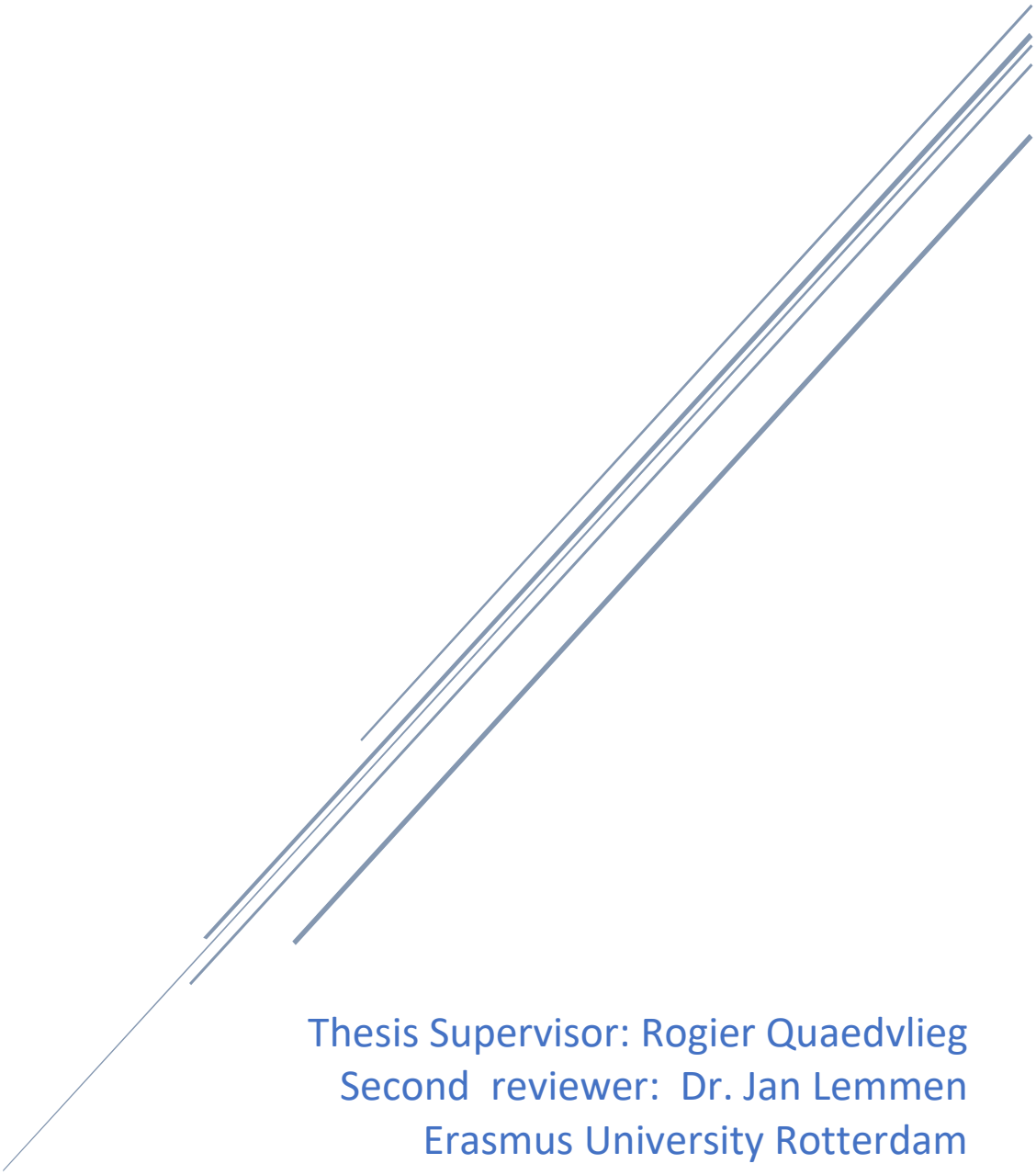
MUTUAL FUND PERFORMANCE IN THE NETHERLANDS

Do the Dutch mutual funds outperform their benchmark?



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Abstract

Mutual funds play a significant role in the everyday investing world, as it is a relative easy way for the individual investors to invest their money without having the necessary expertise about the stock market or other investment aspects. We analyze whether the mutual funds perform better or worse than the benchmark they compare their performance to. The data used in this research is free of survivorship bias and consists of monthly returns in the period between January 2013 and December 2017 of 52 individual funds in the Netherlands. Concluding out of the data, is that the far majority of the mutual funds underperform their benchmark. Parallel with the conclusion is that there are slim to no stock picking abilities present among the mutual funds in this research sample. These findings go against the findings of the paper Daniel et al. (1997) where it was concluded that the managers are able to outperform their benchmark by a small margin. Nevertheless, the findings of this paper are in line with other papers like Cuthbertson, Nitzsche & O'Sullivan (2008) and Fama and French (2010).

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Introduction

More and more people are looking to invest their money in order to grow their wealth. The low interest rate offered on one's savings plays a big role in the investment behaviour of the individual investors. The interest rate is in general caused by the ratio between the demand and the supply for the market of loans supplied by the banks and the savings of the individual investors, for example their savings account or their investment portfolio. (DNB, n.d.). Thus, when the interest rate is low, it means that the there is a large supply for loans, but the demand for these loans is shallow. Furthermore, according to the Dutch central Bank (DNB) another factor for the low interest rate is the COVID-19 crisis. Because of this crisis there is an increase in money saving by the consumers. In addition to this, the investments done by the government have also decreased and particularly in the industrial sector, where usually the main investments are made. All this and in combination with a, at the start of the COVID-19 pandemic declining inflation rate, caused the interest rate to decease. This decrease in interest caused for a disincentive to keep one's money on a savings account at the bank, since the profit of the interest you receive is slim to none existent.

The effect of a low interest rate is that people are looking for alternatives to grow their wealth. The ABN AMRO mention on their website that the interest rate on saving accounts has to be higher than 1.97 percent in order to let your savings grow harder than the inflation rate, which will make your total wealth grow (ABN AMRO, n.d.). However, the current interest rate (in the year 2021) is particularly low compared to the interest rate in 2010. It can even be negative for the people who have savings over 100.000 euros (ING, n.d.). This is a significant reason for why individuals are looking for alternatives to grow their wealth.

There are several ways to invest one's money in order to gain higher returns than the interest rate. Some of these are for example the real estate market, materials (gold), private equity funds, bonds, cryptocurrencies and the stock exchange market. M. Chiah and A. Zhong (2020) documented in their research that the amount of share trading, in the markets of China and USA, at the stock market has significantly increased during the COVID-19 pandemic. A reason for this mentioned in the same article is that the individuals are willing to take on more risk and see the share trading as a substitute for gambling. It can be concluded that a lot of individuals are getting more invested into the stock market. However, in order to obtain profit with the initial investment using the stock exchange market, one would need to require a certain amount of knowledge on share trading. Since the stock market is a very complex market to understand, it makes sense that not everyone possesses the required knowledge, which could withhold the individual investors to participate in the share trading. A possible solution for these investors is to put their money in an mutual fund. A mutual fund combines the

money of different individuals, who are looking to invest their money, and invests that money into a portfolio which will be managed by the managers of that same fund (Robeco, n.d.).

These funds exist so that they can help the individual investors with their knowledge and expertise to obtain higher returns than what those investors would obtain themselves. They manage and invest the money of different individual investors together to create a pool of money. The managers of these funds receive a certain fee as a compensation for their expertise, which is paid by the individual investors.

Thus, these funds are managed by experts so that these experts can enlarge the wealth of the investors. However, one can ask themselves if there actually exists some sort of 'expertise' when it comes to the trading on the stock market, given that the returns of the stocks are very challenging and sometimes quite impossible to predict (M. Lanne, 2002). Since these returns are quite difficult to predict, one could wonder whether these 'experts' actually have the knowledge on the future on the stock prices.

Even though the prices of the stocks in the future are hard to predict, even for the mutual funds, they still set a certain benchmark which they aim to beat. The exact benchmarks can differ per mutual fund and will be covered and listed further in this paper. The choice of the benchmark seems rather important and it can have an effect on the performance of the funds (Grinblatt & Titman, 1994). The mutual funds must be careful when choosing a benchmark in order to avoid choosing one which would be inefficient. Mutual funds which invest in the stocks of the relative larger firms, would perform relative poorly in comparison to their benchmark, since those stocks of the larger firms themselves perform relative poorly. This indicates that the choice of benchmark is significant and can have an effect on the performance of the fund. Moreover, it also shows that the mutual funds do not always beat their benchmark which leads up to the following question on what the rest of this paper will be based on:

Do mutual funds outperform or underperform their benchmark?

With this research question come two sub questions which will also be focused on:

Would it be beneficial for the individual investor to invest in mutual funds compared to their benchmarks and the risk free rate?

Does good performance happen by skill or luck?

This paper discusses whether the mutual funds in the Netherlands outperform their benchmark. The benchmark does differ per individual mutual fund and will be discussed later on in this paper. Next, there will be discussed whether there is a certain level of expertise present or that the returns the mutual funds realise are due to a certain amount of 'luck'.

Next in this paper, the related literature and their empirical results will be discussed, which will lead to the research question and the hypotheses. After, the social and the scientific relevance will be considered. Lastly, the dataset and the methodology that will be used throughout this paper will be discussed and enlightened.

Theoretical framework

Mutual funds combine the money of many different investors and invest that pool of money into portfolios which will be managed by the managers of the mutual fund. The expectation of the investment by the individual investors, is to obtain a higher return than the benchmark chosen by the mutual fund or than when these investors would invest themselves passively in a certain stock market. This way the investors can use the skill and knowledge of the managers of the fund to their advantage, but do have to pay a management fee in exchange for those services.

By looking at other literature and their results, an indication could be made whether or not the active mutual funds do outperform their benchmarks. This will later on be confirmed or refuted. Moreover, there will also be looked at the presence of 'skill based stock picking'.

One of the earliest papers on mutual fund performance is written by Sharpe in 1966. The reason for his paper was to expand the theory on behalf of the mutual fund performance measures. In his research he used the data of 34 different open-end mutual funds between the years of 1954 and 1963. He concludes that the performance of the mutual funds can be evaluated with a relatively straightforward measurement by considering both risk and average return (Sharpe, 1966). This ratio is now known as the Sharpe ratio and this measurement prevents differences in performance because of differences in objectives. These objectives can for example be the difference between when a mutual fund holds higher risk portfolios to other funds which hold less risky portfolios. Sharpe concludes that the differences between mutual funds can be explained by the differences in expense ratios (Sharpe, 1966). This result supports the idea that good managers focus on good diversification of risk and to the idea that the capital market is efficient. However, he has mentioned that further work was required in order for the result to be correctly evaluated.

Two years later, a similar research was done by Michael C. Jensen. He also investigates the performance of mutual funds but took a broader time period, namely from 1945 to 1964. Moreover, his dataset is greater for his research, coming at 115 open end mutual funds. The conclusion of Jensen's research is in line with Sharpe's conclusion, namely that the mutual funds on average are not able to outperform the market benchmark (buy the market and hold) (Jensen, 1968). Jensen does however mention that he has not considered diversification, while he also reports that evidence has been found that on average the funds perform very well in minimizing the "insurable" risk of the shareholders. His paper contributes to the funds by showing a need of evaluation by the funds themselves for the costs and benefits of their trading activities. During his paper he introduces a new performance measure which is now known as "Jensen's alpha". Jensen's alpha is a risk-adjusted performance measure that represents the average return on a portfolio or investment (Chen, 2020). Together with Sharpe ratio, this is a strong foundation for financial economics on which is further build on.

One of many papers written which builds further on those fundamental theories is Carhart (1997) in his paper on persistence in mutual fund performance. He tries to explain the persistency of the mutual funds when it comes to their mean and risk-adjusted returns. Carhart uses two models in his research, one being the Capital Asset Pricing Model (CAPM) which is discussed by Sharpe (1964) and Litner (1965), and the other being his own Carhart 4-factor model (1995) (Carhart, 1997). Carhart concluded three main take-aways on his research. The first one being that one should avoid funds with persistently poor performance. The second one being that funds with high returns last year have higher-than-average returns next year, but not in the years thereafter. Lastly, the investment costs of expense ratios, transaction costs and load fees all have a direct, negative impact in performance (Carhart, 1997).

Daniel et al. (1997) also performed a research concerning the mutual fund performance measurements and their characteristic-based benchmarks. Their paper investigates whether mutual funds are able to pick stocks which yield higher returns in order to generate higher profits for the mutual funds. There are four different types of performance measures used in their research. "A characteristic-based approach that uses benchmark portfolios constructed to match the characteristics of the stocks held by a mutual fund (1). The Grinblatt and Titman measure, which uses the past portfolio weights of a fund as a benchmark (2). A Jensen measure using the Carhart (1997) four factor portfolios as benchmark (3). A Jensen measure using the CRSP value-weighted index as a benchmark (4)" (Daniel et al, 1997). The conclusion of this research is somewhat contradictory to the conclusions of the papers of Sharpe and Jensen. Daniel et al. concludes that mutual funds do outperform simpler mechanical strategies, when one looks at the book-to-market ratio and momentum. However, they

outperform those simpler strategies by a small margin and is on average equal to the management fee of the mutual funds.

The management fees are of great importance on behalf of the individual investors, since these can be relevant for the choice of mutual fund the private investors make. There is a variety of papers written concerning the management fees and the effect of these. Dahlquist, Engström and Söderling (2000) have conducted a research concerning the relation between fund attributes and their performances. These fund attributes consist of past performance, flows, size, turnover and proxies for expenses and trading activities (Dahlquist, Engström & Söderling, 2000). The conclusion of their research is that the alphas are negative for the public equity funds which measures the performance of the funds. Furthermore, smaller equity funds seem to perform better than larger equity funds. However, larger bond funds tend to perform better than smaller bond funds. Therefore, one can conclude that the performance of funds differ in the industry they participate in. Thirdly, their results indicate that there is a negative relationship between the measured performance and the fees which holds that the funds with lower fees would on average perform better than the funds with higher fees. Glode (2011) comes to the same conclusion in his research where he investigated why the mutual funds underperform relative to their benchmark.

A mutual fund is an investing corporation that collects the money of different individual investors and invests that money into the stock market on behalf of the individual investors. This way the money of the individual investors gets invested but they do not need the expertise themselves. Glode (2011) concluded that the funds which performed poorly, will often have a higher fee than the funds which have better performances. This can explain why some companies could survive despite their poor performances.

A frequent question that comes to mind when discussing mutual funds is that whether the experts that work at the mutual funds actually have the skills to obtain a certain profit when trading on the stock exchange market. Cuthbertson, Nitzsche and O'sullivan (2008) have investigated this subject while looking at the mutual funds in the United Kingdom and they conclude that among the top performing companies a certain amount of skill is present when it comes to stock picking. Prior to their research, they mention two major issues. The first one is that in other relevant literature the findings mainly conclude that there was stronger evidence in favour of the underperformance of the mutual funds and nearly no evidence in favour of overperformance of the mutual funds. The second issue is whether abnormal performance can be identified upfront and for the period it carries on (Cuthbertson, Nitzsche & O'Sullivan, 2008). By using a dataset with over 900 mutual funds with a timespan from April 1975 until December 2002, they conclude that stock picking abilities is present in the 5 to 10 percent top

performing mutual funds in the UK. Furthermore, they also find that past performance of mutual funds is not a good measurement for future mutual funds (Cuthbertson et al., 2008). The reason for this mentioning is because funds with high skill and high past performance experience large inflows and with increasing marginal costs to active management, this leads to zero long-run average ex-post performance for most funds and lack of persistence in many past-winner funds (Cuthbertson et al., 2008).

Some may however question the method of measuring the skill present among the managers. Berk & Binsbergen (2015) conclude that the way to measure skill, which can be present in mutual funds, is by using the value added by the managers. Value added is determined by taking the fund's gross excess return over its benchmark and that multiplied by the assets under management (AUM) (Berk & Binsbergen, 2015). The reason for this more specific method is because this technique would generate more accurate results than when one would just look at the net gross alpha. With the measurement of the net gross alpha one could interpret a positive net alpha as evidence for a non-competitive market. Whereas with a negative net gross alpha it is the other way around. However, the results they find by using the added value method conclude that there is skill present among the managers of the mutual funds. This is somewhat in line with the paper of Cuthbertson, et al. (2008). With the skill of the managers they are in total responsible for an added value of 3.2 million dollars per year.

This thesis builds on the literature treated above and investigates whether it is appealing for the individual investors to invest their money in these funds and whether these funds generate abnormal returns.

Social and sciential relevance

More and more people are looking for alternative investment methods since the interest rate on their savings account is relatively extremely low. Because of this, an increased amount of people are focussing towards the stock market to increase their wealth. However, the expertise of the individual investors may fluctuate between these investors. Mutual funds respond to these individual investors, those who have minor knowledge, by offering their expertise in exchange for a fee which the investors pay.

This research can thus be of importance for investors to see whether or not the mutual funds do possess more knowledge and skills when it comes to trading stocks than the individual investors. May

this be, then it is more beneficial to invest their money in the mutual funds than investing on their own.

Seeing that there are not many other papers written on the performances of Dutch mutual funds and compare those performances to their own benchmark, it is interesting to see whether these mutual funds actually do possess certain skills to realise these returns or is there also a certain level of luck to it. So, we check whether these firms are able to consistently get relatively good returns, which indicates that there is skill among the managers of the fund.

Data and methodology

The database of Morningstar is consulted in order to obtain the data which is used in this research. The data in this database consists of all the funds which are spread around the globe. However, for this paper the data will be filtered to just the performance of the funds which are based in the Netherlands. There are in total 52 Dutch funds available in the Morningstar database with a timespan ranging from January 2013 to December 2017. A benefit of the Morningstar database is that it not just includes surviving funds only, which prevents the presence of survivorship bias. If this bias would be present, the results of this research could be skewed towards overperformance.

The performance of the mutual funds are compared to certain benchmarks in order to check whether or not they perform well. Sensoy (2009) has conducted a research concerning relationship between the benchmark of the mutual funds and their performance. He concludes that around one in three (31.2 percent) of the mutual funds have a benchmark which does not match the funds' size and value/growth characteristics (Sensoy, 2009). Even though the benchmarks are mismatched, they still seem relevant to fund investors as a performance of a mutual fund better than their benchmark shows positive cash inflows. This shows the importance of the selection of the benchmarks by the mutual funds. Not every mutual fund manages the same benchmark. An overview of the benchmarks can be seen in the appendix Table 1**.** In order to retrieve those benchmarks, the Morningstar database is once again consulted for every mutual fund. One thing that can be noticed in Table 1 in the appendix, is that 28 of the 52 mutual funds are not benchmarked according to the Morningstar database. For these funds the MSCI Europe NR EUR Index will be taken as the benchmark as these funds mostly operate in the European market and the MSCI Europe Index is the index which captures large and mid-cap funds in Europe.

After collecting the data, several measurements are used in order to obtain the results needed for the conclusion of this research. There are multiple ways in order to measure mutual fund performance. This paper mentions four different performance measurements, being the Sharpe ratio, Capital Asset Pricing Model, Fama and French three-factor model and the Fama and French five-factor model. These are explained further on.

Sharpe ratio

The first measurement is mentioned before in this paper, being the Sharpe ratio. The Sharpe ratio is used for measuring risk-adjusted returns of a firm or mutual fund. The formula for the Sharpe ratio is the return of the portfolio subtracted by the risk free rate, which than is divided by the standard deviation of the portfolio's excess return (Fernanando, 2021a). The results of the Sharpe ratio indicate a portfolio's past performances and whether or not it had to do with smart investment decisions or that it was subject to too much risk. A positive Sharpe ratio means better risk-adjusted performances and the higher the Sharpe ratio, the better the performances.

$$Sharpe\ Ratio = \frac{R_p - R_f}{\sigma_p}$$

Capital Asset Pricing Model

The Capital Asset Pricing Model is implemented by William Sharpe (1964) and John Lintner (1965) with the aim that not all risks should affect asset prices (Perold, 2004). For example the risk that can be diversified away is not a risk at all. This model gives insights on what kind of risks have an effect on and are related to return (Perold, 2004). However, Fama and French do mention some weaknesses of the CAPM. The test would be forced to use proxies for the market portfolio and since these were not the true value of the market portfolio, the CAPM would not be meaningful (Fama and French, 2004).

Furthermore, the Jensen's alpha is used as a measure for abnormal performance. A problem that comes along with using the Jensen's alpha is that, because of empirical shortcoming, funds that concentrate on small stocks and low beta stocks tend to produce positive abnormal returns, even when the managers would not have special stock picking skills (Fama and French, 2004).

The Capital Asset Pricing Model consists of different factors which all are related to the expected return of the portfolio.

$$\text{(Time-Series Regression)} \quad R_{it} - R_{ft} = \alpha_i + \beta_{iM}(R_{Mt} - R_{ft}) + \varepsilon_{it},$$

The factors present in the regressions are R_{it}, R_{ft}, α, βiM, R_{iM} and e_{it}. As said before, the α is the intercept of the model which represents the risk-adjusted performance. The expected value of a portfolio is represented by the term R_{it} - R_{Ft}, where R_{it} indicates the return of the portfolio 'i' it time 't' and R_{ft} indicates the market risk free rate for that same time period 't'. The risk that the portfolio holds and which can not be diversified away is projected as the factor β_{iM}. Furthermore the R_{mt} represents the return of the market at time t and e_{it} represents the unsystematic risk which can be diversified away. So, the expected value of a portfolio (R_{it} – R_{ft}) is explained by Jensen's alpha and the CAPM risk premium (β_{iM} (R_{Mt} – R_{ft})) (Fama and French, 2014).

Fama and French Three-Factor Model

Fama and French mention in their paper (1993) that there are some well-known patterns still left unexplained which of those still affect the average returns. Hence why they extend the CAPM with two factors. These two factors are the Size of the firm and the book-to-market (B/M) values, which are indicated as SMB and HML, respectively. The idea behind these two variables is to see whether these variables, which are important in bond returns, are also significant in helping to explain the stock returns (Fama & French, 1993). Size (SMB) is calculated by deducting the small shares with the big shares, hence the abbreviation SMB (Small Minus Big). This factor indicates that smaller companies do outperform the larger companies on the long-term (Kenton, 2020). This is called the Size-effect. Book-to-market (HML), High Minus Low, is calculated by deducting the high value stocks with the low value stocks. This is called the value premium. The HML factor states that the value stocks (high B/M ratio) outperform the growth stocks (low B/M ratio) (Fernando, 2021b). With these two factors extending the CAPM, the regression can be viewed as:

$$R_{it} - R_{Ft} = a_i + b_i(R_{Mt} - R_{Ft}) + s_i SMB_t + h_i HML_t + e_{it}.$$

Fama and French Five-Factor Model

The last model discussed in this paper is the five-factor model of Fama and French. The five-factor model is an extension of the older Fama and French three-factor model by implementing two new factors. These factors being profitability and investment factors. Profitability (RMW) is determined by the difference between the returns on diversified portfolios of stocks with robust and weak profitability (Fama & French, 2015). The other factor, investment factors (CMA), is constructed by taking the difference between the returns on diversified portfolios of the stocks of low and high investment firms (Fama & French, 2015). With all five factors included in the model, the formula is viewed as:

$$R_{it} - R_{Ft} = a_i + b_i(R_{Mt} - R_{Ft}) + s_i SMB_t + h_i HML_t + r_i RMW_t + c_i CMA_t + e_{it}.$$

Fama and French do however mention a problem in their own research on their five-factor model. Their model fails to capture the low average returns on the stocks that behave like firms which invest a lot despite low profitability (Fama & French, 2015). With the extension of the two new factors, Fama and French conclude that the value factor (HML) becomes redundant in the regression when it comes to describing average returns.

Alpha

Since the alpha is of big importance for this research, it is essential that the alpha is estimated correctly. The alpha will be tested at an significance level of five percent. This means that there is a 5 percent chance that the conclusion that the funds perform better than their benchmark, is incorrect. In order to make sure the alpha is reliable and accurate, the alpha will be measured with monthly data in order to retrieve reliable and usable values. Because of this, the chance of incorrect conclusions will be negligible and the alpha can be interpreted correctly.

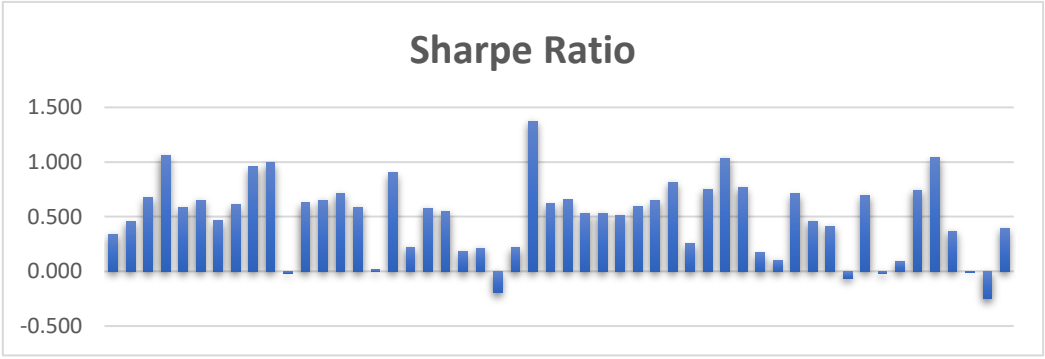
Results and discussion

This section provides and describes the results of the performance of the mutual funds which are obtained by executing the previously explained analysis. The results is split into different sections with each section focussed on their own subject and relevance to the research question and hypotheses. The first section concerns the performance of the mutual funds based on the Sharpe ratio of every individual fund. The second section consists of the results based on the performance of the mutual funds by three different types of regressions, being the CAPM, Fama and French Three-factor and the Fama and French Five-factor model while being compared to their benchmark. The third section is similar to the second section, but instead of comparing their performance to the benchmark the performance of the funds is compared to the risk-free rate given by the database of Fama and French.

Sharpe ratio results

The Sharpe ratio expresses the performance of the funds in comparison to their risk, where a higher Sharpe ratio indicates on average better performance. As seen in Figure 1, nearly all of the mutual funds are able to obtain a positive Sharpe ratio which indicates that their performance, on average, is better than the risk-free rate. Only some of the funds have a negative Sharpe Ratio which indicates that the returns of the risk-free rate on average are higher than the returns of that mutual fund. Figure 1 shows the yearly Sharpe ratios of the funds in the period of January 2013 to December 2017. Since the data in this research consists of monthly data, the data is converted to yearly data by multiplying the monthly data by the square root of 12 as there are 12 months in a year. This results in higher Sharpe ratios for the funds when being converted to yearly ratios. All exact Sharpe ratios can be seen in Table 2a and 2b in the Appendix.

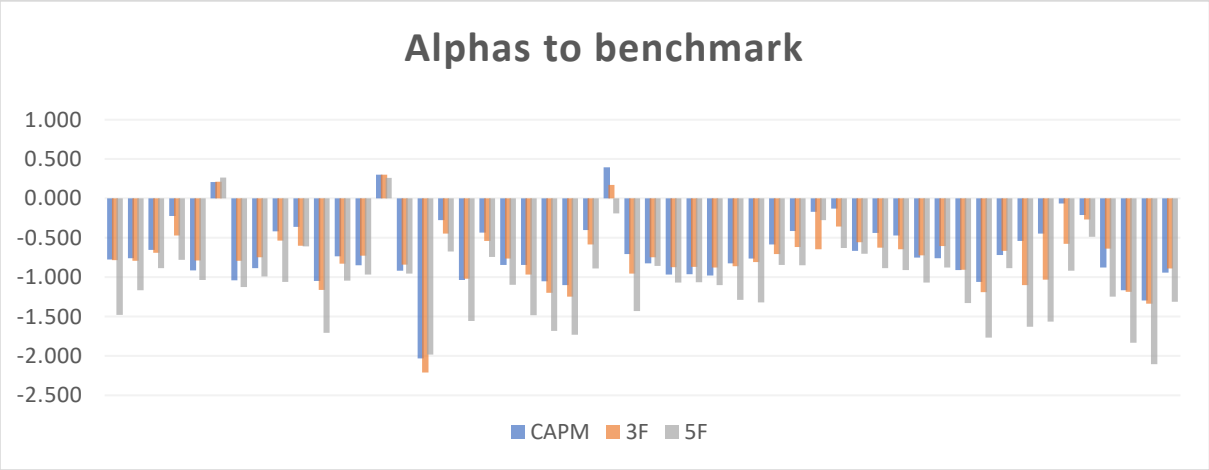
Figure 1:
Sharpe ratio for the mutual funds converted to yearly data.



Performance to benchmark

Figure 2 shows the alphas of the three different type of regressions used for the analysis. These regressions are the CAPM, Fama and French Three-factor model and the Fama and French Five-factor model. The results are based on monthly data. The alphas indicate the performance of the mutual fund, and with that the manager performance, relative to their benchmark. Where a positive alpha represents a mutual fund with positive excess return when compared to their benchmark, will a negative alpha represent underperformance. It can be noticed from Figure 2 that nearly all the alphas of the funds are negative and only three of them are positive. Which means that on average only three of the funds are on average able to outperform their benchmark based on this data set. The alphas of the three different funds which are positive would then indicate that they succeeded in outperforming their benchmark. However, in Table 3a,b,c is shown that these coefficients are not significant which results in that there is no significant evidence of overperformance of the mutual funds relative to their benchmark in this dataset.

Figure 2:
Alphas of the mutual funds when compared to their benchmark.



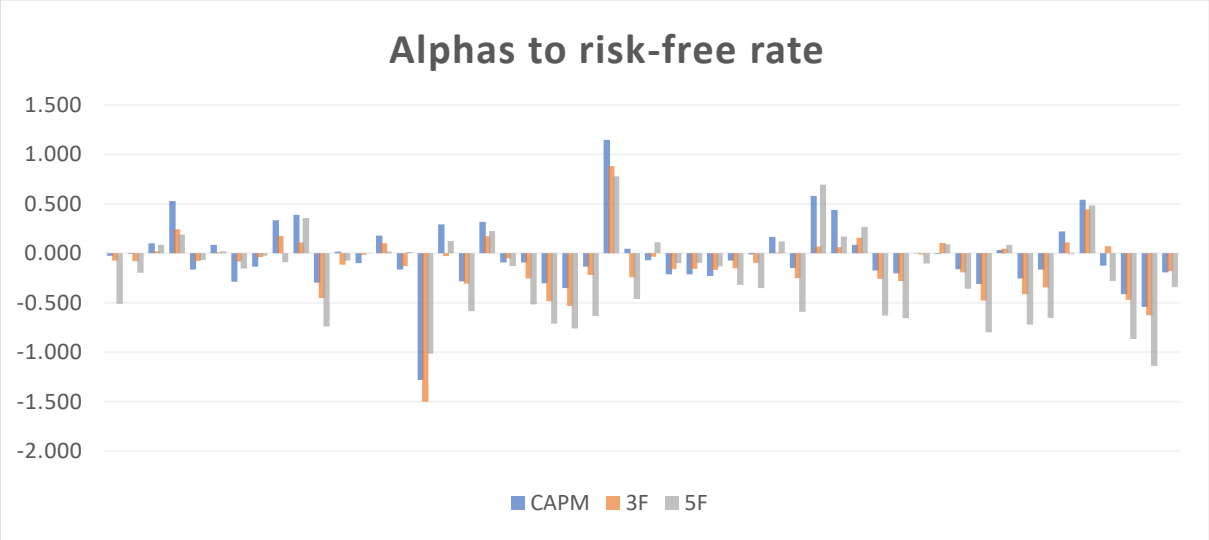
Previous literature stated that for similar countries to the Netherlands, the mutual funds did underperform their benchmark (Cuthbertson, Nitzsche & O'Sullivan, 2008). CAPM, in this research, by itself explains the returns of the funds very well, since almost all of the coefficients with this model are not statistically significant and lower than zero which already indicates underperformance of the funds. In addition to this, the other two models do not have a different outcome to the CAPM. The exact coefficients and their significance of the models are stated in Table 3a, 3b and 3c in the appendix and a comparison between the alphas of the different models in Table 5a. Furthermore, contradictory to earlier literature (Zakri, 2008), the Fama and French Three-factor model does not add extraordinary value to this analysis since the alpha coefficients for most of the funds are quite similar and the

significance levels only change for some of the funds and not significantly. Which means that the two added factors, HML and SMB, do not have a significant influence on the measurement of performance in this dataset of mutual funds. This further acknowledges the on average underperformance of the mutual funds compared to their benchmark, since these two models result in similar returns. When adding the last two factors, RMW and CMA, it can be noticed that the alphas on the majority of the funds result in lower coefficients in comparison to the CAPM and the Fama and French Three-factor model. Thus, indicating that the two added factors have a negative influence on the average managers' performance of the mutual fund in this dataset.

Absence of abnormal performance

Since the mutual funds in this dataset are not able to outperform their benchmark, are they capable of generating abnormal returns at all? To examine this, a comparable test is conducted as mentioned above. Figure 3 represents the results for this test and is similar to Figure 2, but instead of comparing the mutual funds to their benchmark, the performance of the mutual funds are measured against the risk-free rate given by the Fama and French database. It also shows the obtained alphas for the three different types of executed regressions. These results are based on monthly data as well. The exact coefficients and their significance levels can be found in Table 4a, 4b and 4c in the appendix. The comparison between the alphas of the different models used in Figure 3**,** can be found in Table 5b in the appendix.

Figure 3:
Alphas of the mutual funds when compared to the risk free rate.



The alphas of the funds in Figure 3, when their performance is compared to the risk-free rate, are closer to zero and also the amount of alphas of the funds which are positive has increased, both in comparison to Figure 2. This indicates that on average the management of the mutual funds are relatively better in outperforming the risk-free rate than outperforming their benchmark. However, even though the alphas of the funds are closer to zero which indicates better performance relative to Figure 2, the majority of the funds still produce negative alphas. This shows that the majority of the funds still on average do underperform relative to the risk-free rate, indicating that these funds in general do not obtain abnormal returns in this dataset on average.

Similar to comparing to their benchmark, the far majority of the alphas are not statistically significant different from zero, with a few exceptions. This only further confirms the findings that the mutual funds on average underperform both when being compared to their benchmark and when compared to the risk-free rate. Next to the alpha, most of the coefficients of the added factors, HML, SMB, RMW and CMA of the Fama and French Three-factor and Five-factor model are also not statistically significant.

Discussion

The four different performance measure models used in this research, being the Sharpe ratio, Capital Asset Pricing Model, Fama and French Three-factor model and the Fama and French Five-factor model, give an interpretation of the performance of the mutual funds used in this dataset and timeframe. The alphas of these models show the performance and possible skill of the management. The low and insignificant alphas coming from these models is in line with the expectations going into this paper, based on the findings in previous literature. These low and insignificant alphas show that the mutual funds on average underperform when their returns are compared to their benchmark mentioned in the Morningstar database which are shown in Table 1 in the appendix. Where most of the funds produce negative alphas, only some of the mutual funds in this paper able to retrieve a positive alpha. The underperformance is explained by the fact that the stock prices are unpredictable, even for well-developed mutual funds.

These findings of underperformance is in line with previous literature. Cuthbertson, Nitzsche & O'Sullivan (2008) came to the same conclusion of underperformance among the majority of the mutual funds with regard to the funds in the United Kingdom. According to their research, only the top five to ten percent top performing funds in the United Kingdom would possess stock picking abilities. This would leave that the other 90-95 percent of the funds do not have these skills and that their returns

are based on luck. Fama and French (2010) support these findings with their similar conclusion that few managers have sufficient skill when it comes to stock picking and that the estimation of the alphas of the top percentiles are about zero for the three-factor model and the estimate of the true alpha for the four-factor model is negative.

Thus, the results of this paper are validated by many of the previous literature. However, some papers do have different results. Those results indicate that the mutual funds did outperform their benchmarks. Daniel et al. (1997) conclude based on their results that the average manager of the mutual funds is able to, by a small margin, outperform their benchmarks. The paper does however mention that this benchmark is based on relative simple mechanical trading strategies, being the returns of 125 passive portfolios. Since the mutual funds only outperform the relative simple benchmark by a small margin, one could argue that the managers of the mutual funds underperform when the fund is exposed to a less simpler benchmark as the funds in this paper are exposed to.

Limitations and further research

The data that is consulted for this paper has its perks and limitations. One of the perks of this data is that it is free of survivorship bias, which means that when this bias would be present, the results would be skewed towards overperformance of the mutual funds. However, there are also limitations to this data and this research. The main limitations for this study were the time constraints and restrictions of the data. When it comes to time restraints, one could do more extensive and more specific research when having a bigger time frame available. Different portfolios could be constructed and added to this paper in order to compare the performance of similar funds to see how the funds perform relative to each other. These portfolios can for example be based on the Net Asset Value (NAV) of the fund.

The most complete and accurate database for mutual funds, which is used for the analysis, is the one of Morningstar. Nevertheless, not all the funds initially available in the database were taken into this research since some funds had missing data in the Morningstar database. This missing data could be monthly returns which then makes the data not completely accurate. Because of these missing mutual funds, the research sample of this paper became smaller which follows that the outcome of this paper is less representative for all the Dutch mutual funds. Furthermore, the timeframe of the data is relatively small, ranging only from January 2013 to December 2017. The issue caused by this is similar to the issue of the smaller research sample. Namely, the results could be less accurate and representative when looking at all the mutual funds in the Netherlands. It would be interesting to see future research where the amount of mutual funds used in the analysis is larger than the amount used

in this paper as well as a greater timeframe. This together results in a more accurate and more representative finding on the performance of Dutch mutual funds.

On top of the missing funds in the database of Morningstar, some of the mutual funds in that database do not have a benchmark listed. To solve this problem, these funds are benchmarked at the MSCI NR EUR rate. Since this is not their actual benchmark, it is possible that the benchmark is too strict for those funds which resulted in the conclusion of underperformance. Further research could investigate which benchmark would be a better fit for those funds and compare the returns of the fund with the new and better benchmark.

Lastly, the timeframe of this research is relatively less interesting since there is no crisis or big impact on the economy. Therefore, an interesting addition for future research to this paper is for example by investigating the influence on the performance of the Dutch mutual fund by the COVID-19 crisis. The COVID-19 crisis had a massive impact on the global economy and stock prices, and the future impact of the crisis still unknown as of writing this paper. Hence, it would be fascinating to observe whether the funds perform better or worse relative to their benchmark during the COVID-19 crisis in comparison to the timeframe of this research.

Conclusion

This paper focused on the performance of the mutual funds relative to their benchmarks. Even though there already is a considerable amount of research done on this subject, slim to none have focused on the Dutch mutual funds and within the same time period as this paper has. This paper therefore is a contribution to the current literature. The reason for the focus of this paper is to give the individual investors insight in the performance of the mutual funds. The individual investors could then make the choice to invest their money in these funds based on these results.

When looking at previous literature, many concluded that the majority of the mutual funds do underperform in comparison to their benchmark. By using the Sharpe ratio, Capital Asset Pricing Model, Fama and French three-factor model and the Fama and French five-factor model, the performance of the mutual funds in the sample is measured and interpreted. Based on the results of the analysis, the mutual funds used in this sample do, on average, underperform their benchmark. The models produce coefficients of which the alphas represent the performance of the management of the fund. When comparing to their benchmark, the alphas produced are, with a few exceptions, negative. The negative alphas indicate that the mutual funds underperform their benchmark. When the returns of the funds are compared to the risk-free rate, a relative improvement can be noticed

from the results. The alphas were closer to zero and the amount of positive alphas had also increased. This indicates a relative better performance than compared to their benchmark. However, this means that the mutual funds in general on average do not obtain abnormal returns.

Coming back to the research question of this paper, managers of the mutual funds in the Netherlands on average seem to underperform their benchmark during the period of January 2013 to December 2017. The underperformance suggests that there is a lack of stock picking abilities among the managers of the fund which makes the returns mostly based on luck. This is explained by the unpredictability of the stock returns and that even well-developed mutual funds are not able to foresee the future stock prices.

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Appendix

Table 1: *Benchmark for every mutual fund*

Table 1 consists of the data on the benchmark per mutual fund which is retrieved from the Morningstar database. The funds without benchmark are benchmarked to the MSCI NR EUR.

Name	Benchmark
AEAM European Bond	MSCI Europe NR EUR
Antaurus Europe	Not Benchmarked
Hof Hoorneman Value Fund	Not Benchmarked
Juno Selection Fund	Not Benchmarked
Meesman Indexfonds Aandelen Europa	MSCI Europe NR EUR
Kempen European Property N.V.	FTSE EPRA Nareit Developed Europe UCITS Daily Capped Index in euro
InDelta Europa Index Fonds	Not Benchmarked
Sustainable Europe Index Fund	MSCI Europe NR EUR
Hof Hoorneman Income Fund	MSCI Europe NR EUR
InsingerGilissen European Mid Cap	Not Benchmarked
ASR Kapitaalmarkt Fonds – Onderwijs	Not Benchmarked
Hof Hoorneman Real Estate Value Fund	Not Benchmarked
ACTIAM Duurzaam Index Aand. Europa	MSCI Europe Index Net Index
ACTIAM Duurzaam Idx Vastgoedfonds Europa	FTSE EPRA Nareit Developed Europe UCITS Daily Capped Index in euro
ACTIAM Duurzaam Europees Aandelenfonds	MSCI Europe NR EUR
Intereffekt Active Leverage China	Not Benchmarked
ASN Duurzaam S&Mid Cap	MSCI Europe Small Cap Total Return Net Index
Blue Sky Eagle Fund Neutraal A EUR Acc	Not Benchmarked
Blue Sky Eagle Fund Zeer Off A EUR Acc	Not Benchmarked
Blue Sky Eagle Fund Offensief A EUR Acc	Not Benchmarked
TKPI European Real Estate A EUR Inc	Not Benchmarked
Triodos Energy Transition Eurp Q EUR Acc	Not Benchmarked
Triodos Energy Transition Eurp R EUR Acc	Not Benchmarked
NN Euro Obligatie Fonds P	Bloomberg Euro Agg Bond TR EUR
Kempen Oranje Participaties N.V.	Not Benchmarked
EV Smaller Companies Fund	Not Benchmarked
NN Europe Fund P	MSCI Europe NR EUR
Kempen European High Dividend N.V. Y	MSCI Europe NR EUR
Kempen European High Dividend N.V. X	MSCI Europe NR EUR
Kempen European High Dividend N.V. N	MSCI Europe NR EUR
NN Europa Duurzaam Aandelen N.V. P	MSCI Europe NR EUR
NN Europa Duurzaam Aandelen N.V. D	MSCI Europe NR EUR
Hof Hoorneman European Value Fund	Not Benchmarked
AEAM European Credit	Bloomberg Barclays Euro-Aggregate Corp
LSP Life Sciences Fund N.V.	Not Benchmarked

NN Europe Small Caps Fund P	MSCI Europe Small Cap NR EUR
ASR Fonds Nederlandfonds	MSCI Europe NR EUR
NN Euro Rente Fonds - P	Bloomberg Euro Agg Bond TR EUR
NN Euro Rente Fonds - B	Bloomberg Euro Agg Bond TR EUR
InDelta Nederland Index Fonds	Not Benchmarked
Dutch Darlings Fund	Not Benchmarked
NN Wereldwijd Mix N.V. P	MSCI Europe NR EUR
ASN Groenprojectenfonds	Not Benchmarked
NN Dutch Fund P	MSCI Europe NR EUR
Triodos Groenfonds Inc	Not Benchmarked
Oikocredit Nederland Fonds	Not Benchmarked
Add Value Fund N.V.	Not Benchmarked
Kempen Orange Fund N.V.	MSCI Europe NR EUR
InDelta BRIC Index Fonds	Not Benchmarked
Blue Sky Eagle Fund Defensief A EUR Acc	Not Benchmarked
Blue Sky Eagle Fund Zeer Def A EUR Acc	Not Benchmarked
Blue Sky Eagle Fund Gem Off A EUR Acc	Not Benchmarked

Table 2a: *Sharpe ratio for every mutual fund based on monthly data*

Table 2a shows the Sharpe ratio of the mutual funds, calculated by the excess return divided by the standard deviation (volatility) of the fund. The data consisted of monthly returns retrieved from the Morningstar database. Where a higher Sharpe ratio indicates higher excess returns or lower volatility does a negative Sharpe ratio indicate negative excess returns by the fund.

Mutual Fund	Sharpe ratio
AEAM European Bond	0.098
Antaurus Europe	0.131
Hof Hoorneman Value Fund	0.195
Juno Selection Fund	0.307
Meesman Indexfonds Aandelen Europa	0.170
Kempen European Property N.V.	0.188
InDelta Europa Index Fonds	0.134
Sustainable Europe Index Fund	0.176
Hof Hoorneman Income Fund	0.276
InsingerGilissen European Mid Cap	0.287
ASR Kapitaalmarkt Fonds – Onderwijs	-0.004
Hof Hoorneman Real Estate Value Fund	0.182
ACTIAM Duurzaam Index Aand. Europa	0.188
ACTIAM Duurzaam Idx Vastgoedfonds Europa	0.207
ACTIAM Duurzaam Europees Aandelenfonds	0.169
Intereffekt Active Leverage China	0.005
ASN Duurzaam S&Mid Cap	0.261
Blue Sky Eagle Fund Neutraal A EUR Acc	0.064

Blue Sky Eagle Fund Zeer Off A EUR Acc	0.166
Blue Sky Eagle Fund Offensief A EUR Acc	0.159
TKPI European Real Estate A EUR Inc	0.053
Triodos Energy Transition Eurp Q EUR Acc	0.061
Triodos Energy Transition Eurp R EUR Acc	-0.057
NN Euro Obligatie Fonds P	0.062
Kempen Oranje Participaties N.V.	0.396
EV Smaller Companies Fund	0.179
NN Europe Fund P	0.189
Kempen European High Dividend N.V. Y	0.153
Kempen European High Dividend N.V. X	0.154
Kempen European High Dividend N.V. N	0.149
NN Europa Duurzaam Aandelen N.V. P	0.173
NN Europa Duurzaam Aandelen N.V. D	0.187
Hof Hoorneman European Value Fund	0.235
AEAM European Credit	0.073
LSP Life Sciences Fund N.V.	0.218
NN Europe Small Caps Fund P	0.298
ASR Fonds Nederlandfonds	0.222
NN Euro Rente Fonds - P	0.049
NN Euro Rente Fonds - B	0.030
InDelta Nederland Index Fonds	0.205
Dutch Darlings Fund	0.133
NN Wereldwijd Mix N.V. P	0.119
ASN Groenprojectenfonds	-0.018
NN Dutch Fund P	0.202
Triodos Groenfonds Inc	-0.006
Oikocredit Nederland Fonds	0.026
Add Value Fund N.V.	0.215
Kempen Orange Fund N.V.	0.301
InDelta BRIC Index Fonds	0.107
Blue Sky Eagle Fund Defensief A EUR Acc	-0.002
Blue Sky Eagle Fund Zeer Def A EUR Acc	-0.072
Blue Sky Eagle Fund Gem Off A EUR Acc	0.114

Table 2b: *Sharpe ratio for every mutual fund based on yearly data*

Table 2b shows the Sharpe ratio of the mutual funds, calculated by the excess return divided by the standard deviation (volatility) of the fund. The data consisted of monthly returns retrieved from the Morningstar database. The monthly Sharpe ratios are converted to yearly by multiplying the monthly Sharpe ratios with the square root of 12. Where a higher Sharpe ratio indicates higher excess returns or lower volatility does a negative Sharpe ratio indicate negative excess returns by the fund.

Mutual Fund	Sharpe ratio
AEAM European Bond	0.339
Antaurus Europe	0.454
Hof Hoorneman Value Fund	0.675
Juno Selection Fund	1.062
Meesman Indexfonds Aandelen Europa	0.588
Kempen European Property N.V.	0.650
InDelta Europa Index Fonds	0.466
Sustainable Europe Index Fund	0.611
Hof Hoorneman Income Fund	0.955
InsingerGilissen European Mid Cap	0.994
ASR Kapitaalmarkt Fonds – Onderwijs	-0.015
Hof Hoorneman Real Estate Value Fund	0.629
ACTIAM Duurzaam Index Aand. Europa	0.650
ACTIAM Duurzaam Idx Vastgoedfonds Europa	0.716
ACTIAM Duurzaam Europees Aandelenfonds	0.585
Intereffekt Active Leverage China	0.018
ASN Duurzaam S&Mid Cap	0.904
Blue Sky Eagle Fund Neutraal A EUR Acc	0.222
Blue Sky Eagle Fund Zeer Off A EUR Acc	0.577
Blue Sky Eagle Fund Offensief A EUR Acc	0.551
TKPI European Real Estate A EUR Inc	0.184
Triodos Energy Transition Eurp Q EUR Acc	0.210
Triodos Energy Transition Eurp R EUR Acc	-0.197
NN Euro Obligatie Fonds P	0.215
Kempen Oranje Participaties N.V.	1.373
EV Smaller Companies Fund	0.620
NN Europe Fund P	0.654
Kempen European High Dividend N.V. Y	0.531
Kempen European High Dividend N.V. X	0.533
Kempen European High Dividend N.V. N	0.515
NN Europa Duurzaam Aandelen N.V. P	0.598
NN Europa Duurzaam Aandelen N.V. D	0.648
Hof Hoorneman European Value Fund	0.813
AEAM European Credit	0.251
LSP Life Sciences Fund N.V.	0.754
NN Europe Small Caps Fund P	1.034
ASR Fonds Nederlandfonds	0.769

NN Euro Rente Fonds - P	0.170
NN Euro Rente Fonds - B	0.103
InDelta Nederland Index Fonds	0.710
Dutch Darlings Fund	0.460
NN Wereldwijd Mix N.V. P	0.413
ASN Groenprojectenfonds	-0.064
NN Dutch Fund P	0.699
Triodos Groenfonds Inc	-0.022
Oikocredit Nederland Fonds	0.089
Add Value Fund N.V.	0.743
Kempen Orange Fund N.V.	1.042
InDelta BRIC Index Fonds	0.369
Blue Sky Eagle Fund Defensief A EUR Acc	-0.008
Blue Sky Eagle Fund Zeer Def A EUR Acc	-0.250
Blue Sky Eagle Fund Gem Off A EUR Acc	0.394

Table 3a: *CAPM results compared to benchmark*

*Table 3a shows the coefficients of the Capital Asset Pricing Model on the performance of the mutual funds compared to their benchmark. The t-statistic of the coefficients is stated between brackets. The excess return is calculated by subtracting the monthly return of the fund with the monthly return of the benchmark. The alpha represents the risk-adjustment performance of the funds. Where a negative alpha indicates underperformance by the fund, shows a positive alpha overperformance. Significance levels indicate: * p<0.05, ** p<0.01, *** p< 0.001.*

Capital Asset Pricing Model	**α**	**Mkt-Rf**
AEAM European Bond	-0.777 (-1.544)	0.284* (2.058)
Antaurus Europe	-0.757 (-1.440)	0.545*** (3.779)
Hof Hoorneman Value Fund	-0.651 (-1.208)	0.938*** (6.341)
Juno Selection Fund	-0.222 (-0.427)	0.717*** (5.016)
Meesman Indexfonds Aandelen Europa	-0.915* (-2.046)	0.970*** (7.912)
Kempen European Property N.V.	0.209 (1.140)	0.119* (2.375)
InDelta Europa Index Fonds	-1.037* (-2.354)	0.998*** (8.255)
Sustainable Europe Index Fund	-0.885 (-1.920)	0.970*** (7.673)
Hof Hoorneman Income Fund	-0.418 (-0.842)	0.509*** (3.732)
InsingerGilissen European Mid Cap	-0.362 (-0.771)	0.980*** (7.618)

ASR Kapitaalmarkt Fonds – Onderwijs	-1.049* (-2.225)	0.327* (2.528)
Hof Hoorneman Real Estate Value Fund	-0.734 (-1.416)	0.850*** (5.981)
ACTIAM Duurzaam Index Aand. Europa	-0.849 (-1.900)	0.975*** (7.947)
ACTIAM Duurzaam Idx Vastgoedfonds Europa	0.302 (1.887)	0.034 (0.783)
ACTIAM Duurzaam Europees Aandelenfonds	-0.916* (-2.017)	1.049*** (8.420)
Intereffekt Active Leverage China	-2.031 (-1.340)	1.697*** (4.081)
ASN Duurzaam S&Mid Cap	-0.275 (-0.746)	0.282*** (2.795)
Blue Sky Eagle Fund Neutraal A EUR Acc	-1.034* (-2.192)	0.530*** (4.096)
Blue Sky Eagle Fund Zeer Off A EUR Acc	-0.432 (-0.712)	0.273 (1.641)
Blue Sky Eagle Fund Offensief A EUR Acc	-0.843 (-1.831)	0.644*** (5.100)
TKPI European Real Estate A EUR Inc	-0.842 (-1.602)	0.257 (1.780)
Triodos Energy Transition Eurp Q EUR Acc	-1.053* (-2.163)	0.237 (1.771)
Triodos Energy Transition Eurp R EUR Acc	-1.102* (-2.264)	0.236 (1.764)
NN Euro Obligatie Fonds P	-0.399 (-1.484)	0.338*** (4.583)
Kempen Oranje Participaties N.V.	0.395 (0.701)	1.004*** (6.494)
EV Smaller Companies Fund	-0.704 (-1.410)	0.567*** (4.136)
NN Europe Fund P	-0.823 (-1.989)	0.980*** (8.634)
Kempen European High Dividend N.V. Y	-0.965* (-2.096)	0.994*** (7.873)
Kempen European High Dividend N.V. X	-0.963* (-2.095)	0.995*** (7.889)
Kempen European High Dividend N.V. N	-0.979* (-2.14)	0.995*** (7.919)
NN Europa Duurzaam Aandelen N.V. P	-0.825 (-1.597)	0.846*** (5.972)
NN Europa Duurzaam Aandelen N.V. D	-0.764 (-1.493)	0.764*** (5.438)
Hof Hoorneman European Value Fund	-0.585 (-1.488)	0.945*** (8.756)
AEAM European Credit	-0.412 (-1.526)	0.388*** (5.242)
LSP Life Sciences Fund N.V.	-0.170 (-0.212)	1.123*** (5.095)

NN Europe Small Caps Fund P	-0.130 (-0.356)	0.317** (3.152)
ASR Fonds Nederlandfonds	-0.666 (-1.433)	0.954*** (7.478)
NN Euro Rente Fonds - P	-0.439 (-1.654)	0.350*** (4.813)
NN Euro Rente Fonds - B	-0.469 (-1.810)	0.330*** (4.635)
InDelta Nederland Index Fonds	-0.751 (-1.650)	1.098*** (8.793)
Dutch Darlings Fund	-0.758 (-0.962)	1.016*** (4.704)
NN Wereldwijd Mix N.V. P	-0.911* (-2.046)	0.525*** (4.302)
ASN Groenprojectenfonds	-1.060* (-2.223)	0.300* (2.296)
NN Dutch Fund P	-0.716 (-1.530)	1.096*** (8.533)
Triodos Groenfonds Inc	-0.538 (-0.962)	-0.385* (-2.509)
Oikocredit Nederland Fonds	-0.445 (-0.759)	-0.408* (-2.539)
Add Value Fund N.V.	-0.063 (-0.121)	0.465** (3.257)
Kempen Orange Fund N.V.	-0.210 (-0.403)	1.149*** (8.038)
InDelta BRIC Index Fonds	-0.875 (-1.251)	0.856*** (4.461)
Blue Sky Eagle Fund Defensief A EUR Acc	-1.165* (-2.362)	0.483*** (3.568)
Blue Sky Eagle Fund Zeer Def A EUR Acc	-1.295* (-2.474)	0.406** (2.828)
Blue Sky Eagle Fund Gem Off A EUR Acc	-0.943* (-2.045)	0.584*** (4.614)

Table 3b: *Fama and French Three-Factor model results compared to benchmark*

*Table 3b shows the coefficients of the Fama and French Three-Factor Model on the performance of the mutual funds compared to their benchmark. This model adds the Small Minus Big and the High Minus Low factors to the CAPM. The t-statistic of the coefficients is stated between brackets. The excess return is calculated by subtracting the monthly return of the fund with the monthly return of the benchmark. The alpha represents the risk-adjustment performance of the funds. Where a negative alpha indicates underperformance by the fund, shows a positive alpha overperformance. Significance levels indicate: * p<0.05, ** p<0.01, *** p< 0.001.*

Fama and French Three-Factor model	**α**	**Mkt-RF**	**SMB**	**HML**
AEAM European Bond	-0.783 (-1.472)	0.320* (2.085)	-0.049 (-0.148)	-0.170 (-0.700)
Antaurus Europe	-0.790 (-1.417)	0.531** (3.300)	0.110 (0.317)	0.097 (0.380)
Hof Hoorneman Value Fund	-0.691 (-1.224)	0.884*** (5.430)	0.198 (0.574)	0.292 (1.131)
Juno Selection Fund	-0.468 (-0.879)	0.851*** (5.534)	0.394 (1.190)	-0.441 (-1.809)
Meesman Indexfonds Aandelen Europa	-0.788 (-1.694)	0.988*** (7.358)	-0.357 (-1.237)	-0.190 (-0.893)
Kempen European Property N.V.	0.213 (1.095)	0.110 (1.956)	0.007 (0.062)	0.044 (0.496)
InDelta Europa Index Fonds	-0.793 (1.786)	0.996*** (7.775)	-0.626* (-2.272)	-0.197 (-0.968)
Sustainable Europe Index Fund	-0.747 (1.555)	0.979*** (7.061)	-0.370 (-1.240)	-0.160 (-0.727)
Hof Hoorneman Income Fund	-0.534 (-1.020)	0.511** (3.380)	0.295 (0.907)	0.089 (0.372)
InsingerGilissen European Mid Cap	-0.600 (-1.214)	1.081*** (7.758)	0.431 (1.437)	-0.289 (-1.309)
ASR Kapitaalmarkt Fonds – Onderwijs	-1.162* (-2.334)	0.344* (2.395)	0.260 (0.841)	0.012 (0.054)
Hof Hoorneman Real Estate Value Fund	-0.826 (-1.518)	0.924*** (5.882)	0.106 (0.314)	-0.279 (-1.118)
ACTIAM Duurzaam Index Aand. Europa	-0.725 (-1.558)	0.993*** (7.397)	-0.353 (-1.223)	-0.193 (-0.906)
ACTIAM Duurzaam Idx Vastgoedfonds Europa	0.303 (1.786)	0.032 (0.654)	-0.001 (-0.005)	0.009 (0.122)
ACTIAM Duurzaam Europees Aandelenfonds	-0.839 (-1.754)	1.067*** (7.735)	-0.232 (-0.780)	-0.150 (-0.685)
Intereffekt Active Leverage China	-2.212 (-1.375)	1.736*** (3.741)	0.395 (0.395)	-0.038 (-0.051)
ASN Duurzaam S&Mid Cap	-0.446 (-1.179)	0.286* (2.622)	0.433 (1.844)	0.127 (0.733)
Blue Sky Eagle Fund Neutraal A EUR Acc	-1.018* (-2.037)	0.551*** (3.823)	-0.079 (-0.255)	-0.117 (-0.510)

Blue Sky Eagle Fund Zeer Off A EUR Acc	-0.538 (-0.840)	0.272 (1.468)	0.276 (0.694)	0.097 (0.329)
Blue Sky Eagle Fund Offensief A EUR Acc	-0.761 (-1.573)	0.664*** (4.757)	-0.247 (-0.822)	-0.165 (-0.746)
TKPI European Real Estate A EUR Inc	-0.966 (-1.739)	0.274 (1.712)	0.285 (0.828)	0.019 (0.254)
Triodos Energy Transition Eurp Q EUR Acc	-1.196* (-2.334)	0.258 (1.745)	0.329 (1.035)	0.016 (0.069)
Triodos Energy Transition Eurp R EUR Acc	-1.245* (-2.429)	0.257 (1.741)	0.328 (1.030)	0.014 (0.061)
NN Euro Obligatie Fonds P	-0.584* (-2.261)	0.329*** (4.420)	0.490* (3.061)	0.199 (1.687)
Kempen Oranje Participaties N.V.	0.171 (0.290)	1.048*** (6.166)	0.497 (0.179)	-0.026 (-0.097)
EV Smaller Companies Fund	-0.953 (-1.840)	0.628*** (4.200)	0.531 (0.104)	-0.086 (-0.361)
NN Europe Fund P	-0.746 (-1.728)	1.008*** (8.091)	-0.248 (-0.925)	-0.203 (-1.029)
Kempen European High Dividend N.V. Y	-0.871 (-1.796)	1.000*** (7.151)	-0.253 (-0.840)	-0.110 (-0.494)
Kempen European High Dividend N.V. X	-0.869 (-1.795)	1.001*** (7.166)	-0.253 (-0.843)	-0.110 (-0.497)
Kempen European High Dividend N.V. N	-0.877 (-1.821)	1.000*** (7.199)	-0.273 (-0.914)	-0.114 (-0.516)
NN Europa Duurzaam Aandelen N.V. P	-0.861 (-1.614)	0.942*** (6.121)	-0.079 (-0.238)	-0.435 (-1.783)
NN Europa Duurzaam Aandelen N.V. D	-0.808 (-1.561)	0.887*** (5.940)	-0.108 (-0.336)	-0.562 (-2.373)
Hof Hoorneman European Value Fund	-0.704 (-1.701)	0.967*** (8.093)	0.267 (1.040)	-0.005* (-0.029)
AEAM European Credit	-0.618* (-2.449)	0.380*** (5.211)	0.546*** (3.487)	0.215 (1.859)
LSP Life Sciences Fund N.V.	-0.643 (-0.782)	1.299*** (5.474)	0.902 (1.768)	-0.453 (-1.203)
NN Europe Small Caps Fund P	-0.356 (-0.967)	0.329** (3.100)	0.557* (2.441)	0.131 (0.776)
ASR Fonds Nederlandfonds	-0.555 (-1.132)	0.944*** (6.669)	-0.267 (-0.877)	-0.045 (-0.199)
NN Euro Rente Fonds - P	-0.623* (-2.433)	0.346*** (4.680)	0.482** (3.030)	0.177 (1.511)
NN Euro Rente Fonds - B	-0.646* (-2.563)	0.327*** (4.502)	0.459** (2.932)	0.160 (1.385)
InDelta Nederland Index Fonds	-0.722 (-1.493)	1.096*** (7.861)	-0.073 (-0.245)	-0.017 (-0.077)
Dutch Darlings Fund	-0.606 (-0.728)	1.007*** (4.189)	-0.372 (-0.720)	-0.080 (-0.209)
NN Wereldwijd Mix N.V. P	-0.905 (-1.922)	0.554*** (4.080)	-0.066 (-0.228)	-0.145 (-0.675)
ASN Groenprojectenfonds	-1.188* (-2.363)	0.331* (2.278)	0.276 (0.885)	-0.039 (-0.170)

NN Dutch Fund P	-0.663 (-1.336)	1.095*** (7.646)	-0.134 (-0.436)	-0.041 (-0.181)
Triodos Groenfonds Inc	-1.099* (-2.155)	-0.339* (-2.300)	1.361*** (4.300)	0.248 (1.063)
Oikocredit Nederland Fonds	-1.031 (-1.935)	-0.365* (-2.377)	1.431*** (4.329)	0.286 (1.175)
Add Value Fund N.V.	-0.574 (-1.262)	0.467*** (3.554)	1.312*** (4.647)	0.422* (2.027)
Kempen Orange Fund N.V.	-0.266 (-0.481)	1.151*** (7.212)	0.141 (0.412)	0.041 (0.164)
InDelta BRIC Index Fonds	-0.638 (-0.869)	0.758*** (3.580)	-0.435 (-0.956)	0.278 (0.829)
Blue Sky Eagle Fund Defensief A EUR Acc	-1.184* (-2.262)	0.508** (3.366)	0.002 (0.006)	-0.107 (-0.449)
Blue Sky Eagle Fund Zeer Def A EUR Acc	-1.337* (-2.405)	0.424* (2.647)	0.074 (0.215)	-0.054 (-0.211)
Blue Sky Eagle Fund Gem Off A EUR Acc	-0.891 (-1.830)	0.603*** (4.294)	-0.169 (-0.559)	-0.139 (-0.622)

Table 3c: *Fama and French Five-Factor model results compared to benchmark*

*Table 3c shows the coefficients of the Fama and French Five-Factor Model on the performance of the mutual funds compared to their benchmark. This model adds the profitability and investment factors to the F&F Three-factor model. The t-statistic of the coefficients is stated between brackets. The excess return is calculated by subtracting the monthly return of the fund with the monthly return of the benchmark. The alpha represents the risk-adjustment performance of the funds. Where a negative alpha indicates underperformance by the fund, shows a positive alpha overperformance. Significance levels indicate: * p<0.05, ** p<0.01, *** p< 0.001.*

Fama and French 5-Factor Model	**α**	**Mkt-RF**	**SMB**	**HML**	**RMW**	**CMA**
AEAM European Bond	-1.477* (-2.570)	0.429* (2.610)	0.314 (0.896)	0.248 (0.463)	1.254 (1.959)	1.001 (1.615)
Antaurus Europe	-1.165 (-1.854)	0.612* (3.401)	0.335 (0.875)	0.157 (0.269)	0.520 (0.743)	0.702 (1.037)
Hof Hoorneman Value Fund	-0.885 (-1.375)	0.948*** (5.149)	0.341 (0.871)	0.159 (0.266)	0.111 (0.155)	0.520 (0.750)
Juno Selection Fund	-0.780 (-1.293)	0.898*** (5.197)	0.570 (1.553)	-0.265 (-0.471)	0.529 (0.786)	0.383 (0.589)
Meesman Indexfonds Aandelen Europa	-1.034 (-1.961)	1.056*** (6.996)	-0.194 (-0.603)	-0.235 (-0.479)	0.276 (0.469	0.613 (1.078)
Kempen European Property N.V.	0.267 (1.209)	0.084 (1.335)	-0.030 (-0.225)	0.127 (0.619)	0.001 (0.004)	-0.221 (-0.930)
InDelta Europa Index Fonds	-1.123* (-2.252)	1.065*** (7.464)	-0.440 (-1.449)	-0.085 (-0.182)	0.539 (0.971)	0.664 (1.235)

Sustainable Europe Index Fund	-0.992 (-1.818)	1.048*** (6.713)	-0.204 (-0.614)	-0.212 (-0.416)	0.266 (0.438)	0.614 (1.045)
Hof Hoorneman Income Fund	-1.058 (-1.826)	0.606** (3.653)	0.584 (1.656)	0.294 (0.544)	0.835 (0.202)	0.833 (0.188)
InsingerGilissen European Mid Cap	-0.610 (-1.105)	1.095*** (6.933)	0.473 (1.407)	-0.406 (-0.789)	-0.123 (-0.200)	0.060 (0.102)
ASR Kapitaalmarkt Fonds – Onderwijs	-1.708** (-3.118)	0.429** (2.738)	0.545 (1.634)	0.329 (0.644)	0.965 (0.1.582)	0.759 (1.286)
Hof Hoorneman Real Estate Value Fund	-1.042 (-1.681)	0.926*** (5.220)	0.215 (0.570)	0.063 (0.109)	0.556 (0.806)	0.013 (0.019)
ACTIAM Duurzaam Index Aand. Europa	-0.967 (-1.833)	1.059*** (7.014)	-0.193 (-0.600)	-0.230 (-0.467)	0.279 (0.474)	0.596 (1.047)
ACTIAM Duurzaam Idx Vastgoedfonds Europa	0.263 (1.380)	0.007 (0.135)	-0.006 (-0.051)	0.254 (1.428)	0.268 (1.262)	-0.198 (-0.966)
ACTIAM Duurzaam Europees Aandelenfonds	-0.953 (-1.747)	1.118*** (7.161)	-0.129 (-0.390)	-0.310 (-0.610)	0.001 (0.001)	0.444 (0.754)
Intereffekt Active Leverage China	-1.982 (-1.080)	1.580** (3.009)	0.200 (0.179)	0.640 (0.374)	0.276 (0.135)	-1.377 (-0.696)
ASN Duurzaam S&Mid Cap	-0.675 (-1.583)	0.286* (2.342)	0.516 (1.989)	0.499 (1.256)	0.612 (1.290)	0.005 (0.010)
Blue Sky Eagle Fund Neutraal A EUR Acc	-1.554** (-2.822)	0.639*** (4.056)	0.207 (0.619)	0.182 (0.355)	0.946 (1.542)	0.803 (1.352)
Blue Sky Eagle Fund Zeer Off A EUR Acc	-0.744 (-1.017)	0.263 (1.258)	0.355 (0.798)	0.490 (0.719)	0.597 (0.733)	-0.067 (-0.085)
Blue Sky Eagle Fund Offensief A EUR Acc	-1.096* (2.008)	0.729*** (4.665)	-0.050 (-0.150)	-0.041 (-0.081)	0.535 (0.880)	0.589 (1.001)
TKPI European Real Estate A EUR Inc	-1.483* (-2.403)	0.376* (2.128)	0.572 (1.523)	0.171 (0.297)	0.785 (1.141)	0.891 (1.339)
Triodos Energy Transition Eurp Q EUR Acc	-1.680** (-2.960)	0.368* (2.267)	0.612 (1.772)	0.045 (0.085)	0.630 (0.995)	0.953 (1.558)
Triodos Energy Transition Eurp R EUR Acc	-1.728** (3.045)	0.367* (2.260)	0.610 (1.766)	0.047 (0.088)	0.632 (1.000)	0.949 (1.551)
NN Euro Obligatie Fonds P	-0.887** (-3.136)	0.369*** (4.559)	0.629*** (3.654)	0.413 (1.565)	0.570 (1.808)	0.352 (1.154)
Kempen Oranje Participaties N.V.	-0.191 (-0.286)	1.127*** (5.915)	0.721 (1.780)	0.001 (0.002)	0.455 (0.614)	0.647 (0.901)
EV Smaller Companies Fund	-1.430* (-2.484)	0.720*** (4.369)	0.804* (2.293)	0.044 (0.082)	0.698 (1.089)	0.782 (1.259)
NN Europe Fund P	-0.856 (-1.742)	1.071*** (7.617)	-0.138 (-0.463)	-0.448 (-0.979)	-0.081 (-0.148)	0.533 (1.006)
Kempen European High Dividend N.V. Y	-1.066 (1.932)	1.058*** (6.701)	-0.124 (-0.368)	-0.171 (-0.332)	0.198 (0.332)	0.517 (0.869)
Kempen European High Dividend N.V. X	-1.065 (-1.934)	1.059*** (6.714)	-0.124 (-0.369)	-0.170 (-0.330)	0.201 (0.328)	0.518 (0.872)
Kempen European High Dividend N.V. N	-1.101* (-2.011)	1.059*** (6.756)	-0.132 (-0.396)	-0.127 (-0.248)	0.279 (0.457)	0.526 (0.890)
NN Europa Duurzaam Aandelen N.V. P	-1.288* (-2.152)	0.989*** (5.769)	0.137 (0.376)	-0.031 (-0.055)	0.896 (1.344)	0.436 (0.676)

NN Europa Duurzaam Aandelen N.V. D	-1.319* (-2.294)	0.958*** (5.825)	0.162 (0.464)	-0.188 (-0.350)	0.976 (1.524)	0.652 (1.053)
Hof Hoorneman European Value Fund	-0.846 (-1.800)	1.023*** (7.603)	0.393 (1.372)	-0.185 (-0.422)	-0.004 (-0.008)	0.441 (0.871)
AEAM European Credit	-0.847** (-3.008)	0.392*** (4.863)	0.632*** (3.692)	0.493 (1.880)	0.531 (1.692)	0.108 (0.356)
LSP Life Sciences Fund N.V.	-0.273 (-0.295)	1.292*** (4.862)	0.824 (1.459)	-1.115 (-1.288)	-1.139 (-1.101)	-0.251 (-0.250)
NN Europe Small Caps Fund P	-0.629 (-1.522)	0.347** (2.935)	0.672** (2.671)	0.440 (1.143)	0.611 (1.327)	0.157 (0.353)
ASR Fonds Nederlandfonds	-0.702 (-1.250)	0.971*** (6.045)	-0.176 (-0.515)	0.026 (0.049)	0.248 (0.397)	0.251 (0.415)
NN Euro Rente Fonds - P	-0.886** (-3.121)	0.373** (4.594)	0.595** (3.444)	0.410 (1.550)	0.535 (1.691)	0.241 (0.788)
NN Euro Rente Fonds - B	-0.910** (3.264)	0.355** (4.456)	0.574** (3.381)	0.391 (1.504)	0.535 (0.091)	0.249 (0.828)
InDelta Nederland Index Fonds	-1.069 (-1.966)	1.175*** (7.547)	0.140 (0.424)	0.023 (0.046)	0.471 (0.777)	0.688 (1.173)
Dutch Darlings Fund	-0.878 (-0.934)	1.159*** (4.310)	-0.142 (-0.248)	-0.672 (-0.768)	-0.166 (-0.158)	1.330 (1.313)
NN Wereldwijd Mix N.V. P	-1.327* (-2.527)	0.627*** (4.173)	0.163 (0.509)	0.064 (0.130)	0.721 (1.233)	0.662 (0.566)
ASN Groenprojectenfonds	-1.768** (-3.212)	0.425** (2.700)	0.581 (1.735)	0.267 (0.520)	1.000 (1.631)	0.845 (1.424)
NN Dutch Fund P	-0.883 (-1.561)	1.128*** (6.967)	-0.011 (-0.032)	0.106 (0.201)	0.407 (0.645)	0.302 (0.495)
Triodos Groenfonds Inc	-1.627** (2.878)	-0.278 (1.719)	1.603*** (4.658)	0.648 (1.230)	0.995 (1.580)	0.496 (0.813)
Oikocredit Nederland Fonds	-1.562* (-2.635)	-0.298 (-1.758)	1.677*** (4.649)	0.641 (1.160)	0.959 (1.452)	0.549 (0.859)
Add Value Fund N.V.	-0.917 (-1.790)	0.509** (3.473)	1.479*** (4.744)	0.631 (1.322)	0.583 (1.021)	0.311 (0.563)
Kempen Orange Fund N.V.	-0.485 (-0.770)	1.182*** (6.551)	0.268 (0.669)	0.179 (0.305)	0.385 (0.548)	0.266 (0.392)
InDelta BRIC Index Fonds	-1.248 (-1.521)	0.832*** (3.545)	-0.148 (-0.296)	0.826 (1.079)	1.285 (1.406)	0.748 (0.845)
Blue Sky Eagle Fund Defensief A EUR Acc	-1.833** (-3.226)	0.616*** (3.787)	0.345 (0.997)	0.243 (0.459)	1.136 (1.796)	0.980 (1.600)
Blue Sky Eagle Fund Zeer Def A EUR Acc	2.106*** (-3.540)	0.543** (3.191)	0.468 (1.294)	0.419 (0.756)	1.399* (2.111)	1.090 (1.700)
Blue Sky Eagle Fund Gem Off A EUR Acc	-1.310* (-2.406)	0.677*** (4.346)	0.065 (0.196)	0.062 (0.121)	0.709 (1.169)	0.674 (1.148)

Table 4a: *CAPM results compared to the risk free rate*

*Table 4a shows the coefficients of the Capital Asset Pricing Model on the performance of the mutual funds compared to the risk-free rate. The t-statistic of the coefficients is stated between brackets. The excess return is calculated by subtracting the monthly return of the fund with the risk-free rate retrieved from the Fama and French database. The alpha represents the risk-adjustment performance of the funds. Where a negative alpha indicates underperformance by the fund, shows a positive alpha overperformance. Significance levels indicate: * p<0.05, ** p<0.01, *** p< 0.001.*

CAPM	α	Mkt-Rf
AEAM European Bond	-0.026 (-0.095)	0.331*** (4.443)
Antaurus Europe	-0.006 (-0.015)	0.592*** (5.936)
Hof Hoorneman Value Fund	0.100 (0.280)	0.985*** (10.048)
Juno Selection Fund	0.529 (1.627)	0.764*** (8.568)
Meesman Indexfonds Aandelen Europa	-0.164** (-2.775)	1.017*** (62.880)
Kempen European Property N.V.	0.086 (0.216)	1.051*** (9.647)
InDelta Europa Index Fonds	-0.286* (-2.123)	1.045*** (28.282)
Sustainable Europe Index Fund	-0.133 (-1.546)	1.017*** (42.987)
Hof Hoorneman Income Fund	0.333 (1.291)	0.556*** (7.858)
InsingerGilissen European Mid Cap	0.390 (1.548)	1.027*** (14.885)
ASR Kapitaalmarkt Fonds – Onderwijs	-0.298 (-1.171)	0.374*** (5.358)
Hof Hoorneman Real Estate Value Fund	0.017 (0.058)	0.897*** (10.917)
ACTIAM Duurzaam Index Aand. Europa	-0.098 (-1.729)	1.022*** (65.632)
ACTIAM Duurzaam Idx Vastgoedfonds Europa	0.179 (0.468)	0.966*** (9.240)
ACTIAM Duurzaam Europees Aandelenfonds	-0.165 (-1.289)	1.096*** (31.216)
Intereffekt Active Leverage China	-1.280 (-0.900)	1.744*** (4.471)
ASN Duurzaam S&Mid Cap	0.293 (1.105)	0.994*** (13.685)

Blue Sky Eagle Fund Neutraal A EUR Acc	-0.282 (-1.433)	0.577*** (10.670)
Blue Sky Eagle Fund Zeer Off A EUR Acc	0.319 (0.743)	0.320** (2.714)
Blue Sky Eagle Fund Offensief A EUR Acc	-0.092 (-0.545)	0.691*** (14.945)
TKPI European Real Estate A EUR Inc	-0.091 (-0.275)	0.304** (3.349)
Triodos Energy Transition Eurp Q EUR Acc	-0.302 (-1.059)	0.284*** (3.628)
Triodos Energy Transition Eurp R EUR Acc	-0.351 (-1.233)	0.283*** (3.619)
NN Euro Obligatie Fonds P	-0.134 (-0.523)	0.360*** (5.115)
Kempen Oranje Participaties N.V.	1.146* (2.658)	1.051*** (8.883)
EV Smaller Companies Fund	0.047 (0.183)	0.614*** (8.720)
NN Europe Fund P	-0.071 (-0.500)	1.027*** (26.238)
Kempen European High Dividend N.V. Y	-0.213 (-1.623)	1.041*** (28.853)
Kempen European High Dividend N.V. X	-0.212 (-1.612)	1.042*** (28.938)
Kempen European High Dividend N.V. N	-0.228 (-1.615)	1.042*** (26.916)
NN Europa Duurzaam Aandelen N.V. P	-0.074 (-0.347)	0.893*** (15.318)
NN Europa Duurzaam Aandelen N.V. D	-0.013 (-0.062)	0.810*** (14.438)
Hof Hoorneman European Value Fund	0.166 (0.693)	0.992*** (15.073)
AEAM European Credit	-0.146 (-0.601)	0.410*** (6.130)
LSP Life Sciences Fund N.V.	0.581 (0.803)	1.170*** (5.897)
NN Europe Small Caps Fund P	0.437 (1.734)	1.029*** (14.878)
ASR Fonds Nederlandfonds	0.085 (0.432)	1.001*** (18.549)
NN Euro Rente Fonds - P	-0.174 (-0.688)	0.372*** (5.371)
NN Euro Rente Fonds - B	-0.204 (-0.820)	0.351*** (5.150)
InDelta Nederland Index Fonds	0.000 (0.000)	1.145*** (22.793)
Dutch Darlings Fund	-0.006 (-0.010)	1.063*** (6.019)
NN Wereldwijd Mix N.V. P	-0.159 (-1.002)	0.572*** (13.129)

ASN Groenprojectenfonds	-0.308 (-1.223)	0.347*** (5.019)
NN Dutch Fund P	0.035 (0.131)	1.143*** (15.520)
Triodos Groenfonds Inc	-0.255 (-1.003)	0.314*** (4.493)
Oikocredit Nederland Fonds	-0.162 (-0.564)	0.290*** (3.677)
Add Value Fund N.V.	0.220 (0.522)	1.163*** (10.078)
Kempen Orange Fund N.V.	0.541 (1.725)	1.196*** (13.906)
InDelta BRIC Index Fonds	-0.124 (-0.215)	0.903*** (5.721)
Blue Sky Eagle Fund Defensief A EUR Acc	-0.414 (-1.707)	0.530*** (7.964)
Blue Sky Eagle Fund Zeer Def A EUR Acc	-0.544 (-1.872)	0.453*** (5.687)
Blue Sky Eagle Fund Gem Off A EUR Acc	-0.191 (-1.117)	0.631*** (13.416)

Table 4b: *Fama and French Three-Factor model compared to the risk free rate*

*Table 4b shows the coefficients of the Fama and French Three-Factor Model on the performance of the mutual funds compared to the risk-free rate. This model adds the Small Minus Big and the High Minus Low factors to the CAPM. The t-statistic of the coefficients is stated between brackets. The excess return is calculated by subtracting the monthly return of the fund with the risk-free rate retrieved from the Fama and French database. The alpha represents the risk-adjustment performance of the funds. Where a negative alpha indicates underperformance by the fund, shows a positive alpha overperformance. Significance levels indicate: * p<0.05, ** p<0.01, *** p< 0.001.*

Fama and French Three-Factor model	**α**	**Mkt-Rf**	**SMB**	**HML**
AEAM European Bond	-0.072 (-0.251)	0.343*** (4.134)	0.098 (0.548)	-0.020 (-0.153)
Antaurus Europe	-0.079 (-0.209)	0.554*** (5.118)	0.256 (1.101)	0.247 (1.441)
Hof Hoorneman Value Fund	0.020 (0.057)	0.907*** (9.041)	0.345 (1.597)	0.443** (2.780)
Juno Selection Fund	0.243 (0.769)	0.874*** (9.605)	0.540** (2.761)	-0.291* (-2.015)
Meesman Indexfonds Aandelen Europa	-0.077 (-1.875)	1.011*** (85.120)	-0.210*** (-8.237)	-0.040* (-2.113)
Kempen European Property N.V.	0.011 (0.027)	1.147*** (9.807)	0.021 (0.083)	-0.403* (-2.169)
InDelta Europa Index Fonds	-0.082 (-0.837)	1.019*** (36.203)	-0.479*** (-7.915)	-0.046 (-1.039)

Sustainable Europe Index Fund	-0.036 (-0.465)	1.002*** (44.595)	-0.223*** (-4.618)	-0.010 (-0.269)
Hof Hoorneman Income Fund	0.177 (0.718)	0.534*** (7.516)	0.441** (2.890)	0.239* (2.126)
InsingerGilissen European Mid Cap	0.111 (0.476)	1.104*** (16.358)	0.578*** (3.978)	-0.139 (-1.299)
ASR Kapitaalmarkt Fonds – Onderwijs	-0.451 (-1.801)	0.367*** (5.077)	0.407* (2.614)	0.163 (1.417)
Hof Hoorneman Real Estate Value Fund	-0.115 (-0.370)	0.947*** (10.527)	0.253 (1.306)	-0.128 (-0.899)
ACTIAM Duurzaam Index Aand. Europa	-0.014 (-0.363)	1.016*** (92.243)	-0.206*** (-8.711)	-0.043* (-2.437)
ACTIAM Duurzaam Idx Vastgoedfonds Europa	0.102 (0.264)	1.070*** (9.643)	0.013 (0.054)	-0.437* (-2.484)
ACTIAM Duurzaam Europees Aandelenfonds	-0.128 (-0.946)	1.090*** (28.016)	-0.085 (-1.013)	0.000 (0.006)
Intereffekt Active Leverage China	-1.501 (-0.996)	1.759*** (4.049)	0.541 (0.579)	0.113 (0.164)
ASN Duurzaam S&Mid Cap	-0.029 (-0.122)	1.094*** (15.937)	0.650*** (4.400)	-0.211 (-1.934)
Blue Sky Eagle Fund Neutraal A EUR Acc	-0.307 (-1.470)	0.574*** 99.536)	0.068 (0.522)	0.034 (0.726)
Blue Sky Eagle Fund Zeer Off A EUR Acc	0.173 (0.391)	0.295* (2.315)	0.423 (1.544)	0.247 (1.223)
Blue Sky Eagle Fund Offensief A EUR Acc	-0.050 (-0.282)	0.687*** (13.393)	-0.100 (-0.908)	-0.015 (-0.181)
TKPI European Real Estate A EUR Inc	-0.255 (-0.761)	0.297** (3.080)	0.432* (2.081)	0.169 (1.104)
Triodos Energy Transition Eurp Q EUR Acc	-0.485 (-1.733)	0.281*** (3.480)	0.476** (2.739)	0.167 (1.301)
Triodos Energy Transition Eurp R EUR Acc	-0.534 (-1.908)	0.280*** (3.474)	0.474** (2.732)	0.165 (1.285)
NN Euro Obligatie Fonds P	-0.218 (-0.814)	0.359*** (4.656)	0.216 (1.300)	0.073 (0.593)
Kempen Oranje Participaties N.V.	0.882 (2.028)	1.071*** (8.541)	0.644* (2.386)	0.124 (0.624)
EV Smaller Companies Fund	-0.242 (-1.056)	0.651*** (9.848)	0.677*** (4.766)	0.065 (0.617)
NN Europe Fund P	-0.035 (-0.237)	1.031*** (23.974)	-0.101 (-1.094)	-0.053 (-0.777)
Kempen European High Dividend N.V. Y	-0.160 (-1.163)	1.023*** (25.803)	-0.106 (-1.243)	0.041 (0.649)
Kempen European High Dividend N.V. X	-0.158 (-1.152)	1.024*** (25.885)	-0.107 (-1.252)	0.040 (0.639)
Kempen European High Dividend N.V. N	-0.166 (-1.128)	1.023*** (24.110)	-0.126 (-1.384)	0.037 (0.542)
NN Europa Duurzaam Aandelen N.V. P	-0.150 (-0.716)	0.965*** (15.953)	0.068 (0.521)	-0.285** (-2.969)
NN Europa Duurzaam Aandelen N.V. D	-0.097 (-0.536)	0.910*** (17.414)	0.039 (0.346)	-0.412*** (-4.969)

Hof Hoorneman European Value Fund	0.007 (0.029)	0.990*** (14.640)	0.414** (2.847)	0.145 (1.315)
AEAM European Credit	-0.252 (-1.007)	0.410*** (5.669)	0.272 (1.749)	0.088 (0.769)
LSP Life Sciences Fund N.V.	0.068 (0.093)	1.322*** (6.271)	1.049* (2.314)	-0.302 (-0.905)
NN Europe Small Caps Fund P	0.061 (0.301)	1.137*** (19.434)	0.774*** (6.153)	-0.207* (-2.230)
ASR Fonds Nederlandfonds	0.155 (0.757)	0.967*** (16.326)	-0.120 (-0.944)	0.106 (1.125)
NN Euro Rente Fonds - P	-0.257 (-0.974)	0.376*** (4.937)	0.207 (1.264)	0.051 (0.418)
NN Euro Rente Fonds - B	-0.280 (-1.073)	0.358*** (4.750)	0.184 (1.137)	0.033 (0.278)
InDelta Nederland Index Fonds	-0.011 (-0.056)	1.119*** (20.434)	0.073 (0.623)	0.133 (1.533)
Dutch Darlings Fund	0.105 (0.154)	1.030*** (5.229)	-0.225 (-0.532)	0.071 (0.226)
NN Wereldwijd Mix N.V. P	-0.194 (-1.155)	0.577*** (11.914)	0.080 (0.770)	0.005 (0.063)
ASN Groenprojectenfonds	-0.477 (-1.914)	0.354*** (4.916)	0.423** (2.733)	0.111 (0.974)
NN Dutch Fund P	0.047 (0.168)	1.118*** (13.674)	0.012 (0.070)	0.109 (0.841)
Triodos Groenfonds Inc	-0.412 (-1.635)	0.312*** (4.293)	0.406* (2.596)	0.140 (1.213)
Oikocredit Nederland Fonds	-0.344 (-1.217)	0.285*** (3.498)	0.476** (2.715)	0.178 (1.377)
Add Value Fund N.V.	0.113 (0.262)	1.117*** (9.003)	0.357 (1.339)	0.314 (1.594)
Kempen Orange Fund N.V.	0.445 (1.382)	1.174*** (12.627)	0.288 (1.440)	0.192 (1.301)
InDelta BRIC Index Fonds	0.073 (0.123)	0.781*** (4.540)	-0.288 (-0.780)	0.429 (1.571)
Blue Sky Eagle Fund Defensief A EUR Acc	-0.473 (-1.852)	0.531*** (7.211)	0.149 (0.939)	0.043 (0.367)
Blue Sky Eagle Fund Zeer Def A EUR Acc	-0.626* (-2.062)	0.447*** (5.111)	0.221 (1.173)	0.097 (0.696)
Blue Sky Eagle Fund Gem Off A EUR Acc	-0.180 (-0.988)	0.626*** (11.924)	-0.022 (-0.196)	0.012 (0.142)

Table 4c: *Fama and French Five-Factor model compared to the risk free rate*

*Table 4c shows the coefficients of the Fama and French Five-Factor Model on the performance of the mutual funds compared to the risk-free rate. This model adds the profitability and investment factors to the F&F Three-factor model. The t-statistic of the coefficients is stated between brackets. The excess return is calculated by subtracting the monthly return of the fund with the risk-free rate retrieved from the Fama and French database. The alpha represents the risk-adjustment performance of the funds. Where a negative alpha indicates underperformance by the fund, shows a positive alpha overperformance. Significance levels indicate: * p<0.05, ** p<0.01, *** p< 0.001.*

Fama and French 5-Factor model	**α**	**Mkt-RF**	**SMB**	**HML**	**RMW**	**CMA**
AEAM European Bond	-0.509 (-1.628)	0.390*** (4.501)	0.295 (1.601)	0.397 (1.410)	0.931** (2.763)	0.450 (1.380)
Antaurus Europe	-0.197 (-0.460)	0.572*** (4.664)	0.316 (1.212)	0.307 (0.768)	0.197 (0.412)	0.151 (0.328)
Hof Hoorneman Value Fund	0.084 (0.210)	0.908*** (7.967)	0.322 (1.329)	0.309 (0.831)	-0.212 (-0.478)	-0.031 (-0.072)
Juno Selection Fund	0.188 (0.523)	0.858*** (8.342)	0.552* (2.523)	-0.116 (-0.346)	0.205 (0.513)	-0.167 (-0.432)
Meesman Indexfonds Aandelen Europa	-0.066 (-1.458)	1.016*** (78.685)	-0.212*** (-7.731)	-0.086* (-2.049)	-0.047 (-0.942)	0.063 (1.285)
Kempen European Property N.V.	0.022 (0.047)	1.078*** (8.246)	-0.031 (-0.113)	0.065 (0.154)	0.393 (0.772)	-0.587 (-1.192)
InDelta Europa Index Fonds	-0.155 (-1.474)	1.025*** (34.107)	-0.458*** (-7.168)	0.065 (0.659)	0.216 (1.847)	0.113 (1.001)
Sustainable Europe Index Fund	-0.023 (-0.262)	1.008*** (39.739)	-0.223*** (-4.124)	-0.062 (-0.754)	-0.057 (-0.576)	0.064 (0.667)
Hof Hoorneman Income Fund	-0.090 (-0.331)	0.566*** (7.292)	0.565** (3.425)	0.443 (1.752)	0.511 (1.692)	0.282 (0.965)
InsingerGilissen European Mid Cap	0.358 (1.406)	1.056*** (14.484)	0.454** (2.930)	-0.257 (-1.082)	-0.446 (-1.571)	-0.490 (-1.786)
ASR Kapitaalmarkt Fonds – Onderwijs	-0.739** (-2.699)	0.389*** (4.968)	0.526** (3.154)	0.478 (1.873)	0.642* (2.104)	0.209 (0.707)
Hof Hoorneman Real Estate Value Fund	-0.074 (-0.211)	0.886*** (8.863)	0.196 (0.924)	0.212 (0.652)	0.233 (0.599)	-0.538 (-1.428)
ACTIAM Duurzaam Index Aand. Europa	0.001 (0.021)	1.019*** (85.007)	-0.211*** (-8.291)	-0.080* (-2.060)	-0.044 (-0.947)	0.045 (0.994)
ACTIAM Duurzaam Idx Vastgoedfonds Europa	0.018 (0.041)	1.001* (8.167)	-0.007 (-0.028)	0.192 (0.480)	0.660 (1.383)	-0.564 (-1.222)
ACTIAM Duurzaam Europees Aandelenfonds	0.015 (0.100)	1.079* (25.429)	-0.148 (-1.641)	-0.161 (-1.164)	-0.322 (-1.952)	-0.107 (-0.669)
Intereffekt Active Leverage China	-1.013 (-0.593)	1.541** (3.150)	0.182 (0.175)	0.789 (0.495)	-0.047 (-0.025)	-1.928 (-1.046)

ASN Duurzaam S&Mid Cap	0.123 (0.467)	1.039*** (13.821)	0.557** (3.480)	-0.128 (-0.523)	-0.148 (-0.506)	-0.528 (-1.864)
Blue Sky Eagle Fund Neutraal A EUR Acc	-0.585* (-2.618)	0.599*** (9.368)	0.189 (1.386)	0.331 (1.590)	0.622* (2.499)	0.252 (1.045)
Blue Sky Eagle Fund Zeer Off A EUR Acc	0.225 (0.450)	0.224 (1.564)	0.336 (1.106)	0.639 (1.373)	0.274 (0.492)	-0.618 (-1.148)
Blue Sky Eagle Fund Offensief A EUR Acc	-0.128 (-0.634)	0.689*** (11.911)	-0.069 (-0.558)	0.108 (0.575)	0.212 (0.942)	0.039 (0.178)
TKPI European Real Estate A EUR Inc	-0.515 (-1.368)	0.336** (3.119)	0.553* (2.414)	0.320 (0.913)	0.462 (1.101)	0.340 (0.838)
Triodos Energy Transition Eurp Q EUR Acc	-0.712* (-2.264)	0.329*** (3.653)	0.593** (3.101)	0.194 (0.663)	0.306 (0.875)	0.403 (1.188)
Triodos Energy Transition Eurp R EUR Acc	-0.760* (-2.420)	0.327*** (3.641)	0.591** (3.093)	0.196 (0.669)	0.309 (0.884)	0.398 (1.175)
NN Euro Obligatie Fonds P	-0.632* (-2.256)	0.404*** (5.041)	0.400* (2.345)	0.457 (1.751)	0.873** (2.796)	0.430 (1.423)
Kempen Oranje Participaties N.V.	0.778 (1.564)	1.087*** (7.642)	0.703* (2.322)	0.150 (0.324)	0.132 (0.239)	0.096 (0.179)
EV Smaller Companies Fund	-0.462 (-1.812)	0.680*** (9.326)	0.785*** (5.060)	0.193 (0.814)	0.375 (1.321)	0.231 (0.841)
NN Europe Fund P	0.113 (0.691)	1.031*** (22.087)	-0.157 (-1.583)	-0.299 (-1.966)	-0.404* (-2.225)	-0.018 (-0.103)
Kempen European High Dividend N.V. Y	-0.098 (-0.626)	1.018*** (22.796)	-0.142 (-1.497)	-0.022 (-0.149)	-0.125 (-0.719)	-0.033 (-0.199)
Kempen European High Dividend N.V. X	-0.097 (-0.623)	1.019*** (22.864)	-0.142 (-1.501)	-0.020 (-0.141)	-0.122 (-0.702)	-0.033 (-0.195)
Kempen European High Dividend N.V. N	-0.133 (-0.792)	1.019*** (21.193)	-0.151 (-1.475)	0.023 (0.145)	-0.044 (-0.237)	-0.025 (-0.139)
NN Europa Duurzaam Aandelen N.V. P	-0.320 (-1.395)	0.949*** (14.448)	0.118 (0.846)	0.119 (0.555)	0.573* (2.242)	-0.114 (-0.462)
NN Europa Duurzaam Aandelen N.V. D	-0.350 (-1.838)	0.918*** (16.840)	0.144 (1.238)	-0.038 (-0.216)	0.653** (3.074)	0.101 (0.494)
Hof Hoorneman European Value Fund	0.122 (0.461)	0.983*** (12.964)	0.374* (2.318)	-0.036 (-0.144)	-0.327 (-1.109)	-0.109 (-0.382)
AEAM European Credit	-0.592* (-2.222)	0.427*** (5.602)	0.403* (2.488)	0.538* (2.168)	0.834** (2.810)	0.186 (0.649)
LSP Life Sciences Fund N.V.	0.695 (0.859)	1.252*** (1.252)	0.806 (1.637)	-0.965 (-1.281)	-1.462 (-1.623)	-0.801 (-0.919)
NN Europe Small Caps Fund P	0.168 (0.746)	1.101*** (17.040)	0.712*** (5.185)	-0.187 (-0.887)	-0.150 (-0.596)	-0.375 (-1.542)
ASR Fonds Nederlandfonds	0.266 (1.150)	0.931*** (14.042)	-0.195 (-1.380)	0.175 (0.809)	-0.075 (-0.291)	-0.300 (-1.199)
NN Euro Rente Fonds - P	-0.631* (-2.249)	0.408*** (5.089)	0.366* (2.143)	0.455 (1.740)	0.838** (2.682)	0.319 (1.057)
NN Euro Rente Fonds - B	-0.655* (-2.370)	0.391*** (4.939)	0.345* (2.048)	0.436 (1.691)	0.838** (2.722)	0.327 (1.098)
InDelta Nederland Index Fonds	-0.101 (-0.467)	1.135*** (18.362)	0.122 (0.927)	0.173 (0.858)	0.148 (0.613)	0.137 (0.589)

Dutch Darlings Fund	0.091 (0.117)	1.120*** (5.055)	-0.160 (-0.340)	-0.523 (-0.725)	-0.489 (-0.567)	0.780 (0.934)
NN Wereldwijd Mix N.V. P	-0.358 (-1.933)	0.587*** (11.071)	0.144 (1.275)	0.213 (1.233)	0.398 (1.927)	0.111 (0.557)
ASN Groenprojectenfonds	-0.799** (-2.967)	0.386*** (5.000)	0.562** (3.428)	0.416 (1.657)	0.677* (2.255)	0.294 (1.012)
NN Dutch Fund P	0.085 (0.262)	1.089*** (11.764)	-0.030 (-0.151)	0.255 (0.848)	0.084 (0.817)	-0.249 (-0.713)
Triodos Groenfonds Inc	-0.719* (-2.617)	0.345*** (4.391)	0.541** (3.233)	0.412 (1.611)	0.629* (2.055)	0.301 (1.016)
Oikocredit Nederland Fonds	-0.654* (-2.096)	0.325*** (3.641)	0.615** (3.240)	0.405 (1.395)	0.593 (1.706)	0.355 (1.054)
Add Value Fund N.V.	-0.009 (-0.019)	1.132*** (8.045)	0.417 (1.393)	0.396 (0.863)	0.217 (0.396)	0.117 (0.220)
Kempen Orange Fund N.V.	0.483 (1.315)	1.143*** (10.886)	0.250 (1.116)	0.328 (0.959)	0.062 (0.152)	-0.284 (-0.718)
InDelta BRIC Index Fonds	-0.280 (-0.417)	0.793*** (4.120)	-0.167 (-0.407)	0.975 (1.556)	0.962 (1.284)	0.197 (0.272)
Blue Sky Eagle Fund Defensief A EUR Acc	-0.865** (-3.226)	0.576*** (7.510)	0.326 (1.999)	0.392 (1.571)	0.813** (2.724)	0.429 (1.484)
Blue Sky Eagle Fund Zeer Def A EUR Acc	-1.138*** (-3.647)	0.504*** (5.641)	0.450* (2.369)	0.569 (1.956)	1.076** (3.096)	0.539 (1.604)
Blue Sky Eagle Fund Gem Off A EUR Acc	-0.342 (-1.687)	0.638*** (11.005)	0.046 (0.377)	0.211 (1.118)	0.386 (1.712)	0.123 (0.563)

Table 5a: *Alphas of the different models compared to benchmark*

*Table 5a presents an overview of the alpha coefficients of the three different models. The alphas in this table indicate the performance of the funds relative to their benchmark. T-statistic of the coefficients is stated between brackets. Significance levels indicate: * p<0.05, ** p<0.01, *** p< 0.001.*

CAPM	3-Factor	5-Factor
-0.777 (-1.544)	-0.783 (-1.472)	-1.477* (-2.570)
-0.757 (-1.440)	-0.790 (-1.417)	-1.165 (-1.854)
-0.651 (-1.208)	-0.691 (-1.224)	-0.885 (-1.375)
-0.222 (-0.427)	-0.468 (-0.879)	-0.780 (-1.293)
-0.915* (-2.046)	-0.788 (-1.694)	-1.034 (-1.961)
0.209 (-1.140)	0.213 (-1.095)	0.267 (-1.209)
-1.037* (-2.354)	-0.793 (-1.786)	-1.123* (-2.252)
-0.885	-0.747	-0.992

(-1.920)	(-1.555)	(-1.818)
-0.418	-0.534	-1.058
(-0.842)	(-1.020)	(-1.826)
-0.362	-0.600	-0.610
(-0.771)	(-1.214)	(-1.105)
-1.049*	-1.162*	-1.708**
(-2.225)	(-2.334)	(-3.118)
-0.734	-0.826	-1.042
(-1.416)	(-1.518)	(-1.681)
-0.849	-0.725	-0.967
(-1.900)	(-1.558)	(-1.833)
0.302	0.303	0.263
(-1.887)	(-1.786)	(-1.380)
-0.916*	-0.839	-0.953
(-2.017)	(-1.754)	(-1.747)
-2.031	-2.212	-1.982
(-1.340)	(-1.375)	(-1.080)
-0.275	-0.446	-0.675
(-0.746)	(-1.179)	(-1.583)
-1.034*	-1.018*	-1.554**
(-2.192)	(-2.037)	(-2.822)
-0.432	-0.538	-0.744
(-0.712)	(-0.840)	(-1.017)
-0.843	-0.761	-1.096*
(-1.831)	(-1.573)	(-2.008)
-0.842	-0.966	-1.483*
(-1.602)	(-1.739)	(-2.403)
-1.053*	-1.196*	-1.680**
(-2.163)	(-2.334)	(-2.960)
-1.102*	-1.245*	-1.728**
(-2.264)	(-2.429)	(-3.045)
-0.399	-0.584*	-0.887**
(-1.484)	(-2.261)	(-3.136)
0.395	0.171	-0.191
(-0.701)	(-0.290)	(-0.286)
-0.704	-0.953	-1.430*
(-1.410)	(-1.840)	(-2.484)
-0.823	-0.746	-0.856
(-1.989)	(-1.728)	(-1.742)
-0.965*	-0.871	-1.066
(-2.096)	(-1.796)	(-1.932)
-0.963*	-0.869	-1.065
(-2.095)	(-1.795)	(-1.934)
-0.979*	-0.877	-1.101*
(-2.140)	(-1.821)	(-2.011)

-0.825 (-1.597)	-0.861 (-1.614)	-1.288* (-2.152)
-0.764 (-1.493)	-0.808 (-1.561)	-1.319* (-2.294)
-0.585 (-1.488)	-0.704 (-1.701)	-0.846 (-1.800)
-0.412 (-1.526)	-0.618* (-2.449)	-0.847** (-3.008)
-0.170 (-0.212)	-0.643 (-0.782)	-0.273 (-0.295)
-0.130 (-0.356)	-0.356 (-0.967)	-0.629 (-1.522)
-0.666 (-1.433)	-0.555 (-1.132)	-0.702 (-1.250)
-0.439 (-1.654)	-0.623* (-2.433)	-0.886** (-3.121)
-0.469 (-1.810)	-0.646* (-2.563)	-0.910** (-3.264)
-0.751 (-1.650)	-0.722 (-1.493)	-1.069 (-1.966)
-0.758 (-0.962)	-0.606 (-0.728)	-0.878 (-0.934)
-0.911* (-2.046)	-0.905 (-1.922)	-1.327* (-2.527)
-1.060* (-2.223)	-1.188* (-2.363)	-1.768** (-3.212)
-0.716 (-1.530)	-0.663 (-1.336)	-0.883 (-1.561)
-0.538 (-0.962)	-1.099* (-2.155)	-1.627** (-2.878)
-0.445 (-0.759)	-1.031 (-1.935)	-1.562* (-2.635)
-0.063 (-0.121)	-0.574 (-1.262)	-0.917 (-1.790)
-0.210 (-0.403)	-0.266 (-0.481)	-0.485 (-0.770)
-0.875 (-1.251)	-0.638 (-0.869)	-1.248 (-1.521)
-1.165* (-2.362)	-1.184* (-2.262)	-1.833** (-3.226)
-1.295* (-2.474)	-1.337* (-2.405)	2.106*** (-3.540)
-0.943* (-2.045)	-0.891 (-1.830)	-1.310* (-2.406)

Table 5b: *Alphas of the different models compared to the risk free rate*

*Table 5b presents an overview of the alpha coefficients of the three different models. The alphas in this table indicate the performance of the funds relative to the risk-free rate. T-statistic of the coefficients is stated between brackets. Significance levels indicate: * p<0.05, ** p<0.01, *** p< 0.001.*

CAPM	3-Factor	5-Factor
-0.026 (-0.095)	-0.072 (-0.251)	-0.509 (-1.628)
-0.006 (-0.015)	-0.079 (-0.209)	-0.197 (-0.460)
0.100 (-0.280)	0.020 (-0.057)	0.084 (-0.210)
0.529 (-1.627)	0.243 (-0.769)	0.188 (-0.523)
-0.164** (-2.775)	-0.077 (-1.875)	-0.066 (-1.458)
0.086 (-0.216)	0.011 (-0.027)	0.022 (-0.047)
-0.286* (-2.123)	-0.082 (-0.837)	-0.155 (-1.474)
-0.133 (-1.546)	-0.036 (-0.465)	-0.023 (-0.262)
0.333 (-1.291)	0.177 (-0.718)	-0.090 (-0.331)
0.390 (-1.548)	0.111 (-0.476)	0.358 (-1.406)
-0.298 (-1.171)	-0.451 (-1.801)	-0.739** (-2.699)
0.017 (-0.058)	-0.115 (-0.370)	-0.074 (-0.211)
-0.098 (-1.729)	-0.014 (-0.363)	0.001 (-0.021)
0.179 (-0.468)	0.102 (-0.264)	0.018 (-0.041)
-0.165 (-1.289)	-0.128 (-0.946)	0.015 (-0.100)
-1.280 (-0.900)	-1.501 (-0.996)	-1.013 (-0.593)
0.293 (-1.105)	-0.029 (-0.122)	0.123 (-0.467)
-0.282 (-1.433)	-0.307 (-1.470)	-0.585* (-2.618)

0.319 (-0.743)	0.173 (-0.391)	0.225 (-0.450)
-0.092 (-0.545)	-0.050 (-0.282)	-0.128 (-0.634)
-0.091 (-0.275)	-0.255 (-0.761)	-0.515 (-1.368)
-0.302 (-1.059)	-0.485 (-1.733)	-0.712* (-2.264)
-0.351 (-1.233)	-0.534 (-1.908)	-0.760* (-2.420)
-0.134 (-0.523)	-0.218 (-0.814)	-0.632* (-2.256)
1.146* (-2.658)	0.882 (-2.028)	0.778 (-1.564)
0.047 (-0.183)	-0.242 (-1.056)	-0.462 (-1.812)
-0.071 (-0.500)	-0.035 (-0.237)	0.113 (-0.691)
-0.213 (-1.623)	-0.160 (-1.163)	-0.098 (-0.626)
-0.212 (-1.612)	-0.158 (-1.152)	-0.097 (-0.623)
-0.228 (-1.615)	-0.166 (-1.128)	-0.133 (-0.792)
-0.074 (-0.347)	-0.150 (-0.716)	-0.320 (-1.395)
-0.013 (-0.062)	-0.097 (-0.536)	-0.350 (-1.838)
0.166 (-0.693)	0.007 (-0.029)	0.122 (-0.461)
-0.146 (-0.601)	-0.252 (-1.007)	-0.592* (-2.222)
0.581 (-0.803)	0.068 (-0.093)	0.695 (-0.859)
0.437 (-1.734)	0.061 (-0.301)	0.168 (-0.746)
0.085 (-0.432)	0.155 (-0.757)	0.266 (-1.150)
-0.174 (-0.688)	-0.257 (-0.974)	-0.631* (-2.249)
-0.204 (-0.820)	-0.280 (-1.073)	-0.655* (-2.370)
0.000 (0.000)	-0.011 (-0.056)	-0.101 (-0.467)
-0.006	0.105	0.091

(-0.010)	(-0.154)	(-0.117)
-0.159	-0.194	-0.358
(-1.002)	(-1.155)	(-1.933)
-0.308	-0.477	-0.799**
(-1.223)	(-1.914)	(-2.967)
0.035	0.047	0.085
(-0.131)	(-0.168)	(-0.262)
-0.255	-0.412	-0.719*
(-1.003)	(-1.635)	(-2.617)
-0.162	-0.344	-0.654*
(-0.564)	(-1.217)	(-2.096)
0.220	0.113	-0.009
(-0.522)	(-0.262)	(-0.019)
0.541	0.445	0.483
(-1.725)	(-1.382)	(-1.315)
-0.124	0.073	-0.280
(-0.215)	(-0.123)	(-0.417)
-0.414	-0.473	-0.865**
(-1.707)	(-1.852)	(-3.226)
-0.544	-0.626*	1.138***
(-1.872)	(-2.062)	(-3.647)
-0.191	-0.180	-0.342
(-1.117)	(-0.988)	(-1.687)