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WHAT WORKS ON EUROPEAN MARKETS

The Best Performing Investment Strategies

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AND TIM DU TOIT

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Dear Fellow Investor

Compared with the USA there have been few studies on **what works in investing in the European stock markets**. With this paper we would like to contribute and find **out what ratios would have given you market beating returns** in the European markets over the 12-year period from 13 June 1999 to 13 June 2011.

The ratios we tested were:

- Earnings yield,
- Free cash flow yield,
- Price-to-book,
- Price-to-sales,
- Piotroski F-Score,
- Return on invested capital (ROIC),
- Return on assets (ROA),
- Net debt,
- Relative strength / price index

We not only tested the past 12 months value of the ratios, but where it made sense, we also tested the 5-year average to see if it gave better returns.

When we found a ratio that showed strong out-performance we tested it together with other ratios to see if two ratios generated even more market outperformance.

We also tested two investment strategies, the **Magic Formula** (MF) and the **ERP5** strategy, for their ability to beat the market.

What we found mostly confirmed what other research studies found, but a **few results were really astounding**.

Single ratio results

If we averaged the return over large, medium, and small companies, the **best ratio was the price-to-book**, generating an average **compound annual return of 10.92%** compared with 2.25% for the market over the period. The **second-best ratio was the 12-month free cash flow yield** that generated a **compound annual return of 10.87%.**

For **small companies** the **best single ratio was the 6-month price index** which generated a compound annual return of 11.91%. The **second-best ratio was the 12-month price index**, generating a return of 10.32%.

For **medium sized companies** the **best ratio was price-to-book**, which generated an astounding compound return of 14.36% over the period. **Second best was the five-year average free cash flow**, generating a compound 12.83%.

For **large companies** the **best ratio was free cash flow yield**, leading to compound growth of 10.81%, with **earnings yield a close second** with a compound return of 10.64%.

Interesting to note is that with small companies, unlike with medium and large companies, valuation ratios did not lead to the best returns.

Of the two investment strategies we tested, **the ERP5 strategy beat the Magic Formula** for small (compound 12.95% compared with 7.33%), medium (compound 11.76% compared with 9.05%) and large companies (compound 8.60% compared with 8.39%).

Two-ratio results

What if we told you we found a **simple two-ratio method** you can use to select investments that led to a **23.5% per year compound return** (market was 2.25%) over the 12 years we tested? That is a total return of **1157.5% compared with the 30.54%** the market returned! That is what a **combination of the 6-month price index with the lowest price-to-book value** companies returned.

Very interesting was that the **10 best performing two-ratio strategies all had a momentum ratio** as one of the ratios.

This was hard for us to understand as classical value investors. We always thought buying a cheap, good company would give you market beating results. And the cheaper the company gets, the higher your returns would be. This strategy will give you market beating results, **but not nearly as good as buying companies where the share prices are already increasing**.

For example, the 11th best performing two-ratio strategy, 12-month free cash flow yield combined with price-to-book ratio, led to a total return of 713.7%.

Not bad.

But if you used the best performing strategy, your return would have been **11.6 times your initial capital compared with only 7.1 times** if you used the 11th best strategy!

The only reason we could think of why momentum leads to so much higher returns is because it **lets you avoid value traps**.

INTRODUCTION

This paper looks at what historical value ratios or financial ratios have the **highest probability of consistently beating the market**.

Considerable research has documented the use of individual ratios or combinations to create portfolios that outperform the market. One ratio that received a lot of attention in the past is the book-to-market investment strategy.

Studies by Lakonishok, Shleifer and Vishny (1994) and Fama and French (1992) have demonstrated that buying a portfolio of high book-to-market (low price-to-book ratio) companies results in market outperformance. Joseph Piotroski (2000) extended this research by creating his own Piotroski F-score; an accounting based 9-point scoring system that when used in combination with high book-to-market (low price to book) companies shows a consistent upward shift in distribution of returns.

Other authors focused on different ratios. **Joel Greenblatt focused on earnings yield and ROIC and** found that ranking US companies based on these measures and investing on a consistent basis in the top companies resulted in an outperformance of 23% compared with the benchmark

James O'Shaughnessy focused on different ratios, such as price-to-sales, and proved in his tests that these value ratios help create portfolios that outperform the US market on a consistent basis.

The studies above were performed using different datasets and periods, so it's not trivial to understand which ratios or combination of ratios leads to the most market outperformance.

The goal of this paper is to provide more clarity in this area and to help investors understand which ratios lead to the biggest market outperformance and which have no effect.

Finally, we combine the single ratios generating the highest market outperformance with a second ratio to determine if this increases market outperformance even more.

The problem of our emotions and the influence on our investments returns

In his book, ***'The Big Secret for the Small Investor'***, Joel Greenblatt wrote that the best performing stock mutual fund of the last decade earned more than 18% annually. This is impressive since the market, as measured by the S&P 500, was actually down close to 1% per year between 2000 and 2009. **Yet the average investor, in the same fund, managed to lose 11%** per year over those 10 years.

How is that possible?

After every period in which the fund did poorly, investors ran for the exits, and after every period in which the fund did well, investors piled in. The average investor managed to lose money in the best performing fund by buying and selling the fund at just the wrong times. Investors seem to forget that **even the best-performing fund managers go through long periods of significant underperformance**.

Our emotions and our behaviour are under the continuous influences of the media, and of course of other people. Emotions are simply a wrong guide to base investment decisions on. Where money is concerned, emotions regularly overcome rationality. This can also be seen in the market as stocks go up and down for no reason other than fear, greed, hope or despair.

In order to avoid your emotions influencing your investment decisions, you should invest using a strict standardized process; a proven system which you can rely on that removes emotions from the decision-making process.

Think of this system as the process or procedure that a doctor needs to follow when performing an operation. It does not guarantee success, but the procedure has proven its reliability over time and has a high probability of success.

The need to focus on the investment process with the highest probability of success, rather than the outcome, is critical when investing. This is because investment outcomes are probability based, and even if they have a high probability of success there is still a chance that they will be negative.

However, only if you invest using a system with a high probability of market beating returns over the long term do you have a high probability of being a successful investor.

And this is exactly what we would like to do with this paper.

Determine exactly **what ratios you should use when selecting your investments to give you the highest probability of substantially outperforming the market**. In order to do this, we looked at ratios based on historical financial data to see how effective each ratio is in generating market outperformance.

We did this using a computer database that can quickly and accurately process or screen a large number of companies, but more importantly, a computer has no emotions.

Once you have identified what ratios have a probability of outperforming the market, you can add them to the computerised stock screener to generate the names of companies that meet these ratios. This list is an excellent starting point for selecting market beating investment ideas.

METHODOLOGY

In the paper we only use historical accounting data and **no forecasts.** The reason being is that there is ample evidence that **forecasts cannot be relied on**. For example, in his excellent book, 'The New Contrarian Investment Strategies', David Dreman mentioned a study that used a sample of 67.375 analysts' quarterly estimates for companies listed on US stock exchanges.

The study found that the **average analysts' error was 40%,** and that the estimates were **misleading two-thirds** of the time!

The backtest universe and benchmark

Our backtest universe is a subset of companies in the Datastream database containing an average of about 1500 companies in the 17 country Eurozone market during our 12-year test period (13 June 1999 to 13 June 2011).

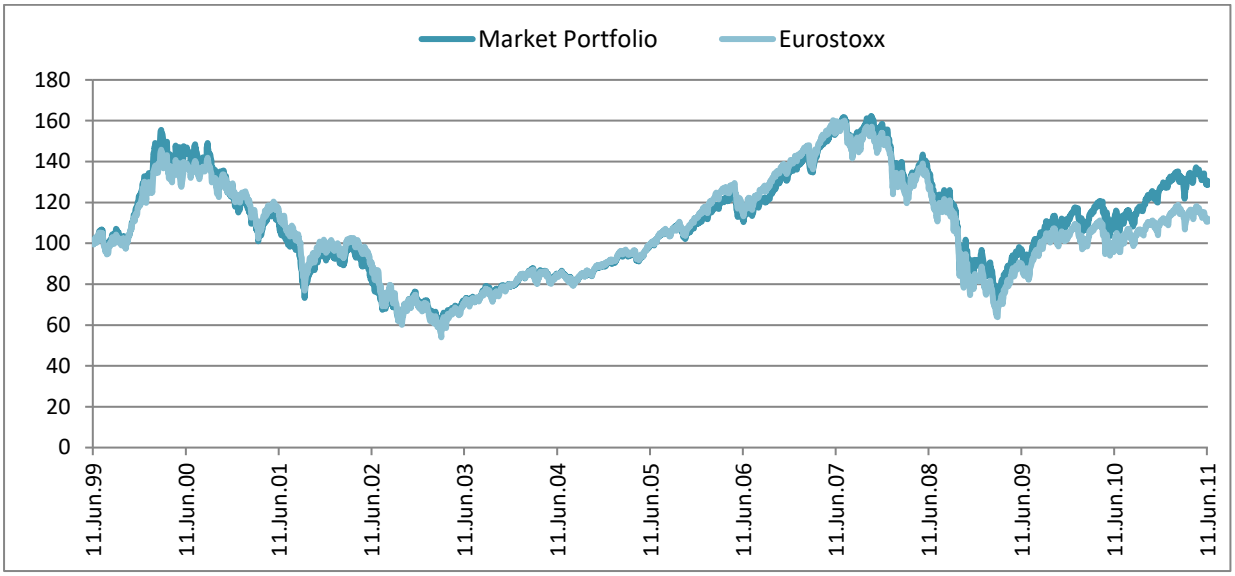
We **excluded** banks, insurance companies, investment funds, certain holdings companies, and REITS.

We **included** bankrupt companies to avoid any survivor bias and excluded companies with an average 30-day trading volume of less than €10 000. For bankrupt companies, or companies that were taken over, returns were calculated using the last stock market price available before the company was delisted.

In order to create a **market portfolio** to compare our results against - remember we excluded certain types of companies - we constructed a market portfolio based on the 250 most traded companies in our test universe, over the previous 30 days, weighted by trading volume in Euros.

Each year on 13 June the **market portfolio was reconstructed** with the then 250 most liquid companies, weighted by trading volume (average over the previous 30 days before 13 June).

As you can see below, our constructed market portfolio was closely correlated with the EURO STOXX index, a broad but liquid subset of the STOXX Europe 600 Index. Over the 12-year period of the study, the **market portfolio generated a return of 30.54 % or 2.25% pa**, dividends included.



Market portfolio compared to the EURO STOXX index

Not a good time to invest in stocks

The test period was most certainly not a good time to be invested in stocks.

The 12-year period we tested included a stock market bubble (1999), two recessions (2001, 2008-2009) and two bear markets (2001-2003, 2007-2009). In spite of all the substantial movements, over the whole period it was essentially a sideways market, as Vitaliy Katsenelson defined in his book, 'The Little Book of Sideways Markets'.

The following tables below show the movement of the market portfolio over the 12-year time period we tested:

Year	Market Return (%)
13/06/1999 - 13/06/2000	45.28
13/06/2000 - 13/06/2001	-24.44
13/06/2001 - 13/06/2002	-25.26
13/06/2002 - 13/06/2003	-12.94
13/06/2003 - 13/06/2004	18.88
13/06/2004 - 13/06/2005	17.17
13/06/2005 - 13/06/2006	11.22
13/06/2006 - 13/06/2007	39.54
13/06/2007 - 13/06/2008	-13.70
13/06/2008 - 13/06/2009	-27.39
13/06/2009 - 13/06/2010	15.15
13/06/2010 - 13/06/2011	15.55

Summary	*Market*	*EuroStoxx*
Total Return	30.54%	10.53%
Compound Annual Return	2.25%	0.91%
Standard Deviation	21.82%	23.09%
Correlation with EuroSoxx	0.932	1.000
Beta	0.898	1.000
Number of positive years	7	7
Number of negative years	5	5
Maximum Peak-to-Trough Decline	-63.39%	-62.98%

Holding periods and quintile tests

Each year, as with the market portfolio, all the **portfolios we tested were formed on 16 June**. We chose 16 June as most European companies have a December year-end and by this date all their previous year-end results would be available in the database.

The annual returns for our back test portfolios were calculated as the 12-month price change plus dividends received over the period. Returns were compounded on an annual basis. This means each

year the return of the portfolio (dividends included) would be reinvested (equally weighted) in the strategy the following year. The portfolios were all constructed on an equal-weighted basis.

In order to test the effectiveness of a strategy, we divided our **back test universe into five equal groups (quintiles),** according to the ratio we were testing. For example, when testing a low price-to-book (PB) value strategy, we ranked our back test universe from the cheapest (lowest PB) to the most expensive (highest PB) stocks.

The **cheapest 20% of companies were put in the first quintile (Q1),** the next in the second, and so on, with the 20 % of companies with the highest price-to-book value in the fifth quintile (Q5).

What was a good and bad ratio?

We defined a good ratio or strategy as one where:

- The top quintile (Q1) outperforms the bottom quintile (Q5) over the 12 years we back tested and
- There must be a linearity of returns among the quintiles (quintile one must outperform quintile 2 which must outperform quintile 3, up to quintile 5) over the 12 years we tested, and
- The strategy must also consistently outperform the market over time. We defined consistent outperformance when the first quintile (Q1) outperformed the market portfolio 60% or more of the time.

So, **in summary,** we are looking for ratios that increase the probability of positive returns, beat the market, and how strong or weak this probability is.

In order to determine if the size of the company has any effect on the effectiveness of a one factor test, we divided the back test universe into three groups based on of market capitalization:

- **Small Cap** - companies with a market capitalization between **15 million and 100 million Euro**.
- **Mid Cap** - companies with a market cap between **100 million and 1 billion Euro**.
- **Large Cap** - companies with a market capitalization **greater than 1 billion Euro**.

Compared with US studies, our Small Cap group can also be classified as Nano capitalization companies, and our Mid Cap group equivalent to US small capitalization companies.

Strategies – single factor

Using only one ratio we tested the following:

1 Valuation ratios (earnings yield, free cash flow yield, price-to-book ratio, and price-to-sales),

2 Fundamental or quality ratios (Piotroski F-score, ROIC, ROA, net debt ratio), and

3 Momentum ratios (price Index/ relative strength).

We also tested two investment strategies; the Magic Formula (MF) strategy developed by Joel Greenblatt and explained in his book, 'The Little Book that Still Beats the Market' and the ERP5 strategy developed by P. Vanstraceele & L Allaeys (2010). Our goal was to look at each ratio and determine if it is a strong or a weak contributor for generating market beating returns.

Combining the strategies – multiple ratios

When we tested single ratios the portfolios sizes were quite large. As our back test universe was quite large, with an average of 1500 companies, the average portfolio's size per quintile was around 300 companies. It is of course not practical to have a portfolio with such a large number of companies.

Thus, in the **two-ratio strategies** we tested, we formed portfolios with **30 to a maximum of 60 companies for each quintile**. We did this by taking the first quintile of the first ratio we tested (about 300 companies), sorted it by the second factor, and divided it into five quintile portfolios (300/5=60). By testing the two-ratios this way you have the added advantage of accurately identifying the stronger and weaker factor, as the first ratio is emphasized due to the inclusion of only its first quintile companies.

For the two-ratio tests, we did not split the universe into different market capitalization as in doing so we would not have been able to form portfolios with at least 30 to 60 companies.

RESULTS – SINGLE RATIO ANALYSIS – VALUATION RATIOS

Earnings Yield (EY)

We defined the earnings yield ratio (EY) as operating income / enterprise value. We also tested the ratio in two ways: trailing 12-month operating income divided by enterprise value, and 5-year average operating income divided by enterprise value. Thus, the lower the EY, the more investors are paying for operating income and the larger their expectations of future growth of the company.

EARNINGS YIELD 12 MONTHS

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	122.2%	94.2%	-22.3%	-26.8%	-42.3%
MID CAP (>100M AND <1000M)	235.7%	163.1%	72.3%	-33.4%	-38.9%
LARGE CAP (>1000M)	236.3%	87.6%	82.5%	68.8%	-6.4%

EARNINGS YIELD 5 YEAR AVERAGE

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	121.1%	42.7%	-26.8%	-41.4%	-30.4%
MID CAP (>100M AND <1000M)	291.1%	135.9%	-17.3%	-21.8%	-17.8%
LARGE CAP (>1000M)	186.2%	138.6%	98.0%	-0.2%	3.1%

Note: For the full test results go to appendix 2

As you can see, trailing 12-months EY is a strong ratio (as we defined it) over the test period. The returns in Q1 were higher than Q5 for all company sizes. It is interesting to note that the ratio led to substantially better performance with mid and large companies. Also, for large companies, Q1 outperformed the market more than 80%, but only 67% of the time with small companies.

Market outperformance was substantial, with Q1 for the mid and large companies outperforming the market by more than 8% per year (pa). Small companies did not perform as well, but still outperformed the market portfolio by more than 4.6% pa.

The 12-months EY was the **second-best single ratio strategy** to select large cap companies.

The 5-year average EY is not as strong a ratio as the one year. For all company sizes Q1 performed better than Q5, but the results were not linear with Q5 performing better than Q4 for all company sizes.

Click Here to see how (step by step) to implement an EBIT to EV investment strategy in your portfolio!

Price-to-Book

A stock with a low price-to-book (PB) ratio is cheap, based on the price of acquiring its book equity. This ratio does not take the earnings power of the company into consideration and relies on the assets and liabilities of the company being fairly valued. The price-to-book value was a favourite tool of Benjamin Graham and other value investors. In spite of its shortcomings, PB is a strong ratio in generating market outperformance, and also works well with other ratios as you will see later.

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	172.5%	75.4%	72.2%	-12.8%	-76.2%
MID CAP (>100M AND <1000M)	400.3%	134.4%	44.4%	-21.2%	-53.9%
LARGE CAP (>1000M)	203.6%	149.5%	83.8%	8.2%	-0.5%

Note: For the full test results go to appendix 2

Investors who believe PB is an important ratio when looking for bargains would be correct. It certainly is for the mid cap companies, with Q1 generating market outperformance of 12.1% pa, and Q5 underperforming the market by 8.5 % pa. For the other company sizes, the ratio is less strong. However, for all three company sizes it led to market outperformance between 66% and 75% of the time over the 12-year test period.

Of all the single ratios we tested, a low PB strategy applied to mid-cap companies led to the highest return of 400.3% over 12 years. That was nearly 370% better than the market portfolio. It did not work as well for large cap companies, returning only 203.6%, and was even less successful when applied to small companies, leading to a 172.5% return. Over the 12 years tested you would have been well rewarded if you used only a low price-to-book strategy.

Click Here to see exactly how to implement a low price to book value investment strategy - world-wide

Price-to-Sales

The price-to-sales (PSR) measures the market value of the company against its annual sales. Investors buy low PSR stocks because they believe companies are undervalued when they are not paying much for the sales the company generates. Also, PSR is a more stable ratio than EY, for example as sales fluctuate less than earnings, and it can be used to value companies that temporarily have no earnings.

In the early edition of James O'Shaughnessy's book, 'What works on Wall Street', he called the PSR the 'king of the valuation ratios' as it beat the returns of all the valuation ratios he tested. In later editions he changed this to other factors depending on the time period tested.

James Montier, in his 2008 paper, 'Joining the dark side: Pirates, Spies and Short Sellers', on the other hand, used the price-to-sales ratio to find overpriced companies that may be good candidates to sell short. A high PSR allows you to find companies whose valuation has lost all touch with reality.

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	49.9%	16.5%	27.7%	-1.3%	-40.8%
MID CAP (>100M AND <1000M)	191.2%	152.9%	60.4%	2.7%	-54.0%
LARGE CAP (>1000M)	165.0%	134.0%	81.9%	62.8%	-25.5%

Note: For the full test results go to appendix 2

As you can see, this is a strong ratio with linear returns for all three company sizes. However, it is not as effective with small companies as it only beat the market 58% of the time. Returns of Q1 were also not as high as some of the other single ratios we tested. This may be because sales do not automatically lead to profits, and thus this ratio may work better in combination with another factor; something we tested in the two-ratio strategies.

Free Cash Flow Yield

Free cash flow (FCF) can best be defined as the cash available from operations minus capital expenditure. It is the cash available to the company to pay dividends, make investments and buy back shares. We defined the free cash flow yield as cash from operations minus capital expenditure, divided by enterprise value. And we analysed the trailing 12-month FCF yield and the 5-year average FCF yield.

If you think about it, a high FCF yield should have strong predictive power over future returns. This may be because the market is less efficient when it comes to pricing free cash flow and its growth in the stock price. Another reason may be because FCF is more difficult to manipulate compared with earnings.

12 Month FCF yield

	Total return 13/06/1999-13/06/2011				
Market Cap	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15m and <100m)	186.0%	69.5%	1.8%	-18.3%	-51.8%
MID CAP (>100m and <1000m)	317.4%	107.9%	16.1%	-14.1%	-6.3%
LARGE CAP (>1000m)	242.8%	147.7%	59.8%	-1.8%	30.7%

As you can see, the 12-month trailing FCF yield is a strong ratio and it is very consistent. High FCF companies (Q1) outperform low FCF yield companies (Q5) consistently for all three market size companies, with the outperformance also completely linear over the five quintiles. Thus, FCF valuation really matters in separating the winners from the losers. This valuation ratio has a strong predictive power for the mid cap stocks, but less so for small companies.

5 Year Average FCF Yield

	Total return 13/06/1999-13/06/2011				
Market Cap	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15m and <100m)	113.0%	109.4%	-27.7%	12.5%	-49.2%
MID CAP (>100m and <1000m)	325.8%	138.4%	4.2%	-24.1%	-6.8%
LARGE CAP (>1000m)	171.2%	148.5%	108.2%	3.5%	12.7%

Note: For the full test results go to appendix 2

Even though using the 5-year average FCF yield on mid cap companies (third best single ratio we tested) over the test period would have given you a higher return than the 12-month FCF yield, the results for the other market size companies would have been a lot lower. As a ratio it is also not strong, with the results not being linear over the five quintiles. Q1 did, however, outperform Q5 by a substantial margin.

Click Here to see exactly how to implement a high Free Cash Flow Yield investment strategy in your portfolio!

RESULTS – SINGLE RATIO ANALYSIS – FUNDAMENTAL RATIOS

Return on invested capital (ROIC)

As a value investor we are sure you also believe that buying bad companies at very low prices is a perfectly viable strategy, provided of course, that the companies don't go bankrupt. But what about buying good companies that generate a **high return on invested capital without looking to see if the companies are over- or undervalued**? A lot of investors believe that this is a way to identify market beating investments as it measures how effectively a company invests shareholder's money.

Previous research shows this is not the case. In his book, 'What works on Wall Street', in chapter 14, James O'Shaughnessy tested return on equity using a decile analysis and found that stocks in the top decile (highest return on equity) were on average only mediocre investments underperforming the market. Surprisingly, decile two and three did considerably better than the market.

We defined ROIC as the past 12-months operating income divided by the sum of net working capital (current assets minus excess cash minus current liabilities) and net fixed assets (total assets minus current assets minus intangible assets). We tested ROIC over one year, as well as the 5-year average, and this is what we found.

12 MONTH ROIC

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	120.3%	64.2%	-8.2%	-15.8%	-56.7%
MID CAP (>100M AND <1000M)	82.6%	83.5%	139.5%	98.9%	-51.8%
LARGE CAP (>1000M)	69.5%	116.7%	116.9%	108.0%	24.9%

Note: For the full test results go to appendix 2

5 YEAR AVERAGE ROIC

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	200.2%	47.6%	131.4%	7.6%	-20.9%
MID CAP (>100M AND <1000M)	134.2%	159.4%	204.9%	168.0%	58.1%
LARGE CAP (>1000M)	69.9%	177.2%	92.2%	151.6%	73.9%

Note: For the full test results go to appendix 2

Similar to the above-mentioned study, we also found **ROIC to have a mixed returns** during the test period. Companies with the highest ROIC (Q1) did not always perform the best, and there was no

linearity in returns from Q1 to Q5. You can safely say that **a great company does not automatically make for a great investment**.

Return on Assets (ROA)

We not only wanted to test return on equity but also return on assets as a ratio that can generate market outperformance. We defined return on assets (ROA) as net profit after tax divided by total assets.

But I'm sure you can immediately see the shortcomings of using return on assets when selecting investments. Some companies, like auto manufacturers, need a lot of assets whereas others like software companies have hardly any assets that all. In the first example, return on assets is likely to be low, whereas is the second example it is likely to be extremely high.

However, it does not say how cheap or expensive the shares of the companies are priced, and that, as you saw with the valuation ratios we tested, is more important.

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	37.2%	136.7%	26.5%	-12.9%	-57.3%
MID CAP (>100M AND <1000M)	43.4%	108.7%	101.0%	132.1%	-37.0%
LARGE CAP (>1000M)	53.8%	152.5%	123.4%	72.5%	21.2%

Note: For the full test results go to appendix 2

As you can see, **ROA is not a very effective ratio** to use when selecting investments. Even though Q1 had higher returns than Q5, the results are not linear and the number of years this ratio outperformed the market was only 58% for all three market size companies. Of all the single ratios we tested, buying companies with the highest ROA was the second worst performing strategy you could have followed.

Piotroski F-Score

Joseph Piotroski is an associate professor of accounting at the Stanford University Graduate School of Business. He developed the F-score in 2000 while at the University of Chicago. Professor Piotroski recognized that, although it has long been proven that value stocks (or high book-to-market firms as he calls them) have strong returns as a group, there is nevertheless a very wide variability in terms of the returns of these stocks, with most of them performing worse than the market.

In his research paper called '*Value Investing: The Use of Historical Financial Statement Information to Separate Winners from Losers*', he noted:

> *'Embedded in that mix of companies, you have some that are just stellar. Their performance turns around. People become optimistic about the stock and it really takes off [but] half of the firms languish; they continue to perform poorly and eventually delist or enter bankruptcy.'*

The F-score he developed essentially looks for companies that are profit-making, have improving margins, don't employ any (obvious) accounting tricks, and are strengthening their balance sheets. The score consists of nine variables are split into three groups:

- Profitability,
- Balance sheet health, and
- Operating efficiency.

More information on exactly how the Piotroski F-Score is calculated can be found here: This academic can help you make better investment decisions – Piotroski F-Score

In our back tests we **sorted the universe according to their F-score without considering the valuations** of the stocks. We first wanted to determine if the F-score on its own is a strong predictor of market outperformance, because if so, it may be an even better predictor in combination with other parameters valuation ratios, for example.

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	205.1%	36.7%	-6.6%	-41.9%	-55.0%
MID CAP (>100M AND <1000M)	301.7%	82.7%	58.0%	3.0%	-54.6%
LARGE CAP (>1000M)	144.3%	77.1%	95.7%	61.3%	20.6%

Note: For the full test results go to appendix 2

In the above table you can see that the F-score is a strong ratio as we defined it. It led to market outperformance for all three company sizes and worked particularly well for mid cap companies. Also,

the strategy outperformed the market 75% of the time for small and mid-sized companies and 83% for large companies. The results were also completely linear.

To see exactly **how the Piotroski F-Score can improve your returns** click here: Can the Piotroski F-Score also improve your investment strategy?

Net Debt on Market Value

With this ratio we wanted to test if the amount of debt a company had on its balance sheet had any impact on its stock price over the following 12-months. To do this we used the net debt (long term debt minus excess cash[1]) to market value ratio.

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	28.8%	-32.8%	41.9%	7.7%	-10.3%
MID CAP (>100M AND <1000M)	-13.6%	18.0%	34.7%	120.6%	127.7%
LARGE CAP (>1000M)	39.2%	89.7%	104.2%	79.4%	97.7%

Note: For the full test results go to appendix 2

The results above show that the market rewards companies that take risks and punishes those that are too conservative. Companies with high cash balances and thus low debt to market value ratios (Q1) underperform those with less cash and a high amount of debt (on average).

This was most extreme with mid-sized companies where returns are linear, and highly leveraged companies outperformed companies with low amounts of leverage by over 140%. But **overall, the results were mixed, showing the net debt-to-market value ratio as a weak ratio for achieving market outperformance**.

[1] Excess cash is determined as follows: If Total Current Assets are greater than 2 * Total Current Liabilities, then Excess Cash is determined to be the lesser of Cash and Short-Term Investments or Total Current Assets - 2 * Total Current Liabilities, otherwise it is zero.

RESULTS – SINGLE RATIO ANALYSIS – MOMENTUM RATIOS

Relative Strength / Price Index

The idea behind relative strength is to find companies with the best performing stock prices; the ones that have gone up in price the most over a specific period of time.

In his book, 'What works on Wall Street', James O'Shaughnessy calculated relative strength by looking at the price increase of a stock over the past year. Looking at the change in stock prices over a year, he found that **winners seem to continue to win, and the losers kept on loosing**.

In this study we first set out to also see if relative strength can separate winners from losers. Then with the multiple ratio portfolios, we wanted to test if the combination of reasonable priced stocks with momentum can give you even higher excess returns. We have analysed two periods of short-term price momentum:

- Companies with the best 6-month price appreciation (stock price on the day the portfolio was formed minus the stock price six months ago which we called the 6-month Price Index, and
- Companies with the best 12-month price appreciation (stock price on the day the portfolio was formed minus the stock price 12-months ago, which we called the 12-month Price Index.

6 MONTH PRICE INDEX

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	285.8%	196.2%	1.0%	-42.9%	-90.3%
MID CAP (>100M AND <1000M)	248.0%	167.2%	85.1%	35.3%	-80.2%
LARGE CAP (>1000M)	150.6%	137.6%	97.2%	60.6%	-18.1%

Note: For the full test results go to appendix 2

12 MONTH PRICE INDEX

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	224.9%	168.2%	8.2%	-49.4%	-83.4%
MID CAP (>100M AND <1000M)	159.6%	173.6%	98.7%	28.7%	-50.6%
LARGE CAP (>1000M)	152.7%	116.3%	75.9%	100.0%	-11.4%

Note: For the full test results go to appendix 2

As you can see the short-term **price index (6-months) is a strong ratio** as we defined it. Results are linear with Q1 beating Q5 for all size companies and the ratio outperformed the market just over 83% of the time for all three market sized companies.

The **12-months price index is not strong** as it is not linear for large cap companies. It also outperformed the market only 58% of the time for mid cap companies.

What is very clear is that companies with a **low-price index (Q5) for both the 6- and 12-month price index are to be avoided at all costs** as for small companies as the 6-months was the worst, and 12-months price index the second worst single ratio strategy we tested.

The results also show good or bad news about a company may be quickly incorporated in the stock price, but clearly with some delay, otherwise the top quintiles would not outperform the bottom quintiles as well as the market. The ratio is particularly strong for small and mid-cap companies. This may be, for example, if a company's order book is decreasing the company's employees, or suppliers may notice this and start selling the shares who then tell others who then sell shares before the news is really public.

The increased numbers of sellers lead to supply exceeding demand, causing the stock price to fall. But there may also be other reasons, such as company insiders that may be buying.

Another reason why short-term momentum works is the so called **'inertia effect'**. In his book, '*The New Finance', Robert Haugen* said stock prices exhibit inertia in the short-term and often have reversals in the long-term. This is driven by the tendency of companies in competitive industries to revert to the mean. Yesterday's winners become losers or average performers, while yesterday's losers improve. The market is slow to recognise these reversals and thus share price trends continue.

You can read more about momentum here: What is stock price momentum and why is it important if you want high returns

RESULTS – SINGLE RATIO ANALYSIS – HYBRID RATIOS

The following two ratios are **not really single ratios**, but really a combination of several ratios. However, we wanted to include them under the single ratio tests as we also wanted to combine them with other ratios to see if their market outperformance could be improved even further.

Magic Formula - MF Rank

In this paper we called the Magic Formula MF rank. As you know it was developed by Joel Greenblatt in his book, 'The Little Book That Still Beats the Market'. The basic idea behind the rank is to identify good businesses that are selling at attractive prices. This is done through the use of two ratios:

- Return on Invested Capital (ROIC) - which is calculated as EBIT / (Net Working Capital + Net Fixed Assets)
- Earning Yield - which is calculated as EBIT / Enterprise Value.

The rank then combines these two ratios to give you a list of companies with **good businesses that are trading at an attractive price**.

Kindly note that we tested the Magic Formula based on our interpretation of it after reading Joel Greenblatt's book mentioned above.[2]

Magic Formula returns:

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	133.8%	76.2%	0.9%	-17.3%	-53.3%
MID CAP (>100M AND <1000M)	182.8%	139.7%	67.5%	44.4%	-52.1%
LARGE CAP (>1000M)	162.9%	104.2%	82.5%	91.0%	13.5%

Note: For the full test results go to appendix 2

As you can see, the MF rank is a **strong ratio that leads to substantial market outperformance**. Q1 performs better than Q5, and the results are completely linear. It is, however, **not that consistent** - outperforming the market 50% of the time for small companies and 58% of the time for mid and large companies.

Click here to see (step-by-step) how to implement the Magic Formula in your portfolio NOW!

[2] Neither Mr Greenblatt nor the website (magicformulainvesting.com) has endorsed this study or have had anything to do with it or recommended any of the companies included in our back tests. We also made use of our own database and did not have access to Mr Greenblatt's

ERP5 Rank

The ERP5 rank is an investment strategy developed by P. Vanstraceele and L. Allaeys in 2010 that uses the following ratios to find good companies that are trading at undervalued prices:

- Return on Invested Capital (ROIC) - EBIT / (Net Working Capital + Net Fixed Assets).
- Earning Yield - EBIT / Enterprise Value.
- Price-to-Book Value - Market Capitalization / Book Value.
- 5Y Trailing ROIC - five-year average EBIT / (Net Working Capital + Net Fixed Assets).

	TOTAL RETURN 13/06/1999-13/06/2011				
MARKET CAP	Q1	Q2	Q3	Q4	Q5
SMALL CAP (>15M AND <100M)	331.0%	83.1%	7.8%	28.0%	-53.1%
MID CAP (>100M AND <1000M)	279.8%	121.0%	68.7%	65.2%	-37.7%
LARGE CAP (>1000M)	169.1%	116.4%	105.5%	65.0%	-7.0%

Note: For the full test results go to appendix 2

The results show that the ERP5 rank is a ratio that **works best when applied to small cap companies**, with the second-best results of all single ratios we tested. Q1 results are substantially better than Q5. However, the results for small cap companies are not completely linear.

What is worth noting is that the **Q1 results for the ERP5 for all size companies are higher than that of the MF rank**. The ERP5 screen is particularly effective in identifying market beating small companies. It is also a very consistent factor, beating the market 83% of the time for small and medium-size companies, and 67% of the time for large companies.

Click here to see (step-by-step) how to implement the ERP5 investment strategy in your portfolio NOW!

SUMMARY OF SINGLE RATIO TESTS

Here are the main points for the one ratio tests:

- Valuation ratios have a strong predictive power to achieve market outperformance.
- The mid cap companies seem to outperform the small cap and large cap companies except for the results of the ERP5 rank.
- The fact that a company generates a high return on invested capital does not make it a market beating investment; valuation is more important.
- Investing in companies with a good F-score, which suggests improving fundamentals, results in market beating returns.
- Winners continue to win, and losers continue to lose, as shown in our test using 6- and 12-months price index ratios.

In the following table we show how all the single ratios we tested met our criteria of being classified as a strong factor.

As a reminder, this is how we **defined a strong factor**:

- The top quintile (Q1) outperforms the bottom quintile (Q5), and
- There must be a linearity of returns among the quintiles (quintile one must outperform quintile 2 which must outperform quintile 3, up to quintile 5), and
- The strategy must also consistently outperform the market over time. We defined **consistent outperformance when the first QUINTILE (Q1) outperformed the market portfolio 60%** or more of the time.

VALUATION	Q1 OUTPERFORMS Q5	LINEAR RETURNS	CONSISTENT OUTPERFORMANCE	RESULT
EARNINGS YIELD - 12-MONTHS	☑	☑	☑	STRONG
EARNINGS YIELD – 5 YEAR AVERAGE	☑	☒	☑	WEAK
PRICE-TO-BOOK	☑	☑	☑	STRONG
PRICE-TO-SALES	☑	☒	☒	WEAK
FREE CASH FLOW YIELD - 12-MONTHS	☑	☒	☑	WEAK
FREE CASH FLOW YIELD – 5-YEAR AVERAGE	☑	☒	☑	WEAK

FUNDAMENTAL	Q1 OUTPERFORMS Q5	LINEAR RETURNS	CONSISTENT OUTPERFORMANCE	RESULT
RETURN ON INVESTED CAPITAL (ROIC) - 12-MONTHS	☑	☒	☒	WEAK
RETURN ON INVESTED CAPITAL (ROIC) - 5-YEAR AVERAGE	☑	☒	☒	WEAK
RETURN ON ASSETS (ROA)	☑	☒	☒	WEAK
PIOTROSKI F-SCORE	☑	☒	☑	WEAK
NET DEBT-TO-MARKET VALUE	☒	☒	☒	WEAK

MOMENTUM	Q1 OUTPERFORMS Q5	LINEAR RETURNS	CONSISTENT OUTPERFORMANCE	RESULT
PRICE INDEX 6-MONTH	☑	☑	☑	STRONG
PRICE INDEX 12-MONTH	☑	☒	☒	WEAK

HYBRID	Q1 OUTPERFORMS Q5	LINEAR RETURNS	CONSISTENT OUTPERFORMANCE	RESULT
MF RANK	☑	☒	☒	WEAK
ERP5	☑	☒	☑	WEAK

If you only looked at the first quintile of each single ratio we tested, this detailed the two best and worse strategies for each market size group of companies:

LARGE COMPANIES:

BEST	WORST
12M FREE CASH FLOW YIELD (+242.8%)	NET DEBT-TO-MARKET VALUE (+39.2%)
12-MONTH EY (+236.3%)	RETURN ON ASSETS (+53.8%)

MEDIUM- SIZED COMPANIES:

BEST	WORST
PRICE-TO-BOOK (+400.3%)	NET DEBT-TO-MARKET VALUE (-13.6%)
5 YEAR AVERAGE FREE CASH FLOW YIELD (+325.8%)	RETURN ON ASSETS (+43.4%)

SMALL COMPANIES:

BEST	WORST
ERP5 RANK (+331%)	NET DEBT-TO-MARKET VALUE (+28.8%)
6 MONTH PRICE INDEX (+285.8%)	RETURN ON ASSETS (+37.2%)

COMBINING MULTIPLE RATIOS

In this second part of this research paper, we **build portfolios by combining two of the ratios we have already tested**.

Through the combination with a second ratio, we want to find out, using the strong ratios we have already identified if it leads to higher consistent market outperformance.

To do this we **first sorted all the companies in our investment universe by the first factor**. We then **selected only the companies in the first quintile (best 20% of companies),** and then **used only this group of companies and sorted them into five quintiles using the second factor**. So, the two-ratios were not weighed equally.

The **first ratio in each case had more weight** as we only selected the best quintile from this ratio to use with the second factor.

We also tested the same ratio twice; for example, using price-to-book as the first and second factor. We did this to determine if this combination leads to higher market outperformance compared with the original one-ratio tests.

As explained, for the two-ratio tests **we did not split the universe into different market capitalization** as in doing so we would not have been able to form second ratio quintiles with at least 30 to 40 companies in each quintile.

Overall, what we found was that all the two-ratios we tested, even the worst performing quintiles, substantially outperformed the market portfolio.

Combinations with Earnings Yield as primary factor

For this backtest we first sorted our universe of stocks by **earnings yield (EY)** which we defined as operating income (EBIT) divided by enterprise value. We then took the 300 or so companies with the highest earnings yield and sorted them by the 14 second ratios we tested.

For each of the second ratios, we divided the 300 companies into five quintiles and calculated the performance of each quintile.

	TOTAL RETURN 13/06/1999-13/06/2011				
SECONDARY FACTOR	Q1	Q2	Q3	Q4	Q5
EARNINGS YIELD 12 MONTHS	372.9%	392.1%	154.2%	162.7%	170.7%
EARNINGS YIELD 5 YEARS	332.4%	355.2%	292.1%	154.2%	106.7%
PRICE TO BOOK	560.4%	348.8%	271.4%	202.0%	31.4%
FCF YIELD	420.8%	409.7%	266.1%	113.3%	66.9%
FCF YIELD 5 YEARS	319.5%	333.5%	324.7%	159.6%	73.0%
PRICE TO SALES	362.8%	189.5%	326.5%	209.4%	134.5%
F-SCORE	447.1%	289.4%	286.2%	219.2%	55.1%
NET DEBT ON MARKET VALUE	285.3%	190.9%	300.9%	239.4%	173.5%
ROIC	143.3%	271.3%	252.8%	259.7%	260.8%
ROIC 5 YEARS	225.8%	332.4%	242.4%	342.7%	250.3%
PRICE INDEX 12 MONTHS	695.8%	394.2%	307.8%	178.2%	-14.7%
PRICE INDEX 6 MONTHS	814.4%	332.5%	319.5%	197.5%	-26.1%
MF RANK	233.3%	224.4%	250.3%	234.0%	243.5%
ERP5	455.1%	396.1%	193.5%	182.0%	74.0%

Note: For the full test results go to appendix 3

As you can see, using EY (valuation factor) is very effective to identify market beating stocks. On average, across all second ratios tested, the strategy led to an average performance of just under 405% (median was 368%); substantially higher than the market portfolio return of 30.54%.

The **best return of 814%** was achieved by combining the earnings yield with the 6-month price index. This means a combination of price momentum, as well as undervaluation based on earnings yield. Interesting was that the **second-best combination was earnings yield combined with a 12-month price index**, also a momentum factor.

The **worst performing strategy was earnings yield combined with return on invested capital,** which returned 143% over 12 years. Even though this strategy also beat the market portfolio, it was not nearly as effective as using price momentum as a second factor. Even though the results of this two-ratio strategy were good, based on the average Q1 returns, this was the sixth best two ratio strategy we tested.

Combinations with price-to-book ratio as primary ratio

With this two-ratio back test we took the **cheapest 20% of companies in our universe with the lowest price-to-book value** and then sorted these companies into five quintiles based on the second ratio we tested.

TOTAL RETURN 13/06/1999-13/06/2011					
SECONDARY FACTOR	Q1	Q2	Q3	Q4	Q5
EARNINGS YIELD 12 MONTHS	692.0%	252.1%	427.4%	168.4%	273.2%
EARNINGS YIELD 5 YEARS	354.3%	280.5%	370.3%	314.9%	238.0%
PRICE TO BOOK	618.7%	232.0%	264.7%	261.0%	251.3%
FCF YIELD	685.2%	370.6%	186.7%	193.3%	216.6%
FCF YIELD 5 YEARS	384.3%	521.8%	213.7%	192.0%	245.8%
PRICE TO SALES	623.1%	265.4%	311.8%	234.3%	234.1%
F-SCORE	685.2%	370.6%	186.7%	193.3%	216.6%
NET DEBT ON MARKET VALUE	376.4%	482.0%	311.1%	206.3%	349.1%
ROIC	551.0%	403.4%	362.7%	168.2%	271.6%
ROIC 5 YEARS	476.4%	224.3%	286.9%	365.7%	339.6%
PRICE INDEX 12 MONTHS	987.3%	352.2%	358.7%	191.1%	41.3%
PRICE INDEX 6 MONTHS	1029.4%	302.5%	354.1%	168.9%	70.6%
MF RANK	603.5%	399.5%	223.8%	194.8%	226.4%
ERP5	616.3%	284.1%	208.2%	333.9%	208.0%

Note: For the full test results go to appendix 3

Of the nine two-ratio strategies we tested, using the price-to-book as the first ratio led to by far the highest average return of 620% (median 617.5%).

The **best two-ratio strategy** was combining cheap price-to-book companies with the companies that had the highest 6-month price index value. This led to a **total return of nearly 1030%** over the 12-year period we tested. The **second-best** combination was also momentum combined with price-to-book value with the highest 12-months price index companies. This led to a total return of 987%.

The worst strategy was the combination of low price-to-book companies with companies that had the highest 5-year average earnings yield. This would have led to a total return of 354.3%. Not bad at all, but not close to the 1030% of the best performing two-ratios.

It is of course very **hard to make predictions about what investment strategy will work best in future** but looking at the dreadful market over the last 12 years the returns of buying low price-to-book companies with a high 6-months price index is truly astounding.

Combinations with the 12-month free cash flow as primary ratio

With this two-ratio backtest we combined the **cheapest 20% of companies based on price-to-free cash flow** (over the past 12-months) in our investment universe **with all the second ratios** we tested.

	TOTAL RETURN 13/06/1999-13/06/2011				
SECONDARY FACTOR	Q1	Q2	Q3	Q4	Q5
EARNINGS YIELD 12 MONTHS	607.9%	323.5%	281.9%	260.9%	122.8%
EARNINGS YIELD 5 YEARS	428.7%	438.0%	382.4%	122.2%	209.2%
PRICE TO BOOK	713.7%	372.5%	324.6%	179.8%	114.4%
FCF YIELD	313.0%	421.6%	297.6%	300.1%	192.9%
FCF YIELD 5 YEARS	322.7%	414.8%	356.5%	292.8%	160.9%
PRICE TO SALES	549.0%	326.3%	275.9%	298.1%	119.0%
F-SCORE	568.7%	389.3%	250.9%	260.5%	127.9%
NET DEBT ON MARKET VALUE	231.7%	270.1%	374.2%	292.1%	339.5%
ROIC	199.1%	437.5%	446.4%	320.6%	145.1%
ROIC 5 YEARS	334.4%	358.8%	359.0%	375.1%	221.1%
PRICE INDEX 12 MONTHS	755.0%	411.9%	367.3%	242.3%	5.3%
PRICE INDEX 6 MONTHS	582.8%	525.7%	352.8%	199.7%	35.0%
MF RANK	389.3%	341.3%	348.9%	311.2%	142.0%
ERP5	578.4%	339.3%	351.4%	141.9%	186.2%

Note: For the full test results go to appendix 3

As you can see the results were also very good, with an **average return of just under 470%** (median was 488.8%). On average this was the third best two ratio strategy we tested.

The **best performing** strategy was combining a high price-to-free cash flow ratio with the 12-months price index. This led to a total return of 755%. With this strategy the **second-best performance** was not the 6-month price index but buying the lowest price-to-book ratio companies. If you did this, your return over the 12 years would have been just under 714%.

The two-ratio strategy with the lowest return was the combination of high free cash flow companies with companies that generated high returns on invested capital. In this case the 12-year return was 199.1%

Click here to see (step-by-step) how to implement a Free Cash Flow Yield and Momentum investment strategy in your portfolio NOW!

Combinations with the price-to-sales ratio as primary factor

With this combination we took the lowest 20% of price-to-sales ratio companies and combined them with the second ratios we tested for.

	TOTAL RETURN 13/06/1999-13/06/2011				
SECONDARY FACTOR	Q1	Q2	Q3	Q4	Q5
EARNINGS YIELD 12 MONTHS	330.3%	143.3%	372.2%	112.7%	4.5%
EARNINGS YIELD 5 YEARS	252.6%	187.2%	214.7%	98.3%	86.8%
PRICE TO BOOK	423.3%	326.3%	221.1%	151.0%	-15.8%
FCF YIELD	446.0%	245.7%	97.7%	74.0%	37.4%
FCF YIELD 5 YEARS	257.4%	312.6%	133.8%	80.6%	46.3%
PRICE TO SALES	336.4%	123.4%	197.5%	146.4%	68.6%
F-SCORE	341.3%	312.9%	144.8%	72.4%	47.8%
NET DEBT ON MARKET VALUE	251.5%	225.1%	164.9%	85.4%	109.0%
ROIC	275.7%	241.3%	199.0%	164.5%	4.4%
ROIC 5 YEARS	184.8%	190.2%	206.6%	184.3%	54.6%
PRICE INDEX 12 MONTHS	549.0%	314.6%	187.3%	116.0%	-46.0%
PRICE INDEX 6 MONTHS	563.0%	298.6%	195.2%	59.4%	-18.8%
MF RANK	229.5%	267.2%	257.3%	138.4%	7.5%
ERP5	393.5%	187.7%	190.5%	76.3%	56.0%

Note: For the full test results go to appendix 3

Even though price-to-sales is also a valuation factor, on average, using this combination gave the lowest returns of all the two-ratio strategies we tested, generating an average return of 345.3% (median 333.4%). The **best performing** strategy was selecting companies with a cheap price-to-sales ratio as well as companies with the highest 6-months price index values. This would have given you a **return of 563% over 12 years.**

The **worst combination** would have been combining the low price-to-sales ratio companies with those that generated the highest ROIC over the past five years. Using this strategy your return would have been 184.8%.

Combinations with the Piotroski F-score as primary ratio

With this combination we **first selected the 20% of companies with the highest Piotroski F-score** and then divided these companies into quintiles based on the second ratios we tested.

It's worth mentioning that even though you may think that combining the F-score with low price-to-book companies would be what Joseph Piotroski did in the paper mentioned previously, but that would not be correct.

In his paper Mr Piotroski first selected low price-to-book companies and then sorted these by the F-score. So, for you to see the results that the strategy based on Mr Piotroski's paper, you would have to look under price-to-book as the first ratio and the F-score as the second factor.

TOTAL RETURN 13/06/1999-13/06/2011					
SECONDARY FACTOR	Q1	Q2	Q3	Q4	Q5
EARNINGS YIELD 12 MONTHS	448.7%	298.9%	259.5%	119.4%	66.4%
EARNINGS YIELD 5 YEARS	457.4%	353.0%	181.3%	61.7%	124.0%
PRICE TO BOOK	591.2%	275.0%	238.9%	127.5%	40.1%
FCF YIELD	680.4%	268.2%	201.5%	75.1%	62.8%
FCF YIELD 5 YEARS	391.4%	343.0%	181.8%	59.6%	148.4%
PRICE TO SALES	455.5%	267.2%	255.2%	166.2%	29.0%
F-SCORE	334.4%	292.9%	143.4%	239.2%	105.6%
NET DEBT ON MARKET VALUE	224.9%	184.7%	262.8%	207.1%	198.5%
ROIC	232.7%	179.3%	308.5%	184.0%	182.7%
ROIC 5 YEARS	329.6%	256.7%	227.6%	276.3%	241.0%
PRICE INDEX 12 MONTHS	477.7%	339.3%	155.7%	292.7%	33.6%
PRICE INDEX 6 MONTHS	393.3%	351.7%	203.1%	219.8%	29.5%
MF RANK	340.9%	313.6%	164.1%	201.5%	103.5%
ERP5	549.3%	237.5%	231.9%	114.2%	75.8%

Note: For the full test results go to appendix 3

Based on average returns of the best quintile of all the second ratios, this strategy returned 422% (median was 421%). Out of the nine two-ratio strategies we tested this one on average was the fifth best strategy. The **best combination that** would have given you a 680.4% return over 12 years would have been to **combine a high F-score with companies that had the highest 12-month free cash flow yield**.

Combinations with the 12-month price index as primary ratio

Here we **first took the 20% of companies in our investment universe with the highest 12-month price index** and then combined these companies with the 14 second ratios we tested.

	TOTAL RETURN 13/06/1999-13/06/2011				
SECONDARY FACTOR	Q1	Q2	Q3	Q4	Q5
EARNINGS YIELD 12 MONTHS	802.4%	295.3%	135.0%	56.1%	22.2%
EARNINGS YIELD 5 YEARS	477.1%	174.0%	91.1%	32.4%	134.1%
PRICE TO BOOK	674.8%	334.7%	172.2%	55.5%	-8.9%
FCF YIELD	629.7%	321.4%	138.5%	64.0%	40.5%
FCF YIELD 5 YEARS	530.4%	310.6%	119.8%	68.3%	59.2%
PRICE TO SALES	290.2%	351.2%	301.3%	79.6%	-11.3%
F-SCORE	447.9%	247.9%	233.3%	61.7%	-10.8%
NET DEBT ON MARKET VALUE	138.5%	139.9%	211.3%	233.0%	194.0%
ROIC	271.4%	326.6%	166.8%	162.1%	39.1%
ROIC 5 YEARS	482.2%	214.0%	216.6%	240.9%	165.9%
PRICE INDEX 12 MONTHS	114.9%	113.1%	119.1%	268.9%	156.9%
PRICE INDEX 6 MONTHS	186.0%	278.0%	258.8%	223.7%	-25.9%
MF RANK	229.5%	267.2%	257.3%	138.4%	7.5%
ERP5	393.5%	187.7%	190.5%	76.3%	56.0%

Note: For the full test results go to appendix 3

On average, across all the second ratios we tested, this strategy would have given you a return of 404.9% (median was 420.7%). This was the seventh best (out of nine) two-ratio strategy we tested. The **best combination was combining the 12-month price index** with the companies with the highest **earnings yield,** using the past 12 months earnings. The strategy would have given you a return of 802.4%.

The worst strategy would have been to combine the highest 12-months price index with the same ratio again. This means from the 20% of companies with the highest share price increase over the past 12 months, you would have chosen the 20% that went up the most over the past 12 months. In this case your return would have been 114.9%.

Click here to see (step-by-step) how to implement a Price index and Earnings Yield investment strategy in your portfolio NOW!

Combinations with the 6-month price index as primary factor

In some of the previous combination strategies the 6-months price index was one of the best second ratios to use. In this combination would like to determine if it is also a good first ratio to use. We thus **selected the 20% of companies with a higher 6-months price** index and used only these companies when we made up the portfolios for the second ratio tests.

TOTAL RETURN 13/06/1999-13/06/2011					
SECONDARY FACTOR	Q1	Q2	Q3	Q4	Q5
EARNINGS YIELD 12 MONTHS	1002.2%	416.0%	134.2%	59.8%	48.3%
EARNINGS YIELD 5 YEARS	662.0%	244.6%	64.7%	163.9%	151.6%
PRICE TO BOOK	1157.5%	449.2%	173.5%	71.9%	3.8%
FCF YIELD	556.3%	285.5%	166.2%	95.3%	130.6%
FCF YIELD 5 YEARS	668.8%	214.2%	171.4%	96.8%	82.3%
PRICE TO SALES	621.5%	554.2%	217.4%	110.2%	-16.3%
F-SCORE	598.6%	314.1%	243.6%	84.2%	61.3%
NET DEBT ON MARKET VALUE	180.4%	135.6%	197.4%	368.7%	294.9%
ROIC	332.7%	347.6%	303.7%	220.9%	43.7%
ROIC 5 YEARS	485.3%	402.4%	559.5%	300.0%	230.3%
PRICE INDEX 12 MONTHS	153.4%	166.0%	412.7%	316.9%	154.4%
PRICE INDEX 6 MONTHS	122.1%	273.5%	164.4%	185.1%	411.8%
MF RANK	746.6%	212.8%	257.9%	52.7%	89.7%
ERP5	637.3%	208.1%	180.3%	107.6%	125.2%

Note: For the full test results go to appendix 3

And it turns out that using the 6-months price index as a first ratio gives you GREAT returns. On average, across all 14 second ratios we tested, the best quintile would have given you an average return of 566% (median was 610%). The **best performing strategy** was combining the 6-months price index with the lowest price-to-book companies. If you did this to select investments, your return over the past **12 years would have been 1157.5%.**

The worst performing strategy combination would have been combining the best 6-months price index companies by the same ratio again. This would have given you a return of only 122.1%.

Click here to see (step-by-step) how to implement a Price index and Price to Book investment strategy in your portfolio NOW!

Combinations with the Magic Formula (MF rank) as primary ratio

With this combination we wanted to determine if the results of the MF-rank could be improved by adding an additional ratio to select companies to invest in. Out of our universe of companies we thus took the **20% of companies with the best MF-ranking** and combined them with the second ratios we tested.

	TOTAL RETURN 13/06/1999-13/06/2011				
SECONDARY FACTOR	Q1	Q2	Q3	Q4	Q5
EARNINGS YIELD 12 MONTHS	412.2%	253.2%	146.3%	150.7%	79.5%
EARNINGS YIELD 5 YEARS	477.6%	222.1%	262.2%	36.7%	116.9%
PRICE TO BOOK	642.8%	258.3%	226.0%	100.4%	26.8%
FCF YIELD	337.4%	286.0%	174.3%	117.2%	57.4%
FCF YIELD 5 YEARS	369.7%	245.5%	237.4%	87.4%	36.6%
PRICE TO SALES	326.8%	218.4%	169.3%	211.4%	75.9%
F-SCORE	349.0%	284.7%	266.8%	171.6%	32.1%
NET DEBT ON MARKET VALUE	166.7%	169.2%	269.6%	199.4%	170.9%
ROIC	121.6%	101.8%	207.2%	242.5%	323.7%
ROIC 5 YEARS	180.9%	289.0%	286.6%	208.2%	267.5%
PRICE INDEX 12 MONTHS	655.1%	280.1%	259.7%	111.9%	-18.0%
PRICE INDEX 6 MONTHS	783.3%	270.4%	259.6%	111.5%	-25.9%
MF RANK	234.9%	204.1%	215.8%	91.6%	273.3%
ERP5	567.2%	340.7%	141.7%	55.0%	79.9%

Note: For the full test results go to appendix 3

Across all the second ratios we tested the average return was 401.8% (median was 359.3%) over 12 years. On average, this was the eighth best (out of nine) two-ratio strategy we tested. The best performing combination would have been to **combine the best MF-rank companies with the companies that had the highest 6-months price index**. This would have given you a return of 783.3% over 12 years.

The worst performing strategy would have been to combine the MF-rank with return on invested capital. In this case your returns would have been 121.6%.

Combinations with the ERP5 rank as primary ratio

With this combination we combined the 20% of companies with the highest ERP5-rank with all the second ratios we tested.

	TOTAL RETURN 13/06/1999-13/06/2011				
SECONDARY FACTOR	Q1	Q2	Q3	Q4	Q5
EARNINGS YIELD 12 MONTHS	590.3%	355.9%	248.9%	175.8%	120.6%
EARNINGS YIELD 5 YEARS	404.2%	408.4%	351.7%	216.2%	84.1%
PRICE TO BOOK	680.2%	456.8%	265.2%	200.3%	46.6%
FCF YIELD	555.6%	245.2%	204.0%	223.9%	177.0%
FCF YIELD 5 YEARS	336.4%	311.0%	285.8%	206.1%	179.6%
PRICE TO SALES	402.4%	272.7%	332.7%	220.5%	166.5%
F-SCORE	583.1%	332.5%	190.8%	336.8%	94.7%
NET DEBT ON MARKET VALUE	321.2%	291.7%	314.7%	238.2%	216.0%
ROIC	145.6%	178.8%	383.5%	296.8%	449.2%
ROIC 5 YEARS	114.4%	246.1%	362.7%	236.5%	481.2%
PRICE INDEX 12 MONTHS	696.5%	378.4%	300.8%	195.3%	41.4%
PRICE INDEX 6 MONTHS	732.1%	357.2%	268.2%	192.7%	51.8%
MF RANK	256.3%	319.5%	260.1%	247.8%	309.0%
ERP5	600.9%	249.2%	434.2%	151.1%	113.0%

Note: For the full test results go to appendix 3

Your average return of combining the ERP5 score with all the second ratios would have been 458.5% (median was 479.9%) over 12 years. The average this was the fourth best two-ratio strategies we tested.

Similar to what we found with the MF-rank; the **best performing strategy was combining the ERP5 score with companies that had the highest 6-month price index**. If you did this your returns would have been 732.1%.

The worst return was generated by combining the ERP5 score with companies that had the highest return on investment capital on average over the past five years. This would have only given you a return of 114.4%.

Click here to see (step-by-step) how to implement a ERP5 and Price index investment strategy in your portfolio NOW!

SUMMARY OF THE TWO-RATIO TESTS

Here are the main points of the two-ratio tests:

- **All two-ratio strategies we tested substantially outperformed the market** with even the worst performing strategy returning 114.4% over 12 years compared with the 30.54% of the market portfolio.
- Price momentum, both 6- and 12-months played a substantial part in all 10 of the best performing two-ratio strategies.
- The **three best performing strategies that all generated returns of over 1000**%, all either as first or second ratios, contained the highest 6-month price index as a factor.
- A low price-to-book value was also a very important ratio as it formed part, either as first or second factor, in three out of four of the best performing two-ratio strategies.

If you only looked at the **first quintile of all two-ratio strategies** we tested, these were the five best and worse strategies:

Best Strategies:

No.	First Factor	Second Factor	Total return	Compound annual growth rate	Years outperforming the market	Number of years with negative returns
1	Price index 6m	Price-to-book	1157,5%	23,5%	83%	3
2	Price-to-book	Price index 6m	1029,4%	22,4%	83%	2
3	Price index 6m	Earnings yield 12m	1002,2%	22,1%	92%	2
4	Price-to-book	Price index 12m	987,3%	22,0%	92%	2
5	Earnings yield 12m	Price index 6m	814,4%	20,3%	83%	2

Worst Strategies:

No.	First Factor	Second Factor	Total return	Compound annual growth rate	Years outperforming the market	Number of years with negative returns
1	ERP5 rank	ROIC 5 years	114,4%	6,6%	67%	5
2	Price index 12-month	Price index 12m	114,9%	6,6%	83%	4
3	MF-rank	Return on invested capital	121,6%	6,9%	67%	5
4	Price index 6-months	Price index 6m	122,1%	6,9%	75%	4
5	Price index 12-months	Net debt-to-market value	138,5%	7,5%	92%	5

CONCLUSION

Value, momentum, and changes in fundamentals (F-score)

Even though we tested some single ratios that did lead to strong market outperformance, the **two-ratio strategies we tested were substantially better**.

For example, if we combine the first quintile performance of all the one and two-ratio strategies we tested, and sort them from best to worst, the **best single** ratio performance (achieved by applying a low price-to-book ratio to mid-cap companies) was **at position 69** (the next was at position 91). All the strategies that performed better were two-ratio strategies.

The most surprising result we found, especially for value investors, is that **price movements over previous 6- and 12-months (6- and 12-months price index) were ratios in each of the 10 best performing two ratio strategie**s we tested. This is not what we learned as classical value investors. We learned that the more a company share price declined, as long as it became cheaper in terms of valuation, the more attractive it was as an investment.

With our back testing we found that **valuation still matters, but it has to be applied in a different way**. You first have to look for the 20% of companies that increased the most in price over the previous 6-months and then sort these companies by price-to-book value and buy the 30 companies with the lowest price-to-book value.

What does this mean for future returns?

At this point you may be asking yourself the same question we have - the results we have shown are all based on historical financial information, but what does this mean for my future investment returns? The simple answer is we cannot say for certain, but we have a good idea.

We now know what strategies were very successful in arguably one of the worst 12 years in terms of stock market performance in at least half a century.

For the next 10 years the top performing strategy we tested of buying the lowest 20% of companies by book value of the 20% of companies that have increased the most in price over the past six months will most likely not be the best strategy. But it will still give you outstanding market beating returns. In the past 12 years the strategy returned just under 1160%, compared with the market portfolio 30.54%.

Does it really matter if the strategy you choose falls to position 20 of the strategies we tested and generated a total return of 670%? Most likely not, because you would probably have outperformed 99% of all investment funds worldwide. This means that the strategies that performed the best over the past 12 years may not do so over the next 10 years, but they will still be amongst the top strategies in terms of overall returns.

But what will happen if everybody starts using the best performing strategies; surely, they will stop working, you may be thinking. If everybody does, **they will definitely stop** working as investors pile in and push up prices to where these companies would not be undervalued anymore.

But as Joel Greenblatt in his book, '**The Little Book That Still Beats the Market'** mentioned, the reason everybody will not follow strategy is because it doesn't work all the time. And as soon as it stops working investors will abandon it like they abandoned the top performing investment fund we mentioned above. Most likely at exactly the wrong time, just before the strategy would substantially start outperforming the market once again.

Remember the best performing strategy we mentioned outperformed the market only 83% of the time and had negative returns in three of the 12 years. In one of the last years, or one of the other years that the strategy didn't outperform the market, it would most likely have been exactly the time when investors abandoned the strategy.

A last point

One last point we would like to mention.

Do not for a minute think that it is easy to follow these strategies. If you see what companies they come up with you will immediately start analysing them and for example say:

> *There's no way I am investing in that industry at the current time', or 'Look at this company's financial statements, it's completely hopeless.*

That may be so with one or two of the companies that the strategy comes up with. That is the reason why we suggest that **whatever strategy you follow you invest in a minimum of 30 companies.** This means that even if one of two companies go bankrupt, the others will do great, and your overall performance will still be outstanding.

We sincerely hope that you found the study of value and it substantially improves your investment returns.

You can implement all the investment strategies with the stock screener we built because we could not find a screener that had all the ratios we needed to invest our own money.

If you are pressed for time, take a look at our Quant Value Investment Newsletter. It uses all our best performing research to find market beating investment ideas. It is also the investment strategy I use in my own portfolio.

Wishing you profitable investing!

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APPENDIX 1: PIOTROSKI F-SCORE CALCULATION

Profitability:

ROA	Positive return on assets (ROA) in the current year (1 point)
CFO	Positive operating cash flow in the current year (1 point)
ΔROA	Higher ROA in the current period compared to the ROA in the previous year (1 point)
CFO>ROA	Cash flow from operations are greater than ROA (1 point)

Leverage, Liquidity and Source of funds:

ΔLeverage	Lower ratio of long-term debt to in the current period compared value in the previous year (1 point)
ΔLiquidity	Higher current ratio (current assets / current liabilities) this year compared to the previous year (1 point)
ΔEQ Offer	If no new shares were issued in the last year (1 point)

Operating Efficiency:

ΔMargin	A higher gross margin compared to the previous year (1 point)
ΔTurn	A higher asset turnover ratio (sales/assets) compared to the previous year (1 point)

APPENDIX 2: SINGLE RATIO TEST RESULTS

Earnings Yield 12 months

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	122.2%	94.2%	-22.3%	-26.8%	-42.3%	45.0%	50.4%	58.6%	59.7%	62.5%	99	98	98	98	98
MID CAP (> 100 m and < 1000 m)	235.7%	163.1%	72.3%	-33.4%	-38.9%	39.2%	42.2%	45.7%	52.0%	57.7%	132	131	130	131	131
LARGE CAP (> 1000 m)	236.3%	87.6%	82.5%	68.8%	-6.4%	36.9%	42.5%	40.6%	46.2%	49.4%	71	70	70	70	70

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	6.88%
CAGR Q5	-4.48%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	164.46%
Outperformance of Top Quintile vs Bottom Quintile (pa)	11.36%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	91.61%
Outperformance of Top Quintile vs Market (pa)	4.63%
Underperformance of Bottom Quintile Total vs Market	-72.85%
Underperformance of Bottom Quintile vs Market (pa)	-6.73%

MID CAP	
CAGR Market	2.25%
CAGR Q1	10.62%
CAGR Q5	-4.02%
Years outperforming the market (%)	75.00%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	274.56%
Outperformance of Top Quintile vs Bottom Quintile (pa)	14.64%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	205.11%
Outperformance of Top Quintile vs Market (pa)	8.37%
Underperformance of Bottom Quintile Total vs Market	-69.45%
Underperformance of Bottom Quintile vs Market (pa)	-6.27%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	10.64%
CAGR Q5	-0.55%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	3
Outperformance of Top Quintile vs Bottom Quintile Total	242.66%
Outperformance of Top Quintile vs Bottom Quintile (pa)	11.18%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	205.75%
Outperformance of Top Quintile vs Market (pa)	8.39%
Underperformance of Bottom Quintile Total vs Market	-36.91%
Underperformance of Bottom Quintile vs Market (pa)	-2.79%

Earnings Yield 5-year average

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	121.1%	42.7%	-26.8%	-41.4%	-30.4%	46.1%	52.8%	58.7%	60.7%	58.8%	118	116	116	117	117
MID CAP (> 100 m and < 1000 m)	291.1%	135.9%	-17.3%	-21.8%	-17.8%	37.7%	43.0%	50.6%	52.3%	52.4%	153	152	152	152	152
LARGE CAP (> 1000 m)	186.2%	138.6%	98.0%	-0.2%	3.1%	39.5%	40.3%	43.5%	44.7%	47.8%	77	76	76	76	76

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	6.83%
CAGR Q5	-2.98%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	151.49%
Outperformance of Top Quintile vs Bottom Quintile (pa)	9.81%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	90.51%
Outperformance of Top Quintile vs Market (pa)	4.59%
Underperformance of Bottom Quintile Total vs Market	-60.98%
Underperformance of Bottom Quintile vs Market (pa)	-5.23%

MID CAP	
CAGR Market	2.25%
CAGR Q1	12.04%
CAGR Q5	-1.62%
Years outperforming the market (%)	75.00%
Number of years with negative return Top Quintile	3
Outperformance of Top Quintile vs Bottom Quintile Total	308.84%
Outperformance of Top Quintile vs Bottom Quintile (pa)	13.65%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	260.55%
Outperformance of Top Quintile vs Market (pa)	9.79%
Underperformance of Bottom Quintile Total vs Market	-48.29%
Underperformance of Bottom Quintile vs Market (pa)	-3.86%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	9.16%
CAGR Q5	0.26%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	3
Outperformance of Top Quintile vs Bottom Quintile Total	183.11%
Outperformance of Top Quintile vs Bottom Quintile (pa)	8.90%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	155.68%
Outperformance of Top Quintile vs Market (pa)	6.91%
Underperformance of Bottom Quintile Total vs Market	-27.43%
Underperformance of Bottom Quintile vs Market (pa)	-1.99%

Price-to-Book ratio

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	172.5%	75.4%	72.2%	-12.8%	-76.2%	47.8%	52.2%	53.1%	56.8%	64.2%	106	106	106	105	105
MID CAP (> 100 m and < 1000 m)	400.3%	134.4%	44.4%	-21.2%	-53.9%	37.2%	44.5%	46.4%	50.8%	54.6%	147	146	146	146	146
LARGE CAP (> 1000 m)	203.6%	149.5%	83.8%	8.2%	-0.5%	38.6%	39.7%	42.3%	46.2%	48.7%	76	75	74	75	75

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	8.71%
CAGR Q5	-11.27%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	248.65%
Outperformance of Top Quintile vs Bottom Quintile (pa)	19.98%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	141.93%
Outperformance of Top Quintile vs Market (pa)	6.47%
Underperformance of Bottom Quintile Total vs Market	-106.72%
Underperformance of Bottom Quintile vs Market (pa)	-13.51%

MID CAP	
CAGR Market	2.25%
CAGR Q1	14.36%
CAGR Q5	-6.25%
Years outperforming the market (%)	75.00%
Number of years with negative return Top Quintile	3
Outperformance of Top Quintile vs Bottom Quintile Total	454.17%
Outperformance of Top Quintile vs Bottom Quintile (pa)	20.61%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	369.71%
Outperformance of Top Quintile vs Market (pa)	12.11%
Underperformance of Bottom Quintile Total vs Market	-84.46%
Underperformance of Bottom Quintile vs Market (pa)	-8.50%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	9.70%
CAGR Q5	-0.04%
Years outperforming the market (%)	75.00%
Number of years with negative return Top Quintile	3
Outperformance of Top Quintile vs Bottom Quintile Total	204.03%
Outperformance of Top Quintile vs Bottom Quintile (pa)	9.73%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	173.03%
Outperformance of Top Quintile vs Market (pa)	7.45%
Underperformance of Bottom Quintile Total vs Market	-31.00%
Underperformance of Bottom Quintile vs Market (pa)	-2.28%

Price-to-Sales ratio

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	49.9%	16.5%	27.7%	-1.3%	-40.8%	52.6%	53.4%	53.5%	57.8%	58.7%	108	107	107	107	107
MID CAP (> 100 m and < 1000 m)	191.2%	152.9%	60.4%	2.7%	-54.0%	42.1%	43.7%	46.2%	49.2%	53.7%	147	146	146	146	146
LARGE CAP (> 1000 m)	165.0%	134.0%	81.9%	62.8%	-25.5%	41.6%	39.7%	43.0%	43.7%	47.6%	76	75	75	75	75

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	3.43%
CAGR Q5	-4.27%
Years outperforming the market (%)	58.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	90.68%
Outperformance of Top Quintile vs Bottom Quintile (pa)	7.70%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	19.39%
Outperformance of Top Quintile vs Market (pa)	1.19%
Underperformance of Bottom Quintile Total vs Market	-71.29%
Underperformance of Bottom Quintile vs Market (pa)	-6.51%

MID CAP	
CAGR Market	2.25%
CAGR Q1	9.32%
CAGR Q5	-6.26%
Years outperforming the market (%)	75.00%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	245.19%
Outperformance of Top Quintile vs Bottom Quintile (pa)	15.58%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	160.68%
Outperformance of Top Quintile vs Market (pa)	7.07%
Underperformance of Bottom Quintile Total vs Market	-84.51%
Underperformance of Bottom Quintile vs Market (pa)	-8.51%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	8.46%
CAGR Q5	-2.42%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	190.43%
Outperformance of Top Quintile vs Bottom Quintile (pa)	10.88%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	134.42%
Outperformance of Top Quintile vs Market (pa)	6.21%
Underperformance of Bottom Quintile Total vs Market	-56.01%
Underperformance of Bottom Quintile vs Market (pa)	-4.67%

Free Cash Flow Yield 12 months

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	186.0%	69.5%	1.8%	-18.3%	-51.8%	46.7%	47.0%	55.0%	59.7%	63.9%	85	83	84	84	84
MID CAP (> 100 m and < 1000 m)	317.4%	107.9%	16.1%	-14.1%	-6.3%	37.9%	43.0%	49.4%	50.8%	54.8%	117	116	115	116	116
LARGE CAP (> 1000 m)	242.8%	147.7%	59.8%	-1.8%	30.7%	37.2%	41.4%	42.6%	49.0%	47.5%	66	65	65	65	65

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	9.15%
CAGR Q5	-5.89%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	237.78%
Outperformance of Top Quintile vs Bottom Quintile (pa)	15.05%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	155.48%
Outperformance of Top Quintile vs Market (pa)	6.91%
Underperformance of Bottom Quintile Total vs Market	-82.30%
Underperformance of Bottom Quintile vs Market (pa)	-8.14%

MID CAP	
CAGR Market	2.25%
CAGR Q1	12.65%
CAGR Q5	-0.54%
Years outperforming the market (%)	75.00%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	323.68%
Outperformance of Top Quintile vs Bottom Quintile (pa)	13.18%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	286.86%
Outperformance of Top Quintile vs Market (pa)	10.40%
Underperformance of Bottom Quintile Total vs Market	-36.82%
Underperformance of Bottom Quintile vs Market (pa)	-2.78%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	10.81%
CAGR Q5	2.26%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	212.02%
Outperformance of Top Quintile vs Bottom Quintile (pa)	8.55%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	212.21%
Outperformance of Top Quintile vs Market (pa)	8.56%
Underperformance of Bottom Quintile Total vs Market	0.19%
Underperformance of Bottom Quintile vs Market (pa)	0.01%

Free Cash Flow Yield 5-year average

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	113.0%	109.4%	-27.7%	12.5%	-49.2%	45.0%	47.3%	56.4%	59.4%	64.6%	84	84	83	84	84
MID CAP (> 100 m and < 1000 m)	325.8%	138.4%	4.2%	-24.1%	-6.8%	37.7%	42.6%	49.3%	52.1%	54.3%	117	116	115	116	116
LARGE CAP (> 1000 m)	171.2%	148.5%	108.2%	3.5%	12.7%	38.0%	42.0%	42.5%	47.2%	48.3%	66	65	65	65	65

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	6.51%
CAGR Q5	-5.48%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	162.20%
Outperformance of Top Quintile vs Bottom Quintile (pa)	11.99%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	82.49%
Outperformance of Top Quintile vs Market (pa)	4.26%
Underperformance of Bottom Quintile Total vs Market	-79.71%
Underperformance of Bottom Quintile vs Market (pa)	-7.73%

MID CAP	
CAGR Market	2.25%
CAGR Q1	12.83%
CAGR Q5	-0.59%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	3
Outperformance of Top Quintile vs Bottom Quintile Total	332.63%
Outperformance of Top Quintile vs Bottom Quintile (pa)	13.42%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	295.29%
Outperformance of Top Quintile vs Market (pa)	10.59%
Underperformance of Bottom Quintile Total vs Market	-37.34%
Underperformance of Bottom Quintile vs Market (pa)	-2.83%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	8.67%
CAGR Q5	1.00%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	158.51%
Outperformance of Top Quintile vs Bottom Quintile (pa)	7.67%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	140.66%
Outperformance of Top Quintile vs Market (pa)	6.42%
Underperformance of Bottom Quintile Total vs Market	-17.85%
Underperformance of Bottom Quintile vs Market (pa)	-1.25%

ROIC 12 months

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	120.3%	64.2%	-8.2%	-15.8%	-56.7%	49.2%	49.5%	56.3%	58.4%	63.4%	100	100	100	100	100
MID CAP (> 100 m and < 1000 m)	82.6%	83.5%	139.5%	98.9%	-51.8%	44.9%	44.8%	44.2%	46.0%	57.3%	133	132	131	131	131
LARGE CAP (> 1000 m)	69.5%	116.7%	116.9%	108.0%	24.9%	45.6%	41.2%	38.5%	42.0%	48.0%	72	71	70	71	71

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	6.80%
CAGR Q5	-6.74%
Years outperforming the market (%)	58.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	177.02%
Outperformance of Top Quintile vs Bottom Quintile (pa)	13.55%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	89.75%
Outperformance of Top Quintile vs Market (pa)	4.56%
Underperformance of Bottom Quintile Total vs Market	-87.27%
Underperformance of Bottom Quintile vs Market (pa)	-8.99%

MID CAP	
CAGR Market	2.25%
CAGR Q1	5.15%
CAGR Q5	-5.89%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	134.34%
Outperformance of Top Quintile vs Bottom Quintile (pa)	11.04%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	52.05%
Outperformance of Top Quintile vs Market (pa)	2.90%
Underperformance of Bottom Quintile Total vs Market	-82.29%
Underperformance of Bottom Quintile vs Market (pa)	-8.14%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	4.50%
CAGR Q5	1.87%
Years outperforming the market (%)	58.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	44.62%
Outperformance of Top Quintile vs Bottom Quintile (pa)	2.63%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	38.96%
Outperformance of Top Quintile vs Market (pa)	2.25%
Underperformance of Bottom Quintile Total vs Market	-5.66%
Underperformance of Bottom Quintile vs Market (pa)	-0.38%

ROIC 5-year average

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	200.2%	47.6%	131.4%	7.6%	-20.9%	44.5%	49.4%	47.2%	55.9%	60.6%	64	64	63	63	63
MID CAP (> 100 m and < 1000 m)	134.2%	159.4%	204.9%	168.0%	58.1%	43.5%	41.3%	40.6%	44.7%	50.6%	97	96	96	96	96
LARGE CAP (> 1000 m)	69.9%	177.2%	92.2%	151.6%	73.9%	43.9%	38.8%	43.0%	41.0%	44.3%	61	61	60	61	61

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	9.59%
CAGR Q5	-1.94%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	221.14%
Outperformance of Top Quintile vs Bottom Quintile (pa)	11.53%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	169.66%
Outperformance of Top Quintile vs Market (pa)	7.35%
Underperformance of Bottom Quintile Total vs Market	-51.48%
Underperformance of Bottom Quintile vs Market (pa)	-4.18%

MID CAP	
CAGR Market	2.25%
CAGR Q1	7.35%
CAGR Q5	3.89%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	76.15%
Outperformance of Top Quintile vs Bottom Quintile (pa)	3.46%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	103.68%
Outperformance of Top Quintile vs Market (pa)	5.10%
Underperformance of Bottom Quintile Total vs Market	27.53%
Underperformance of Bottom Quintile vs Market (pa)	1.64%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	4.52%
CAGR Q5	4.72%
Years outperforming the market (%)	58.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	-3.96%
Outperformance of Top Quintile vs Bottom Quintile (pa)	-0.20%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	39.35%
Outperformance of Top Quintile vs Market (pa)	2.27%
Underperformance of Bottom Quintile Total vs Market	43.31%
Underperformance of Bottom Quintile vs Market (pa)	2.47%

ROA (Return on Assets)

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	37.2%	136.7%	26.5%	-12.9%	-57.3%	51.2%	48.3%	52.7%	59.7%	64.0%	105	105	105	105	105
MID CAP (> 100 m and < 1000 m)	43.4%	108.7%	101.0%	132.1%	-37.0%	47.1%	43.1%	44.2%	44.7%	54.5%	145	144	143	144	144
LARGE CAP (> 1000 m)	53.8%	152.5%	123.4%	72.5%	21.2%	44.3%	39.2%	39.6%	44.9%	47.1%	76	75	75	75	75

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	2.67%
CAGR Q5	-6.84%
Years outperforming the market (%)	58.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	94.48%
Outperformance of Top Quintile vs Bottom Quintile (pa)	9.51%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	6.65%
Outperformance of Top Quintile vs Market (pa)	0.42%
Underperformance of Bottom Quintile Total vs Market	-87.83%
Underperformance of Bottom Quintile vs Market (pa)	-9.09%

MID CAP	
CAGR Market	2.25%
CAGR Q1	3.05%
CAGR Q5	-3.78%
Years outperforming the market (%)	58.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	80.43%
Outperformance of Top Quintile vs Bottom Quintile (pa)	6.83%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	12.89%
Outperformance of Top Quintile vs Market (pa)	0.81%
Underperformance of Bottom Quintile Total vs Market	-67.54%
Underperformance of Bottom Quintile vs Market (pa)	-6.02%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	3.65%
CAGR Q5	1.61%
Years outperforming the market (%)	58.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	32.56%
Outperformance of Top Quintile vs Bottom Quintile (pa)	2.04%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	23.21%
Outperformance of Top Quintile vs Market (pa)	1.40%
Underperformance of Bottom Quintile Total vs Market	-9.35%
Underperformance of Bottom Quintile vs Market (pa)	-0.63%

Piotroski F-Score

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	205.1%	36.7%	-6.6%	-41.9%	-55.0%	43.3%	53.1%	57.1%	61.9%	61.7%	118	117	116	117	117
MID CAP (> 100 m and < 1000 m)	301.7%	82.7%	58.0%	3.0%	-54.6%	39.3%	44.4%	47.2%	48.8%	56.4%	153	152	152	152	152
LARGE CAP (> 1000 m)	144.3%	77.1%	95.7%	61.3%	20.6%	40.2%	42.6%	43.5%	44.0%	45.5%	77	76	76	76	76

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	9.74%
CAGR Q5	-6.44%
Years outperforming the market (%)	75.00%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	260.10%
Outperformance of Top Quintile vs Bottom Quintile (pa)	16.18%
Number of years with negative return Bottom Quintile	7
Outperformance of Top Quintile Total vs Market	174.57%
Outperformance of Top Quintile vs Market (pa)	7.50%
Underperformance of Bottom Quintile Total vs Market	-85.53%
Underperformance of Bottom Quintile vs Market (pa)	-8.68%

MID CAP	
CAGR Market	2.25%
CAGR Q1	12.29%
CAGR Q5	-6.37%
Years outperforming the market (%)	75.00%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	356.32%
Outperformance of Top Quintile vs Bottom Quintile (pa)	18.65%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	271.19%
Outperformance of Top Quintile vs Market (pa)	10.04%
Underperformance of Bottom Quintile Total vs Market	-85.13%
Underperformance of Bottom Quintile vs Market (pa)	-8.61%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	7.73%
CAGR Q5	1.57%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	123.79%
Outperformance of Top Quintile vs Bottom Quintile (pa)	6.16%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	113.80%
Outperformance of Top Quintile vs Market (pa)	5.48%
Underperformance of Bottom Quintile Total vs Market	-9.99%
Underperformance of Bottom Quintile vs Market (pa)	-0.68%

Net Debt to Market Value Ratio

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	28.8%	-32.8%	41.9%	7.7%	-10.3%	52.8%	58.3%	54.2%	55.6%	56.4%	101	100	100	100	100
MID CAP (> 100 m and < 1000 m)	-13.6%	18.0%	34.7%	120.6%	127.7%	49.9%	48.4%	47.5%	45.6%	45.8%	133	132	132	132	132
LARGE CAP (> 1000 m)	39.2%	89.7%	104.2%	79.4%	97.7%	45.4%	42.2%	43.5%	43.2%	40.9%	72	71	71	71	71

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	2.13%
CAGR Q5	-0.90%
Years outperforming the market (%)	50.00%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	39.03%
Outperformance of Top Quintile vs Bottom Quintile (pa)	3.03%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	-1.79%
Outperformance of Top Quintile vs Market (pa)	-0.12%
Underperformance of Bottom Quintile Total vs Market	-40.82%
Underperformance of Bottom Quintile vs Market (pa)	-3.15%

MID CAP	
CAGR Market	2.25%
CAGR Q1	-1.21%
CAGR Q5	7.10%
Years outperforming the market (%)	41.67%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	-141.30%
Outperformance of Top Quintile vs Bottom Quintile (pa)	-8.31%
Number of years with negative return Bottom Quintile	4
Outperformance of Top Quintile Total vs Market	-44.12%
Outperformance of Top Quintile vs Market (pa)	-3.45%
Underperformance of Bottom Quintile Total vs Market	97.18%
Underperformance of Bottom Quintile vs Market (pa)	4.85%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	2.80%
CAGR Q5	5.84%
Years outperforming the market (%)	50.00%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	-58.46%
Outperformance of Top Quintile vs Bottom Quintile (pa)	-3.05%
Number of years with negative return Bottom Quintile	4
Outperformance of Top Quintile Total vs Market	8.68%
Outperformance of Top Quintile vs Market (pa)	0.55%
Underperformance of Bottom Quintile Total vs Market	67.14%
Underperformance of Bottom Quintile vs Market (pa)	3.60%

6 months Price Index

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	285.8%	196.2%	1.0%	-42.9%	-90.3%	49.2%	46.3%	53.8%	58.3%	68.7%	112	111	111	111	111
MID CAP (> 100 m and < 1000 m)	248.0%	167.2%	85.1%	35.3%	-80.2%	42.3%	41.7%	43.5%	46.5%	60.6%	147	146	146	146	146
LARGE CAP (> 1000 m)	150.6%	137.6%	97.2%	60.6%	-18.1%	42.3%	41.3%	41.7%	42.4%	47.6%	76	75	75	75	75

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	11.91%
CAGR Q5	-17.69%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	376.09%
Outperformance of Top Quintile vs Bottom Quintile (pa)	29.60%
Number of years with negative return Bottom Quintile	7
Outperformance of Top Quintile Total vs Market	255.22%
Outperformance of Top Quintile vs Market (pa)	9.66%
Underperformance of Bottom Quintile Total vs Market	-120.87%
Underperformance of Bottom Quintile vs Market (pa)	-19.94%

MID CAP	
CAGR Market	2.25%
CAGR Q1	10.95%
CAGR Q5	-12.61%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	328.21%
Outperformance of Top Quintile vs Bottom Quintile (pa)	23.57%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	217.50%
Outperformance of Top Quintile vs Market (pa)	8.71%
Underperformance of Bottom Quintile Total vs Market	-110.71%
Underperformance of Bottom Quintile vs Market (pa)	-14.86%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	7.96%
CAGR Q5	-1.65%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	168.72%
Outperformance of Top Quintile vs Bottom Quintile (pa)	9.61%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	120.07%
Outperformance of Top Quintile vs Market (pa)	5.71%
Underperformance of Bottom Quintile Total vs Market	-48.65%
Underperformance of Bottom Quintile vs Market (pa)	-3.90%

12 months Price Index

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	224.9%	168.2%	8.2%	-49.4%	-83.4%	49.1%	48.0%	51.7%	58.9%	66.6%	106	106	106	106	106
MID CAP (> 100 m and < 1000 m)	159.6%	173.6%	98.7%	28.7%	-50.6%	43.1%	42.2%	43.1%	47.2%	56.0%	141	140	140	140	140
LARGE CAP (> 1000 m)	152.7%	116.3%	75.9%	100.0%	-11.4%	41.5%	42.2%	41.4%	42.2%	46.9%	74	72	73	73	73

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	10.32%
CAGR Q5	-13.90%
Years outperforming the market (%)	75.00%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	308.29%
Outperformance of Top Quintile vs Bottom Quintile (pa)	24.22%
Number of years with negative return Bottom Quintile	7
Outperformance of Top Quintile Total vs Market	194.34%
Outperformance of Top Quintile vs Market (pa)	8.07%
Underperformance of Bottom Quintile Total vs Market	-113.95%
Underperformance of Bottom Quintile vs Market (pa)	-16.15%

MID CAP	
CAGR Market	2.25%
CAGR Q1	8.27%
CAGR Q5	-5.71%
Years outperforming the market (%)	58.33%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	210.21%
Outperformance of Top Quintile vs Bottom Quintile (pa)	13.99%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	129.04%
Outperformance of Top Quintile vs Market (pa)	6.03%
Underperformance of Bottom Quintile Total vs Market	-81.17%
Underperformance of Bottom Quintile vs Market (pa)	-7.96%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	8.03%
CAGR Q5	-1.00%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	164.14%
Outperformance of Top Quintile vs Bottom Quintile (pa)	9.04%
Number of years with negative return Bottom Quintile	4
Outperformance of Top Quintile Total vs Market	122.19%
Outperformance of Top Quintile vs Market (pa)	5.79%
Underperformance of Bottom Quintile Total vs Market	-41.95%
Underperformance of Bottom Quintile vs Market (pa)	-3.25%

MF Rank

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	133.8%	76.2%	0.9%	-17.3%	-53.3%	44.8%	51.8%	57.5%	58.1%	63.3%	98	97	97	97	97
MID CAP (> 100 m and < 1000 m)	182.8%	139.7%	67.5%	44.4%	-52.1%	41.1%	43.2%	46.2%	48.3%	57.9%	131	130	130	130	130
LARGE CAP (> 1000 m)	162.9%	104.2%	82.5%	91.0%	13.5%	42.5%	40.0%	42.5%	42.2%	48.3%	71	70	70	70	70

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	7.33%
CAGR Q5	-6.15%
Years outperforming the market (%)	50.00%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	187.08%
Outperformance of Top Quintile vs Bottom Quintile (pa)	13.48%
Number of years with negative return Bottom Quintile	7
Outperformance of Top Quintile Total vs Market	103.22%
Outperformance of Top Quintile vs Market (pa)	5.09%
Underperformance of Bottom Quintile Total vs Market	-83.86%
Underperformance of Bottom Quintile vs Market (pa)	-8.40%

MID CAP	
CAGR Market	2.25%
CAGR Q1	9.05%
CAGR Q5	-5.94%
Years outperforming the market (%)	58.33%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	234.90%
Outperformance of Top Quintile vs Bottom Quintile (pa)	14.99%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	152.30%
Outperformance of Top Quintile vs Market (pa)	6.80%
Underperformance of Bottom Quintile Total vs Market	-82.60%
Underperformance of Bottom Quintile vs Market (pa)	-8.19%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	8.39%
CAGR Q5	1.06%
Years outperforming the market (%)	58.33%
Number of years with negative return Top Quintile	5
Outperformance of Top Quintile vs Bottom Quintile Total	149.36%
Outperformance of Top Quintile vs Bottom Quintile (pa)	7.32%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	132.36%
Outperformance of Top Quintile vs Market (pa)	6.14%
Underperformance of Bottom Quintile Total vs Market	-17.00%
Underperformance of Bottom Quintile vs Market (pa)	-1.18%

ERP5 Rank

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size				
Market Cap	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5
SMALL CAP (> 15 m and < 100m)	331.0%	83.1%	7.8%	28.0%	-53.1%	38.7%	48.9%	54.8%	52.9%	64.7%	66	65	65	65	65
MID CAP (> 100 m and < 1000 m)	279.8%	121.0%	68.7%	65.2%	-37.7%	39.2%	41.8%	43.9%	47.0%	56.6%	105	104	104	104	104
LARGE CAP (> 1000 m)	169.1%	116.4%	105.5%	65.0%	-7.0%	40.6%	41.4%	41.4%	43.9%	47.6%	63	62	62	62	62

SMALL CAP	
CAGR Market	2.25%
CAGR Q1	12.95%
CAGR Q5	-6.11%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	4
Outperformance of Top Quintile vs Bottom Quintile Total	384.09%
Outperformance of Top Quintile vs Bottom Quintile (pa)	19.06%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	300.48%
Outperformance of Top Quintile vs Market (pa)	10.70%
Underperformance of Bottom Quintile Total vs Market	-83.61%
Underperformance of Bottom Quintile vs Market (pa)	-8.36%

MID CAP	
CAGR Market	2.25%
CAGR Q1	11.76%
CAGR Q5	-3.87%
Years outperforming the market (%)	83.33%
Number of years with negative return Top Quintile	3
Outperformance of Top Quintile vs Bottom Quintile Total	317.45%
Outperformance of Top Quintile vs Bottom Quintile (pa)	15.63%
Number of years with negative return Bottom Quintile	6
Outperformance of Top Quintile Total vs Market	249.21%
Outperformance of Top Quintile vs Market (pa)	9.52%
Underperformance of Bottom Quintile Total vs Market	-68.24%
Underperformance of Bottom Quintile vs Market (pa)	-6.11%

LARGE CAP	
CAGR Market	2.25%
CAGR Q1	8.60%
CAGR Q5	-0.61%
Years outperforming the market (%)	66.67%
Number of years with negative return Top Quintile	3
Outperformance of Top Quintile vs Bottom Quintile Total	176.12%
Outperformance of Top Quintile vs Bottom Quintile (pa)	9.20%
Number of years with negative return Bottom Quintile	5
Outperformance of Top Quintile Total vs Market	138.55%
Outperformance of Top Quintile vs Market (pa)	6.35%
Underperformance of Bottom Quintile Total vs Market	-37.57%
Underperformance of Bottom Quintile vs Market (pa)	-2.85%

APPENDIX 3: MULTIPLE RATIO TEST RESULTS

12 months Earnings Yield as primary factor

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size					Years outperforming the market (%)	Number of years with negative return Top Q	CAGR Q1	CAGR Q5
Factor 2	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5				
Earnings Yield 12 months	372.9%	392.1%	154.2%	162.7%	170.7%	36.1%	36.4%	40.7%	42.6%	38.7%	50	49	50	49	49	92%	4	13.8%	8.7%
Earnings Yield 5 years	332.4%	355.2%	292.1%	154.2%	106.7%	34.0%	36.3%	38.4%	41.1%	44.8%	50	49	50	49	49	75%	3	13.0%	6.2%
Price To Book	560.4%	348.8%	271.4%	202.0%	31.4%	35.1%	35.3%	39.0%	39.7%	44.4%	50	49	49	49	49	75%	3	17.0%	2.3%
FCF Yield	420.8%	409.7%	266.1%	113.3%	66.9%	34.3%	33.9%	37.8%	41.9%	46.5%	46	45	45	45	45	83%	4	14.7%	4.4%
FCF Yield 5 years	319.5%	333.5%	324.7%	159.6%	73.0%	33.0%	37.4%	37.5%	40.6%	45.9%	46	45	45	45	45	75%	3	12.7%	4.7%
Price To Sales	362.8%	189.5%	326.5%	209.4%	134.5%	37.7%	40.7%	36.0%	39.5%	40.7%	50	49	49	49	49	75%	3	13.6%	7.4%
F SCORE	447.1%	289.4%	286.2%	219.2%	55.1%	34.0%	35.9%	37.7%	41.0%	46.0%	50	49	49	49	49	75%	3	15.2%	3.7%
Net Debt On Market Value	285.3%	190.9%	300.9%	239.4%	173.5%	38.1%	38.9%	38.6%	38.9%	40.0%	50	49	49	49	49	75%	4	11.9%	8.7%
ROIC	143.3%	271.3%	252.8%	259.7%	260.8%	41.2%	36.9%	39.3%	37.8%	39.6%	50	49	49	49	49	58%	4	7.7%	11.3%
ROIC 5 years	225.8%	332.4%	242.4%	342.7%	250.3%	38.5%	35.5%	37.7%	38.4%	38.1%	41	40	41	40	40	67%	3	10.3%	11.0%
Price Index 12 months	695.8%	394.2%	307.8%	178.2%	-14.7%	32.2%	34.3%	36.2%	38.1%	53.4%	49	48	48	48	48	83%	2	18.9%	-1.3%
Price Index 6 months	814.4%	332.5%	319.5%	197.5%	-26.1%	32.8%	34.7%	36.2%	37.3%	52.9%	50	49	49	49	49	83%	2	20.3%	-2.5%
MF Rank	233.3%	224.4%	250.3%	234.0%	243.5%	39.8%	37.9%	37.3%	39.5%	40.0%	50	49	50	49	49	67%	4	10.6%	10.8%
ERP5	455.1%	396.1%	193.5%	182.0%	74.0%	34.6%	35.1%	39.0%	41.1%	44.8%	50	49	50	49	49	83%	3	15.4%	4.7%

Price-to-Book ratio as primary factor

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size					Years outperforming the market (%)	Number of years with negative return Top Q	CAGR Q1	CAGR Q5
Factor 2	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5				
Earning Yield 12 months	692.0%	252.1%	427.4%	168.4%	273.2%	31.8%	38.0%	42.1%	43.6%	48.0%	44	44	43	43	43	83%	3	18.8%	11.6%
Earning Yield 5 years	354.3%	280.5%	370.3%	314.9%	238.0%	37.9%	38.0%	41.3%	38.6%	42.4%	55	54	54	54	54	67%	3	13.4%	10.7%
Price To Book	618.7%	232.0%	264.7%	261.0%	251.3%	38.5%	39.8%	38.0%	41.0%	40.8%	55	54	54	54	54	83%	2	17.9%	11.0%
FCF Yield	685.2%	370.6%	186.7%	193.3%	216.6%	34.1%	35.5%	38.6%	39.8%	48.8%	47	46	46	46	46	83%	3	18.7%	10.1%
FCF Yield 5 years	384.3%	521.8%	213.7%	192.0%	245.8%	34.9%	35.3%	38.0%	39.6%	48.7%	48	46	46	46	46	83%	4	14.0%	10.9%
Price To Sales	623.1%	265.4%	311.8%	234.3%	234.1%	37.5%	41.6%	40.5%	40.5%	37.2%	53	52	52	52	52	83%	2	17.9%	10.6%
F SCORE	685.2%	370.6%	186.7%	193.3%	216.6%	34.1%	35.5%	38.6%	39.8%	48.8%	47	46	46	46	46	83%	3	18.7%	10.1%
Net Debt On Market Value	376.4%	482.0%	311.1%	206.3%	349.1%	37.7%	39.9%	38.2%	44.2%	43.0%	45	44	44	44	44	92%	4	13.9%	13.3%
ROIC	551.0%	403.4%	362.7%	168.2%	271.6%	33.6%	38.4%	39.6%	43.8%	48.1%	44	43	44	44	44	83%	3	16.9%	11.6%
ROIC 5 years	476.4%	224.3%	286.9%	365.7%	339.6%	36.2%	38.0%	42.0%	38.8%	46.7%	37	36	36	36	36	83%	3	15.7%	13.1%
Price Index 12 months	987.3%	352.2%	358.7%	191.1%	41.3%	35.0%	35.7%	36.0%	42.2%	49.2%	53	52	52	53	52	92%	2	22.0%	2.9%
Price Index 6 months	1029.4%	302.5%	354.1%	168.9%	70.6%	34.8%	36.9%	34.8%	42.9%	48.4%	54	53	53	53	53	83%	2	22.4%	4.6%
MF Rank	603.5%	399.5%	223.8%	194.8%	226.4%	34.0%	37.1%	42.0%	49.2%	36.0%	55	54	54	54	54	75%	3	17.7%	10.4%
ERP5	616.3%	284.1%	208.2%	333.9%	208.0%	33.7%	39.0%	44.6%	41.0%	39.9%	55	54	54	54	54	75%	3	17.8%	9.8%

12 months price to Free Cash Flow as primary factor

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size					Years outperforming the market (%)	Number of years with negative return Top Q	CAGR Q1	CAGR Q5
Factor 2	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5				
Earnings Yield 12 months	607.9%	323.5%	281.9%	260.9%	122.8%	32.1%	34.7%	39.0%	40.2%	45.1%	45	44	44	44	44	92%	3	17.7%	6.9%
Earnings Yield 5 years	428.7%	438.0%	382.4%	122.2%	209.2%	33.3%	36.0%	34.5%	45.0%	42.3%	45	44	44	44	44	83%	2	14.9%	9.9%
Price To Book	713.7%	372.5%	324.6%	179.8%	114.4%	33.2%	37.1%	34.6%	41.0%	43.9%	45	43	44	43	44	83%	2	19.1%	6.6%
FCF Yield	313.0%	421.6%	297.6%	300.1%	192.9%	37.6%	37.6%	38.5%	36.9%	40.4%	45	44	44	44	44	83%	4	12.5%	9.4%
FCF Yield 5 years	322.7%	414.8%	356.5%	292.8%	160.9%	34.6%	33.3%	37.6%	38.6%	46.7%	45	44	43	44	44	83%	4	12.8%	8.3%
Price To Sales	549.0%	326.3%	275.9%	298.1%	119.0%	35.2%	40.5%	36.8%	37.7%	40.8%	45	44	44	44	44	75%	2	16.9%	6.7%
F SCORE	568.7%	389.3%	250.9%	260.5%	127.9%	32.9%	34.9%	39.0%	40.5%	43.7%	45	44	43	44	44	92%	2	17.2%	7.1%
Net Debt On Market Value	231.7%	270.1%	374.2%	292.1%	339.5%	37.0%	40.5%	34.7%	39.5%	39.3%	45	44	44	44	44	75%	4	10.5%	13.1%
ROIC	199.1%	437.5%	446.4%	320.6%	145.1%	39.3%	35.1%	35.7%	37.2%	44.1%	45	44	44	44	44	75%	4	9.6%	7.8%
ROIC 5 years	334.4%	358.8%	359.0%	375.1%	221.1%	36.1%	34.3%	35.8%	37.6%	42.4%	37	35	36	36	36	75%	4	13.0%	10.2%
Price Index 12 months	755.0%	411.9%	367.3%	242.3%	5.3%	34.6%	35.1%	36.5%	36.4%	48.2%	44	42	43	42	43	92%	2	19.6%	0.4%
Price Index 6 months	582.8%	525.7%	352.8%	199.7%	35.0%	34.9%	34.9%	36.5%	37.7%	46.6%	44	43	43	43	43	100%	2	17.4%	2.5%
MF Rank	389.3%	341.3%	348.9%	311.2%	142.0%	33.7%	37.5%	37.4%	38.1%	44.4%	45	44	44	44	44	83%	3	14.1%	7.6%
ERP5	578.4%	339.3%	351.4%	141.9%	186.2%	33.2%	37.8%	35.1%	41.6%	43.4%	45	44	44	44	44	83%	3	17.3%	9.2%

Price-to-Sales ratio as primary factor

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size					Years outperforming the market (%)	Number of years with negative return Top Q	CAGR Q1	CAGR Q5
Factor 2	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5				
Earnings Yield 12 months	330.3%	143.3%	372.2%	112.7%	4.5%	38.8%	42.5%	39.3%	46.1%	54.4%	53	52	52	52	52	67%	3	12.9%	0.4%
Earnings Yield 5 years	252.6%	187.2%	214.7%	98.3%	86.8%	40.5%	42.5%	41.6%	47.5%	48.6%	55	54	54	54	54	75%	3	11.1%	5.3%
Price To Book	423.3%	326.3%	221.1%	151.0%	-15.8%	41.1%	38.7%	42.5%	43.4%	51.7%	54	53	52	53	52	67%	3	14.8%	-1.4%
FCF Yield	446.0%	245.7%	97.7%	74.0%	37.4%	37.8%	40.2%	46.7%	44.6%	54.4%	52	51	51	51	51	75%	2	15.2%	2.7%
FCF Yield 5 years	257.4%	312.6%	133.8%	80.6%	46.3%	38.5%	40.5%	43.6%	48.1%	53.4%	51	51	50	51	50	75%	4	11.2%	3.2%
Price To Sales	336.4%	123.4%	197.5%	146.4%	68.6%	43.2%	43.4%	43.5%	45.3%	45.2%	55	54	54	54	54	75%	3	13.1%	4.4%
F SCORE	341.3%	312.9%	144.8%	72.4%	47.8%	39.0%	40.6%	43.7%	46.8%	50.6%	55	54	54	54	54	75%	4	13.2%	3.3%
Net Debt On Market Value	251.5%	225.1%	164.9%	85.4%	109.0%	41.4%	42.3%	42.6%	46.2%	48.9%	53	52	53	52	53	83%	4	11.0%	6.3%
ROIC	275.7%	241.3%	199.0%	164.5%	4.4%	40.0%	39.2%	43.0%	44.6%	54.6%	53	52	52	53	52	67%	4	11.7%	0.4%
ROIC 5 years	184.8%	190.2%	206.6%	184.3%	54.6%	40.1%	41.3%	43.8%	44.3%	51.3%	47	46	46	46	45	67%	4	9.1%	3.7%
Price Index 12 months	549.0%	314.6%	187.3%	116.0%	-46.0%	36.5%	39.5%	43.1%	45.3%	56.7%	54	53	53	53	53	75%	2	16.9%	-5.0%
Price Index 6 months	563.0%	298.6%	195.2%	59.4%	-18.8%	36.5%	41.2%	40.9%	48.1%	53.9%	54	54	53	54	53	75%	2	17.1%	-1.7%
MF Rank	229.5%	267.2%	257.3%	138.4%	7.5%	39.9%	40.3%	41.4%	45.7%	53.3%	55	54	54	54	54	67%	3	10.4%	0.6%
ERP5	393.5%	187.7%	190.5%	76.3%	56.0%	37.1%	40.1%	43.8%	51.3%	48.4%	55	54	54	54	54	67%	3	14.2%	3.8%

Piotroski F-Score as primary factor

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size					Years outperforming the market (%)	Number of years with negative return Top Q	CAGR Q1	CAGR Q5
Factor 2	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5				
Earnings Yield 12 months	448.7%	298.9%	259.5%	119.4%	66.4%	34.7%	37.2%	40.1%	42.5%	48.0%	56	55	55	55	55	83%	3	15.2%	4.3%
Earnings Yield 5 years	457.4%	353.0%	181.3%	61.7%	124.0%	33.5%	36.0%	40.7%	46.9%	46.0%	57	56	56	56	56	92%	2	15.4%	7.0%
Price To Book	591.2%	275.0%	238.9%	127.5%	40.1%	35.4%	37.4%	38.9%	43.6%	47.2%	57	56	56	56	56	83%	3	17.5%	2.8%
FCF Yield	680.4%	268.2%	201.5%	75.1%	62.8%	33.7%	37.4%	39.0%	44.7%	48.2%	56	56	55	56	55	83%	2	18.7%	4.1%
FCF Yield 5 years	391.4%	343.0%	181.8%	59.6%	148.4%	33.2%	37.3%	39.2%	48.0%	45.6%	56	56	55	56	55	83%	3	14.2%	7.9%
Price To Sales	455.5%	267.2%	255.2%	166.2%	29.0%	38.5%	39.0%	38.4%	39.7%	47.4%	57	56	56	56	56	75%	4	15.4%	2.1%
F SCORE	334.4%	292.9%	143.4%	239.2%	105.6%	38.7%	38.5%	40.4%	41.5%	44.0%	57	56	56	56	56	83%	3	13.0%	6.2%
Net Debt On Market Value	224.9%	184.7%	262.8%	207.1%	198.5%	39.7%	40.3%	41.5%	40.3%	40.5%	56	55	56	56	55	75%	5	10.3%	9.5%
ROIC	232.7%	179.3%	308.5%	184.0%	182.7%	41.4%	41.2%	36.5%	39.9%	43.6%	56	55	56	55	55	75%	5	10.5%	9.0%
ROIC 5 years	329.6%	256.7%	227.6%	276.3%	241.0%	38.2%	38.9%	39.3%	37.5%	42.1%	47	46	46	46	46	75%	5	12.9%	10.8%
Price Index 12 months	477.7%	339.3%	155.7%	292.7%	33.6%	40.0%	36.2%	41.6%	36.6%	47.2%	55	53	54	53	54	75%	4	15.7%	2.4%
Price Index 6 months	393.3%	351.7%	203.1%	219.8%	29.5%	40.8%	36.8%	38.9%	39.9%	46.1%	57	56	56	56	56	75%	3	14.2%	2.2%
MF Rank	340.9%	313.6%	164.1%	201.5%	103.5%	37.3%	39.1%	40.6%	41.0%	45.1%	57	56	56	56	56	83%	3	13.2%	6.1%
ERP5	549.3%	237.5%	231.9%	114.2%	75.8%	34.3%	38.6%	39.4%	44.7%	46.1%	57	56	56	56	56	83%	3	16.9%	4.8%

12 months price index as primary factor

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size					Years outperforming the market (%)	Number of years with negative return Top Q	CAGR Q1	CAGR Q5
Factor 2	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5				
Earnings Yield 12 months	802.4%	295.3%	135.0%	56.1%	22.2%	33.9%	40.8%	42.6%	48.6%	50.8%	47	46	46	46	46	92%	3	20.1%	1.7%
Earnings Yield 5 years	477.1%	174.0%	91.1%	32.4%	134.1%	35.0%	39.7%	46.7%	50.5%	47.3%	53	52	52	52	52	83%	3	15.7%	7.3%
Price To Book	674.8%	334.7%	172.2%	55.5%	-8.9%	38.7%	38.5%	42.1%	48.0%	50.0%	51	50	50	49	50	83%	3	18.6%	-0.8%
FCF Yield	629.7%	321.4%	138.5%	64.0%	40.5%	37.4%	37.1%	44.6%	48.9%	52.1%	45	43	43	43	43	100%	3	18.0%	2.9%
FCF Yield 5 years	530.4%	310.6%	119.8%	68.3%	59.2%	35.5%	39.0%	46.0%	47.3%	52.1%	44	43	43	43	43	92%	3	16.6%	4.0%
Price To Sales	290.2%	351.2%	301.3%	79.6%	-11.3%	41.6%	39.9%	41.1%	45.3%	50.9%	51	49	50	49	49	67%	4	12.0%	-1.0%
F SCORE	447.9%	247.9%	233.3%	61.7%	-10.8%	38.6%	41.4%	42.6%	45.7%	51.0%	53	52	52	52	52	75%	3	15.2%	-0.9%
Net Debt On Market Value	138.5%	139.9%	211.3%	233.0%	194.0%	43.1%	43.7%	44.8%	43.0%	42.7%	48	47	47	47	47	92%	5	7.5%	9.4%
ROIC	271.4%	326.6%	166.8%	162.1%	39.1%	41.5%	38.7%	43.5%	42.9%	50.8%	47	46	46	46	46	83%	5	11.6%	2.8%
ROIC 5 years	482.2%	214.0%	216.6%	240.9%	165.9%	39.6%	38.3%	39.0%	42.5%	47.8%	35	34	34	34	34	92%	5	15.8%	8.5%
Price Index 12 months	114.9%	113.1%	119.1%	268.9%	156.9%	47.9%	45.5%	42.6%	40.2%	42.8%	53	52	52	52	52	83%	4	6.6%	8.2%
Price Index 6 months	186.0%	278.0%	258.8%	223.7%	-25.9%	45.2%	45.4%	39.4%	40.6%	48.2%	53	52	52	52	52	67%	3	9.2%	-2.5%
MF Rank	229.5%	267.2%	257.3%	138.4%	7.5%	39.9%	40.3%	41.4%	45.7%	53.3%	55	54	54	54	54	67%	3	10.4%	0.6%
ERP5	393.5%	187.7%	190.5%	76.3%	56.0%	37.1%	40.1%	43.8%	51.3%	48.4%	55	54	54	54	54	67%	3	14.2%	3.8%

6 months price index as primary factor

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size					Years outperforming the market (%)	Number of years with negative return Top Q	CAGR Q1	CAGR Q5
Factor 2	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5				
Earnings Yield 12 months	1002.2%	416.0%	134.2%	59.8%	48.3%	35.1%	36.9%	43.5%	48.1%	51.7%	49	48	49	48	48	92%	2	22.1%	3.3%
Earnings Yield 5 years	662.0%	244.6%	64.7%	163.9%	151.6%	34.9%	39.8%	47.5%	47.1%	47.8%	55	54	54	54	55	83%	3	18.4%	8.0%
Price To Book	1157.5%	449.2%	173.5%	71.9%	3.8%	36.8%	39.3%	42.5%	46.3%	49.4%	53	52	52	52	52	83%	3	23.5%	0.3%
FCF Yield	556.3%	285.5%	166.2%	95.3%	130.6%	36.5%	38.5%	44.5%	46.4%	52.0%	47	46	46	46	46	92%	3	17.0%	7.2%
FCF Yield 5 years	668.8%	214.2%	171.4%	96.8%	82.3%	34.8%	38.6%	45.6%	46.3%	53.0%	47	46	46	46	46	100%	4	18.5%	5.1%
Price To Sales	621.5%	554.2%	217.4%	110.2%	-16.3%	39.9%	36.7%	43.0%	42.9%	54.1%	53	52	52	52	52	75%	3	17.9%	-1.5%
F SCORE	598.6%	314.1%	243.6%	84.2%	61.3%	37.9%	40.7%	42.0%	45.5%	50.9%	56	54	54	54	54	83%	3	17.6%	4.1%
Net Debt On Market Value	180.4%	135.6%	197.4%	368.7%	294.9%	44.2%	44.6%	43.5%	40.7%	42.4%	50	49	49	49	49	92%	5	9.0%	12.1%
ROIC	332.7%	347.6%	303.7%	220.9%	43.7%	40.2%	39.8%	41.3%	42.2%	52.0%	49	48	49	48	48	83%	5	13.0%	3.1%
ROIC 5 years	485.3%	402.4%	559.5%	300.0%	230.3%	37.1%	38.5%	35.0%	42.8%	48.6%	35	34	34	35	34	92%	5	15.9%	10.5%
Price Index 12 months	153.4%	166.0%	412.7%	316.9%	154.4%	47.5%	44.9%	39.1%	39.8%	42.3%	52	51	51	51	51	83%	4	8.1%	8.1%
Price Index 6 months	122.1%	273.5%	164.4%	185.1%	411.8%	46.8%	44.3%	44.9%	41.3%	39.6%	56	54	54	54	55	75%	4	6.9%	14.6%
MF Rank	746.6%	212.8%	257.9%	52.7%	89.7%	36.3%	40.6%	43.6%	47.5%	49.1%	55	54	54	54	55	100%	4	19.5%	5.5%
ERP5	637.3%	208.1%	180.3%	107.6%	125.2%	35.2%	42.3%	42.5%	50.6%	46.5%	55	54	54	54	55	100%	4	18.1%	7.0%

MF Rank as primary factor

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size					Years outperforming the market (%)	Number of years with negative return Top Q	CAGR Q1	CAGR Q5
Factor 2	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5				
Earnings Yield 12 months	412.2%	253.2%	146.3%	150.7%	79.5%	34.9%	37.9%	42.2%	42.8%	47.4%	50	49	49	49	49	92%	4	14.6%	5.0%
Earnings Yield 5 years	477.6%	222.1%	262.2%	36.7%	116.9%	31.7%	39.5%	41.6%	46.7%	45.9%	50	49	49	49	49	92%	3	15.7%	6.7%
Price To Book	642.8%	258.3%	226.0%	100.4%	26.8%	32.6%	39.2%	40.1%	43.8%	48.3%	50	49	49	49	49	83%	3	18.2%	2.0%
FCF Yield	337.4%	286.0%	174.3%	117.2%	57.4%	35.5%	38.3%	40.3%	44.5%	45.6%	46	45	46	45	46	75%	4	13.1%	3.8%
FCF Yield 5 years	369.7%	245.5%	237.4%	87.4%	36.6%	32.7%	39.6%	40.1%	44.4%	47.9%	46	45	46	45	46	75%	3	13.8%	2.6%
Price To Sales	326.8%	218.4%	169.3%	211.4%	75.9%	38.4%	38.0%	40.8%	42.4%	45.6%	50	49	49	49	49	75%	3	12.9%	4.8%
F SCORE	349.0%	284.7%	266.8%	171.6%	32.1%	36.5%	39.6%	38.1%	43.7%	47.4%	50	49	49	49	49	83%	3	13.3%	2.3%
Net Debt On Market Value	166.7%	169.2%	269.6%	199.4%	170.9%	41.5%	42.6%	40.5%	40.6%	39.9%	50	49	49	49	49	67%	4	8.5%	8.7%
ROIC	121.6%	101.8%	207.2%	242.5%	323.7%	46.2%	41.9%	40.5%	38.9%	37.5%	50	49	49	49	49	67%	5	6.9%	12.8%
ROIC 5 years	180.9%	289.0%	286.6%	208.2%	267.5%	42.3%	37.2%	36.8%	39.3%	40.3%	39	38	37	38	37	67%	4	9.0%	11.5%
Price Index 12 months	655.1%	280.1%	259.7%	111.9%	-18.0%	36.5%	38.7%	35.9%	40.2%	52.4%	48	47	47	47	47	92%	2	18.3%	-1.6%
Price Index 6 months	783.3%	270.4%	259.6%	111.5%	-25.9%	37.1%	37.1%	37.1%	41.4%	51.9%	49	48	48	48	48	92%	3	19.9%	-2.5%
MF Rank	234.9%	204.1%	215.8%	91.6%	273.3%	39.8%	40.1%	39.0%	45.7%	40.7%	50	49	49	49	49	67%	4	10.6%	11.6%
ERP5	567.2%	340.7%	141.7%	55.0%	79.9%	34.9%	35.8%	41.6%	46.0%	46.9%	50	49	49	49	49	83%	3	17.1%	5.0%

ERP5 Rank as primary factor

	Total Return 13/06/1999-13/06/2011					Average % of yearly losers in the portfolio					Average Portfolio size					Years outperforming the market (%)	Number of years with negative return Top Q	CAGR Q1	CAGR Q5
Factor 2	Q1	Q2	Q3	Q4	Q5	LosersQ1	LosersQ2	LosersQ3	LoserQ4	LoserQ5	NbQ1	NbQ2	NbQ3	NbQ4	NbQ5				
Earnings Yield 12 months	590.3%	355.9%	248.9%	175.8%	120.6%	32.0%	36.2%	39.0%	40.3%	45.3%	40	40	39	40	39	92%	3	17.5%	6.8%
Earnings Yield 5 years	404.2%	408.4%	351.7%	216.2%	84.1%	32.3%	35.9%	37.9%	38.7%	47.9%	40	40	39	40	39	75%	3	14.4%	5.2%
Price To Book	680.2%	456.8%	265.2%	200.3%	46.6%	33.5%	35.0%	38.8%	39.8%	45.2%	40	39	39	40	39	83%	3	18.7%	3.2%
FCF Yield	555.6%	245.2%	204.0%	223.9%	177.0%	32.9%	37.1%	40.3%	40.3%	42.3%	37	36	36	36	36	83%	2	17.0%	8.9%
FCF Yield 5 years	336.4%	311.0%	285.8%	206.1%	179.6%	33.5%	37.8%	40.4%	37.9%	43.5%	37	36	36	36	36	67%	3	13.1%	8.9%
Price To Sales	402.4%	272.7%	332.7%	220.5%	166.5%	37.5%	38.1%	36.2%	39.1%	41.7%	40	40	39	40	39	75%	3	14.4%	8.5%
F SCORE	583.1%	332.5%	190.8%	336.8%	94.7%	33.7%	36.7%	37.9%	40.6%	43.6%	40	39	39	40	39	75%	3	17.4%	5.7%
Net Debt On Market Value	321.2%	291.7%	314.7%	238.2%	216.0%	37.1%	39.6%	37.5%	39.2%	39.2%	40	40	39	40	39	75%	3	12.7%	10.1%
ROIC	145.6%	178.8%	383.5%	296.8%	449.2%	44.3%	39.9%	35.7%	36.6%	35.8%	40	40	39	39	39	67%	5	7.8%	15.2%
ROIC 5 years	114.4%	246.1%	362.7%	236.5%	481.2%	44.6%	38.0%	36.5%	37.5%	35.8%	40	40	39	40	39	67%	5	6.6%	15.8%
Price Index 12 months	696.5%	378.4%	300.8%	195.3%	41.4%	34.2%	35.3%	35.7%	37.9%	49.6%	40	39	39	39	39	92%	4	18.9%	2.9%
Price Index 6 months	732.1%	357.2%	268.2%	192.7%	51.8%	35.6%	33.6%	36.8%	38.6%	48.0%	40	39	39	39	39	100%	3	19.3%	3.5%
MF Rank	256.3%	319.5%	260.1%	247.8%	309.0%	36.9%	38.8%	38.2%	39.0%	39.6%	40	40	39	40	39	67%	4	11.2%	12.5%
ERP5	600.9%	249.2%	434.2%	151.1%	113.0%	35.0%	36.5%	37.4%	41.4%	42.2%	40	40	39	40	39	92%	3	17.6%	6.5%

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