traces central theories deliberating the relevance and irrelevance of the dividend theory to the company's shareholders.

The discussion around the importance of the dividend policy to the company's shareholders has been ongoing since the late 1950s (Bhattacharyya, 2007). While some researchers believe that dividend policy is irrelevant to shareholders, others hold that it does matter. According to the first group, only decisions directly related to fixed and working capital affect shareholder's wealth. Alternatively, second group holds that a company's dividend policy can affect shareholders' wealth. This belief is based either on the assumption that investors value dividends more than a comparable amount of uncertain capital gains or on the assumption that market imperfections present such as differences in taxes on dividends and capital, asymmetric information, and agency costs are present. (Noronha & Troughton, 2021)

The first empirical study undertaken about dividend policy was done by Linter (1956). The goal of his research was to compile a model, which would explain the motivation of the managers and setting of the dividend policy by a firm. Linter opined that companies tend to smooth the preceding

and present changes in earnings and reflect it in the form of a dividend. Therefore, he concluded that changes in dividend payout marginally represent current changes in the earnings. Additionally, Linter noted that dividend payout is a reaction to a long-term development of the earnings of the company. It can be explained by a concept of a “sticky dividend”, which emphasizes that companies deciding to cut dividends are facing a negative market reaction, leading to a lower stock price. It happens because market participants perceive dividend cuts as a signal of financial distress or poor prospects for the business. (Linter, 1956.) The findings are aligned with the conclusion of a study done by Fama and Blahnik in 1968. Researchers stated that sturdy companies tend to increase dividends in response to increases in earnings. (Blahnik & Fama, 1968.)

Miller and Modigliani (1961) researched the importance and implication of the dividend payouts on the firm value and concluded dividend payouts to be irrelevant for the firm value in the perfect capital market. The argument rests in the assumption that investment program is autonomously established, each shareholder obtains the same return and future value of the market is not influenced by current dividend payout. Particularly, their study holds that dividend policy has no impact on shareholder wealth or cost of capital. (Miller & Modigliani, 1961.) In such circumstances, investors can construct their own dividends, also called homemade dividends, by selling shares to create a cash flow. However, by utilizing such strategy, investors would reduce their holdings, thereby reducing dividend income in the consequent periods. Therefore, the theory does not articulate that dividends intrinsically are irrelevant to the shareholders' wealth, though stating that the dividend policy itself is irrelevant. (Noronha & Troughton, 2021.) Besides, the theory holds that the firm's value depends only on net income produced by assets, not on how income is split in terms of dividends and retained earnings. Further, under Miller and Modigliani's theory, share repurchases, and dividends are interchangeable as they deliver the same amount of value. (Meldrum, 2021.)

In 1963, Gordon and in 1962, Linter concluded that stock risk declines as dividends increase, leading to a decrease in the cost of equity and consequently WACC<sup>2</sup>. According to the theory, shareholders view dividends as a bird in the hand while considering retained earnings to be riskier. Thus, shareholders prefer dividends and are willing to accept a lower required rate of return on

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<sup>2</sup> WACC, or weighted average cost of capital, measures a firm's cost to borrow money from both debt and equity investors (Berk & DeMarko, 2020).



equity when compared with otherwise similar non-dividend payer-company. (Meldrum, 2021.) Furthermore, the lower cost of equity should result in a higher share price (Noronha & Troughton, 2021). Opposingly, Miller and Modigliani's theory advocates that this hypothesis cannot withstand their assumptions. According to Miller and Modigliani, increasing or paying the dividend does not affect the risk of future cash flows. Such actions only lower the ex-dividend price of the share. (Noronha & Troughton, 2021).

Additionally, dividend payout reduces the agency costs as then management has less retained earnings to misuse. (Meldrum, 2021). In 1976, Jensen and Meckling, concluded that in scenario when allocated resources may benefit managers, managers will be likely to act in their own benefit instead of shareholders' (Jensen & Meckling, 1976). In his study, Easterbrook (1984) showed that dividends can be used as a solution to an agency conflict. By paying out dividends, management has less capital to allocate, leading to higher scrutiny of investment-related decisions and lower opportunities to use the company's capital wastefully. (Easterbrook, 1984.)

Tax Effect Theory asserts that if tax on dividends is higher than tax on capital gain, investors prefer low payout ratios or share repurchases as a form of distribution. Thus, investors would be willing to pay more for low payout companies. (Meldrum, 2021) Theory assumes that any growth of excess earnings would result in a growth of share price. (Noronha & Troughton, 2021) From this perspective, a company with a high dividend payout ratio will have a lower value per share compared to a company with a lower ratio. It is also critical to note that if tax on dividend and tax on capital gain is equal, investors will still prefer capital gains because of the concept time value of money. (Meldrum, 2021). Allen and Michaely (2003) and Chen et al. (1990) also noted influence of taxation on the decisions regarding payout policy. Gottesman and Jacoby (2006) stated that tax advantage is the leading driver of buybacks as a payout method.

A number of studies, including Grullon and Michaely (2004), DeAngelo et al. (2006), and Fama and French (2001) reported an importance of the availability of investment opportunities when choosing a payout policy. Studies show that companies that are lacking NPV positive projects are paying out excess cash to shareholders, while companies that have NPV positive investment opportunities serve the best interest of their shareholders and retain earnings to reinvest money to provide

shareholders with higher rate of return in the future. A company with NPV positive investment opportunities tends to return less cash in the form of dividends than a company with lack of investment projects, all else equal. This phenomenon can be explained by the fact that generally, internally generated cash flows are a cheaper way for firms to invest in their new projects rather than, for instance, issuing new equity. Similarly, depending on the industry or the project itself the company may be unable to delay initiation of the project without penalty. Accordingly, a company that needs to act urgently to exploit the opportunity will be less willing to pay dividends. (Noronha & Troughton, 2021.)

## 2.4 Motives behind share repurchases

As already discussed in chapter 2.2, management of the firm may have a lot of reasons to announce a share repurchase. The present thesis focuses on three core motives that can be guiding management's decision to start a share repurchase program: leverage, free cash flow and signaling hypotheses. Therefore, the purpose of the subchapter is to present studies that can explain the relationship between share buybacks and motivation of the management, as well as establish the value creation process.

### *The leverage hypothesis*

Share buybacks can be utilized by management as a tool for managing the capital structure. Once share repurchase program is employed, the equity base decreases, accordingly, increasing debt-to-equity ratio. (Kivi, 2006.) Companies may decide that their current leverage is below the target because of the equity dilution, which can be forced by executive stock options, dividend re-investment plans (DRIPs) or employee stock ownership plans (ESOPs). (Chan et al., 2004.) Nonetheless, the extent to which share repurchase program affects the capital structure of a firm is also dependent on the financing method. If a company uses internally generated funds, the leverage increases modestly unlike if the share buyback is financed with debt. In that case, leverage will increase more. (Karhunen, 2000.)

Higher abnormal returns around the announcement date were found to be higher for companies with greater degree of debt due to losses of agency, according to Masulis (1980) as well as Jensen (1986). Though, Vermaelen (1981) was partially in disagreement with conclusion of Masulis (1980)

by stating signaling hypothesis to be more plausible core explanation for the phenomenon, while the leverage hypothesis could only partially explain it. Nevertheless, both Masulis (1980) and Vermaelen (1981) agreed that own share acquisitions can be used by the management team of a company as means to steer the capital structure towards the more optimal one, which in turn, increases the firm value. Chan et al. (2004) as well concluded that utilizing buybacks to reach their optimal capital structure experienced long-term positive abnormal returns. Though, these companies do not experience abnormal returns on the day of announcement because the market is more focused on the actual buyback operation. Hence, the author of present thesis concludes that if a share buyback announcement is executed with intent to reach the optimal capital structure, it is more likely to be incorporated in the long-term rather than short-term.

### *The free cash flow hypothesis*

According to Jensen (1986), companies execute share buybacks when they have cash, which exceeds the current and potential investment opportunities. Jensen also suggested buybacks to be an effective method of avoiding agency costs as otherwise funds could be wasted by management due to differing incentives of management and owners. (Jensen, 1986.) Stephens and Weisbach (1998) contributed to Jensen's theory by finding that both expected and unexpected increases in cash flows are positively correlated with share repurchases. The finding consequently means that companies can tailor their payout policy according to their financial position. Stephens' and Weisbach's study assumed that CFO distributed excess cash in a wise manner rather than utilizing it for personal benefits such as perks or negative NPV investment projects. (Stephens & Weisbach, 1998.) Meanwhile this assumption has been refuted by other researchers such as Jensen and Meckling (1976), Bates (2005), and Dittmar and Mahrt-Smith (2007), who claimed that managers would not invest excess cash to benefit the shareholders, presenting agency conflict. Finally, Bagwell and Showen (1989) argued that companies with lower market-to-book ratios lacked investment opportunities and therefore tended to accumulate more retained earnings. Once a company rids itself of financial slack, market reacts positively.

### *The signaling hypothesis*

Under the conditions of the perfect marketing, information asymmetry is not able to exist and therefore implying that payout policy is not impacted by availability of information (Modigliani & Miller, 1961). In an imperfect market on the other hand, signaling hypothesis is one of the most dominant motivations to begin a share buyback program. Signaling hypothesis relies upon two assumptions, undervaluation, and asymmetry of information. (Vermaelen, 1981.) Insiders having more information regarding a company than investors, is implied by asymmetry of information. Hence, management can relay private information to investors through share repurchases. (Duinker, 2013.) Though, management may in fact be announcing share buybacks due to valuation errors made by the market and therefore responding to the assumption of undervaluation (Vermaelen, 1981). According to Comment and Jarrell (1991), there is a negative correlation between positive market reaction and the financial performance prior to it. The logic behind such phenomenon is that through positive market reaction company is brought closer to its fundamental value while a negative reaction drives the company further away from the value. (Comment & Jarrell, 1991.) Asquith and Mullins argued in 1986 that company announcing a share buyback program is considered more genuine than a management team simply claiming misevaluation without following the claim up with any actions. Moreover, abnormal returns that a company experiences after announcing share repurchase program prove that the company did not falsify information. (Vermaelen, 1981.)

Although it can be argued that the company sends an intentional false signal via share buyback, Bhattacharya and Jacobsen (2015) concluded that it is unlikely because it is an expensive method to send a signal to the market. However, Chan et al. (2010) argued that open market repurchases (OMR) act as a weaker signal of the undervaluation than repurchase tender offers as OMR are not assuming the obligation of the firm to buy shares, therefore, the cost of the false signaling is low. Rau and Vermaelen (2002) suggested that one cannot detect signaling for certain, because companies have no obligation to buy back shares. In addition, Chan et al. (2004) argued that the management in fact reaches their final decision on whether to pursue the share buyback program or not only after the announcement has been done. They also found that companies acquire a larger number of shares if the market reaction is not as large as expected. (Chan et al., 2004.)

Vermaelen (1981) found a negative correlation between the abnormal returns and firm size. He states that the information asymmetry is bigger in smaller firms as they are not analyzed by the market as precisely as larger companies. Vermaelen also argued that share repurchase programs are the only alternative for small companies to curtail information asymmetry. (Vermaelen, 1981.) Dann et al. (1991) also stated that smaller companies have a higher chance to be affected by information asymmetry, and therefore, are more expected to signal data. Ikenberry et al. (1995) supported the signaling hypothesis by stating that low market-to-book companies tend to have higher abnormal announcement returns since small companies are likely to initiate a share repurchase due to undervaluation. Stephens and Weisbach (1998) concluded that the actual buybacks have a negative correlation with prior quarter stock return and are associated with information asymmetry hypothesis. Finally, Chen and Choi (1997) suggested that announcement of the share repurchase program is associated with a bigger market response than the dividend increases.

Brav et al. (2005) surveyed managers of 256 public companies and found that according to 86,4% of them, undervaluation is one of the most important factors in the decision-making process of whether to or not to pursue a share repurchase program. Furthermore, 85,6% of the managers claimed buyback announcements to relay information to the investors. (Brav et al., 2005.) Chen and Obizhaeva (2022) however concluded that signaling hypothesis alone is not sufficient to explain open-market buybacks as other types of share repurchases serve as significantly stronger signal.

## **2.5 Business cycles and share repurchases**

Initially, Burns and Mitchel (1946, p.3) identified “business cycles as a type of fluctuation in the cumulative economic activity of populations that establish their work primarily in business enterprises”. Business cycle, hence, consists of expansions, followed by regressions, contractions, and revivals, and thenceforth merging into the next business cycle expansion phase. Normally, cycles eventuate roughly simultaneously in many economic activities, yet making it rather recurrent than periodic ranging in length from one year to 10-12 years. (Burns & Mitchel, 1946.) Cao et al. (2021) agree that the definition of the Burns and Mitchel remains applicable and still proposes patterns that can be utilized when analyzing the economic scene. Researchers also proposed their definition of business cycles as recurrent contractions and expansions in economic activity influencing vast segments of the economy (Cao et al., 2021.)

Classical cycle, as one of the types of the business cycle, represents the fluctuations in the level of economic activity (OECD, 2001). The contraction phases, periods between peaks and troughs, are normally shorter than the expansion phases. (Cao et al., 2021). Figure 4 represents graphically classical business cycle.

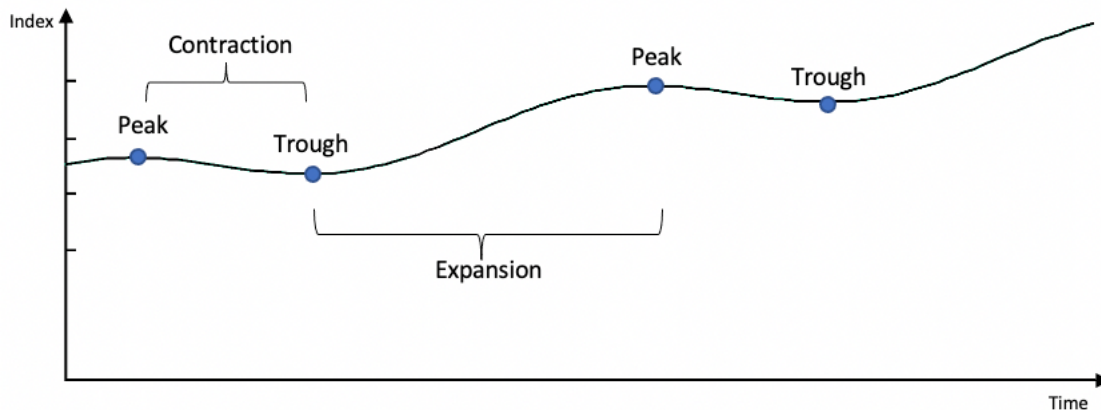


Figure 4 - Classical Business Cycles adapted from Cao et al., 2021

Dittmar and Dittmar (2008) demonstrated the pro-cyclicality of the value of share repurchases made by US-based companies. Researchers also underscored financial flexibility and tax advantages to be more influential factors in the decision-making process for companies in the boom period rather than in stagnation or burst periods. (Dittmar & Dittmar, 2008.) Wang et al. (2021) further explored the topic of the management's motivation throughout business cycle. They summarized that in the expansion companies do buybacks to distribute excess cash and in recession companies buy back shares either due to the undervaluation hypothesis or to boost the market liquidity (Wang et al., 2021). Hillert et al. (2016) explained that company may be incentivized to utilize the share buyback as a stimulator of liquidity as stock market is less liquid in case if the sell-side is dominating the buy-side.

Dittmar (2000) noted that in expansion, firms normally have better financial results and more net cash inflows, resulting in larger cash distributions. Alternatively, in recession, companies are more likely to be undervalued due to market pessimism. In the presented case, companies can be utilizing the situation to repurchase stocks back as firms think that shares are undervalued. (Ikenberry et al., 1995.) Wang et al. (2021) provided in their study more details about differences of share

buybacks done in expansion and recession. For instance, in the economic recession, announcements are followed by a smaller completion rate and a higher short-term stock return, opposing higher long-term returns and higher completion rates in recession. Moreover, researchers found that in expansion companies tend to have a larger number of shares to repurchase with fewer buyback announcements. Lastly, the duration of share buybacks and completion rate are 3,1%–4,4% higher and 10,6–19,5 days shorter in expansion compared to recession. (Wang et al., 2021.)

	<b>Recession</b>	<b>Expansion</b>
Prevailing motives	Undervaluation motive Liquidity motive	Substitution <sup>3</sup> motive Flexibility motive FCF hypothesis
Consequences	Higher short-term stock returns Lower completion rate Higher stock liquidity	Higher long-term returns Higher completion rate

Table 1 - Comparison of management's motives and buybacks' consequences in recession and expansion as compiled from Wang et al. (2021) and Ikenberry et al. (1995)

AnalystPrep (2021) concluded that volume of buybacks typically increases when economy is strong, and companies have more retained earnings. That poses a follow-up conclusion that when the economy is growing, companies are overvalued. Therefore, companies tend to buy back their shares when they are overvalued and conserve cash when shares are undervalued. Alternatively, if companies reserve cash and repurchase shares when the economy is in recession, management would be able to maximize share value more effectively. However, in such case shareholders may face agency costs. (Meldrum, 2021.)

## 2.6 Hypotheses

Present paper inspects two spheres of interest: short- and long-term returns of share repurchases and reasons that guide management's decisions to utilize buyback as a payout method. Therefore,

<sup>3</sup> Substitution hypothesis argues that companies substitute buybacks for cash dividends due to tax benefits. Tax dividend on income is normally higher than the capital gain tax rate. (Moser, 2007.)  
In Finland, the capital gain tax is 30% if capital gains are under 30000€ and 34% if over. On the other side, 85% of dividends is taxed at the capital gain tax rate and 15% are tax-free. In such case, the effective tax rate on dividends is 25,5% if sum is lower than 30000€ and 28,5% if higher.

present subchapter lists hypotheses that are tested by the thesis writer. The present research performs a two-sided hypotheses test in which the null hypothesis (or null) is rejected in case if the population parameter is either significantly smaller or significantly greater than a hypothesized value and is favoring the alternative hypothesis (Drake, 2021a). After providing reader with hypotheses, researcher introduces variables grouped by corresponding hypothesis used in the analysis of the managements' motivation.

Hypotheses testing short- and long-term consequences of buybacks:

**H<sub>a</sub>:** The announcement of the intent to start a share repurchase program has abnormal returns on the day of the share repurchase announcement and in the event window (-1; +1).<sup>4</sup>

**H<sub>b</sub>:** The firm that utilizes the share repurchase program has a long-term stock price reaction.<sup>5</sup>

**H<sub>c</sub>:** In recession the short-term stock returns are higher than in expansion.<sup>6</sup>

Hypotheses testing the motives of the firms to start a share repurchase:

**H<sub>d</sub>:** Leverage hypothesis is responsible for positive market reaction.<sup>7</sup>

**H<sub>e</sub>:** The free cash flow hypothesis is responsible for the positive market reaction.<sup>8</sup>

**H<sub>f</sub>:** The signaling hypothesis is responsible for the positive market reaction.<sup>9</sup>

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<sup>4</sup> H<sub>0a</sub>: The announcement of the intent to start share repurchase program has no effect on the day of the share repurchase announcement and in the event window (-1; +1).

<sup>5</sup> H<sub>0b</sub>: The firm that utilizes the share repurchase program has no long-term reaction.

<sup>6</sup> H<sub>0c</sub>: The short-term effect on share prices in expansion is the same as in downturn.

<sup>7</sup> H<sub>0d</sub>: The leverage hypothesis is not responsible for positive market reaction.

<sup>8</sup> H<sub>0e</sub>: The free cash flow hypothesis is not responsible for the positive market reaction.

<sup>9</sup> H<sub>0f</sub>: The signaling hypothesis is not responsible for the positive market reaction.



### **Variables used to test hypotheses $H_d$ , $H_e$ and $H_f$**

As a variable to test the leverage hypothesis the ratio of debt to assets can be used. Researcher expects to observe a negative relation between the debt-to-assets and the announcement of abnormal returns since increasing the leverage itself brings the value.

To test the free cash flow hypothesis, researcher uses market-to-book (MTB) ratio as proposed by Bagwell and Shoven (1989). They summarized that companies with low MTB ratio have lower investment opportunities, and therefore, such companies have bigger financial slack. Consequently, once the company gets rid of financial slack, the market reacts positively as potential agency conflict decreases. The expected coefficient is negative. Similarly, Jensen (1986) states that companies with financial slack experience agency conflict as management can misuse cash for their personal benefits. Therefore, as an alternative to analyze the financial slack, free cash flow divided by total assets can be used as proposed by Karhunen (2000). In that case, researcher expects to observe a positive coefficient. As proposed by Hatakeda & Isagava (2004) for companies that do not have profitable investment projects, it is more beneficial to distribute cash to shareholders. This in turn leads to an assumption that companies that have lower return on assets tend to have a positive impact when the intent to buy shares back is announced. The expected coefficient is negative.

Pursuant to the signaling hypothesis, Comment and Jarrel (1991) revealed the negative relation between the positive market reaction and negative performance prior to the announcement as undervalued stock moves closer to its fundamental price. Consequently, negative coefficient is expected. Vermaelen (1981) showed a negative relation of the company size and abnormal returns in the announcement window. It can be explained by the higher degree of information asymmetry in the smaller companies. In such case the announcement of the program signals the information to investors and increases the share prices. Researcher expects to observe the negative coefficient. Ikenberry et al. (1995) proposed that companies with low market-to-book value are more likely to initiate a share repurchase due to the undervaluation hypothesis, while the ones with high MTB tend to have other reasons. Therefore, negative coefficient is expected. To sum up, table 2 summarizes information about variables used in the analysis.

Hypothesis	Variable	Formula	Proxy for	Predicted sign
H1: The Leverage Hypothesis	Debt/Assets (DEBTASSETS)	$\frac{ST\ Debt + LT\ Debt}{Total\ Assets}$	Suboptimal Capital Structure	-
H2: Free Cash Flow Statement Hypothesis	Free Cash Flow (FCF)	$\frac{EBIT - CAPEX}{Total\ Assets}$	Free Cash Flow	+
	Market-to-Book (MTB)	$\frac{Market\ Cap.}{Total\ Assets - Total\ Liab.}$	Investment Opportunities	-
	Return-on-assets ratio (ROA)	$\frac{Net\ Income}{Total\ Assets}$	Agency Costs	-
H3: The Signaling Hypothesis	Prior Abnormal Return (PAR)	-60 to -20 cumulative abnormal performance	Misevaluation	-
	Size (SIZE)	$\ln Total\ Assets$	Information Asymmetry	-
	Market-to-Book (MTB)	$\frac{Market\ Cap.}{Total\ Assets - Total\ Liab.}$	Undervaluation	-

Table 2 - Variables for the analysis of the management's motivations

### 3 Research framework

In the present chapter of the thesis, author describes methodologies used in the analysis of the studied subject. Firstly, writer describes the research design. Thereafter, researcher introduces event study method that is utilized to measure and analyze the short- and long-term price impact around the date of share repurchase announcement. Additionally, t-tests are described. Secondly, author presents a framework to attain drivers behind the motivation to initiate a share repurchase program.

#### 3.1 Research design

Research design, the core focus of the subchapter, refers to a comprehensive strategy that researcher utilizes to address the research topic coherently and unambiguously through integration of various components of the study. The main goal of a research design is to ensure an effective approach to the research topic. (Vaus, 2001.) Lewis et al. (2009) summarized that research design

identifies how researcher is planning to answer to the research questions and therefore it is critical to adopt a concise research design to systematically answer to the research questions. Therefore, fundamentally research demands its author to construct an appropriate research design.

In the present study the research's focus revolves around establishing motives of the management to start a buyback procedure as well as estimating the short- and long-term consequences of the share repurchases. Hence, author employs a quantitative approach as a method that aims to gather numerical data and to generalize or demonstrate a particular phenomenon (Babbie, 2010). Consequently, as a research philosophy positivism is taken. Studies that are done according to the positivism philosophy usually include a hypothesis that is developed based on the existing theoretical data and that is tested and confirmed (partially or fully) or denied, which leads to development of generalizations and to the advancement of theory base (Lewis et al., 2009). Conforming the research philosophy, research approach is defined as deductive since it entails initiation of the research from general to particular (Daellenbach & Woiceshyn, 2018). As a strategy to perform work, a case study is utilized. Additionally, the present study is longitudinal as gives an opportunity to examine development of the phenomenon over 16 years (Lewis et al., 2009). Lastly, since researcher uses only a single data collection technique the mono method is adopted (Lopez-Robles & Vizcarguenaga-Aguirre, 2020).

### **3.2 Data collection**

In the present study, the author defines event in question as acquisition of own shares executed by a specific company. Companies from various industries are included in the sample and events take place over the span of the last 16 years. OMX Helsinki 25 index is used as the market portfolio index, because the sample consists of own share acquisition events within the Finnish stock market only.

The empirical study is built on 140 publicly traded companies in Nasdaq Helsinki. 81 companies presented in table 1 announced an open-market own share acquisition program within the set time frame of 01.01.2006 – 31.12.2021. The selection of time frame was based on two aspects of availability. The availability of data on Finnish market business cycles and availability of financial data from open sources. Share repurchase announcement data was gathered manually from the

Nasdaq OMX Nordic's online database. The financial data was extracted from financial reports published by companies on their respective websites.

In the research process, the author gathers and combines business cycle data, and information regarding share repurchase programs to reveal correlations. Like in the research executed by Wang et al. (2021), as well as in Gratez's and Michaels' (2017) study, EXPANSION is defined as a dummy that equals one in trough-to-peak expansion quarters and zero otherwise. Through-to-peak expansion is calculated through composite monthly indicator of business cycle. The indicator is tailored for the Finnish market by the National Audit Office of Finland and is used to represent the current situation of the Finnish economy. Indicator takes into consideration eleven cyclical indicators, such as economic sentiment indicator (ESI) and capacity utilization index. It also considers changes in consumer price index, wages and salaries, unemployment rate, employment rate, and vacancies. ESI includes retail trade, construction, consumer, services, and industrial confidence indicators. (Business cycle heatmap, 2022.) Observations from the composite indicator on the Finnish market within the time frame of 2006 -2021 are presented in figure 1.

### 3.3 Event studies

Share repurchases as a subject of an event study is analyzed using method that was initially proposed by Craig MacKinlay in 1997. Generally, event studies benchmark the impact of a concrete economic event on the value of the companies using the information from the financial market. MacKinlay reviewed studies done since 1933 regarding the event study and introduced his version. According to him, at the outset, the event of interest and period over which the prices of the security are studied must be identified. (MacKinlay, 1997.)

Figure 5 defines a time sequence with a timeline. Accordingly,  $\tau = 0$  represents the event or announcement day. Event window is defined as  $\tau = T_1 + 1$  to  $\tau = T_2$ , estimation window continues to period from  $\tau = T_0 + 1$  to  $\tau = T_1$  and, finally, post-event window is from  $\tau = T_2 + 1$  to  $\tau = T_3$ . For further development of the framework, let  $L_1 = T_1 - T_0$ ,  $L_2 = T_2 - T_1$  and  $L_3 = T_3 - T_2$  symbolize the estimation window, the event window and respectively the post-event windows.

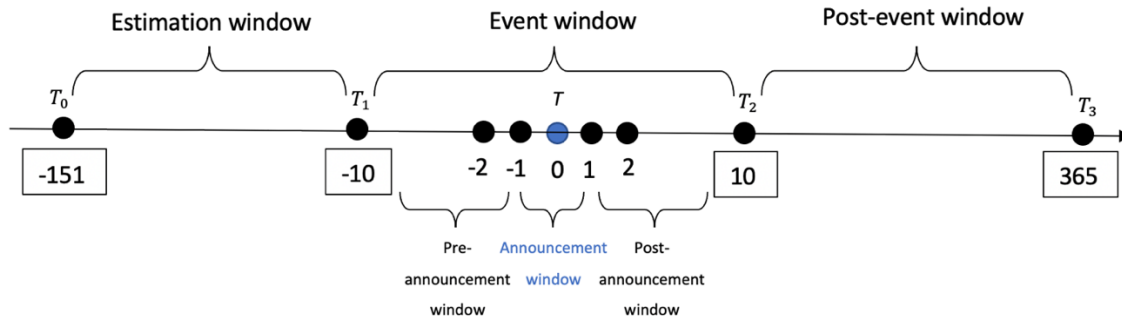


Figure 5 - Time line for an event window adapted from MacKinlay, 1997

To evaluate the event's impact, the company will require a measure of abnormal returns<sup>10</sup>. The relationship among abnormal  $AR_{it}$ , actual  $R_{it}$ , and normal returns  $E$  for the period  $\tau$  for company  $i$  is identified as follows

$$AR_{it} = R_{it} - E(R_{it}|X_{\tau}), \quad (1)$$

where  $X_T$  is the conditioning information for the normal return model, a market return. As one of the choices for the normal return model, the market model can be utilized. It presumes a stable linear relationship between the market return and the security return. The formula of market model is described as follows:

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

$$E(\varepsilon_{it}) = 0, \quad var(\varepsilon_{it}) = \sigma_{\varepsilon_i}^2,$$

where  $R_{mt}$  and  $R_{it}$  are returns on market portfolio and security  $i$ , and  $\varepsilon_{it}$  is the zero mean disturbance term. (MacKinlay 1997.)

<sup>10</sup> Abnormal return is an actual post return of the security over the event window subtracted the normal return of the company over the same event window. Then normal return is identified as an expected return without stipulating any event occurring. (MacKinlay 1997.)

To determine the market models parameters such as  $\beta_i$ ,  $\alpha_i$  for the estimation window OLS (ordinary least squares) is used:

$$\beta_i = \frac{\sum_{\tau=T_0+1}^{T_1} (R_{i\tau} - \mu_i)(R_{m\tau} - \mu_m)}{\sum_{\tau=T_0+1}^{T_1} (R_{m\tau} - \mu_m)^2}, \quad (3)$$

$$\alpha_i = \mu_i - \beta_i \mu_m, \quad (4)$$

where  $\mu_i = \frac{1}{L_1} \sum_{\tau=T_0+1}^{T_1} R_{i\tau}$  and  $\mu_m = \frac{1}{L_1} \sum_{\tau=T_0+1}^{T_1} R_{m\tau}$ .  $\beta_i$ , and  $\alpha_i$  are utilized to quantify abnormal returns through the formula

$$AR_{i\tau} = R_{i\tau} - \alpha_i - \beta_i R_{m\tau}, \quad (5)$$

To deliberate comprehensive inferences for the event of interest the abnormal returns must be aggregated. Henceforth, the CAR from  $T_1$  to  $T_2$  or equivalently CAR (-10; +10) is the sum of all abnormal returns from the period, particularly 21 returns. Accordingly, CAR (-5; +5), CAR (-2; +2) and CAR (-1; +1) are sums of 11, 5 and 3 returns.

After computing the Abnormal Returns and Cumulative Abnormal Returns for different time periods the following formula is applied to compute the average of the AR and CARs:

$$\overline{AR}_\tau = \frac{1}{N} \sum_{i=1}^N AR_{i\tau}, \quad (6)$$

$$\text{and } \overline{CAR}_{(T_1, T_2)} = \sum_{\tau=T_1}^{T_2} \overline{AR}_\tau. \quad (7)$$

Like the calculation of short-term returns, long-term returns are determined using a buy-and-hold abnormal return approach, or BHAR. The method is based on the investment strategy, according to which investor buys a stock on a specific day and holds it until the day in the future. (Event study tools, 2021.) Therefore, for the calculation of the long-term returns the already mentioned formulas are utilized.

## General analysis

One-sample t-test is used to test hypotheses  $H_{0a}$ ,  $H_{0b}$ , and  $H_{0c}$ . It is used to understand if the sample is representative of the normal population.

In that case, the null hypothesis ( $H_0$ ) is as follows:  $H_0: \mu = \mu_0$

Similarly, alternative hypothesis ( $H_{0a}$ ) is:  $H_{0a}: \mu \neq \mu_0$

First and foremost, assumptions need to be discussed to conclude appropriateness of the t-test utilization. The study design meets two assumptions, particularly, the analyzed variable is dependent at a continuous level and data is independent. Two other assumptions are related to the nature of the data. One of these assumptions is that dependent variable has no significant outliers. The second assumption holds that the dependent variable should be approximately normally distributed. (Laerd Statistics, 2021a)

The dependent variables do not meet the two criteria regarding the nature of the data. Dependent variables do have outliers as judged by inspection of a boxplot for values greater than 1.5 box-lengths and the dependent variables are not normally distributed based on the Shapiro-Wilk test for normality and Normal Q-Q plot. Researcher attempted to resolve the not met assumptions. The assumption of outliers' presence and violations of normality can be clarified either through data transformation, keeping the outliers in the analysis or utilizing the non-parametric one-sample Wilcoxon signed-rank test. As an option of last resort, outliers can be removed from the analysis.

Firstly, researcher attempted to apply the transformation technique. Transformation of the dependent variables is warranted only in case if data is not distributed normally. For ease of explanation, variable CAR (-1; +1) is addressed. It is positively skewed. To convert positively skewed data to normality, researcher applies a "square root" transformation. In case some of the variables are negative, IBM (2021) suggests adding a constant to each of them before applying transformations. However, no significant benefits are observed. Secondly, researcher considers the impact of re-

moving the outliers from the dataset, similarly to the transformations in thesis written by Temming (2014). Researcher concludes that removing outliers creates new outliers, and therefore, does not serve its initial purpose. Since none of the previous solutions are employed, in addition to conducting one-sample t-test, researcher decides to conduct a non-parametric one-sample Wilcoxon signed-rank test. The decision is dictated by a different focus of the non-parametric test. One-sample Wilcoxon signed-rank test is not as affected by outliers as one-sample t-test as it concentrates on the median rather than on the mean. To utilize one-sample Wilcoxon signed-rank test, data must satisfy the assumption of continuity and assumption of sample being random. In contrast to one-sample t-test, variable should be skewed. (Statstest, 2021.)

However, the results of the one-sample t-test are still presented due to robustness of one sample t-test. According to researches done by MacKinlay (1997) and Brown and Warner (1985), convergence to normality is quick as the number of sample securities increases. Additionally, even though non-parametric tests are dominating parametric tests in event studies with a focus on abnormal returns on a single day, their efficacy is curtailed when used for analysis of multiple day tests of CAR. (Kolari & Pynnonen, 2012). Therefore, the study will present results of both tests for the analysis of AR and only parametric test for CAR.

### **Analysis by business cycle**

Since one of the aims of the research is to compare the returns on various stages of business cycles, the independent samples t-test is employed. In variable terms, the present study aims to figure out if the independent variable, business cycle, has an effect on the dependent variable, CAR/AR.

Similarly to the one sample t-test, to run the test, there are six assumptions that should be considered. The first three assumptions are related to the design of the study and measurements. Firstly, dependent variables, that are measured at the continuous level, in the present study are represented by CARs or ARs. Secondly, as an independent dichotomous variable business cycle variable is taken. It consists of two groups: "recession" and "expansion". Thirdly, independence of observations is declared. The second three assumptions are related to the characteristics of the data. To be more precise, no significant outliers should be present, data should be approximately normally



distributed, and homogeneity of variances should be existent. Even though assumptions of normality and absence of outliers are not met, researcher will still utilize the independent t-test because of the already discussed reasons. Similarly to the analysis of one sample, independent/samples median test is used to test if medians are the same in both groups. The assumptions of independent observations and test variables being metric are met (Geert, 2020).

### 3.4 Cross-sectional model

MacKinlay (1997) suggests a cross-sectional regression model to investigate the relationship between abnormal returns and multiple hypotheses that are potentially explaining the source of abnormal returns. This method was used extensively in analysis of relationships between independent and dependent variables, for instance, by researchers Cressy and Farag (2009), Asquith and Mullins (1986) and Wang et al. (2021). In the present research it is used to test the null hypothesis  $H_{0d}$ ,  $H_{0e}$ ,  $H_{0f}$  to understand the motives driving the share repurchases in different business cycles.

To test hypotheses, cross-sectional regressions of abnormal returns and cumulative abnormal returns are run on the characteristics of interest (MacKinlay, 1997). Dependent variable is the one whose variation is being explained, and consequently, independent variable as one that explains the particular variation (Drake, 2021b). Therefore, in the present work dependent variable is CAR in the intervals (-1; +1). Independent variables are presented in Table 2.

The regression model for the event period (-1; +1) is:

$$CAR_{i(-1;+1)} = \delta_0 + \delta_1 DEBTASSETS_{i,\tau_i} + \delta_2 FCF_{i,\tau_i} + \delta_3 MTB_{i,\tau_i} + \delta_4 ROA_{i,\tau_i} + \delta_5 PAR_{i,\tau_i} + \delta_6 SIZE_{i,\tau_i} + \eta_i,$$

where  $\delta_0$  is intercept symbol and  $\eta_i$  is zero mean disturbance term (MacKinlay, 1997).

Multiple linear regression has eight assumptions that must be considered. The first two assumptions are related to the study design – dependent variable is measured at the continuous level and independent variables are either continuous or nominal. Other six assumptions are related to the

nature of the data: observations are independent, linear relationship exists between the dependent variable and each independent variable, homoscedasticity of residuals is present, data does not show multicollinearity, no significant outliers are present, and residuals are approximately normally distributed. (Laerd Statistics, 2021b.) All assumptions except presence of the significant outliers and normal distributions are met. Yet, similarly to one sample t-test, the multiple linear regression can still be used, as suggested by MacKinlay (1997).

In addition, the regression model tool used by SPSS simultaneously provides the Pearson product-moment correlation, which is used to determine the direction and strength of the association between variables to further explore the association between variables.

## **4 Research results**

The present section shows results for the hypotheses using the data and methodologies presented in chapter 3. In the first subchapter descriptive statistics is presented. In the second subchapter author presents the short-term and long-term ARs and CARs cumulatively, as well as split by business cycles. In the third subchapter, possible motives behind share repurchases using cross-sectional regressions are proposed.

### **4.1 Descriptive design**

Over 16 years, 81 researched companies announced their intent to repurchase shares 291 times, out of which 214 times were in recession period and 77 in expansion.

Figure 6 represents share repurchases distribution by sectors defined by Morningstar. Companies from the Industrial sector did 107 share repurchases, representing almost 37% of all share repurchases. The second largest number of share repurchases was done by firms from the Technology sector, equaling to 51 and representing 18% of the total number of share repurchases. The least number of share repurchases was done by companies from the Energy sector (4 events) and from the Utilities sector (2 buybacks), consequently representing 1,4% and 0,7%.

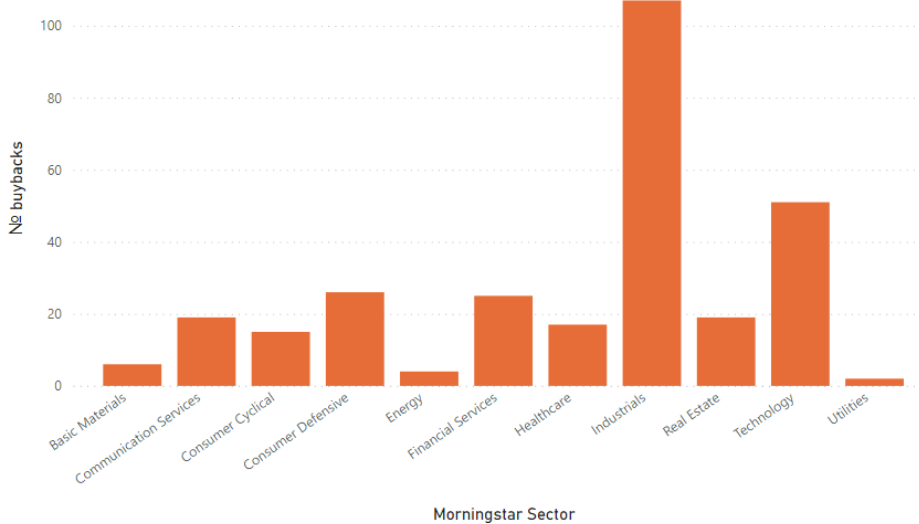


Figure 6 - Share repurchases by Morningstar Sector

Companies that announced intent to start a buyback program from 01.01.2006 until 31.12.2021			
Afarak Group Oyj	Aktia Bank Abp	Alma Media Oyj	Apetit Oyj
Aspo Oyj	Atria Oyj A	Basware Oyj	Cargotec Oyj
Citycon Oyj	Digia Oyj	Dovre Group Oyj	EAB Group Oyj
Elisa Oyj	Enedo Oyj	eQ Oyj	Etteplan Oyj
F-Secure Oyj	Finnair Oyj	Fiskars Oyj Abp	Fortum Oyj
Harvia Oyj	HKScan Oyj A	Honkarakenne Oyj B	Innofactor Plc
Investors House Oyj	Kamux Oyj	Kesko Oyj B	KONE Oyj
Konecranes Oyj	Lassila & Tikanoja Oyj	Lehto Group Oyj	Marimekko Oyj
Metso Outotec Oyj	Musti Group Oyj	Neles Oyj	Neste Oyj
Nixu Oyj	NoHo Partners Oyj	Nokia Oyj	Nordea Bank Abp
Olvi Oyj A	Oma Säästöpankki Oyj	Oriola Oyj A	Orion Oyj A
Outokumpu Oyj	Ovaro Kiinteistösi joitus Oyj	Panostaja Oyj	Pihlajalinna Oyj
Ponss Oyj 1	QPR Software Oyj	Raisio Oyj Vaihto-osake	Rapala VMC Oyj
Raute Oyj A	Revenio Group Oyj	Robit Oyj	Rovio Entertainment Oyj
Sampo Oyj A	Sanoma Oyj	Scanfil Oyj	Sievi Capital Oyj
Solteq Oyj	Soprano Oyj	SRV Yhtiöt Oyj	Suominen Oyj
Talnom Oyj	Teleste Oyj	Telia Company	Terveystalo Oyj
TietoEVRY Oyj	Tokmanni Group Oyj	Trainers' House Oyj	Tulikivi Oyj A
United Bankers Oyj	UPM-Kymmene Oyj	Uponor Oyj	Vaisala Oyj A
Valmet Oyj	Verkkokauppa.com Oyj	Wulff-Yhtiöt Oyj	Wärtsilä Oyj Abp
YIT Oyj			

Table 3 - Research sample companies

Table 3 summarizes the companies that did share repurchases from the 1st of January 2006 until 31st of December 2021. Table 4 represents descriptive statistics of the explanatory variables used in regression and correlation models. The approach of variable calculation is presented in chapter 2.6.

	Debt-to-Asset	FCF	MTB	ROA	Size	Prior AR (-60; -20)	CAR (-1; +1)
N	271	271	269	271	271	287	287
Min	0,001	-1,665	0,003	-0,146	14,709	-36,48	-16,27
Max	1	0,308	26,582	0,353	27,144	22,58	20,27
Mean	0,55	0,004	2,892	0,031	19,777	-0,509	0,912
Std. Dev.	0,158	0,12	3,338	0,05	2,082	8,505	4,893

Table 4 - Descriptive statistics

## 4.2 Results of the event studies

In the present subchapter, firstly, author presents cumulative results of the event studies. Then, author shows results of the event studies analyzed by business cycle stages.

### Overall analysis

Table 5 shows the abnormal returns as well as cumulative abnormal returns over the course of the sample time frame. On day zero of the share repurchase announcement (AR0), with 0,87%, the average abnormal return is statistically significantly greater than the market return on the same day. CAR in the shortest announcement window (-1; +1) is 0,91%, while in the event window (-2; +2) CAR is 1,08%. The three-month event window (0; +90) puts forward a mean abnormal return of 3,64%. Following the prior window, the half-year event window (0; +180) shows mean abnormal return of 6,4%. Finally, the one-year mark event window (0; +360) shows a mean abnormal return of 13,01%.

In addition, four statistically significant results in the pre-announcement window are found. Firstly, researcher finds significant negative performance prior to the announcement in the event window (-10; -2) that is significant at the 1% level and equals to -1,54%. Significant mean abnormal return on the 10<sup>th</sup> day prior to the announcement equals -0,34%. Mean abnormal returns on the 9<sup>th</sup> day

prior to the announcement is -0,34%. Average abnormal returns on the 5<sup>th</sup> day prior to announcement is -0,32%. Finally, even though not statistically significant, most of the days prior to the announcement (9/10) show negative abnormal returns. In the post-announcement window, there is only one statistically significant result, on the 4<sup>th</sup> day post announcement.

Panel A: ARs (1%, 5% and 10% significance level represented by *, **, and ***)					
Day/Interval	One-Sample Test		One-sample Wilcoxon Signed-Rank Test		AAR (%) trimmed
	AAR (%)	t-stat	Median AR (%)	t-stat	
-10	-0,349%*	-2,848	-0,215*	-3,000	-0,33 %
-9	-0,339%**	-2,339	-0,102*	-2,726	-0,33 %
-8	0,105 %	0,932	0,058	1,016	0,11 %
-7	-0,182 %	-1,582	-0,101**	-2,243	-0,17 %
-6	-0,178 %	-1,515	-0,093**	-2,178	-0,26 %
-5	-0,319%**	-2,263	-0,112**	-2,100	-0,28 %
-4	-0,062 %	-0,457	0,032	0,15	-0,03 %
-3	-0,029 %	-0,206	-0,080	-0,477	0,04 %
-2	-0,006 %	-0,043	-0,031	-1,048	-0,11 %
-1	-0,008 %	-0,059	-0,054	-0,422	-0,03 %
0	0,875%*	3,662	0,392*	3,969	0,83 %
1	-0,050 %	-0,337	-0,026	-0,554	-0,15 %
2	0,118 %	0,887	0,011	0,543	0,01 %
3	0,034 %	0,261	-0,046	-0,288	-0,01 %
4	-0,21%***	1,905	0,157*	2,523	0,24 %
5	-0,112 %	-0,939	-0,035	-1,039	-0,14 %
6	-0,022 %	-0,186	-0,018	-0,511	0,04 %
7	0,164 %	1,344	0,033	0,712	0,06 %
8	0,050 %	0,420	-0,021	0,127	0,02 %
9	-0,092 %	-0,786	-0,053	-1,24	-0,06 %
10	-0,086 %	-0,671	-0,055	-0,974	-0,08 %
Day 0 to +90	3,639%*	4,374	2,03*	3,702	3,14 %
Day 0 to +180	6,403%*	4,184	3,7*	3,557	4,99 %
Day 0 to +360	13,012%*	5,538	6,16*	4,370	9,87 %
Day -60 to -20	-0,509 %	-1,013	0,533	-0,624	-0,41 %

Panel A: CARs and One-Sample Test			
Interval	CAR (%)	t-stat	
Day -1 to +1	0,912*	3,157	0,794 %
Day -2 to +2	1,08*	3,063	0,878 %
Day -10 to -2	-0,11*	-0,196	-1,281 %
Day +2 to +10	0,43	-3,756	0,399 %
Day -10 to +10	-0,02	1,281	0,001 %

Table 5 - ARs and CARs using One-Sample Test

Figure 7 puts forward a more illustrative picture of the abnormal and cumulative abnormal returns in the interval (-10; +10). Average cumulative abnormal returns tend to decrease prior to the share buyback announcement then increasing rapidly on day zero of the announcement and so recovering from losses, as is observable from the figure. Post announcement in the event window (+1; +10) a general negative trend of CAR presents itself. Comparing the abnormal returns to pre-announcement returns, only six out of ten days are negative, then catapulting to 0,875% on the day of the announcement. Furthermore, the announcements positive effect on abnormal returns in the event window (+1; +10) can be observed.

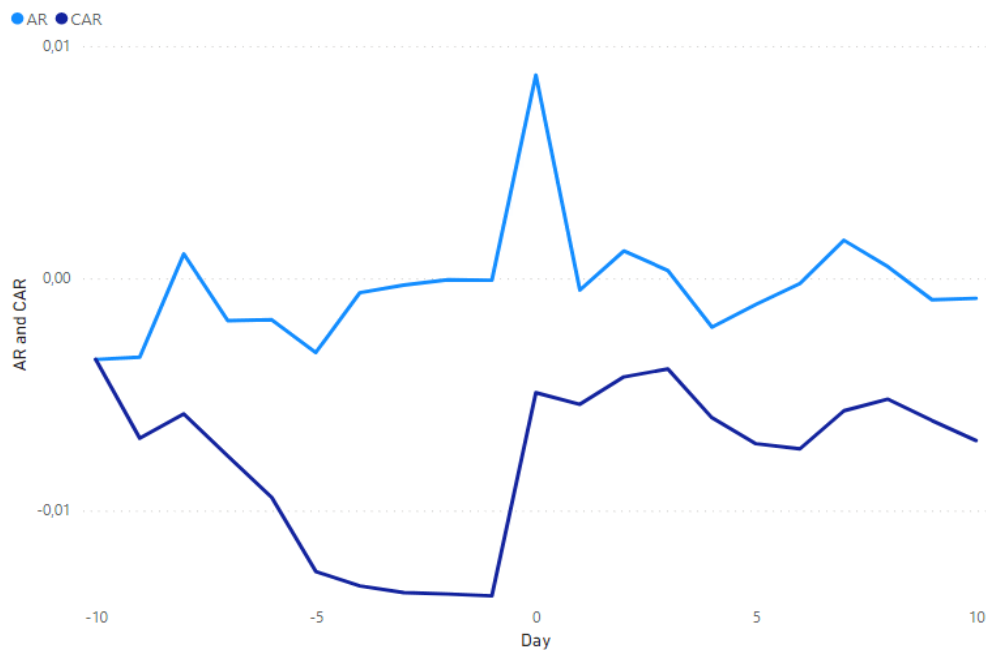


Figure 7 - AR and CAR in the time interval (-10, +10)

### Analysis by recession and expansion

Figure 8 represents the CAR during the expansionary and recessionary periods as separate curves. As one can observe, cumulative abnormal returns are greater in expansionary period than in recessionary. Intriguingly, the overall trend is nevertheless same for each group, almost reaching the same abnormal returns on the day zero of the repurchase announcement in recession and in expansion, with abnormal returns of 0,84% and 0,96% respectively.

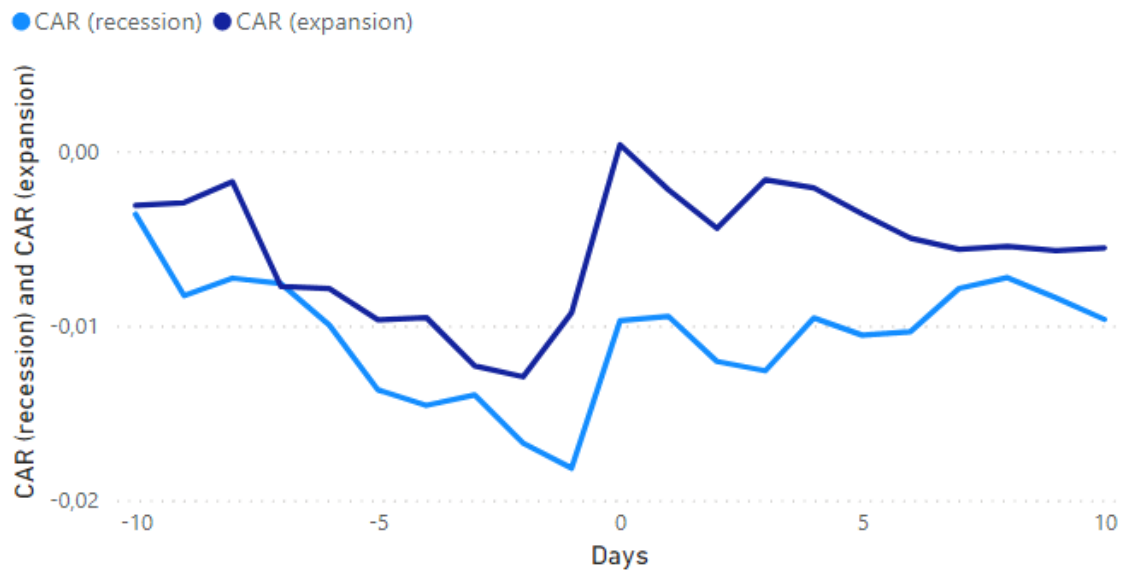


Figure 8 - CAR in recession and expansion period

Results of the independent sample t-test and independent samples median test are presented in the table 6. Due to the nature of the data and because of lack of events, the testing on share repurchases do not output statistically significant results, except for the abnormal returns on the days -7 and -1 before the announcement and on the 2<sup>nd</sup> day after.

Beginning with average abnormal returns from tenth day to the day before the announcement, mean AR on seven out of ten days are greater, or in case of abnormal losses are lower, in the expansion than in recession. This finding is in line with regular market behavior observable over the business cycle. Post share buyback announcement from first till tenth day, mean abnormal returns average higher in recessionary periods in comparison with expansionary ones. Also, within the interval (+2; +10) the cumulative abnormal returns are on average significantly higher in recession than in expansion, while on the mirrored interval (-10; -2) the opposite is true with CAR being higher in expansion over recession.

Only instance where long-term abnormal returns are greater in expansion than in recession occurs in the interval (0; +90). Accordingly, abnormal returns in intervals (0; +180) and (0; +360) are greater in recession than in expansion.

Panel A: ARs in recession and expansion period (1%, 5% and 10% significance level represented by \*, \*\*, and \*\*\*)

Day/Interval	Independent Sample T-Test			Independent-Samples Median Test	
	AAR, recession	AAR, expansion	t-stat	Median	t-stat
-10	-0,36 %	-0,31 %	-0,180	-0,215	0,054
-9	-0,47 %	0,02 %	-1,475	-0,102	1,223
-8	0,10 %	0,12 %	-0,072	0,058	0,25
-7	-0,03%*	-0,6%*	2,198	-0,101**	4,431
-6	-0,24 %	-0,01 %	-0,847	-0,093	0,326
-5	-0,37 %	-0,18 %	-0,594	-0,112	0,326
-4	-0,09 %	0,01 %	-0,337	0,032	0,702
-3	0,06 %	-0,28 %	1,080	-0,08	1,071
-2	0,01 %	-0,06 %	0,240	-0,031	0,054
-1	-0,14%***	0,37%***	-1,597	-0,054	1,886
0	0,84 %	0,96 %	-0,215	0,392	0,001
1	0,03 %	-0,26 %	0,842	-0,026	0,001
2	0,24%***	-0,22%***	1,532	0,011	2,465
3	-0,05 %	0,28 %	-1,112	-0,046	0,702
4	0,30 %	-0,05 %	1,402	0,157***	3,512
5	-0,10 %	-0,15 %	0,190	-0,035	1,792
6	0,02 %	-0,14 %	0,607	-0,018	1,147
7	0,25 %	-0,06 %	1,122	0,033	0,287
8	0,06 %	0,02 %	0,161	-0,021	0,054
9	-0,12 %	-0,03 %	-0,342	-0,053	0,092
10	-0,12 %	-0,31 %	-0,478	-0,055	0,092
Day 0 to +90	3,50 %	3,99 %	-0,258	2,03	1,241
Day 0 to +180	6,63 %	5,80 %	0,242	3,7	1,826
Day 0 to +360	14,00 %	10,17 %	0,711	6,16	0,079
Day -60 to -20	-0,40 %	-0,81 %	0,355	-0,14	1,696

Panel A: CARs in recession and expansion

Interval	Independent Sample T-Test		
	CAR, recession	CAR, expansion	t-stat
Day -1 to +1	0,85 %	1,10 %	-0,395
Day -2 to +2	1,16 %	0,87 %	0,352
Day -10 to -2	-1,69 %	-1,11 %	-0,622
Day +2 to +10	0,69 %	-0,22 %	1,172
Day -10 to +10	-0,10 %	-0,15 %	0,040

Table 6 - ARs and CARs using the Independent Sample T-Test



### 4.3 Results of the correlation analysis

The present subchapter will firstly present results of the correlation analysis despite the business cycle variable. The business cycle based results are then presented.

#### General analysis

Correlation matrix of explanatory variables, regression (I), (1%, 5% and 10% significance level represented by \*, \*\*, and \*\*\*)

	CAR (-1; +1)	Debt to Assets	FCF	MTB	ROA	Prior AR	Size
CAR (-1; +1)	1,000						
Debt to Assets	-0,086	1,000					
FCF	-0,127**	-0,121	1,000				
MTB	-0,142**	-0,038	0,152**	1,000			
ROA	-0,120**	-0,216*	0,390*	0,407*	1,000		
Prior AR	0,015	0,082	-0,019	-0,076	-0,053	1,000	
Size	-0,087	0,317*	0,044	-0,124*	-0,073	0,075	1,000

Table 7 - Results of the Multiple Pearson's correlation test

The variables CAR (-1; +1) and FCF are found to be negatively correlated with a low degree. The same correlation is present for variable couples CAR (-1; +1) and MTB, CAR (-1; +1) and ROA. Variables ROA and Debt to Assets, as well as ROA and Debt to Assets are also negatively correlated at the 1% significance level. However, size of the company is found to be positively correlated with Debt to Assets variable. Finally, variable couples MTB and FCF, ROA and FCF, and ROA and MTB show a positive correlation.

#### Analysis by the business cycle

Table 7 presents the results of the Multiple Pearson's correlation test by the business cycle. The data from the table allows researcher to deeper understand the reasoning behind the results since the statistically significant correlations are different for expansion and recession. The signs of correlation when analyzed by business cycle did not change if compared with the general analysis.

Variable MTB is negatively correlated with CAR (-1; +1) at a significant level in the recession period. However, in expansion, CAR (-1; +1) significantly negatively correlates only with variables FCF and ROA. Similarly, ROA is positively correlated with FCF in both recession and expansion, while variables MTB and FCF are positively related at a significant level only in expansion. Moreover, MTB is positively correlated with ROA on a significant level in both expansion and recession while variables MTB is significantly negatively correlated with size of the enterprise only in recession and with prior AR only in expansion. Lastly, Debt to Assets is positively correlated on a significant level with size of the company in both expansion and recession. Yet Debt to Assets is negatively correlated with ROA only in recession.

Correlation matrix of explanatory variables, regression (I) by recession, (1%, 5% and 10% significance level represented by *, **, and ***)							
	CAR (-1; +1)	Debt to Asset	FCF	MTB	ROA	Prior AR	Size
CAR (-1, +1)	1						
Debr to Asset	-0,092	1					
FCF	-0,103	-0,133	1				
MTB	-0,150**	-0,028	0,141	1			
ROA	-0,057	-0,246*	0,339*	0,423*	1		
Size ln	-0,069	0,341*	0,027	-0,14**	-0,121	1	
Prior AR	0	0,111	-0,04	-0,05	-0,082	0,035	1

Correlation matrix of explanatory variables, regression (I) by expansion, (1%, 5% and 10% significance level represented by *, **, and ***)							
	CAR (-1; +1)	Debt to Asset	FCF	MTB	ROA	Prior AR	Size
CAR (-1,+1)	1						
Debr to Asset	-0,07	1					
FCF	-0,313*	-0,06	1				
MTB	-0,116	-0,106	0,335*	1			
ROA	-0,325*	-0,111	0,807*	0,404*	1		
Size ln	-0,145	0,239**	0,156	-0,028	0,08	1	
Prior AR	0,068	-0,017	0,112	-0,291**	0,044	0,205	1

Table 8 - Results of the Multiple Pearson's correlation test by regression and expansion

#### 4.4 Results of the regression analysis

In the present subchapter, firstly, author presents cumulative results of the regression analysis. Then, author shows results of the regression analysis analyzed by business cycle stages.

## General analysis

Table 9 represents the results of multiple linear regression, which is used to find the motives behind buybacks. Four regressions with different sets of explanatory variables are presented. Regression (I) includes all variables, regression (II), (III) and (IV) test the relationships for three hypotheses, mentioned in chapter 2.6. Regression (II) tests the variables that explain the leverage hypothesis, regression (III) analyses variable that explain the free cash flow hypothesis and regression (IV) checks variable that can explain the signaling hypothesis.

In the first regression, MTB is shown to impact cumulative abnormal returns. Market-to-book variable is an explanatory variable for both the Free Cash Flow hypothesis and the Signaling hypothesis. Testing signaling hypothesis, the variable SIZE was the only one found to significantly predict CAR (-1; +1) in regression (IV), emphasizing the hypothesis.

Regression results (first row for each variable states the coefficient, second row represents the value of the t-test), 1%, 5% and 10% significance level represented by *, **, and ***				
	Regression (I)	Regression (II)	Regression (III)	Regression (IV)
Debt/Assets	-3,012	-2,657		
	-1,422	-1,393		
FCF	-3,847		-3,936	
	-1,421		-1,456	
MTB	-0,171***		-0,168***	-0,231
	-1,701		-1,691	-2,517
ROA	-6,185		-3,693	
	-0,853		-0,518	
PAR	0,008			0,007
	0,245			0,194
SIZE	-0,175			-0,256***
	-1,127			-1,744
Adjusted R <sup>2</sup>	0,028	0,003	0,021	0,02
F	2,288	1,94	2,954	2,84
Sig.	0,036	0,165	0,033	0,038

Table 9 - Results of the multiple linear regression

Statistically significant coefficients were not put forward by the other variables. Taking everything into account, the regressions do not explain the abnormal returns successfully, as adjusted R-squares of less than 0,03 can be observed for all four regressions.

### Analysis by the business cycle

Table 10 shows the results of the multiple linear regression by the business cycle. Same explanatory variables are used as in the general level analysis. Regression analysis by business cycle periods does not provide high amount of statistically significant results nor is it informative, both due to the lack of large sample, with the small size of sample emphasized in the expansion. In regression (I) only MTB is found to significantly predict CAR (-1; +1) in recession. In order to explore in more detail, which hypothesis could potentially explain the observation, regression (III) and (IV) are studied. In a fascinating turn of events, both regressions present significant coefficients.

Prior abnormal returns do not present any statistical correlations with the exception of MTB and Prior AR, as presented in table 8. Concurrently, regressions presented in tables 9 and 10, suggest that Prior AR do not explain the CAR (-1; +1) on a statistically significant level.

Regression results by the business cycle, (first row for each variable states the coefficient, second row represents the value of the t-test), 1%, 5% and 10% significance level represented by *, **, and ***								
	Regression (I)		Regression (II)		Regression (III)		Regression (IV)	
	rec.	exp.	rec.	exp.	rec.	exp.	rec.	exp.
Debt/Assets	-2,761	-2,354	-2,745	-2,352				
	-1,106	-0,57	-1,265	-0,574				
FCF	-3,562	-10,423			-3,544	-10,845		
	-1,264	-0,692			-1,267	-0,738		
MTB	-0,205***	0,162			-0,208**	0,057	-0,221**	-0,297
	-1,916	0,399			-1,967	0,15	-2,283	-0,786
ROA	1,103	-24,048			3,973	-21,677		
	0,131	-1,156			0,485	-1,053		
PAR	-0,001	0,076					-0,003	0,042
	0,013	1,029					-0,073	0,559
SIZE	-0,140	-0,257					-0,225	-0,371
	-0,749	-0,898					-1,291	-1,309
Adjusted R <sup>2</sup>	0,014	0,062	0,003	-0,01	0,015	0,072	0,016	-0,004
F	1,462	1,7755	1,601	0,329	2,038	2,767	2,06	0,906
Sig.	0,193	0,123	0,207	0,568	0,11	0,049	0,107	0,443

Table 10 - Results of the multiple linear regression by the business cycle

## 5 Discussion, limitations, and recommendations

The present chapter aims to discuss findings, as well as provide reader with the limitations the research has. Additionally, researcher proposes recommendations for future research.

### 5.1 Discussion

In the present subchapter researcher considers the implication of findings presented in the prior chapter. Author firstly discusses the hypotheses regarding short- and long-term consequences of the share repurchase announcements. Thereafter, author analyses hypotheses explaining the motives of the management to announce share repurchases.

#### Short- and long-term consequences of buybacks

Average abnormal return on the buyback announcement day, as well as cumulative abnormal returns in time frames (-2; +2) and (-1; +1), is higher than that of the market return in the same comparable period at a significant level. The researcher rejects the null hypothesis ( $H_{0a}$ ) and hence accepts the alternative hypothesis ( $H_a$ ), because difference between means were found to be statistically significant in all of the three cases. Researcher gave special consideration to Karhunen's results. Although his research found nearly two times greater cumulative abnormal returns in comparison with the present study, this difference can be explained by different time periods in the sampling process. At the time when Karhunen (2002) was executing his study, share repurchases were still a fresh phenomenon in the Finnish financial world, because Finland enabled share buybacks in the Finnish regulation only in 1997. Author presumes the novelty of repurchase activity to have resulted in more positive market reactions post legalization.

Negative abnormal return was found by the researcher on the 4<sup>th</sup> day after the announcement at 10% significance level. Positive abnormal return could be expected in the post-announcement window, if the signaling hypothesis is assumed to be true. Author suggests that significant negative outliers could dictate such results as the median abnormal return is 0,157%.

Mean abnormal returns within the three long-term event windows (0; +90), (0; +180) and (0; +360) also exceed the mean market returns in the corresponding time frames. Based on the stated

results, the researcher is successfully able to reject the null hypothesis ( $H_{0b}$ ) and accept the alternative ( $H_b$ ). Results found in the present study are on average higher than the ones found by other works<sup>11</sup>, though still following the general trend of the returns set by prior research. The researcher hypothesizes that the variation is caused by different comparable periods and countries.

Figure 8 illustrates how the cumulative abnormal returns are lesser in the recession in comparison with expansion. Yet study fails to prove with statistically significant results that short-term returns are higher in recession than in the expansion. Therefore, researcher cannot reject the null hypothesis ( $H_{0c}$ ).

### **Motives of share repurchases**

Based on the results of the regression model, presented in table 9, MTB does positively affect the cumulative abnormal returns in the time interval (-1; +1). MTB works as an explanatory variable for both signaling and free cash flow hypotheses, which are not mutually exclusive. Yet only regression III shows statistically significant data for variable MTB. Therefore, researcher concludes that MTB predicts CAR (-1; +1) based on the free cash flow hypothesis. Accordingly, one may conclude that once firm distributes excess cash to the shareholders, market reacts positively. These findings are conformed with the conclusions of Bagwell and Showen (1989). Researchers stated that since companies with lower MTB have less profitable investment projects and, as a consequence, abundance of cash, once such companies get rid of financial slack, their share prices increase. Therefore, researcher rejects the null hypothesis ( $H_{0e}$ ) and accepts the alternative ( $H_e$ ). The correlation analysis, presented in table 7, also shows variable MTB to be positively correlated with variable ROA. This implies that a more profitable company is more likely to be valued better on the market. MTB value variable is positively correlated with the FCF variable, showing that the more the share is valued the more cash the company has after paying its operating expenses and capital expenditures. ROA is positively correlated with FCF at a significant level, underscoring that profitability in relation to its total assets is associated with higher free cash flows.

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<sup>11</sup> Zhang (2005) found a return of 2,02% in a year while Rau and Vermaelen (2002) found a return of -7%, Oswald and Young (2004) found 4,54% and Crawford and Wang (2012) found a return of 2,71% in the same window. As can be observed, presented results are not consistent, yet 3 out of 4 provide with positive abnormal returns.

Furthermore, regression IV shows that variable size predicted CAR (-1; +1) at a significant level. Such finding means that smaller firms are misevaluated by market because of higher degree of the information asymmetry prior to the announcement. Consequently, the announcement of the share repurchase does convey the information regarding the financial state of the firm to investors, resulting in abnormal returns. Therefore, researcher can reject the null hypothesis ( $H_{0f}$ ) and accept the alternative ( $H_f$ ). Additionally, correlation analysis shows size of the company to be positively correlated with Debt to Assets variable. Therefore, bigger companies (based on the total assets) tend to have more leverage. Based on the same theoretical base, though not always held true, researcher concludes that the size of the company can be related to the stage of the company's development because of the capital accumulation process. Normally the value of the assets the company holds rises as a result of investments along the lifecycle of the firm. Additionally, mature companies can favor debt due to its tax-deductibility and lower costs to reach the optimal capital structure, and, therefore, to maximize the shareholder value.

Regrettably, there was not found any statistically significant proof of the leverage hypothesis's viability, therefore, the null hypothesis ( $H_{0d}$ ) cannot be rejected. This implies that present thesis fails to find any support for the fact that firms that are attempting to move closer to the optimal capital structure, experience positive short-term market reaction. Yet, as was already proposed by author in the Literature review, if the goal of the management is to steer closer to the optimal capital structure, returns are more likely to be incorporated in the long-term rather than in the short-term.

Furthermore, correlation analysis provides more statistically significant results that can also be analyzed. For instance, variables CAR (-1; +1) and FCF are negatively correlated. The mentioned finding is not satisfying the hypothesis of Jensen (1986). Jensen concluded that management of companies with financial slack can use excess cash to their own benefit, thereupon disposal of the financial slack is a positive sign. Also, variables CAR (-1; +1) and ROA show negative correlation. Hatakeda & Isagava (2004) suggested that companies with lack of profitable projects on average have higher returns on the announcement day since companies return excess cash to their shareholders what is usually taken by the market positively. Variables ROA and Debt to Assets are negatively correlated at the 1% significance level, indicating that the higher efficiency of the management in generating earnings from company's economic resources is associated with lower degree

of leverage of the company. Therefore, for instance, younger companies, that do have low leverage degree because of their business development stage, can provide with higher return than well-established companies with high debt availability. The present conclusion corresponds to the summary given by Aggawal et al.(2021) that states that at the early stage, debt is normally either not available to the firm at all or is expensive due to high business risks. On the growth stage, competitive and execution risks decline, cash flows normally become positive, more stable, and more predictable, consequently resulting in firm turning more enticing to debt investors. When a company matures, debt-financing is more alluring to the firm than more costly equity financing because of tax-deductibility of interest expense yet returns decrease when compared to the growth stage. (Aggawal et al., 2021.)

Regression by business cycle does not provide with a lot of statistically significant results due to small sample size in the expansion group. Nonetheless, in the recession group MTB significantly predicts cumulative abnormal returns in regression (III) and (IV). Present finding implies that both free cash flow and signaling hypotheses can explain abnormal return in recession.

Furthermore, data presented in table 5 and figure 7 gives additional base for the viability of the signaling hypothesis on the Finnish market. According to the data, most days before the event show negative abnormal returns. Resting on the assumption of undervaluation and asymmetry of information, signaling hypothesis can explain these findings. Author suggests that companies, undervalued due to market valuation error, convey information to their investors via a share buyback program, hence signaling about positive prospects of the company. The shareholder theory states that the core goal of an enterprise is to maximize the value of shareholders. This implies that purpose of management is to act to benefit their current and potential investors. Concurrently, investors presume that management are acting on their behalf and in good faith. Thus, announcing the intent to repurchase shares is taken as a method to relay to investors information they do not have, leading to abnormal market returns on the day of announcement. More positive returns in the post-event window (+1; +10) indirectly strengthen the signaling hypothesis, as only six out of ten days present negative returns in comparison with nine out of ten in the pre-announcement window. Meanwhile, free cash flow hypothesis presumes that companies, which have higher amount of free cash flows, end up gaining larger abnormal returns in the announcement window due to decreasing agency costs. The author assumes that retained earnings, accumulated during



the expansion period when companies tend to reach higher net profits, can explain the decrease in agency costs.

Correlation analysis presenting relations between the variables in regards of the business cycle, presented in table 8, also proposes some observations for the further discussion. Variable MTB is negatively correlated with CAR (-1; +1) in the recession period, while the negative correlation between variables FCF and CAR (-1; +1), as well as ROA and CAR (-1; +1) are present in expansion. Since each of the mentioned correlations is statistically significant, it can be concluded that free cash flow hypothesis is more prevalent in the expansion period while in recession both free cash flow and signaling hypotheses can be responsible for the explanation of returns. Interestingly, these findings are partially in line with conclusions of Wang et al. (2021). The relationship can be explained by the fact that in expansion firms tend to have excess cash due to favorable market conditions. At the same time, in recession companies tend to be undervalued since the market is going down and, in such cases, companies want to signal about their better state. (Wang et al. 2021.)

Similarly, ROA is positively correlated with FCF in both recession and expansion, while variables MTB and FCF are positively related only in expansion. The first finding similarly to the correlation between Size and Debt to Assets holds true despite the business cycle. Nonetheless, in author's opinion, the second correlation does not show representative results, potentially due to the lack of events. Normally investors prefer mature companies, or "blue chips" with no regard to the stage of the business cycle in case of the low-risk tolerance. Alternatively, blue chips can be used more actively in the economic downturn as this kind of firm has operated for a long period of time already, showing sound financial results and therefore being a more secure investment in stringent times.

Being not in line with table 8, variables Prior AR and MTB are negatively correlated, implying that the more valued companies have lower abnormal return prior to the announcement. The author also considers it to be misleading as lower prior abnormal returns are supposed to exclude higher market-to-book value according to the developed hypothesis. The variables are expected to have a positive correlation. Moreover, MTB is positively correlated with ROA in both expansion and recession while variables MTB is negatively correlated with size of the enterprise only in recession. The

first conclusion is true for any business cycle. The second finding leads to a conclusion that in recession asset-lighter companies tend to be valued higher than the heavier ones. This conclusion does not seem to go through the reality check as on average in crisis period investors prefer more secure companies with a stable financial position. There are exceptions, for instance, the growth companies but they are not statistically significant.

## 5.2 Limitations and recommendations

Although the theme of share repurchases is well researched, studies have not been executed on share buybacks by companies in the Finnish market when analyzed by business cycles. Due to small sample size, the present study fails to provide the reader a detailed justification for the theories built around repurchases and stages of economy especially in the expansionary periods. Hence, a similar study should be conducted with a larger sample of share repurchase announcements. The results can then be compared to similar research done in foreign markets as to explore potential differences and similarities. In addition, variety of aspects can be investigated further. For example, the correlation between dividend payout and share buybacks done or announced by companies in the Finnish market could be researched. Another option for future researchers is to focus on alternative hypotheses that could explain the abnormal returns. Such hypotheses include for instance mimicking<sup>12</sup> and liquidity hypothesis. Furthermore, contrasting abnormal returns with the completion rate of the repurchase programs presents an intriguing research opportunity. In such study, events with different completion rates can be analyzed separately for more in-depth analysis.

In future research, more in-depth techniques of analysis can be used as well. Fama and French five factor, which takes into consideration market, size, and value risk factors as well as future earnings and internal investment, can be used to calculate long-term abnormal returns with a greater precision. Such methodology would improve the accuracy of the results as well.

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<sup>12</sup> Mimicking hypothesis, proposed by Massa, Rehman and Vermaelen (2007), states that while open-market share repurchase entails positive news to the announcing company, it brings negative to the rivals of that firms. Consequently, rivals are likely to announce their intent to start a buyback program to counter the investors' lower expectations. (Massa, Rehman & Vermaelen,2007).

### 5.3 Conclusions

To conclude, the overall purpose of the present study was to apply already done research in the field of finance, to the Finnish market. The research is now able to act as a foundation for similar future research to build on in the Finnish market.

Both short-term and long-term consequences of share repurchase announcements tend to be positive. This conclusion can give more confidence to investors to invest in companies that have recently executed a share repurchase program, as on average the investors will get a positive return on their investment. The return gained generally has a tendency to be above market average.

Cumulative abnormal returns are lower in recession than in expansion, which leads to the logical conclusion that investing in a company based on share repurchase announcement alone results in a higher yield in expansion over recession. On average, the yield is maximized, if the investment is made before the announcement is done and the investment is held for at least a year.

The signaling and the free cash flow hypotheses can be applied in the Finnish market, while leverage hypothesis can not. The author concludes that in the Finnish stock market, share repurchases are a viable method of conveying information to the investors and therefore reducing information asymmetry. Furthermore, because the signaling hypothesis is applicable in the Finnish market, investors could pay more attention to smaller companies. In such case the information asymmetry tends to be higher and hence investors may try to analyze small companies more effectively to find out undervalued companies before such company attempts to signal its undervaluation to the market. Additionally, study shows viability of the free cash flow hypothesis in the Finnish market. This finding implies that investors take it positively when companies reduce their agency costs through cash distribution in the absence of profitable investment projects. Finally, both free cash flow and signaling hypotheses can explain abnormal return in recession. For the expansion group, correlation analysis shows that free cash flow holds true.

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