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Share Repurchases in Finland –

Descriptive statistics from 2005 to 2007

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Table of Contents

1. Introduction	2
2. Theoretical background.....	4
2.1. Share repurchases	4
2.2. Plausible reasons for buybacks	5
<i>Signalling</i>	<i>5</i>
<i>Capital structure adjustment</i>	<i>6</i>
<i>Executive and employee stock options</i>	<i>7</i>
<i>Reducing agency costs</i>	<i>8</i>
<i>Increasing liquidity.....</i>	<i>8</i>
2.3. General regulations and tax review	9
<i>Tax review</i>	<i>9</i>
2.4. Recent domestic research	11
2.5. Choice between dividends and repurchases.....	12
3. Data and research methods	14
4. Results	15
4.1. Descriptive statistics	15
4.2. Performance compared to the Omx Helsinki Cap -Index	17
5. Conclusions	19
6. Summary	21
References	22
Appendix 1: Nokia's EViews output.....	25

1. Introduction

“The proportion of firms paying cash dividends falls from 66.5% in 1978 to 20.8% in 1999, due in part to the changing characteristics of publicly traded firms. The population of publicly traded firms tilts increasingly toward small firms with low profitability and strong growth opportunities.” (Fama & French. 2001) At the same time, value of the open market repurchase program announcements has increased 750% from 15.4 billion to 113 billion dollars between 1985 and 1996 (Jagannathan et al. 2000).

This popularity of share repurchases over dividends can easily be explained by the more favourable tax treatment of capital gains in the United States before the Jobs and Growth Tax Relief Reconciliation Act in 2003. However, this doesn't explain why Finnish companies have gone forward with their share repurchase programs. Finnish markets differ substantially from American markets when it comes to taxation of dividends and capital gains. Until the end of 2004, Finland had a full imputation system, which allowed corporate tax deductions from dividends and hence, the effective tax rate became zero percent, corporate taxes excluded, while the effective tax rate for capital gains was 29 percent. Nowadays, capital gains are taxed with rate of 28 percent. Instead, 30 percent of dividends are tax-free which gives dividends an effective tax rate of 19.6 percent. Thereby, dividends have still some advantage compared to repurchases.

Repurchases have been possible for Finnish companies only for a decade. Hence, the domestic research of the subject is so far fairly modest. What is important to remember when reading further on, is that the articles referred are mostly written in the United States, under tax regulation that favours capital gains over dividends.

The main focus of this study is to illuminate the scale of Finnish repurchases and to discover some plausible explanations that might justify repurchases under tax regulation that favours dividends over capital gains. Statistical part of this study concentrates in rejecting the signalling hypothesis.

The story proceeds as follows. Section 2 presents a theoretical background of share repurchases. Section 3 presents the data and methods used in the research. Section 4 includes the results of the research and section 5 offers conclusions. Finally, section 6 summarizes.

2. Theoretical background

Although this study focuses only on open-market share repurchases, this chapter begins with an introduction of possible procedures firms can use to execute buybacks. Second part of this chapter offers a brief presentation of various reasons why firms repurchase their own shares. Motivations vary from capital structure adjustment to excess cash distribution, from takeover defense to substitution for cash dividends. While all reasons are plausible, signalling has emerged as one of the most important explanations.

Third part of this chapter offers an overview of tax treatment of share repurchases, including recent changes in domestic regulation and the taxation of foreign investors. Fourth part covers latest research in Finland; doctoral dissertation by Karhunen 2002, Tomperi's doctoral thesis from 2004 and master's thesis by Kivi in 2006. Finally, comparison of dividends and repurchases concludes this chapter.

2.1. Share repurchases

Corporations have three primary ways to carry through their repurchases. First, a tender offer is an offer to purchase, by a company or a third party, some or all stocks of the company. The offer is set at a fixed price which usually has a premium over current share price (SEC, Tender offer). Companies might also repurchase own shares using Dutch auction. This is a bidding process where shareowners give a number of stocks and prices at which they are willing to sell shares. After the bidding process is over, the company buys those stocks that are offered at the lowest prices.

The most common way for corporations to buy their own stock is open-market share repurchase in which a stockbroker is commissioned to buy corporations shares from daily trading. However, the daily repurchase volume is limited to 50 percent of the average daily trading volume of the preceding four weeks. Repurchases are also prohibited in the morning call and five minutes before the closing call (Listed

companies own shares). Contrary to the most countries, in Finland, companies are obligated to report daily volumes and average prices of repurchases, which increases the transparency and also enables more accurate research.

2.2. Plausible reasons for buybacks

Literature offers multiple explanations for buybacks. Some of these explanations have theoretical backgrounds and some are formed from empirical studies and interviews. Finnish corporations are also obligated to reveal one or more reasons for their repurchase programs. However, these announced reasons are usually meant to cover everything. Five, subjectively selected, hypotheses are discussed next. In order, these hypotheses are; signalling, capital structure adjustment, stock options, agency costs and increasing liquidity.

Signalling

Because of the asymmetric information between managers and shareholders, share repurchase announcements are considered to reveal private information that managers have about the value of the company. Studies show that undervaluation is mentioned to be the most important reason for share repurchases.

Ikenberry et al. (1995) have studied abnormal returns following share repurchase announcements. They found out that the average instant (two days before through two days after) reaction to the announcement was 3.54 percent. The average long-term (four-year buy-and-hold) abnormal return was 12.1 percent. However, there was a significant difference between value stocks and glamour stocks. For value stocks abnormal return was 45.3 percent. Instead, for the glamour stocks there was no positive drift observed in abnormal returns.

According to Louis & White (2007) managers have alternative means to communicate their private information to the capital markets. However, there is generally a trade-off between the credibility and the cost of the signal. For example,

instead of using accruals or repurchases to signal their private information, managers could reveal their private beliefs through press releases and conference calls. However, this could potentially lead to lawsuits, like class-action lawsuit against Nokia in 2004, where Nokia was sued over too optimistic prospects (Nokia's share price continued to fall).

Capital structure adjustment

In frictionless markets, the value of a firm is independent of its capital structure. In real world there is an optimal debt-equity ratio which maximizes the firm value. This ratio minimizes the weighted-average cost of capital maximizing the net effect of the present value of tax shield and bankruptcy costs.

And because the primary purpose of a firm is to maximize its shareholders value, managers have an incentive to use financial leverage to increase the return on equity by increasing debt-equity ratio. For this, managers can either use the excess cash or issue new debt for share repurchases.

Modigliani and Miller have studied the optimal capital structure and come up with several famous propositions. Figure 1 on the next page sums up three theorems concerning optimal capital structure. Theorem A states that in frictionless capital markets capital structure is irrelevant. Theorem B takes corporate taxes into account and theorem C offers optimal capital structure when also bankruptcy costs are taken into account. (Hamminga 2000)

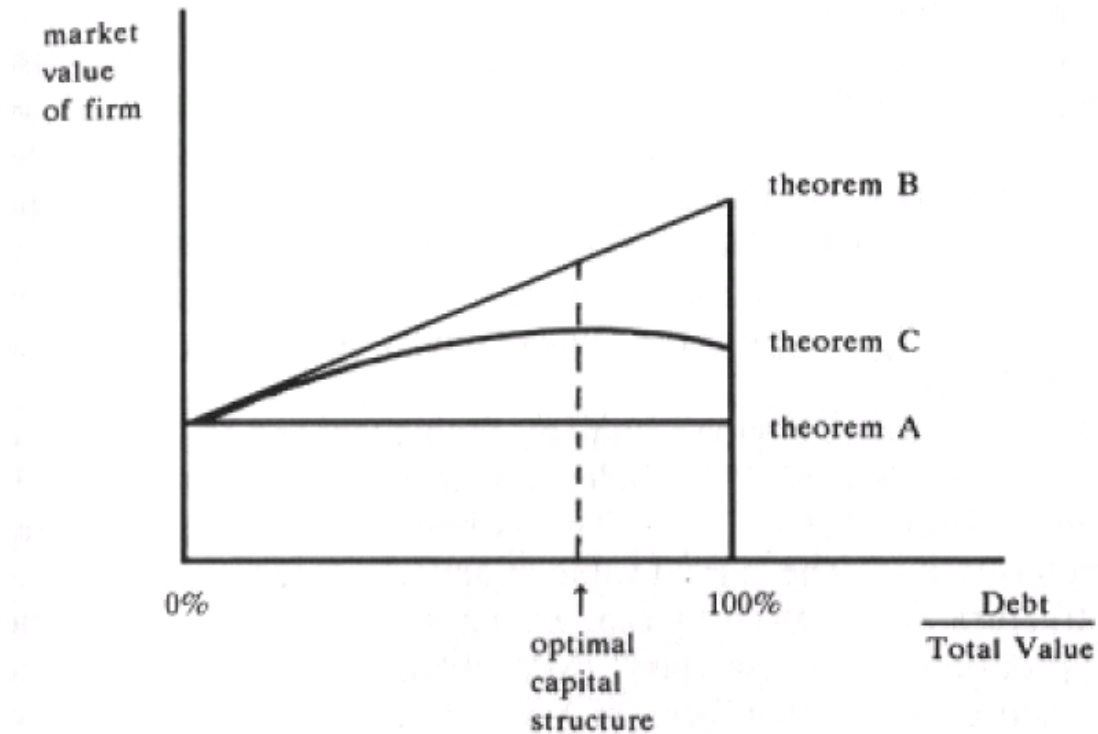


Figure 1: Optimal capital structure (MM's view)

Executive and employee stock options

Kahle (2002) studied if stock options do affect the decision to repurchase own shares. During 1990s, repurchases had increased substantially, but in many of these companies, the number of outstanding shares didn't decrease correspondingly. She came up with two plausible hypotheses; the option-funding hypothesis and the substitution hypothesis.

The rationale behind the option-funding hypothesis is that repurchases are intended to fund the execution of employee stock options and hence, avoid the dilution of EPS that would occur if shares outstanding increased. E.g. Microsoft announced in 2000 that it would buy back its stock to prevent the possible dilution caused by employee stock options.

The substitution hypothesis refers to the forthcoming executive options. Buybacks maximise the managerial wealth, since repurchases do not affect the value of the

managerial options but dividends do. Unlike dividends, repurchases preserve option value since the cash outflow is matched by a proportionate reduction of shares outstanding. However, market seems to recognize these reasons and the repurchase announcement returns are lower for the firms with stock option plans.

Reducing agency costs

According to Jiraporn (2006), repurchases are argued to reduce agency costs in, at least, two ways. First, if managers over-invest in negative net present value projects, repurchases mitigate the overinvestment problem by reducing the amount of free cash flow. Second, repurchases increase the possibility that the firm has to issue new equity, which in turn leads to increased monitoring of management opportunistic behaviour by investment banks, security exchanges and capital suppliers, thereby reducing agency costs.

On the opposite however, Brav et al. (2005.a.) find in their survey that 80 percent of the executives think that the discipline factor is not an important factor affecting share repurchases although a remarkable minority of the interviewed firms had admitted that “money can burn a hole in our pocket”.

Increasing liquidity

Ginglinger & Hamon (2007) have examined the impact of open market share repurchases on liquidity. Their conclusion was that the average spreads on repurchase days were significantly greater than the prior-period benchmarks which support the hypothesis that a firm's share liquidity is actually reduced when it repurchases own shares.

However, liquidity might increase in form of derivatives when corporations issue warrants that are secured by repurchased shares. Firms can also profit from share repurchases using derivatives. Finnish financial institution Sampo Oyj announced in 2006 that they are going to buy back their shares using derivatives. According to the

agreement, Sampo issues a put option for an investment bank, which exercises the option and gains a profit if the stock price goes down. (Rapeli K. 2006)

2.3. General regulations and tax review

Share repurchases became possible for Finnish corporations as late as the end of 1997 and the first repurchases were conducted in 1998. To ensure investors rights, the regulation to disclose information became much stricter in Finland than it is in many other countries. Initially, companies announce, in most cases, their repurchase plan when they call the annual meeting. Thereafter, most companies give an exchange release when they start the actual repurchases. Finally, corporations are obligated to publish the actual buybacks on daily basis. The announcement has to include the number and total value of shares bought, average price, highest and lowest price and the number of shares held by the company. (Tomperi, 2004)

A stockbroker is commissioned to execute buybacks independently, which reduces the firm's repurchase timing ability. The number of the repurchased shares is limited to 50 percent of the average daily trading activity of the preceding four weeks. In many countries the limitation is 25 percent. Higher percentage is explained by more illiquid trade in Helsinki Stock Exchange. To prevent insider trading, buybacks are prohibited during the 14-day period preceding the publication of the interim report or a financial statement bulletin. (Publicly traded company's own shares, 2007)

Allowed amount for own shares owned by a company increased from five to ten percent in 2005. If the number of shares exceeds this limit, these shares have to be cancelled or given away within three years.

Tax review

Before the latest tax reform, Finland had a full imputation system which prevented double taxation. Tax rate for dividends was 29 percent, which was also the corporate tax level. However, when dividends were paid, corporate taxes were deductible, and

the effective tax rate, corporate taxes included, was only 29 percent. Since 2005, corporate taxes were lowered to 26 percent and tax rate for capital gains fell to 28 percent. Although 30 percent of dividends became tax-free, without the imputation system, effective tax rate rose to 40.5 percent ($26\% + 0.74 \times 0.70 \times 28\%$).

From the domestic shareholders point of view, benefits from dividends compared to capital gains narrowed to 8.4 percent from preceding 29 percent, but dividends are still more favourable. More interesting however is the tax treatment of dividends which is more favourable for foreign investors.

According to the Federation of European Securities Exchanges, foreign investors owned 51 percent of all shares in 2005 (Share Ownership Structure in Europe). Especially, the foreign ownership in Nokia is significant, 88 percent (Nokia 2007). This emphasizes the importance of tax treaties with other countries which prevents double taxation and hence, encourages foreign capital investments. Among the EU countries, only Cyprus and Liechtenstein do not have a valid tax treaty with Finland (Tax Rates on Dividends). For others, the tax rate on dividends is 0 to 15 percent. However, this tax is deductible in the target country's taxation.

American investors, and especially pension funds, have a huge role even in Finnish stock market and some of the Finnish companies are listed in New York Stock Exchange. This requires a brief review also about the tax regulation in the United States. First, current source at tax on dividends is five percent and this is also deductible. However, most American pension funds are relieved from taxes and hence, can not utilize the deduction right. The new, forthcoming tax treaty between Finland and the United States is about to correct this disadvantage (Tax Rates on Dividends). So, in the near future, US pension funds will be indifferent between dividends and capital gains, but today, since capital gains from Finnish companies do not have any tax consequences, capital gains are more favourable.

Second, the tax treatment for individual shareholders has favoured capital gains over dividends, which partly explains the drastic increase in repurchases in the United States since the 1980s. However, the Jobs and Growth Tax Relief Reconciliation Act of 2003 was set to make dividends more tempting for individual investors and

nowadays, there is no significant difference between capital gains and qualified dividends. Short-term capital gains are taxed at taxpayer's regular tax rate and long-term tax rates are 15% in the 25% or higher tax bracket and 5% in the 10 and 15% tax bracket. Qualified dividends are taxed at 15% (or 5% if they are in the 10 or 15% regular tax bracket). (Krawczyk & Wright, 2003)

2.4. Recent domestic research

Share repurchases have been possible for Finnish corporations for less than ten years, but some research on the subject has already been published. Karhunen (2002), studied in his doctoral dissertation the factors behind Finnish repurchase programs and market reactions. His conclusions were that the repurchasing firms appear to have relatively low debt ratios, high free cash flows and high dividends. He also found a weak positive drift in returns, associated with repurchase program announcements.

Tomperi (2004), focused on his doctoral thesis for the liquidity effects of buybacks, managerial timing ability and reasons for open-market share repurchases. He found out that managers have timing ability compared to an accumulation strategy. For the smaller companies, repurchases increased the liquidity. On the other hand, the bid-ask spread of the large companies remained unchanged. Common factors behind the repurchase decisions were foreign ownership, free cash flow and stock options.

Kivi (2006), studied in her master's thesis repurchase practises under the new tax law, the abnormal returns caused by repurchase announcements and she also extended Tomperi's study on announced reasons for buybacks adding years 2003 to 2006. Her first conclusion was that the announced reasons didn't have any significant connection to firm's actual behaviour. She also conducted event-studies and found some positive abnormal returns after repurchase announcements. The observed returns were modest (no statistical significance) and there were great differences between firms. Moreover, unexpected repurchases were rewarded with larger returns.

2.5. Choice between dividends and repurchases

Only cash flows matter. This is also true for the investor. It is absurd to think that companies could invest all their profits, from this day to eternity, with positive net present values. This in mind, companies need to have a payout policy. For this, managers have two main alternatives, dividends and share repurchases. Brealey et al. (2006) summarizes Lintner's mid-1950s conclusions about the payout policies in four stylized facts.

1. *Firms have long-run target dividend payout ratios. Mature companies with stable business generally pay out a high proportion of earnings; growth companies have low payouts.*
2. *Managers focus more on dividend changes than on absolute levels.*
3. *Dividend changes follow shifts in long-run sustainable earnings. Managers "smooth" dividends.*
4. *Managers are reluctant to make dividend changes that may have to be reversed.*

Brav et al. (2005.b.) discovered on their survey that only 22.5 percent of executives believe that reducing repurchases has negative consequences. On the other hand, almost 90 percent think that reducing dividends has negative consequences. The same conclusion can also be drawn from data gathered from Nokia's annual reports (Table 1). Managers avoid making dividend changes that may have to be reversed. Between 2001 and 2006 dividends have grown steadily, less than 10 percent per year. Instead, the value of share repurchases has gone up more than 200 percent between years 2003 and 2005, and slightly reduced in 2006.

New shares from stock options (1000)		Cancellation of shares (1000)		Dividend (in millions EUR)		Repurchases (in millions EUR)	
2001	23057	2001	69	2001	1279	2001	N/A
2002	50377	2002	-	2002	1340	2002	N/A
2003	8385	2003	-	2003	1439	2003	1351
2004	5	2004	132536	2004	1539	2004	2659
2005	125	2005	230000	2005	1641	2005	4265
2006	5060	2006	341890	2006	(1773)	2006	3403

Table 1: Financial data from Nokia's annual reports (Nokia 2002; 2007).

As shown in Table 1, between 2001 and 2006, Nokia has increased dividends in a moderate rate. Repurchases on the other hand have grown substantially. Until year 2004, Nokia had used repurchased shares for acquisitions and especially, to prevent the dilution from the exercised employee and executive stock options. However, poor stock performance after December 2002 has reduced the exercised stock options close to zero. Hence, the most of the repurchased shares have been cancelled between 2004 and 2006.

3. Data and research methods

The data includes the volumes of 1 819 observations of the actual share repurchases gathered from the exchange releases. Selected time period begins from January 2005 and ends September 2007. Reason for the selected time period is to exclude repurchases during the preceding tax regulation. Compared to the previous studies, repurchase announcements were also excluded.

The total return indices for the selected corporations and for the market index (Omx Helsinki Cap), as well as the year end market caps, were retrieved from DataStream database. The Omx Helsinki Cap -index limits the weight of a single company to 10 percent, an adjustment that is justified by Nokia's enormous weight at the Helsinki Stock Exchange.

The objective was to find out, whether continuous stock repurchases were rewarded with abnormal returns. For this, four corporations which used buybacks most actively were selected to further studies. Statistical significance was tested using Capital Asset Pricing -model:

$$r_i = \alpha + r_f + \beta(r_m - r_f) + \varepsilon ,$$

and rearranged

$$r_i^e = \alpha + \beta r_m^e ,$$

where e stands for the excess returns. The null hypothesis was that the alpha equals to zero. Statistical significance was examined using the Wald test.

4. Results

This chapter is divided into two parts. The first part includes descriptive statistics of the data and the second part focuses on the statistical significance of the stock performance of the corporations who used share repurchases most actively.

4.1. Descriptive statistics

Quarterly number and total volume of trades have been gathered into Table 2. As the Table shows, the number of trades seems to be increasing towards year-ends. Instead, a similar pattern can not be found from the values of quarterly trades. The total values of repurchases vary from 725 million euros in the second quarter in 2006 to 1 832 million in the fourth quarter 2005. The number of trades was the lowest in the first quarter 2007 (75) and the highest at the third quarter 2007 (308).

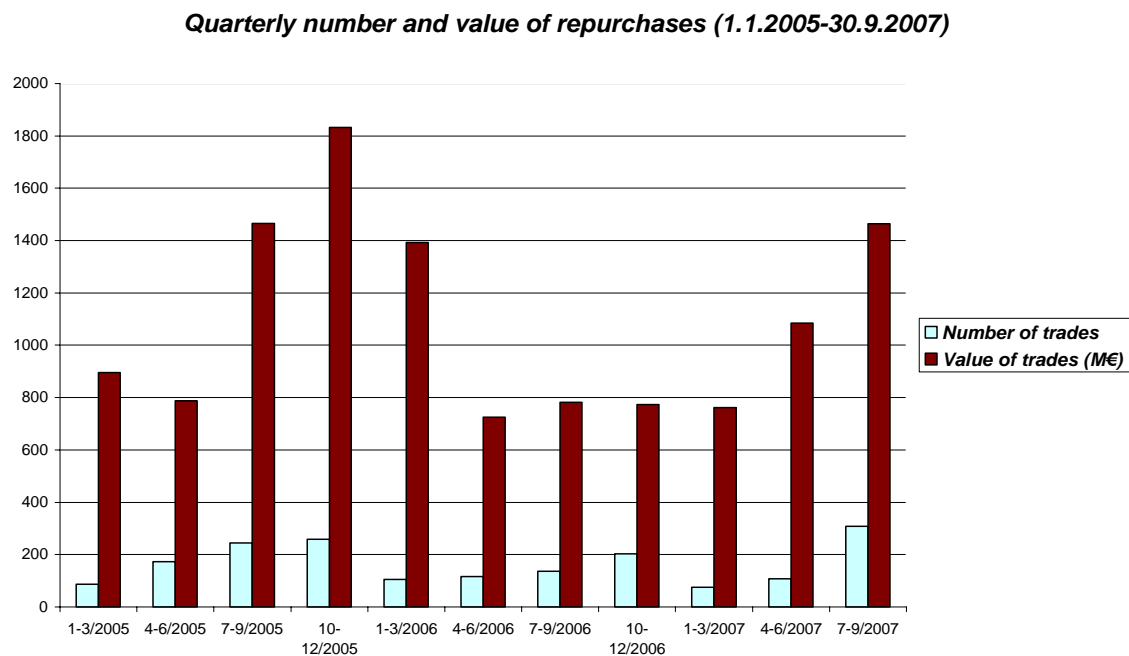


Table 2: Quarterly number and value of repurchases from 1.1.2005 to 30.9.2007.

There were 33 corporations who actually used the open-market share repurchases during this period. These corporations and the relative shares of their repurchases are depicted in Figure 2. This pie chart illustrates the fundamentals of the Finnish share repurchase environment. Nokia's share represents 88 percent of the overall value of buybacks. In monetary value this means 10.6 billion euros.

Total value of repurchases by corporation (1.1.2005 - 30.9.2007)

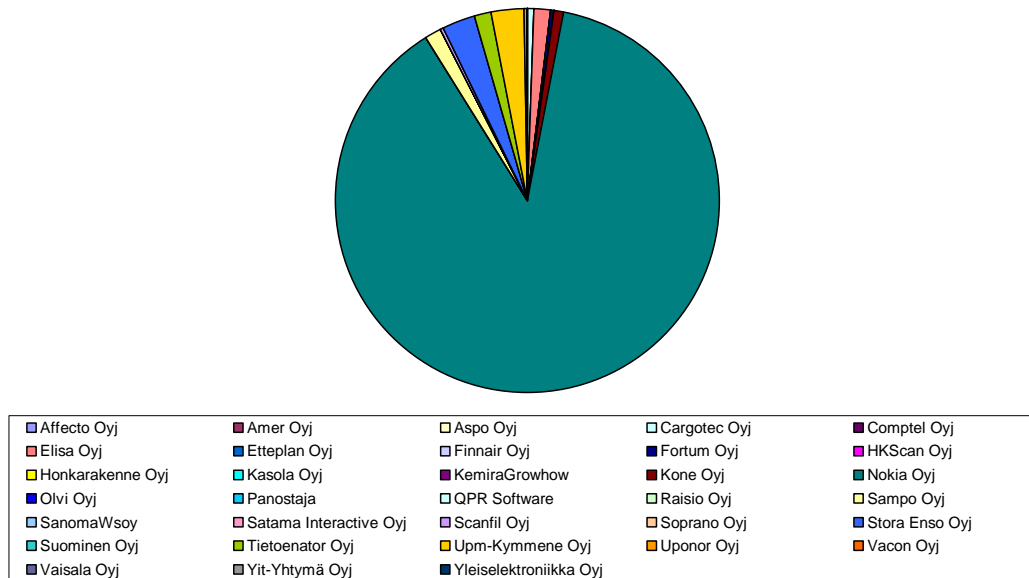


Figure 2: Share of total value of repurchases by corporation.

The value of the repurchases for some corporations was insignificant. For example, Yit-Yhtymä Oyj spent 7 050 and Yleiselektroniikka Oyj 11 705 euros for repurchases. Hence, the only purpose for the pie chart is to emphasize Nokia's share of the overall repurchases.

To get a better idea of the share repurchase distribution, the same information is depicted in Table 3 on the next page, which shows also the overall values and relative shares annually from six companies which made the largest repurchases. The overall value of repurchases, during January 1st 2005 to September 30th 2007, was 12.034 billion euros and the annual values were; 5 billion euros in 2005, 3.7 billion in 2006 and 3.4 billion in the first three quarters 2007.

	Elisa Oyj	Nokia Oyj	Sampo Oyj	Stora Enso Oyj	Tietoenator Oyj	Upm-Kymmene Oyj	Others	Total
2005 (M€)	0.00	4 264.90	87.74	344.83	78.96	150.43	54.55	4 981.42
%	0.0 %	85.6 %	1.8 %	6.9 %	1.6 %	3.0 %	1.1 %	100.0 %
2006 (M€)	79.37	3 403.04	73.07	0.00	52.33	0.00	135.44	3 673.07
%	2.1 %	90.9 %	2.0 %	0.0 %	1.4 %	0.0 %	3.6 %	100.0 %
1-9/2007 (M€)	85.59	2 933.05	3.138	0.00	32.13	196.57	59.22	3 309.70
%	2.6 %	88.6 %	0.1 %	0.0 %	1.0 %	5.9 %	1.8 %	100.0 %
Total (M€)	164.96	10 601.00	163.95	344.83	163.4	347.00	249.20	11 964.19
%	1.4 %	88.1 %	1.4 %	2.9 %	1.4 %	2.9 %	2.1 %	100.0 %

Table 3: Relative shares from six companies that made the largest repurchases compared to the total repurchase.

4.2. Performance compared to the Omx Helsinki Cap -Index

The primary focus for the research was to find out, which of the companies used share repurchases most actively in 2005 in and 2006. For this, the accumulated repurchases were divided by the year-end market cap. And second, the daily logarithmical returns of these companies were compared to the market performance (OmxHCap). The comparison was made both in 2006 and 2007, from January to September. Seven relatively highest repurchase shares have been gathered below at Table 4.

Relative share of repurchases compared to year-end market caps in 2005 and 2006

	Elisa	Kemira	Nokia	Raisio	Scanfil	Stora Enso	Tietoenator
2005	0.00 %	0.48 %	6.23 %	2.89 %	1.53 %	3.71 %	3.25 %
2006	2.30 %	2.41 %	5.37 %	1.13 %	1.93 %	0.00 %	2.82 %

Table 4: The highest relative repurchases by corporation in 2005 and 2006.

There were only four companies which repurchased more than one percent of their year-end market caps in both years 2005 and 2006. These companies were selected to further studies, where the emphasis was to find out if the manager's had made successful investment decisions by repurchasing company's own shares.

Alphas, betas and annual returns for stocks

2006	α	prob.	β	prob.	Return p.a.
Nokia	-0.000602	0.4486	1.071453	0.3357	4.80 %
Raisio	-0.002702	0.0369	0.764641	0.0517	-42.40 %
Scanfil	-0.002689	0.1052	0.765491	0.1304	-42.20 %
Tietoenator	-0.001938	0.1440	0.808529	0.1224	-29.20 %

2007	α	prob.	β	prob.	Return p.a.
Nokia	0.001883	0.0301	1.155269	0.0569	112.80 %
Raisio	-0.000096	0.9372	0.605368	0.0005	13.70 %
Scanfil	-0.000656	0.4706	0.546845	0.0000	-2.90 %
Tietoenator	-0.002859	0.0455	0.975291	0.8540	-40.20 %

Table 5: Daily logarithmic stock performance 1.1.2006 - 30.9.2006 and 1.1.2007 - 30.9.2007. The null hypothesis assumes that the alpha equals to zero and the beta equals one.

The annual market returns were 21 percent in the first three quarters in 2006 and 26.3 percent in the first three quarters in 2007. As Table 5 shows, only Nokia's annual return in 2007 exceeds the market performance. Although the Wald test was done by using daily logarithmical returns for only nine-month periods in 2006 and 2007, the differences between the annual stock returns and the market returns were wide enough for statistical significance in most cases. More detailed output from Nokia can be seen in Appendix 1.

A positive alpha indicates that the security has outperformed the market on the risk-adjusted basis and a negative alpha indicates the opposite (Russel, 2007). In 2007, Nokia has been able to produce significant positive alpha at 95 percent confidence level. On the other hand, significant negative alpha can be found for Raisio in 2006 and for Tietoenator in 2007. There is also a fairly significant probability with negative alphas from Scanfil and Tietoenator in 2006.

Some of the betas differ also significantly from one. However, for Raisio and Scanfil this might be a result from thin trading. Nokia's significant beta in 2007 on the other hand, is more creditworthy. Nevertheless, the annual returns for the mentioned stocks are in general substantially below the market return.

5. Conclusions

The study contains the Finnish open-market share repurchases from January 2005 to September 2007. Although, the main focus of this study was to find out the scale of the repurchases and the fundamentals behind these buybacks, some effort was also made to reject the signalling hypothesis.

Undervaluation is an important factor that motivates share repurchases (Ikenberry et al, 1995). For the companies which most actively used buybacks in Finland in 2005 and 2006, the total returns following previous year's repurchases were substantially lower (in seven out of eight cases) compared to the total return of the market. If the purpose of these repurchases was to disclose some private information that only the managers had, these disclosures weren't so creditworthy for the investors. On the opposite, buybacks seems to have a negative tone. Although, Kivi (2006) pointed out in her master's thesis that the unexpected repurchases were rewarded with larger abnormal returns.

More plausible explanations are stock options, distribution of excess cash flows and capital structure adjustment. Although the executive stock options are a necessity to reduce the agency costs, buybacks to fund these options are not rewarded. Managers might also have an incentive to use share repurchases instead of increasing dividends, to protect their own wealth.

Distribution of excess cash has a linkage to the capital structure adjustment. Decades ago, Modigliani and Miller found an optimal capital structure which maximizes the shareholder value. This optimal capital structure maximizes the net effect of the tax shield of debt and the bankruptcy costs. Despite all the efforts, Nokia has a negative debt to equity ratio, minus 68 percent, and hence, it still has unused debt capacity (Nokia, 2007).

Taxes have the number one priority when a payout policy is considered. For the domestic shareholders, dividends offer an advantage compared to the capital gains.

On the other hand, capital gains have also some benefits because the investors have an option to defer taxes. However, the foreign investors prefer in general capital gains over dividends. Thereby, Nokia's repurchases are justified since the vast majority of the shares are in foreign possession.

Finally, dividends decrease the share price. I.e. if the share price today is 10\$, after a 2\$ extra dividend the share price falls to 8\$. On the other hand, if the same amount of money is spent for buybacks, the share price remains at 10\$ and only the number of outstanding shares decreases. Hence, the repurchases benefits the most to those who have stock options. However, the managers might also be interested in the long-term share price development. After all, most mediums publish only stock prices, not the total return indices.

6. Summary

Firms have two primary ways to distribute retained profits to their shareholders, either in form of dividends or share repurchases. The latter has increased its popularity significantly during the last two decades. In Finland, the share repurchases became possible as late as the end of 1997.

Literature offers multiple explanations for repurchases. However, signalling has emerged to be the most plausible one. I studied the performance of four corporations that most actively used repurchases in 2005 and in 2006. Following three quarters after these repurchases didn't support the signalling hypothesis. Seven out of eight cases, the returns were substantially lower than the market return.

Between January 2005 and September 2007, the total value of the open-market share repurchases was over 12 billion euros. 98 percent of this value came from only six companies and 88 percent from Nokia. In 2005, Nokia spent 150 percent more on repurchases than dividends despite the fact that repurchases means 8.4% supplementary cost compared to dividends for a domestic shareholder. Luckily, only 11.9 percent of the shareholders were domestic.

Foreign ownership is a fundamental factor behind the Finnish share repurchases. Due to the tax at source, especially American institutional investors find capital gains more favourable, although the new tax treaty will most likely correct this disadvantage.

Buybacks are also used to prevent the dilution from exercised stock options and managers might also have incentives to use share repurchases to preserve the value of the executive stock options. However, the investors do not reward these buybacks. And finally, because the managers are reluctant to make dividend changes that may have to be reversed, repurchases are the next best way to distribute the excess cash.

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Appendix 1: Nokia's EViews output

Nokia 06

System: NOKIAHEX
 Estimation Method: Least Squares
 Date: 11/16/07 Time: 13:23
 Sample: 1/02/2006 9/29/2006
 Included observations: 195
 Total system (balanced) observations 390

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.000602	0.000794	-0.757740	0.4491
C(2)	1.071453	0.074222	14.43586	0.0000
C(3)	1.08E-19	3.88E-21	27.94892	0.0000
C(4)	1.000000	3.62E-19	2.76E+18	0.0000

Determinant residual covariance 3.50E-43

Equation: NOKIA = C(1) + C(2) * INDHEXCAP

Observations: 195

R-squared	0.519176	Mean dependent var	9.80E-05
Adjusted R-squared	0.516684	S.D. dependent var	0.015928
S.E. of regression	0.011073	Sum squared resid	0.023665
Durbin-Watson stat	1.878138		

Equation: INDHEXCAP = C(3) + C(4) * INDHEXCAP

Observations: 195

R-squared	1.000000	Mean dependent var	0.000653
Adjusted R-squared	1.000000	S.D. dependent var	0.010711
S.E. of regression	5.41E-20	Sum squared resid	5.64E-37
Durbin-Watson stat	1.750000		

Wald Test:

System: NOKIAHEX

Test Statistic	Value	df	Probability
Chi-square	0.574171	1	0.4486

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(1) - C(3)	-0.000602	0.000794

Wald Test:
System: NOKIAHEX

Test Statistic	Value	df	Probability
Chi-square	0.926796	1	0.3357

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2) - C(4)	0.071453	0.074222

Nokia 07

System: NOKIAHEX
Estimation Method: Least Squares
Date: 11/16/07 Time: 13:32
Sample: 1/01/2007 9/28/2007
Included observations: 195
Total system (balanced) observations 390

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.001883	0.000868	2.169106	0.0307
C(2)	1.155269	0.081554	14.16564	0.0000
C(3)	2.17E-19	1.65E-19	1.316073	0.1889
C(4)	1.000000	1.55E-17	6.46E+16	0.0000

Determinant residual covariance 7.54E-40

Equation: NOKIA = C(1) + C(2) * INDHEXCAP

Observations: 195

R-squared	0.509736	Mean dependent var	0.002790
Adjusted R-squared	0.507196	S.D. dependent var	0.017223
S.E. of regression	0.012090	Sum squared resid	0.028212
Durbin-Watson stat	1.950123		

Equation: INDHEXCAP = C(3) + C(4) * INDHEXCAP

Observations: 195

R-squared	1.000000	Mean dependent var	0.000785
Adjusted R-squared	1.000000	S.D. dependent var	0.010644
S.E. of regression	2.29E-18	Sum squared resid	1.02E-33
Durbin-Watson stat	1.931814		

Wald Test:
System: NOKIAHEX

Test Statistic	Value	df	Probability
Chi-square	4.705023	1	0.0301

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(1) - C(3)	0.001883	0.000868

Wald Test:
System: NOKIAHEX

Test Statistic	Value	df	Probability
Chi-square	3.624712	1	0.0569

Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2) - C(4)	0.155269	0.081554