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THE EFFECT OF DIVIDEND YIELD TO STOCKS' PERFORMANCE ON BULLISH AND BEARISH FINNISH STOCK MARKET

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ABSTRACT

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This study examines the relationship between dividend yield and stock return over bullish and bearish Finnish stock market by testing for alpha and beta shifts across bull and bear markets. In addition, this study examines if various factors, such as a standard deviation of dividends, firm size and profitability have an effect on the size, of the firms' dividends and systematic risk of the stocks. We divide stocks into five portfolios on the basis of their past average dividend yields and investigate if the highest yielding portfolios outperform the lowest yielding portfolios during the different market conditions.

As a result, high yielding stocks were most stable during the examination period and offered downside protection on bear markets. However, a strategy of forming portfolios with past dividend yields led to negative alphas even in bull markets. Standard deviation of dividends, firm size and profitability were found to have no effect on the size of dividends and systematic risk of the stocks.

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Tämä tutkielma tarkastelee osinkotuoton ja osakkeen tuottavuuden välistä yhteyttä nousevilla ja laskevilla suomalaisilla osakemarkkinoilla vertailemalla alfa ja beta arvojen muutoksia eri markkinatilanteissa. Myös eri tekijöiden kuten osinkotuoton keskihajonnan, yrityksen koon ja tuottavuuden yhteyttä osingon suuruuteen ja osakkeen systemaattiseen riskiin tarkastellaan. Vertailtaessa osakkeiden kehitystä osakkeet jaettiin viiteen salkkuun aikaisempien vuosien osinkotuoton perusteella, ja tutkittiin menestyykö korkean osinkotuoton salkku paremmin kuin matalan osinkotuoton salkku

Korkean osinkotuoton osakkeet olivat tutkimuksessa kaikkein vakaimpia tarkasteluperiodilla ja niiden voidaan katsoa antavan turvaa laskevilla markkinoilla. Lopputuloksena kaikki salkut kuitenkin johtivat negatiiviseen alfaan jopa nousevilla markkinoilla. Osinkotuoton keskihajonnan sekä yrityksen koon ja tuottavuuden ei myöskään todettu vaikuttavan osingon suuruuteen saati systemaattiseen riskiin.

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1 INTRODUCTION

High dividend yielding stocks are often touted as a very tempting investment decision because of the downside risk protection offered by the high dividend yield component of their total rate of return (Clinebell et al, 1993a). A similar risk information explanation can be found in the common assumption expressed by Van Horne (1980) that high dividend yields can buffer the decline of stock prices during down market periods. The main point of this assumption is that dividend yield provides a floor for the stock price in a same way as the yield on a convertible bond that provides a floor for its price. If this assumption is true investors seeking favourable upside potential/downside risk characteristics should be attracted to high yield stocks. Siegel (2007) mentions that one of the most famous strategies relying on this assumption is called “Dogs of the Dow”, popularized by Michael B. O'Higgins. The idea behind this strategy is to invest in ten stocks of the Dow Jones Industrial Average or another major stock index which provide the highest dividend yields and to readjust the portfolio once a year.

However, no clear evidence has been presented that would confirm that high dividend yield leads to a better stock performance. Several studies have proved that dividend yield is related to future stock returns (Graham and Dodd 1976; Blume 1980; Hodrick 1992). However, as much as there have been supporters for this theory there have also been critics, who claim that dividend yield cannot forecast future stock returns (Black and Scholes 1974; Goetzman and Jorion 1995). Some authors (Gombola and Liu 1993b; Arbel et al. 1988) have found that high dividend yield is only positively related to return during bear markets, while other authors (Clinebell et al. 1993a) argue that dividend yield has no predictive power on bearish markets. In this sense, the problem remains unsolved.

As far as dividends are discussed we cannot pass a factor closely tied to this discussion: taxation of dividends. Especially, in Finland the taxation laws for dividends have tightened remarkably and the latest new tax reform was introduced in 2004, which took into effect the partial double taxation of corporate profits. Now, the Finnish government is yet again tightening dividend taxation most probably in 2012 (Kauppalehti, 9.11.2010). According to Poterba and Summers (1984) changes in dividend taxation have a substantial effect on the premium which investors require to induce them to receive returns in the form of dividends. We analyze a number of different studies concerning the effect of taxes to dividend yields and firms' propensity to pay dividends.

The purpose of this study is to examine the relationship between dividend yield and stock return over bullish and bearish Finnish stock market by testing for alpha and beta shifts across bull and bear markets. In addition, we analyze if factors like firm size, firm's profitability and standard deviation of dividends have an effect to dividend yield and stocks' performance. The effect of taxes on the size of the dividend yields and firms propensity to pay dividends is also discussed. We also analyze the many ways to divide market periods to bull and bear markets. Two different approaches are used to divide the examination period 1999-2008 to bull and bear periods.

When testing the effect of dividend yield to stocks' performance during different market conditions we form five portfolios of stocks according to their past dividend yields. The stocks are chosen to these portfolios in descending order, so that portfolio 1 consists the top five dividend paying firms and portfolio 5 the least paying firms.

We found two bullish periods lasting a total of 14 months and three bearish periods lasting a total of 27 months using a long-term definition of market movements during the examination period. A short-term definition of market movements showed 48 bullish months and 69

bearish months during the examination period. Our hypothesis is that high-dividend yield portfolios have lower beta on bear markets than low yielding portfolios. This assumption comes from the idea that investors favour dividend paying stocks during bear markets because they provide protection against falling stock prices. When the performances of portfolios were analyzed with the two market movement definitions we found that none of the portfolios were able to offer downside protection in bull or bear markets when using a short-term market definition.

However, when portfolios' performances were analyzed using a long-term definition of market movements we found a statistically significant evidence that high yielding portfolio were most stable during both bull and bear markets while the lowest yielding portfolio was the most sensitive to the market movements.

The rest of the paper is organized as follows. In section 2 we take a look at the theoretical background and past research concerning dividend yield and dividend policy. In section 3 we discuss about dividends in Finland and the effect of dividend taxation to firms' dividend policy. Section 4 introduces the methodology and data of this thesis. In section 5, the results are presented and section 6 concludes and summarizes the results.

2 THEORETICAL BACKGROUND

Dividends represent a return on the capital directly or indirectly contributed to the corporation by the shareholders. Companies are not forced by law to pay dividends to the shareholders. On the contrary it is a decision of the board of directors whether to pay out dividends or not and what amount. For example, a company can't go bankruptcy because of non-payment of dividends. Another characteristic of dividends is that they are not deductible for corporate tax purposes. They are paid out of after-tax profits of the corporation. (Ross et al 2005, 388)

When a company distributes its earnings to shareholders the term dividend is used to describe this distribution of earnings. The most common type of dividend is in the form of cash. Public companies in the US or in the UK usually pay dividends four times a year. On the contrary, in Finland dividends are usually paid once a year. Paying a cash dividend reduces the corporate cash and retained earnings shown in the balance sheet. In addition, dividends can also be paid in shares of stock. This kind of dividend is called as a stock dividend. In this case no cash leaves from the company so stock dividend is not a true dividend. It increases the number of shares outstanding and thereby reduces the value of each share. Stock dividend is usually expressed as a ratio; for example, with a 2% stock dividend a shareholder receives one new share for every 50 currently owned. (Ross et al 2005, 502)

According to the Finnish limited liability companies act a shareholder who is registered in the company's shareholder register on the record date of the dividend has the right for the dividend. The dividend will be paid to a shareholder who buys or owns the company's share on the date of the general meeting. The company decides the record date and the payment date for the dividend. The record date can be at the

earliest three days after the general meeting. The dividend payment date is usually five days after the record date.

Dividends are usually taxed at a higher rate than capital gains and hence the common presumption is that dividends are less valuable than capital gains. From this point of view firms that pay dividends are at a competitive disadvantage since they have a higher cost of equity than firms that do not pay. Therefore, the fact that many firms pay dividends is then difficult to explain. (Fama & French 2001, 4)

After Modigliani and Miller's proposition about irrelevance theory, firms' incentives to pay dividends have puzzled financial economists. Traditionally, finance scholars say that firms pay dividends because of their desire to communicate information to shareholders or to satisfy the demand for payouts from heterogeneous dividend clienteles (Denis & Osobov 2008; 62). DeAngelo & DeAngelo (2006) propose that optimal payout policy is driven by the need to distribute the firms' free cash flow. In their life-cycle theory, firms in their early years pay few dividends because their investment opportunities exceed their internally generated capital. In later years, internal funds exceed investment opportunities and firms optimally pay out the excess cash in order to mitigate the possibility that free cash flows would be wasted.

2.1 International evidence

Graham and Dodd (1976) were one of the first who considered dividend payments and their effects on the value of a corporation. They observed that the payment of a liberal portion of the earnings in dividends adds to the attractiveness of a stock. This finding involved a curious paradox: Stock value increased when taken away value from the capital and surplus fund. In other words, the more the shareholders subtract the larger is the value placed upon what is left.

Black and Scholes (1974) considered returns instead of prices and dividend yields instead of dividend payments. They were one of the first who took this aspect into the consideration. They extended the CAPM equation by a dividend yield term and considered portfolios instead of single stocks to include diversification effects. They used New York Stock Exchange data from 1926 to 1966 and showed that dividend yields did not have a consistent impact on expected returns. In addition, they found that given a certain level of risk, maximising the portfolio return by considering dividend yields may lead to a poorly diversified portfolio with a lower expected return compared to the one of a well diversified portfolio.

However, Blume (1980) re-examined the findings of Black and Scholes and extended them into the seventies. He found that throughout the 41 years ending in 1976, the risk-adjusted returns on dividend-paying stocks increased monotonically with anticipated dividend yield. Over the thirty years, the average returns on all dividend paying issues were about the same as on non-dividend paying issues. Over the period 1937-1946, he found that the total returns on non-dividend paying stocks tended to exceed, on average, the returns on most dividend paying stocks. So, only those stocks with extremely high dividend yields showed a higher return on average. Hence, he was the first who mentioned the term “U-shape” between dividend yield and total return. He also concluded that taxation did not affect the relation between dividend yield and pre-tax return. Later, Keim (1985) came also into the conclusion that tax effects don’t have any effect on the relation between dividend yield and pre-tax return. He believed that the U-shape can be explained by the firm size in a way that small firms were concentrated in the zero dividend yield group and large firms in the highest dividend yield group. However, at the same time the largest firms were not the largest dividend yield firms. After the 1987 stock market crash Arbel, Carvell and Postnieks (1988) found that stocks with both high dividend-

payouts and high absolute dividend payments were more resistant to the crash than were low-dividend stocks.

Hodrick (1992) also examined whether dividend yields had some predictive power to explain returns. He used three different methodologies: (1) regression of the compounded return and the preceding dividend yield, (2) regression of the return and the preceding compounded dividend yield, and (3) vector autoregression to generate one-step-ahead linear predictions. Using NYSE data from 1926 to 1987, he came into conclusion that dividend yields had predictive power to explain returns for all three methodologies but this predictive power decreased when returns were computed over longer time horizons. As a continuation to Arbel's et al study (1988) Clinebell, Squires and Stevens (1993a) analyzed if dividend yield characteristics alter the levels of systematic risk in both up and down markets. They examined this by determining if up- and down-market alphas and betas were sensitive to either the stock's dividend yield or dividend smoothing. They found that high-dividend-yield stocks tend to have lower betas overall but they didn't find evidence that beta is lower in down markets than in up markets. Goetzman and Jorion (1995) also examined if dividend yields could predict future long-horizon stock returns. Their data consisted of NYSE data on a monthly basis and U.K. stock exchange data on a yearly basis from 1872 and 1871, respectively to 1992. Their findings suggest that dividend yield cannot forecast future stock returns. Gombola and Liu (1993b) found instead that dividend yield was positively related to return during bear markets but negatively related to return during bull markets. They used three different definitions for bull/bear markets and divided their sample to six portfolios according to dividend yield. They found a positive relationship between portfolio yield and portfolio return during bear markets and a negative relationship between portfolio yield and portfolio return during bull markets.

Dividend changes and their effect to earnings have also been a hot topic for decades in corporate finance. Brickley (1983) found a significant earnings increase in the year off and the year after the dividend increase. Healy and Palepu (1988) used a sample of 131 dividend-initiating firms and found that earnings increase rapidly in the preannouncement years. In addition, DeAngelo et al (1992) reported that dividend reducing companies experience declining current and future earnings.

On the other hand, several studies state that there is no relationship or a weak relationship between dividend changes and subsequent earnings. For example, Watts (1973) and Gonedes (1978) found only a weak relationship between dividend and earnings changes. DeAngelo et al (1996) studied the signalling content of dividends paid by 145 NYSE firms. They found no evidence that dividend increases help identify firms with superior future earnings.

Recent studies

Most recent studies concerning dividends have concentrated on disappearing dividends and firms' reasons to pay dividends. Denis and Osobov (2008) examined why some firms pay dividends while others don't. They found that the propensity to pay dividends is higher among larger, more profitable firms and those with a greater proportion of earned equity. They also found some evidence of disappearing dividends which is, however, largely driven by a failure of newly listed firms to initiate dividends when expected to do so. However, in Finland the problem is that there haven't been many new firms listed in the Helsinki stock exchange. That's why these results cannot be extended to the Finnish markets.

Fama and French (2001) showed that the propensity to pay dividends declined dramatically between 1978 and 1999, while 66.5% of listed firms paid dividends in 1978, only 20.8% did so in 1999. Hoberg and

Prabhala (2009) examined this effect through the lens of risk and reported two findings. Firstly, they reported that risk is a significant determinant of the propensity to pay dividends and it explains roughly 40% of disappearing dividends. Secondly, they found little evidence for the view that disappearing dividends reflects firms' catering to transient fads for dividends.

2.2 Finnish evidence

Yli-Olli (1979) examined the association between the market value of companies and their dividend policy in Finland. He analyzed a sample of 30 Finnish industrial firms listed on the Helsinki Stock Exchange during the period 1966-1973. By employing regressions for the cross-sectional data he wasn't able to show association between the average market value during the year examined and the dividend policy of the company. Martikainen (1990) adopted the association type of approach to analyze the relationship between the dividend yield growth rate and stock market returns. The sample of the study included 28 Finnish companies listed on the Helsinki Stock Exchange during 1975-1986. The association between average weekly market-adjusted returns and portfolios of different average dividend growth rates was examined by using the Spearman rank correlation. The outcome was that a significant positive correlation was detected between dividend growth rate and the abnormal returns

Heikkilä and Ikäheimo (1997) conclude that based on the early association studies, there seems to be no clear evidence on the relationships between dividends and the value of the firm. They argue that it could be due to conservative dividend policies of the firms, taxation or underdeveloped capital markets.

Dividend yield itself has not been a very popular subject of studies in the 21st century in Finland. However, there have been lots of studies concerning ex-dividend day trading and tax effects to dividends. The

success of tax effects to dividends comes mainly from the 2004 tax reform, which tightened dividend taxation remarkably. These studies also highlight the structure and agents in the Finnish stock market. Rantapuska (2008) examined the ex-dividend day trading of all investors in the Finnish stock market. He found that foreign investors dominate the market around ex-dividend day by 40% of the gross trading volume. After them come domestic households (26%) followed by domestic non-financial corporations with the 16% share of the total volume. Domestic investors with a preference for dividend income tend to accelerate their buys before a stock goes ex-dividend, while foreigners with a preference for capital gains increase sells cum-dividend and accumulate buys ex-dividend. Also, dividend yield is positively related to an investor's propensity to engage in tax arbitrage.

2.3 Different calculation methods of dividend yield

There is a plethora of methods to calculate dividend yield. Motivated by Henne et al (2007) we use a formula where the dividend yield is calculated as follows:

$$DY_i^{(y)} = \frac{D_{i,t}^{(y)}}{P_{i,t-1}^{(y)}} \quad (1)$$

where $DY_i^{(y)}$ denote the dividend yield of stock *i* in year *y*, $D_{i,t}^{(y)}$ denote the dividend on stock *i* in year *y* (paid on day *t*), and $P_{i,t-1}^{(y)}$ denote the closing price of stock *i* in year *y* on day *t -1*. So the dividend yield can be determined as the quotient of dividend and closing price of the stock on the day preceding the dividend payment. The idea behind this formula is to invest in a stock one day before the dividend payment and when the dividend is paid it can be interpret as the investment's return (Henne et al 2007, 4).

In Finland dividends are paid only once a year, which simplifies the computation of dividend yield and hence the formula above is used in this thesis. However, in some countries like in the U.S and in the U.K dividends are paid quarterly or even monthly, which complicates the computation of dividends. That's why some authors like Clinebell, Squires and Stevens (1993a) used the stock's closing price in the month preceding the dividend payment to compute the dividend yield. Another way is to measure dividend yield as the ratio of the sum of dividends paid over the last twelve months to the stock price at the beginning of this period. This method was used, for example, by Morgan and Thomas (1998) in their study, where they examined the effect of taxes to the dividend yield and stock return in the UK market. Naranjo, Nimalendran and Ryngaert (1998) in turn used four times a corporation's most recently declared quarterly dividend and its current share price to compute the corporation's annual dividend yield.

Earlier, Fama and French (1988) added up the monthly dividend payments over one year and computed the ratio of this sum to both the stock price at the beginning and at the end of this year. They came to the conclusion that using the stock price at the beginning of the year gave better and more reliable outcomes about the relationship of dividend yield and stock returns. Blume (1980) came to the same conclusion as Fama and French that the beginning of period stock price leads to a more accurate measure than the end of the period stock price when dividend levels are adjusted quickly.

2.4 Dividend policy

Dividend policy determines how much a company decides to distribute its earnings to the shareholders and reinvest in the company. Manager's task is to allocate the earnings to dividends or retained earnings. When it comes to corporate growth, retained earnings are one of the most significant sources for financing it. In addition, corporate

growth makes it eventually possibly to get more dividends. Dividend policy as such has been the main concern in relatively few empirical studies in Finland.

One of the most classic papers concerning dividend policy is Lintner's (1956). He used a sample of over 600 U.S. companies from which he chose 28 companies into his survey. According to him, firms are not willing to reduce dividends per share. He noticed that the stability of dividends meant a great deal to companies. Companies didn't select dividends differently each quarter but made their dividend decisions based on future earnings prospects. Managers believed strongly that the market puts a premium on companies with a stable dividend policy and thus were reluctant to cut dividends. Based on Lintner's survey of 28 companies, the median target payout rate was 50 percent. In addition, current earnings were the most important determinant of change in dividends.

However, Lintner's study is now more than 50 years old and times have changed. Brav et al (2005) updated Lintner's study to 21st century by summarizing survey responses from 384 financial executives. They found that, in general, maintaining a target ratio has declined in importance and is no longer of primary concern. The responses indicate that managers try to maintain a particular dividend level and to avoid dividend cuts. Only about 21 percent of managers reported that the tax rate is an important or very important factor affecting dividend decisions. However, more than 40 percent of managers indicated that taxes play a role in choosing between paying a dividend and repurchasing shares.

Miller and Modigliani (so forth MM) (1961) stated that the effect of a company's dividend policy on the current price of its shares is a very important matter, not only to the corporate officials, who set the policy, but also to investors planning portfolios and to economists seeking to

understand and appraise the functioning of the capital markets. Especially, when a company follows a policy of dividend stabilization, investors will have good reason to interpret a change in the dividend payout rate as a change in management's views of the firm's future profitability (Miller & Modigliani 1961; 430). They make no assumptions about the process that generates earnings. This means investors believe that dividends convey information that enables them to predict future earnings more accurately. The term used in this context is referred to "information content of dividends" and it is widely recognized, if not accepted in texts of financial management. For example, Watts (1973) tested the information content of dividends and came into the conclusion that the information in dividends could only be trivial. However, investors tend to believe that dividends give information about the future prospects of a company, although no clear evidence has been presented and MM's irrelevance theorems are widely accepted. Black and Scholes (1974) state that "*the price may change temporarily in response to change in the dividend because the market may believe, that the change indicates something about the probable future course of earnings. If it becomes clear that the change was not made because of any changes in estimated future earnings, this temporary effect should disappear*" (Black and Scholes 1974, 21). So a conclusion can be made that the firm's underlying profitability affects the long-term stock price and not the firm's dividend policy decisions. Ross (1977) and Bhattacharya (1979) suggested that dividend policy could be employed as a signalling mechanism. According to their opinion, firms with profitable projects are able and willing to pay higher dividends in order to segregate themselves from firms with less profitable projects.

MM's irrelevance theorems (1958, 1961) form the cornerstone of modern corporate finance theory. The MM theorems indicate that under the assumptions of perfect markets, rational behaviour and no taxes, the value of the company doesn't depend on the company's dividend

payout rate. Hence, all feasible capital structure and dividend policies are optimal because all imply identical stockholder wealth and make the choice among them irrelevant. The main point of these theories is that investment policy is the key to stockholders wealth in frictionless markets. All in all, the leverage and payout policy have no impact on firm value. MM (1958) summarise this fact in their “pie slicing exercise” where a company considers different leverage and payout decisions. They state that the company is simply slicing a fixed pie (of cash flows from investment) into different pieces, whose individual values in frictionless markets must inevitably sum to the value generated by the underlying investment policy.

However, this assumption has been a target of strong criticism. For example, DeAngelo and DeAngelo (2006) present a critique of MM’s (1961) proof that dividends do not affect the value of the firm in perfect markets. They claim that the finding of dividend irrelevance results from MM’s framework, which assumes that firms have 100 percent payouts. By relaxing this assumption, payout policy affects value in the same manner as investment policy. They also argue that the irrelevance result is due to MM’s assumptions, which makes their proof nothing more than an elegant tautology. “*When MM’s assumptions are modified to allow retention with the NPV of investment policy fixed, a firm can reduce its value by paying out less than the full present value of FCF, and so payout policy matters and investment policy is not the sole determinant of value*” (DeAngelo & DeAngelo 2006, 294).

2.4.1 Dividend theories

A model that has been very popular in studies concerning dividends is the so-called dividend model of share prices, which is based on earnings that the shareholder gains on his share (Koskela 1984, 18). It is based on discounted dividend earnings based on shareholding when the shareholder’s rate of return is changing. The main idea is that private investors buy future dividends when they buy a share and thus,

a share is worth only what an investor can get out of it. The market establishes share prices by discounting an anticipated stream of future dividends.

The earliest value theories based on dividends were presented in 1930s. One of the most famous one was William's (1938) theory. He presented the following value model for a stock (pp. 57):

$$V_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+k)^t} \quad (2)$$

where:
V_0 = the value of the stock at time 0,
D_t = the dividends paid at season t
k = the investors' demanded rate of return.

This basic model has formed the basis for later dividend based models. Later, Gordon and Shapiro (1956) presented one of the most well known dividend based model. Their goal was to develop William's model to be more predictive. Hence, they presented a model which takes into account the growth factor. The estimation of growth expectations is based on past information presuming that the dividend growth will remain the same in the future. The formula can be written as follows:

$$P_0 = \frac{D_0}{k-g} \ (k > g) \quad (3)$$

where:
P_0 = a stock's market price at time 0
D_0 = dividends paid at season 0
k = demanded rate of return
g = growth rate

In the formula, investors' demanded rate of return (k) has to be greater than the growth factor (g). Otherwise Gordon and Shapiro's model

doesn't work. They concluded that *k* is in a growing function with *g*. If the dividend growth rate increases because of increase in retained earnings, dividend payouts will move further into the future. This pattern will raise investors' risk factor which affects to demanded rate of return causing it to increase as well.

2.5 Determinants of propensity to pay dividends

2.5.1 Management

Feldstein and Green (1983) summarize different solutions which have been given to answer the question of dividend puzzle. They believe that there is some truth to all of these ideas in reality but, all in all, they have failed to provide a satisfactory explanation of the prevailing ratio of dividends to retained earnings.

First, there are small investors and non-profit organizations that desire a steady stream of dividends with which to finance consumption. The same consumption stream might be financed on a more favourably taxed basis by periodically selling shares but selling shares many times a year causes a risk to be exposed to higher transaction costs. Another explanation is that dividends are required because of the separation of ownership and management. According to one form of this argument, dividends are a signal of the sustainable income of the company. Management selects a dividend policy to communicate the level and growth of real income because conventional accounting reports are inadequate guides to current income and future prospects. There can also be distrust among shareholders towards the management. Shareholders might fear that retained earnings will be wasted in poor investments, higher management compensation, etc. According to this argument, in the absence of taxation shareholders would clearly prefer dividends and this preference is strong enough to pressure managements to make dividend payments even when this involves a tax penalty. More familiar term for this is agency costs.

Cash-related agency problems may occur when managers in high-performing firms hold too much cash. They may spend this cash unwisely, resulting in the free cash flow problem articulated by Jensen (1986). Easterbrook (1984) first formally postulated using dividends to reduce free cash flow. According to Easterbrook (p.562), *"Dividends exists because they influence the firms' financing policies, because they dissipate cash and induce firms to float new securities"*. Agency costs arise from two situations. The first cost arises because managers need to be monitored. The second cost relates to management's preference for low-risk, low return investments, due to their concern over job security or any personal wealth tied to the corporation. Shareholders, in contrast, demand riskier, high-returning investment projects to maximize their return. (Baker 2009)

2.5.2 Firm size

Fama and French (2001) found that dividend paying firms tend to be more profitable, have less valuable growth opportunities and are larger firms than non-payers. Denis and Osobov (2008) examined why some firms pay dividends while others don't, and are there common determinants for dividends across countries. Their sample included firms from the US, Canada, UK, Germany, France and Japan. They reported same kind of results. They found that dividend payers tend to be larger and more profitable firms. However, the relation between dividend payments and growth opportunities wasn't uniform across countries. One of the main factor that separated dividend payers from non-payers was growth opportunities: dividend payers had more valuable growth opportunities than non-payers (Denis & Osobov 2008; 65).

DeAngelo et al. (2006) found that the propensity to pay dividends is most strongly associated with company's earned equity mix. Their conclusion is that the probability a firm pays dividends increases with

the relative amount of earned equity in its capital structure. Denis and Osobov (2008) measured the earned/contributed equity mix as the ratio of retained earnings to the book value of total equity and also found that dividend payers tend to have substantially higher ratios of retained earnings to total equity than non-payers.

Allen, Bernardo and Welch (2000) studied why some firms prefer to pay dividends rather than repurchase shares. They came into the conclusion that institutional investors are more likely to invest in dividend paying stocks. They argue that this is due to tax advantages relative to individual investors, which induces dividend clientele effects. They see these clientele effects as the very reason for the presence of dividends, because institutions have a relative advantage in monitoring firms or in detecting firm quality. "*Firms paying dividends attract relatively more institutions and perform better*" (Allen et al 2000, 2531). In addition, when a firm pays higher dividends, it attracts disproportionately larger ownership by institutions, and these institutions are in turn more likely to play a larger role in monitoring management than dispersed retail investors. Hence, managers weight the positive share price response to the announcement of dividends against the consequences of angering institutional shareholders if they were later forced to cut the dividends in response to poorer response.

2.5.3 Macroeconomic factors

Number of studies tries to explain the market price of a share by using various kinds of information. That information can be divided into two groups: (1) information under the control of the managers and (2) information out of management control. Macroeconomic factors are included into the second group. According to the USA's results, macroeconomic factors are important determinants of stock returns. (Kinkki 2001, 66)

Lahti and Pylkkönen (1989), Martikainen and Yli-Olli (1991) and Viskari (1992) have studied the relation between stock markets and macroeconomic factors in Finland. Martikainen and Yli-Olli applied the Arbitrage Pricing model when investigating the macroeconomics factors on Finnish stock returns. They couldn't find any stable economic interpretation to the price factors from the pre-specified macroeconomic factors in the Finnish stock market. Viskari (1992) used industrial production, real money supply, short term interest, consumer price index and the real exchange rate as macroeconomic factors in his study. These factors explained about 7 percent of stock prices. Lahti and Pylkkänen (1989) instead tested industrial production, real money supply, long-term interest rate and monthly inflation as macroeconomic factors. The explanation percentage was about eight. It seems that in Finland studies concerning stock prices and macroeconomic factors have failed to indicate dependence between these two subjects

Kallunki et al (1997) note that it is not easy to argue theoretically that the relation between stock market and certain macroeconomic variables would be the same. According to their study, in Finland the relation between macroeconomic factors and stock returns is rather sample specific and time-variant. In addition, macroeconomic factors have no dependence on stock prices in Finland, unlike in the United States. Kinkki (2001) concludes that because macroeconomic factors have no dependence on stock prices, they don't have thus dependence on dividends either in Finland.

3 DIVIDENDS IN FINLAND

Dividends use to become a hot topic in Finland every spring. This is because all Finnish companies distribute their dividends between February and May. The stock exchange of Helsinki is also one of the best stock exchanges when measured with dividend yield. On average, it generates 4,6 per cent dividend yield (Kauppalehti 18.3.2011).

3.1 Taxation of dividends in Finland

Finland's dividend taxation has changed dramatically during the 21st century. The biggest change happened in 2004. Prior to the 2004 tax reform all capital income and corporate profits were placed under a single flat tax rate. In 1993, the rate was 25% but it was gradually raised to 28% (in 1996) and finally to 29% (in 2000). Furthermore, a full imputation system applied to dividend distributions, which made dividends tax-free for domestic investors at the personal level. However, the 2004 reform modified the tax rates both at corporate and personal income level and introduced the partial double taxation of corporate profits.

The reform lowered the corporate profits tax rate from 29% to 26% and the flat personal capital income tax rate from 29% to 28%. The abandonment of the full imputation system made 70% of dividends received taxable income. During the adjustment year of 2005, this rate was 57%. Therefore, the effective post-reform tax-rate on dividend income for individual investor is 19.6% (0.7 times 0.28). When the full imputation system was in use, the dividend income tax-rate for individual domestic investor was 0. (KPMG 2004; 2)

The 2004 tax reform increased taxation of dividend income significantly but several exceptions exist. Korkeamaki et al. (2009) see these exceptions interesting, because they cause different investor groups to

view the reform differently. First, they observed that several institutions are exempt from dividend taxes, for example, mutual funds, mutual banking firms, and several governmental institutions, such as the Bank of Finland. Second, dividends that are received by a company from another company are tax-free. However, for dividends received from a publicly listed company, this rule applies only when the recipient is another listed non-financial company, or when the equity stake held by the receiving corporations is more than 10% of the shares outstanding. Third, foreign investors are subject to a withholding tax that depends on bilateral agreements between countries. For most foreign owners a tax of 15% is withheld from dividends received from a Finnish company. In other words, the reform left the tax preference of foreign investors intact, as they continued to face the withholding tax (typically 15 %) that was levied on them prior to the reform as well.

The tax reform was not a surprise to the Finnish companies or to the financial markets. One of the key factors that affected to the making of new tax reform was the differential treatment of foreign investors. Korkeamaki et al (2009) found that due to the new tax reform the preference of dividends reduced in every investor group they had in their study (banks and insurance companies, limited partnership, private persons, pension institutions, towns and municipalities, non listed companies and associations). In addition, they found that ownership by private persons also dropped significantly. This was also due to the new tax reform where relative tax efficiency of mutual fund holdings, compared to direct holdings improved. They also conclude that firms increased dividends during the last year of the old tax system, when dividends were still untaxed at the investor level. All in all, the new tax reform affected to ownership patterns and dividend payout ratios in Finland.

In 2009 receipts of dividend from listed companies are taxable capital income, but only 70% of the receipts are taxable income. The remaining

30% is tax-exempt income. The listed company must withhold 19% of the full dividend amount and pay it forward to the Tax Administration. *"In final tax assessment, the tax rate for capital income is 28%, and it only applies to the taxable portion"*. (Verohallinto 2009)

However, in recent months dividend taxation has become, yet again, a hot topic in the Finnish politics. It seems very likely that dividend taxation is tightening in the beginning of 2012 in Finland. According to Erkki Sinkko in Kauppalehti's article (9.11.2010) next year is going to be lucrative for investors in terms of dividends, because firms afraid of tightening dividend taxation pay out dividends first in spring and later more in autumn. This is because when the new dividend taxation law comes into effect, tax authorities are able to intervene even more heavily. Exactly the same happened in 2003 and 2004 when the Finnish government decided to increase dividend taxation. Kauppalehti (9.11.2010) consider the tightening dividend taxation law strange, because a Finnish stock depositor suffers from EU's fourth highest taxation.

3.2 Laws and regulations

The decision of distributing earnings in always made at the company's general meeting. In general, this happens at the same meeting where the last fiscal year's financial statement is confirmed. The dividend distribution decision is always based on the company's board of directors' statement, which is presented in company's annual report and from which auditors have given their statements. (Koponen 2001, 10)

The company must announce the date and amount of dividend distribution either in terms of cash or percentage calculated from the stock's nominal value. The receiver of the dividends is taxed from dividend income as that year's income when the dividend can be withdrawn. The dividends can also be distributed in posts. If there are

different kinds of stocks, which entitle the stockholder to get various sum of dividend, that must be announced in the dividend distribution decision. A mandate can be given to the board of directors to decide the more precise day of payment of dividends. If the board of directors don't choose any exact day, then dividends are paid immediately after general meeting or when the decision of general meeting is accepted by board of directors. (Koponen 2001, 12)

Finnish companies pay out dividends usually once a year after publishing their financial statement. The amount of dividends is tightly tied to financial statement because a company can only pay dividends on ground of their last confirmed financial statement. The main principle is that dividends are paid from the company's free equity. Before a company can pay dividends to its shareholders it must first pay interests and taxes. In addition, the amount of dividends cannot exceed the amount of free equity. (Leppiniemi 2003)

A company's equity is divided in the limited-liability company act into invested capital and free equity. Invested capital includes share capital, above par value fund, revaluation reserve and reserve fund. All other equity is free equity. However, all free equity is not divisible. Balance sheet doesn't show separately the amount of invested capital and free equity or the amount which is divisible from the free equity. The accounting board has instructed that divisible free equity must be reported in notes to the accounts, so that the financial statement gives the right picture from the company's profits and its financial situation. (Leppiniemi 2003)

Simply, divisible dividends can be regarded as past fiscal years' indivisible profits and the last fiscal year's profits as long as all past financial losses are first paid. Hence, the company can pay dividends to its shareholders, although, the fiscal year would had been unprofitable as long as there is enough earlier generated free equity, which can be

used to cover the losses that were generated during the unprofitable fiscal year. If there is no free equity, the company can't pay dividends. In addition, when it comes to Group's parent company, the whole Group's free equity must be taken into account. (Koponen 2002, 11)

3.3 Taxes and Clientele Effects

When a firm makes it dividend decision, an important question arises: How does the stock price react to the dividend announcement? The effects of firms' dividend policies on stock returns have been widely studied (Hess 1982, Black & Scholes 1974, Litzenberger & Ramaswamy 1980, 1982). In most cases, researchers have found statistically significant relation between dividend yields and stock returns. However, the explanations for this common empirical finding have been controversial. This problem is usually divided into two various questions: (1) Do firms with higher dividend yields have higher stock prices and vice versa, (2) how does stock market react to dividend announcements? The first question is called the clientele problem and the second is called ex-date effects on dividends (Kinkki 2001, 68).

Miller and Modigliani (1961) were the first who suggested clientele effects. Their point was that investors choose the corporations whose payout ratio they prefer. Hence, each payout ratio tends to attract a class of investors, a clientele. They argue that if the company decides to change its payout ratio, the result would be a change in the clientele, but that would not affect the value of the firm because any clientele is, from the firm's perspective as good as any other.

Litzenberger and Ramaswamy (1979, 1980) were the first to argue that the relation between dividend yield and stock returns is best explained by differential taxation of dividends over capital gains. They also argued with Elton and Gruber (1970) that the potential tax impacts of dividends

will lead to ownership clienteles forming on the basis of securities' dividend yields. In general, this means that investors in low marginal tax brackets purchase high yielding securities, and investors with high marginal tax brackets own low yielding securities. This pattern of ownership minimizes the aggregate tax liability of all investors. These dividend yield clienteles are also thought to be reflected in security prices in a way that high yielding securities reflect a lower marginal tax bracket than low yielding securities. The differential tax explanation was later challenged by Blume (1980) and Hess (1982). Their conclusion was that the relation across securities is far too complicated to be entirely explained by tax effects. For example, Hess (1982) argued that the empirical tests are clouded by the ability of dividend yields to proxy for changes in the riskiness of common stocks, and therefore, of their expected returns. Later, Poterba and Summers (1984) also examined the effect of taxes to the valuation of dividends. Using both daily and monthly data on British securities, they documented that changes in dividend taxation have a substantial effect on the premium which investors require to induce them to receive returns in the form of dividends. Scholz (1992) analyzed data from the 1983 Survey of Consumer Finances and reported a negative relationship between the dividend yield of investor's stock holdings and the relative taxation of dividends. However, Allen and Michaely (2002) found that the wealthiest and presumably highest-tax-bracket investors receive the bulk of dividends. This finding casts doubt on taxes on dividends being a first-oder determinant of investor decision.

Sorjonen (1999) couldn't find any evidence of tax clienteles in 1993-1997 in Finland. Instead, Korkeamäki et al (2009) found that after the 2004 tax reform in Finland, the ownership structures of Finnish firms changed consistent with shareholder clienteles adjusting to the new tax system. The payouts were significantly higher immediately prior to the reform among companies whose ownership were to face the most negative consequences of the tax reform.

Dividend clienteles have also been explained by a demographical factor. Graham and Kumar (2006) studied the stock holdings of more than 60 000 households in the US during 1991-1996 and found that the preference for dividend yield increases as investor age increases and decreases as investor income increases. As a class, retail investors prefer non-dividend paying stocks when institutions prefer to hold dividend paying stocks instead. This can be a future phenomenon in the near future in Finland when the “baby boomers” retire from work. They also document that older and low-income investors purchase stocks following dividend announcements.

3.4 Efficiency of the Finnish stock market

The earliest studies concerning stock market efficiency in Finland have produced mixed results. Korhonen (1977) studied the efficiency of Helsinki Stock Exchange and put it into the category of informational week-form efficiency. Berglund et al (1987) extended the results obtained by Korhonen by using daily data. They found significant positive excess returns on the announcement day for stock dividends and mixed announcements of stock dividends and new issues. For new issues, the announcement day return was insignificant, although a slightly positive preannouncement price development was detected. Martikainen (1989) found that there exists evidence on anomalies from market evidence even in the weak-form sense. Kinkki (2001) notes that the results from these studies show that the efficiency of the Finnish stock market is not especially high compared to other stock markets in the world. Kinkki also summarizes that the studies concerning stock market efficiency test in Finland have found that stock prices react to the announcements on the financial characteristics of a firm. Among these characteristics he listed profitability, growth, financial status, risk, accrued earnings, cash flow, financial leverage, operating leverage, capital investment and rate of interest for debt (Kinkki 2001, 65).

Pätäri and Leivo (2009) conclude that Finnish stock market suffers from occasional “periphery syndrome” which means that international investors cash their equity positions first from the furthest stock markets during the turbulent times. Combined with relatively low liquidity of the Finnish stock market the withdrawal process results in drops of stock prices that are steeper than simultaneous drops in larger and more developed stock markets. However, due to relatively thin trading during bullish sentiment stock prices tend to raise more during bullish sentiment in Finland than they do in the major stock markets. Hence, the average stock market volatility is also higher in Finland.

Figure 1 illustrates how the OMXH Helsinki total return index has fluctuated during 1.1.1999 – 30.9.2008. There has been a lot of volatility in the Finnish market due to the technology bubble, which put huge upward pressure to stock markets all over the world in the late 1990s and then burst in the beginning of 2000. From 2003 the stock market has rocketed until the financial crisis started in late 2007.

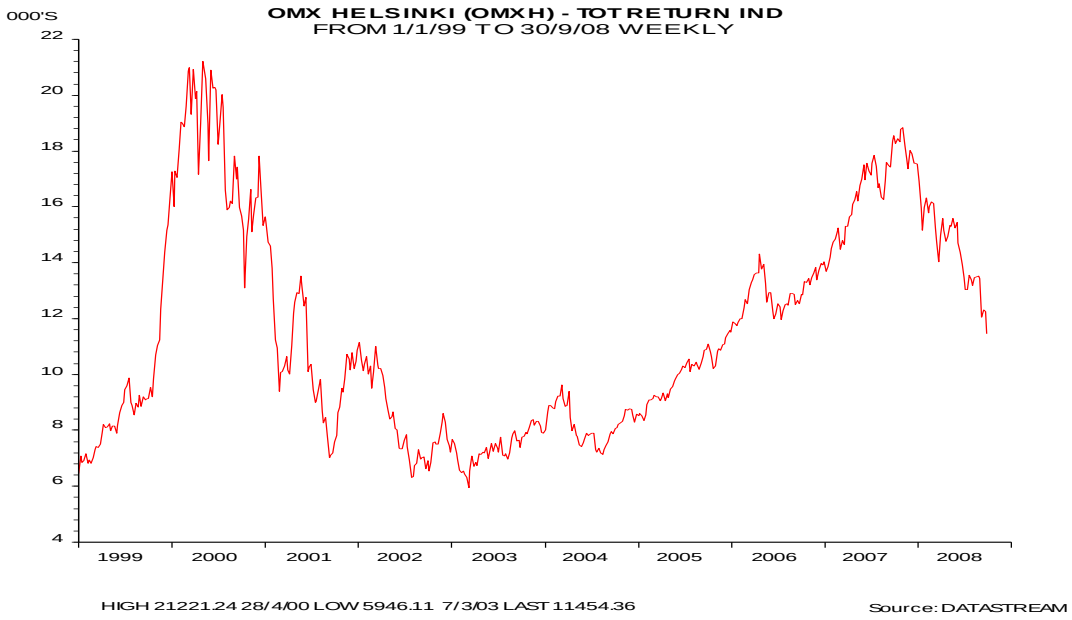

Figure 1. Historical price patterns of OMXH Helsinki total return index.

4 METHODOLOGY AND DATA

4.1 Objectives and methodology

This study examines the relationship between dividend yield and stock return over bullish and bearish Finnish stock market by testing for alpha and beta shifts across bull and bear markets. We also examine if high yielding portfolios can offer downside protection during bear markets. The hypothesis is that high-dividend yield portfolios have lower beta on bear markets than non-dividend paying portfolios. This assumption comes from the idea that investors favour dividend paying stocks during bear markets because they provide protection against falling stock prices. However, if high-dividend yield stocks have lower betas overall, rather than lower betas in bear markets only, the advantage from protection could also be achieved with low beta stocks paying low yields. This means that net advantages from high yield stock occur only if such stocks have lower betas in down markets than in up markets, offering greater protection over the cycle than comparable low beta stocks (Clinebell et al. 1993a, 80).

All in all, the questions wished to be answered in this thesis are

- How can we determine if the market is bullish or bearish?
- Do the high yielding portfolios perform better on the market overall?
- Are the betas of high yielding portfolios lower than betas of non-paying portfolios?
- Can high dividend yield characteristics alter the level of systematic risk in bull and bear markets?

We analyze 25 most traded Finnish stocks' performance during the time period 1.1.1999 – 30.9.2008 and their dividend yields. All the stocks belong to OMXH25 stock market index. In order to analyze stocks' performance daily, unadjusted stock prices are used. The unadjusted

stock prices, inflation rates and euribor rates were taken from Datastream database and dividends from Kauppalehti.fi website. Firm characteristics such as total assets and return on assets were taken from Thomson reuters database. The dividend data consist the exact amount and payment date over this period, including bonus dividends. Only cash dividends are relevant for this study, so stock dividends, are not included into the data. Adjusted stock prices were used to calculate stocks' yearly and monthly returns as well as returns on bull and bear markets.

In order to calculate the stocks' excess return we employ Jensen's alpha. It measures the difference between the mean returns of an investment and the benchmark strategy with the same systematic risk, normalized to the beta coefficient. The formula can be written as:

$$\alpha = R_i - \left[R_f + \beta_i\left(R_m - R_f\right)\right] \quad (4)$$

where:

R_i = the mean return of investment i

R_m = the mean return of the market index

β_i = the beta coefficient for the stock

R_f = the risk-free rate.

We use 3 month euribor rates as a proxy for risk-free return. Yearly excess returns for the stocks' were calculated by using an average monthly 3 month euribor rate.

4.2 Determining bullish and bearish stock markets

There are many ways to analyze if the market is bullish or bearish. One of the many definitions to bull and bear markets was given by Chauvet and Potter (2000, 90, fn 6): "*In stock market terminology, bull (bear) market corresponds to periods of generally increasing (decreasing)*

market prices". At the same year Maheu & McCurdy (2000, 104) termed bull market to refer to the high-return, low volatility state, whereas the bear market refers to low-return, high-volatility state of the stock market. However, there is also a more precise definition used by financial press, which insists that in order to qualify to bull or bear, the market must rise (fall) more than 20 or 25 percent (Pagan & Sossounov 2003, 24). In general, when the market is bullish prices go up, the number of shares traded is high and new companies enter to the market. On bearish market it's the opposite. Prices and indices fluctuate a lot and often fall, volumes are stagnant and traders suffer from lack of confidence. The start of the bull market is the best time for an investor to make profits according to Maheu & McCurdy (2000). They found that returns in the bull-market state are a decreasing function of duration, whereas volatility in the bear-market state is an increasing function of duration.

Barsky and Long (1990) examined bull and bear markets of the twentieth century in the USA. As can be seen from Figure 2, the US stock market was very volatile on a month-to-month, year-to-year and especially decade-to-decade scale. The first drop happened during the World War 1 in 1914-1918 period when stock market plummeted by 60 percent. In 1920s the stock market rocketed 500 percent, before the start of Great Depression when the market fell by 75 percent. From the early 1950s to the middle 1960s the market experienced a long bullish phase when it rose by 400 percent, and dropped by 60 percent during the mid-1970s.

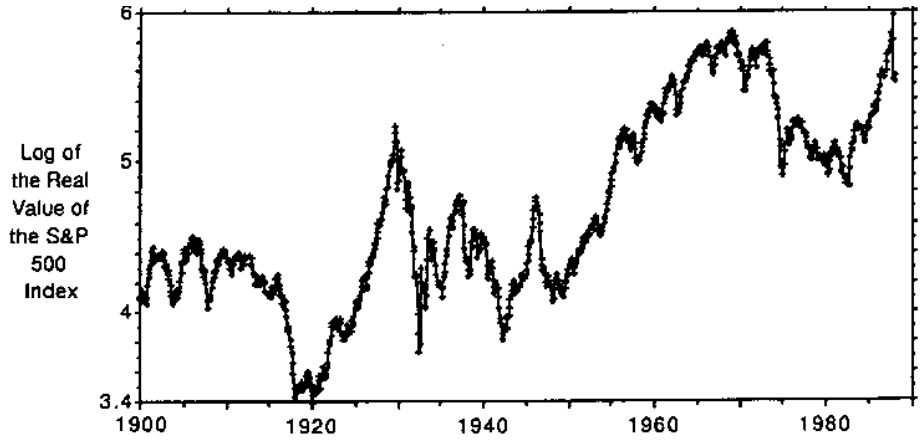

Figure 2. Real United States stock index prices 1900-1988 (Barsky & Long 1990, 266)

Many famous observers of the stock market, including John Maynard Keynes and John Kenneth Galbraith interpreted these swings to be due to “animal spirits” of investors. This means that investors did not reflect large shifts in the expected present value of future dividends as assessed by a cautious and far-sighted investor. Barsky and Long argue that the bull and bear markets of the twentieth century were driven by shifts in assessments of fundamentals. In other words, investors had little knowledge of crucial factors, in particular the long run dividend growth rate, and their changing expectations of average dividend growth plausibly lie behind the major swing of this century (Barsky & Long 1990, 269).

In this thesis bull and bear markets are defined from monthly returns of OMXH total return index. Every month’s total return is subtracted with the average monthly return of the whole time period. The average monthly return of the index was 1,044 percent. In order to determine the proper minimum length of one phase Dow Theory is used. It was developed by Charles Dow at the turn of the century and popularized by W.P Hamilton in editorials in Wall Street Journal. (Pagan & Sossounov 2003, 25).

Hamilton (1922) concludes that Dow Theory recognizes three main phases in market trends: (1) the primary movement or the major trend may last from less than a year to several years. (2) The secondary reaction or intermediate reaction may last from ten days to three months and generally retraces from 33% to 66% of the primary price change since the previous medium swing or start of the main movement. (3) The "short swing" or minor movement varies with opinion from hours to a month or more. It is also possible that these reactions happen simultaneously, for example, a daily minor movement in a bearish secondary reaction in a bullish primary movement.

According to Down Theory the length of a secondary reaction falls between ten days and three months. Therefore, rising (falling) periods lasting four or more consecutive months are defined as bullish or bearish in this thesis. However, one adaptation to this can be done, which is that there can be a couple of positive (negative) months during the bear (bull) market if the trend clearly seems to go down (up) and the market depreciates (appreciates) more than 25 percent. In other words, when there are more than three consecutive months that returns are below the average monthly return the market is determined as bearish – and on the other hand three or more consecutive months when returns are above the average monthly return mean that the market is bullish.

During the time period lasting from 1st of January 1999 to 31st of October 2007, two bullish conditions and three bearish conditions were found. The length of the periods fluctuated from 11 months to 6 months. The strongest rise happened between 1st of September 1999 and 1st of May 2000 when Finnish stock market rocketed 141 percent in eight months. On the contrary, the most dramatic fall happened between 1st of November 2000 and 1st of October 2001 when Finnish stock market plummeted 56 percent in 11 months. These periods are also in line with the financial press, which insist that markets must rise (fall) 20 to 25 percent in order to be classified as bear (bull) markets. As can be seen

from the table 1 below, all found periods include a rise (fall) more than 25 percent.

Table 1. Bull and bear markets during the time period 1.1.1999 - 30.9.2008.

	Rise/Fall during the period	Duration in months
Bull market		
01. 09. 1999 – 01.05.2000 (Bull 1)	+141 %	8
01.11.2005 – 01.05.2006 (Bull 2)	+29 %	6
Bear market		
01.11.2000 – 01.10.2001 (Bear 1)	-56 %	11
01.01.2002 – 01.08.2002 (Bear 2)	-40 %	7
01.11.2007 – 01.08.2008 (Bear 3)	-30 %	9

Motivated by Kim and Zumwalt (1979) and Chen (1982) we use also month-by-month basis to distinguish up and down markets. According to this method if the market return exceeds the risk-free rate for that month, the month is characterized as an up-market month. Otherwise, it is characterized as a down-market month. Because categorization is performed separately for each month, it can be considered as a short-term definition of market movements. This definition is referred to as the KZC up-versus-down market definition later in this study. When using KZC methodology we found 48 bullish months and 69 bearish months during the whole time period.

Figure 3 shows how the probability of staying in the state changes as duration increases. Maheu and McCurdy (2000) found that when the economy is in a bull market (state 2) the probability of staying in the bull market increases with duration. In other words, the bull market gains momentum. This can be due to confidence that investors get when the bull market persist. They come more optimistic about the future and hence wish to invest more in the stock market. As a result the probability of switching out of the bull market decreases. In addition, the

probability of staying in the bear market (state 1) also increases with duration, but not as much as in the bull state. Similarly to bull markets, the length of the bear market could create pessimism about future returns among investors, which can lead to a substitution from equity into other expected high-return instruments, such as treasury bills.

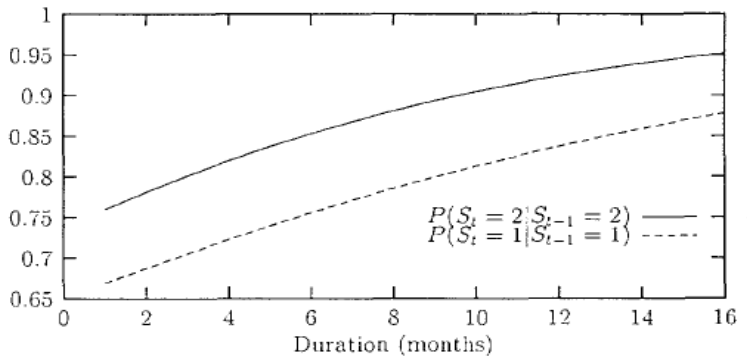

Figure 3. DDMS-DD: Transition probabilities (Maheu & McCurdy 2000, 108).

4.3 Descriptive statistics

All analyzed stocks were ranked from high to low by their mean dividend yield from 1999 to 2008 (see Table 2). The standard deviation (stdv.) of the single dividend yields is given as a measure of dividend stability. However, because the time period used in this study consist large changes in stock prices due to the crisis, such as technology bubble and the beginning of financial crisis, we also use mean adjusted standard deviation of dividend payments (Adj.Std.Dev.). It equals the standard deviation of the single dividend payments divided by their mean. This is because investors might define a stable dividend as a dividend of constant amount instead of constant yield since a stock offering a stable dividend amount protects the shareholders from losses up to a certain level (Henne et al 2007, 12). Table 2 also shows the yearly average total return of a stock and the amount how many times a stock has paid dividends. If a stock has paid dividends 10 times then it has paid dividends every year during the examination period. Usually, all Finnish companies pay their dividends during March to May period.

Every stock included in this study pays its dividends during these months.

Table 2. Overview of analyzed stocks (1999-2008)

Stock	Average DY	STDV	Adj.Std.Dev.	Average yearly return	Number of dividend payments
Kesko B	6,72 %	0,0286	0,3584	8,21 %	11
Orion B	6,20 %	0,0184	0,3927	3,62 %	13
Wärtsilä	5,68 %	0,0318	0,7015	17,28 %	13
TeliaSonera	5,48 %	0,0356	0,8305	-0,10 %	6
Sampo A	5,02 %	0,0442	0,6626	10,79 %	10
Rautaruukki	4,57 %	0,0205	1,0607	21,04 %	9
Fortum	4,56 %	0,0087	0,8138	22,91 %	10
Metso	4,36 %	0,0208	0,9232	10,57 %	9
Sanoma	4,16 %	0,0161	0,3576	2,06 %	9
Stora Enso	3,94 %	0,0078	0,0776	4,91 %	10
Nordea Bank	3,86 %	0,0063	0,3743	7,59 %	9
Outokumpu	3,76 %	0,0217	0,6690	16,19 %	10
Pohjola Pankki A	3,61 %	0,0115	0,3513	13,53 %	11
Neste Oil[1]	3,60 %	0,0074	0,1111	-13,01 %	3
UPM	3,33 %	0,0148	0,1648	1,34 %	10
Elisa	2,82 %	0,0313	1,1455	-1,55 %	8
Tieto Corporation	2,69 %	0,0127	0,3984	-3,55 %	11
Kemira	2,60 %	0,0073	0,2561	7,23 %	10
Cargotec B[2]	2,36 %	0,0070	0,2422	-11,31 %	3
Outotec[3]	1,98 %	0,0098	0,6527	7,79 %	2
YIT	1,78 %	0,0115	0,6605	22,66 %	10
Nokia	1,60 %	0,0099	0,3689	18,63 %	10
Kone B	1,29 %	0,0016	0,1575	29,95 %	3
Konecranes	1,04 %	0,0083	0,6066	10,55 %	11
Nokian Renkaat	0,67 %	0,0067	0,7488	29,61 %	10

([1]=listed at 2005, [2]=listed at 2005, [3]=listed at 2006,)

As can be seen from table 2 above the average yearly dividend yields fluctuate between 6,72 – 0,67 percent during the examination period. The top three dividend payers (Kesko, Orion and Wärtsilä) have paid dividends more than once a year. These bonus dividend payments have taken place in 1999, 2003 and 2004. There are also four companies (Kone, Outotec, Neste Oil and Cargotec) that have paid

dividends only two or three times during this period. Three of these (Outotec, Neste Oil and Cargotec) were listed to OMXH later than the other companies. Kone instead has started paying dividends since the year 2006. However, it has the best average yearly return. When comparing the top five dividend payers against the bottom five we can see that there is a sign of low yielding stocks performing better than high yielding stocks.

Table 3 shows the betas of stocks during bullish and bearish conditions as well as during the whole time period. As can be seen from the table the betas tend to fluctuate a lot during bull and bear markets compared to their whole time period beta. A beta value of 0 indicates that the investment is risk-free. A value of 0.5 indicates that the stock is expected to be only half as risky as the average for the market. A value of 1 means that the stock has the same risk as the market, as defined by a market index. A value of 2 indicates that the stock is expected to be twice as risky as the market. If the value is negative, then the stock's reaction to the market changes is the opposite. For example, if the market appreciates 1 percent a stock with beta value of -1 depreciates 1 percent.

The industry where a company operates has a strong impact to the beta of a stock. Usually, companies that operate in a technology industry have higher betas than companies that, for example, operate in a grocery or metal industry. A good example of this can be seen in Table 3. When we compare the beta values of Nokia, which operates in a technology industry and Kesko, which operates in a grocery industry, we notice that Nokia has significantly higher beta value than Kesko.

Table 3. Stocks' beta values during different market conditions

Stock	Bull 1	Bull 2	Bear 1	Bear 2	Bear 3	The whole time period
Cargotec B	-	0,31	-	-	1,05	1,08
Elisa	0,83	0,47	0,70	0,67	0,52	0,68
Fortum	0,04	1,35	0,13	0,14	0,43	0,20
Kemira	0,15	0,61	0,07	0,09	0,68	0,22
Kesko B	0,24	0,39	-0,02	0,03	0,86	0,20
Kone B	0,16	0,84	0,08	0,11	0,99	0,24
Konecranes	0,23	0,35	0,09	0,15	1,19	0,31
Metso	0,09	0,87	0,12	0,24	1,12	0,34
Neste oil	-	1,06	-	-	0,92	0,92
Nokia	1,21	1,46	1,43	1,60	1,46	1,41
Nokian renkaat	0,20	0,48	0,24	0,04	0,87	0,30
Nordea Bank	0,08	0,52	0,23	0,29	0,80	0,38
Orion B	0,14	1,02	0,04	0,10	0,44	0,15
Outokumpu	0,22	0,57	0,12	0,05	1,09	0,32
Outotec	-	-	-	-	1,01	1,20
Pohjola Pankki A	0,18	0,84	-0,02	0,01	0,61	0,18
Rautaruukki	0,20	1,43	0,17	0,18	1,11	0,33
Sampo A	0,31	0,64	0,23	0,19	0,78	0,38
Sanoma	0,26	0,67	0,13	0,15	0,56	0,24
Stora Enso	0,13	0,99	0,22	0,40	0,91	0,43
TeliaSonera	-	0,55	0,44	0,65	0,39	0,52
Tieto Corporation	0,88	0,71	0,60	0,63	0,50	0,70
UPM-Kymmene	0,05	1,07	0,16	0,28	0,95	0,36
Wärtsilä	0,09	0,63	0,15	0,14	0,98	0,28
YIT	0,03	0,41	0,08	0,09	1,15	0,23

5 RESULTS

5.1 Dividend yield and stock performance

In the first test we examine if the dividend yields can predict future excess stock returns. We run the regression using the excess returns during 2000-2008 as a dependent variable and dividend yields from time period 1999-2007 as an independent variable. We also include nine dummy variables into the model in order to control seasonal variations. The dummy variables represent single years starting from 2000 till 2008. The model can be written as:

$$ER_t = \alpha + \beta DY_{t-1} + D_1 + D_2 + \cdots D_9 + \varepsilon_t \quad (5)$$

where, ER_t denotes the excess returns of stocks during 2000-2008 and DY_{t-1} the dividend yields from 1999 to 2007. This way future returns can be regressed on current dividend yields, using lagged variables, to examine whether dividend yields are able to predict future returns. D_{1-9} denote the difference in mean in explaining the expected return (ER) for each year 2000-2008. ε_t is the error term.

As a result, the dividend yield parameter was insignificant, which suggests that the relationship between dividend yield and excess returns disappear when we control seasonal variations. All the dummy variables and intercept were biased. All in all, the dividend yield didn't have an impact to stocks' excess returns during years 2000-2008. Now, it is more interesting to see if the dividend yield has more power during bull and bear market conditions.

5.2 Bull and bear markets

We also divided stocks into five portfolios, which are based on the dividend yields on underlying stocks. Portfolio 1 consists of the five best

dividend paying companies, portfolio 2 consists of the next five best paying companies and so on. Portfolio returns were calculated by combining equally weighted returns for securities in each portfolio. Based on the overall average monthly returns of the portfolios we cannot clearly identify the U-shape relationship between the dividend yield and return reported in earlier studies by Blume (1980) and Litzenberger and Ramaswamy (1979). Overall, there seems to be a positive relationship between portfolio yield and portfolio return during bear markets and a negative relationship between portfolio yield and return in bull markets. As can be seen from table 4 the lowest yielding portfolio stands out on both bullish periods. However, when it comes to bear periods the portfolio 2 seems to be the best while the portfolio 4 is the most vulnerable. All in all, the high-dividend yield stocks seem to protect investors during bear markets but don't give much profit during bull periods when compared to low-dividend yield stocks, which rocket during bull periods but also have the most negative return during bear markets. When these portfolios are compared to Finnish stock market none of the portfolios were able to outperform the market on bullish periods.

Table 4. Average monthly return of the portfolios in bull and bear markets as well as, during the whole time period (%).

P	Av. DY	Av. monthly return	Av. monthly real return	Bull 1	Bull 2	Bear 1	Bear 2	Bear 3
1	5.82	0.19	0.11	0.16	1.31	-0.50	-0.79	-2.80
2	4.32	0.44	0.43	-0.33	1.92	0.26	0.13	-2.25
3	3.63	0.14	0.22	0.46	2.29	-1.07	-1.16	-2.69
4	2.49	-0.32	-0.14	2.89	0.54	-1.86	-5.01	-3.93
5	1.28	0.89	0.96	3.51	2.53	-0.99	-2.46	-3.07
M		0.45	0.47	9.97	3.22	-8.50	-8.24	-5.02

(P=portfolio, M=market)

Next we examine if the dividend yields have an impact on stocks' yearly excess returns during bullish and bearish sentiment. We use five different dummy variables to include bull and bear markets into the model. In this model DY_{t-1} refers to the last dividend yield before

bull/bear market occurred. This way we can analyze if dividends paid prior bull/bear market have any effect to the excess return during bull/bear market. As can be seen from table 5, the dividend yield parameter is significant at 5 percent significance level implying that dividend yield has a negative impact to stocks' excess returns. However, the standard error of the dividend yield estimate is very high and, thus, cannot be considered as trustworthy.

Table 5. Linear regression statistics of the model $\boldsymbol{ER_t = \alpha + \beta DY_{t-1} + D_{Bull\,1} + D_{Bull\,2} + D_{Bear\,1} + D_{Bear\,2} + D_{Bear\,3} + \varepsilon}$

Variable	Parameter estimate	Standard error	t-value
Intercept	0.05944	0.04913	1.21 (0.2293)
DY_{T-1}	-1.80535	0.75026	-2.41 (0.0180)*
Bull 1	-0.38832	0.06225	-6.24 (<.0001)**
Bull 2	-0.06143	0.05735	-1.07 (0.2868)
Bear 1	-0.37603	0.05808	-6.47 (<.0001)**
Bear 2	-0.13962	0.05712	-2.44 (0.0163)*
Bear 3	0		

*(**= significant at 1 % confidence level, *= significant at 5 % confidence level)*

In the second test we use standard econometric significance tests to determine whether the regressions statistics of stocks differ significantly when measured over bull and bear market conditions. Motivated by Fabozzi and Francis (1977) we use the single-index market model (SIMM) as a base for our analysis. The SIMM can be written as follows:

$$r_{it} = \alpha_i + \beta_i r_{mt} + \varepsilon_{it} \quad (6)$$

where

r_{it} is the rate of return of a stock *i* on month *t*

α_i is the alpha coefficient

β_i is the beta coefficient

r_{mt} is the market index return and

ε_{it} is the unsystematic residual return.

Single-index market model doesn't allow differences in systematic risk or alpha in bull and bear markets. In order to test whether beta and/or alpha are stable over bull and bear markets, a two factor model is constructed by introducing a binary dummy variable that takes the value of 1 when the market is bullish/bearish and 0 otherwise. (Clinebell et al 1993b, 15)

$$(r_{it} - r_{ft}) = \alpha_{0i} + A_{1i}DB_t + B_{1i}(r_{mt} - r_{ft}) + B_{2i}(r_{mt} - r_{ft})(DB_t) + \varepsilon_{it} \quad (7)$$

The *DB,* variable in equation (7) is a binary variable which assumes the value of 1 in bear markets and 0 otherwise. The test results are identical whether the dummy is set to 1 for bull or for bear markets. The coefficients on the binary variables A_{1i} and B_{2i} measure the differential effects of bull and bear market conditions on the α_{0i} and B_{1i} for the *i* th portfolio. However, when it comes to bullish sample periods equation 7 reduces to SIMM equation 6 where $A_{1i} = \alpha_{0i}$ and $B_{1i} = \beta_1$, because $A_{1i}DB_t = B_{2i}DB_t = 0$ (Fabozzi & Francis 1977, 1094). A tendency to perform better or worse during bull or bear markets than predicted by the market model should be captured in A_{1i}. A tendency for beta estimates to shift across bull and bear markets should be captured in B_{2i} (Gombola and Liu 1993b, 313). Tables 6 summarises the effect of different alphas and betas in bull and bear markets.

Table 6. Parameter estimates and their significance level using a linear regression formula 7 and portfolios' monthly returns.

	Bear market				Bull market	
P	α_{0i}	A_{1i}	B_{1i}	B_{2i}	α_{0i}	B_{1i}
1	-0.02081	-0.03118	0.24626	-0.19253	-0.02328	0.19122
	(<.0001)**	(0.0008)**	(<.0001)**	(0.0102)**	(<.0001)**	(<.0001)**
2	-0.01947	-0.01474	0.32864	-0.15940	-0.02111	0.27156
	(<.0001)**	(0.1558)	(<.0001)**	(0.0611)	(<.0001)**	(<.0001)**
3	-0.01811	-0.03752	0.37074	-0.32335	-0.02294	0.26834
	(<.0001)**	(0.0008)**	(<.0001)**	(0.0004)**	(<.0001)**	(<.0001)**
4	-0.01604	-0.02961	0.61390	-0.27706	-0.01968	0.52170
	(0.0046)**	(0.0314)*	(<.0001)**	(0.0140)*	(0.0002)**	(<.0001)**
5	-0.00622	-0.02066*	0.65657	-0.25445	-0.00827	0.56040
	(0.1581)	(0.0564)	(<.0001)**	(0.0044)**	(0.0442)*	(<.0001)**

*(P=portfolio,**= significant at 1 % confidence level, *= significant at 5 % confidence level)*

In this case:
A_{1i} = the difference between bear market alpha and other market alpha measures ($\alpha_{2i} - \alpha_{1i}$)
B_{2i} = the difference between bear and other market beta measures ($\beta_{2i} - \beta_{1i}$)

If A_{1i} is not statistically significantly different from zero, the portfolio's alpha is stable over bull/bear markets. Only portfolio 2 has insignificant A_{1i} value and, thus, its alpha is considered to be stable over bull/bear markets. By the same logic, the statistical significance of B_{2i} offers a test of difference in the stock's beta for bear and bull markets. If a stock offers downside protection, the bear market beta β_2 should be less than the bull market beta β_1 resulting in a statistically significant negative value for B_2 (Clinebell et al 1993b, 16).

We find that the widest statistically significant difference between bear and bull market beta is in the portfolio 5, while the smallest difference is in portfolio 1, indicating that portfolio 1 is the most stable during both bull and bear markets unlike portfolio 5, which seems to be the most sensitive followed by portfolio 3 and 4. This can be seen also in B_{1i} values in bear and bull markets. All these values are statistically significant at 1 % confidence level. These values tend to increase when the average portfolio yield decreases indicating increasing dependence to market fluctuations when the dividend yield decreases. This result implies that high yielding stocks can be seen as "defensive" unlike low yielding stocks, which strongly follow the market movements.

Another interesting result is that all portfolios have statistically significant negative alpha measures even in bull markets. This implies that portfolio selection based solely on past average dividend yields is a bad choice. However, low yielding portfolios have less negative alphas than high yielding portfolios, so there is still a tendency that low yielding stocks perform better on bull markets.

We also examined the changes of alphas and betas of individual stocks in bear markets. Out of 25 stocks only 8 stocks had negative statistically significant B_{2i} values at 5 percent confidence level. From portfolio 1 four out of five stocks were included to this list. In this sense, it seems that high yielding stocks offer downside protection. There were only 5 stocks which had statistically significant values for both A_{1i} and B_{2i}. These stocks were Orion, Wärtsilä, Kesko, Pohjola and Rautaruukki, which are yet again top dividend payers. However, there are also low dividend yielding stocks in the list, so the results cannot clearly prove that high dividend yield offer downside protection in bear markets. Table 7 summarises these results.

Table 7. Summary of stocks that have significant A_{1i} and/or B_{2i} values in bear markets.

Stock	Portfolio	A_{1i}	B_{2i}
Kesko B	1	-0.05625 (0.0137)**	-0.39035 (0.0355)**
Kone	5	-0.04043 (0,0248)**	X
Konecranes	5	X	-0.46734 (0,0324)**
Nokian renkaat	5	X	-0,51032 (0,0297)**
Nordea	3	-0.06778 (0.0003)*	X
Orion	1	-0.04243 (0.0410)**	-0.48353 (0.0047)*
Outokumpu	3	X	-0.73486 (0,0014)*
Pohjola	3	-0.02887 (0.0004)**	-0.18680 (0.0045)*
Rautaruukki	2	-0.02657 (0.0233)*	-0.28850 (0.0028)*
Sanoma	2	-0.02251 (0.0118)**	X
Teliasonera	1	-0.02543 (0.0110)**	X
Wärtsilä	1	-0.02995 (0.0092)*	-0.18328 (0.0493)**

(=significant at 1 % confidence level, **=significant at 5 % confidence level, X= value is insignificant)*

5.3 KZC up and down markets

Using the KZC method when dividing months into bullish or bearish category, the same kind of results are reported (see Table 8). The lowest yielding portfolio is the best in bull markets and the highest yielding portfolio the worst. In bear markets the portfolio number 2 is the best closely followed by portfolio number 1, when portfolio 4 performs worst. None of the portfolios were able to outperform the market index.

Table 8. Average monthly return during bull and bear markets using KZC methodology.

Portfolio	Bull	Bear
1	-1,09 %	-4,56 %
2	-0,56 %	-4,51 %
3	-0,46 %	-4,88 %
4	1,15 %	-6,68 %
5	2,55 %	-5,91 %
Market	5,14 %	-8,24 %

We also run the same regression as in bull and bear market situation (formula 7) for portfolios using KZC model for determining up and down markets. In this case the dummy variable takes on a value of 1 in up markets and a value of 0 in down markets. If the alpha and beta for the *i* th portfolio differ over up and down markets then A_{1i} and B_{2i} will be significantly different than zero (Fabozzi and Francis 1977, 1094).

In this case:

A_{1i} = the difference between up and down market alpha measures ($\alpha_{2i} - \alpha_{1i}$),
B_{2i} = the difference between up and down market betas ($\beta_{2i} - \beta_{1i}$)

To determine if either the alpha or the beta coefficients were less stable between up and down market periods the t-statistics of A_{1i} and B_{2i} in equation 7 for each of the portfolios were examined separately. If the *i*th portfolio's alpha intercept shifted significantly then the t-statistic for A_{1i} would be significantly different than zero. On the other hand, if the beta regression coefficient changed then B_{2i} would be significant. (Fabozzi & Francis 1977, 1096)

If A_{1i} is not statistically significantly different from zero, the portfolio's alpha is stable over up/down markets. As table 9 shows, only the highest dividend yield portfolio has a significant positive A1 value at 10 % confidence level indicating higher alfa on up markets than on down

markets. All other portfolios have insignificant A1 values, which indicate that portfolios' alphas don't change in up and down markets.

Table 9. Paramenter estimates on up and down markets using a two-factor model 7.

Portfolio	A_0	A_{1i}	B_{1i}	B_{2i}
1	-0.03023	0.01695	0.1817	-0.13472
	(<.0001)	*(0.0746)**	*(0.0021)***	*(0.2078)*
2	-0.01947	0.00724	0.30371	-0.17450
	(0.0085)	*(0.4959)*	*(<.0001)***	*(0.1473)*
3	-0.02724	0.01681	0.25448	-0.14177
	(0.0010)	*(0.1565)*	*(0.0006)***	*(0.2888)*
4	-0.02681	0.01471	0.47283	-0.01469
	(0.0071)	*(0.3041)*	*(<.0001)***	*(0.9274)*
5	-0.01512	0.01768	0.52045	-0.07361
	(0.0520)	*(0.1179)*	*(<.0001)***	*(0.5623)*

(= significant at 10 % confidence level)*

By the same logic, the statistical significance of B_2 offers a test of difference in the stock's beta for down and up markets. If a stock has a bigger beta on up markets, than on down markets, B_{2i} should have statistically significant positive value. As can be seen from table 9 above, none of the portfolios have significant B_{2i} values, which indicate that when using a short-term definition of market movements portfolios cannot offer downside protection. B_{1i} values, which are all statistically significant at 1 % significance level indicate increasing dependence on market movements when the dividend yield is decreasing.

Figures 4 and 5 provide a graphical example if alpha and/or beta differ significantly from each other in bull and bear markets. Figure 4 illustrates traditional alpha and beta relationships in the single factor model. Superior risk-adjusted performance is measured by higher alpha (intercept) measures and the slope of the characteristic line is the stock/portfolio beta. Figure 5 illustrates the characteristic line for the two-factor model if bear and bull market differences in alpha and/or beta are significant.

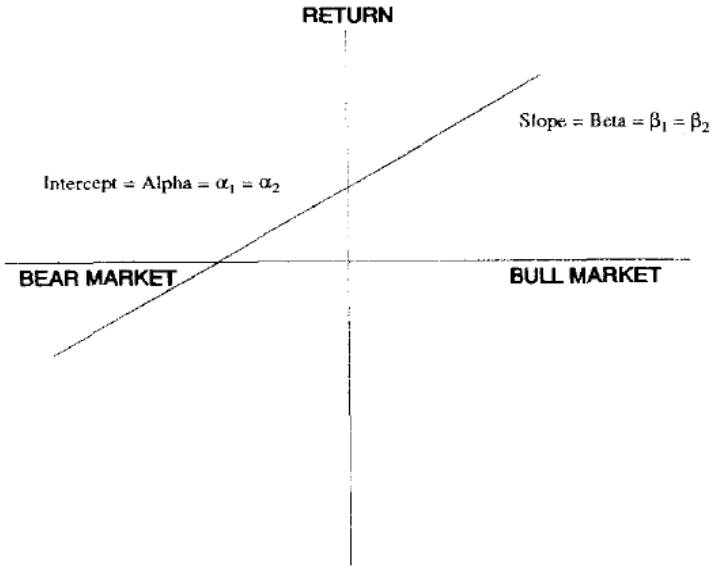

Figure 4. Traditional characteristic line with a constant alpha and beta in bull and bear markets (Clinebell et al 1993b, 17).

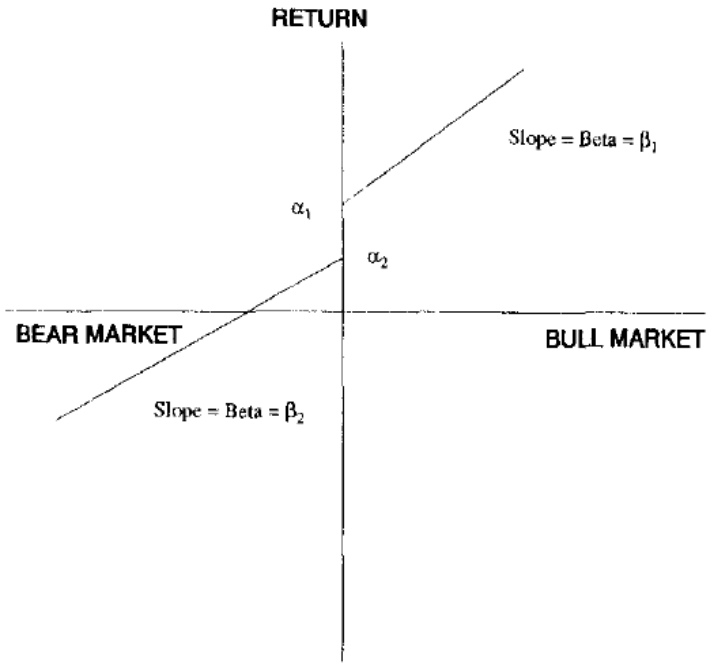

Figure 5. Characteristics lines with different alphas and betas in bull and bear markets Clinebell et al, 1993b, 17).

5.4 Dividend stability and risk

Next, we look at the effect of dividend stability to stocks returns and risk. The definition of dividend stability presents a rather more complex problem than does dividend yield, since there is no standard measure of stability which has gained general acceptance in the relative sparse research literature in this area (Ap Gwilym et al 2000, 264). Motivated by Gombola and Liu (1993a) and Ap Gwilym et al (2000), we use the standard deviation of a stock's single dividend yields as a measure of dividend stability. All the stocks are taken into the analysis because there aren't any zero-dividend stocks, which would have been otherwise eliminated. In this model standard deviation is used to explain the average yearly return, average yearly excess returns and betas.

When examining the effect of dividend stability during the whole time period, we found no statistically significant results to returns or systematic risk. As can be seen from the table 10, standard deviation of dividends couldn't explain the variation of mean yearly returns and excess returns or systematic risk during the ten year examination period. However, these results are inferred from quite small data set of 25 stocks and a time horizon of just seven years.

Table 10. Regression statistics using standard deviation of dividends as an independent variable.

Dependent variable	α	β	R^2	F-value
Excess return	0.06156	-1.06624	0.0099	0.23
	(0.1633)	(0.6360)		(0.6360)
Average yearly return	0.11362	-1.17612	0.0129	0.30
	(0.0112)	(0.5882)		(0.5882)
Beta	0.54296	-4.97695	0.0248	0.58
	(0.0002)	(0.4526)		(0.4526)

Motivated by Henne et al (2007) we also employ another measure of dividend stability which is the standard deviation of the single dividend payments divided by their mean. This is to take into account that

investors might define a stable dividend as a dividend of constant amount. The results can be seen in table 11. Adjusted standard deviation had significant positive value at 5 percent confidence level when explaining yearly excess returns. However, the R-square is really low so these results cannot be considered trustworthy. All in all, these results imply that dividend stability doesn't affect to systematic risk, excess return or yearly return.

Table 11. Regression statistics when using adjusted standard deviation as an independent variable.

Dependent variable	α	β	R^2	F-value
Excess return	-0.03686	0.15542	0.1576	4.30
	(0.4201)	(0.0495)**		(0.0495)**
Average yearly return	0.03394	0.11625	0.0947	2.41
	(0.4576)	(0.1346)		(0.1346)
Beta	0.52566	-0.11918	0.0106	0.25
	(0.0013)	(0.6239)		(0.6239)

*(**=significant at 5 % confidence level)*

5.5 Firm size and dividends

Various authors have hypothesized that dividends are associated with characteristics of firm fundamentals such as firm size, profitability, growth opportunities, and maturity. In addition, others have suggested that dividends are related to more discretionary firm's characteristics, such as leverage and aspects of the firm's corporate governance structure. For example, Smith and Watts (1992), Gaver and Gaver (1993), Fama and French (2001), DeAngelo et al (2006) and Dennis and Osobov (2008) have studied the effects of these factors.

Fama and French (2001) estimate logit models in which the dependent variable is equal to one if the firm pays regular common dividends in a given year and zero otherwise. They find that the likelihood of dividend payments is positively associated with firm size and profitability and negatively associated with the firm's market-to-book ratio (a measure of growth opportunities). DeAngelo et al. (2006) extended the Fama and French (2001) analysis to include a measure of firm maturity, which is

the ratio of retained earnings to the book value of equity (RE/BE). They find that the propensity to pay dividends is positively associated with RE/BE. Grullon et al (2002) corroborate the link between dividends and firm maturity by reporting that firms increasing dividends exhibit declines in systematic risk and future reductions in profitability. These firms also fail to increase capital expenditures.

Smith and Watts (1992) and Gaver and Gaver (1993) adopt a similar cross-sectional approach, but instead of estimating models that predict whether a firm pays dividends, they estimate models in which dividend yield and dividend payout are the dependent variables. Using industry level data, Smith and Watts find that dividend yield is positively related to firm size and whether the firms regulated. Dividend yield is negatively associated with measures of growth options. Using firm-level data, Gaver and Gaver confirm that growth firms have lower payout rations and lower dividend yield.

The relationship between dividends and firm fundamentals also appears to be robust across countries. Dennis and Osobov (2008) analyze dividend policies in six developed financial markets - United States, United Kingdom, Canada, Germany, France and Japan – and find that firm size, profitability and firm maturity are associated with the propensity to pay dividends in all six countries. The association between dividends and growth opportunities is less robust.

In this thesis we use return on assets (ROA) as an estimate of firm profitability and total assets as an estimate of a firm size. We analyze separately if these two factors have an effect to firms' dividend yield. The models can be written as:

$$DY = \alpha + \beta ROA + \varepsilon \quad (8)$$

$$DY = \alpha + \beta Firm's\ assets + \varepsilon \quad (9)$$

Using a linear regression model we couldn’t find any relationship between dividend yield, return on assets and total assets. All in all, return on assets and total assets don’t have any effect to the size of the dividend yield.

6 CONCLUSIONS

The purpose of this thesis was to examine the relationship between dividend yield and stock return over bullish and bearish Finnish stock market by testing for alpha and beta shifts across bull and bear markets. Another main point of interest was to find out if high yielding portfolios offer downside protection during bear markets. In addition, different variables like firm size and standard deviation of dividends were tested to see if these variables have an effect to the size of the dividend yield.

The results of this thesis show that during bull/up markets low yielding portfolios outperform high yielding portfolios, but high yielding portfolios perform better on bear/down markets. In this sense we conclude that high yielding stocks can be seen as defensive, especially, in bear markets. However, we couldn't find a clear U-shape pattern among these portfolios, but in some bearish periods portfolio 2 perform better than portfolio 1 and sometimes in bullish periods portfolio 4 outperformed portfolio 5. Overall, the lower the dividend yields the higher the return in bull markets and the opposite.

Using a two-factor model we found statistically significant evidence that high yielding portfolio was the most stable during bull and bear markets while low yielding portfolios were the most volatile in terms of portfolio beta. The lower the portfolio's average dividend yield the more sensitive it was to the market movements. However, when the examination period was divided into up and down markets with KZC method, portfolios' alpha and beta coefficients were stable. This means that when using a short-term definition of market movements, portfolios cannot offer downside protection and high yielding stocks do not perform better in bull or bear markets.

Another interesting result was that during bull and bear markets all portfolios had negative alphas. However, low yielding portfolios have less negative alphas than high yielding portfolios, so there is still a tendency that low yielding stocks perform better on bull markets.Our conclusion is that forming portfolios based on stocks' past dividend yields is a bad choice, due to negative alpha measures even in bull markets. However, during bear markets high yielding portfolios offer downside protection due to lower beta measures.

In the end, we examined if the stability of dividend could explain stocks' average yearly return, systematic risk or excess return. Using standard deviation and adjusted standard deviation as a measure of dividend stability we couldn't find any connection between dividend stability and stocks' return or systematic risk. We also tested using a basic linear regression model if firm characteristics such as firm size and profitability could explain the size of dividend yield. No statistically significant results were found.

To sum up, high dividend yield portfolios tend to be the most stable ones during both bull and bear markets. They could also offer downside protection in bear markets. When comparing the monthly average returns of the portfolios there seemed to be a negative correlation with dividend yield and risk - the higher the dividend yield the lower the return. However, we have to address that the quite small sample of firms and relatively short time period caused some limitations for this study. An interesting continuation for this study would be to compare dividend yield effects within different industries and compare if it has stronger impact to stocks' performance in some industries than others.

All in all, we can end this thesis by agreeing with the old, well known wisdom – the risk and return go hand in hand.

REFERENCES

Allen F., A. E. Bernardo & I. Welch (2000), *A Theory of Dividends Based on Tax Clienteles,* Journal of Finance Vol. 55, No. 6, 2499-2536.

Allen F. & R. Michaely (2002), *Payout Policy*, Wharton School Center for Financial Institutions, Working Paper Series No. 01-21-B.

Ap Gwilym, O., G. Morgan & S. Thomas (2000), *Dividend Stability, Dividend Yield and Stock Returns: UK Evidence*, Journal of Business Finance & Accounting 27, 261-281.

Arbel A., S. Carvell & E. Postnieks (1988), *The Smart Crash of October 19th*, Harvard Business Review Vol. 66, No. 3, 124-136.

Baker K. H. (2009), *Dividends and Dividend Policy*, John Wiley & Sons, Inc.

Barsky R. B. & J. B. De Long (1990), *Bull and Bear Markets in the Twentieth Century*, Journal of Economic History Vol. 50, No. 2, 265-281.

Berglund T., Liljeblom E. & Wahlroos B. (1987), *Stock Price Reactions to Announcement of Stock Dividends and Rights Issues. A Test of Liquidity and Signaling Hypothesis*. Finance 8:2, 109–132.

Bhattacharya S (1979), *Imperfect Information, Dividend Policy and the Bird-in-the-Hand Fallacy*, The Bell Journal of Economics 10, 259-27.

Black F. & Scholes M. (1974). *The Effects on Dividend Yield and Dividend Policy on Common Stock Prices and Returns*, Journal of Financial Economics 2, 1–22.

Blume, M. E (1980), *Stock Returns and Dividend Yields: Some More Evidence*, Review of Economics and Statistics 62, 567-577.

Brickley J. A (1983), *Shareholder Wealth, Information Signaling and the Specially Designated Dividend: An Empirical Study*, Journal of Financial Economics Vol. 12, No. 2, 187-209.

Brav A., J. R. Graham, R. Campbell & R. M. Harvey (2005), *Payout Policy in 21st Century*, Journal of Financial Economics Vol. 77, No. 3, 483-527.

Chauvet M. & S. Potter (2000), *Coincident and Leading Indicators of the Stock Market*, Journal of Empirical Finance 7, 87–111.

Chen S.-N. (1982), *An Examination of Risk-Return Relationship in Bull and Bear Markets Using Time-Varying Betas*, Journal of Financial and Quantitative Analysis 17, 265-286.

Clinebell, J. M., J. R. Squires, and J. L Stevens (1993a), *Investment Performance of High Income Stocks in Up and Down Markets*, Journal of Economics and Finance 17, 77-91.

Clinebell, J. M., J. R. Squires, and J. L Stevens (1993b), *Investment Performance Over Bull and Bear Markets: Fabozzi and Francis Revisited*, Quarterly Journal of Business and Economics Vol. 32, No. 4, 14-25.

DeAngelo H., & L. DeAngelo (2006), *The Irrelevance of the MM Dividend Irrelevance Theorem*, Journal of Financial Economics 79, 293–315

DeAngelo H., L. DeAngelo & D. J. Skinner (1996), *Reversal of Fortune: Dividend Signalling and the Disappearance of Sustained Earnings Growth*, Journal of Financial Economics Vol. 40, No. 3, 341-371.

DeAngelo H., L. DeAngelo & D. J. Skinner (1992), *Dividends and Losses*, Journal of Finance Vol. 47, No. 5, 1837-1863.

Denis D. J., & I. Osobov (2008), *Why Do Firms Pay Dividends? International Evidence on the Determinants of Dividend Policy,* Journal of Financial Economics 89, 62-82.

Elton, E. & M. Gruber (1970), *Marginal Stockholder Tax Rates and the Clientele Effect*, Review of Economics and Statistics, February, pp. 68-74.

Fabozzi F. J. & J. C. Francis (1977), *Stability Tests for Alphas and Betas Over Bull and Bear Market Conditions*, Journal of Finance Vol. 32 No. 4, 1093-1099.

Fama E. F., & K. R. French (2001), *Disappearing Dividends: Changing Firm Characteristics or Lower Propensity to Pay*, Journal of Financial Economics 60, 3-43.

Fama E. F., & K. R. French (1988), *Dividend Yields and Expected Stock Returns*, Journal of Financial Economics Vol. 22, 3-25.

Feldstein M. & J. Green (1983), *Why Do Companies Pay Dividends?*, The American Economic Review Vol. 73, No. 1, 17-30.

Gaver J. & K. Gaver (1993), *Additional Evidence on the Association between the Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies*, Journal of Accounting and Economics Vol. 16, No. 1-3, 125-160.

Goetzman W. N., & P. Jorion (1995), *Testing the Predictive Power of Dividend Yields*, Journal of Finance 48, 663-679

Gombola M. J., & F.-Y Liu (1993a), *Considering Dividend Stability in the Relation between Dividend Yields and Stock Returns*, Journal of Financial Research 16, 139-150.

Gombola M. J., & F.-Y. L. Liu (1993b), *Dividend Yields and Stock Returns: Evidence of Time Variation between Bull and Bear Markets*, Financial Review Vol. 28, No. 3, 303-327.

Gonedes N. J. (1978), *Corporate Signaling, External Accounting, and Capital Market Equilibrium: Evidence on Dividends, Income and Extraordinary Items*, Journal of Accounting Research Vol. 16, No. 1, 26-79.

Gordon M. J. & E. Shapiro (1956), *Capital Equipment Analysis: The Required Rate of Profit*, Management Science

Graham B & D.L. Dodd (1976), *Security Analysis, special reprint of the 1934 first edition*, McGraw-Hill.

Graham J. R. & A. Kumar (2006), *Do Dividend Clienteles Exist? Evidence on Dividend Preferences of Retail Investors*, Journal of Finance vol. 61, No. 3, 1305-1366.

Grullon G., R. Michaely & B. Swaminathan (2002), *Are Dividend Changes a Sign of Firm Maturity?*, Journal of Business Vol. 75, No. 3, 387-424.

Hamilton W.P (1922), *The Stock Market Barometer*, Harper and Brothers.

Healy P. M., & Palepu K. G. (1988), *Earnings Information Conveyed by Dividend Initiations and Omissions*, Journal of Financial Economics Vol. 21, No. 2, 149-176.

Henne A., S. Ostrowski & P. Reichling (2007), *Dividend Yield and Stability versus Performance at the German Stock Market*, FEMM Working Paper No. 17.

Heikkilä T. & S. Ikäheimo (1997), *Financial Management and Stock Markets in Finland*, Finnish Journal of Business Economics

Hess P.J (1982), *The Ex-Dividend Day Behavior of Stock Returns: Further Evidence on Tax Effects*, Journal of Finance. Vol. 37, No. 2, 445–456.

Hoberg G., & N. R. Prabhala (2009), *Disappearing Dividends, Catering, and Risk*, Review of Financial Studies 22, 79-116.

Hodrick R. J. (1992), *Dividend Yields and Expected Stock Returns: Alternative Procedures for Interference and Measurement*, Review of Financial Studies 5, 357-386.

Kallunki J-P., M. Martikainen, T. Martikainen & P. Yli-Olli (1997), *The Finnish Stock Market: A Survey of Some Empirical Evidence and its Practical Relevance*, Finnish Journal of Business Economics Vol. 46 No. 4, 474-496.

Kauppalehti (18.3.2011), *Osingot rauhoittavat, kun maailma vapisee*, written by Hanna Eskola.

Kauppalehti (9.11.2010), *Veropelko ahdistaa, osinkopajatso tyhjenee*, written by Olli Herrala.

Keim D. B (1985), *Dividend Yields and Stock Returns – Implications of Abnormal January Returns*, Journal of Financial Economics 14, 473-489.

Kim M. K. & J. K. Zumwalt (1979), *An Analysis of Risk in Bull and Bear Markets*, Journal of Financial and Quantitative Analysis 14, 1015-1025.

Kinkki. S (2001), *Dividend Puzzle – A Review of Dividend Theories*, Finnish Journal of Business Economics 1, 58-97.

Koponen, J (2001), *Osingonjakajan verokirja*. Helsinki: Oy Edita Ab.

Korhonen A. (1977), *Stock Prices, Information and the Efficiency of the Finnish Stock Market. Empirical tests*, Proceeding of the Helsinki School of Economics A 23.

Korkeamaki T., E. Liljeblom & D. Pasternack (2009), *Tax Reform and Payout Policy: Do Shareholder Clienteles or Payout Policy Adjust*, Journal of Corporate Finance Vol. 16, Is. 4, 572-584.

Koskela M. (1984), *Osakkeen kassaperusteinen arvonmääritys*, The Helsinki School of Economics. A 43.

Lahti A. & Pylkkönen P. (1989). *News and Stock Prices*, The Finnish Journal of Business Economics 3, 184–193.

Lintner J. (1956), *Distribution of Incomes of Corporations Among Dividends, Retained Earnings and Taxes*, American Economic Review Vol. 46, No. 2, 97-113.

Litzenberger, R. & K. Ramaswamy (1979), *The Effects of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence*, Journal of Financial Economics Vol. 7, No. 2, 163-195.

Litzenberger, R. & K. Ramaswamy (1980), *Dividends, Short Selling Restrictions, Tax-Induced Investor Clienteles and Market Equilibrium*, Journal of Finance Vol. 35, No. 2, 469-482.

Litzenberger, R. & K. Ramaswamy (1982), *The Effects of Dividends on Common Stock Prices Tax Effects or Information Effects?*, Journal of Finance Vol. 37, No. 2, 429-443.

Maheu J. M. & T. H. McCurdy (2000), *Identifying Bull and Bear Markets in Stock Returns*, Journal of Business and Economic Statistics Vol. 18, No. 1, 100-112.

Martikainen T. (1990), The *Individual and Incremental Significance of the Economic Determinants of Stock Returns and Systematic Risk*, Acta Wasaensia. Universitas Wasaensis, 24.

Martikainen T. (1989), *Stock Price Behaviour and Economic Operations of the Firm,* Business Administration 45 Accounting and Finance. University of Vaasa.

Martikainen T. & Yli-Olli P. (1991), *Macroeconomic Factors and Stock returns: The Case of the Helsinki Stock Exchange*, The Finnish Journal of Business Economics 3, 232–252.

Miller M. H. & F. Modigliani (1961), *Dividend Policy, Growth, and the Valuation of Shares*, Journal of Business Vol. 34, No. 4, 411-433.

Modigliani F. & M. H. Miller (1958), *The Cost of Capital, corporation finance, and the theory of investment*, American Economic Review 48, 261–297.

Morgan G. & S. Thomas (1998), *Taxes, Dividend Yields and Returns in the UK Equity Market*, Journal of Banking & Finance 22, 405-423.

Naranjo, A., M. Nimalendarn & M. Ryngaert (1998), *Stock Returns, Dividend Yields, and Taxes*, Journal of Finance 53, 2029-2057.

Pagan A.R & K.A Sossounov (2003), *A Simple Framework for Analysing Bull and Bear Markets*, Journal of Applied Econometrics 18, 23-46.

Poterba J. M. & L. H. Summers (1984), *New Evidence That Taxes Affect the Valuation of Dividends*, Journal of Finance Vol. 39, No. 5, 1397-1415.

Pätäri E.J., & T.H. Leivo (2009) "*Performance of the Value Strategies in the Finnish Stock Markets*", Journal of Money, Investment and Banking 8, 5-24.

Rantapuska E. (2008), *Ex-dividend day trading: Who, how, and why? Evidence from the Finnish market*, Journal of Financial Economics 88, 355–374.

Ross, S. A. (1977), *The Determination of Financial Structure: The Incentive Signalling approach*, The Bell Journal of Economics, 8, 23-40.

Ross, S.A., R.W. Westerfield & J. Jaffe (2005), *Corporate Finance*, 7th edition, McGraw-Hill/Irwin.

Scholz J. K. (1992), *A Direct Examination of the Dividend Clientele Hypothesis*, Journal of Public Economics Vol. 49, No. 3, 261-285.

Siegel J.J. (2007), *Stocks for the Long Run: The Definitive Guide to Financial Market Returns and Long-term Investment Strategies,* McGraw-Hill.

Smith C. W. & R. L. Watts (1992), *The Investment Opportunity Set and Corporate Financing, Dividend, and Compensation Policies*, Journal of Financial Economics Vol. 32, No. 3, 263-292.

Sorjonen P (1999), *Ex-Dividend Day Behaviour of Stock Prices in Finland in 1989-90 and 1993-97*, The Research Institute of the Finnish Economy, Discussion Papers No. 674.

Van Horne J. C (1980), *Financial Management and Policy*, 5th edition, New Jersey, Prentice-Hall.

Viskari J. (1992), *News and Stock Prices: Some Further Results*, The Finnish Journal of Business Economics 4, 371–376.

Watts R. (1973), *The Information Content of Dividends*, Journal of Business, Vol. 46, No. 2, 191-211.

Williams J. B. (1938), *The Theory of Investment Value*, Cambridge, Mass. Harvard University Press.

Yli-Olli P. (1979), *Yrityksen markkina-arvo, velkaisuus ja pääoman kustannukset. Sovellutus suomalaisiin pörssiyhtiöihin*. Vaasan kauppakorkeakoulun julkaisuja, Tutkimuksia 62.

Internet references

KPMG (2004), Taxview, KPMG:n veropalveluiden tiedotuslehti 2/2004 [web document] [retrieved 17.5.2010]. Available: http://www.kpmg.fi/Binary.aspx?Section=167&Item=1461

Leppiniemi Jarmo (2003), *Osakeyhtiön jakokelpoiset varat*, Taloussanomat [www-document] [retrieved 11.8.2010] Available: http://www.taloussanomat.fi/arkisto/2003/02/21/osakeyhtion-jakokelpoiset-varat/200323123/12

Verohallinto 2009: *Taxation of Dividends Received by Residents of Finland 2009*, Publication of the Finnish Tax Administration 50e.09 1.5.2009. [www-document]. [retrieved 20.4.2010]. Available: http://www.vero.fi/nc/doc/download.asp?id=6511;56636

APPENDIX A: List of OMXH25 stocks

Cargotec B
Elisa
Fortum
Kemira
Kesko B
Kone B
Konecranes
Metso
Neste Oil
Nokia
Nokian Renkaat
Nordea Bank
Orion B
Outokumpu A
Outotec
Pohjola Pankki A
Rautaruukki K
Sampo A
Sanoma
Stora Enso
TeliaSonera
Tieto Corporation
UPM
Wärtsilä
YIT

APPENDIX B: Breakdown of the portfolios

Portfolio 1:

Kesko
Orion
Wärtsilä
Sampo
Teliasonera

Portfolio 2:

Rautaruukki
Fortum
Metso
Sanoma
Stora Enso

Portfolio 3:

UPM
Pohjola Bank
Neste Oil
Outokumpu
Nordea Bank

Portfolio 4:

Outotec
Cargotec
Kemira
Tieto Corporation
Elisa

Portfolio 5:

Nokian renkaat
Konecranes
Kone
Nokia
YIT