Are Financial Ratios Rational?

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ABSTRACT

Scope: This thesis investigates if it is possible to generate an abnormal return on the Swedish stock exchange in 1993 to 2007 by adopting an investment strategy that is exclusionary based on seven different financial ratios. The financial ratios analyzed are price-to-earnings, dividend yield, price-to-book, EV/EBITDA, price-to-sales, FCF/CAPEX and MV/(FCF/std). It also explores if there is a value premium by calculating the difference between the portfolios containing companies with the highest ratios to the portfolio with the lowest ratios.

Findings: There are no indications that it is possible to use the financial ratios analyzed as the only criterion when selecting stocks to invest in and create abnormal return over time. Moreover our results indicate that there has been no significantly proven value premium in our data on the Swedish stock market between 1993 and 2007.

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Table of contents

1. Introduction

The recent years have been marked by the turbulence that has taken place in the financial markets around the world. After a crash similar to the sub-prime it is hard to understand why the bubble was not predicted and prevented beforehand. This burst of bubble is not the first in history, e.g. the recent dot.com during the millennium, and most likely not the last. This has made us suspicions and doubtful about the efficiency of analysts' forecasts and prognoses such as financial ratios analyses.

Several articles in the financial press and analysis discuss how different financial ratios have developed the most recent time and we have understood the importance of these ratios in the financial market. Financial ratios are also frequently used in the corporate finance- and investment bank industry to find and analyze potential companies to invest in.

There has been a substantial increase in small private investors in the stock market over the last decades. (Aktiefrämjandet, 2007) Financial ratios such as dividend yield and price-to earnings is commonly used among small private savers and they certainly have an impact on their investment decisions. Reasons for this are that financial ratios are quickly to calculate, easily interpreted and most of them are available in daily newspapers and financial reports.

The commonly use of financial ratios and recent crisis lead us to the aim of this thesis; to investigate if it is possible to generate an abnormal return by having an investment strategy that solidarity is using different financial ratios as investing criteria. To further deepen the analysis we will investigate if there is a value premium on the Swedish market by calculating the difference between the portfolios containing the firms with highest ratios to the portfolio with the lowest ratios.

Our focus will be on stocks traded at large- mid- and small cap at OMX Stockholm stock exchange in 1993 to 2007 and we will analyze seven different financial ratios in our search for abnormal return. Given the data available we have chosen to rely on the bootstrapping method to obtain valid results. We found no indication that it is possible to create abnormal return by using financial ratios as the only criterion when deciding which stocks to invest in. Furthermore, no significantly proven value premium was found. However, the differences between the extreme value weighted portfolios have the expected sign in line with value premium theory.

Our ambition with this thesis is to put light on and deepen our understanding of the behavior of financial ratios and the usage of these in investing decision. Since there is little research done in this area in the Swedish market we see this as an early step to find the characteristics of financial ratios and hope to raise interest for further analysis within this field

2. Previous research

This part of the paper will introduce the previous research related to our subject. For more elaborate information, please refer to the original papers.

In 1934 Dodd and Graham emphasized in their book Security Analysis the importance of fundamental valuation (Dodd & Graham, 1934). They argued that it is possible to find a company's intrinsic value by analyzing fundamental information such as accounting data. Different complex valuation models have been constructed since then. One of them is financial ratio valuation which among valuation methods is considered one of the fastest and easiest.

Several studies have been performed on the US market where the authors consider firm characteristic such as price-to-book and price-to-earning, firms with similar characteristic are grouped together in portfolios and their return over time is analyzed. Fama & French (1993) formed portfolios based on book-to-market (B/M), the deciles with the highest B/M (value firms) performed a 22% annualized return between 1963-1990 to be compared with the annualized return on 3,6% for the low B/M portfolio (growth firms). In a later study Fama & French (1998) formed portfolios according to B/M, P/E and Dividend yield and found once again evidence that value stocks have a higher return than growth stocks on most markets considered between 1975 and 1995.

Another study in the same field was done by Piotroski (2000). He studied the possibility to discriminate between the value stocks (high book-to-market) to find the best performing value firms using historical financial statements. He finds an increased annual return of 7,5% between 1976 and 1996. This approach includes not only financial ratios but also more advanced fundamental analysis.

There have also been studies where only P/E ratio is taken into account; Goodman & Peavy (1986) studied 125 random firms noted on US markets between 1970 and 1980. They divided the firms into five different portfolios depending on their P/E ratio. They found evidence that investing in the low P/E portfolio generated positive abnormal returns whereas the high P/E portfolio had negative return, i.e. the P/E-effect.

With all these studies covering US markets and one covering international markets we are interested in examine the financial ratios on the Swedish stock market. Some studies have already been performed on the Swedish market. Carlsson, Esser & Skoric (2008) compare growth stocks with value stocks regarding their performance during the period of 1996-2007. They investigate P/B, P/E, and dividend yield, and their key finding is that value portfolios based on P/B and P/E get a positive abnormal return. However, they do not include all lists on the OMX and use a method that we do not consider optimal for this type of study since they run a regression with a time series of only 10 observations. Compared to (Carlsson, Esser, & Skoric, 2008) we use the bootstrap method to overcome the problem with few observations. We also have analyzed four additional financial ratios during a time period that is three years longer.

Gustafsson & Palm (2006) examine if they can find a P/E-effect similar to Goodman & Peavy (1986). They do not find any abnormal returns for high or low P/E portfolios between 1991 and 2004, i.e. they could not find any P/E effect. Even though the P/E-effect is recently studied on the Swedish market we will include the P/E financial ratio as one of the firm characteristic we are studying to get a benchmark for our result. Our thesis differs from (Gustafsson & Palm, 2006) since we use bootstrap method in our analysis. Moreover, we investigate six more financial ratios whereas they only look at P/E ratios.

3. Theoretical framework and hypotheses

3.1. CAPM

The capital asset pricing model (CAPM) is the risk and return model that has been used for the longest time and is the standard among analysts. There are several assumptions behind the model that have been discussed in several academic textbooks. We have decided to follow (Damodaran, 2002) framework in our review of the model and its assumption.

CAPM assumes that all investors have the same information and it is therefore not possible to find over- and undervalued assets in the market. It also assumes there are no transaction costs, investments are infinitely divisible, and all assets are traded. These assumptions enable investors to make diversifications without extra costs and their portfolio will as a result include all traded assets with the same weight (weighted by market value)

To reflect the different investors risk aversion they can invest different portion in a risk free asset and the rest in the market portfolio discussed in the previous section. If an investor is risk avert he invests a bigger amount in the risk free asset. If an investor wants to take on additional risk he can put all his money in the market portfolio and then take more risk by borrowing at the risk free rate and invest the additional money in the market portfolio. This introduces two new assumptions. First, CAPM assumes that it is possible to lend and borrow at the risk free ate. Second, there is a risk free asset which expected return is known.

In the CAPM, the risk of an individual asset to an investor is the risk the asset adds to the market portfolio. If an asset moves totally independently to the market portfolio its risk is firm specific and can be diversified away. If the asset moves in the same way as the market it will add risk to the market portfolio and has therefore a high market risk. This is measured by looking at the covariance of an asset with the market portfolio.

To calculate the non-diversifiable risk in CAPM that any asset adds to the market portfolio the following equation is used to find the variance (measure of risk) of the market portfolio before and after an asset is added:

$$Variance\ prior\ to\ asset\ is\ being\ added: \sigma_m^2$$

$$Variance\ after\ asset\ i\ is\ added: \sigma_{m'}^2 = w_i^2\sigma_i^2 + (1 - w_i)^2\sigma_m^2 + 2w_i(1 - w_i)\sigma_{im}$$

Where

σ_m^2 = Variance of the market portfolio

σ_i^2 = Variance of the individual asset being added to the market portfolio

w_i =The market portfolios weight on the asset

σ_{im} = Covariance in return between the individual asset and the market portfolio

The market value weight on any individual in the market is very small and therefore the first term will be close to zero and the second term should get close to the variance of the market. The result from this is that the covariance between the asset and the market will be the measure of the risk added by asset i. The risk is often standardized by dividing the covariance of each asset with the market portfolio by the variance of the market portfolio. The yield is called beta:

$$Beta\ of\ asset\ i, \beta_i = \frac{Covariance\ of\ asset\ i\ with\ market\ portfolio}{Variance\ of\ the\ market\ portfolio} = \frac{\sigma_{im}}{\sigma_m^2}$$

Assets that are riskier than the average will have betas exceeding 1 and assets that have risk below average will be below 1. Risk free asset will have a beta of 0.

Since all investors hold some combination of the risk free asset and the market portfolio we can conclude that the expected return of an asset is linearly related to the beta of the asset:

$$E(r_i) = r_f + \beta_i[E(r_m) + r_f]$$

Where

$E(r_i)$ = Expected return on asset i

r_f = Risk free rate

$E(r_m)$ = Expected return on market portfolio

β_i = Beta of asset i

To get the expected return of a specific asset we need three inputs, i.e. risk free rate, expected return on market portfolio and beta, as seen above.

3.2. Efficient market theory

The efficient market theory's main message is that it is not possible to constantly outperform the market. In this section we present a brief description of the theory.

In 1953 Maurice Kendall found out that price changes on the stock market follow a random walk i.e. price changes are independent of each other. (Kendall, 1953) That implies that historical price changes cannot predict future price changes which rules out the opportunity to earn access return by only looking at historical data. The reason why this is not possible in competitive markets is that all investors would try to take advantage of the situation by investing in undervalued assets. The price of these assets would then increase and the abnormal return opportunity would disappear.

Three levels of market efficiency can be defined, the weak, semi strong and strong. In the weak version the current price reflect all information contained in the past. It says that it is impossible to make superior returns by studying previous price changes and that the price follows a random walk. The semi strong version of market efficiency theory includes the assumption behind the weak and adds the requirement that prices also reflect all published information such as newspaper, financial statements and so on. A semi strong market will adjust immediately to public information. Finally, the strong version of market efficiency is when prices reflect all information that can be obtained by advanced analysis of the company and economy. In the strong setting there would not exist superior investors that constantly beat the market, instead it would be coincidences and luck that differs good investors from the bad. (Brealey & Myers, 2003)

There has been some criticism to the efficient market theory both from theoretical and empirical view. From the theoretical standpoint it is worth mentioning behavioral economist claiming that the market is not efficient due to, for example, overconfidence among investors. Empirically there are various studies that have find abnormal returns on the market, see previous research for examples.

3.3. Financial ratios

In this part we discuss the theory behind the financial ratios that we have decided to analyze.

3.3.1. Price-to-earnings

Price-to-earnings is one of the most popular ratios to use when valuating companies. It can be seen as an estimate of how much investors are willing to pay for each earnings. In an industry different firms can have different price-to-earnings ratios; one explanation for this is that companies with higher ratios are expected to show higher growth in earnings in the future. But a high price-to-earnings ratio may also be interpreted as if the firm recently has had a reduction in its profits from which it will soon recover. (Arnold, 2005)

In other words, an investor is prepared to pay a higher price for earnings if he expect future earnings to grow more rapidly and it is mainly the differences in expected growth opportunities that

drives differentials between firms within an industry. To get a deeper understanding of these drivers the constant-growth Dividend Discount Model (DDM) formula model can be applied.

$$g = ROE \times b$$

If the stock price equals its intrinsic value the price should be:

(Constant-growth DDM formula) $$P_0 = \frac{D_1}{(k-g)}$$

P_0=Current price
D_1=Dividend next year
k=Required rate of return
g=Growth rate of dividend
ROE=Return on equity
b=Fraction of earnings reinvested in more capital

This model shows that the price of a stock will rise when a firm invests in projects with an expected return that are higher than the return the shareholders can find in other investment (*ROE>k*). One simplification of this model is that the dividend growth rate is considered to be constant in the future which is usually not the case since the different dividend profiles of a firm changes as it passes through different stages in its life cycles. The NPV of the projects is also called the *present value of growth opportunities* PVGO. The price of the firm can therefore be calculated as the value of the assets already owned the company plus the PVGO(Bodie, Kane, & Marcus, Investments, 2005):

$$Price = "No - growth\ value\ per\ share" + PVGO$$

$$P_0 = \frac{E_1}{k} + PVGO$$

E_1=Estimated earnings

By dividing both side of the model above with expected earnings we can see how the growth possibility of a firm is reflected in the price-to-earnings ratio.

$$\frac{P_0}{E_1} = \frac{1}{k}\left(1 + \frac{PVGO}{E/k}\right)$$

When the PVGO is equal to zero (ROE=k) there is no advantage investing money back into the firm and the price of the firm is equal its expected earnings divided by required rate of return. When a company's PCGO=0 it can be seen as a "cash cow" with curtain cash flow but no actual opportunities for investments with a price-to-earnings ratio of 1/*k*. From the formula it can also be concluded that as the PVGO increase so does the price-to-earnings ratio i.e. the price of a stock increases as the opportunities for future growth increases. The ratio $\frac{PVGO}{E/k}$ can be interpreted as the ratio between the firm value connected to the value obtain from the growth opportunities to the part of firm value from the no growth value E/*k*. In firms where the future growth opportunities are the larger part of the total firm value this will be reflected in a higher price compared to earnings. When making an investment decision from a price-to earnings ratio an investor has to choose whether they are more or less

optimistic of the future outlook for a specific firm compared to the market.(Bodie, Kane, & Marcus, Investments, 2005)

A further analysis of the constant-growth DDM formula can be made by replacing D_1 and g:

$D_1 = E_1(1-b)$ and $g = ROE \times b$

$$P_0 = \frac{E_1(1-b)}{k - ROE \times b}$$

$$\frac{P_0}{E_1} = \frac{1-b}{k - ROE \times b}$$

As before we can see that the price-to-earnings ratio increase when a firm invest in projects with high growth opportunities (high return on equity). The same conclusion can be drawn regarding b, the amount of ROE invested back into the company. As long as return on equity exceeds *k* the price-to-earnings increases in increasing plowback. Putting it in another way one can tell that when expected ROE is less than the required return *k*, dividend is preferred rather than reinvesting earnings in the firm from an investor's point of view.

In the model above the risk affect on price-to-earnings can also be analyzed. The riskier a company is, the higher the markets required rate of return *k* will be, and an increasing *k* will result in a lower price-to-earnings holding all else equal. (Bodie, Kane, & Marcus, Investments, 2005)

There are drawbacks with using the price-to-earnings ratio when valuing companies. First of all the fact that the denominator in the price-to-earnings ratio is the accounting earnings implies that in times with high inflation the true economic value tend to be higher than the cost of inventory and historical cost of depreciation. This because the rise in level of prices will increase the replacement cost of capital, equipment and cost of goods sold. Accounting earnings are also possible to improve by making changes in the financial statement; this gives the managers in the firms a flexibility to increase their earnings by using different accounting rules.

Second the equations that we have used to explain price-to-earnings assumes a constant growth rate for earnings but this is not consistent with actual growth rate which fluctuate around a trend due to business cycles. We are using an historical price-to-earnings ratio in the analysis where today's price is divided by last historical earning. This is the ratio that is usually reported in financial newspapers. Nevertheless, by using the historical earnings the problem with accounting earnings and business cycles becomes more severe. The reason for this is that there can be a large difference between accounting earnings today and future earnings tomorrow.

3.3.2. Dividend Yield

"The dividend yield is defined as the annualized dollar dividend divided by the stock's price, expressed as a percentage"(Bodie & C, Finance, 2000)

$$Dividend\ yield = \frac{Annual\ dividend\ per\ share}{Price}$$

The dividend yield is the current income from a stock as a percentage of the price and can be compared with the current yield on a bond. The price increase in the asset is not reflected in the dividend yield which makes it different from total rates of returns. Firms with low dividend yield correspond to higher capital gains opportunities when investors hold these assets in their portfolios.(Bodie, Kane, & Marcus, Investments, 2005)

Managers usually want dividend to grow in line with the firm's long-term growth rate but they are constantly subjected to pressure from different interest groups. These groups want them to pay out either a high or low proportions of earnings, there are also pressures from interest groups that want the managers to provide consistent or stable dividends. The reason why managers want a stable dividend yield is the signaling effect. Hence manager tries to smooth out fluctuations and tries to maintain a high dividend yield in years with poor results and are reluctant to increase in dividend yield in boom market because they do not want to risk to be forced to cut back in recessions. During years with negative profits companies are limited by the retained earnings from previous years regarding the amount of which they can pay out as dividend. (Arnold, 2005)

There are several companies that do not pay dividend; the motive for this is often that the firm believes that they will be able to invest the money in projects that will yield a higher return than if investors would invest the money in alternative projects. However, this is not a creditable policy in the long run and profitable companies usually starts pay out dividend or makes large repurchase of stocks when the amount of available cash becomes too large. This approach can be seen as paying dividend as a residual and only be paid out when a firm has financed all its positive net present value projects. (Arnold, 2005)

The clientele effect is second reason why managers prefer a consistent dividend policy. The clientele effect argues that different investors are attracted to different companies because they have different dividend policy. By changing the dividend yield investors who were attracted by the company earlier might decide to sell which can lead to a drop in share price. For this reason the clientele effect makes the dividend more stable and consistent to attract a particular type of clientele compared to the residual approach which varies the dividend depending on investment opportunities. The preference for different types of dividend policies is also affected by taxation, different taxation on dividend and capital gains for investors makes a certain dividend policy more or less attractive (Arnold, 2005)

There are costs connected with giving out dividends compared to keeping the money as retained earnings and invest them in positive NPV projects. If a company pays out dividend to avoid a lower dividend yield they might at a later be forced to issue new stocks. This will be an unnecessary loss of money due to underwriting fees, prospect preparation, advertising and taxes. This is one reason explaining why young growing firm usually have a lower dividend compared to mature companies with stable cash flows. (Arnold, 2005)

3.3.3. Price-to-book

The price-to-book multiple has always been of great interest for investors, below is a explanation about the theory behind the ratio for deeper analysis see (Damodaran, 2002)

When a stocks book value is above the price it is commonly seen as a sign of an undervalued stock. In essence the markets expectation of a firm's cash flow and earning power is reflected in the market value of the equity. The book value of equity is calculated as:

$$Book\ value\ of\ assets - Book\ value\ of\ liabilities = Book\ value\ of\ equity$$

This Price-to-book ratio is computed by dividing price per share with book value per share and is a measure of how aggressively the market values a firm.

$$Price\ to\ book\ ratio = \frac{Price\ per\ share}{Book\ value\ of\ equity\ per\ share}$$

There are several reasons why price-to-book ratio is useful when doing investment analyses. The book value is a stable and easy to understand measure of value that can be compared to the market price. The book value is also a much easier benchmark for comparison compared to for example discounted cash flow valuation. When looking for signs for under- and overvalued firms the ratio is a useful tool for doing comparison across firms and industries given consistent accounting standards. A last reason why price-to-book ratio is used is in cases where companies have negative earnings. In these cases the firms can't be valued using price-earnings ratio the price-to-book offer an alternative since it is uncommon that firms have negative book value.

There are of course also drawbacks with the Price-to-book ratio, it is dependent and affected by decision regarding depreciation and other variables. If there are big variations of accounting standards across firms the ratios cannot be used when doing comparisons.

Furthermore, there is a risk of inconsistencies when computing the price-to-book ratio. When there are several classes of shares outstanding the price per share can be different for thee different classes, there are also different ways to compute the book value of equity per share. A similar problem arises if there are preferred stocks which shouldn't be included when computing the book value of

equity. These problems can however be mitigated by using composite market value for all classes of common stock and composite book value of equity.

Another problem with the price-to-book ratio is that the book value is not updated frequently; some companies make updates only once every year. A final drawback with price-to-book ratio occurs when a company has a lot of options outstanding; if the option is a substantial part of the value of the equity their value must be calculated and added to the market value of equity before computing the ratio.

The Price-to-book ratio can be derived from the dividend discount model:

$$P_0 = \frac{DPS_1}{k_e - g_n}$$

Where

P_0 = Value of equity per share today

DPS_1 = Expected dividends per share next year

k_e = Cost of equity

g_n = Growth rate in dividends (forever)

Replacing $DPS_1 = EPS_1 \times$(Payout ratio)

$$P_0 = \frac{\text{EPS}_1 \times (\text{Payout ratio})}{k_e - g_n}$$

Defining the return on equity (ROE) = EPS_1/Book value of equity$_0$

$$P_0 = \frac{\text{BV}_0 \times \text{ROE} \times (\text{Payout ratio})}{k_e - g_n}$$

$$\frac{P_0}{\text{BV}_0} = PBV = \frac{\text{ROE} \times (\text{Payout ratio})}{k_e - g_n}$$

When defining the ROE using contemporaneous earnings, ROE = EPS_0/Book value of equity$_0$, the price-to-book ratio can be written as:

$$\frac{P_0}{\text{BV}_0} = \frac{\text{ROE}(1 + \text{g}) \times (\text{Payout ratio})}{k_e - g_n}$$

By relating growth to the return on equity this formulation can be simplified even further:

$$g = (1 - Payout\ ration) \times ROE$$

$$\frac{P}{\text{BV}} = \frac{(\text{ROE} - g_n)}{(k_e - g_n)}$$

From the last formula we can see that if the return on equity exceeds the cost of equity the price should be higher than the book value of equity. The firms that should be considered undervalued are the ones that have a high return on equity and a low price-to-book ratio.

3.3.4. EV/EBITDA

$$\frac{EV}{EBITDA} = \frac{(Market\ value\ of\ equity - Market\ value\ of\ debt - Cash)}{EBITDA}$$

EV/EBITDA is a highly used firm value multiple among analysts. EV is an acronym for Enterprise Value and EBITDA stands for Earnings Before Interest, Taxes, Depreciation, and Amortization. There are several reasons why the multiple is so frequently used. First of all operating income or net income is both affected by differences in depreciation method which differs across companies (straight line or accelerated depreciation), these differences does not affect EBITDA which therefore is a more consistent measure. Second, the number of firms with negative EBITDA is far less then companies with negative earnings and because of that there are more companies that can be analyzed. Third, since the nominator is firm value and the denominator is a pre-debt earning the ratio is easier to use when comparing firms with different financial leverage. (Damodaran, 2002)

The problem with the EV/EBITDA occurs when firms have cross holdings. In cases when firms have minority interests the operating income does not reflect the income from the holding and the EV includes the market value of equity which consists of the value of the minority holdings. The result is that the EV/EBITDA is overestimated and the company becomes overvalued. The opposite occurs when a firm has a majority holding, in this case the EBITDA includes 100% of the majority company's EBITDA but the EV still only include the portion of the holding that firm has. Therefore the EV/EBITDA is underestimated and the company seems to be undervalued. To cope with this problem analysts have to do individual corrections for all companies with majority or minority interests.(Damodaran, 2002)

EV/EBITDA can be derived from the Free cash flow valuation model:

$$V_0 = \frac{FCFF_1}{WACC - g}$$

$$\begin{aligned} FCFF &= EBIT(1-t) - (Cap\ ex - DA + \Delta Working\ capital) \\ &= (EBITDA - DA)(1-t) - (Cap\ ex - DA + \Delta Working\ capital) \\ &= (EBITDA)(1-t) - DA(1-t) - Reinvestment \end{aligned}$$

$$V_0 = \frac{EBITDA_1(1-t) - DA_1(1-t) - Reinvestment_1}{WACC - g}$$

$$\frac{V_0}{EBITDA} = \frac{(1-t) - \frac{DA}{EBITDA}(1-t) - \frac{Reinvestment}{EBITDA}}{WACC - g}$$

In the last formula the different factors that affect EV/EBITDA can be analyzed.

3.3.5. Price-to-sales

The price-to-sales tells how the market values every SEK of sales. It is a useful measure for firms in industries that grows fast and have not reached positive earnings. Then price-to-sales is a more supportive financial ratio then P/E because there are not earnings to valuate.

$$Price\ to\ sales\ ration = \frac{Market\ value\ of\ equity}{Revenues}$$

Price-to-sales ratio can be derived from a stable growth dividend discount model:

$$P_0 = \frac{DPS_1}{k_e - g_n}$$

Where,

P_0 = Value of equity

DPS_1 = Expected dividends per share next year

k_e = Cost of equity

g_n = Growth rate in dividends (forever)

3.3.6. FCF/(CAPEX)

Free Cash Flow, FCF, is the amount of cash the firm can pay out to investors after payments for investments necessary for future growth and is calculated as:

Net Income
+ Depreciation/Amortization
- Change in working capital
- Capital expenditure (CAPEX)

Free Cash Flow

Capital Expenditure, CAPEX, is incurred when firms buy a new fixed asset or invest/add value to an existing fixed asset.

For growth firms we expect that FCF is low and CAPEX high since they need high investments, this implies that the ratio should be low for growing companies. For value stocks we expect FCF to be high and CAPEX to be low. A problem with this ratio is that a high CAPEX might reflect healthy investments but could also be a result from expensive maintenance of fixed assets that will not generate future high returns. It is therefore difficult how interpret the ratio.

3.3.7. MV/(FCF/Std)

Since we have a handful of already established financial ratios we find it interesting to construct our own ratio and investigate its performance Our idea behind MV/(FCF/Std) is that we wanted to create a ratio that sets the market value in relation to a risk adjusted cash flow. We decided to use FCF since that measure is not affected by the company's financial structure.

The simple logic behind the ratio is that we believe an investor normally wants to invest in a company with a high FCF per market value. By also assuming that investors want a high return per risk unit measured as the standard deviation of price calculated on weekly basis over previous year.

It would have been interesting to use the standard deviation in FCF instead of standard deviation of price but since we had too few observations of FCF this is not possible. Our expectations about the ratio are that a high denominator is preferred (high FCF and low Standard deviation). By relating FCF/Std to market value we hope to distinguish between stock that are over- or undervalued. When comparing companies with the same FCF/std the one with the lowest market value is considered undervalued given everything else equal.

$$\frac{Market\ value}{FCF/_{Std}}$$

There are weaknesses in this financial ratio just as in the previous ratios discussed. For example a negative FCF can imply that the firm is fast growing and make large investment for future cash flows but it can also indicate that the company not generating cash flow at all. For market value there is a risk that low market value implies that the firm is in financial distress. Well aware of this fact we are still interested to investigate if the ratio can be used to find stocks with positive abnormal return.

We did a cross-sectional correlation analysis to see if our ratio correlates with either price-to-earnings or EV/EBITDA. Our result was that there was a very low correlation indicating that it can provide new information stocks.

4. Methodology and data description

4.1. Collection of data

4.1.1. Stock lists and variables

We have chosen to analyze the large- mid- and smallcap at OMX Stockholm stock exchange between 1993-2007, these lists where in 2006 rearranged and renamed from A- O- and OTC-list to the current names. We have used the DataStream as our database for collection of the data that we needed to calculate our different financial ratios. One of the first difficulties that we met was that DataStream did not keep lists of what companies that were traded each year. Instead we had to manually go through the list for each year and find the correct DataStream code for each individual company. The list of what companies that were traded each year was acquired from NASDAQ OMX for the year 1997-2007. For the year 1993-1996 the lists were found in Stockholm Stock Exchange Fact Books.

All data is from the first of July each year, the reason why we chose this date was because we needed data from the different companies annual report and by this date all companies has provided their reports. Since several of the financial ratios are based on data from the annual report and DataStream did not provide prognoses of financial ratios we have been limited to use annual data. This was a time-consuming work and it was the main reason why we had to limit the amount of years that we have analyzed to fifteen. Once the codes for all companies were found the following different data types summarized in Table 4-1 was obtained from DataStream for each year.

Table 4-1 Variables downloaded from Thomson DataStream

Variable Name	*Name*
P	Price, Adjusted for dividend, split and new issue
PE	Price – to – earnings
PB	Price – to – book
FCF	Free Cash Flow
MV	Market Value
CAPEX	Capital Expenditure
DY	Dividend Yield
EBITDA	Earnings Before interest tax amortization and depreciation
OMX Index	Stockholm Stock Exchange largest index
EV	Enterprise Value
EV/EBITDA	Enterprise Value / Earnins Before interest tax amortization and depreciation
PS	Price-to-sales

In Table 4-2 below we have summarized our selection of data, in cases where we didn't get any data we count that company as a fall off. As the table describes, the reliability of the data increase as we get closer to today's date and for the last years we have data for almost one hundred percent of the companies listed. There are also variations between the different financial ratios. There has been a couple of decision that has made regarding our dataset:

1. When there are companies that are listed after the first of July each year (between year t and t+1) we have decided that we do not include them in the companies that we invest in year t
2. In cases when companies change name or merge with another firm we had to manually make changes in the dataset by using references from DataStream or Stockholm Stock Exchange Fact Books.
3. We have not included companies with negative financial ratios (price-to-earnings, EV/EBITDA)
4. When companies get delisted or defaults we sell the position we have at the last registered price available.
5. DataStream has already accounted for splits and reverse stock splits in the database.
6. We assume zero transaction cost and no taxes?

Table 4-2 Descriptive statistics of number of companies per year and ratio

Companies/year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
PE	111	118	158	225	217	232	248	228	234	194	168	196	224	249	250
MV/(FCF/Std)	0	5	71	98	124	165	198	230	209	206	220	213	205	233	239
EV/EBITDA	128	154	178	189	207	243	252	241	238	212	212	207	239	241	248
PB	171	189	194	226	253	289	307	310	323	315	307	296	289	291	286
PS	168	180	191	218	235	282	285	299	306	309	301	286	283	283	288
DY	229	194	213	216	238	269	288	275	271	261	265	266	263	274	281
FCF/CAPEX	0	5	69	95	122	159	189	213	201	200	207	203	203	227	232
COMPANIES TOTAL	295	315	304	301	336	357	386	410	418	402	387	314	301	304	306
Percent	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
PE	38%	37%	52%	75%	65%	65%	64%	56%	56%	48%	43%	62%	74%	82%	82%
MV/(FCF/Std)	0%	2%	23%	33%	37%	46%	51%	56%	50%	51%	57%	68%	68%	77%	78%
EV/EBITDA	43%	49%	59%	63%	62%	68%	65%	59%	57%	53%	55%	66%	79%	79%	81%
PB	58%	60%	64%	75%	75%	81%	80%	76%	77%	78%	79%	94%	96%	96%	93%
PS	57%	57%	63%	72%	70%	79%	74%	73%	73%	77%	78%	91%	94%	93%	94%
DY	78%	62%	70%	72%	71%	75%	75%	67%	65%	65%	68%	85%	87%	90%	92%
FCF/CAPEX	0%	2%	23%	32%	36%	45%	49%	52%	48%	50%	53%	65%	67%	75%	76%

The financial ratios that we have decided to analyze are listed in Table 4-3. Price-to-earnings, EV/EBITDA, price-to-book, price-to-sales and dividend are financial ratios that are commonly used and they where therefore natural choices in our selection. See previous research for a discussion about research and result already conducted on these ratios on the Swedish stock exchange. We also decided to include FCF/CAPEX, a ratio that is not so commonly used but is in our view an interesting ratio that basically looks at the return from operations that is generated from investment in capital expenditure. The final ratio that we have examined was Market value/(FCF/Standard deviation), a ratio that we have invented that measure how high a company's market value is in relation to a risk adjusted free cash flow.

Table 4-3 The financial ratios investigated

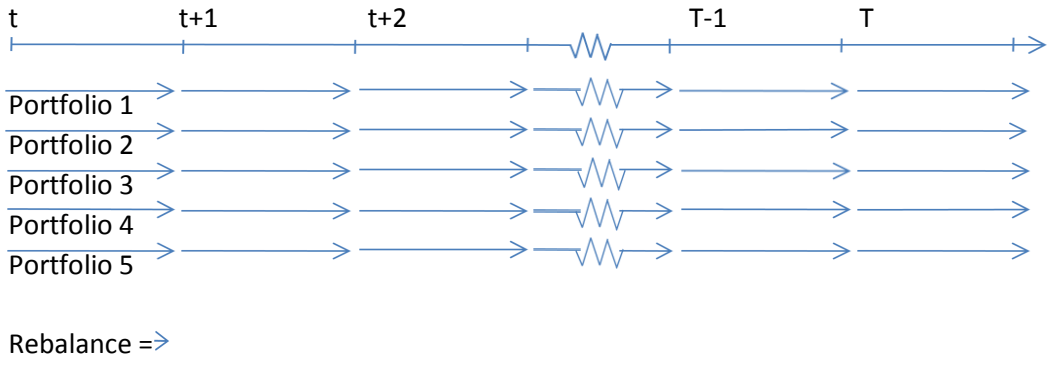
Financial ratio	Abbreviation
Price-to-earnings	PE
Market value/(FCF/Standard deviation)	MV/(FCF/Std)
Enterprise value/ Earnings Before interest tax amortization and depreciation	EV/EBITDA
Price-to-book	PB
Price/sales	PS
Dividend yield	DY
Free Cash Flow/CAPEX	FCF/CAPEX

4.2. Method of analysis

4.2.1. Portfolio composition and return calculations

To create portfolios we first sorted the firms for each year ascending/descending according to the financial ratio that we analyzed. The list of firms was divided into quintile and each quintile represented a portfolio. We then invested in all stocks available at the price at time *t* and sold the same stock for the price at year *t+1* and calculated the return. For robustness check we constructed the return for each portfolio both equally weighted and market-value-weighted. On a yearly basis the portfolios where rebalanced according to this pattern and returns was calculated for the portfolios each year. The portfolios were rebalanced the 1:st of July each year, the reason why we chose this date was that the annual reports for the companies should have been released by this date. We have decided to rebalance the portfolios on an annual basis since prognosis of financial ratios was not to be found in DataStream database. The reason why we did not choose to split the companies into different industries was that we want to use an investing strategy that purely looked at high/low ratios.

Figure 4.1 Portfolio formation. Five portfolios are formed for every financial ratio and rebalanced annually



Equally weighted portfolios $r_{ep,t} = \frac{1}{N_t}\sum_{i=1}^{N}(r_{i,t})$

N = Number of stocks in portfolio in period t

$r_{ep,t}$ *= return on portfolio ep in period t*

$r_{i,t}$ *= return on stock i in period t*

Value weighted portfolios $r_{vp,t} = \sum_{i=1}^{N}\frac{(r_{i,t}) \times MV_{i,t}}{\sum_{i=1}^{N} MV_{i,t}}$

N = Number of stocks in portfolio in period t

$r_{vp,t}$ *= return on portfolio vp in period t*

$r_{i,t}$ *= return on stock i in period t*

$MV_{i,t}$ *= Market value for firm i in period t*

4.2.2. Portfolio evaluation

To get the performance for the portfolios comparable their returns had to be adjusted to risk. This could be done in several ways, well known are the Sharp and Treynor ratios. We chose to use the Capital asset pricing model (CAPM) as our framework to calculate required return for the portfolio and compare this with the realized return for the portfolio. The abnormal returns are then used to statistically evaluate the portfolio performance. We have calculated a short term using one year of weekly data for all companies that we have invested in for each year. To increase the reliability of our result the previous period beta is used to evaluate the current period.(MacKinlay, 1997)

For all portfolios we also calculated the accumulated return over the whole period (15 years) and the arithmetic mean. For the risk free rate we have used the Swedish interbank rate and the OMX market index as our return on market.

CAPM $E(r_p) = r_f + \beta_p \times [E(r_m) - r_f]$

$E(r_p)$ *= Expected return on portfolio p*

r_f *= the risk free rate*

$E(r_m) - r_f$ *= Riskpremium*

Beta	$\beta_i = \frac{Cov(r_i, r_m)}{\sigma_m^2}$	r_i = *return on stock i* r_m = *return on market* σ_m^2 = *variance for the market*
Abnormal return	$r_p - E(r_p) = \alpha$	r_p = *return portfolio* α = *abnormal return*

4.2.3. Bootstrapping

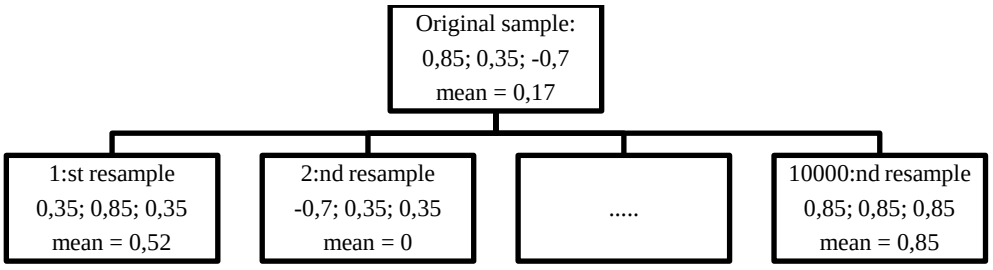
Since we only have 15 observations of portfolio returns we can't perform any statistic test because the parametric assumptions that the observation follow a normal distribution cannot be claimed. The method we have used to overcome this problem is bootstrapping. We do however need to assume that our observations come from an independent and identically distributed population.

The mean and confidence interval is calculated for the bootstrap distribution and hypothesis testing is performed. For 10000 identically distributed independent random observations we can use the central limit theorem and assume that it will be normally distributed.

Bootstrapping is a method that is used to approximately find the sampling distribution from just one sample. The original sample represents the populations from which the data was taken. By creating several resample of the original sample we can create a selection that represents what we would get if we took many samples from the original population. The procedure is described below:

1. *Resample with replacement.* From one original random sample, create resamples by repeatedly sampling with replacement. Each resample should have the same size as the original sample. This can be compared to drawing a number from a hat, look at it and put it back, and then draw a new number. By randomly drawing observations with replacement more than 10000 resamples should be generated.

Figure 4.2. A bootstrapping example. To illustrate the bootstrapping method we use 3 observations and show some possible resample results.



2. The bootstrapping distribution now provides us with information about our population distribution. It does not add or remove data it just provides us with a tool to estimate the variation in our statistic and represent the sampling distribution of the statistic, based on many samples.

4.2.4. Statistic hypothesis testing

We will perform the tests described below to answer the following questions for each financial ratio:

1. Is there a difference in return of the five different portfolios and the return of the market?
2. Is there a difference in return of portfolio 1 and portfolio 5?

We answer the first question by testing if the abnormal return for each portfolio is greater, less or equal to zero.

Test 1, greater than zero

$$H_0: \mu_{portfolio} - \mu_{CAPM} \leq 0$$
$$H_1: \mu_{portfolio} - \mu_{CAPM} > 0$$

Test 2, less than zero

$$H_0: \mu_{portfolio} - \mu_{CAPM} \geq 0$$
$$H_1: \mu_{portfolio} - \mu_{CAPM} < 0$$

Test 3, equal to zero

$$H_0: \mu_{portfolio} - \mu_{CAPM} \neq 0$$
$$H_1: \mu_{portfolio} - \mu_{CAPM} = 0$$

Question 2 is answered by testing if the difference between portfolio 1 and portfolio 5 is greater, less or equal to zero.

Test 1, greater than zero

$$H_0: \mu_{Portfolio\ 1} - \mu_{Portfolio\ 5} \leq 0$$
$$H_1: \mu_{Portfolio\ 1} - \mu_{Portfolio\ 5} > 0$$

Test 2, less than zero

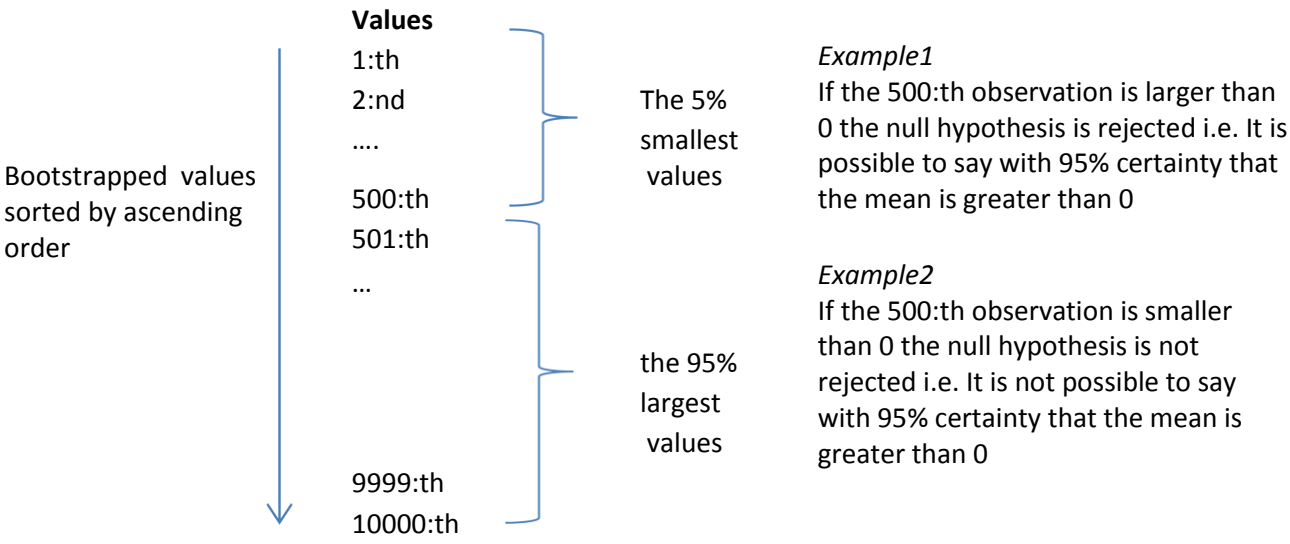
$$H_0: \mu_{Portfolio\ 1} - \mu_{Portfolio\ 5} \geq 0$$
$$H_1: \mu_{Portfolio\ 1} - \mu_{Portfolio\ 5} < 0$$

Test 3, equal to zero

$$H_0: \mu_{Portfolio\ 1} - \mu_{Portfolio\ 5} \neq 0$$
$$H_1: \mu_{Portfolio\ 1} - \mu_{Portfolio\ 5} = 0$$

To practically do these tests we sorted our 10000 bootstrapped samples in ascending order. If zero can be found in the first five hundred observations we reject null hypothesis for test 1. If zero can be found in the last five hundred observations we reject null hypothesis for test 2. Since test 3 is a two-sided test we reject the null-hypothesis if zero can be found in the first or last 250 observation.

Figure 4.3 Illustration of how the hypothesis testing was performed for test 1.



All our tests will be performed on a 95% significant level and our results is reported in the appendix.

4.3. Descriptive statistics

This part is divided into two parts; first each financial ratios accumulated return is described graphically for both equally-weighted and value-weighted portfolios. In the second part the accumulated return for the difference between the extreme portfolios is illustrated graphically. (I.e. long position in portfolio1 and short in portfolio5)

As expected the accumulated return for the value weighted portfolios are evenly distributed around the accumulated market index. When comparing equally and value weighted trends it seems as if the equally weighted portfolio perform above market index more frequently.

4.3.1. Accumulated return for the portfolios

Figure 4.4 Accumulated return in percent for price-to-earnings (equally weighted)

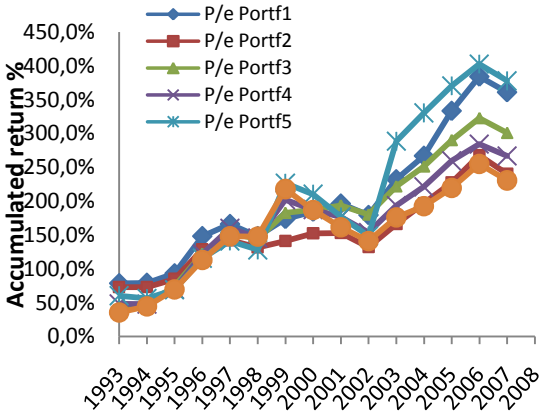


Figure 4.5 Accumulated return in percent for price-to-earnings (value weighted)

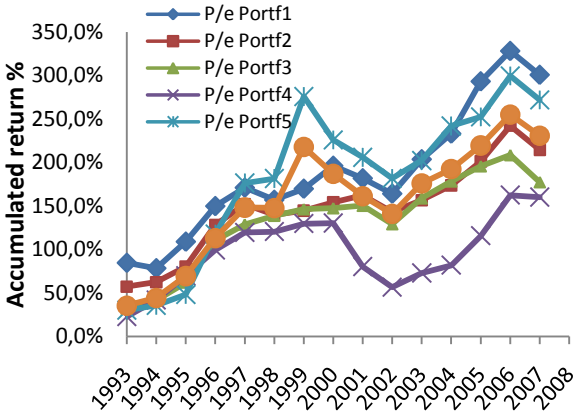


Figure 4.6 Accumulated return in percent for MV/(FCF/std) (equally weighted)

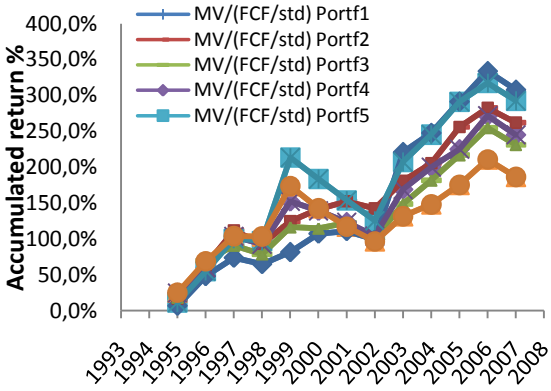


Figure 4.7 Accumulated return in percent for MV/(FCF/std) (value weighted)

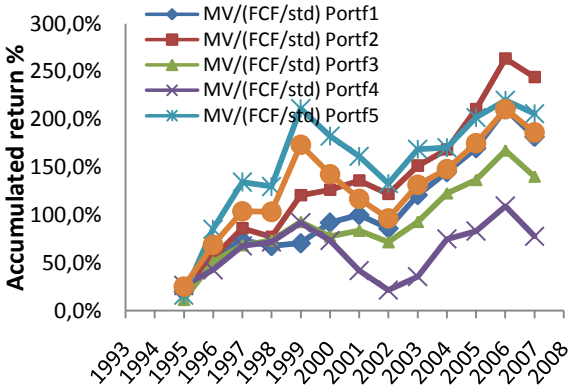


Figure 4.8 Accumulated return in percent for EV/EBITDA (equally weighted)

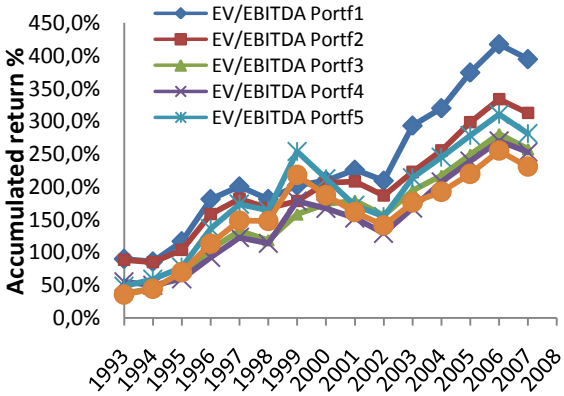


Figure 4.9 Accumulated return in percent for EV/EBITDA (value weighted)

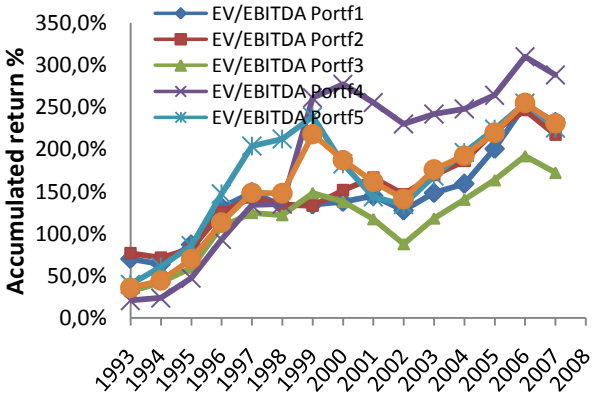


Figure 4.10 Accumulated return in percent for price-to-book (equally weighted)

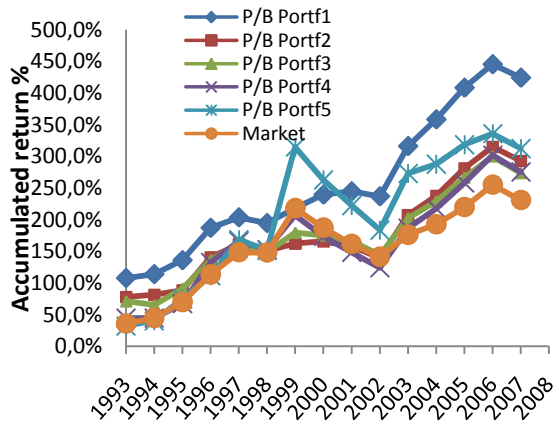


Figure 4.11 Accumulated return in percent for price-to-book (value weighted)

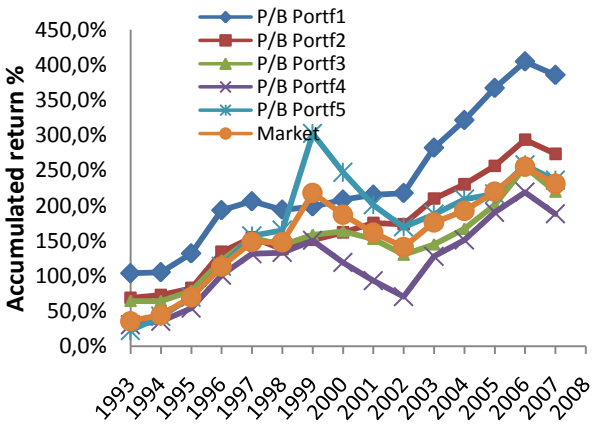


Figure 4.12 Accumulated return in percent for price-to-sales (equally weighted)

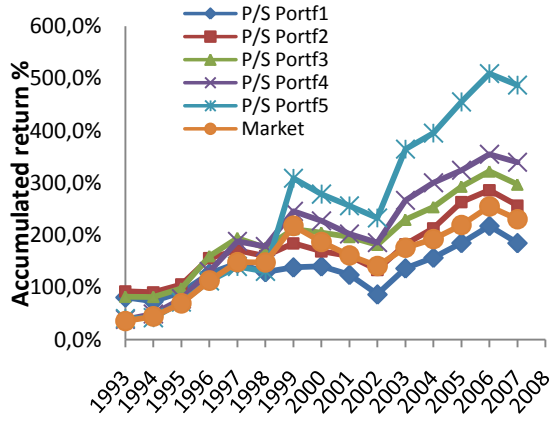


Figure 4.13 Accumulated return in percent for price-to-sales (value weighted)

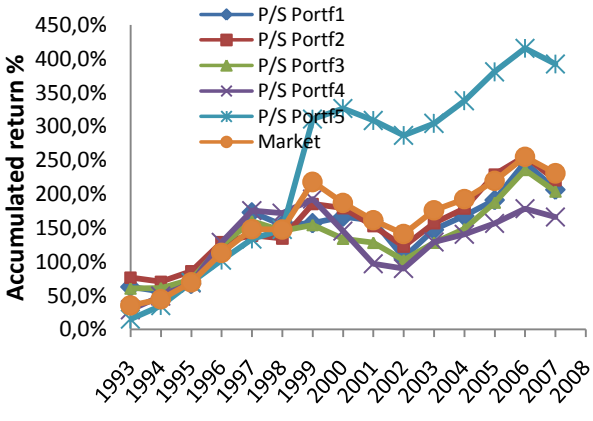


Figure 4.14 Accumulated return in percent for dividend yield (equally weighted)

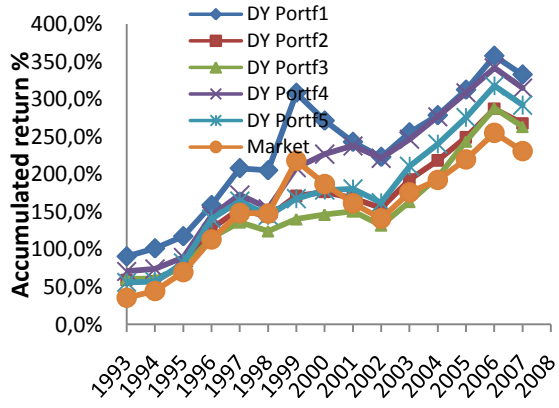


Figure 4.15 Accumulated return in percent for dividend yield (value weighted)

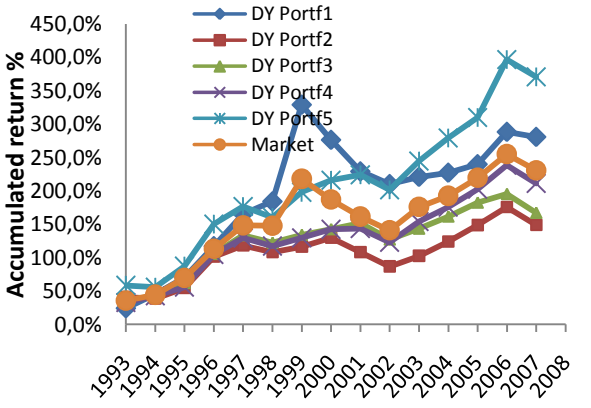


Figure 4.16 Accumulated return in percent for FCF/CAPEX (equally weighted)

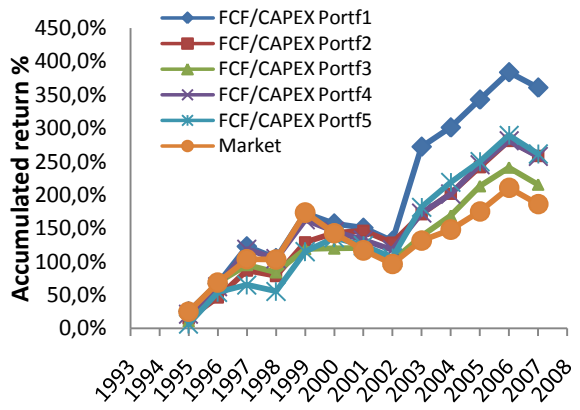
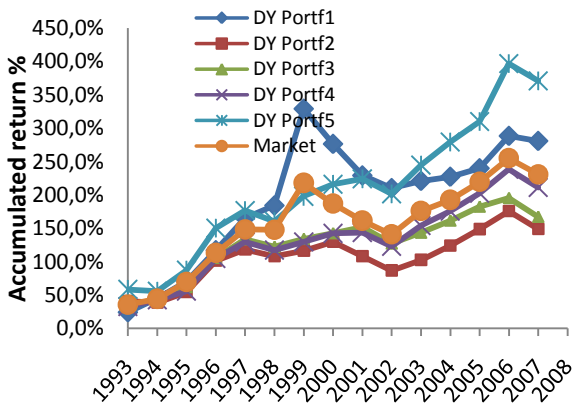


Figure 4.17 Accumulated return in percent for FCF/CAPEX (value weighted)



4.3.2. Accumulated return for the difference between the extreme portfolios

For the accumulated difference in return between P1 – P5 the pattern between value weighted and equally weighted is similar. However, for equally weighted portfolios the accumulated return are generally higher than for the value weighted portfolios.

Figure 4.18 Accumulated return in percent for the difference between the extreme portfolios (P1 – P5 equally weighted)

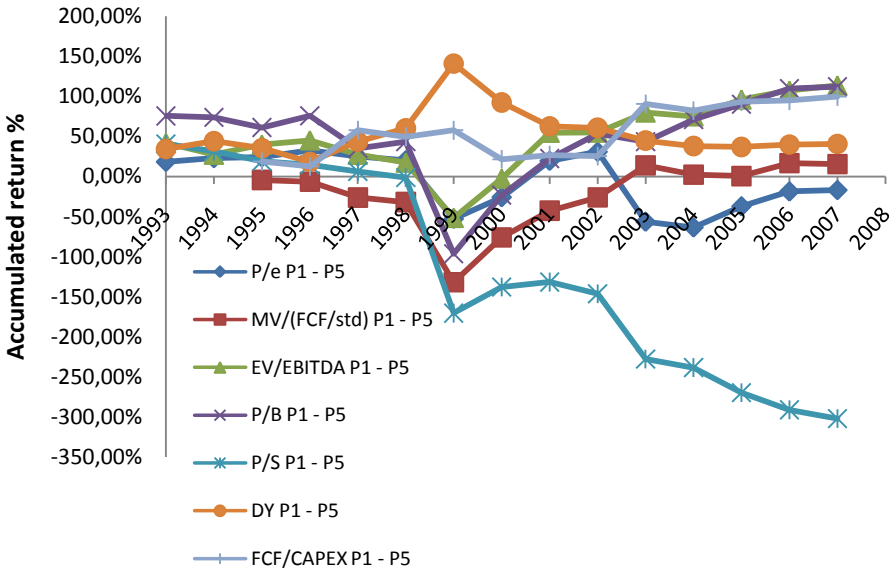
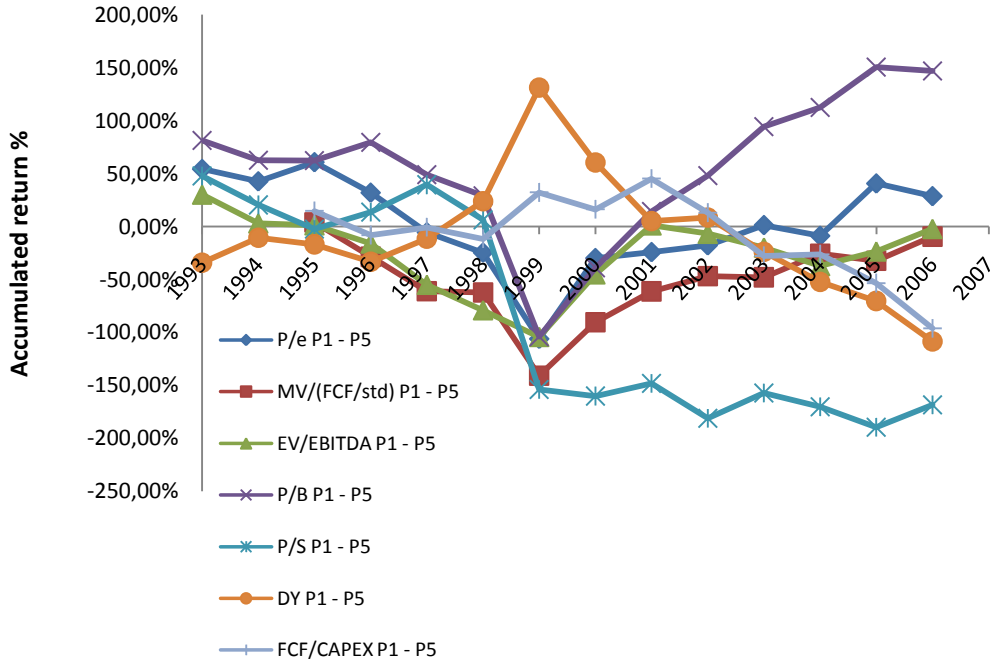


Figure 4.19 Accumulated return in percent for the difference between the extreme portfolios (P1 – P5 value weighted)



4.3.3. Variation for the financial ratios over time

In this section we illustrate how the financial ratios fluctuate over time.

Figure 4.20 Average P/E values for the five equally weighted portfolios. (Logarithmic scale)

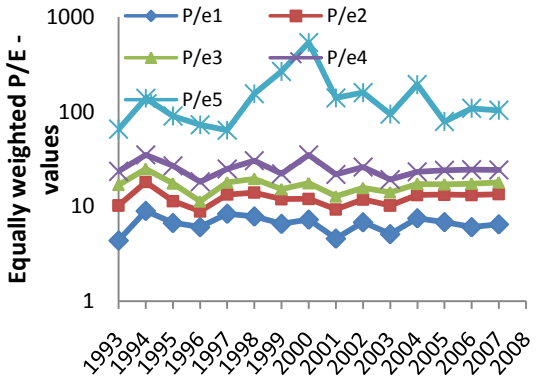


Figure 4.21 Average P/E values for the five value weighted portfolios. (Logarithmic scale)

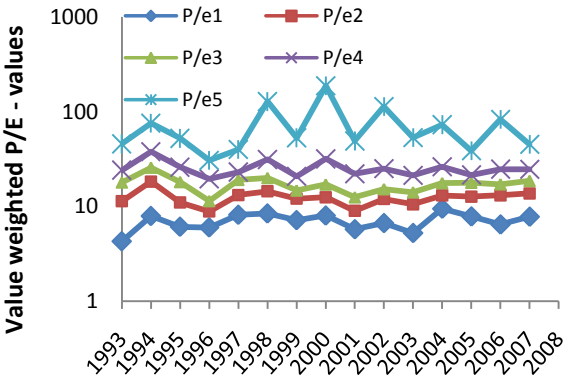


Figure 4.22 Average MV/(FCF/std) values for the five equally weighted portfolios. (Logarithmic scale)

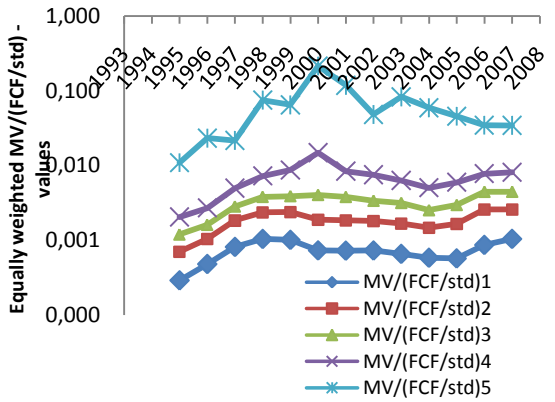


Figure 4.23 Average MV/(FCF/std) values for the five equally weighted portfolios. (Logarithmic scale)

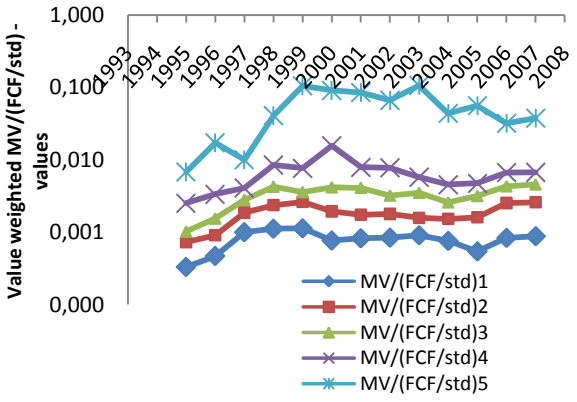


Figure 4.24 Average EV/EBITDA values for the five equally weighted portfolios. (Logarithmic scale)

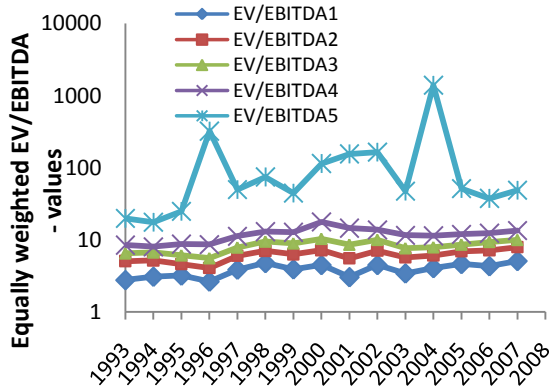


Figure 4.25 Average EV/EBITDA values for the five equally weighted portfolios. (Logarithmic scale)

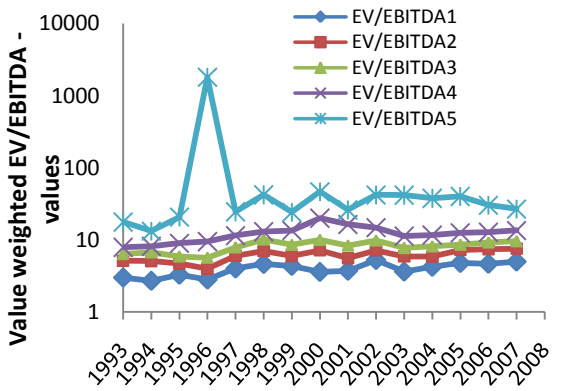


Figure 4.26 Average P/B values for the five equally weighted portfolios. (Logarithmic scale)

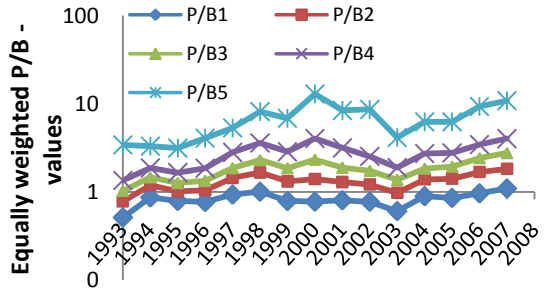


Figure 4.27 Average P/B values for the five equally weighted portfolios. (Logarithmic scale)

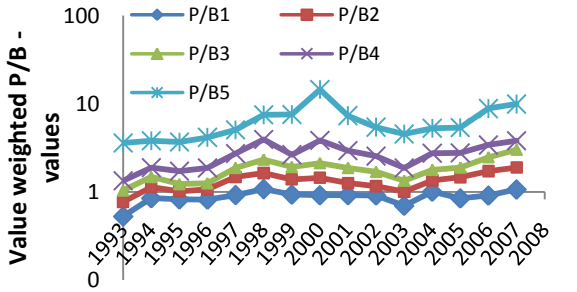


Figure 4.28 Average P/S values for the five equally weighted portfolios. (Logarithmic scale)

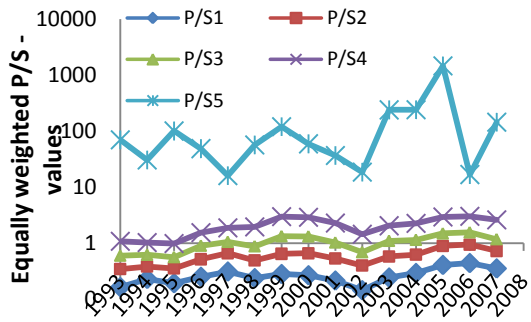


Figure 4.29 Average P/S values for the five equally weighted portfolios. (Logarithmic scale)

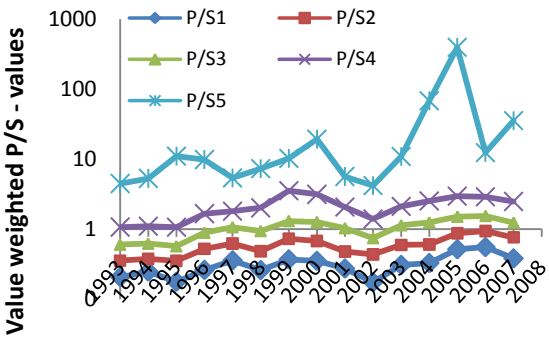


Figure 4.30 Average DY values for the five equally weighted portfolios. (Logarithmic scale)

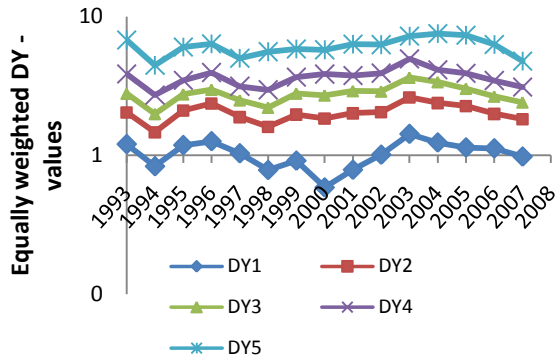


Figure 4.31 Average DY values for the five equally weighted portfolios. (Logarithmic scale)

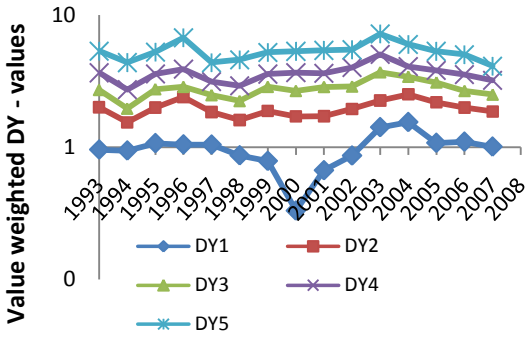


Figure 4.32 Average FCF/CAPEX values for the five equally weighted portfolios. (Logarithmic scale)

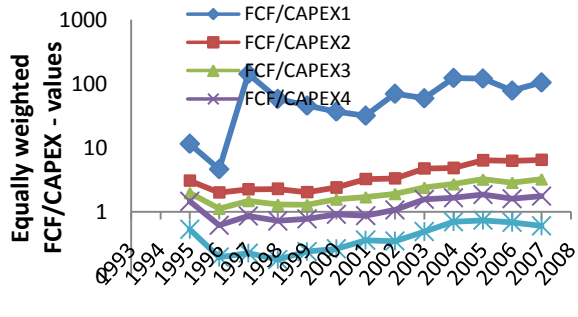
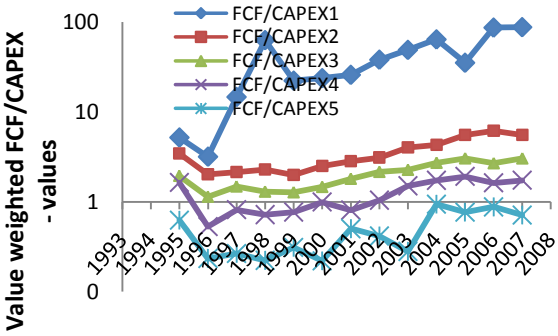


Figure 4.33 Average FCF/CAPEX values for the five equally weighted portfolios. (Logarithmic scale)



5. Main results

In this part we summarize the outcome from our research in four tables, after each table we explain the main findings. For complete statistics see the appendix. The results presented in this chapter are from our calculations performed in Excel. However, all are verified using Stata.

5.1. Abnormal returns

In Table 5-1 the results from the statistical test performed on the value weighted portfolios for each financial ratio are summarized. Each row represents one portfolio and the mean of the annualized abnormal returns from bootstrapping ($\mu_{portfolio} - \mu_{CAPM}$) are presented in the second column. The result from each statistical test is graphically captured in the last three columns, a "*" indicates that the null-hypothesis is rejected. The test described from left to right is:.

1. Abnormal return less than zero (Test 2 in 4.2.4 Statistic hypothesis testing above)
2. Abnormal return equal to zero (Test 3)
3. Abnormal return higher than zero (Test 1)

Table 5-1 Bootstrapped mean of annualized abnormal return for value weighted portfolios.

		Statistical test for abnormal return (bootstrap). Sig 95%		
Portfolios Value Weighted	Mean of annualized abnormal return from bootstrap	< 0	= 0	> 0
DY Portf1	2,60%		*	
DY Portf2	-4,99%		*	
DY Portf3	-7,07%	*		
DY Portf4	-4,96%		*	
DY Portf5	8,37%		*	*
EV/EBITDA Portf1	-1,26%		*	
EV/EBITDA Portf2	-2,86%		*	
EV/EBITDA Portf3	-6,00%	*		
EV/EBITDA Portf4	-2,25%		*	
EV/EBITDA Portf5	5,16%		*	*
FCF/CAPEX Portf1	-6,18%	*	*	
FCF/CAPEX Portf2	-6,00%	*		
FCF/CAPEX Portf3	-2,93%		*	
FCF/CAPEX Portf4	5,22%		*	
FCF/CAPEX Portf5	4,14%		*	
MV/(FCF/std) Portf1	-1,08%		*	
MV/(FCF/std) Portf2	2,06%		*	
MV/(FCF/std) Portf3	-3,50%		*	
MV/(FCF/std) Portf4	-9,14%	*	*	
MV/(FCF/std) Portf5	-3,79%		*	
P/B Portf1	8,92%		*	
P/B Portf2	1,37%		*	
P/B Portf3	-5,06%		*	
P/B Portf4	-2,36%		*	
P/B Portf5	1,22%		*	
P/E Portf1	2,59%		*	
P/E Portf2	-5,29%		*	
P/E Portf3	-2,65%		*	
P/E Portf4	-4,00%		*	
P/E Portf5	1,12%		*	
P/S Portf1	-3,81%		*	
P/S Portf2	-3,66%		*	
P/S Portf3	-4,66%		*	
P/S Portf4	-1,51%		*	
P/S Portf5	6,54%		*	
Total		5	32	2

For the value weighted portfolios two portfolios (DY Portf5 and EV/EBITDA Portf5) have statistic significant positive abnormal returns in our one sided test. But when we performed a two-sided test we rejected the null-hypothesis which means that we can't say that the same portfolios are different from zero with a 95 percent confidence interval. We draw the conclusion that no positive abnormal return can be obtained for our investment strategy for the value weighted portfolios.

Five portfolios have statistically significant negative abnormal returns and for three of them, (DY Portf3, EV/EBITDA Portf3 and MV/(FCF/Std) Portf2), we could not reject the null-hypothesis that the portfolios are not equal to zero. We cannot see a trend of extreme portfolios outperforming the

market, out of 35 portfolios, 32 (91,5%) did not give abnormal return that is statistically different from zero.

In Table 5-2 the results from the statistical test performed on the equally weighted portfolios are summarized. The structure of the table is the same as for the value weighted portfolios in Table 5-1 above.

Table 5-2 Bootstrapped mean of annualized abnormal return for equally weighted portfolios.

		Statistical test for annualized return (bootstrap). Sig 95%		
Portfolios Equally Weighted	Mean of annualized abnormal return from bootstrap	< 0	= 0	> 0
DY Portf1	9,50%			*
DY Portf2	5,25%		*	
DY Portf3	3,56%		*	
DY Portf4	7,68%		*	*
DY Portf5	6,80%		*	
EV/EBITDA Portf1	13,62%			*
EV/EBITDA Portf2	7,20%		*	
EV/EBITDA Portf3	2,65%		*	
EV/EBITDA Portf4	4,46%		*	
EV/EBITDA Portf5	6,52%			*
FCF/CAPEX Portf1	16,64%			*
FCF/CAPEX Portf2	7,68%			*
FCF/CAPEX Portf3	3,85%		*	
FCF/CAPEX Portf4	7,42%		*	*
FCF/CAPEX Portf5	9,16%		*	
MV/(FCF/std) Portf1	12,13%		*	*
MV/(FCF/std) Portf2	8,02%		*	*
MV/(FCF/std) Portf3	6,66%		*	*
MV/(FCF/std) Portf4	6,51%		*	*
MV/(FCF/std) Portf5	10,12%		*	*
P/B Portf1	15,81%			*
P/B Portf2	6,58%		*	
P/B Portf3	5,65%		*	
P/B Portf4	6,74%			*
P/B Portf5	10,60%		*	
P/E Portf1	11,74%			*
P/E Portf2	2,15%		*	
P/E Portf3	8,18%			*
P/E Portf4	4,45%		*	
P/E Portf5	12,77%		*	*
P/S Portf1	0,53%		*	
P/S Portf2	6,12%		*	
P/S Portf3	6,23%		*	
P/S Portf4	9,42%			*
P/S Portf5	22,09%			*
Total		0	24	19

Among the equally weighted portfolios there are 19 portfolios that have a positive abnormal return and no portfolio that have negative abnormal return on a 95% significance level. Within these 19 portfolios there were 8 portfolios were our test could not differentiate between if our result is

significantly different from zero or not. We also found that out of 35 portfolios 24 (69%) portfolios were not different from zero on the 95% significance level. It may be possible to see a pattern that many of the portfolio 1 (5 out of 7) had significantly positive abnormal returns. To further analyze this we will test whether there is a statistically difference between the portfolio 1 and portfolio 5 (see next section). A reason why we obtain more portfolios with higher returns using equally weighted compared to the value weighted method may be due to the small firm effect. (Reinganum, 1981)

5.2. Difference between the extreme portfolios

In this section the results obtained when we tested the difference between the return for portfolio 1 and portfolio 5 for the seven financial ratios is presented.

In Table 5-3 the results from the statistical test performed on the value weighted portfolios for each financial ratio are summarized. Each row represents one financial ratio and the differences between the portfolios ($\mu_{portfolio1} - \mu_{portfolio5}$) are presented in the second column. The result from each statistical test is graphically captured in the last three columns, a "*" indicates that the null-hypothesis is rejected. The test described from left to right

1. Abnormal return less than zero (Test 2 in 4.2.4 Statistic hypothesis testing above)
2. Abnormal return equal to zero (Test 3)
3. Abnormal return higher than zero (Test 1)

Table 5-3 Portfolio1 – Portfolio5 (value weighted) for the seven financial ratios

		Statistical test for difference in annualized return (bootstrap). Sig 95%		
Portfolio difference P1-P5 (value weighted)	Difference in bootstrapped mean of annualized abnormal return	< 0	= 0	> 0
DY P1 - P5	-5,87%		*	
EV/EBITDA P1 - P5	-6,35%		*	
FCF/CAPEX P1 - P5	-10,32%		*	
MV/(FCF/std) P1 - P5	2,84%		*	
P/B P1 - P5	7,60%		*	
P/E P1 - P5	1,54%		*	
P/S P1 - P5	-10,20%		*	
Total		0	7	0

We did not obtain any statistically significant difference between the extreme portfolios for any of the financial ratio even though the difference was in some case more than 10%. The extreme portfolios abnormal annualized returns are thereby regarded as equal. However, the signs on the difference between DY, P/B and P/E extreme portfolios are as expected according to value premium. In these cases the value portfolio outperforms the growth even though not significantly proven on a 95 % level.

In Table 5-4 the results from the statistical test performed on the equally weighted portfolios are summarized. The structure of the table is the same as for the value weighted portfolios in Table 5-3 above.

Table 5-4 Portfolio1 – Portfolio5 (equally weighted) for the seven financial ratios

		Statistical test for difference in annualized return (bootstrap). Sig 95%		
Portfolio difference P1-P5 (equally weighted)	Difference in bootstrapped mean of annualized abnormal return	< 0	= 0	> 0
DY P1 - P5	2,58%		*	
EV/EBITDA P1 - P5	7,12%		*	
FCF/CAPEX P1 - P5	7,29%		*	
MV/(FCF/std) P1 - P5	1,90%		*	
P/B P1 - P5	5,27%		*	
P/E P1 - P5	-0,95%		*	
P/S P1 - P5	-21,38%	*		
Total		1	6	0

For the comparison between the extreme portfolios for equally weighted portfolios we found a statistically significant difference in annualized abnormal return for the financial ratio price-to-sales. The difference between price-to-sales extreme portfolios were -21,38%, this result indicates that portfolio5 (high price-to-sales) performs better than portfolio1 (low price-to-sales). For the remaining ratios we could not find any statistical difference from zero with a 95% confidence level. When using equally weighted portfolio the correct sign is found on the difference between the extreme portfolios for P/B but not on DY and P/E according to value premium.

6. Analysis

6.1. Abnormal returns

We found that 3 out of 35 value weighted portfolios had significant abnormal return, DY Portfolio 3, EV/EBITDA Portfolio 3 and FCF/CAPEX Portfolio 2. All these portfolios had negative abnormal return which means that the portfolio performed worse than expected according to the risk adjusted return calculated with CAPM. More than 90% of our portfolio performed in line with expectation and did not create any statistically significantly abnormal return. We do not find any theoretical evidence in the literature that makes us believe that the negative performance of the portfolios is a trend that will be repeated in the future. Hence, we do not see any indication that it is possible to use financial ratios as the only criterion when selecting stocks to invest in that creates an abnormal return over time.

The finding from value weighted portfolios is of most importance since it best reflects the true composition of the market where large firms have a bigger impact than small firms. However, the difference in results between value and equally weighted portfolio is of interest. When we use equally weighted portfolio we find no portfolio that has a negative abnormal return and 11 portfolios that have a significantly positive return, a clear shift from negative toward positive abnormal return. A possible explanation for this result can be the small firm effect (Reinganum, 1981), implying that small firms tend to outperform the large firms in the stock market. When giving the small firm relatively more weight this positive performance gets reflected in the performance of the portfolios. The tendency of increasing return for equally weighted portfolios can also be seen in the graphs in 4.3 Descriptive statistics above.

6.2. Difference between the extreme portfolios

We did not find any statistically significant difference when we compared value weighted return for portfolio 1 and portfolio 5. For equally weighted portfolios we found that price-to-sales portfolio 5 outperform portfolio 1. These results indicate that there has been no significantly proven value premium on the Swedish stock market between 1993 and 2007. The signs on the difference between DY, P/B and P/E extreme portfolios are as expected according to value premium. In these cases the value portfolio outperforms the growth even though not significantly proven on a 95 % level.

There has been previous research done on the so called P/E effect as well as research on differences between value versus growth stock return on the Swedish market. Our finding is in line with (Gustafsson & Palm, 2006). They studied the period of 1991-2004 and did not find any P/E effect on the Swedish market. However, they found that during the period after the IT-boom it was possible

to generate an abnormal return by investing in stocks with low P/E ratios. The study by (Carlsson, Esser, & Skoric, 2008) investigated if there is a difference between the return for value and growth stocks. In their growth portfolio they included stocks that had high P/E and high P/B and in their value portfolio they included stocks with low P/E and low P/B. They found a value premium on the Swedish market for the period. Fama and French also found a value premium on the Swedish stock market in their research for the period of 1975-1995.

A possible explanation why our result differs compared to Fama and French is that we have divided our portfolios into quintile and not deciles. This makes our extreme portfolios less extreme and that may affect the returns. Another factor that we have to take into consideration is the occurrence of the IT-boom during the millennium. Especially high growth and technology stocks were, during this period before the crash, highly valued this misprice can have had an effect on our result. Finally we want to emphasize that the signs on the difference between the returns for the DY, P/B, and P/E extreme portfolios was the same as in the study by Fama & French even though not significant.

P/S portfolio 5 for equally weighted portfolios outperformed P/S portfolio 1, the difference was -21.38%. It can be seen inTable 10-60 Portfolio1 - Portfolio5 Table 10-53 where Portfolio 5 had a higher return than portfolio 1 in 13 out of 15 years. The biggest difference occurred in 1999 when portfolio 5 had a return of 109,4% and portfolio 1 had a return of -35.1% which had a big impact on the result. An explanation for this is that small IT-companies had a higher P/S and also a higher return during this year and with equally weighted portfolios their returns had a higher impact on the portfolio.

6.3. Discussion and critique against data and method

As we discussed in previous chapters, we divided our portfolios into quintile. It was the lack of data from the early 90s that prevented us from using deciles since the number of companies in each portfolio would have been too few. This made our extreme portfolios less extreme and it is possible that our result would have been different if we had constructed our portfolios in a different manner.

Our data is not complete, DataStream do not keep data for all companies for each year that we have researched which limit the creditability of our result. Further manual collection of data was not feasible within the timeframe of this thesis. For two of our financial ratios, MV/(FCF/std) and FCF/CAPEX, we only found data for 13 years which makes the analysis for those financial ratios even more uncertain.

A final critique is the number of years that we have used in the period that we have analyzed. By only using 15 years, our result becomes more sensitive against event such as the IT-boom, by using a longer time period this problem would be minimized. Also, the lack of observations prevented us from using statistical tests assuming normal distribution, this problem was solved by the use of

bootstrapping. Another outcome form the lack of observation is that the power of our statistical test is lower. As we can see for equally weighted portfolios we have 8 cases where we both reject the hypothesis that the difference is greater than zero and that it is now equal to zero. Here we have the occurrence of a type I error, rejecting a null hypothesis when the null-hypothesis is true. (Newbold, Carlson, & Thorne, 2003)

7. Conclusion and discussion

In this thesis we have investigated if it is possible to generate an abnormal return on the Swedish stock exchange by adopting an investment strategy that is exclusionary based on different financial ratios. In the analysis we scrutinize if there is a value premium by calculating the difference between the portfolios containing companies with highest ratios to the portfolio with the lowest ratios.

In 3 out of 35 value weighted portfolios we found significant negative abnormal return. However, we did not find any theoretical evidence in the literature that makes us believe that the negative performance of the portfolios is a trend that will be repeated in the future. Hence we cannot see any indication that it is possible to use the financial ratios analyzed as the only criterion when selecting stocks to invest in and create abnormal return over time.

We did not find any statistically significant difference when we compared value weighted return for portfolio 1 and portfolio 5. For equally weighted portfolios we found that price-to-sales portfolio 5 outperform portfolio 1. These results indicate that there has been no significantly proven value premium on the Swedish stock market between 1993 and 2007. However, the signs on the differences between DY, P/B and P/E for the extreme portfolios are as expected according to value premium. The value portfolio outperforms the growth portfolio even though not on a significant level of 95%.

When interpreting our findings there are a number of factors that have to be taken into consideration. Our use of a limited number of observations has a negative effect on the reliance of the statistical tests performed. Furthermore, we want to stress that the source of data and time period differs from previous studies which can explain the differences in result.

8. Future research

We decided to look at the Swedish stock exchange in our thesis, the same method of analysis can be used on other markets. A comparison between the Nordic stock exchanges would be an interesting approach and subject for future research.

We have used the period 1993-2007 in our analysis, extending this period and see if the same result is acquired would be another approach of interest. Our result might be affected by the IT-boom during the millennium; this effect would be minimized by including more historical year which would give a more reliable result.

Our investing strategy was to sort all companies each year according to different financial ratios and then create portfolios. By using our approach there is a risk that the companies in one portfolio come from the same industry that have a certain characteristic this would make the industry the criteria of investment and not the financial ratio . This pattern would be solve by first dividing all stocks in their corresponding industry and then create portfolios that contains the lowest to the highest financial ratio for each industry.

The difference in our result between value weighted and equally weighted portfolios indicates that the small firm effect might occurring on the Swedish market, this is a field that require further studies before we can draw any conclusions.

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10. Appendix

10.1. Confidence interval for bootstrap average

Table 10-1Bootstrap average results with hypothesis testing for value weighted portfolios.

Portfolios	Bootstrap Average	Test > 0	Sig 95%	Test < 0	Sig 95%	Test = 0		Sig 95%
P/B Portf1	8,92%	-0,025		0,198		-0,052	0,219	*
DY Portf5	8,37%	0,007	*	0,167		-0,007	0,183	*
P/S Portf5	6,54%	-0,020		0,157		-0,034	0,177	*
FCF/CAPEX Portf4	5,22%	-0,015		0,133		-0,026	0,150	*
EV/EBITDA Portf5	5,16%	0,001	*	0,103		-0,009	0,112	*
FCF/CAPEX Portf5	4,14%	-0,055		0,139		-0,073	0,156	*
DY Portf1	2,60%	-0,045		0,099		-0,056	0,114	*
P/E Portf1	2,59%	-0,069		0,123		-0,085	0,141	*
MV/(FCF/std) Portf2	2,06%	-0,032		0,070		-0,043	0,078	*
P/B Portf2	1,37%	-0,066		0,091		-0,082	0,106	*
P/B Portf5	1,22%	-0,041		0,069		-0,049	0,081	*
P/E Portf5	1,12%	-0,048		0,073		-0,059	0,085	*
MV/(FCF/std) Portf1	-1,08%	-0,085		0,056		-0,100	0,067	*
EV/EBITDA Portf1	-1,26%	-0,098		0,076		-0,114	0,092	*
P/S Portf4	-1,51%	-0,047		0,018		-0,054	0,025	*
EV/EBITDA Portf4	-2,25%	-0,082		0,043		-0,093	0,057	*
P/B Portf4	-2,36%	-0,089		0,042		-0,101	0,055	*
P/E Portf3	-2,65%	-0,079		0,022		-0,091	0,032	*
EV/EBITDA Portf2	-2,86%	-0,133		0,066		-0,156	0,081	*
FCF/CAPEX Portf3	-2,93%	-0,106		0,040		-0,121	0,051	*
MV/(FCF/std) Portf3	-3,50%	-0,091		0,023		-0,101	0,035	*
P/S Portf2	-3,66%	-0,104		0,034		-0,115	0,049	*
MV/(FCF/std) Portf5	-3,79%	-0,098		0,023		-0,109	0,035	*
P/S Portf1	-3,81%	-0,128		0,045		-0,146	0,058	*
P/E Portf4	-4,00%	-0,121		0,035		-0,137	0,048	*
P/S Portf3	-4,66%	-0,122		0,020		-0,140	0,029	*
DY Portf4	-4,96%	-0,109		0,002		-0,123	0,009	*
DY Portf2	-4,99%	-0,102		0,003		-0,110	0,014	*
P/B Portf3	-5,06%	-0,127		0,015		-0,145	0,026	*
P/E Portf2	-5,29%	-0,151		0,028		-0,173	0,038	*
FCF/CAPEX Portf2	-6,00%	-0,089		-0,030	*	-0,095	-0,024	
EV/EBITDA Portf3	-6,00%	-0,101		-0,020	*	-0,109	-0,012	
FCF/CAPEX Portf1	-6,18%	-0,116		-0,002	*	-0,126	0,009	*
DY Portf3	-7,07%	-0,140		-0,011	*	-0,155	-0,002	
MV/(FCF/std) Portf4	-9,14%	-0,169		-0,013	*	-0,182	0,004	*

Table 10-2 Bootstrap average results with hypothesis testing for equally weighted portfolios.

Portfolios	Bootstrap Average	Test > 0	Sig 95%	Test < 0	Sig 95%	Test = 0		Sig 95%
P/S Portf5	22,09%	0,076	*	0,385		0,054	0,417	
FCF/CAPEX Portf1	16,64%	0,044	*	0,324		0,030	0,357	
P/B Portf1	15,81%	0,054	*	0,272		0,038	0,295	
EV/EBITDA Portf1	13,62%	0,026	*	0,252		0,003	0,276	
P/E Portf5	12,77%	0,009	*	0,276		-0,006	0,309	*
MV/(FCF/std) Portf1	12,13%	0,000	*	0,272		-0,016	0,304	*
P/E Portf1	11,74%	0,018	*	0,219		0,003	0,240	
P/B Portf5	10,60%	-0,011		0,241		-0,027	0,270	*
MV/(FCF/std) Portf5	10,12%	0,007	*	0,201		-0,010	0,219	*
DY Portf1	9,50%	0,031	*	0,171		0,021	0,188	
P/S Portf4	9,42%	0,036	*	0,161		0,026	0,176	
FCF/CAPEX Portf5	9,16%	-0,003		0,193		-0,020	0,213	*
P/E Portf3	8,18%	0,036	*	0,128		0,028	0,138	
MV/(FCF/std) Portf2	8,02%	0,012	*	0,146		0,000	0,159	*
DY Portf4	7,68%	0,008	*	0,148		-0,003	0,160	*
FCF/CAPEX Portf2	7,68%	0,025	*	0,128		0,016	0,137	
FCF/CAPEX Portf4	7,42%	0,009	*	0,140		-0,001	0,152	*
EV/EBITDA Portf2	7,20%	-0,027		0,175		-0,046	0,195	*
DY Portf5	6,80%	-0,004		0,140		-0,017	0,154	*
P/B Portf4	6,74%	0,012	*	0,127		0,002	0,139	
MV/(FCF/std) Portf3	6,66%	0,008	*	0,125		-0,003	0,136	*
P/B Portf2	6,58%	-0,032		0,167		-0,050	0,188	*
EV/EBITDA Portf5	6,52%	0,014	*	0,117		0,005	0,128	
MV/(FCF/std) Portf4	6,51%	0,009	*	0,125		-0,001	0,137	*
P/S Portf3	6,23%	-0,013		0,143		-0,026	0,160	*
P/S Portf2	6,12%	-0,030		0,161		-0,044	0,185	*
P/B Portf3	5,65%	-0,019		0,134		-0,032	0,150	*
DY Portf2	5,25%	0,000		0,106		-0,009	0,117	*
EV/EBITDA Portf4	4,46%	-0,012		0,103		-0,023	0,114	*
P/E Portf4	4,45%	-0,006		0,094		-0,016	0,103	*
FCF/CAPEX Portf3	3,85%	-0,024		0,102		-0,036	0,113	*
DY Portf3	3,56%	-0,042		0,113		-0,057	0,129	*
EV/EBITDA Portf3	2,65%	-0,021		0,075		-0,030	0,084	*
P/E Portf2	2,15%	-0,065		0,109		-0,080	0,126	*
P/S Portf1	0,53%	-0,085		0,102		-0,101	0,122	*

10.2. Price-to-earnings

Table 10-3 P/e. Not riskadjusted portfolio returns (equally weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/e Portf1	78.8%	0.6%	14.0%	55.0%	17.9%	-17.9%	25.5%	10.7%	11.9%	-16.9%	52.8%	34.7%	66.4%	50.7%	-23.1%	361.2%	24.1%
P/e Portf2	73.2%	-0.1%	12.0%	43.7%	13.7%	-10.5%	9.4%	11.2%	0.5%	-20.8%	34.1%	30.5%	30.7%	40.4%	-27.6%	240.4%	16.0%
P/e Portf3	45.2%	3.5%	25.9%	48.1%	30.9%	-9.6%	38.9%	4.7%	6.5%	-13.6%	41.7%	29.4%	39.0%	32.6%	-21.9%	301.2%	20.1%
P/e Portf4	48.3%	-0.5%	21.9%	52.5%	37.7%	-14.2%	56.4%	-14.5%	-11.2%	-22.6%	39.7%	27.8%	38.3%	24.8%	-17.5%	267.0%	17.8%
P/e Portf5	60.7%	-4.0%	12.8%	46.5%	25.4%	-13.0%	98.5%	-16.2%	-33.5%	-28.2%	140.1%	41.8%	40.1%	32.1%	-24.7%	378.3%	25.2%

Table 10-4 P/e. Return portfolio (equally weighted) - Return market

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/e Portf1	43.2%	-8.1%	-11.3%	11.5%	-17.3%	-17.4%	-44.7%	41.7%	37.5%	3.5%	17.9%	18.2%	39.3%	15.2%	1.2%	130.4%	8.7%
P/e Portf2	37.6%	-8.8%	-13.3%	0.2%	-21.5%	-10.0%	-60.8%	42.2%	26.1%	-0.4%	-0.8%	13.9%	3.6%	5.0%	-3.3%	9.6%	0.6%
P/e Portf3	9.6%	-5.3%	0.7%	4.6%	-4.2%	-9.0%	-31.3%	35.6%	32.1%	6.8%	6.8%	12.8%	11.9%	-2.9%	2.3%	70.4%	4.7%
P/e Portf4	12.7%	-9.3%	-3.4%	9.0%	2.6%	-13.6%	-13.8%	16.4%	14.4%	-2.2%	4.8%	11.2%	11.2%	-10.6%	6.8%	36.2%	2.4%
P/e Portf5	25.0%	-12.8%	-12.4%	2.9%	-9.7%	-12.5%	28.3%	14.7%	-7.9%	-7.8%	105.2%	25.3%	13.0%	-3.3%	-0.5%	147.5%	9.8%

Table 10-5 P/e. Realized returns (equally weighted) - required returns. (Return equally weighted portfolio - (Rf + (Beta Portfolio)*(Rm-Rf)))

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/e Portf1	58.7%	-8.1%	-4.5%	19.7%	-4.6%	-18.7%	-14.8%	18.8%	23.7%	-14.5%	33.3%	25.7%	49.9%	20.3%	-7.1%	177.9%	11.9%
P/e Portf2	50.0%	-8.6%	-9.9%	16.8%	-11.8%	-11.4%	-45.5%	16.4%	9.3%	-9.3%	9.9%	20.7%	6.6%	8.3%	-8.5%	32.9%	2.2%
P/e Portf3	19.9%	-5.1%	6.1%	22.0%	2.0%	-10.6%	3.5%	11.7%	16.0%	-4.9%	22.2%	18.9%	21.8%	2.7%	-3.1%	123.0%	8.2%
P/e Portf4	16.8%	-9.0%	2.2%	23.4%	7.0%	-14.6%	0.8%	10.6%	2.1%	-13.4%	16.4%	14.6%	18.3%	-7.6%	-1.1%	66.3%	4.4%
P/e Portf5	26.1%	-12.6%	-7.7%	18.0%	-1.7%	-13.7%	27.1%	13.6%	-8.4%	-11.5%	113.9%	30.9%	24.9%	0.4%	-7.2%	192.1%	12.8%

Table 10-6 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		11.7%	2.1%	8.2%	4.5%	12.8%
Standard deviation		0.061	0.053	0.028	0.031	0.082
Lower conf level		0.003	-0.080	0.028	-0.016	-0.006
Upper conf level		0.240	0.126	0.138	0.103	0.309
One-sided smallest figure		0.018	-0.065	0.036	-0.006	0.009
One-sided largest figure		0.219	0.109	0.128	0.094	0.276

Table 10-7 P/e. Return portfolio (value weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/e Portf1	84.8%	-6.2%	30.5%	40.9%	21.2%	-14.0%	12.8%	26.4%	-14.4%	-17.7%	39.5%	29.5%	60.1%	34.9%	-27.4%	300.9%	20.1%
P/e Portf2	57.5%	5.1%	17.8%	47.8%	23.8%	-12.2%	4.9%	9.6%	8.0%	-19.2%	13.6%	17.1%	27.6%	40.9%	-27.6%	214.7%	14.3%
P/e Portf3	31.8%	9.8%	20.3%	48.6%	18.3%	10.1%	7.5%	1.2%	2.8%	-21.2%	29.7%	19.5%	17.4%	12.8%	-31.1%	177.6%	11.8%
P/e Portf4	22.8%	19.1%	27.8%	29.8%	20.1%	1.1%	9.1%	0.6%	-50.1%	-23.7%	16.3%	9.0%	34.0%	46.7%	-2.4%	160.2%	10.7%
P/e Portf5	30.4%	5.4%	12.5%	69.6%	58.6%	5.2%	94.2%	-49.8%	-20.1%	-24.1%	20.4%	39.7%	10.6%	46.9%	-27.6%	272.0%	18.1%

Table 10-8 P/e. Return portfolio (equally weighted) - Return market

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/e Portf1	43.2%	-8.1%	-11.3%	11.5%	-17.3%	-17.4%	-44.7%	41.7%	37.5%	3.5%	17.9%	18.2%	39.3%	15.2%	1.2%	130.4%	8.7%
P/e Portf2	37.6%	-8.8%	-13.3%	0.2%	-21.5%	-10.0%	-60.8%	42.2%	26.1%	-0.4%	-0.8%	13.9%	3.6%	5.0%	-3.3%	9.6%	0.6%
P/e Portf3	9.6%	-5.3%	0.7%	4.6%	-4.2%	-9.0%	-31.3%	35.6%	32.1%	6.8%	6.8%	12.8%	11.9%	-2.9%	2.3%	70.4%	4.7%
P/e Portf4	12.7%	-9.3%	-3.4%	9.0%	2.6%	-13.6%	-13.8%	16.4%	14.4%	-2.2%	4.8%	11.2%	11.2%	-10.6%	6.8%	36.2%	2.4%
P/e Portf5	25.0%	-12.8%	-12.4%	2.9%	-9.7%	-12.5%	28.3%	14.7%	-7.9%	-7.8%	105.2%	25.3%	13.0%	-3.3%	-0.5%	147.5%	9.8%

Table 10-9 P/e. Realized returns (value weighted) - Required returns. (Return value weighted portfolio - (Rf + (Beta Portfolio)(Rm-Rf)))*

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/e Portf1	49.1%	-16.0%	1.8%	-8.3%	-12.6%	-13.9%	-39.0%	31.6%	-0.3%	-15.7%	17.9%	17.1%	35.2%	-6.3%	-0.8%	40.0%	2.7%
P/e Portf2	24.8%	-3.7%	-9.4%	6.2%	-7.9%	-12.8%	-72.9%	5.7%	17.5%	-7.7%	-19.9%	3.7%	0.2%	2.4%	-5.5%	-79.3%	-5.3%
P/e Portf3	5.9%	1.2%	0.0%	13.7%	-11.2%	10.5%	-32.6%	4.2%	10.7%	-7.5%	-3.6%	7.0%	-12.0%	-15.6%	-10.5%	-39.8%	-2.7%
P/e Portf4	-11.8%	10.1%	2.3%	-4.3%	-19.4%	2.0%	-51.9%	12.0%	-13.9%	-18.2%	-15.3%	-4.0%	17.1%	12.0%	23.7%	-59.5%	-4.0%
P/e Portf5	-17.1%	-3.3%	-12.3%	4.6%	15.6%	6.1%	26.2%	5.2%	-18.9%	-4.1%	-10.6%	24.2%	-13.0%	18.5%	-5.2%	16.0%	1.1%

Table 10-10 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		2.6%	-5.3%	-2.7%	-4.0%	1.1%
Standard deviation		0.058	0.055	0.031	0.047	0.037
Lower conf level		-0.085	-0.173	-0.091	-0.137	-0.059
Upper conf level		0.141	0.038	0.032	0.048	0.085
One-sided smallest figure		-0.069	-0.151	-0.079	-0.121	-0.048
One-sided largest figure		0.123	0.028	0.022	0.035	0.073

Table 10-11 P/e. Equally weighted. (Abnormal return for equally weighted portfolio1 - Abnormal return for equally weighted portfolio5)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/e P1 - P5	32.6%	4.5%	3.3%	1.6%	-2.9%	-5.0%	-41.9%	5.2%	32.1%	-2.9%	-80.6%	-5.3%	25.1%	19.9%	0.2%	-14.2%	-0.9%

Table 10-12 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		-0.9%
Standard deviation		0.071
Lower conf level		-0.163
Upper conf level		0.114
One-sided smallest figure		-0.135
One-sided largest figure		0.099

Table 10-13 P/e. Value weighted. (Abnormal return for value weighted portfolio1 - Abnormal return for value weighted portfolio5)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/e P1 - P5	66.2%	-12.7%	14.1%	-12.9%	-28.2%	-19.9%	-65.1%	26.4%	18.6%	-11.6%	28.5%	-7.1%	48.1%	-24.8%	4.4%	24.0%	1.6%

Table 10-14 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		1.5%
Standard deviation		0.083
Lower conf level		-0.145
Upper conf level		0.181
One-sided smallest figure		-0.120
One-sided largest figure		0.152

10.3. Market value/(FCF/Standard deviation)

Table 10-15 MV/(FCF/std). Not riskadjusted portfolio returns (equally weighted)

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
MV/(FCF/std) Portf1			7.0%	41.3%	25.6%	-8.8%	16.6%	25.8%	3.6%	-11.8%	121.8%	26.7%	43.7%	42.4%	-25.9%	307.9%	23.7%
MV/(FCF/std) Portf2			17.1%	46.5%	48.3%	-19.0%	31.7%	17.1%	10.7%	-10.0%	38.3%	24.8%	50.4%	26.6%	-20.7%	261.9%	20.1%
MV/(FCF/std) Portf3			18.4%	51.1%	21.3%	-12.1%	37.6%	-1.7%	7.8%	-21.3%	47.6%	32.8%	35.2%	38.0%	-23.6%	231.2%	17.8%
MV/(FCF/std) Portf4			24.6%	35.3%	43.7%	-11.1%	59.4%	-13.0%	-15.8%	-19.5%	65.1%	31.0%	25.0%	46.8%	-26.7%	245.0%	18.8%
MV/(FCF/std) Portf5			11.5%	43.5%	45.3%	-3.2%	116.4%	-29.9%	-29.8%	-28.4%	82.0%	38.0%	45.6%	26.3%	-24.7%	292.6%	22.5%

Table 10-16 MV/(FCF/std). Return portfolio (equally weighted) - Return market

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
MV/(FCF/std) Portf1			-18.2%	-2.3%	-9.6%	-8.2%	-53.6%	56.7%	29.2%	8.6%	86.8%	10.1%	16.6%	7.0%	-1.7%	121.5%	9.3%
MV/(FCF/std) Portf2			-8.1%	2.9%	13.1%	-18.4%	-38.4%	48.1%	36.3%	10.5%	3.3%	8.2%	23.3%	-8.8%	3.6%	75.5%	5.8%
MV/(FCF/std) Portf3			-6.8%	7.5%	-13.9%	-11.5%	-32.6%	29.2%	33.4%	-0.9%	12.7%	16.3%	8.1%	2.6%	0.7%	44.7%	3.4%
MV/(FCF/std) Portf4			-0.6%	-8.2%	8.5%	-10.5%	-10.7%	17.9%	9.8%	1.0%	30.2%	14.4%	-2.2%	11.4%	-2.5%	58.6%	4.5%
MV/(FCF/std) Portf5			-13.7%	0.0%	10.1%	-2.6%	46.2%	1.0%	-4.2%	-7.9%	47.0%	21.5%	18.5%	-9.1%	-0.5%	106.2%	8.2%

Table 10-17 MV/(FCF/std). Realized returns (equally weighted) - required returns. (Return equally weighted portfolio - (Rf + (Beta Portfolio)*(Rm-Rf)))

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
MV/(FCF/std) Portf1			-12.9%	12.7%	-2.3%	-9.8%	-17.0%	27.1%	13.7%	-5.1%	101.5%	16.8%	25.9%	14.2%	-7.9%	156.9%	12.1%
MV/(FCF/std) Portf2			-3.2%	18.4%	22.6%	-20.2%	-3.8%	19.6%	17.2%	-5.0%	18.2%	13.9%	33.4%	-2.6%	-4.2%	104.3%	8.0%
MV/(FCF/std) Portf3			1.2%	19.3%	-6.7%	-12.8%	-2.0%	8.3%	18.7%	-9.7%	24.8%	22.8%	16.8%	12.5%	-6.6%	86.6%	6.7%
MV/(FCF/std) Portf4			4.1%	3.3%	10.6%	-11.7%	4.3%	18.1%	-0.1%	-6.1%	36.6%	19.1%	4.6%	12.3%	-10.7%	84.3%	6.5%
MV/(FCF/std) Portf5			-12.2%	6.8%	18.1%	-3.9%	44.1%	13.9%	-5.6%	-14.6%	53.2%	24.4%	27.1%	-10.7%	-7.5%	133.1%	10.2%

Table 10-18 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		12.1%	8.0%	6.7%	6.5%	10.1%
Standard deviation		0.083	0.041	0.036	0.035	0.059
Lower conf level		-0.016	0.000	-0.003	-0.001	-0.010
Upper conf level		0.304	0.159	0.136	0.137	0.219
One-sided smallest figure		0.000	0.012	0.008	0.009	0.007
One-sided largest figure		0.272	0.146	0.125	0.125	0.201

Table 10-19 MV/(FCF/std). Return portfolio (value weighted)

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
MV/(FCF/std) Portf1			20.0%	36.6%	16.8%	-5.9%	2.9%	21.6%	8.0%	-14.1%	34.8%	23.9%	25.0%	40.7%	-28.8%	181.6%	14.0%
MV/(FCF/std) Portf2			24.9%	30.4%	30.7%	-9.0%	43.6%	5.6%	9.9%	-14.1%	29.6%	17.0%	42.0%	53.0%	-19.3%	244.3%	18.8%
MV/(FCF/std) Portf3			11.4%	39.4%	17.6%	5.0%	19.2%	-15.2%	6.0%	-12.0%	21.2%	29.8%	14.0%	30.8%	-27.3%	140.1%	10.8%
MV/(FCF/std) Portf4			26.2%	16.4%	25.0%	4.2%	20.2%	-18.6%	-31.4%	-20.4%	14.0%	39.4%	8.2%	26.2%	-31.6%	77.7%	6.0%
MV/(FCF/std) Portf5			16.1%	69.0%	49.3%	-4.6%	81.5%	-28.8%	-21.2%	-28.4%	35.8%	1.7%	31.6%	17.9%	-14.1%	205.8%	15.8%

Table 10-20 MV/(FCF/std). Return portfolio (equally weighted) - Return market

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
MV/(FCF/std) Portf1			-18.2%	-2.3%	-9.6%	-8.2%	-53.6%	56.7%	29.2%	8.6%	86.8%	10.1%	16.6%	7.0%	-1.7%	121.5%	9.3%
MV/(FCF/std) Portf2			-8.1%	2.9%	13.1%	-18.4%	-38.4%	48.1%	36.3%	10.5%	3.3%	8.2%	23.3%	-8.8%	3.6%	75.5%	5.8%
MV/(FCF/std) Portf3			-6.8%	7.5%	-13.9%	-11.5%	-32.6%	29.2%	33.4%	-0.9%	12.7%	16.3%	8.1%	2.6%	0.7%	44.7%	3.4%
MV/(FCF/std) Portf4			-0.6%	-8.2%	8.5%	-10.5%	-10.7%	17.9%	9.8%	1.0%	30.2%	14.4%	-2.2%	11.4%	-2.5%	58.6%	4.5%
MV/(FCF/std) Portf5			-13.7%	0.0%	10.1%	-2.6%	46.2%	1.0%	-4.2%	-7.9%	47.0%	21.5%	18.5%	-9.1%	-0.5%	106.2%	8.2%

Table 10-21 MV/(FCF/std). Realized returns (value weighted) - Required returns. (Return value weighted portfolio - (Rf + (Beta Portfolio)(Rm-Rf)))*

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
MV/(FCF/std) Portf1			-5.7%	-0.2%	-21.5%	-5.6%	-38.7%	17.0%	20.2%	-5.6%	5.9%	10.6%	1.4%	10.9%	-2.9%	-14.2%	-1.1%
MV/(FCF/std) Portf2			-1.6%	-7.2%	0.5%	-9.0%	-25.4%	4.6%	17.8%	1.0%	2.8%	3.6%	14.2%	17.2%	7.8%	26.3%	2.0%
MV/(FCF/std) Portf3			-12.4%	-3.1%	-15.7%	5.2%	-26.2%	6.8%	19.8%	3.0%	-10.4%	14.0%	-17.7%	-4.9%	-3.7%	-45.2%	-3.5%
MV/(FCF/std) Portf4			0.7%	-19.9%	-14.1%	5.9%	-45.3%	8.6%	-17.1%	-6.9%	-20.3%	29.1%	-15.6%	-15.4%	-8.7%	-119.0%	-9.2%
MV/(FCF/std) Portf5			-14.4%	-3.8%	4.4%	-3.6%	17.3%	9.8%	-21.4%	-21.5%	-1.2%	-18.9%	14.4%	-16.4%	5.3%	-50.2%	-3.9%

Table 10-22 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		-1.1%	2.1%	-3.5%	-9.1%	-3.8%
Standard deviation		0.043	0.031	0.035	0.047	0.036
Lower conf level		-0.100	-0.043	-0.101	-0.182	-0.109
Upper conf level		0.067	0.078	0.035	0.004	0.035
One-sided smallest figure		-0.085	-0.032	-0.091	-0.169	-0.098
One-sided largest figure		0.056	0.070	0.023	-0.013	0.023

Table 10-23 MV/(FCF/std). Equally weighted. (Abnormal return for equally weighted portfolio1 - Abnormal return for equally weighted portfolio5)

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
MV/(FCF/std) P1 - P5			-0.7%	5.9%	-20.4%	-5.8%	-61.0%	13.2%	19.3%	9.5%	48.3%	-7.6%	-1.3%	24.9%	-0.4%	23.8%	1.8%

Table 10-24 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		1.9%
Standard deviation		0.068
Lower conf level		-0.120
Upper conf level		0.146
One-sided smallest figure		-0.096
One-sided largest figure		0.128

Table 10-25 MV/(FCF/std). Value weighted. (Abnormal return for value weighted portfolio1 - Abnormal return for value weighted portfolio5)

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
MV/(FCF/std) P1 - P5			8.7%	3.7%	-25.9%	-2.0%	-55.9%	7.2%	41.6%	15.9%	7.1%	29.6%	-13.0%	27.2%	-8.2%	35.9%	2.8%

Table 10-26 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		2.8%
Standard deviation		0.067
Lower conf level		-0.107
Upper conf level		0.155
One-sided smallest figure		-0.084
One-sided largest figure		0.135

10.4. Enterprise value/Earnings Before interest tax amortization and depreciation

Table 10-27 EV/EBITDA. Not riskadjusted portfolio returns (equally weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
EV/EBITDA Portf1	90.2%	-4.0%	30.9%	64.3%	19.3%	-19.2%	20.8%	7.4%	16.5%	-16.7%	84.0%	26.6%	54.4%	43.1%	-22.7%	394.8%	26.3%
EV/EBITDA Portf2	88.4%	-3.3%	18.4%	54.9%	23.2%	-14.1%	10.9%	27.9%	1.9%	-21.6%	36.0%	32.6%	43.2%	35.1%	-20.9%	312.6%	20.8%
EV/EBITDA Portf3	37.5%	7.2%	21.8%	38.1%	28.1%	-13.9%	39.3%	15.7%	4.9%	-22.6%	38.2%	22.6%	32.1%	31.6%	-23.1%	257.5%	17.2%
EV/EBITDA Portf4	55.2%	-5.3%	9.6%	32.6%	30.7%	-9.0%	64.3%	-11.1%	-14.6%	-23.5%	38.7%	39.8%	31.6%	30.9%	-17.1%	252.8%	16.9%
EV/EBITDA Portf5	48.4%	10.6%	18.4%	59.0%	37.2%	-9.4%	89.8%	-41.5%	-40.8%	-16.9%	58.9%	31.4%	33.4%	32.0%	-29.1%	281.3%	18.8%

Table 10-28 EV/EBITDA. Return portfolio (equally weighted) - Return market

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
EV/EBITDA Portf1	54.5%	-12.8%	5.6%	20.8%	-15.8%	-18.7%	-49.4%	38.3%	42.1%	3.7%	49.0%	10.1%	27.3%	7.7%	1.5%	164.0%	10.9%
EV/EBITDA Portf2	52.8%	-12.1%	-6.9%	11.4%	-12.0%	-13.6%	-59.3%	58.8%	27.5%	-1.2%	1.1%	16.1%	16.1%	-0.3%	3.3%	81.7%	5.4%
EV/EBITDA Portf3	1.9%	-1.6%	-3.4%	-5.5%	-7.1%	-13.4%	-30.8%	46.7%	30.5%	-2.1%	3.2%	6.1%	5.0%	-3.8%	1.2%	26.7%	1.8%
EV/EBITDA Portf4	19.6%	-14.1%	-15.6%	-10.9%	-4.5%	-8.4%	-5.9%	19.8%	11.0%	-3.0%	3.7%	23.3%	4.5%	-4.6%	7.2%	22.0%	1.5%
EV/EBITDA Portf5	12.8%	1.8%	-6.8%	15.4%	2.1%	-8.8%	19.6%	-10.6%	-15.2%	3.5%	24.0%	14.8%	6.3%	-3.4%	-4.9%	50.5%	3.4%

Table 10-29 EV/EBITDA. Realized returns (equally weighted) - required returns. (Return equally weighted portfolio - (Rf + (Beta Portfolio)*(Rm-Rf)))

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
EV/EBITDA Portf1	70.3%	-12.6%	11.5%	30.0%	-8.2%	-19.5%	-19.5%	15.6%	27.3%	-12.4%	60.0%	16.7%	39.3%	11.5%	-4.4%	205.7%	13.7%
EV/EBITDA Portf2	63.9%	-11.8%	-1.1%	27.6%	-2.5%	-15.0%	-40.9%	31.9%	12.4%	-13.0%	9.2%	21.6%	24.6%	6.6%	-5.5%	108.0%	7.2%
EV/EBITDA Portf3	6.5%	-1.6%	-0.3%	9.6%	-1.8%	-14.6%	-10.3%	24.7%	13.2%	-14.3%	14.6%	10.8%	11.5%	-1.3%	-6.5%	40.3%	2.7%
EV/EBITDA Portf4	29.4%	-14.1%	-11.0%	0.5%	-0.2%	-9.8%	8.9%	14.0%	0.4%	-12.0%	20.0%	29.3%	10.2%	-0.1%	0.9%	66.5%	4.4%
EV/EBITDA Portf5	6.8%	1.3%	-0.6%	25.5%	10.7%	-10.4%	14.4%	0.8%	-8.9%	2.6%	31.3%	18.6%	15.1%	2.0%	-10.7%	98.5%	6.6%

Table 10-30 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		13.6%	7.2%	2.7%	4.5%	6.5%
Standard deviation		0.069	0.062	0.029	0.035	0.032
Lower conf level		0.003	-0.046	-0.030	-0.023	0.005
Upper conf level		0.276	0.195	0.084	0.114	0.128
One-sided smallest figure		0.026	-0.027	-0.021	-0.012	0.014
One-sided largest figure		0.252	0.175	0.075	0.103	0.117

Table 10-31 EV/EBITDA. Return portfolio (value weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
EV/EBITDA Portf1	70.0%	-6.3%	23.1%	44.3%	17.9%	-15.8%	1.3%	3.2%	6.9%	-17.2%	20.8%	10.9%	41.5%	51.9%	-20.3%	232.2%	15.5%
EV/EBITDA Portf2	76.7%	-5.1%	10.6%	43.4%	17.6%	-8.4%	-1.6%	18.4%	14.8%	-19.5%	22.7%	16.6%	35.9%	24.5%	-29.2%	217.3%	14.5%
EV/EBITDA Portf3	31.6%	10.6%	17.5%	48.5%	16.5%	-2.6%	26.2%	-10.4%	-20.6%	-29.7%	30.5%	22.4%	23.1%	28.5%	-19.8%	172.3%	11.5%
EV/EBITDA Portf4	20.7%	2.9%	23.7%	45.8%	40.8%	1.1%	126.1%	16.1%	-21.5%	-25.4%	11.7%	6.0%	16.3%	45.7%	-21.5%	288.5%	19.2%
EV/EBITDA Portf5	39.9%	20.9%	25.0%	61.5%	56.8%	8.3%	26.5%	-55.9%	-39.3%	-9.3%	33.8%	28.3%	27.8%	30.6%	-29.4%	225.4%	15.0%

Table 10-32 EV/EBITDA. Return portfolio (equally weighted) - Return market

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
EV/EBITDA Portf1	54.5%	-12.8%	5.6%	20.8%	-15.8%	-18.7%	-49.4%	38.3%	42.1%	3.7%	49.0%	10.1%	27.3%	7.7%	1.5%	164.0%	10.9%
EV/EBITDA Portf2	52.8%	-12.1%	-6.9%	11.4%	-12.0%	-13.6%	-59.3%	58.8%	27.5%	-1.2%	1.1%	16.1%	16.1%	-0.3%	3.3%	81.7%	5.4%
EV/EBITDA Portf3	1.9%	-1.6%	-3.4%	-5.5%	-7.1%	-13.4%	-30.8%	46.7%	30.5%	-2.1%	3.2%	6.1%	5.0%	-3.8%	1.2%	26.7%	1.8%
EV/EBITDA Portf4	19.6%	-14.1%	-15.6%	-10.9%	-4.5%	-8.4%	-5.9%	19.8%	11.0%	-3.0%	3.7%	23.3%	4.5%	-4.6%	7.2%	22.0%	1.5%
EV/EBITDA Portf5	12.8%	1.8%	-6.8%	15.4%	2.1%	-8.8%	19.6%	-10.6%	-15.2%	3.5%	24.0%	14.8%	6.3%	-3.4%	-4.9%	50.5%	3.4%

Table 10-33 EV/EBITDA. Realized returns (value weighted) - Required returns. (Return value weighted portfolio - (Rf + (Beta Portfolio)(Rm-Rf)))*

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
EV/EBITDA Portf1	51.9%	-14.8%	-4.6%	-5.1%	-19.9%	-15.0%	-44.8%	7.6%	20.1%	-7.6%	-11.6%	-0.8%	13.6%	5.6%	7.5%	-18.1%	-1.2%
EV/EBITDA Portf2	36.9%	-13.7%	-13.8%	5.9%	-15.2%	-7.7%	-68.5%	21.9%	25.5%	-6.1%	-11.9%	2.0%	12.7%	-5.0%	-6.5%	-43.5%	-2.9%
EV/EBITDA Portf3	-7.4%	1.9%	-9.9%	13.7%	-15.8%	-1.3%	-27.4%	-7.7%	-8.7%	-15.9%	-4.8%	5.3%	-2.7%	-10.8%	1.5%	-90.1%	-6.0%
EV/EBITDA Portf4	-19.8%	-5.9%	-1.0%	-6.1%	-2.2%	1.1%	31.7%	21.6%	-22.2%	-18.6%	-17.2%	-5.3%	-7.7%	16.5%	1.6%	-33.5%	-2.2%
EV/EBITDA Portf5	2.0%	11.7%	-0.4%	24.2%	31.4%	8.1%	-20.0%	1.5%	0.0%	6.1%	-1.7%	15.3%	6.2%	-2.0%	-5.4%	77.0%	5.1%

Table 10-34 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		-1.3%	-2.9%	-6.0%	-2.3%	5.2%
Standard deviation		0.053	0.060	0.025	0.038	0.031
Lower conf level		-0.114	-0.156	-0.109	-0.093	-0.009
Upper conf level		0.092	0.081	-0.012	0.057	0.112
One-sided smallest figure		-0.098	-0.133	-0.101	-0.082	0.001
One-sided largest figure		0.076	0.066	-0.020	0.043	0.103

Table 10-35 EV/EBITDA. Equally weighted. (Abnormal return for equally weighted portfolio1 - Abnormal return for equally weighted portfolio5)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
EV/EBITDA P1 - P5	63.4%	-13.9%	12.0%	4.6%	-18.9%	-9.0%	-33.9%	14.8%	36.2%	-15.0%	28.8%	-1.9%	24.3%	9.5%	6.3%	107.3%	7.2%

Table 10-36 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		7.1%
Standard deviation		0.062
Lower conf level		-0.046
Upper conf level		0.198
One-sided smallest figure		-0.029
One-sided largest figure		0.175

Table 10-37 EV/EBITDA. Value weighted. (Abnormal return for value weighted portfolio1 - Abnormal return for value weighted portfolio5)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
EV/EBITDA P1 - P5	50.0%	-26.5%	-4.2%	-29.4%	-51.3%	-23.2%	-24.8%	6.1%	20.1%	-13.7%	-9.9%	-16.1%	7.4%	7.6%	12.8%	-95.1%	-6.3%

Table 10-38 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		-6.3%
Standard deviation		0.061
Lower conf level		-0.180
Upper conf level		0.058
One-sided smallest figure		-0.162
One-sided largest figure		0.039

10.5. Price-to-book

Table 10-39 P/B. Not riskadjusted portfolio returns (equally weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/B Portf1	107.6%	6.1%	22.0%	51.2%	16.5%	-9.0%	23.5%	21.4%	5.2%	-7.9%	79.4%	42.2%	50.1%	37.0%	-21.2%	424.3%	28.3%
P/B Portf2	77.8%	3.3%	7.2%	52.1%	20.4%	-10.4%	11.8%	3.4%	-8.1%	-17.9%	67.6%	30.2%	43.7%	33.8%	-22.2%	292.7%	19.5%
P/B Portf3	71.0%	-5.9%	25.8%	45.2%	26.5%	-14.4%	31.0%	-4.2%	-8.6%	-22.4%	58.1%	26.6%	37.5%	33.4%	-26.4%	273.4%	18.2%
P/B Portf4	44.6%	-0.1%	22.8%	65.2%	33.5%	-13.3%	54.1%	-33.3%	-25.2%	-24.1%	62.5%	30.8%	40.8%	44.0%	-26.6%	275.5%	18.4%
P/B Portf5	32.0%	8.0%	34.5%	36.6%	57.2%	-17.3%	163.2%	-51.7%	-40.5%	-38.9%	89.4%	14.7%	30.9%	17.3%	-23.4%	312.1%	20.8%

Table 10-40 P/B. Return portfolio (equally weighted) - Return market

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/B Portf1	72.0%	-2.7%	-3.2%	7.6%	-18.6%	-8.4%	-46.7%	52.4%	30.8%	12.6%	44.5%	25.6%	23.0%	1.6%	3.0%	193.4%	12.9%
P/B Portf2	42.1%	-5.4%	-18.1%	8.6%	-14.7%	-9.9%	-58.4%	34.3%	17.5%	2.5%	32.7%	13.6%	16.6%	-1.6%	2.1%	61.9%	4.1%
P/B Portf3	35.4%	-14.7%	0.6%	1.7%	-8.6%	-13.9%	-39.2%	26.8%	17.0%	-1.9%	23.1%	10.1%	10.4%	-2.0%	-2.2%	42.6%	2.8%
P/B Portf4	9.0%	-8.8%	-2.4%	21.6%	-1.7%	-12.7%	-16.1%	-2.4%	0.4%	-3.7%	27.6%	14.2%	13.6%	8.5%	-2.3%	44.7%	3.0%
P/B Portf5	-3.6%	-0.8%	9.3%	-6.9%	22.1%	-16.8%	93.1%	-20.8%	-14.9%	-18.5%	54.5%	-1.9%	3.8%	-18.1%	0.8%	81.3%	5.4%

Table 10-41 P/B. Realized returns (equally weighted) - required returns. (Return equally weighted portfolio - (Rf + (Beta Portfolio)*(Rm-Rf)))

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/B Portf1	81.2%	-2.9%	2.6%	22.9%	-7.9%	-10.1%	-16.0%	26.4%	18.4%	3.9%	54.4%	31.8%	32.2%	7.5%	-6.9%	237.4%	15.8%
P/B Portf2	57.9%	-5.5%	-12.5%	20.2%	-10.2%	-11.2%	-40.1%	10.9%	10.0%	-7.4%	42.5%	18.9%	27.4%	5.2%	-7.1%	99.1%	6.6%
P/B Portf3	40.8%	-14.6%	5.0%	17.2%	1.7%	-15.4%	-25.2%	12.2%	7.4%	-10.4%	33.4%	14.7%	20.9%	6.7%	-9.9%	84.5%	5.6%
P/B Portf4	9.7%	-8.9%	1.6%	34.7%	5.4%	-13.9%	3.7%	9.5%	-1.8%	-7.8%	31.1%	15.3%	18.9%	11.9%	-7.9%	101.3%	6.8%
P/B Portf5	3.3%	-0.6%	16.7%	10.6%	27.9%	-18.0%	90.4%	-0.1%	-9.4%	-21.4%	64.6%	0.6%	10.2%	-13.0%	-3.0%	158.9%	10.6%

Table 10-42 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		15.8%	6.6%	5.6%	6.7%	10.6%
Standard deviation		0.066	0.061	0.046	0.035	0.077
Lower conf level		0.038	-0.050	-0.032	0.002	-0.027
Upper conf level		0.295	0.188	0.150	0.139	0.270
One-sided smallest figure		0.054	-0.032	-0.019	0.012	-0.011
One-sided largest figure		0.272	0.167	0.134	0.127	0.241

Table 10-43 P/B. Return portfolio (value weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/B Portf1	103.6%	1.5%	26.7%	61.4%	12.7%	-11.9%	4.6%	9.7%	7.0%	2.4%	64.5%	39.3%	45.7%	37.7%	-19.2%	385.6%	25.7%
P/B Portf2	68.7%	3.9%	10.0%	51.4%	20.9%	-17.0%	13.4%	10.5%	13.6%	-1.9%	36.3%	20.4%	26.2%	37.3%	-20.2%	273.4%	18.2%
P/B Portf3	64.3%	-0.1%	14.7%	43.2%	32.1%	-10.5%	14.7%	5.3%	-10.9%	-22.5%	14.7%	22.1%	33.8%	54.2%	-35.1%	219.8%	14.7%
P/B Portf4	30.4%	4.8%	18.9%	46.8%	30.6%	1.4%	17.3%	-31.4%	-25.7%	-22.8%	57.3%	23.3%	39.2%	28.8%	-31.0%	188.1%	12.5%
P/B Portf5	22.2%	20.2%	27.0%	44.3%	43.2%	8.0%	137.5%	-55.2%	-46.3%	-31.5%	18.2%	21.3%	7.6%	41.2%	-21.7%	236.1%	15.7%

Table 10-44 P/B. Return portfolio (equally weighted) - Return market

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/B Portf1	72.0%	-2.7%	-3.2%	7.6%	-18.6%	-8.4%	-46.7%	52.4%	30.8%	12.6%	44.5%	25.6%	23.0%	1.6%	3.0%	193.4%	12.9%
P/B Portf2	42.1%	-5.4%	-18.1%	8.6%	-14.7%	-9.9%	-58.4%	34.3%	17.5%	2.5%	32.7%	13.6%	16.6%	-1.6%	2.1%	61.9%	4.1%
P/B Portf3	35.4%	-14.7%	0.6%	1.7%	-8.6%	-13.9%	-39.2%	26.8%	17.0%	-1.9%	23.1%	10.1%	10.4%	-2.0%	-2.2%	42.6%	2.8%
P/B Portf4	9.0%	-8.8%	-2.4%	21.6%	-1.7%	-12.7%	-16.1%	-2.4%	0.4%	-3.7%	27.6%	14.2%	13.6%	8.5%	-2.3%	44.7%	3.0%
P/B Portf5	-3.6%	-0.8%	9.3%	-6.9%	22.1%	-16.8%	93.1%	-20.8%	-14.9%	-18.5%	54.5%	-1.9%	3.8%	-18.1%	0.8%	81.3%	5.4%

Table 10-45 P/B. Realized returns (value weighted) - Required returns. (Return value weighted portfolio - (Rf + (Beta Portfolio)(Rm-Rf)))*

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/B Portf1	63.1%	-7.4%	4.0%	28.4%	-17.4%	-11.5%	-59.9%	12.4%	16.4%	19.7%	35.6%	24.2%	18.3%	2.4%	4.8%	133.2%	8.9%
P/B Portf2	38.8%	-5.4%	-18.1%	4.3%	-12.7%	-16.1%	-41.9%	18.1%	25.3%	11.4%	-1.3%	7.8%	0.4%	5.4%	3.3%	19.2%	1.3%
P/B Portf3	14.8%	-8.8%	-12.0%	-1.2%	-0.6%	-10.8%	-56.8%	1.7%	-1.2%	-10.0%	-18.2%	8.2%	12.1%	15.0%	-7.3%	-75.0%	-5.0%
P/B Portf4	-13.1%	-4.0%	-7.1%	11.3%	-3.0%	1.5%	-39.5%	33.2%	-11.6%	-5.7%	10.8%	3.9%	11.5%	-13.7%	-9.8%	-35.3%	-2.4%
P/B Portf5	-9.6%	11.6%	3.2%	-1.4%	1.3%	9.5%	35.7%	1.1%	-3.6%	-4.7%	-10.4%	-5.4%	-23.7%	10.9%	3.9%	18.3%	1.2%

Table 10-46 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		8.9%	1.4%	-5.1%	-2.4%	1.2%
Standard deviation		0.069	0.048	0.043	0.040	0.033
Lower conf level		-0.052	-0.082	-0.145	-0.101	-0.049
Upper conf level		0.219	0.106	0.026	0.055	0.081
One-sided smallest figure		-0.025	-0.066	-0.127	-0.089	-0.041
One-sided largest figure		0.198	0.091	0.015	0.042	0.069

Table 10-47 P/B. Equally weighted. (Abnormal return for equally weighted portfolio1 - Abnormal return for equally weighted portfolio5)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/B P1 - P5	77.9%	-2.3%	-14.1%	12.4%	-35.8%	7.8%	-106.4%	26.5%	27.8%	25.3%	-10.2%	31.3%	22.0%	20.5%	-4.0%	78.6%	5.2%

Table 10-48 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		5.3%
Standard deviation		0.100
Lower conf level		-0.154
Upper conf level		0.235
One-sided smallest figure		-0.120
One-sided largest figure		0.209

Table 10-49 P/B. Value weighted. (Abnormal return for value weighted portfolio1 - Abnormal return for value weighted portfolio5)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/B P1 - P5	72.7%	-19.0%	0.8%	29.8%	-18.7%	-20.9%	-95.5%	11.4%	20.0%	24.3%	46.0%	29.7%	42.0%	-8.5%	0.8%	114.8%	7.7%

Table 10-50 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		7.6%
Standard deviation		0.099
Lower conf level		-0.128
Upper conf level		0.255
One-sided smallest figure		-0.094
One-sided largest figure		0.229

10.6. Price/sales

Table 10-51 P/S. Not riskadjusted portfolio returns (equally weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/S Portf1	81.1%	-7.7%	17.3%	36.1%	19.5%	-17.0%	9.0%	2.0%	-16.2%	-37.5%	49.9%	20.4%	28.2%	32.6%	-32.8%	184.9%	12.3%
P/S Portf2	92.7%	-1.7%	14.9%	50.4%	14.6%	-10.5%	24.4%	-15.6%	-9.0%	-26.4%	48.7%	31.0%	50.1%	22.5%	-29.3%	256.8%	17.1%
P/S Portf3	82.4%	-0.4%	16.3%	61.6%	34.8%	-18.8%	36.0%	-6.9%	-8.2%	-14.9%	47.9%	24.1%	39.2%	29.1%	-25.1%	297.1%	19.8%
P/S Portf4	38.9%	10.2%	29.2%	52.2%	58.0%	-10.2%	67.4%	-18.2%	-25.2%	-16.3%	80.7%	33.6%	24.2%	30.4%	-15.2%	339.6%	22.6%
P/S Portf5	40.8%	1.4%	29.6%	40.6%	27.8%	-9.3%	178.1%	-30.4%	-22.5%	-23.0%	131.4%	30.9%	59.5%	54.0%	-21.9%	486.9%	32.5%

Table 10-52 P/S. Return portfolio (equally weighted) - Return market

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/S Portf1	45.5%	-16.4%	-7.9%	-7.4%	-15.7%	-16.4%	-61.1%	32.9%	9.4%	-17.1%	14.9%	3.8%	1.1%	-2.8%	-8.6%	-45.9%	-3.1%
P/S Portf2	57.0%	-10.5%	-10.3%	6.9%	-20.6%	-10.0%	-45.8%	15.3%	16.7%	-6.0%	13.8%	14.4%	23.0%	-12.9%	-5.1%	26.0%	1.7%
P/S Portf3	46.7%	-9.2%	-8.9%	18.1%	-0.4%	-18.3%	-34.2%	24.0%	17.4%	5.5%	13.0%	7.6%	12.1%	-6.4%	-0.9%	66.2%	4.4%
P/S Portf4	3.3%	1.5%	3.9%	8.6%	22.8%	-9.6%	-2.8%	12.7%	0.4%	4.1%	45.7%	17.1%	-2.9%	-5.1%	9.1%	108.8%	7.3%
P/S Portf5	5.1%	-7.4%	4.4%	-3.0%	-7.4%	-8.8%	107.9%	0.5%	3.1%	-2.6%	96.4%	14.4%	32.4%	18.6%	2.3%	256.1%	17.1%

Table 10-53 P/S. Realized returns (equally weighted) - required returns. (Return equally weighted portfolio - (Rf + (Beta Portfolio)(Rm-Rf)))*

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/S Portf1	59.5%	-16.7%	-2.4%	4.5%	-7.7%	-17.9%	-35.1%	11.4%	4.7%	-21.3%	25.2%	7.0%	11.0%	3.7%	-17.5%	8.4%	0.6%
P/S Portf2	68.1%	-10.5%	-6.7%	21.7%	-9.1%	-11.3%	-25.3%	3.3%	13.2%	-9.0%	25.0%	19.1%	29.8%	-3.8%	-12.9%	91.6%	6.1%
P/S Portf3	49.5%	-9.1%	-4.3%	28.1%	9.1%	-19.5%	-19.1%	15.8%	8.8%	-3.3%	20.6%	10.0%	18.7%	-4.4%	-7.0%	94.0%	6.3%
P/S Portf4	10.5%	1.6%	8.6%	20.3%	26.5%	-10.8%	9.4%	6.5%	-4.2%	-3.1%	50.5%	20.8%	3.6%	-1.7%	2.8%	141.4%	9.4%
P/S Portf5	8.6%	-7.5%	12.2%	17.9%	-1.0%	-10.7%	109.4%	21.6%	0.4%	-11.1%	105.0%	19.1%	43.3%	25.4%	-2.4%	330.3%	22.0%

Table 10-54 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		0.5%	6.1%	6.2%	9.4%	22.1%
Standard deviation		0.057	0.059	0.047	0.039	0.095
Lower conf level		-0.101	-0.044	-0.026	0.026	0.054
Upper conf level		0.122	0.185	0.160	0.176	0.417
One-sided smallest figure		-0.085	-0.030	-0.013	0.036	0.076
One-sided largest figure		0.102	0.161	0.143	0.161	0.385

Table 10-55 P/S. Return portfolio (value weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/S Portf1	63.1%	-7.3%	11.6%	48.4%	57.4%	-18.9%	3.0%	9.4%	-5.7%	-55.1%	41.7%	20.4%	23.5%	55.7%	-40.4%	206.8%	13.8%
P/S Portf2	76.7%	-6.1%	15.6%	42.7%	10.0%	-4.4%	50.9%	-6.1%	-26.5%	-30.4%	34.8%	21.6%	50.2%	27.0%	-35.4%	220.6%	14.7%
P/S Portf3	60.7%	0.5%	12.7%	50.6%	35.5%	-14.0%	8.3%	-20.2%	-6.0%	-25.6%	25.8%	20.2%	39.0%	48.3%	-31.9%	204.0%	13.6%
P/S Portf4	28.9%	20.3%	19.7%	59.8%	47.2%	-3.9%	20.9%	-47.4%	-48.2%	-7.3%	39.4%	11.3%	16.3%	21.6%	-12.1%	166.5%	11.1%
P/S Portf5	15.4%	20.0%	34.4%	32.5%	31.4%	14.2%	163.3%	15.5%	-17.7%	-22.2%	17.8%	33.6%	42.7%	34.6%	-23.3%	392.4%	26.2%

Table 10-56 P/S. Return portfolio (equally weighted) - Return market

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/S Portf1	45.5%	-16.4%	-7.9%	-7.4%	-15.7%	-16.4%	-61.1%	32.9%	9.4%	-17.1%	14.9%	3.8%	1.1%	-2.8%	-8.6%	-45.9%	-3.1%
P/S Portf2	57.0%	-10.5%	-10.3%	6.9%	-20.6%	-10.0%	-45.8%	15.3%	16.7%	-6.0%	13.8%	14.4%	23.0%	-12.9%	-5.1%	26.0%	1.7%
P/S Portf3	46.7%	-9.2%	-8.9%	18.1%	-0.4%	-18.3%	-34.2%	24.0%	17.4%	5.5%	13.0%	7.6%	12.1%	-6.4%	-0.9%	66.2%	4.4%
P/S Portf4	3.3%	1.5%	3.9%	8.6%	22.8%	-9.6%	-2.8%	12.7%	0.4%	4.1%	45.7%	17.1%	-2.9%	-5.1%	9.1%	108.8%	7.3%
P/S Portf5	5.1%	-7.4%	4.4%	-3.0%	-7.4%	-8.8%	107.9%	0.5%	3.1%	-2.6%	96.4%	14.4%	32.4%	18.6%	2.3%	256.1%	17.1%

Table 10-57 P/S. Realized returns (value weighted) - Required returns. (Return value weighted portfolio - (Rf + (Beta Portfolio)(Rm-Rf)))*

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/S Portf1	21.0%	-16.3%	-13.8%	11.1%	23.8%	-18.3%	-53.6%	11.5%	7.2%	-31.2%	2.1%	5.1%	-1.9%	12.0%	-15.8%	-57.2%	-3.8%
P/S Portf2	34.0%	-14.8%	-12.7%	-3.7%	-25.2%	-3.3%	-31.9%	1.7%	-11.5%	3.9%	-0.7%	2.6%	24.8%	-3.7%	-14.1%	-54.5%	-3.6%
P/S Portf3	13.1%	-8.7%	-13.2%	9.2%	2.1%	-13.6%	-57.5%	-6.8%	3.9%	-14.6%	-7.7%	5.9%	13.5%	8.7%	-5.0%	-70.6%	-4.7%
P/S Portf4	-11.0%	11.6%	-6.0%	6.7%	5.5%	-3.5%	-12.4%	2.7%	-8.5%	6.7%	0.3%	-5.7%	-8.5%	-9.5%	9.6%	-22.0%	-1.5%
P/S Portf5	-15.2%	11.2%	10.6%	-5.1%	-7.8%	14.1%	57.5%	34.0%	-20.2%	-14.9%	-13.8%	18.1%	29.4%	0.4%	0.2%	98.5%	6.6%

Table 10-58 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		-3.8%	-3.7%	-4.7%	-1.5%	6.5%
Standard deviation		0.052	0.042	0.043	0.020	0.054
Lower conf level		-0.146	-0.115	-0.140	-0.054	-0.034
Upper conf level		0.058	0.049	0.029	0.025	0.177
One-sided smallest figure		-0.128	-0.104	-0.122	-0.047	-0.020
One-sided largest figure		0.045	0.034	0.020	0.018	0.157

Table 10-59 P/S. Equally weighted. (Abnormal return for equally weighted portfolio1 - Abnormal return for equally weighted portfolio5)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/S P1 - P5	50.8%	-9.2%	-14.6%	-13.4%	-6.7%	-7.2%	-144.5%	-10.2%	4.4%	-10.1%	-79.8%	-12.1%	-32.3%	-21.7%	-15.2%	-321.9%	-21.5%

Table 10-60 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		-21.4%
Standard deviation		0.107
Lower conf level		-0.444
Upper conf level		-0.025
One-sided smallest figure		-0.402
One-sided largest figure		-0.053

Table 10-61 P/S. Value weighted. (Abnormal return for value weighted portfolio1 - Abnormal return for value weighted portfolio5)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/S P1 - P5	36.2%	-27.5%	-24.3%	16.1%	31.6%	-32.4%	-111.2%	-22.5%	27.4%	-16.4%	15.8%	-12.9%	-31.3%	11.7%	-15.9%	-155.7%	-10.4%

Table 10-62 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		-10.2%
Standard deviation		0.093
Lower conf level		-0.295
Upper conf level		0.063
One-sided smallest figure		-0.261
One-sided largest figure		0.042

10.7. Dividend yield

Table 10-63 DY. Not riskadjusted portfolio returns (equally weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
DY Portf1	90.5%	10.7%	16.1%	41.4%	49.3%	-2.8%	103.1%	-37.0%	-28.3%	-20.0%	32.6%	22.9%	33.9%	45.2%	-25.0%	332.7%	22.2%
DY Portf2	59.2%	-1.7%	22.0%	48.4%	25.8%	-10.2%	27.6%	5.2%	-7.8%	-13.2%	37.6%	25.6%	30.8%	38.1%	-19.6%	267.6%	17.8%
DY Portf3	60.8%	0.5%	14.6%	39.4%	20.8%	-11.8%	16.0%	6.1%	4.4%	-18.7%	31.4%	33.0%	47.4%	44.1%	-24.5%	263.3%	17.6%
DY Portf4	70.8%	3.2%	15.3%	55.3%	27.9%	-18.2%	54.4%	18.1%	10.9%	-16.5%	25.3%	30.0%	31.9%	33.1%	-26.8%	314.8%	21.0%
DY Portf5	56.2%	1.0%	24.8%	58.4%	24.1%	-19.4%	22.5%	11.4%	1.6%	-18.2%	48.6%	29.6%	35.1%	42.3%	-25.7%	292.2%	19.5%

Table 10-64 DY. Return portfolio (equally weighted) - Return market

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
DY Portf1	54.9%	1.9%	-9.1%	-2.1%	14.1%	-2.3%	32.9%	-6.1%	-2.7%	0.4%	-2.3%	6.3%	6.8%	9.8%	-0.7%	101.8%	6.8%
DY Portf2	23.6%	-10.5%	-3.2%	4.8%	-9.3%	-9.7%	-42.5%	36.1%	17.8%	7.2%	2.6%	9.0%	3.6%	2.6%	4.7%	36.8%	2.5%
DY Portf3	25.1%	-8.3%	-10.6%	-4.1%	-14.4%	-11.2%	-54.2%	37.0%	30.0%	1.7%	-3.6%	16.4%	20.3%	8.6%	-0.3%	32.4%	2.2%
DY Portf4	35.2%	-5.6%	-9.9%	11.8%	-7.3%	-17.7%	-15.8%	49.1%	36.5%	3.9%	-9.6%	13.4%	4.8%	-2.3%	-2.6%	83.9%	5.6%
DY Portf5	20.6%	-7.8%	-0.4%	14.9%	-11.1%	-18.9%	-47.7%	42.3%	27.2%	2.2%	13.6%	13.1%	8.0%	6.8%	-1.5%	61.4%	4.1%

Table 10-65 DY. Realized returns (equally weighted) - required returns. (Return equally weighted portfolio - (Rf + (Beta Portfolio)*(Rm-Rf)))

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
DY Portf1	59.2%	2.0%	-2.1%	9.0%	20.8%	-3.4%	25.1%	5.4%	-6.5%	-6.7%	3.0%	11.8%	12.4%	18.0%	-6.0%	142.2%	9.5%
DY Portf2	32.4%	-10.1%	2.2%	20.2%	-0.4%	-11.1%	-14.8%	13.6%	2.9%	-3.3%	14.8%	14.5%	13.9%	7.1%	-3.0%	79.0%	5.3%
DY Portf3	33.7%	-8.1%	-6.7%	8.0%	-9.0%	-13.3%	-35.8%	9.2%	15.8%	-11.8%	7.4%	21.9%	30.8%	19.2%	-7.7%	53.5%	3.6%
DY Portf4	46.0%	-5.6%	-2.7%	26.2%	1.0%	-18.6%	11.3%	22.6%	19.0%	-9.4%	4.8%	18.7%	12.1%	-0.1%	-9.8%	115.5%	7.7%
DY Portf5	29.2%	-7.5%	5.8%	30.2%	-1.9%	-20.5%	-17.9%	17.3%	9.8%	-11.6%	30.0%	22.6%	16.3%	11.8%	-10.8%	103.0%	6.9%

Table 10-66 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		9.5%	5.3%	3.6%	7.7%	6.8%
Standard deviation		0.043	0.032	0.047	0.042	0.044
Lower conf level		0.021	-0.009	-0.057	-0.003	-0.017
Upper conf level		0.188	0.117	0.129	0.160	0.154
One-sided smallest figure		0.031	0.000	-0.042	0.008	-0.004
One-sided largest figure		0.171	0.106	0.113	0.148	0.140

Table 10-67 DY. Return portfolio (value weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
DY Portf1	24.1%	21.0%	25.2%	46.7%	48.2%	18.9%	144.9%	-52.7%	-47.3%	-19.0%	10.8%	6.2%	12.7%	48.5%	-7.6%	280.7%	18.7%
DY Portf2	41.0%	-2.2%	15.7%	47.3%	16.9%	-10.4%	8.3%	13.3%	-21.6%	-21.2%	15.9%	21.2%	24.9%	27.1%	-26.7%	149.2%	9.9%
DY Portf3	35.8%	7.2%	18.9%	43.7%	27.9%	-11.2%	11.7%	8.5%	9.0%	-24.4%	16.2%	18.1%	20.9%	12.9%	-28.1%	167.3%	11.2%
DY Portf4	32.6%	10.1%	13.2%	48.7%	24.8%	-12.1%	12.3%	12.6%	1.1%	-20.6%	31.4%	21.5%	27.0%	35.9%	-27.3%	211.1%	14.1%
DY Portf5	58.3%	-2.6%	31.4%	63.2%	26.4%	-16.5%	37.7%	18.0%	8.0%	-22.3%	43.2%	34.6%	30.8%	86.7%	-26.0%	370.7%	24.7%

Table 10-68 DY. Return portfolio (equally weighted) - Return market

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
DY Portf1	54.9%	1.9%	-9.1%	-2.1%	14.1%	-2.3%	32.9%	-6.1%	-2.7%	0.4%	-2.3%	6.3%	6.8%	9.8%	-0.7%	101.8%	6.8%
DY Portf2	23.6%	-10.5%	-3.2%	4.8%	-9.3%	-9.7%	-42.5%	36.1%	17.8%	7.2%	2.6%	9.0%	3.6%	2.6%	4.7%	36.8%	2.5%
DY Portf3	25.1%	-8.3%	-10.6%	-4.1%	-14.4%	-11.2%	-54.2%	37.0%	30.0%	1.7%	-3.6%	16.4%	20.3%	8.6%	-0.3%	32.4%	2.2%
DY Portf4	35.2%	-5.6%	-9.9%	11.8%	-7.3%	-17.7%	-15.8%	49.1%	36.5%	3.9%	-9.6%	13.4%	4.8%	-2.3%	-2.6%	83.9%	5.6%
DY Portf5	20.6%	-7.8%	-0.4%	14.9%	-11.1%	-18.9%	-47.7%	42.3%	27.2%	2.2%	13.6%	13.1%	8.0%	6.8%	-1.5%	61.4%	4.1%

Table 10-69 DY. Realized returns (value weighted) - Required returns. (Return value weighted portfolio - (Rf + (Beta Portfolio)(Rm-Rf)))*

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
DY Portf1	-12.7%	12.2%	0.0%	-6.3%	4.6%	20.2%	44.0%	2.0%	-9.3%	-1.7%	-23.9%	-4.9%	-19.2%	17.8%	17.2%	40.0%	2.7%
DY Portf2	6.3%	-10.9%	-6.9%	16.6%	-13.1%	-9.7%	-19.7%	14.9%	-22.2%	-16.2%	-14.4%	7.4%	7.1%	-15.4%	0.6%	-75.5%	-5.0%
DY Portf3	-2.2%	-1.6%	-8.0%	2.2%	-8.0%	-11.7%	-53.7%	4.7%	18.6%	-12.9%	-16.5%	2.9%	-5.7%	-12.0%	-1.4%	-105.5%	-7.0%
DY Portf4	-7.9%	1.3%	-13.3%	5.4%	-6.3%	-11.4%	-44.3%	11.6%	8.4%	-7.6%	-4.8%	6.5%	2.3%	-3.5%	-10.4%	-74.3%	-5.0%
DY Portf5	11.2%	-11.3%	6.5%	24.1%	-6.9%	-17.1%	-10.3%	21.0%	18.7%	-14.2%	22.8%	23.9%	5.1%	52.8%	-0.4%	126.1%	8.4%

Table 10-70 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		2.6%	-5.0%	-7.1%	-5.0%	8.4%
Standard deviation		0.043	0.032	0.039	0.034	0.048
Lower conf level		-0.056	-0.110	-0.155	-0.123	-0.007
Upper conf level		0.114	0.014	-0.002	0.009	0.183
One-sided smallest figure		-0.045	-0.102	-0.140	-0.109	0.007
One-sided largest figure		0.099	0.003	-0.011	0.002	0.167

Table 10-71 DY. Equally weighted. (Abnormal return for equally weighted portfolio1 - Abnormal return for equally weighted portfolio5)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
DY P1 - P5	30.0%	9.5%	-7.9%	-21.2%	22.7%	17.0%	43.0%	-11.9%	-16.3%	4.8%	-27.0%	-10.9%	-3.8%	6.2%	4.8%	39.2%	2.6%

Table 10-72 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		2.6%
Standard deviation		0.049
Lower conf level		-0.067
Upper conf level		0.122
One-sided smallest figure		-0.053
One-sided largest figure		0.106

Table 10-73 DY. Value weighted. (Abnormal return for value weighted portfolio1 - Abnormal return for value weighted portfolio5)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
DY P1 - P5	-23.9%	23.5%	-6.5%	-30.4%	11.5%	37.3%	54.2%	-19.0%	-28.0%	12.5%	-46.8%	-28.8%	-24.3%	-35.1%	17.6%	-86.1%	-5.7%

Table 10-74 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		-5.9%
Standard deviation		0.075
Lower conf level		-0.201
Upper conf level		0.091
One-sided smallest figure		-0.179
One-sided largest figure		0.065

10.8. Free Cash Flow/CAPEX

Table 10-75 FCF/CAPEX. Not riskadjusted portfolio returns (equally weighted)

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
FCF/CAPEX Portf1			25.4%	41.6%	55.8%	-17.6%	67.6%	-15.6%	-6.4%	-19.5%	141.1%	28.9%	41.8%	41.0%	-23.0%	360.9%	27.8%
FCF/CAPEX Portf2			14.8%	31.9%	39.9%	-7.9%	50.2%	14.2%	3.2%	-18.1%	43.2%	30.7%	39.6%	39.4%	-22.6%	258.4%	19.9%
FCF/CAPEX Portf3			11.1%	57.4%	26.6%	-10.9%	35.0%	0.7%	0.7%	-19.9%	37.4%	30.8%	44.3%	27.9%	-25.5%	215.6%	16.6%
FCF/CAPEX Portf4			21.4%	41.1%	55.9%	-14.0%	58.5%	-17.6%	-12.8%	-14.7%	55.0%	28.4%	44.0%	35.8%	-23.6%	257.5%	19.8%
FCF/CAPEX Portf5			6.7%	47.7%	10.7%	-9.5%	59.5%	20.7%	-11.7%	-18.4%	75.8%	37.3%	30.8%	39.5%	-27.9%	261.2%	20.1%

Table 10-76 FCF/CAPEX. Return portfolio (equally weighted) - Return market

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
FCF/CAPEX Portf1			0.2%	-2.0%	20.6%	-17.1%	-2.6%	15.3%	19.2%	0.9%	106.1%	12.3%	14.7%	5.6%	1.3%	174.5%	13.4%
FCF/CAPEX Portf2			-10.4%	-11.6%	4.7%	-7.4%	-20.0%	45.2%	28.8%	2.3%	8.2%	14.1%	12.5%	4.0%	1.6%	72.0%	5.5%
FCF/CAPEX Portf3			-14.1%	13.9%	-8.6%	-10.4%	-35.2%	31.6%	26.3%	0.6%	2.5%	14.2%	17.1%	-7.5%	-1.2%	29.2%	2.2%
FCF/CAPEX Portf4			-3.9%	-2.4%	20.7%	-13.4%	-11.7%	13.4%	12.9%	5.7%	20.0%	11.9%	16.9%	0.4%	0.7%	71.1%	5.5%
FCF/CAPEX Portf5			-18.5%	4.1%	-24.5%	-8.9%	-10.6%	51.7%	13.9%	2.1%	40.8%	20.7%	3.7%	4.1%	-3.7%	74.8%	5.8%

Table 10-77 FCF/CAPEX. Realized returns (equally weighted) - required returns. (Return equally weighted portfolio - (Rf + (Beta Portfolio)*(Rm-Rf)))

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
FCF/CAPEX Portf1			5.8%	9.4%	28.3%	-19.1%	22.9%	7.6%	7.7%	-6.6%	116.0%	17.4%	21.5%	6.4%	-2.4%	214.8%	16.5%
FCF/CAPEX Portf2			-7.5%	5.7%	11.6%	-8.7%	8.5%	28.5%	13.4%	-8.6%	16.3%	16.6%	18.2%	10.5%	-5.5%	99.1%	7.6%
FCF/CAPEX Portf3			-8.6%	21.4%	-4.6%	-12.1%	-13.2%	16.4%	11.4%	-12.1%	13.1%	18.2%	26.8%	-1.1%	-4.4%	51.0%	3.9%
FCF/CAPEX Portf4			1.0%	9.9%	25.9%	-14.2%	-7.0%	2.9%	7.3%	-3.0%	31.8%	20.4%	25.5%	4.7%	-8.2%	97.1%	7.5%
FCF/CAPEX Portf5			-13.0%	18.5%	-15.6%	-10.4%	20.0%	38.6%	2.0%	-8.3%	52.7%	27.2%	16.0%	7.6%	-16.3%	119.0%	9.2%

Table 10-78 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		16.6%	7.7%	3.8%	7.4%	9.2%
Standard deviation		0.087	0.032	0.038	0.039	0.059
Lower conf level		0.030	0.016	-0.036	-0.001	-0.020
Upper conf level		0.357	0.137	0.113	0.152	0.213
One-sided smallest figure		0.044	0.025	-0.024	0.009	-0.003
One-sided largest figure		0.324	0.128	0.102	0.140	0.193

Table 10-79 FCF/CAPEX. Return portfolio (value weighted)

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
FCF/CAPEX Portf1			19.9%	19.9%	24.6%	-15.1%	75.6%	-1.2%	-10.5%	-26.3%	28.3%	29.2%	14.6%	24.9%	-30.5%	153.5%	11.8%
FCF/CAPEX Portf2			31.3%	28.7%	11.8%	4.8%	17.6%	-16.9%	-10.0%	-27.0%	30.0%	24.0%	18.8%	18.9%	-29.9%	102.0%	7.8%
FCF/CAPEX Portf3			16.6%	40.9%	49.7%	8.0%	8.5%	-25.4%	-26.3%	-23.4%	22.1%	2.6%	26.9%	40.0%	-8.2%	132.0%	10.2%
FCF/CAPEX Portf4			22.8%	66.9%	36.7%	-10.0%	163.6%	-17.8%	1.7%	-7.7%	20.1%	13.7%	38.1%	48.3%	-19.9%	356.4%	27.4%
FCF/CAPEX Portf5			5.2%	42.8%	17.2%	-4.2%	31.9%	14.6%	-39.4%	5.9%	69.1%	27.7%	41.8%	67.5%	-31.2%	248.9%	19.1%

Table 10-80 FCF/CAPEX. Return portfolio (equally weighted) - Return market

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
FCF/CAPEX Portf1			0.2%	-2.0%	20.6%	-17.1%	-2.6%	15.3%	19.2%	0.9%	106.1%	12.3%	14.7%	5.6%	1.3%	174.5%	13.4%
FCF/CAPEX Portf2			-10.4%	-11.6%	4.7%	-7.4%	-20.0%	45.2%	28.8%	2.3%	8.2%	14.1%	12.5%	4.0%	1.6%	72.0%	5.5%
FCF/CAPEX Portf3			-14.1%	13.9%	-8.6%	-10.4%	-35.2%	31.6%	26.3%	0.6%	2.5%	14.2%	17.1%	-7.5%	-1.2%	29.2%	2.2%
FCF/CAPEX Portf4			-3.9%	-2.4%	20.7%	-13.4%	-11.7%	13.4%	12.9%	5.7%	20.0%	11.9%	16.9%	0.4%	0.7%	71.1%	5.5%
FCF/CAPEX Portf5			-18.5%	4.1%	-24.5%	-8.9%	-10.6%	51.7%	13.9%	2.1%	40.8%	20.7%	3.7%	4.1%	-3.7%	74.8%	5.8%

Table 10-81 FCF/CAPEX. Realized returns (value weighted) - Required returns. (Return value weighted portfolio - (Rf + (Beta Portfolio)(Rm-Rf)))*

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
FCF/CAPEX Portf1			-9.7%	-18.1%	-18.5%	-15.3%	13.9%	12.5%	0.8%	-13.9%	-7.3%	17.4%	-14.6%	-18.4%	-9.1%	-80.2%	-6.2%
FCF/CAPEX Portf2			5.2%	-2.5%	-15.0%	5.7%	-8.5%	-5.6%	-15.9%	-12.9%	-4.4%	-3.4%	-3.7%	-11.1%	-5.8%	-78.0%	-6.0%
FCF/CAPEX Portf3			-7.3%	-4.4%	2.0%	8.9%	-44.9%	13.8%	-11.4%	-16.5%	-5.1%	-9.9%	7.2%	11.8%	18.3%	-37.4%	-2.9%
FCF/CAPEX Portf4			-6.0%	-3.9%	1.0%	-9.3%	52.8%	-6.4%	21.2%	7.2%	-14.2%	2.7%	10.4%	6.8%	5.9%	68.3%	5.3%
FCF/CAPEX Portf5			-18.9%	3.5%	-19.5%	-4.7%	-18.5%	34.1%	-22.9%	22.4%	29.4%	10.9%	19.2%	33.3%	-15.0%	53.2%	4.1%

Table 10-82 Realized return - Required return

		Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
N Bootstrap Sample		10000	10000	10000	10000	10000
Alpha (significans)		0.05	0.05	0.05	0.05	0.05
Confidence level		95%	95%	95%	95%	95%
Mean		-6.2%	-6.0%	-2.9%	5.2%	4.1%
Standard deviation		0.035	0.018	0.044	0.046	0.059
Lower conf level		-0.126	-0.095	-0.121	-0.026	-0.073
Upper conf level		0.009	-0.024	0.051	0.150	0.156
One-sided smallest figure		-0.116	-0.089	-0.106	-0.015	-0.055
One-sided largest figure		-0.002	-0.030	0.040	0.133	0.139

Table 10-83 FCF/CAPEX. Equally weighted. (Abnormal return for equally weighted portfolio1 - Abnormal return for equally weighted portfolio5)

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
FCF/CAPEX P1 - P5			18.8%	-9.1%	43.9%	-8.7%	2.9%	-31.0%	5.6%	1.7%	63.3%	-9.8%	5.5%	-1.2%	13.9%	95.8%	7.4%

Table 10-84 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		7.3%
Standard deviation		0.064
Lower conf level		-0.047
Upper conf level		0.209
One-sided smallest figure		-0.028
One-sided largest figure		0.184

Table 10-85 FCF/CAPEX. Value weighted. (Abnormal return for value weighted portfolio1 - Abnormal return for value weighted portfolio5)

			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
FCF/CAPEX P1 - P5			9.2%	-21.6%	1.1%	-10.6%	32.4%	-21.6%	23.7%	-36.2%	-36.7%	6.5%	-33.8%	-51.8%	5.9%	-133.4%	-10.3%

Table 10-86 Portfolio1 - Portfolio5

		Portfolio1 - Portfolio5
N Bootstrap Sample		10000
Alpha (significans)		0.05
Confidence level		95%
Mean		-10.3%
Standard deviation		0.069
Lower conf level		-0.237
Upper conf level		0.033
One-sided smallest figure		-0.216
One-sided largest figure		0.010

10.9. Time series of the financial ratios

Table 10-87Summery of data used to construct the descriptive statistic time series for each financial ratio

Average P/e. Equally Weighted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/e1	4.37	8.95	6.68	6.05	8.35	7.83	6.54	7.26	4.58	6.79	5.10	7.49	6.83	6.04	6.47	99.33	6.62
P/e2	10.26	18.10	11.41	8.90	13.40	14.04	11.95	12.02	9.30	11.87	10.25	13.27	13.35	13.26	13.50	184.89	12.33
P/e3	16.90	24.85	17.49	11.32	17.92	19.53	15.23	17.60	12.79	15.65	14.11	17.30	17.13	17.41	17.95	253.16	16.88
P/e4	23.39	34.87	26.77	18.15	24.81	30.29	22.09	34.93	21.73	25.96	19.19	23.18	24.07	24.32	24.20	377.96	25.20
P/e5	65.51	138.47	90.06	72.74	63.88	154.31	264.93	534.20	139.51	158.89	94.28	193.03	79.04	108.50	103.52	2260.90	150.73

Average MV/(FCF/std). Equally Weighted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
MV/(FCF/std)1			0.0003	0.0005	0.0008	0.0010	0.0010	0.0007	0.0007	0.0007	0.0007	0.0006	0.0006	0.0009	0.0010	0.0095	0.0007
MV/(FCF/std)2			0.0007	0.0010	0.0018	0.0024	0.0024	0.0019	0.0018	0.0018	0.0017	0.0015	0.0017	0.0026	0.0026	0.0238	0.0018
MV/(FCF/std)3			0.0012	0.0016	0.0028	0.0038	0.0039	0.0040	0.0038	0.0034	0.0031	0.0025	0.0030	0.0044	0.0044	0.0420	0.0032
MV/(FCF/std)4			0.0020	0.0027	0.0050	0.0073	0.0087	0.0149	0.0084	0.0075	0.0063	0.0050	0.0060	0.0078	0.0081	0.0896	0.0069
MV/(FCF/std)5			0.0109	0.0232	0.0216	0.0748	0.0647	0.2140	0.1181	0.0481	0.0828	0.0592	0.0455	0.0344	0.0343	0.8316	0.0640

Average EV/EBITDA. Equally Weighted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
EV/EBITDA1	2.76	3.07	3.18	2.63	3.84	4.74	3.89	4.45	3.02	4.45	3.41	4.03	4.60	4.28	5.05	57.40	3.83
EV/EBITDA2	5.05	5.16	4.59	4.06	6.00	7.00	6.27	7.16	5.52	7.05	5.68	6.04	6.91	7.10	7.87	91.46	6.10
EV/EBITDA3	6.47	6.67	6.08	5.55	7.80	9.42	8.89	10.27	8.54	9.95	7.62	7.85	8.57	9.32	9.92	122.91	8.19
EV/EBITDA4	8.45	8.01	8.71	8.57	11.19	12.95	12.71	17.68	14.53	13.74	11.55	11.37	11.91	12.34	13.42	177.11	11.81
EV/EBITDA5	19.77	17.46	24.66	320.35	49.58	74.12	44.30	114.00	154.80	163.45	47.18	1389.07	51.13	37.38	48.54	2555.79	170.39

Average P/B. Equally Weighted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/B1	0.51	0.86	0.79	0.77	0.93	1.00	0.79	0.77	0.80	0.77	0.60	0.89	0.85	0.96	1.09	12.40	0.83
P/B2	0.78	1.19	1.01	1.04	1.44	1.66	1.31	1.40	1.29	1.21	0.97	1.39	1.41	1.68	1.82	19.60	1.31
P/B3	1.03	1.47	1.26	1.33	1.86	2.30	1.86	2.33	1.88	1.73	1.37	1.84	1.94	2.42	2.76	27.39	1.83
P/B4	1.35	1.86	1.65	1.85	2.79	3.57	2.85	4.02	3.15	2.51	1.88	2.72	2.76	3.44	4.01	40.38	2.69
P/B5	3.40	3.29	3.13	4.06	5.30	8.16	6.83	12.89	8.39	8.60	4.12	6.23	6.22	9.30	10.80	100.73	6.72

Average P/S. Equally Weighted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/S1	0.16	0.23	0.19	0.25	0.31	0.24	0.28	0.27	0.21	0.14	0.24	0.29	0.41	0.44	0.35	4.04	0.27
P/S2	0.35	0.38	0.36	0.52	0.67	0.49	0.65	0.66	0.53	0.40	0.58	0.63	0.90	0.95	0.73	8.80	0.59
P/S3	0.60	0.62	0.56	0.91	1.06	0.88	1.34	1.33	1.03	0.69	1.10	1.15	1.50	1.57	1.18	15.52	1.03
P/S4	1.08	1.02	0.98	1.55	1.87	1.95	2.97	2.91	2.29	1.44	2.05	2.26	2.94	3.02	2.61	30.95	2.06
P/S5	69.95	30.57	100.56	48.67	16.11	56.86	120.45	59.34	36.77	18.54	239.37	241.14	1453.40	16.86	144.29	2652.89	176.86

Average DY. Equally Weighted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
DY1	1.20	0.83	1.18	1.26	1.03	0.78	0.92	0.59	0.79	1.01	1.42	1.24	1.14	1.12	0.98	15.51	1.03

DY2	2.03	1.47	2.10	2.36	1.89	1.60	1.97	1.84	2.01	2.05	2.61	2.38	2.26	1.99	1.82	30.38	2.03
DY3	2.78	1.99	2.75	2.97	2.49	2.21	2.79	2.70	2.91	2.89	3.63	3.37	3.02	2.66	2.41	41.58	2.77
DY4	3.86	2.72	3.46	3.95	3.14	2.96	3.66	3.84	3.75	3.90	4.94	4.14	3.89	3.45	3.10	54.77	3.65
DY5	6.77	4.46	6.02	6.36	5.00	5.58	5.84	5.75	6.32	6.27	7.22	7.52	7.34	6.29	4.77	91.48	6.10

Average FCF/CAPEX. Equally Weighted

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
FCF/CAPEX1			11.53	4.63	141.89	57.72	45.42	36.74	31.63	69.50	59.03	122.61	119.96	77.74	104.33	882.71	67.90
FCF/CAPEX2			3.05	2.00	2.25	2.28	2.03	2.39	3.23	3.32	4.76	4.84	6.38	6.29	6.49	49.31	3.79
FCF/CAPEX3			1.97	1.12	1.48	1.30	1.29	1.57	1.70	1.91	2.39	2.71	3.21	2.85	3.23	26.72	2.06
FCF/CAPEX4			1.46	0.62	0.86	0.72	0.78	0.91	0.87	1.07	1.56	1.66	1.86	1.60	1.76	15.74	1.21
FCF/CAPEX5			0.53	0.20	0.23	0.18	0.24	0.26	0.36	0.35	0.49	0.70	0.74	0.69	0.60	5.57	0.43

Average of the financial ratio P/e. (Value Weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/e1	4.28	7.91	6.09	5.99	8.14	8.40	7.15	7.99	5.73	6.66	5.23	9.44	7.82	6.43	7.77	105.03	7.00
P/e2	11.36	18.27	10.99	8.84	13.19	14.43	12.05	12.48	8.98	11.96	10.52	13.03	12.67	13.11	13.72	185.60	12.37
P/e3	17.92	25.68	18.11	11.40	19.10	19.94	14.74	17.05	12.51	15.23	14.11	17.63	17.81	17.16	18.61	257.01	17.13
P/e4	24.17	37.75	25.93	19.54	23.05	31.24	20.79	31.73	22.14	25.08	21.22	26.25	21.51	24.75	24.62	379.77	25.32
P/e5	45.82	75.66	52.31	30.72	39.94	127.84	53.09	187.57	49.14	113.09	53.15	72.98	38.75	82.92	45.33	1068.32	71.22

Average of the financial ratio MV/(FCF/std). (Value Weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
MV/(FCF/std)1			0.0003	0.0005	0.0010	0.0011	0.0011	0.0008	0.0008	0.0008	0.0009	0.0008	0.0005	0.0008	0.0009	0.0104	0.0008
MV/(FCF/std)2			0.0007	0.0009	0.0019	0.0024	0.0026	0.0019	0.0017	0.0018	0.0016	0.0015	0.0016	0.0025	0.0026	0.0238	0.0018
MV/(FCF/std)3			0.0010	0.0016	0.0028	0.0043	0.0036	0.0042	0.0041	0.0032	0.0035	0.0026	0.0032	0.0043	0.0046	0.0429	0.0033
MV/(FCF/std)4			0.0025	0.0033	0.0041	0.0085	0.0076	0.0156	0.0079	0.0078	0.0057	0.0045	0.0047	0.0067	0.0067	0.0857	0.0066
MV/(FCF/std)5			0.0068	0.0172	0.0100	0.0408	0.1055	0.0907	0.0849	0.0663	0.1062	0.0440	0.0561	0.0320	0.0375	0.6979	0.0537

Average of the financial ratio EV/EBITDA. (Value Weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
EV/EBITDA1	2.98	2.69	3.26	2.79	3.99	4.61	4.33	3.57	3.70	5.24	3.61	4.20	4.75	4.63	4.97	59.33	3.96
EV/EBITDA2	5.11	5.08	4.65	3.96	6.00	6.99	5.98	7.15	5.55	7.16	5.89	5.85	7.22	7.43	7.52	91.56	6.10
EV/EBITDA3	6.35	6.70	5.88	5.64	7.85	10.11	8.54	9.99	8.34	9.81	7.71	8.12	8.56	9.21	9.56	122.38	8.16
EV/EBITDA4	7.84	8.13	8.94	9.45	11.40	12.93	13.40	19.89	16.30	14.70	11.21	11.62	12.47	12.72	13.43	184.43	12.30
EV/EBITDA5	17.64	13.22	20.63	1798.82	24.53	42.07	24.16	46.46	26.03	42.00	41.73	37.60	40.05	30.28	26.68	2231.90	148.79

Average of the financial ratio P/B. (Value Weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/B1	0.53	0.85	0.82	0.82	0.92	1.07	0.93	0.91	0.92	0.91	0.70	1.00	0.84	0.91	1.06	13.18	0.88
P/B2	0.77	1.13	1.01	1.06	1.47	1.63	1.38	1.44	1.25	1.16	1.00	1.34	1.46	1.71	1.88	19.71	1.31
P/B3	1.04	1.48	1.23	1.25	1.87	2.33	1.92	2.12	1.87	1.69	1.34	1.78	1.89	2.48	3.02	27.30	1.82
P/B4	1.34	1.88	1.72	1.87	2.73	3.94	2.64	3.83	2.93	2.55	1.87	2.75	2.76	3.40	3.81	40.02	2.67
P/B5	3.59	3.79	3.68	4.15	5.06	7.47	7.53	14.50	7.33	5.43	4.52	5.26	5.35	8.83	9.92	96.41	6.43

Average of the financial ratio P/S. (Value Weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
P/S1	0.21	0.25	0.18	0.26	0.36	0.26	0.37	0.35	0.27	0.17	0.31	0.33	0.52	0.55	0.38	4.77	0.32
P/S2	0.36	0.38	0.35	0.53	0.63	0.49	0.73	0.68	0.48	0.44	0.60	0.61	0.87	0.94	0.76	8.83	0.59
P/S3	0.60	0.62	0.57	0.89	1.07	0.94	1.31	1.27	1.04	0.75	1.14	1.25	1.51	1.55	1.25	15.79	1.05
P/S4	1.07	1.10	1.07	1.67	1.80	2.02	3.53	3.13	2.06	1.40	2.11	2.53	2.95	2.89	2.48	31.81	2.12
P/S5	4.49	5.31	11.05	9.88	5.41	7.35	10.24	19.30	5.66	4.20	10.89	68.21	394.95	12.40	35.60	604.92	40.33

Average of the financial ratio DY. (Value Weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
DY1	0.96	0.94	1.07	1.05	1.05	0.87	0.79	0.33	0.67	0.86	1.42	1.55	1.08	1.10	1.01	14.74	0.98
DY2	2.01	1.55	2.00	2.40	1.85	1.61	1.88	1.71	1.72	1.95	2.26	2.52	2.19	2.00	1.87	29.53	1.97
DY3	2.72	1.96	2.75	2.87	2.48	2.24	2.87	2.67	2.86	2.88	3.69	3.42	3.10	2.67	2.51	41.69	2.78
DY4	3.67	2.74	3.59	3.91	3.14	2.92	3.59	3.68	3.64	4.01	5.05	4.09	3.82	3.56	3.21	54.61	3.64
DY5	5.34	4.38	5.26	6.75	4.37	4.60	5.23	5.33	5.41	5.47	7.21	6.01	5.32	5.03	4.11	79.83	5.32

Average of the financial ratio FCF/CAPEX. (Value Weighted)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	SUM	Average
FCF/CAPEX1			5.20	3.18	14.66	62.76	22.24	23.71	25.81	38.04	48.88	63.94	35.19	86.48	87.46	517.55	39.81
FCF/CAPEX2			3.44	2.02	2.13	2.28	1.99	2.49	2.82	3.10	4.03	4.30	5.55	6.15	5.54	45.84	3.53
FCF/CAPEX3			1.94	1.14	1.48	1.29	1.27	1.46	1.80	2.15	2.27	2.71	3.04	2.68	3.03	26.27	2.02
FCF/CAPEX4			1.64	0.53	0.82	0.72	0.77	0.99	0.81	1.04	1.50	1.73	1.91	1.62	1.74	15.81	1.22
FCF/CAPEX5			0.62	0.24	0.27	0.22	0.31	0.22	0.50	0.42	0.28	0.94	0.76	0.88	0.71	6.37	0.49