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A Comparative Study of Active Management in Norway and the US: Analysing Mutual Fund Performance and Fees

Master Thesis

by Lars Christian Wiig & Hjalmar Kristoffer Bjørgan.

MSc in Business with Major Finance

Supervisor: Ben (Chunyu) Yang

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Abstract

We investigated whether the fees charged by active Norwegian global equity mutual funds can be justified, and compared it to those of US global equity mutual funds, over the period from 2012 to 2022. We aimed to explore the relationship between performance and fees in mutual funds, specifically questioning whether higher fees led to increased risk-adjusted returns. Our findings showed that, on average, active Norwegian global equity funds outperformed active US global equity funds. However, neither country succeeded in generating a positive risk-adjusted return above the benchmark, but we saw exceptions in the very top percentile. On average, fees cannot be justified by performance. Additionally, we found some evidence that high-cost funds consistently underperformed across both countries.

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1 Introduction and Motivation

Do Norwegian active mutual funds produce enough value to justify the fees they are taking for their services? In this paper, we will examine how mutual fund fees impact performance in Norway and compare it to the United States. Mutual funds are becoming popular, 46% of the population in Norway are invested in mutual funds (excluding pension funds) (VFF, 2021). The number is even higher across the ocean, mutual funds are held by 52.3% of all households in the United States (ICI, 2022b). Mutual funds are often considered entry-level for individual investors who want to gain exposure to the capital markets. However, mutual funds charge various fees that could significantly impact the funds' overall performance.

Additionally, there are news articles asserting that retail investors in Norway are invested in the most expensive funds, while professionals are invested in cheaper funds (Sættem, 2022). This contrast indicates a form of information asymmetry, or lack of professionalism in the industry, where fund managers might take advantage of uninformed investors. Therefore, our paper aims to deliver insights on fee structure and performance to retail investors who are buying or considering buying mutual funds.

Furthermore, the consumer council in Norway (Forbrukerrådet) has written multiple articles related to overpricing of Norwegian active mutual funds and confronted the banks with allegations of providing too expensive financial products to consumers (Forbrukerrådet, 2020). We want to investigate whether these claims are valid; this is our paper's primary motivation. The reason why we want to compare the performance of Norwegian mutual funds with American mutual funds is that the United States has one of the most liquid and well-established financial markets with a higher degree of competition. The topic related to competition dates back to Adam Smith in the 18th century about the law of supply and demand (The Investopedia Team, 2021). Consequently, it would be intuitive that the prices in the United States are closer to the competitive equilibrium (Liberto, 2021). As a result, comparing these two markets will help us decide whether the fees can be justified and help us understand whether the difference in performance is related to factors other than fees, such as regulatory environment or economic conditions.

In recent years, there has been much turbulence and distress in the capital markets, due to the pandemic and the war in Ukraine. To ensure we have a good picture of the current situation, we used data from funds with a track record of at least 12 months' returns, including merged and liquidated funds. We also limited our paper to include active equity mutual funds that invest globally. Hence, excluding the fixed-income and other types of funds from our data.

In terms of active management in Norway, some active funds have outperformed index funds in the past. However, most of Norway's active funds have performed relatively poorly compared to index funds, even before considering fees (Heggheim, 2021). Furthermore, another news article interviewing Bjørn Sættem, states that half of the real return in several Norwegian funds

is lost to fees, as reported by Nettavisen (Lorvik, 2021).

Additionally, most funds tend to perform great in good economic times. However, these portfolio managers show a tendency to invest in the most volatile stocks to increase the expected return, as Sørensen mentioned due to the high Beta of these funds (Sørensen, 2009, pg. 23). Thus, getting little to no extra risk-adjusted return. In addition, good past returns might lure unsophisticated investors into buying the most expensive funds since these investors favor gross returns over net returns, as experimented by Anufriev, Bao, Sutan & Tuinstra (Anufriev et al., 2019).

Therefore, to investigate our research question of whether the fees can be justified, we will dig deeper into the relevant measurements, such as the Sharpe ratio, Information ratio, expense ratio, and past returns of Norwegian and American mutual equity funds. Furthermore, we will use the CAPM ((Sharpe, 1964) & (Lintner, 1965)), the Fama-French three-factor model (Fama & French, 1993), and the Carhart four-factor model (Carhart, 1997) to measure the risk-adjusted performance. Additionally, we will take a closer look at the performance and the fee relationship.

2 Literature Review and Theory

In this section, we will review the relevant literature and theories on mutual fund performance and fees. Several research papers have been conducted on fund performance, many of which also discuss the fees of active mutual funds. We will present the findings of these studies and where there are disagreements in the literature.

2.1 Mutual Fund

Mutual funds are investment vehicles; they are open-end investment companies and are made up of a pooled collection of securities (SEC, n.d., pg. 4). Most mutual funds have professional management and low minimum investment, which is a liquid and often a cheap way for an investor to diversify their portfolio compared to investing in individual securities (Vanguard, n.d.). The Nobel prize winner, Markowitz, introduced in 1952 the modern theory of diversification (Markowitz, 1952), often referred to as the only free lunch of wall street. By using diversification, an investor can protect their portfolio from idiosyncratic risk.

There are four different categories of mutual funds. According to the US Securities and Exchange Commission (Investor.gov, n.d.), most mutual funds fall into these four categories: Money market funds, Bond funds, Equity funds or Target date funds. After that, a distinction between actively managed and passively managed funds are typical.

2.1.1 Active and Passive Mutual Funds

Bogle introduced Vanguard's first passive-managed index fund in 1976 (Chen, 2022). The role of passive index funds is to track a target benchmark such as MSCI World, S&P 500 or OSEBX. In contrast, actively managed funds are operated by portfolio managers where the objective is to generate an excess return above the benchmark (The Investopedia Team, 2022). Therefore, actively managed funds typically charge higher fees because they need to research and gather information on which securities they should invest in and which not.

2.2 Fee Structure

Various fees and expenses occur when purchasing mutual funds, and as these directly impact the returns of an investment, investors should consider the impact of the fees. The general trend in mutual fund fees has been declining. According to the investment company institute, ICI, the overall expenses associated with mutual equity funds have declined significantly over the past 25 years, from 1.04 percent in 1996 to 0.47 percent in 2021 (ICI, 2022a, pg. 1). Note that these statistics include passively managed funds.

The costs that typically occur on a yearly basis include management fees, 12b-1 fees, and other administrative fees related to running the fund. A commonly used measurement for fees is the expense ratio. The expense ratio, which will be frequently referred to in our study, measures the proportion of total fund assets that go toward administrative and other running costs (Hayes, 2022). At first glance, the fee might look insignificant for investors. However, the interest compounding effect increases the value investors lose to fees exponentially. Thus, the costs will add up to large and significant sums over time.

2.2.1 Management Fee

The management fee is an expense paid to the fund's portfolio managers for overseeing the fund's investments, gathering information, executing trades, and other costs related to portfolio management, such as hiring (FINRA, n.d.).

2.2.2 12b-1 Fee

The 12b-1 fee is an operational expense that is related to paying the fund's marketing and distribution expenses (FINRA, n.d.) and was adopted in the 1980s (ICI, n.d.). The 12b-1 fee is capped at 1% annually and separated into two parts. The first part, marketing and distribution, is restricted to 0.75%, and the second part, the service fee, is capped at 0.25%. The idea of this fee was to lower the fund's overall cost by taking advantage of economies of scale (Chen, 2020).

2.2.3 Other Expenses

According to the Financial Industry Regulatory Authority (FINRA, n.d.), other fees that occur based on individual actions and are paid directly by the fund investors include account fees, redemption fees, exchange fees, and purchase fees.

2.2.4 Load vs No-load mutual funds

It exists two types of funds when it comes to loads, load and no-load mutual funds, where load means the sale charges. Load funds charge fees either front-end or back-end. Front-end fees are charged when purchasing the mutual fund, while the back-end fees are charged when investors sell their fund (Capital Group, n.d.). It is important to note that load fees are not included in the expense ratio.

On the other hand, No-load funds do not charge additional commission or sale charges. However, they typically have a higher expense ratio since the fund has to pay the marketing and distribution costs directly (Capital Group, n.d.).

2.3 Market Sentiment and Cycles

This section will briefly explain other factors that impact mutual fund returns: market sentiment and cycles. Market sentiment refers to the market participants' emotional and psychological aspects, or the market's overall tone. The market sentiment can significantly impact stock returns and is a factor that can lie outside of the market's fundamentals (Smith, 2022).

Moreover, markets tend to act in cycles. There are four market phases: the accumulation phase, the mark-up phase, the distribution phase and the mark-down phase (Hall, 2021).

In the first phase, the accumulation phase, early investors and corporate insiders start to buy. The buying starts after the previously mark-down phase, now when the valuations of companies are very attractive. The second phase is the mark-up phase. In this phase, the market is beginning to act stable, and the early majority of investors are starting to buy. In the third phase, the distribution phase, the selling starts. The market turns from being "bullish" to a mix between "bullish" and "bearish". In the last phase, everything falls, which is called the mark-down phase. Investors holding assets in this phase will experience significant losses (Hall, 2021).

2.3.1 The Efficient Market Hypothesis

The efficient market hypothesis introduced by Eugene Fama in 1970 states that if the market is efficient, it reflects all the information in the prices, hence the prices are always equal to the fundamental price (Fama, 1970). However, the Market Sentiment explained above, is a theory that breaks down "The Efficient Market Hypothesis". Because, when humans make mistakes,

driven by overconfidence, panic, or herd-like decisions, arbitrary opportunities occur (Pedersen, 2015, pg. 3)

On the other hand, should CAPM (Sharpe (1964) & Lintner (1965)) hold, the portfolio with the highest expected risk-adjusted return is the tangency portfolio, which again becomes the market portfolio in the state of equilibrium where supply meets demand—there would be no method to generate consistent alpha (Pedersen, 2015, pg. 3). Consequently, there would be no reason to invest resources into beating the market, and active investing pointless.

There is a middle way introduced by Pedersen (2015), where he argues that there exists a form of efficient inefficiency. Pedersen states that "In an efficiently inefficient market, money managers are compensated for providing a service to the market, namely providing liquidity" (Pedersen, 2015, pg. 4). Thus, this could be the reason why some investors can generate consistent excess returns over time, such as Warren Buffet (Downey, 2023).

2.4 Evidence Regarding Performance and Fee in US and International Mutual Funds

Gruber (1996) investigated why there was a growth in actively managed mutual funds. Gruber tried to understand why investors bought actively managed funds since mutual funds, on average, offer a negative risk-adjusted return and that investors will simply do better by buying index funds. He used a sample of US mutual funds data free of survivorship bias from 1985 to 1994. From this dataset, Gruber concluded that two groups of clientele existed: Sophisticated clientele, which follows the flow of money, and disadvantaged clientele, which invest in the stock of money. The disadvantaged clientele included unsophisticated, institutionally disadvantaged, and tax-disadvantaged investors. The stock of money underperforms benchmarks, and the flow of money outperforms the benchmark by going in and out of mutual funds and earning a positive risk-adjusted return. From his findings, Gruber concluded that the average mutual fund underperformed compared to the index (Gruber, 1996).

Carhart (1997) investigated persistence in mutual fund performance related to stock-picking skills. His paper found that cost and common factors (Fama & French, 1993) of funds do explain persistence in mutual funds' average and risk-adjusted returns. Based on Jegadeesh & Titmans paper (Jegadeesh & Titman, 1993), he constructed a fourth factor, momentum, to the model. As a result, he found very little persistence in mutual funds return after following a momentum strategy, which means there is little evidence of stock-picking skills. In his research, Carhart used 1892 equity funds free of survivor bias from 1962-1993. He used CAPM (Sharpe, 1964) and (Lintner, 1965), and Carhart's four-factor model as methods for performance measurement. From his test, he found that selling the last year's bottom decile and buying the top decile of mutual funds yields a return of 8 percent per year. Sorting on longer horizons makes this spread much lower, and around 1 percent from common factors, transactions costs, and expense ratios.

In his paper he stated "that expense ratios, portfolio turnover, and load fees are significantly and negatively related to performance" (Carhart, 1997, pg. 80).

Daniel, Grinblatt, Titman, & Wermers (1997) studied if mutual funds could generate back the fees they are taking by picking stocks. They used a dataset of US equity mutual funds from 1975 to 1994. They found that the average mutual fund beat the market, but only by a small amount. These results get cut away when compensation for the average management fee (Daniel et al., 1997).

Wermers (2000) investigated in his paper if active management adds value. He used a dataset of 241 mutual funds free of survivorship bias. The data sample he used were from 1975 to 1994, obtained from CDA merged with CRSP data to obtain more characteristics of each mutual fund. From the study, he obtained a result that mutual funds outperform on average 1.3 percent per year, but on a net-return level, there was an underperformance of 1 percent per year. The below-average performance of these funds was attributed to the higher fees associated with them and the lower returns of their non-stock investments over the period (Wermers, 2000).

The study of Gil-Bazo & Ruiz-Verdu (2009) extended upon Gruber's (1996) work. Gil-Bazo & Ruiz-Verdu examined open-end mutual funds operating from 1961 to 2005 using information from CRSP. The purpose of Gil-Bazo & Ruiz-Verdu's work is to determine whether differences in fees can explain the performance variations between actively managed mutual funds. The sample was restricted to diversified domestic equity (US) mutual funds and excluded the money market, bond and income, and specialty funds. In addition, the sample was cleaned of observations with missing or extreme values for returns or expenses. The authors estimated the before-expense performance of mutual funds using Carhart's four-factor model. They discovered that more expensive funds typically have worse risk-adjusted performance, as shown by their alpha. Furthermore, the study discovered that funds with unsophisticated investors and underperforming funds had higher costs. The authors propose two explanations for this relationship: omitted factors that are positively correlated with returns and negatively correlated with fees, and strategic pricing by mutual funds. According to the authors, mutual funds may use strategic pricing to determine their fees depending on previous or anticipated performance. Additionally, they suggest that improved governance may align fees with investor value (Gil-Bazo & Ruiz-Verdú, 2009).

The research paper by Ferreira, Keswani, Miguel & Ramos (2013) studied various determinants that affect actively managed equity funds performance. They collected data from 27 countries over the period 1997-2007. As a result, they discovered differences in the factors of mutual fund performance in the US and other countries. Firstly, the fund size is negatively related to performance only in the US due to liquidity size constraints. It is more challenging to sell illiquid assets when the size of the investments in illiquid assets is vast. However, fund size is positively correlated with performance for other countries. Additionally, they discovered that solo-managed funds outperform due to higher costs on team-managed funds. Lastly, they

found a positive relationship between countries' level of financial development, stock market liquidity, and legal institution on countries' mutual fund performance. In their research paper, they also mentioned that they found a negative relationship between expense ratio and net-of-fee performance, but this relationship was statistically insignificant for the US and only significant in some of the funds outside of US (Ferreira et al., 2013).

A recent study by Cooper, Halling & Yang (2021) examined all mutual funds over a 37-year horizon that invest in US and international equities. They discovered a substantial inverse relationship between net-of-fee fund performance and fees, which indicates that higher fees are related to bad performance. Further, they discovered widespread and continuous cost dispersion in the mutual fund sector, which resulted in a $125 billion value loss overall, primarily from high-price funds. One of the reasons is that funds with similar characteristics charge different prices. Additionally, this article examines the pricing methods of mutual funds and the possibility of pricing inefficiency. The authors discover that the unexplained portion of mutual fund expenses is highly dispersed, which may indicate some degree of pricing inefficiency. The existence of investor groups with varying degrees of sophistication and information access, as well as the presence of market frictions, are possible explanations for this fee dispersion. Finally, the authors contend that regulators should concentrate on enhancing industry transparency and comparability, thus providing investors with better prerequisites to get fair compensation when investing in funds (Cooper et al., 2021). Another study, Bogle (2002), used the nine Morningstar style-boxes to categorise funds from 1991-2001. He then compared active and index funds based on Sharpe ratios and expense ratios. He found that of the active funds, the low-cost quartile outperformed the high-cost quartile, and the index funds outperformed the low-cost quantile on a risk-adjusted basis. In addition, index funds had an expense ratio of 0.2, an annual return of 14,4%, volatility of 16.2%, and a Sharpe ratio of 0.79. Compared to the low-cost actively managed funds, which had an expense ratio of 0.64, annual returns of 14.5%, volatility of 17.4%, and a Sharpe ratio of 0.77. From these results, index funds outperform the low-cost and high-cost quartiles on a risk-adjusted basis over ten years he examined (Bogle, 2002).

Petajisto (2013) investigated active share and equity mutual fund performance. In his study, he used 2740 US all-equity mutual funds from 1980 to 2009 and sorted them into different categories of activeness based on their tracking error volatility and active share. His study concluded that actively managed mutual funds had underperformed the benchmark index. However, he discovered that the most active stock pickers beat their benchmark by 1.26% per year after fees and expenses (Petajisto, 2013).

A study by Cremers, Ferreira, Matos & Starks (2016) investigated 32 countries' relationship between indexing and active management in mutual funds. Their studies found that actively managed funds that face more competitive pressure from index funds charge lower fees and are more active in their management. These results state that growth in index fund investing enlarges the competition in asset management (Cremers et al., 2016).

Anufriev, Bao, Sutan & Tuinstra (2019) experimented with fund picking. This study aimed to look into how fees influence mutual fund selection. Participants were shown two fiction funds (Fund A and B), one with a higher predicted gross return than the other, but also with relatively high fees. According to the study, people chose the fund with the highest gross return as their favorable, even though the net expected return after fees was lower than the other fund. Additionally, People weighted highly previously returns and ignored small operating fees (Anufriev et al., 2019).

2.5 Evidence Regarding Performance and Fee in Norwegian Mutual Funds

In a research paper by Sørensen (2009), he studied the Norwegian Mutual fund market to determine if equity mutual funds could beat the market. He used all Norwegian equity mutual funds listed on the Oslo Stock Exchange from 1982 to 2008, free of survivorship bias. In his study, he used the Fama-French three-factor model (1993), the Carhart (1997) four-Factor model, CAPM (Sharpe (1964) & Litner (1965)) and the bootstrapping method from Kosowski, Timmermann, Wermers, & White (Kosowski et al., 2006). From his paper, he concludes that the Norwegian mutual fund market does not deliver alpha compared to a passive index fund. If the manager possesses stock-picking skills, it is most likely charged as fees. Furthermore, if a mutual fund did well compared to the benchmark, it was most likely because it took more beta risk. He also states that there seems to be a lack of superior fund managers and signs of inferior fund managers in the Norwegian market. As a result, earning risk-adjusted excess returns in the Norwegian mutual fund market will be challenging (Sørensen, 2009).

Gallefoss, Hansen, Haukaas, & Molnar also found that the average mutual funds in Norway underperform their benchmark because of the fund fees. They used data from 64 Norwegian Mutual funds from 2000 to 2010, with at least 36 months of data available. They used the Fama-French three-factor model (1993), the Carhart (1997) four-Factor model, and the bootstrapping method from Kosowski, Timmermann, Wermers, & White (2006). They found that the top decile had a risk-adjusted return of 4.5% and the bottom decile had a risk-adjusted return of -12.5% per year after fees. They concluded that both superior and inferior funds exist in the Norwegian mutual fund market (Gallefoss et al., 2015).

3 Hypothesis and Methodology

From our research question: "Do Norwegian active mutual funds produce enough value to justify the fees they are taking for their services?". We believe that Norwegian active mutual funds are expensive and we want to evaluate and compared them according to their American counterparts as a reference.

3.1 Foundation for Our Hypothesis

Firstly, our hypothesis is based on the articles from the literature review, such as Gruber (1996) and Bogle (2002), that active funds underperform the benchmark indices in general. Thus, active mutual funds deliver negative additional value to investors; therefore, the fees cannot be justified. A matching result was discovered in the Norwegian market by Sørensen (2009).

Secondly, there are some contradictions in the literature Petajistro (2013) found that the most active equity-mutual funds produce enough value to justify their fees in the US market. Additionally, Gallefoss, Hansen, Haukaas, & Molnar (2015) found that the top-performing funds deliver a positive risk-adjusted return in the Norwegian market. Therefore, we want to examine if there is any added value in investing in active mutual funds and in which of the two countries of domicile investors are better off investing.

Lastly, if we cannot find any alpha, some research explains possible reasons for underperformance. For example, the study by Gil-Bazo & Ruiz-Verdu (2009) state that there exist unsophisticated and sophisticated investors where the less informed investors can be a victim of strategic pricing where they pay too much fees. Furthermore, in some cases, bad-performing funds charge a higher fee than good-performing funds explained by Cooper, Halling & Yang (2021).

3.2 How Our Thesis Differs from Previous Research

Firstly, our thesis is most related to the papers Gil-Bazo & Ruiz-Verdu (2009) and Cooper Halling & Yang (2021), which focuses on the relationship between fees and performance. We took inspiration from their methodology when we calculated the alphas and when we look at the relationship between fees and performance. Secondly, we drew inspiration from Bogle's (2002) paper on categorising funds into different groups to be able to see whether cheap or expensive funds were superior. Lastly, we mainly used Sørensen (2009) as inspiration for the Norwegian mutual fund market. Our thesis differs from these papers since in addition to looking at fees and performance in the active global mutual fund segment, we also compare and discuss possible reasons why results in Norway and the US differ. Furthermore, we examine a more recent time horizon compared to prior studies (2012-2022). Finally, we integrate various components from each of these papers to assess the consistency of our findings across different measurements, such as the Sharpe ratio comparison outlined by Bogle (2002), as well as the alpha and expense ratio as discussed by Gil-Bazo & Ruiz-Verdu (2009).

3.3 Multi-Factor Models

In our study, we used different types of Multi-Factor Models to measure the performance of active mutual funds, and we also used the Capital Asset Pricing Model (CAPM) (Sharpe, 1964) & (Lintner, 1965). These models have been widely used to explain asset pricing and

return differences. The models include linear combinations of factors that historically impact performance.

3.3.1 Fama-French Three-factor Model

The Fama-French three-factor model is a factor model that was introduced by Fama & French in 1992. The authors added SMB (Size risk) and HML (book-to-market, value risk) to the CAPM model. For our hypotheses, we want to use this model to see if actively managed mutual funds can achieve alpha after accounting for these factors. We chose the Fama-French three-factor model because of its common use in the research community, stating that it explains variations in return better than CAPM (Fama & French, 1992).

The Fama-French 3-factor Model:

$$R_{it} - R_{ft} = \alpha_{it} + \beta_1(R_{Mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t + \epsilon_{it}$$

3.3.2 Carhart Four-factor Model

Based on the Fama-French three-factor model, Carhart (1997) added a momentum factor (PR1YR), in recent research referred to as MOM for Momentum. Our research uses the Carhart four-factor model to see if the active mutual funds generate alpha after compensating for momentum risk. According to Ferreira, Keswani, Miguel & Ramos (2013), the four-factor model is an appropriate method to apply to both US and international samples due to the high explanatory power (R^2) in many cases. Hence, we will apply this model in our research.

The Carhart 4-factor Model:

$$R_{it} - R_{ft} = \alpha_{it} + \beta_1(R_{Mt} - R_{ft}) + \beta_2 SMB_t + \beta_3 HML_t + B_4 MOM_t + \epsilon_{it}$$

3.4 Performance Measures

3.4.1 Sharpe Ratio

Sharpe (1966) introduced the Sharpe ratio, a measurement that captures the risk-adjusted return (Sharpe, 1966). A higher Sharpe ratio indicates a higher risk-adjusted return (Fernando, 2022). In our research, we used the Sharpe ratio as an additional performance measurement for our analysis.

The Sharpe ratio:

$$SR = \frac{R_p - r_f}{\sigma_p}$$

where: R_p : *Return on portfolio*, r_f : $risk - free\ rate$, σ_p : *the volatility of the portfolio.*

3.4.2 Information Ratio

The information Ratio is a performance measure that is often used to determine the skills of portfolio managers. The information ratio uses the excess return above the benchmark divided by the tracking error (Murphy, 2020). In our research, we used the information ratio as one of the measurements in our comparison.

The Information Ratio:

$$IR = \frac{R_p - R_b}{\sigma_{(R_p - R_m)}}$$

where: R_p : *Return on portfolio*, R_b : *Return on benchmark*, $\sigma_{(R_p - R_m)}$: *Tracking error*

3.5 How We Test Our Hypothesis

We applied the different factor-models presented above to find the model that best fits the data (highest R^2). Then, to investigate the validity of our hypothesis, we used the p-values to determine the significance. The p-values we used for testing are 1%, 5%, and 10%. Finally, when we analysed our data, we checked if the results were reliable; hence, controlling for BLUE. Further, we used different performance measurements and analyses to dig deeper into the results.

3.5.1 Interpretation of Our Hypothesis Before-fees

Our hypothesis testing begins by examining whether active funds can generate risk-adjusted excess return above the benchmark gross of fees. The rationale behind this statement is as follows: to justify charging clients for portfolio management services, mutual fund managers must show their ability to deliver risk-adjusted returns above the benchmark before they charge their fees. This excess performance is the basis for the incentives of how much fees a fund manager can charge. To put this in context, one would not want to pay a premium price for a gourmet meal if the meal turned out to be mediocre. In such a case, it would have been more reasonable to dine elsewhere for a lower cost, for instance, by buying the market index.

At this point we can define our before-fee hypothesis as follows:

$$H_0 : \hat{\alpha} > 0,\ H_A : \hat{\alpha}\ \leq 0$$

H_0: alpha generated before fee is larger than 0.

H_A: alpha generated before fee is equal or less than 0.

The $\hat{\alpha}$ is risk-adjusted return from the Carhart four-factor model.

If we retain the null hypothesis, it implies that the mutual fund managers are able to generate risk-adjusted return above the benchmark (before fees). On the other hand, if we reject the null hypothesis, the mutual fund managers are not able to generate risk-adjusted performance above the benchmark (before fees).

3.5.2 Interpretation of Our Hypothesis After-fees

When examining the risk-adjusted return net of fees, it is acceptable for the mutual funds to exhibit a zero alpha, assuming the presence of an ideal market scenario. The underlying reasoning is that the fund achieves a state of equilibrium in which fund managers extract all the excess return through fees, resulting in a zero alpha net of fees. In cases where the after-fee alpha is positive, an excess demand for funds with positive alpha and an excess supply for those with negative alpha would arise (Gil-Bazo & Ruiz-Verdú, 2009, pg. 2158). Thus, our after-fee hypothesis is as follows:

$$H_0 : \hat{\alpha} \geq 0,\ H_A : \hat{\alpha}\ < 0$$

H_0: alpha generated after-fee is equal or larger than 0.

H_A: alpha generated before fee is less than 0.

The $\hat{\alpha}$ is the risk-adjusted return from the Carhart four-factor model.

Retaining the null hypothesis net of fees will imply that the funds can justify the fees they are taking for their services. Should our null hypothesis be rejected because of a negative alpha, it would indicate that the mutual funds generate a negative risk-adjusted return compared to the benchmark. Therefore, the fees they are taking for the services cannot be justified.

3.5.3 Cost Categorisation and Comparison of Mutual Funds

In addition to the factor models, we categorised the mutual funds into three cost groups, low-cost, medium-cost and high-cost funds, respectively. The categorisation of the funds is determined by the time-series average of each individual fund's expense ratio over the sample period. Where funds with expense ratio lower than the 33^{th} percentile are low-cost, funds with expense ratio between 33^{th} percentile and 66^{th} percentile are medium-cost, and funds with an expense ratio above 66^{th} percentile are categorised as high-cost funds. When the categorisation was done, we ran the Carhart four-factor regression model again to compare if the cost of the funds displayed a noticeable difference in performance.

Furthermore, we classified and compared the mutual funds by their performance. As a result, we created a graph comparing the "High-performance funds" to the "Low-performance funds," with the expense ratio on the Y-axis and time on the X-axis, complementing the cost categorisation method.

Lastly, we replicated some of Bogle's (2002) paper, where he used the Morningstar style-boxes to sort funds into different categories and evaluate the funds performance based on Sharpe ratio. The style boxes sort funds by size: Large-cap, medium-cap, and small-cap. Additionally, on fund type: value, growth or blend. He also sorted the funds into two cost percentiles, high-cost and low-cost mutual funds. In our study, we adopted Bogle's approach regarding the Morningstar-style boxes to categorise the funds. However, instead of dividing the expense ratio into two

parts, we used our previously established three-part categorisation of low-cost, medium-cost, and high-cost funds.

3.5.4 The Relationship Between Fees and Performance

We investigated the relationship between expense ratio and performance by reproducing a part of Gil-Bazo & Ruiz-Verdú's (2009) study, regressing the individual before-fee alphas from the Carhart (1997) model results on expense ratios in both countries.

$$\hat{\alpha}_i = \beta_0 + \beta_1 Expense\ ratio_i + \epsilon_i$$

Where the $\hat{\alpha}_i$ represents the risk-adjusted return (alpha) before fees, β_0 represents the intercept, and β_1 represents the slope coefficient. As described by Gil-Bazo & Ruiz-Verdú, the ideal scenario is when there is a positive correlation between mutual fund fees and before-fee risk-adjusted returns, with the slope coefficient being equal to one (Gil-Bazo & Ruiz-Verdú, 2009, pg. 2159). This outcome would imply that by paying more (less) money to fund managers, investors can expect to receive an equivalent increase (decrease) in their expected returns.

In addition to this approach, we also looked at the expense ratio and alpha net of fee relationship, similar to Cooper, Halling & Yang (2021) and Ferreira, Keswani, Miguel & Ramos (2013).

3.5.5 Robustness Analysis

First, we chose to incorporate outliers in the analytical methods presented above, then, we examined the effects of removing the most extreme outliers to check if the results are consistent. Outliers may have a significant impact on the final result. We removed outliers that fell below and above the 5^{th} and 95^{th} percentile, respectively.

Additionally, we divided our dataset into three different time horizons within our sample to investigate whether our findings remain consistent across the different periods. This approach is commonly used in the literature, such as Sørensen (2009) and Wermers (2000).

3.5.6 R^2 and Adjusted R^2

R^2 is a measure to determine how well the model fits the data (Brooks, 2019, pg. 225-229). In our research, we used adjusted R^2 and R^2 to determine if the different regression models we used are appropriate. The Adjusted R^2 is the measurement to look at when we are adding extra independent variables (Brooks, 2019, pg. 229-230).

3.5.7 BLUE

Since the regressions used in our research follow a linear structure, we used the Ordinary Least Squares (OLS) method. When using OLS, it is important to verify whether the estimators

satisfy the criteria of being the "best linear unbiased estimators" (BLUE), primarily to ensure the accuracy of the hypothesis testing. An estimator is considered BLUE if the first four assumptions of the Gauss-Markov theorem are fulfilled (Brooks, 2019, pg. 162-165). Additionally, we test for normality, the fifth assumption in the Gauss-Markov theorem: (1) Zero mean, (2) No Heteroskedasticity, (3) No Autocorrelation, (4) Non-stochastic independent variables, and (5) Normality.

Dealing with the first assumption, given that our regressions include a constant term, the zero-mean should not pose any issues. Furthermore, we will use robust standard errors (HAC) if we find evidence of heteroskedasticity when running a white test, or autocorrelation when running the Breusch–Godfrey test. Finally, we conduct a Jarque-Bera normality test to verify whether the error terms are normally distributed.

4 Data

4.1 Data collection

4.1.1 Constructing Mutual Fund Dataset

This section will explain how we obtained the dataset used in our study. We utilised Lipper Fund Performance Data from the service provider Refinitiv Eikon. Firstly, we customised the dataset to Asset Status: "any", which includes dead, alive, and merged funds. Secondly, we limited the dataset to actively managed mutual funds categorised as Equity Global domiciled in either Norway or the United States. Lastly, we excluded funds that invest in other funds and index-tracking funds. Thus, we obtained two lists of funds, one with 71 Norwegian and one with 339 US funds. At this stage, our dataset contains the fund names and the identification codes (RIC).

In the next step, we will explain how we gathered time series data from the chosen funds. We used Datastream within the Refinitiv Eikon (Refinitiv, 2023) to obtain time series data. In Datastream, we cannot specify an overall search based only on Equity global funds, therefore we need to search each fund individually. This process can be time-consuming. However, we solved this by utilising the Python library "Pyautogui" (PyAutoGUI, 2019), creating an automated bot that individually searched each fund from our Lipper list based on the Reuters Instrument Code (RIC) and added their data to a list. As a result, we gathered the Net Asset Value (NAV) and the Total Expense Ratio on all the selected funds from 1998 to 2022. This process was repeated for both Norwegian and US funds, which produced 61 Norwegian funds and 284 US funds. The number of funds from Datastream is slightly lower than the Lipper list because some of the funds did not exist in the database.

4.1.2 Mutual Funds Net and Gross Returns

To calculate the monthly returns net of fees, we replicated the approach done by Sørensen (2009). He created the net returns from the Net Asset Value (NAV) by dividing the current NAV by the previous month's NAV for all our data points. Sørensen (2009) also included dividends in his calculations. Since we do not have the required data in our research, we excluded dividends in our calculation. Note that this is just an approximation of the real returns, and not exactly what the investors receive. The formula we used is as followed (Sørensen, 2009, pg. 7):

$$R(t_0 \to t_1) = \frac{NAV_{(t_1)}}{NAV_{(t_0)}} - 1$$

Furthermore, we excluded funds return if the fund maintained a constant NAV over longer periods, which indicates that the fund has been liquidated. Thus, we can observe the number of funds that have been liquidated in our sampling period. In addition to the net returns, we needed to obtain the gross returns from the funds. Since the NAV is a parameter net of fees, we need to add back the expenses to the net returns to retrieve the gross returns. Unfortunately, Refinitiv Eikon does not provide the gross return directly. However, to get an approximation, we use the same method as Gil-Bazo & Ruiz-Verdu (2009), and add the expense ratio divided by 12 to the returns net of fees to achieve the returns gross of fees (Gil-Bazo & Ruiz-Verdú, 2009, pg. 2157).

4.1.3 Sample Period

To begin, we started with a substantial amount of available data covering 35 years and proceeded from there. However, it's worth noting that the Fama-French factors were not available prior to 1990, thus limiting our ability to examine anything before that time. Furthermore, there were very few observations of the Total Expense ratio before 2012, particularly in Norway. Therefore, we have established our research period from January 2012 to December 2022 to obtain a richer dataset.

Additionally, we used minimum one-year observation criteria based on returns and expense ratios to weed out newly created funds that might be influenced by luck in their first months. We also removed all currency-hedged funds, because we converted the currency to USD for all funds, further described below. As a result, the final dataset includes 52 Norwegian Equity Global Mutual funds and 251 US Equity Global Mutual funds. In Figure 1 we can see the number of funds throughout the sample period.

4.1.4 Morningstar Data

We further merged our dataset with the Morningstar database to obtain the funds style-boxes. This data were gathered from Morningstar Direct (Morningstar, 2023). Since we only had the names and the RIC we manually searched for each funds name to see if the fund was available

in Morningstars database. When we found a match we merged the Morningstar style-boxes into our dataset. Since not all of the funds had Morningstar style-boxes we excluded the funds without this data when replicating the Bogle (2002) method. However, we will use the sample of 52 Norwegian Equity Global Mutual funds and 251 US Equity Global Mutual funds as described in Sample Period for our main analysis. The dataset with Morningstar style-boxes contains 33 Norwegian funds and 167 US funds.

4.1.5 Fama-French Factors and Risk-free Rate

We obtained the Fama-French and the momentum factors from the official Kenneth R. French's Website, as well as the risk-free rate based on a US one-month T-bill (French, 2023). The factors were already separated into two categories: developed and emerging markets. Therefore, we selected the factors that best suited our dataset: developed markets. This is because all of our funds utilised the MSCI World Index as benchmark, an index composed of 23 developed markets. Another critical consideration is that the MSCI World Index is denominated in USD. This is not a problem for the US funds because they are already denominated in USD. However, this is not true for the Norwegian funds. We want to be neutral on currency; thus, we do not want the currency rate to affect the monthly returns. Therefore, we converted all the monthly data of the Norwegian NAV from NOK to USD using the relevant monthly closing prices. We obtained the monthly exchange rate information from Eikon, the overview over the exchange rate can be seen in Appendix A, Figure 6. As a result, we can rightfully use the MSCI World Index, denoted in USD, as the benchmark for Norwegian funds. Note this method may lead to a bias since hedging currency is not free.

4.1.6 Survivorship Bias

Over longer time horizons, mutual funds that do not produce good results get liquidated. When looking at the sample of the funds that exist today, it is important to take those funds that did not survive into account. If we only look at mutual funds that exist today, we look at past winners and neglect parts of the total sample. This effect makes it look like mutual funds perform better than they do. Looking purely at the winners will result in survivorship bias. Thus, investors can only see part of the truth and may take wrong decisions (Chen, 2021). In our dataset, there might be some funds that get neglected due to our 12 months return criterion. This process might lead to some survivorship bias in our dataset.

4.2 Summary Statistics

From the dataset, we will present some basic summary statistics. In Table 1 we present the different Fama-French factors and their performance over the sample period from 2012 - 2022. As seen in the table, the market factor has the highest average return and the highest standard

deviation. We further show statistics from the equally-weighted portfolio constructed of Norwegian funds and US funds, net of fees, in Table 2. If we compare the different values from these tables we can see that the Norwegian EW has the greatest return. In Table 3 we can observe the correlation between all the Fama-french factors, the risk-free rate, and the different equally weighted portfolios net of fees. In the correlation table, we can observe that all the weighted portfolios have a high correlation with the market factor and with each other. Further in Figure 1, we have constructed a timeline with a number of funds in our dataset over the period, and an overview of the average expense ratio over the sample in Figure 2.

Table 1: Fama-French Factors Statistics - monthly - Sample from 2012-2022

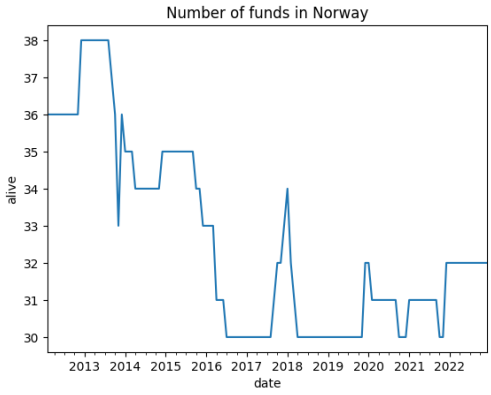
	Mean	Std	Min	Max	Kurt	Skew
Mkt-RF	0.008	0.042	-0.138	0.133	1.301	-0.518
SMB	-0.002	0.015	-0.042	0.033	-0.28	-0.058
HML	0	0.027	-0.092	0.12	3.09	0.631
MOM	0.005	0.028	-0.109	0.067	1.416	-0.551
RF	0.001	0.001	0	0.003	1.113	1.416

Table 2: Active Funds Statistics Net of Fees - monthly - Sample from 2012-2022

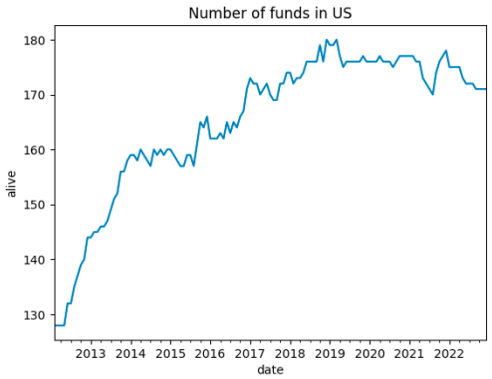
	Mean	Std	Min	Max	Kurt	Skew	Number of Funds
Norway (EW)	0.006	0.044	-0.151	0.137	1.357	-0.532	52
USA (EW)	0.003	0.043	-0.138	0.118	1.221	-0.582	251

Table 3: Correlation Table - Sample from 2012-2022

	Mkt-RF	SMB	HML	MOM	RF	Norway (EW)	USA (EW)
Mkt-RF	1.000						
SMB	0.132	1.000					
HML	-0.029	-0.099	1.000				
MOM	-0.392	-0.035	-0.462	1.000			
RF	-0.123	-0.125	-0.075	0.057	1.000		
Norway (EW)	0.985	0.117	0.021	-0.389	-0.089	1.000	
USA (EW)	0.951	0.077	-0.088	-0.341	-0.113	0.929	1.000



(a) Number of funds in Norway



(b) Number of funds in US

Figure 1: Number of funds over the sample period

4.2.1 Expense Ratio

During our sample period, there has been a decrease in the average annual expense ratio, from an average of 1.264% to 1.200% in Norway and 1.285% to 0.979% in the US, as illustrated in Figure 2. Furthermore, the data reveals a consistent reduction in the US market. On the other hand, the Norwegian market experienced some "choppy" positive and negative variations in the dataset. This inconsistency may be attributed to insufficient data observation of the expense ratio from the Refinitiv Eikon database. However, there is still enough data to observe that the expense ratio has been downward trending in our time horizon, which is a positive development for investors. However, we can see that US funds are generally cheaper and had a more stable decline in expense ratio than their Norwegian counterparts.

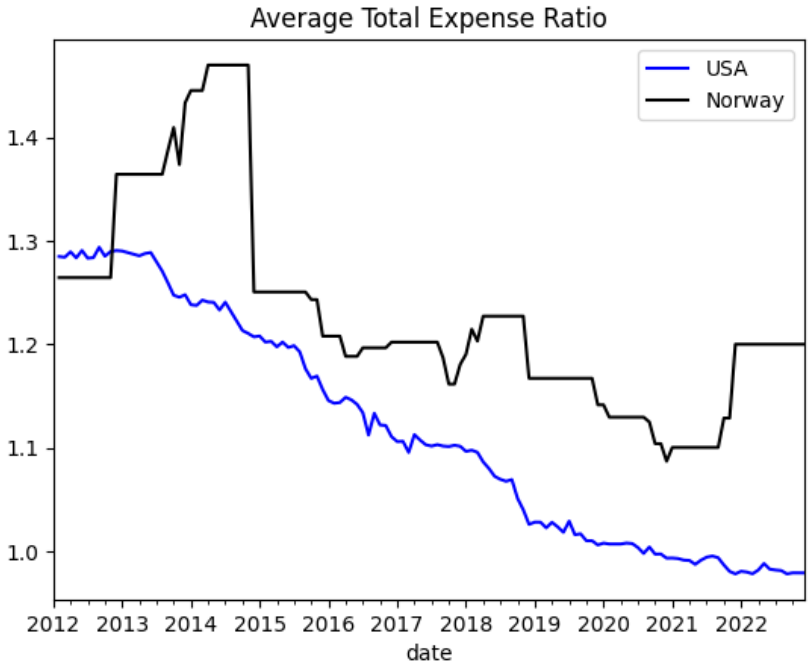


Figure 2: Expense ratio trend

5 Results and analysis

5.1 Factor Regression Results

In this section, we will present the results of the regression analysis that we have conducted. We used the Ordinary Least Square (OLS) regression in our tests. First, we regressed each mutual fund individually, then we constructed a equally-weighted portfolio of the mutual funds. With this approach, we are able to look at each mutual fund individually, but also the fund market as a whole. This process is repeated for the CAPM, Fama-French three-factor, and Carhart four-factor model. When we further mention benchmark in our paper, we are referring to the MSCI World Index nominated in USD. We also tested our funds and the portfolios for BLUE, the results can be seen in Appendix B.

We will present the results from the Norwegian market before we later compare the results with the US market. All alphas are in monthly terms unless otherwise is stated. The results from the individual mutual fund Carhart four-factor regressions can be seen in Appendix C. The equally-weighted factor regressions from the Norwegian market can be seen in Table 7 for gross returns and in Table 8 for net returns. The equally-weighted factor regression for the US market can be seen in Table 12 for gross returns and in Table 13 for net returns.

5.1.1 Factor Regressions Results for Norwegian Funds

CAPM The CAPM regression for Norway revealed that, among the 52 Norwegian funds examined, 21 generated a positive alpha prior to fees, while 10 maintained a positive or zero alpha after fees. This findings was before excluding statistically insignificant results. When we apply a 10% significance level to the CAPM regressions our results is as follows: Before fees, only one fund, "NORDEA STABILE AKSJER GLOBAL ETISK," generated a positive alpha. Four funds had a negative alpha, and the remaining 47 had no alpha significantly different from 0. After fees, no funds generated a positive alpha. However, 13 funds generated a significant negative alpha, and the remaining 39 funds did not have an alpha significantly different from 0. The results are summarised in Table 4. The average explanatory power for the individual CAPM regressions is equal to: 0.849 (R^2) gross and net of fees.

Table 4: CAPM individual regression overview - Norway

	Gross of fees (No sign.)	Net of fees (No sign.)	Gross of fees (10% sign.)	Net of fees (10% sign.)
Positive alpha	21	10	1	0
Negative alpha	31	42	4	13
Zero alpha	0	0	47*	39*
Total funds	52	52	52	52

* Cannot distinguish from zero

The Norwegian equally-weighted CAPM regression showed a negative alpha of -0.0012 before fees and a more negative alpha of -0.0022 after fees. Both results were significant, where the gross alpha was significant on a 10% level, and the net alpha was significant on a 1%. This result indicates that, on average, Norwegian funds do not beat the benchmark index. The market factor is positive and significant on 1% level. The R^2 for the CAPM is 0.971 for the equally-weighted portfolio.

Fama-French three-factor Moving on to the Fama-French three-factor regression, out of the 52 Norwegian funds, 24 generated a positive alpha before fees, and 9 generated a positive alpha net of fees—one fund less than under CAPM. When we apply a 10% significance level to the Fama-French three-factor regressions, our results are as follows: Before fees, no funds generated a positive alpha, while seven funds had a negative alpha. The remaining 45 funds had an alpha that could not be distinguished from zero. After fees, no funds generated a positive alpha. However, 14 funds generated a significant negative alpha, and the remaining 38 funds did not have an alpha significantly different from zero. The results are summarised in Table 5.

The model's fit is better than CAPM by looking at the individual average adjusted R^2: 0.872 for both gross and net of fees. The better fit indicates that it is right to incorporate the SMB

and the HML factors into the regression analysis.

Table 5: Fama-French 3 individual regression overview - Norway

	Gross of fees (No sign.)	Net of fees (No sign.)	Gross of fees (10% sign.)	Net of fees (10% sign.)
Positive alpha	24	9	0	0
Negative alpha	28	43	7	14
Zero alpha	0	0	45*	38*
Total funds	52	52	52	52

* Cannot distinguish from zero

Norway's equally-weighted Fama-French three-factor regression showed a negative alpha of -0.0011 before fees and a more negative alpha of -0.0021 net of fees on a 10% and 1% significance, respectively. The Market factor and HML factor are significant on a 1% level and positive, but the SMB factor is not significant, but positive. This result indicates that, on average, Norwegian mutual funds do prefer high book-to-market value stocks. However, the factor related to buying small-cap stocks and selling big-cap stocks is not significantly different from zero. Additionally, the average result from the Fama-French three-factor regression is the same as the CAPM; Norwegian funds underperformed compared to the benchmark. The adjusted R^2 for the Fama-French three-factor regression is 0.973 for the equally-weighted portfolio, which is higher than the CAPM regression.

Carhart four-factor Lastly, the individual Carhart four-factor model showed that out of the 52 Norwegian funds, 20 generated positive alpha before fees, and 6 generated a positive alpha net of fees. When we apply a 10% significance level to the Carhart four-factor regressions, our results are as follows: Before fees, one mutual fund generated a positive alpha, "FIRST GLOBAL FOCUS", while six funds had a negative alpha. The remaining 45 funds had an alpha that could not be distinguished from zero. After fees, "FIRST GLOBAL FOCUS" maintained a significant positive alpha, while 12 funds generated a significant negative alpha. The remaining 39 funds did not have an alpha significantly different from zero. The results are summarised in Table 6. The average adjusted R^2 for the regressions was 0.873 for gross and net returns, which means that the Carhart four-factor model has a slightly better fit than Fama-French three-factor model.

Table 6: Carhart 4 individual regression overview - Norway

	Gross of fees (No sign.)	Net of fees (No sign.)	Gross of fees (10% sign.)	Net of fees (10% sign.)
Positive alpha	20	6	1	1
Negative alpha	32	46	6	12
Zero alpha	0	0	45*	39*
Total funds	52	52	52	52

* Cannot distinguish from zero

Norway's equally-weighted Carhart four-factor regression showed a negative alpha of -0.0013 before fees and a more negative alpha of -0.0023 net of fees, where net of fees alpha is significant on a 1% level and gross of fees are significant on a 5% level. We found that only the Market factor and the HML factor are significant and positive, which is similar to the previous Fama-French regression. The adjusted R^2 for the Carhart four-factor is 0.973 for the Equally-weighted portfolio, which is higher than the CAPM regression and equal to the Fama-French three-factor regression.

Table 7: Regression Norwegian Global Active funds - EW - Gross returns

	Coefficients					
	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$
CAPM	-0.0012^{*}	1.0351^{***}				0.971
	(0.001)	(0.014)				
Fama-French 3 factor	-0.0011^{*}	1.0357^{***}	0.0166	0.0786^{***}		0.973
	(0.001)	(0.013)	(0.045)	(0.022)		
Carhart 4 factor	-0.0013^{**}	1.0426^{***}	0.0168	0.0918^{***}	0.0266	0.973
	(0.001)	(0.015)	(0.045)	(0.022)	(0.032)	

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

Table 8: Regression Norwegian Global Active funds - EW - Net returns

	Coefficients					
	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$
CAPM	-0.0022^{***}	1.0351^{***}				0.971
	(0.001)	(0.014)				
Fama-French 3 factor	-0.0021^{***}	1.0357^{***}	0.0169	0.0785^{***}		0.973
	(0.001)	(0.013)	(0.045)	(0.022)		
Carhart 4 factor	-0.0023^{***}	1.0426^{***}	0.0172	0.0915^{***}	0.0263	0.973
	(0.001)	(0.015)	(0.045)	(0.022)	(0.032)	

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

5.1.2 Factor Regressions Results for US Funds

CAPM The individual CAPM regression for US funds showed that out of the 251 funds analysed, 24 generated a positive alpha before fees, and 18 generated a positive alpha net of fees. When we apply a 10% significance level to the CAPM regressions for the US, our results are as follows: Before fees, no funds generated a positive alpha, while 114 funds had a negative alpha. The remaining 137 funds had an alpha that could not be distinguished from zero. After fees, no funds generated a positive alpha. However, 148 funds generated a significant negative alpha, and the remaining 103 funds did not have an alpha significantly different from zero. The results are summarized in Table 9. The average R^2 for the individual funds in US for CAPM was 0.697.

Table 9: CAPM individual regression overview - US

	Gross of fees (No sign.)	Net of fees (No sign.)	Gross of fees (10% sign.)	Net of fees (10% sign.)
Positive alpha	24	18	0	0
Negative alpha	227	233	114	148
Zero alpha	0	0	137*	103*
Total funds	251	251	251	251

* Cannot distinguish from zero

The equally weighted CAPM regression for US funds revealed a significant negative alpha before fees of -0.0043 and -0.0052 after fees, both at a 1% significant level. This result indicates that, on average, the US mutual funds underperformed compared to the benchmark. The R^2 for the equally-weighted portfolio was 0.904 for CAPM gross and net of fees.

Fama-French Three-factor When looking at the individual Fama-French three-factor regressions, out of the 251 US funds, 23 generated a positive alpha before fees and 16 funds

generated a positive alpha net of fees. When we apply a 10% significance level to the Fama-French three-factor regressions for the US, our results are as follows: Before fees, two funds generated a positive alpha, "JANUS HENDERSON GLBL SUSTAINABLE EQTY FD D" and "HARTFORD GLB.GW.FD.CL.A". Furthermore, 134 funds had a negative alpha. The remaining 115 funds had an alpha that could not be distinguished from zero. After fees, no funds generated a positive alpha. However, 167 funds generated a significant negative alpha, and the remaining 84 funds did not have an alpha significantly different from zero. The results are summarised in Table 10. The average adjusted R^2 is 0.721 which is higher than the average R^2 from CAPM.

Table 10: Fama-French 3 individual regression overview - US

	Gross of fees (No sign.)	Net of fees (No sign.)	Gross of fees (10% sign.)	Net of fees (10% sign.)
Positive alpha	23	16	2	0
Negative alpha	228	235	134	167
Zero alpha	0	0	115*	84*
Total funds	251	251	251	251

* Cannot distinguish from zero

Furthermore, the Fama-French three-factor regression shows a better fit than the CAPM model for the US funds, looking at the adjusted R-squared of 0.908 for gross and net returns. In the equally weighted Fama-French three-factor regression, both the market risk premium and the high minus low (HML) factors were significant but not the small minus big (SMB) factor. In contrast to Norway, the HML factor was negative, this result suggests that US global funds prefer low book-to-market value stocks. The regression showed a negative alpha of -0.0045 gross of fees, which was significant at a 1% level, and a more negative alpha of -0.0055 net of fees, also significant at a 1% level. As a result, on average, US funds did not beat the benchmark.

Carhart four-factor The individual Carhart four-factor model for US funds showed that out of the 251 funds, 28 generated positive alpha before fees, and 16 generated a positive alpha net of fees. When we apply a 10% significance level to the Fama-French three-factor regressions for the US, our results are as follows: Before fees, the same two funds generated a positive alpha, "JANUS HENDERSON GLBL SUSTAINABLE EQTY FD D" and "HARTFORD GLB.GW.FD.CL.A". Furthermore, 134 funds had a negative alpha. The remaining 115 funds had an alpha that could not be distinguished from zero. After fees, "JANUS HENDERSON GLBL SUSTAINABLE EQTY FD D" maintained a positive alpha, while 166 funds generated a significant negative alpha, and the remaining 84 funds did not have an alpha significantly different from zero. The average adjusted R^2 for the individual regressions net and gross of fees

is 0.722 which is higher than for the Fama-French three-factor regression.

Table 11: Carhart 4 individual regression overview - US

	Gross of fees (No sign.)	Net of fees (No sign.)	Gross of fees (10% sign.)	Net of fees (10% sign.)
Positive alpha	28	16	2	1
Negative alpha	223	235	134	166
Zero alpha	0	0	115*	84*
Total funds	251	251	251	251

* Cannot distinguish from zero

The US's equally weighted Carhart four-factor model showed a negative alpha of -0.0044 before fees and a more negative alpha of -0.0053 net of fees, both significant at a 1% level. In contrast to Norway, the Carhart four-factor regression has a worse fit than the Fama-French three-factor model for the US funds (adj R-squared) with an adjusted R^2 of 0.907. Furthermore, HML and Market factor are significant, but SMB and MOM are not significant. All factors except the market factor are negative.

Table 12: Regression US Global Active funds - EW - Gross returns

	Coefficients					
	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$
CAPM	-0.0043^{***}	0.9822^{***}				0.904
	(0.001)	(0.032)				
Fama-French 3 factor	-0.0045^{***}	0.9856^{***}	-0.1219	-0.1025^{***}		0.908
	(0.001)	(0.032)	(0.078)	(0.032)		
Carhart 4 factor	-0.0044^{***}	0.9797^{***}	-0.1221	-0.1138^{***}	-0.0228	0.907
	(0.001)	(0.034)	(0.078)	(0.041)	(0.035)	

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

Table 13: Regression US Global Active funds - EW - Net returns

	Coefficients					
	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$
CAPM	-0.0052^{***}	0.9821^{***}				0.904
	(0.001)	(0.032)				
Fama-French 3 factor	-0.0055^{***}	0.9855^{***}	-0.1223	-0.1025^{***}		0.908
	(0.001)	(0.032)	(0.078)	(0.032)		
Carhart 4 factor	-0.0053^{***}	0.9794^{***}	-0.1225	-0.1140^{***}	-0.0232	0.907
	(0.001)	(0.034)	(0.078)	(0.041)	(0.035)	

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

5.2 Performance Analysis

In this section, we present additional performance measures alongside the cost of the funds to provide a broader perspective on the funds' accomplishments in our sample period.

5.2.1 Performance Comparison of Funds Across Price Categories

We divided the funds into price categories based on the percentiles outlined in the methodology. For Norway, these percentiles equal an expense ratio of 1.5% or above (high-cost), between 1.05% - 1.5% (medium-cost), and 1.05% or below (low-cost). For the US these percentiles equal an expense ratio of 1.18% or above (high-cost), between 0.92% - 1.18% (medium-cost), and 0.92% or below (low-cost).

The findings for Norway showed that low-cost funds generated better alpha, while high-cost funds delivered the lowest alpha performance. The results were somewhat consistent in the US; our analysis revealed that high-cost funds consistently underperformed low-cost and medium-cost funds. However, the medium-cost funds in the US generated the best alpha.

The results suggest that picking a high-cost fund in Norway or the US will significantly lower the expected risk-adjusted return. Thus, some evidence indicates mispricing on the high-cost side of the spectrum. Therefore, based on our sample period, investors who want to maximise the risk-adjusted return based on the expense ratio could have benefited more by investing in funds with an expense ratio below 1.05% in Norway. In contrast, an expense ratio between 0.92% and 1.18% yields the best risk-adjusted return in the US. The complete overview of the regression results is shown in Table 14 for Norway and Table 15 for the US. In Appendix D, the cumulative returns of the different cost portfolios are plotted.

Table 14: Comparative Analysis of Performance Across Cost-Categories - NOR - EW - Net return

	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$	Obs
Carhart 4 Low-cost	-0.0013^{**}	1.0469^{***}	-0.0648	0.1117^{***}	0.0300	0.975	131
	(0.001)	(0.017)	(0.045)	(0.021)	(0.030)		
Carhart 4 medium-cost	-0.0016^{**}	1.0266^{***}	-0.0582	-0.0423	0.0111	0.964	131
	(0.001)	(0.019)	(0.050)	(0.029)	(0.035)		
Carhart 4 High-cost	-0.0036^{***}	1.0531^{***}	0.1381^{**}	0.1949^{***}	0.0477	0.950	131
	(0.001)	(0.019)	(0.059)	(0.032)	(0.045)		

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

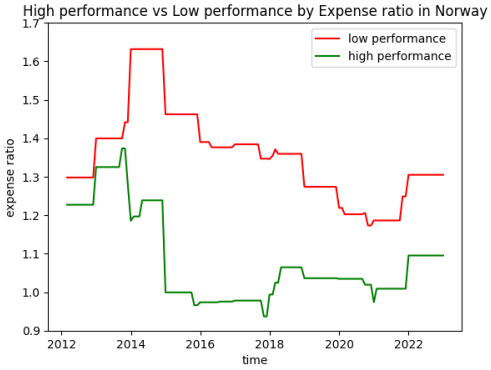
Table 15: Comparative Analysis of Performance Across Cost-Categories - US - EW - Net return

	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$	Obs
Carhart 4 Low-cost	-0.0056^{***}	0.9606^{***}	-0.1871^{**}	-0.105^{**}	-0.224	0.889	131
	(0.001)	(0.034)	(0.084)	(0.045)	(0.038)		
Carhart 4 medium-cost	-0.0046^{***}	1.005^{***}	-0.1054	-0.1497^{***}	-0.0344	0.906	131
	(0.001)	(0.035)	(0.076)	(0.041)	(0.035)		
Carhart 4 High-cost	-0.0060^{***}	0.9689^{***}	-0.0895	-0.0809^{*}	-0.0091	0.907	131
	(0.001)	(0.034)	(0.083)	(0.044)	(0.041)		

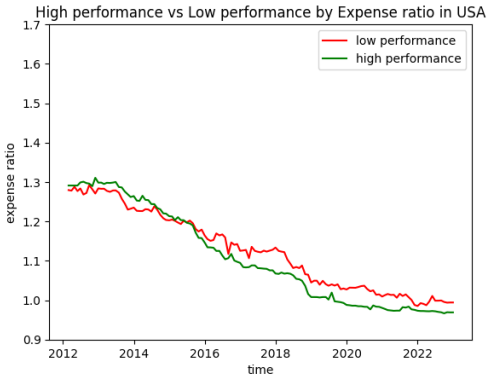
$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

5.2.2 Comparative Analysis of High-performance vs Low-performance Funds

Based on the results from the individual Carhart four-factor model net of fees, we divided the funds into two groups based on the median alpha. Low performance is at the median alpha or below, while high performance is above the median alpha. We then followed their average expense ratio for each of the two groups through our sample. As seen in Figure 3a there is an apparent deviation between fee and performance in Norway. The group with low performance charge a higher fee than the funds with high performance in Norway. On the other hand, US has a smaller gap between the low and high performing funds when we look at the expense ratio. Furthermore, when we look at the time period from 2012 to 2015 in the US, the high-performing funds have a higher expense ratio on average. However, there is a shift right before 2016, where the high-performing funds becomes less expensive than the low-performing funds as seen in Figure 3b.



(a) High performance vs Low performance by Expense ratio in Norway



(b) High performance vs Low performance by Expense ratio in US

Figure 3: High performance vs Low performance by Expense ratio

5.2.3 Bogle's Sharpe Ratio Analysis

In his paper, Bogle (2002) showed that low-cost funds did outperform high-cost funds based on their Sharpe ratios. However, it is also important to note that his study includes index funds, i.e., passive funds. Index funds have a lower expense ratio than actively managed funds. Additionally, Bogle only separates funds into two cost categories, while we have three: low-cost, medium-cost, and high-cost. Bogle also had Small-Cap, while our sample only consist of Mid- and Large-Cap investment-style funds. Note that some funds in our sample did not have corresponding Morningstar data, and therefore no style-boxes. Only funds that had a match in the database, were assigned a style box. The remaining funds, lacking such a match, were excluded from this experiment. There are 33 Norwegian funds and 165 US funds that we use in this section. The funds in each category are divided into equally weighted portfolios, and the Sharpe ratios are annualised.

Our results for the Norwegian mutual funds indicate that Low-cost funds performed best overall, with a Sharpe ratio of 0.552. The highest Sharpe ratio in all categories and price classes was High-cost Large-Cap Value with a Sharpe ratio of 0.665. The category with the highest performance level for all-cost in our sample is Large-Cap Growth with a Sharpe ratio of 0.553. Consistent with the Norwegian mutual funds, the low-cost funds were superior in the US, followed by medium-cost and high-cost. With Sharpe ratios of 0.271, 0.257, and 0.216, respectively.

The performance results from the Sharpe ratio analysis are summarised in Table 16 for Norway and Table 17 for the US. Note that certain categories in the tables have NaN values, as there were no funds that precisely matched these categories in our sample. An overview of all the funds with or without a Morningstar style-box can be seen in Appendix E.

Table 16: Bogle - Sharpe Ratio - EW Norway

Style	Low-cost	Medium-cost	High-cost	All-cost
Large-Cap Blend	0.567	0.511	0.437	0.502
Large-Cap Growth	0.453	0.559	0.522	0.553
Large-Cap Value	0.466	0.350	0.665	0.476
Mid-Cap Blend	NaN	NaN	0.319	0.319
Mid-Cap Growth	NaN	-0.838	-0.467	-0.452
Mid-Cap Value	0.618	NaN	0.377	0.501
All categories	0.552	0.509	0.458	0.502

Table 17: Bogle - Sharpe Ratio - EW US

Style	Low-cost	Medium-cost	High-cost	All-cost
Large-Cap Blend	0.281	0.274	0.179	0.249
Large-Cap Growth	0.430	0.267	0.281	0.306
Large-Cap Value	0.081	0.199	0.215	0.173
Mid-Cap Blend	NaN	NaN	-0.120	-0.120
Mid-Cap Growth	-0.011	-0.452	0.016	0.057
Mid-Cap Value	0.249	0.373	-0.056	0.297
All categories	0.271	0.257	0.216	0.255

5.2.4 Information Ratios

The complete overview of all the individual fund's Information ratios for the different countries can be seen in Appendix E. The equally-weighted Information ratios can be seen in Table 18.

Norwegian information ratio. Our analysis shows that the best-performing fund in Norway based on the Information ratio is "FIRST GLOBAL FOCUS", with an annual information ratio of 0.260. Note that we excluded dead funds when we named the top performer since these cannot be invested in. The result indicates the fund has successfully generated risk-adjusted returns above its benchmark. However, the overall picture for the Norwegian funds is less favorable. When considering an equal-weighted portfolio including all funds, the information ratio is calculated to be -0.870.

Furthermore, we can evaluate the performance of each equally-weighted portfolio by examining the low-cost, medium-cost, and high-cost categories separately. The information ratios are as follows: -0.337 for the low-cost, -0.528 for the medium-cost, and a relatively worse, -0.989 for the high-cost funds.

US information ratio. In the United States, the top-performing fund alive today, according to the Information Ratio, is "JENSEN GLOBAL QUALITY GROWTH FUND I", with a ratio of 0.764. This result highlights the fund's ability to outperform its benchmark. However, similar to the Norwegian funds, the equally-weighted Information Ratio for the US funds is negative, -1.391. This value indicates that US funds have also struggled to surpass their respective benchmarks when risk is considered.

When we separate the funds based on the cost, we see that the information ratio of low-cost funds is -1.326, medium-cost is -1.116, and high-cost is -1.634. Comparing these results with those from Norway, we find that the overall information ratios are lower.

Table 18: Information Ratio for Norwegian and US Portfolios - EW

Country	EW	Low-cost	Medium-cost	High-cost
Norway	-0.870	-0.337	-0.528	-0.989
US	-1.391	-1.326	-1.116	-1.634

5.2.5 Analysing Expense Ratio Influence on Alpha Performance

Gross of fees Furthermore, we investigated the relationship between expense ratio and fund performance, as previously done by Gil-Bazo & Ruiz-Verdu (2009). We wanted to see whether variations in expense ratio could explain any of the fund return before fees. As previously mentioned in the methodology, there should be a positive relationship where a higher expense ratio increases the expected return of the funds before fees. However, we encountered contradictory outcomes in our findings.

The Norwegian global mutual funds analysis indicates a negative relationship between fees and performance. This result is consistent with the paper by Gil-Bazo & Ruiz-Verdu (2009); a higher expense ratio corresponds to a lower performance.

On the other hand, for the US global mutual funds, there was a slightly positive relationship between fees and performance, which means that a higher expense ratio corresponds to higher performance. This result contradicts Gil-Bazo & Ruiz-Verdu (2009) findings. Note that despite identifying a positive relationship in the US and not in Norway, the average alpha remains higher in Norway for the duration of our sample period.

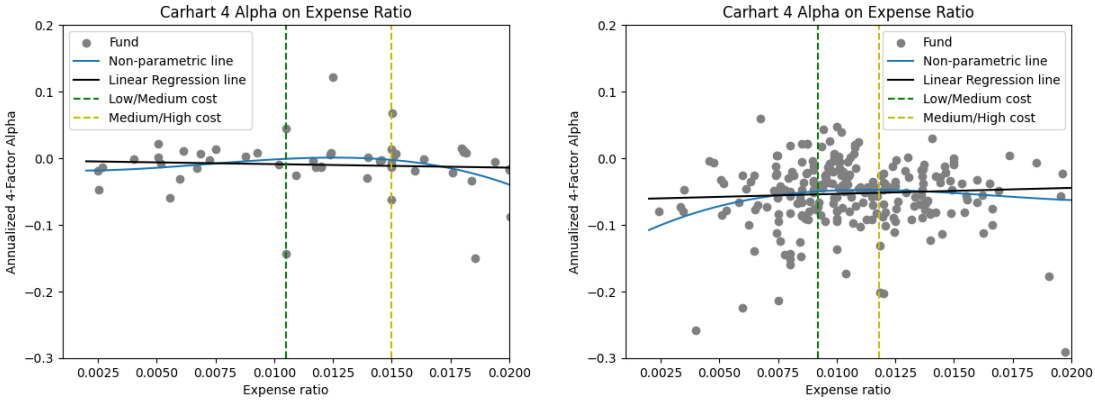
The regression output is shown in Table 19. In Figure 4 we plot the Carhart four-factor on expense ratio regression line and a non-parametric line, on the y-axis we have the annual four-factor alpha values, and on the x-axis we have the expense ratio, similar to Gil-Bazo & Ruiz-Verdu (2009). The non-parametric line is the best approximation of fit. The line is calculated using the UnivariateSpline function from the Scipy package in python (Scipy, n.d.). We also plot the different expense ratio category thresholds where each category is outlined. Left for the green vertical line is the low-cost category, between the green and yellow is the medium-cost category, and to the right of the yellow line is the high-cost category of funds. Note that these

dotted lines have the same values as previously presented when we separated the funds into cost categories.

Table 19: Gross return Carhart 4 Alphas on Expense ratio - Regression output

	β_0	$\beta_1 ExpenseRatio$	R^2	Obs
Norway FFC Alpha	-0.0037	-0.5281	0.004	52
	(0.012)	(0.968)		
US FFC Alpha	-0.0626^{***}	0.8984	0.003	251
	(0.014)	(1.172)		

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.



(a) Carhart 4 on Expense ratio in Norway

(b) Carhart 4 on Expense ratio in US

Figure 4: Carhart 4 on Expense ratio

Net of fees We further investigated the relationship between the expense ratio and the alphas net of fees from the Carhart four-factor model. We obtained a negative relationship similar to Cooper, Halling, & Yang, W. (2021) and Ferreira, Keswani, Miguel & Ramos (2013). This relationship holds true for both Norway and US, and the regression results can be seen in Table 20.

Table 20: Net return Carhart 4 Alphas on Expense Ratios - Regression output

	β_0	$\beta_1 ExpenseRatio$	R^2	Obs
Norway FFC Alpha	-0.0039	-1.4959	0.035	52
	(0.012)	(0.954)		
US FFC Alpha	-0.0626^{***}	-0.0409	0.000	251
	(0.014)	(1.173)		

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

Limitations of The Expense Ratio Regression. Our results from the performance on expense ratio regression may have certain limitations. Despite discovering a correlation, we

cannot conclusively establish causality in our findings. Additionally, the explanatory power of the regression is low. Lastly, our replication of Gil-Bazo & Ruiz-Verdu (2009) is a simplified version of their original work. For instance, their sample size was significantly more extensive, as it included all funds within the United States over an extended time period. Note that the relationship we found is non-significant in both countries. Further, the non-parametric lines are not perfectly aligned with the linear regression line which indicates that linear regression might not be the best approach to examine the relationship between fees and performance.

5.2.6 Time-series Segmentation

We divided the sample period into 3 sub-sample periods and utilised the Carhart four-factor regressions for the equally-weighted portfolio. We did this to see if the mutual fund performance were consistent in different time periods within our sample. The results for the sub-sample regressions can be seen in Table 21 for an equally-weighted portfolio in Norway and in Table 22 for an equally-weighted portfolio in the US. From the results, we see that all the equally-weighted portfolios still produce a negative alpha. However, the Norwegian equally-weighed portfolio has a non-significant alpha in their last sub-sample, and a positive and significant MOM factor. In the US the HML factor is no longer significant in the sub-samples compared to the full sample.

Table 21: Time-series segmentation - NOR - EW - Net return

	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$	Obs	Funds
Carhart 4 2012-2015	-0.0025^{*}	1.0234^{***}	-0.0187	0.2011^{**}	-0.0463	0.961	47	43
	(0.001)	(0.036)	(0.079)	(0.091)	(0.060)			
Carhart 4 2016-2019	-0.0019^{*}	1.0397^{***}	0.0056	0.1204^{*}	0.0593	0.964	48	38
	(0.001)	(0.033)	(0.083)	(0.061)	(0.050)			
Carhart 4 2020-2022	-0.0017	1.0564^{***}	0.0629	0.0928^{**}	0.0943^{*}	0.984	36	35
	(0.001)	(0.026)	(0.073)	(0.036)	(0.051)			

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

Table 22: Time-series segmentation - US - EW - Net return

	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$	Obs	Funds
Carhart 4 2012-2015	-0.0049^{**}	0.9772^{***}	-0.1824	-0.0930	0.0000	0.882	47	185
	(0.002)	(0.058)	(0.126)	(0.145)	(0.096)			
Carhart 4 2016-2019	-0.0061^{***}	1.0627^{***}	-0.1961	-0.1863	-0.0111	0.872	48	209
	(0.002)	(0.067)	(0.171)	(0.125)	(0.104)			
Carhart 4 2020-2022	-0.0057^{**}	0.9339^{***}	-0.0519	-0.1026	-0.0656	0.931	36	195
	(0.003)	(0.052)	(0.144)	(0.072)	(0.101)			

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

5.3 Robustness Analysis Results

By removing the outliers based on percentiles, our new dataset contains 46 Norwegian funds and 225 US funds. We chose this method because we noticed larger tails on the negative sides of the distribution when we plotted the alphas obtained from the regression models, this can be seen in Appendix C, in Figure 7 and Figure 8. In the following subsections, we will present our results based on the new dataset (excl. outliers) and compare the results were we included the outliers.

5.3.1 Robustness: Carhart Four-factor Regression and Cost Categories

From our robust dataset, we performed the equally-weighted Carhart four-factor regression, and we also performed the same regression on the cost categories. The result for these regressions can be seen in Table 23 for Norway and Table 24 for the US.

Results for Norway. Compared to the equally-weighted net return results for Carhart four-factor regression, seen in Table 8. We found that the equally-weighted all-cost portfolio has a higher alpha without the outliers, with an alpha of -0.0018 significant on the 1% level. The portfolio still has significant Market and SMB factors on the 1% level. The Adjusted R^2 is slightly higher with a value of 0.974. The low-cost portfolio still has an alpha of -0.0013 significant on a 5% level. The medium-cost portfolio has obtained a lower alpha of -0.0018 compared to the -0.0016 from the dataset with the outliers, still significant on a 5% level. For the high-cost portfolio, the dataset without the outliers obtained an alpha of -0.0023 which is much better compared to the full dataset of -0.0036, and still significant on a 1% level.

Table 23: Robust Fama French Carhart results - NOR - EW - Net return

	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$	Obs
Carhart 4 All-cost	-0.0018^{***}	1.0208^{***}	-0.0418	0.0787^{***}	0.0426	0.974	131
	(0.001)	(0.015)	(0.043)	(0.021)	(0.030)		
Carhart 4 Low-cost	-0.0013^{**}	1.0469^{***}	-0.0648	0.1117^{***}	0.0300	0.975	131
	(0.001)	(0.017)	(0.045)	(0.021)	(0.030)		
Carhart 4 Medium-cost	-0.0018^{**}	0.9927^{***}	-0.1317	-0.0762	0.0489	0.960	131
	(0.001)	(0.019)	(0.051)	(0.030)	(0.035)		
Carhart 4 High-cost	-0.0023^{***}	1.0191^{***}	0.0498	0.1805^{***}	0.0568	0.959	131
	(0.001)	(0.019)	(0.052)	(0.028)	(0.038)		

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

Results for US. Compared to the equally-weighted net return results for Carhart four-factor regression, seen in Table 13. We found that the equally weighted all-cost portfolio has a higher alpha without the outliers, with an alpha of -0.0050 significant on the 1% level. The portfolio still has significant Market and HML factors. However, the HML factor is now significant on a

5% level. The Adjusted R^2 is higher with a value of 0.909. The low-cost portfolio still has an alpha of -0.0048 significant on a 1% level, which is higher compared to -0.0056 from the dataset with outliers. The medium-cost portfolio has still an alpha of -0.0046, still significant on a 1% level. For the high-cost portfolio, the dataset without the outliers obtained an alpha of -0.0057 which is better compared to the full dataset of -0.0060, and still significant on a 1% level.

Table 24: Robust Fama French Carhart results - US - EW - Net return

	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$	Obs
Carhart 4 All-cost	-0.0050^{***}	0.9803^{***}	-0.1094	-0.1023^{**}	-0.0248	0.909	131
	(0.001)	(0.035)	(0.077)	(0.042)	(0.036)		
Carhart 4 Low-cost	-0.0048^{***}	0.9653^{***}	-0.1438^{*}	-0.0830^{*}	-0.0244	0.893	131
	(0.001)	(0.035)	(0.081)	(0.047)	(0.039)		
Carhart 4 Medium-cost	-0.0046^{***}	1.0041^{***}	-0.1113	-0.1385^{***}	-0.0357	0.904	131
	(0.001)	(0.036)	(0.077)	(0.042)	(0.035)		
Carhart 4 High-cost	-0.0057^{***}	0.9665^{***}	-0.0854	-0.0786^{**}	-0.0130	0.910	131
	(0.001)	(0.034)	(0.082)	(0.045)	(0.041)		

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

5.3.2 Robustness: Expense Ratio Influence on Alpha Performance

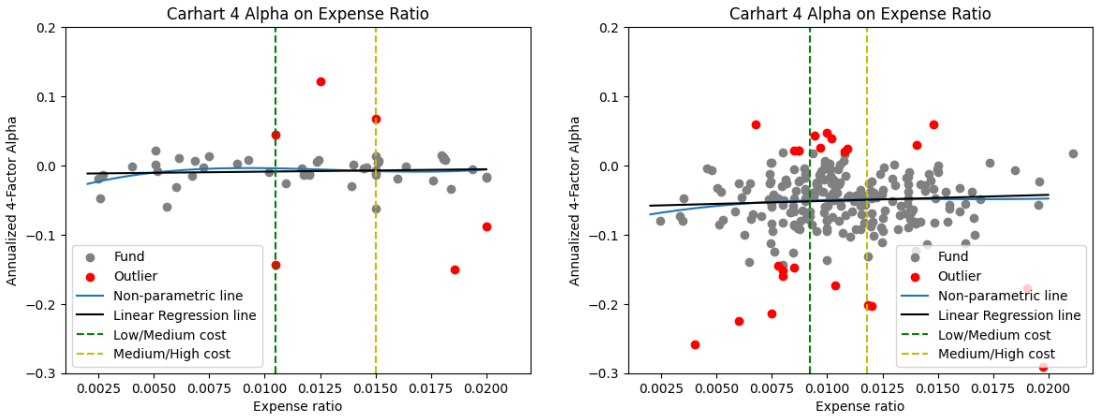
Gross of fees After removing the outliers the results in Norway, gross of fees, changed from a negative to a positive relationship between fees and performance. The relationship between fees and performance is positive, but still below a slope of 1, indicating that more fees do not equal a proportional increase in gross returns. The regression line and all funds plotted for the Norwegian funds can be seen in Figure 5a.

For the US funds, the results are similar to the dataset before removing the outliers. The slope is still positive, but less positive than with the full sample, and still below 1. The US funds plotted with regression line can be seen in Figure 5b. All the results from the regressions can be seen in Table 25. The R^2 for both regressions is larger than with the full dataset. Note that the relationship found is still non-significant in both countries.

Table 25: Robust Gross return Carhart four-factor Alphas on Expense Ratios - Regression output

	β_0	$\beta_1 ExpenseRatio$	R^2	Obs
Norway FFC Alpha	-0.0123	0.3456	0.010	46
	(0.008)	(0.595)		
US FFC Alpha	-0.0598^{***}	0.8681	0.009	225
	(0.007)	(0.610)		

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.



(a) Carhart 4 on Expense ratio in Norway

(b) Carhart 4 on Expense ratio in US

Figure 5: Carhart 4 on Expense ratio
(The outliers plotted are removed from the regression line in the figures)

Net of fees If we look at the net of fees results, which can be seen in Table 26, we still have a negative relationship between expense ratio and net of fees Carhart four-factor alphas. However, the relationship is less negative in both countries compared to the full sample and is still non-significant.

Table 26: Robust Net return Carhart 4 Alphas on Expense Ratios - Regression output

	β_0	$\beta_1 ExpenseRatio$	R^2	Obs
Norway FFC Alpha	-0.0123	-0.6392	0.033	46
	(0.008)	(0.590)		
US FFC Alpha	-0.0605^{***}	-0.0192	0.000	225
	(0.007)	(0.611)		

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

5.4 Discussion

In this section, we will discuss our key findings and provide an economic interpretation of the results. Our goal is to make sense of our findings, connect it to previous research, and to be able to answer our hypothesis about whether Norwegian mutual funds can justify their fees.

5.4.1 Interpretation of the Findings

Factor regression The equally-weighted factor regressions results showed that, on average, there were no signs of risk-adjusted outperformance before fees in both countries over our sample period, as seen in Table 7 for Norway and Table 12 for the US. These findings imply that mutual funds do not have any basis to charge fees. We choose to place considerable emphasis on this result for our conclusion later on, as the funds must manage to outperform the market before they can charge fees. On the other hand, there were exceptions on an individual fund level,

where the very top percentile of mutual funds did generate a positive alpha before fees. This result is not surprising, research papers have found the same outcome, such as Gallefoss et al. (2015) in Norway and Petajisto (2013) for the most active stock pickers in the US. Apart from this, the Efficient Market Hypothesis (Fama, 1970), could be an explanation for the lack of risk-adjusted performance among fund managers. In a perfectly efficient market, the market portfolio holds the highest Sharpe ratio. Thus, the competition fund managers face is not from an average performer; they are facing the elite performer. Since we found some exceptions of funds that beat the market before fees, some evidence point towards the theory of an "Efficiently Inefficient Market", as explained by Pedersen (2015). Lastly, when we analyse at the equally-weighted portfolio net of fees, we observe a significant negative alpha in both countries seen in Table 8 for Norway and in Table 13 for the US. Hence, based on our findings, active management does not add value for investors, on average.

Cost categorisation Some evidence suggests that high-cost funds have under-performed low-cost and medium-cost funds across both countries of domicile, which is consistent throughout all of our research and in line with Cooper Halling & Yang (2021) findings. Our findings for the cost-categorisation can be seen in Table 14 for Norway and Table 15 for the US, our replication of Bogle (2002) seen in Table 16 for Norway and Table 17 for the US, and the information ratio for the categories seen in Table 18. These results imply that paying premium fees to portfolio managers does not necessarily lead to better performance; in fact, it was associated with the lowest performance in our research. The result is also highlighted in Gil-Bazo & Ruiz-Verdu (2009). The problem might be associated with the findings made by Anufriev, Bao, Sutan, & Tuinstra (2019), who showcased the tendency of investors to pay less attention to fees. Another plausible explanation for the significant under-performance among the high-cost funds may be related to the theory on unsophisticated and sophisticated investors mentioned by Gil-Bazo & Ruiz-Verdu (2009), where fund managers with a low-performance record tend to target unsophisticated investors with their marketing strategies, allowing them to charge higher fees. These findings contradict the "common belief" that higher cost gives better quality, or in this case, better risk-adjusted performance. Which again can be seen as a lack of professionalism in the industry. On the other hand, a more straightforward explanation could be that some funds have higher operational costs than others, possibly due to their size or marketing strategy. As fund managers charge a percentage fee based on the total assets under management, larger funds may have a pricing advantage over smaller funds. However, this aspect was not investigated in our study.

Expense ratio and performance relationship Another aspect to discuss is the relationship between expense ratio and gross of fees performance, seen in Table 19. Our findings suggest that the negative relationship between fees and before-fee performance discussed by Gil-Bazo

& Ruiz-Verdu (2009) is present in Norway. However, we found a positive relationship in the US similar to what Ferreira, Keswani, Miguel & Ramos (2013) found in their sample, gross of fees. One possible reason we did not get matching results with Gil-Bazo & Ruiz-Verdu (2009) may have been influenced by the steep decline in expense ratio over our sample period. When they conducted their research, the expense ratios were generally higher compared to the recent period we examined, particularly in the US, as illustrated in Figure 2. It could also be reasoned from the fact that Gil-Bazo & Ruiz-Verdu (2009) used a different dataset (diversified domestic equity US). Given that we did not observe the same effect for the Norwegian mutual funds, there is a subtle indication that paying higher fees lead to lower expected returns for investors. However, our findings imply that, on average, when picking a random Norwegian fund as opposed to an American fund, investors will get compensated with better risk-adjusted return in our sample. Since the intercept in the regression (baseline alpha performance) and the average risk-adjusted performance in Norway are higher than in the US. Additionally, as seen in Table 20, the relationship between expense ratio and net of fees performance is negative, indicating that higher fees lead to lower risk-adjusted returns. The result is similar to previous research papers such as Cooper Halling & Yang (2021) and Ferreira, Keswani, Miguel & Ramos (2013), however, our results are non-significant.

5.4.2 Assessing Robustness of the Findings

Time-series segmentation The results of the sub-sampling of the periods showed us that the negative alpha findings were consistent. Indicating that under-performance is present even in smaller time series over the period. With this method, we were able to observe that outliers from the time series did not impact the overall findings, since all the three sub-samples gave similar results.

Removing Outliers By removing outliers in the equally-weighted portfolios, we still achieve negative alpha, and the lowest alpha was still in the high-cost category net of fees as seen in Table 23 for Norway and Table 24 for the US. However, the sample showed different results in the relationship between expense ratio and performance in Norway seen in Table 25 gross of fees. This suggests that the results from the full dataset were affected by outliers in Norway, indicating that the sample does not handle changes well.

Furthermore, the relationship was still non-significant in both countries and the Expense Ratio gross alpha relationship was below 1 for both countries, which means that 1% more annual fee does not equal 1% more annual risk-adjusted performance gained. As a result, when investors are paying additional fees, they are not compensated with an equal increase in expected risk-adjusted return.

Different model In addition to the previously stated factor models, we also included the Fama French 5-factor regression model. The results were mostly unchanged, the equally-weighted risk-adjusted performance for both countries was still negative. We had an unchanged explanatory power in Norway. However, we achieved a slightly better fit for the US. The results can be seen in Appendix F. Furthermore, since the articles we are using in our research utilised the Carhart four-factor model, we also decided to use this model, despite the higher fit for the Fama French five-factor model in the US.

Different benchmark If investors want to get exposure to the market index (MSCI World), investing directly in the underlying index is impossible. Thus, buying an indirect exposure through an index tracking fund or ETF is necessary. This process includes additional costs such as transaction fees, management fees, and tracking error (deviation from the underlying index). Therefore, we replace the MSCI World Index with iShares MSCI World ETF as an alternative benchmark. This ETF includes management fees and tracking error, which is therefore a more precise opportunity cost for investors. As shown in Appendix G, Table 38 for Norway, and Table 39 for the US, there was a noticeable increase in the number of funds that generates a significant alpha gross and net of fees. This result emphasises that using different benchmarks when evaluating performance does change the outcome of the findings. In addition, the equally-weighted portfolios risk-adjusted return increased, gross and net of fees. However, the alpha from the equally-weighted portfolio net of fees is still negative in both countries as seen in Table 37 in Appendix G.

6 Conclusions

Based on our research, Norwegian active global equity funds cannot justify the fees they are taking for their services, in general. This conclusion is drawn from comparing their risk-adjusted return against the benchmark, namely the MSCI World Index, and observing the non-satisfying relationship between expense ratio and risk-adjusted return. To be able to justify the fees, fund managers should have generated a positive alpha before fees, and maintained a zero alpha or higher after fees. Very few funds managed to obtain these results. In the comparison of the two domiciles, we found that the Norwegian mutual funds did perform less poorly than the American counterparts, on average. On the other hand, there is more evidence of miss-pricing in Norway since we found a negative relationship between expense ratio and before-fee risk-adjusted return (positive in the US). However, we cannot conclusively establish this, since this relationship was statistically non-significant and disappears when we remove outliers. Additionally, we saw that the high-cost category funds showed disappointing risk-adjusted performance in both countries of domicile. Possible explanations for this miss-pricing might stem from a lack of competitiveness, strategic pricing, higher operating costs, or other factors that lay outside our research area.

Additionally, we aimed to determine the best place for investors to place their funds; our research indicated that Norwegian funds were superior. However, investors should avoid high-cost funds, and focus on low-cost or medium-cost funds. Keep in mind that historical data is no guarantee for future results and there might be biases in our results that could give different outcomes, such as using other economic models and assumptions. For instance, an assumption we made was removing the currency risk artificially without any cost. We did this to be able to compare the US and Norway on the same currency basis. However, hedging currency risk introduces extra costs, a cost we did not include in our research. Nonetheless, something that could be interesting to look at in further research. Lastly, we want to highlight the positive trend for investors concerning the generally declining expense ratio over the time horizon we examined. This trend suggests an increased focus on providing investors with a fair price for the services offered.

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A Appendix: USD/NOK for the Sample Period

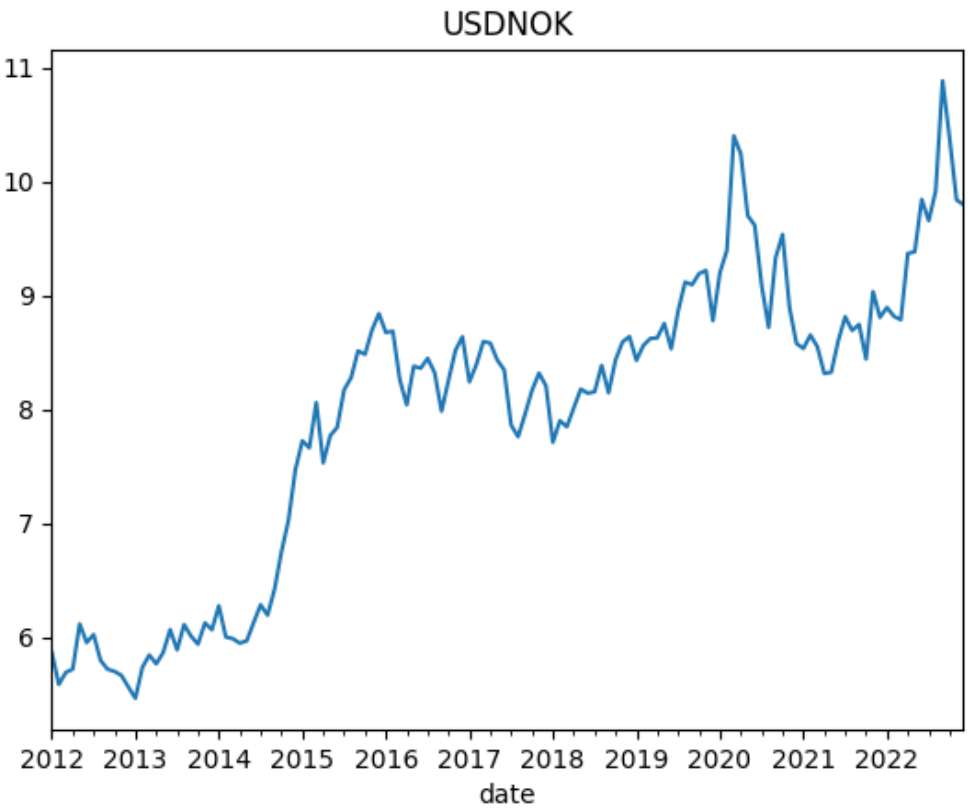

Figure 6: USD/NOK

B Appendix: Testing Funds

In this Appendix, we are testing funds for Heteroscedasity, Autocorrelation and not normal distributed error terms. We performed these tests on individual and EW portfolios for both countries. "True" means that the fund passed the test on a 5% level. "White" is whites test, by passing whites test there is no sign of heteroscedasticity in the error terms. "BG" is Breusch-Godfrey test, by passing Breusch-Godfrey test there is no sign of autocorrelation in the error terms. "JB" is Jarque-Bera test, by passing this test the error terms are normal distributed.

B.1 Testing Funds results in Norway

For Norway there was no sign of Heteroscedasity, autocorrelation or not normal distributed error terms in the equally-weighted portfolio. For the individual funds, there were some funds that had Heteroscedasity, but fewer funds that had autocorrelation and non-normal distributed error terms.

	White	BG	JB
ALFRED BERG GLOBAL	False	True	True
C WORLD WIDE GLOBALE AKSJER	True	False	True
C WORLD WIDE GLOBALE AKSJER ETISK	True	True	True

C WORLD WIDE STABILE AKSJER	False	False	False
CARNEGIE WORLD WIDE ETISK II	False	True	False
DNB NOR KAPFORV.GLOBAL II	True	True	True
DNB NOR KAPFORV.GLOBAL V DEAD - Merged:72937J	True	True	True
DNB NOR KAPFORV. POSTBANKEN GLOBAL	True	True	True
DNB GLOBAL A	True	True	False
DNB NOR KAPFORV.GLOBAL ETISK IV	True	True	True
DNB NOR KAPFORV.GLOBAL ETISK V	True	True	True
DNB GLOBAL LAVKARBON A	True	True	True
DNB NOR KAPFORV.GLOBAL SELEKTIV I	True	True	True
DNB NOR KAPFORV. GLOBALSPAR	True	True	True
DNB NAVIGATOR A DEAD - Liquidated	True	True	True
DELPHI GLOBAL A	False	True	False
DELPHI GREEN TRENDS A	True	True	True
EIKA GLOBAL	True	True	True
EIKA SPAR	True	True	True
FIRST GLOBAL FOCUS	False	True	True
FRAM GLOBAL	True	True	True
HOLBERG GLOBAL A	False	True	True
KLP AKSJE GLOBAL FLERFAK P	False	True	True
NORDEA GLOBAL II DEAD - Merged:88750W	True	True	True
NORDEA GLOBAL NOK	False	False	False
NORDEA INTERNASJONALE AKSJER	False	False	True
NORDEA INTERNASJONALE AKSJER II	False	False	True
NORDEA INTERNASJONALE AKSJER III	False	False	True
NORDEA STABILE AKSJER GLOBAL	True	True	True
NORDEA STABILE AKSJER GLOBAL ETISK	True	True	True
ODIN GLOBAL C	True	True	True
ODIN GLOBAL II DEAD - Merged:74930E	True	True	True
ODIN FORVALTNING AS MARITIM NOK	True	True	True
PLUSS UTLAND AKSJE	True	True	False
PLUSS UTLAND ETISK DEAD - Merged:88728F	False	True	False
PARETO GLOBAL A	True	True	True
SKAGEN GLOBAL A NOK	False	True	True
SKAGEN GLOBAL II NOK	False	True	True
SKAGEN INSIGHT DEAD - Liquidated	True	True	True
SKAGEN VEKST A NOK	True	True	True
SR-UTBYTTE A	True	True	True
SPARE BANK 1 VERDEN VERDI C	True	True	True
STOREBRAND INT INV.FUND BARNESPAR	False	True	True
STOREBRAND EQUAL OPPORTUNITIES A	False	True	True
STOREBRAND GLOBAL ESG	True	True	True
STOREBRAND GLOBAL MULTIFACTOR A	False	True	False
STOREBRAND INTL.INV.FD. GLOBAL SRI	True	True	True
STOREBRAND GLOBAL SOLUTIONS A	False	True	False
STOREBRAND GLOBAL VALUE A	False	True	True
STOREBRAND INTL.INV.FD. PENSJONSPAR	False	True	True
STOREBRAND SMART CITIES A	False	True	True
TERRA GLOBAL DEAD - Merged:88738D	True	True	True

B.2 Testing Funds Results in US

For US there was no sign of Heteroscedasity, autocorrelation, but the error terms are not normally distributed in the equally-weighted portfolio. For the individual funds there was some fund that did not have normally distributed error terms, but fewer funds that had some autocorrelation and Heteroscedasticity.

	White	BG	JB
1290 GLOBAL TALENTS FUND A	False	True	False
1290 SMART BETA EQUITY FUND I	True	True	False
AB GLOBAL CORE EQUITY PORTFOLIO ADV	True	False	False
AB SUSTAINABLE GLOBAL THEMATIC FUND A	True	True	False
AGF GLOBAL EQUITY FUND I DEAD - Liquidated	True	True	True
AGF GLOBAL SUSTAINABLE EQUITY FUND I	True	True	True
AMG TRILOGY GLOBAL EQUITY FUND I	True	True	False
AQR GLOBAL EQ.FD.CL.I	True	True	False
ARTIO SELECT OPPS.FD. INCO.CL.A	True	False	True
ADLER VALUE FUND INSTITUTIONAL	True	True	True
ADVISORY RESEARCH GLOBAL DIVIDEND FUND	True	True	False
ALGER GLOBAL FOCUS FUND A	True	True	False

ALL.BERN.GBL.VAL.FD. ADVI.CL.SHS.	True	True	True
ALLIANZGI BEST STYLES GLOBAL EQUITY FD.CL.R6	False	False	False
ALLIANZGI GLB.MGD.VOLT. FD.INSTL.CL.	True	True	False
ALPHA OPPORTUNISTIC ALTERNATIVES FUND I	True	True	True
AMERICAN CENTURY FOCUSED GLOBAL GROWTH FUND INV	True	True	False
AMER.FUND.CAP.WLD.GW.& INC.FD.CL.A SHS.	True	True	False
AMERICAN FUNDS GLOBAL INSIGHT FUND F-3	True	True	False
NEW ECONOMY FUND	True	True	False
AMERICAN FUNDS NEW PERSPECTIVE FUND A	True	True	False
ARIEL GLB.EQ.FD.INSTL. CL.	False	True	False
ARISTOTLE VALUE EQUITY FUND I	False	True	True
ARISTOTLE/SAUL GLOBAL EQUITY FUND I	True	True	False
ARTISAN GLOBAL DISCOVERY FUND INVESTOR	True	True	False
ARTISAN GLOBAL EQ.FD. INVESTOR SHARES	True	True	False
ARTISAN GLB.OPPS.FD. INVR.SHS.	True	True	False
ARTISAN GLB.VAL.FD. INVESTOR SHARES	True	True	False
AVE MARIA WORLD EQUITY FUND	True	True	False
BBH GLOBAL CORE SELECT CL.N	True	True	False
BMO GLOBAL LOW VOLT.EQ. FD.CL.I	True	True	False
BMO PYRFORD GLOBAL EQUITY FUND I	True	True	True
BNY MELLON GLOBAL STOCK FUND I	True	True	False
BNY MELLON WORLDWIDE GROWTH FUND A	True	True	False
BAILLIE GIFFORD GLOBAL ALPHA EQUITY FUND 2	True	True	False
BAILLIE GIFFORD GBL. STEWD.EQTIES.FD.I	True	True	False
BAILLIE GIFFORD LONG TERM GLOBAL GROWTH 2	True	True	False
BARON GLOBAL ADVANTAGE FD.INST CL.	False	True	False
BLACKROCK ADVANTAGE GLOBAL FUND INVESTOR A	True	True	False
BLACKROCK GLOBAL IMPACT FUND INST	True	True	True
BLACKROCK UNCONSTRAINED EQUITY FUND INVESTOR A	True	True	False
BOSTON PRTNRS GLBL EQTY ADV FD INST	True	True	False
BOSTON PRTNRS GLBL EQTY FD INSTL	True	True	False
BRANDES GLOBAL EQ.FD.CL. I	True	True	False
BRANDES GLBL OPPTYS VAL FD I	False	True	True
BROWN ADVISORY GLOBAL LEADERS FUND INVESTOR	False	True	True
CMG MAULDIN CORE FUND I	True	True	False
CRM GLOBAL OPPORTUNITY FD - INVESTOR SHS	True	True	True
CALAMOS GLB.EQ.FD.CL.I	True	True	False
CAMBIAR GLOBAL EQUITY FUND INVESTOR	True	True	False
CASTLE FOCUS FD.INVESTOR SHARES	True	True	False
CATALYST/MAP GLOBAL EQUITY FUND A	True	True	False
CAUSEWAY CONCENTRATED EQUITY FUND INSTL	True	True	True
CAUSEWAY GLB.VAL.FUND INSTL.CLASS	True	True	False
CHAUTAUQUA GLOBAL GROWTH FUND INSTITUTIONAL	True	True	False
COLUMBIA GLOBAL VALUE FUND A	True	True	False
COLUMBIA SELECT GLOBAL EQUITY FUND A	True	True	False
COLUMBIA SELECT GLOBAL GROWTH FUND A	True	True	False
COMMONWEALTH GLOBAL FD.	True	True	False
THE COOK & BYNUM FUND	True	True	False
DWS CROCI SECTOR OPPORTUNITIES FUND S	False	True	True
DAVIS GLB.FD.CL.A	True	False	False
DELAWARE GLOBAL EQUITY FUND A	True	True	False
DEL.GLB.VAL.FD.CL.A DEAD - Liquidated	True	True	False
DELAWARE IVY GLOBAL GROWTH FUND A	False	True	False
DIAMOND HILL GLOBAL FUND Y	True	True	False
DODGE & COX GLOBAL STOCK FUND I	True	True	False
DREYFUS STRATEGIC BETA GLOBAL EQUITY FUND I	True	True	False
DRIEHAUS GLB.GW.FUND DEAD - Liquidated	False	True	False
ERSHARES GLBL ENTREPRENEURS FD INSTL	True	True	False
EATON VANCE FOCUSED GLBL OPPTYS FD I	True	True	False
EATON VANCE HEXAVEST GLB.EQ.FD.CL.I	True	True	False
EATON VANCE RICHD.BERN. EQ.STGY.FD.CL.I	True	False	False
EPOCH GLOBAL ALL CAP FUND INSTITUTIONAL	True	True	False
FEDERATED HERMES GLOBAL EQUITY FUND IS	True	True	True
FIDELITY ADVISOR GLOBAL CAPITAL APPREC FUND I	True	True	False
FIDELITY ENDURING OPPORTUNITIES FUND	True	True	True
FID SRS INTRINSIC OPPTYS FD	True	True	True
FIDELITY WORLDWIDE FD.	True	True	False
FIERA CAPITAL GLOBAL EQUITY FUND INST	True	False	True
FRANKLIN GLOBAL EQUITY FUND FUND A	True	True	False
FRANKLIN MUTUAL BEACON FUND Z	True	True	False
FRANKLIN MUTUAL GLOBAL DISCOVERY FUND Z	True	True	False
FRANKLIN WORLD PERSPECTIVES FD.CL.A	True	True	False
FRONTIER MFG GLOBAL EQUITY INSTITUTIONAL	False	True	False
FRONTIER MFG GLOBAL PLUS FUND INSTITUTIONAL	True	True	False
FRTR MFG GLBL SUSTAINABLE FD INSTL	True	True	True

FRONTIER ROBECO SAM GLOBAL EQUITY FUND INST	True	True	False
GMO GLB.FOCD.EQ.FD.CL. III	True	True	False
GQG PARTNERS GLOBAL QUALITY EQUITY FUND INST	True	True	True
GABELLI GLOBAL GROWTH FUND AAA	True	True	False
GRANITE VALUE FUND DEAD - Liquidated	True	True	False
GREENWICH IVY LONG-SHORT FUND INST	True	True	False
GUARDIAN CAPITAL DIV GRO FD INST	True	True	False
GUARDIAN CAPITAL FNDM GLBL EQTY FD INST	True	False	True
GUIDE STONE GLBL IMPACT FD INSTL	False	True	True
GUINNESS ATKINSON GLOBAL INNOVATORS FUND INVESTOR	True	True	False
HC ESG GROWTH PORTFOLIO HC STRATEGIC	True	True	False
HSBC GLBL EQTY VOLATILITY FOCUSED FD I	True	True	True
HARBOR GLOBAL LEADERS FUND INSTITUTIONAL	True	True	False
HARBOR GLB.VAL.FD.INSTL. CL.	True	True	True
HARDING LOEVNER GLOB.EQ. PRTF.ADVI.CL.	True	True	False
HARDING LOEVNER GLOBAL EQUITY RESEARCH PFLO INS	True	True	False
HARTFORD CLIMATE OPPORTUNITIES FUND A	True	True	False
HARTFORD GLB.GW.FD.CL.A DEAD - Merged:30913E	True	True	True
HARTFORD GLOBAL RESEARCH HLS IA	True	True	False
HOTCHKIS & WILEY GLOBAL VALUE FD.CL.I	True	False	False
IMPAX GLBL ENVIRON MARKETS FD INST	True	True	True
IMPAX GLBL OPPTYS FD INSTL	True	True	True
INVESCO GLOBAL CORE EQ. FD.CL.A	False	True	False
INVESCO GLOBAL FOCUS FUND Y	True	True	False
INVESCO GLOBAL FUND A	True	True	False
IVS.GLB.GW.FD.CL.A DEAD - Merged:517169	False	True	False
INVESCO GLOBAL OPPS.FD. CL.A	True	True	False
IRONBRIDGE GLOBAL FUND DEAD - Liquidated	True	True	False
JOHCM GLOBAL SELECT FUND INST	True	True	False
JP MORG GLBL UNCONSTRAINED EQTY FD I	True	True	False
JANUS HENDERSON GLOBAL RESEARCH FUND D	True	True	False
JANUS HENDERSON GLOBAL SELECT FUND T	True	True	False
JANUS HENDERSON GLBL SUSTAINABLE EQTY FD D	True	True	True
JANUS HENDERSON GLOBAL VALUE FUND D	True	True	False
JANUS PRESERVATION SERIES-GLOBAL C	True	True	False
JENSEN GLOBAL QUALITY GROWTH FUND I	True	True	True
JOHN HANCOCK FDAMENTAL GLBL FRANCHISE FD NAV	True	True	False
JOHN HANCOCK GLOBAL EQUITY FUND NAV	True	True	False
JOHN HANCOCK FUNDS GLB. OPPS.FD.CL.A	True	True	True
JHAN.FUND.III GLB. SHAREHOLDER YLD.FD.CL.I	True	True	False
JOHN HANCOCK GLOBAL THEMATIC OPPS FUND NAV	True	True	False
JOHN HANCOCK MUTUAL SHARES FUND NAV	True	True	False
JOHN HANCOCK TECHNICAL OPPORTUNITIES FUND NAV	True	True	False
JUBAK GLOBAL EQ.FD. DEAD - Liquidated	True	True	True
LSV GLOBAL MANAGED VOLATILITY FUND INST	True	True	False
LSV GLOBAL VALUE FUND INST	True	False	False
LAZARD EQUITY FRANCHISE PORTFOLIO INSTITUTIONAL	True	True	False
LAZARD GLOBAL EQUITY SELECT PORTFOLIO INSTL	True	True	False
LAZARD GLOBAL STRATEGIC EQUITY PORTFOLIO INST	True	True	False
LONGLEAF PARTNERS GLOBAL FD.	True	True	False
LORD ABBETT GLOBAL EQUITY FUND A	True	True	False
MFAM GLBL OPPTYS FD INVSTR	True	True	False
MFS BLENDED RESEARCH GLOBAL EQUITY FUND R6	True	True	False
MFS GLB.EQ.FD.CL.B	False	True	False
MFS GLOBAL LEADERS FD. CL.A	True	True	False
MAIN STAY EPOCH CAPITAL GROWTH FUND I	True	True	False
MAINSTAY EPOCH GLB.CHO. FD.CL.I	True	True	False
MAINSTAY EPOCH GLB.EQ. YLD.FD.CL.I	True	False	False
MAINSTAY ICAP GLB.FD.CL. I	True	True	False
MNGD ACCT SRS BLKRK GA DYN EQTY FD K	True	True	False
MARSICO GLOBAL FUND INVESTOR	True	True	False
MASS MUTUAL GLOBAL FUND R5	True	True	False
MONDRIAN GLOBAL EQUITY VALUE FUND	False	True	True
MORGAN STANLEY GLOBAL CONCENTRATED PORTFOLIO I	False	True	True
MORGAN STANLEY GLOBAL CORE PORTFOLIO I	True	False	False
MORGAN STANLEY INSTL.FD. GLB.INSIGHT PRTF.CL.H	True	True	False
MORGAN STANLEY GLOBAL SUSTAIN PORTFOLIO I	True	True	False
MGST.INSTL.FD.GLB.FRCH. PRTF.CL.I	True	True	False
MORG STAN INST GLBL PERMANENCE PFOLIO I	True	True	False
MORG STAN INSTL CNTRPNT GLBL I	True	True	False
MORG STAN INSTL GLBL INSIGHT PRT I	True	True	False
MORGAN STANLEY INSTL.FD. GLB.GW.PRTF.CL.I	False	True	False
MUNDOVAL FUND	True	True	False
NATIONWIDE GLBL SUSTAINABLE EQTY FD R6	True	True	False
NATIXIS LOOMIS SAYLES GLOBAL GROWTH Y	True	True	False

NEUBERGER BERMAN FOCUS FD.	True	True	False
NEUBERGER BERMAN GLOBAL THEMATIC OPPS.INSTL.CL.	False	True	True
NINETY ONE GLOBAL FRANCHISE FUND I	True	True	True
NORTHERN ENGAGE 360 FUND	True	True	False
NUVEEN GLOBAL GROWTH FD. CL.A	True	True	True
NUVEEN NWQ GLOBAL ALL- CAP FUND I	False	True	False
OAKMARK GLOBAL FUND INVESTOR	True	True	False
OAKMARK GLOBAL SELECT FUND INVESTOR	True	True	False
OLD WESTBURY ALL CAP ESG FUND	False	True	False
PF MULTI-ASSET FUND P	True	True	False
PGIM JENNISON GLOBAL OPPORTUNITIES FUND Z	True	True	False
PIMCO EQUITIES PFR. WORLD FD.CL.A	True	True	False
PIMCO GLOBAL DIVIDEND FUND A	True	True	False
PMC DIVERSIFIED EQUITY FUND ADVISOR	True	True	False
PARVIN HEDGED EQUITY SOLARI WORLD FUND	False	True	True
PHAEACIAN GLOBAL VALUE FUND INST	True	True	False
PION GLBL SUSTAINABLE EQTY FD A	True	True	False
POLARIS GLB.VAL.FD.	True	True	True
POLEN GLOBAL GROWTH FUND INSTITUTIONAL	False	True	True
PRINCIPAL SYSTEMAT EX INTERNATIONAL FUND R-6	False	True	False
PURISIMA ALL-PURPOSE FD. DEAD - Liquidated	True	True	False
QUAKER GLOBAL TACTICAL ALLOCATION FUND ADVISOR	True	False	True
RBC GLOBAL OPPORTUNITIES FUND I	True	False	False
ROCKEFELLER EQTY ALLOCTN FD INSTL	False	True	False
RUSSELL INVESTMENTS GLOBAL EQUITY FUND S	False	True	False
SEI INST INV GLBL MNGD VOLATILITY FD A	True	True	False
SEI INST MGD GLBL MNGD VOLATILITY FD F	True	True	False
SGI GLOBAL EQUITY FUND I	True	True	False
SALIENT GLOBAL EQ.FD.CL. I	False	True	False
SANDS CAPITAL GLBL GRO FD INSTL	True	True	False
SCHARF GLOBAL OPPORTUNITY FUND INST	True	True	False
SCHRODER GLOBAL MULTI- CAP EQUITY FUND R6	True	True	False
SCOUT GLOBAL EQUITY FD. DEAD - Liquidated	True	True	False
SEGALL BRYANT & HAMILL GLOBAL ALL CAP FUND RTL	True	True	False
SELECTIVE OPPORTUNITY FUND FOUNDATION	True	True	False
SIRIOS FOCUS FUND INST	True	True	True
SIT ESG GROWTH FUND I	True	True	True
STATE STREET DEFENSIVE GLOBAL EQUITY FUND I	True	True	False
STATE STREET GLOBAL VALUE SPOTLIGHT FUND K	False	True	True
STRATEGIC EQUITY ALLOCATION FUND NAV	True	True	False
T.ROWE PRICE GLB.LGCP. STK.FD.	True	True	False
T ROWE PRICE GLOBAL IMPACT EQUITY	False	True	True
T ROWE PRICE GLB.STK.FD.	True	True	False
T ROWE PRICE GLOBAL VALUE EQUITY	True	True	False
T.ROWE PRICE INSTL. DEAD - Merged:9051FK	True	True	False
T ROWE PRICE INSTL.GLB. LGCP.EQ.FD.	True	True	False
T ROWE PRICE QM GLOBAL EQUITY FUND	False	True	False
TD GLOBAL LOW VOLATILITY EQUITY FUND INST	True	True	False
TIF GLB.EQ.SERIES FUND DEAD - Liquidated	False	True	False
TEMPLETON GLB.OPPOR.TST. I	True	True	False
TEMPLETON GROWTH FD.CL.A	True	True	False
TEMPLETON WLD.FUND.CL.A	True	True	False
THORNBURG GLOBAL OPPORTUNITIES FUND I	False	True	False
THRIVENT GLOBAL STOCK FUND A	True	True	False
THRIVENT LOW VOLATILITY EQUITY S	False	True	True
TRILLIUM ESG GLOBAL EQUITY FUND RETAIL	True	True	False
TWEEDY BROWNE INTL VALUE FUND II - CURR UNHGD	False	True	False
TWEEDY BROWNE VAL.FD.	True	True	False
UBS ENGAGE FOR IMPACT FUND P	True	True	False
US GLB.INVRS.FUND.GLB. MEGATRENDS FUND	True	True	True
USAA CAPITAL GROWTH FUND FUND	True	True	False
USAA SUSTAINABLE WORLD FUND FUND	True	True	False
UPRIGHT GW.FD.	True	True	False
VANGD.BAIL GIFF GL POSITIVE IPCT.STK.FD INV	True	True	False
VANGUARD GLOBAL CAPITAL CYCLES FUND INVESTOR	True	True	False
VANGUARD GLBL ESG SEL STK FD ADMIRAL	True	True	False
VANGUARD HORIZON FD. VANGD.GLB.EQ.FD.	True	True	False
VICTORY NEWBRIDGE GLOBAL EQUITY FUND A	True	True	False
VICTORY RS GLOBAL FUND Y	True	True	False
VIRTUS GLB.COMD.STK.FD. CL.I	True	True	True
VIRTUS NFJ GLOBAL SUSTAINABILITY FUND INST	True	True	False
VIRTUS SGA GLOBAL GROWTH FUND R6	True	True	False
VIRTUS SGA NEW LEADERS GROWTH FUND R6	True	True	True
VIRTUS VONTOBEL GLOBAL OPPORTUNITIES FUND A	True	True	False
VONTOBEL GLOBAL EQUITY INSTITUTIONAL FUND I	True	True	True

VOYA GLBL HI DIV LOW VOLATILITY FD A	True	True	False
VOYA GLOBAL OPPORTUNITIES FUND A	True	True	True
WCM FOCUSED GLB.GW.FD. INSTL.CL.	True	True	False
WASATCH GLOBAL SELECT FUND INSTITUTIONAL	True	True	False
WASATCH GLOBAL VALUE FUND INVESTOR	True	True	False
WELLS FARGO INTRINSIC WORLD EQTY FD A	True	True	False
WESTWOOD GLOBAL EQUITY FD.INSTL.SHS.	True	True	False
WILLIAM BLAIR GLOBAL LEADERS FD.CL.I	True	True	False
WINTERGREEN FD. DEAD - Liquidated	True	True	False
WINTON GLOBAL EQUITY PORTFOLIO INSTITUTIONAL	True	True	False
WORLD SELECT EQUITY FUND A	True	True	False
YORKTOWN CAPITAL APPRECIATION FUND A	True	True	False
ABRDN EMERGING MARKETS EX-CHINA FUND A	False	True	False
ABRDN GLOBAL EQUITY IMPACT FUND A	True	True	True

C Appendix: Individual Funds Regression Outputs

For the results, P-values describe the significance level as follows $^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. The first result shown for each country is the gross of fees regression output, then followed by the net of fees regression output. The regression shown is the Carhart four-factor regression. We also plot the net alphas for all the 3 different models used.

C.1 Norway Individual Regression Output

Gross of fees	Alpha	Mkt-RF	SMB	HML	MOM	ADJ_R_SQ
ALFRED BERG GLOBAL	-0.0026**	0.8997***	-0.1161*	-0.0308	0.2831***	0.902
C WORLD WIDE GLOBALE AKSJER	0.0001	0.9089***	-0.2155**	-0.2767***	0.105*	0.875
C WORLD WIDE GLOBALE AKSJER ETISK	0.0006	0.8795***	-0.1892**	-0.2684***	0.124**	0.866
C WORLD WIDE STABILE AKSJER	-0.0016	0.8823***	-0.1615	0.0538	0.1657*	0.767
CARNEGIE WORLD WIDE ETISK II	-0.0014	0.7555***	-0.298	0.3213	0.3354	0.582
DNB NOR KAPFORV.GLOBAL II	0.0003	1.0171***	-0.0709	0.1848**	-0.02	0.958
DNB NOR KAPFORV.GLOBAL V DEAD - Merged:72937J	0.0017	1.0588***	0.0	-0.04	-0.0255	0.956
DNB NOR KAPFORV. POSTBANKEN GLOBAL	0.0007	1.0557***	-0.0914	-0.003	-0.0134	0.961
DNB GLOBAL A	0.0006	1.0433***	-0.1341***	0.1594***	-0.0409	0.955
DNB NOR KAPFORV.GLOBAL ETISK IV	0.0009	1.0626***	-0.2011**	-0.0043	-0.0507	0.959
DNB NOR KAPFORV.GLOBAL ETISK V	0.0001	1.0606***	0.034	0.1625***	-0.0837*	0.942
DNB GLOBAL LAVKARBON A	-0.0012	0.9843***	-0.1163	0.0665	0.2599***	0.931
DNB NOR KAPFORV.GLOBAL SELEKTIV I	0.0008	1.0528***	-0.0955	0.0035	-0.0131	0.961
DNB NOR KAPFORV. GLOBALSPAR	0.001	1.0189***	-0.0068	-0.0377	-0.081	0.970
DNB NAVIGATOR A DEAD - Liquidated	-0.0134***	1.5089***	0.7401**	1.1371***	0.0865	0.661
DELPHI GLOBAL A	-0.0005	1.0451***	0.0876	-0.1515*	0.1176	0.834
DELPHI GREEN TRENDS A	0.0055	1.0772***	0.6239	-0.6633***	0.2225	0.758
EIKA GLOBAL	-0.0018*	1.0332***	-0.0202	0.2213***	0.0325	0.941
EIKA SPAR	-0.0028*	1.206***	0.1426	0.3572***	0.0669	0.895
FIRST GLOBAL FOCUS	0.0096*	1.358***	0.9886***	0.5892***	-0.4019	0.789
FRAM GLOBAL	-0.0013	0.9412***	0.5524***	0.3402***	0.034	0.681
HOLBERG GLOBAL A	0.0004	1.0127***	-0.0149	-0.1824***	-0.0159	0.893
KLP AKSJE GLOBAL FLERFAK P	-0.0011	0.8098***	-0.2752***	0.0908	0.0704	0.901
NORDEA GLOBAL II DEAD - Merged:88750W	-0.004	1.5486***	-0.0533	0.3508**	0.4348**	0.925
NORDEA GLOBAL NOK	-0.0016	1.0671***	-0.1185	-0.0373	0.0389	0.915
NORDEA INTERNASJONALE AKSJER	-0.0003	1.013***	-0.0718	0.0429	-0.0753	0.881
NORDEA INTERNASJONALE AKSJER II	-0.0008	1.0317***	-0.0768	0.0654	-0.0709	0.885
NORDEA INTERNASJONALE AKSJER III	-0.0007	1.0341***	-0.0865	0.0643	-0.0679	0.883
NORDEA STABILE AKSJER GLOBAL	-0.0051**	1.2971***	-0.2028	0.4355***	0.1533	0.848
NORDEA STABILE AKSJER GLOBAL ETISK	0.0011	0.8073***	-0.2386***	0.2183***	0.1037*	0.846
ODIN GLOBAL C	0.0012	1.0215***	0.0289	-0.3057***	-0.0909	0.880
ODIN GLOBAL II DEAD - Merged:74930E	0.0006	1.2175***	-0.2186	0.7665	0.1145	0.713
ODIN FORVALTNING AS MARITIM NOK	-0.0077	1.2034***	1.2266***	0.5185	-0.1984	0.638
PLUSS UTLAND AKSJE	-0.0011	1.0614***	-0.2144***	-0.0438	-0.0033	0.939
PLUSS UTLAND ETISK DEAD - Merged:88728F	-0.001	1.0515***	-0.1775**	-0.0878*	0.0139	0.922
PARETO GLOBAL A	-0.0002	1.0835***	0.0579	0.1862***	-0.0826	0.910
SKAGEN GLOBAL A NOK	-0.0011	1.0163***	-0.3924***	-0.2174***	-0.0829	0.878
SKAGEN GLOBAL II NOK	-0.0002	0.9927***	-0.4446***	-0.2743***	-0.0556	0.892
SKAGEN INSIGHT DEAD - Liquidated	-0.0054	1.3464***	0.3842	0.8019***	0.1294	0.875

SKAGEN VEKST A NOK	-0.0022	1.0808***	0.2056**	0.3501***	-0.0066	0.855
SR-UTBYTTE A	-0.0002	1.1922***	0.1758	0.5393***	0.1779*	0.841
SPARE BANK 1 VERDEN VERDI C	-0.0006	0.9874***	0.0539	0.4033***	0.1477	0.859
STOREBRAND INT INV.FUND BARNESPAR	-0.0009	1.0323***	-0.0554	0.4044**	-0.1704	0.882
STOREBRAND EQUAL OPPORTUNITIES A	-0.0129***	0.9621***	-0.2173	-0.3054***	0.1627	0.920
STOREBRAND GLOBAL ESG	-0.0002	0.9964***	-0.2065***	-0.0574**	0.0307	0.988
STOREBRAND GLOBAL MULTIFACTOR A	0.0005	1.0046***	0.2382**	0.2773***	0.0856*	0.942
STOREBRAND INTL.INV.FD. GLOBAL SRI	-0.0027	0.9655***	-0.284	0.352	-0.0617	0.808
STOREBRAND GLOBAL SOLUTIONS A	0.0011	0.9835***	0.1176	-0.1494*	-0.04	0.869
STOREBRAND GLOBAL VALUE A	0.0002	1.0542***	0.2204***	0.4741***	-0.0795	0.937
STOREBRAND INTL.INV.FD. PENSJONSPAR	-0.0012	1.058***	-0.0335	0.4218**	-0.1857	0.888
STOREBRAND SMART CITIES A	0.0037	1.0247***	0.325	-0.1986*	-0.1992	0.930
TERRA GLOBAL DEAD - Merged:88738D	-0.0003	0.9698***	-0.0704	0.0445	0.0278	0.890

Net of fees	Alpha	Mkt-RF	SMB	HML	MOM	ADJ_R_SQ
ALFRED BERG GLOBAL	-0.0037***	0.8996***	-0.1172*	-0.0312	0.2828***	0.902
C WORLD WIDE GLOBALE AKSJER	-0.001	0.9089***	-0.2155**	-0.2767***	0.105*	0.875
C WORLD WIDE GLOBALE AKSJER ETISK	-0.0004	0.8796***	-0.1887**	-0.27***	0.1231*	0.866
C WORLD WIDE STABILE AKSJER	-0.0029*	0.8823***	-0.1615	0.0538	0.1657*	0.767
CARNEGIE WORLD WIDE ETISK II	-0.0031	0.7555***	-0.298	0.3213	0.3354	0.582
DNB NOR KAPFORV.GLOBAL II	-0.0009	1.0171***	-0.0708	0.1847**	-0.02	0.958
DNB NOR KAPFORV.GLOBAL V DEAD - Merged:72937J	0.0013	1.0588***	0.0003	-0.04	-0.0255	0.956
DNB NOR KAPFORV. POSTBANKEN GLOBAL	-0.0009	1.0557***	-0.0913	-0.003	-0.0134	0.961
DNB GLOBAL A	-0.0007	1.0429***	-0.1342***	0.1596***	-0.0417	0.955
DNB NOR KAPFORV.GLOBAL ETISK IV	0.0004	1.0627***	-0.2009**	-0.0043	-0.0507	0.959
DNB NOR KAPFORV.GLOBAL ETISK V	-0.0003	1.0606***	0.0341	0.1625***	-0.0836*	0.942
DNB GLOBAL LAVKARBON A	-0.0018	0.9844***	-0.1161	0.0669	0.2604***	0.931
DNB NOR KAPFORV.GLOBAL SELEKTIV I	-0.0008	1.0528***	-0.0953	0.0035	-0.013	0.961
DNB NOR KAPFORV. GLOBALSPAR	-0.0005	1.019***	-0.0066	-0.0376	-0.081	0.970
DNB NAVIGATOR A DEAD - Liquidated	-0.015***	1.5086***	0.7404**	1.135***	0.0853	0.661
DELPHI GLOBAL A	-0.0021	1.0451***	0.0861	-0.1491	0.1194	0.834
DELPHI GREEN TRENDS A	0.0043	1.0772***	0.6239	-0.6633***	0.2225	0.758
EIKA GLOBAL	-0.0033***	1.0345***	-0.0142	0.2244***	0.0362	0.942
EIKA SPAR	-0.0044***	1.2058***	0.1415	0.357***	0.0666	0.895
FIRST GLOBAL FOCUS	0.0086*	1.358***	0.9886***	0.5892***	-0.4019	0.789
FRAM GLOBAL	-0.003	0.9412***	0.5524***	0.3402***	0.034	0.681
HOLBERG GLOBAL A	-0.0006	1.0132***	-0.0134	-0.1816***	-0.0151	0.893
KLP AKSJE GLOBAL FLERFAK P	-0.0014	0.8098***	-0.2752***	0.0908	0.0704	0.901
NORDEA GLOBAL II DEAD - Merged:88750W	-0.0042	1.5486***	-0.0533	0.3509**	0.4349**	0.925
NORDEA GLOBAL NOK	-0.0019	1.0671***	-0.1185	-0.0373	0.0389	0.915
NORDEA INTERNASJONALE AKSJER	-0.0015	1.0131***	-0.0739	0.0448	-0.0739	0.881
NORDEA INTERNASJONALE AKSJER II	-0.0017	1.0316***	-0.077	0.0655	-0.0708	0.885
NORDEA INTERNASJONALE AKSJER III	-0.0011	1.034***	-0.0867	0.0644	-0.0678	0.883
NORDEA STABILE AKSJER GLOBAL	-0.0055**	1.2971***	-0.2026	0.4356***	0.1535	0.848
NORDEA STABILE AKSJER GLOBAL ETISK	-0.0001	0.8073***	-0.2386***	0.2183***	0.1037*	0.846
ODIN GLOBAL C	-0.0003	1.0214***	0.0276	-0.3059***	-0.0913	0.880
ODIN GLOBAL II DEAD - Merged:74930E	-0.0001	1.2175***	-0.2189	0.7665	0.1144	0.713
ODIN FORVALTNING AS MARITIM NOK	-0.0093*	1.2034***	1.2266***	0.5186	-0.1983	0.638
PLUSS UTLAND AKSJE	-0.0021**	1.0614***	-0.2144***	-0.0438	-0.0033	0.939
PLUSS UTLAND ETISK DEAD - Merged:88728F	-0.002*	1.0515***	-0.1775**	-0.0878*	0.0139	0.922
PARETO GLOBAL A	-0.0014	1.0821***	0.0579	0.1854***	-0.0837	0.907
SKAGEN GLOBAL A NOK	-0.0021	1.0169***	-0.3904***	-0.2241***	-0.0864	0.878
SKAGEN GLOBAL II NOK	-0.0009	0.9925***	-0.4437***	-0.2734***	-0.055	0.892
SKAGEN INSIGHT DEAD - Liquidated	-0.0066**	1.3464***	0.3842	0.8019***	0.1294	0.875
SKAGEN VEKST A NOK	-0.0031**	1.081***	0.2042**	0.3504***	-0.0067	0.855
SR-UTBYTTE A	-0.0015	1.1924***	0.1752	0.5396***	0.1783*	0.841
SPARE BANK 1 VERDEN VERDI C	-0.0019	0.9874***	0.0539	0.4033***	0.1477	0.859
STOREBRAND INT INV.FUND BARNESPAR	-0.0022	1.0323***	-0.0554	0.4044**	-0.1704	0.882
STOREBRAND EQUAL OPPORTUNITIES A	-0.0137***	0.9621***	-0.2173	-0.3054***	0.1627	0.920
STOREBRAND GLOBAL ESG	-0.0005	0.9964***	-0.2065***	-0.0574**	0.0308	0.988
STOREBRAND GLOBAL MULTIFACTOR A	-0.0	1.0049***	0.2378**	0.2777***	0.0862*	0.942
STOREBRAND INTL.INV.FD. GLOBAL SRI	-0.0032	0.9655***	-0.284	0.352	-0.0617	0.808
STOREBRAND GLOBAL SOLUTIONS A	0.0004	0.9835***	0.1176	-0.1494*	-0.04	0.869
STOREBRAND GLOBAL VALUE A	-0.0005	1.0531***	0.2204***	0.4722***	-0.0819	0.937
STOREBRAND INTL.INV.FD. PENSJONSPAR	-0.0024	1.058***	-0.0335	0.4218**	-0.1857	0.888
STOREBRAND SMART CITIES A	0.0028	1.0247***	0.325	-0.1986*	-0.1992	0.930
TERRA GLOBAL DEAD - Merged:88738D	-0.0013	0.9715***	-0.0605	0.0473	0.0293	0.892

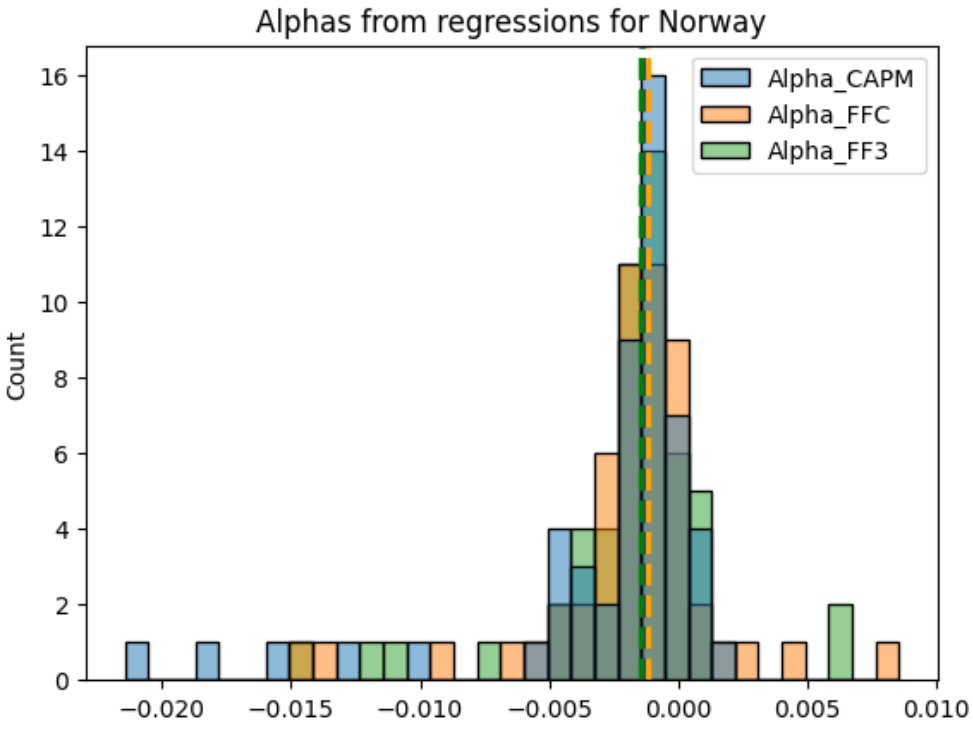

Figure 7: Histogram of monthly net alphas in Norway

C.2 US Individual Regression Output

Gross of fees	Alpha	Mkt-RF	SMB	HML	MOM	ADJ_R_SQ
1290 GLOBAL TALENTS FUND A	-0.0016	0.731**	0.5816	-0.6273***	-0.9627	0.489
1290 SMART BETA EQUITY FUND I	-0.0021	0.892***	-0.3855***	-0.0876*	0.0662	0.916
AB GLOBAL CORE EQUITY PORTFOLIO ADV	-0.0019	0.9597***	-0.2741***	-0.0339	-0.1054*	0.919
AB SUSTAINABLE GLOBAL THEMATIC FUND A	-0.0009	1.0293***	0.1207	-0.4544***	-0.0143	0.828
AGF GLOBAL EQUITY FUND I DEAD - Liquidated	-0.0128*	1.0659***	-0.5313	-0.2646	0.0233	0.920
AGF GLOBAL SUSTAINABLE EQUITY FUND I	0.0015	1.0517***	0.1322	-0.4045***	0.0353	0.917
AMG TRILOGY GLOBAL EQUITY FUND I	-0.0065**	0.8694***	-0.2619	-0.5093	-0.5612	0.249
AQR GLOBAL EQ.FD.CL.I	-0.0079***	1.0113***	-0.2117*	0.0354	0.0305	0.499
ARTIO SELECT OPPS.FD. INCO.CL.A	-0.0059*	0.9443***	-0.157	0.0654	-0.1172	0.800
ADLER VALUE FUND INSTITUTIONAL	-0.0002	1.1062***	0.0951	0.3346**	-0.0612	0.794
ADVISORY RESEARCH GLOBAL DIVIDEND FUND	-0.0071**	1.003***	-0.1906	0.1756*	0.0142	0.624
ALGER GLOBAL FOCUS FUND A	-0.0032*	1.0482***	0.2499**	-0.388***	0.0482	0.857
ALL.BERN.GBL.VAL.FD. ADVI.CL.SHS.	0.0004	1.0822***	-0.056	-0.0269	-0.1498**	0.925
ALLIANZGI BEST STYLES GLOBAL EQUITY FD.CL.R6	-0.0246**	0.9168***	-1.7897	0.0108	0.5311	0.104
ALLIANZGI GLB.MGD.VOLT. FD.INSTL.CL.	-0.0209*	0.9265***	-0.7787	0.2116	-0.2717	0.022
ALPHA OPPORTUNISTIC ALTERNATIVES FUND I	-0.0021	0.2567***	-0.1527	0.249**	0.1189***	0.447
AMERICAN CENTURY FOCUSED GLOBAL GROWTH FUND INV	-0.0062**	1.0134***	-0.4205**	-0.2673***	-0.0472	0.693
AMER.FUND.CAP.WLD.GW.& INC.FD.CL.A SHS.	-0.004***	0.9774***	-0.1432***	0.0384	0.0925**	0.932
AMERICAN FUNDS GLOBAL INSIGHT FUND F-3	-0.002*	0.9498***	-0.1804***	-0.0341	0.0725**	0.925
NEW ECONOMY FUND	-0.0026	0.9963***	0.165	-0.3455***	0.069	0.793
AMERICAN FUNDS NEW PERSPECTIVE FUND A	-0.0035**	1.0556***	-0.2371***	-0.2854***	0.0386	0.884
ARIEL GLB.EQ.FD.INSTL. CL.	-0.0015	0.7377***	-0.2167**	0.0946	0.0461	0.791
ARISTOTLE VALUE EQUITY FUND I	0.0004	1.0308***	-0.119	0.0514	-0.0114	0.930
ARISTOTLE/SAUL GLOBAL EQUITY FUND I	-0.0037**	0.9607***	-0.011	0.0183	-0.0697	0.847
ARTISAN GLOBAL DISCOVERY FUND INVESTOR	0.0024	0.9813***	0.3702**	-0.4203***	0.0006	0.893
ARTISAN GLOBAL EQ.FD. INVESTOR SHARES	-0.0055*	1.0321***	0.1616	0.0012	0.4922***	0.664
ARTISAN GLB.OPPS.FD. INVR.SHS.	-0.002	1.008***	0.1797	-0.3067***	0.2612**	0.798
ARTISAN GLB.VAL.FD. INVESTOR SHARES	-0.0024	1.0263***	0.0017	0.4161***	0.0287	0.877
AVE MARIA WORLD EQUITY FUND	-0.0041***	1.0903***	-0.192**	0.1411**	0.0666	0.921
BBH GLOBAL CORE SELECT CL.N	-0.0056**	0.9957***	-0.3941***	-0.0694	0.0272	0.765
BMO GLOBAL LOW VOLT.EQ. FD.CL.I	-0.0074*	0.7948***	-0.3124*	0.1181	0.2527**	0.529
BMO PYRFORD GLOBAL EQUITY FUND I	-0.0031	0.8275***	-0.3602***	-0.0615	-0.2405	0.836
BNY MELLON GLOBAL STOCK FUND I	-0.0034**	0.9216***	-0.4692***	-0.2872***	-0.0862	0.851
BNY MELLON WORLDWIDE GROWTH FUND A	-0.0049**	0.9824***	-0.684***	-0.2931***	-0.0133	0.817

BAILLIE GIFFORD GLOBAL ALPHA EQUITY FUND 2	-0.006	1.1205***	0.2166	-0.3455***	-0.0285	0.710
BAILLIE GIFFORD GBL. STEWD.EQTIES.FD.I	-0.0022	1.0468***	0.6977***	-0.6911***	-0.0709	0.840
BAILLIE GIFFORD LONG TERM GLOBAL GROWTH 2	0.0004	1.1481***	0.2506	-0.9468***	0.0091	0.761
BARON GLOBAL ADVANTAGE FD.INST CL.	0.002	1.0768***	0.5537***	-0.8806***	-0.0536	0.780
BLACKROCK ADVANTAGE GLOBAL FUND INVESTOR A	-0.0077**	1.0418***	-0.0115	0.1156**	0.1637*	0.622
BLACKROCK GLOBAL IMPACT FUND INST	-0.0112**	0.8816***	0.4276	-0.3251***	0.0356	0.848
BLACKROCK UNCONSTRAINED EQUITY FUND INVESTOR A	-0.0083***	0.9861***	-0.2473	-0.0839	0.0796	0.643
BOSTON PRTNRS GLBL EQTY ADV FD INST	-0.0125	0.6575**	0.9441	-0.1099	-0.5617	0.158
BOSTON PRTNRS GLBL EQTY FD INSTL	-0.0022	1.0765***	0.011	0.4291***	0.0812	0.912
BRANDES GLOBAL EQ.FD.CL. I	-0.005***	1.0518***	-0.121	0.4968***	-0.0396	0.895
BRANDES GLBL OPPTYS VAL FD I	-0.005*	1.0017***	0.2331	0.4141***	-0.245***	0.845
BROWN ADVISORY GLOBAL LEADERS FUND INVESTOR	0.0017	0.9797***	-0.1762*	-0.1346***	-0.0336	0.936
CMG MAULDIN CORE FUND I	-0.0048***	0.4343***	-0.2276*	-0.1812*	0.0239	0.546
CRM GLOBAL OPPORTUNITY FD - INVESTOR SHS	-0.0008	0.9768***	0.1022	-0.1822	-0.0595	0.900
CALAMOS GLB.EQ.FD.CL.I	-0.0081**	1.1274***	-0.0989	-0.3481***	0.1156	0.672
CAMBIAR GLOBAL EQUITY FUND INVESTOR	-0.0085**	0.9817***	-0.3839	-0.1172	-0.2311*	0.571
CASTLE FOCUS FD.INVESTOR SHARES	-0.0048**	0.68***	-0.2772*	0.0599	0.0435	0.574
CATALYST/MAP GLOBAL EQUITY FUND A	-0.0024	0.8671***	-0.1107	0.1424***	0.0751	0.836
CAUSEWAY CONCENTRATED EQUITY FUND INSTL	-0.0075	1.0838***	0.1659	0.4703***	-0.1343	0.846
CAUSEWAY GLB.VAL.FUND INSTL.CLASS	-0.0041	1.1775***	0.0813	0.4018***	-0.2088**	0.836
CHAUTAUQUA GLOBAL GROWTH FUND INSTITUTIONAL	0.0018	0.9583***	0.2412**	-0.2451***	0.0494	0.867
COLUMBIA GLOBAL VALUE FUND A	-0.006***	1.0285***	-0.2464**	0.3409***	0.0459	0.865
COLUMBIA SELECT GLOBAL EQUITY FUND A	-0.0015	0.9838***	-0.2956**	-0.4369***	0.0293	0.860
COLUMBIA SELECT GLOBAL GROWTH FUND A	-0.0018	1.1741***	0.0928	-0.6257***	-0.0388	0.815
COMMONWEALTH GLOBAL FD.	-0.0029**	0.9412***	-0.0306	0.0112	-0.0147	0.884
THE COOK & BYNUM FUND	-0.0053**	0.7452***	-0.2982**	0.4001***	0.2362**	0.602
DWS CROCI SECTOR OPPORTUNITIES FUND S	-0.006*	0.848***	-0.1108	-0.1838	-0.1445	0.603
DAVIS GLB.FD.CL.A	-0.0007	0.9766***	0.4897***	0.0965	-0.0724	0.692
DELAWARE GLOBAL EQUITY FUND A	-0.0072**	0.886***	-0.3864**	-0.0166	0.0951	0.590
DEL.GLB.VAL.FD.CL.A DEAD - Liquidated	-0.0048*	0.8515***	-0.4601**	-0.0233	-0.06	0.570
DELAWARE IVY GLOBAL GROWTH FUND A	-0.0071**	1.1127***	-0.5032	-0.2855	-0.0836	0.598
DIAMOND HILL GLOBAL FUND Y	-0.0099**	1.0751***	0.3198	-0.1515	-0.3645	0.797
DODGE & COX GLOBAL STOCK FUND I	-0.003*	1.1041***	-0.0878	0.3893***	-0.1323	0.845
DREYFUS STRATEGIC BETA GLOBAL EQUITY FUND I	-0.0021*	0.9587***	-0.2824**	-0.0681	-0.0703	0.894
DRIEHAUS GLB.GW.FUND DEAD - Liquidated	-0.0283*	1.0754***	0.3887	1.4269	0.8729	0.255
ERSHARES GLBL ENTREPRENEURS FD INSTL	-0.0048**	0.9747***	0.5335**	-0.4656***	0.0016	0.632
EATON VANCE FOCUSED GLBL OPPTYS FD I	-0.0023	1.0434***	-0.0829	-0.0806	-0.0724	0.906
EATON VANCE HEXAVEST GLB.EQ.FD.CL.I	-0.0051**	0.9192***	-0.2025*	0.1565	0.0708	0.801
EATON VANCE RICHD.BERN. EQ.STGY.FD.CL.I	-0.0034**	0.8841***	-0.2517**	-0.0628	0.0998*	0.796
EPOCH GLOBAL ALL CAP FUND INSTITUTIONAL	-0.0069**	0.9931***	-0.3876***	-0.1536	-0.017	0.699
FEDERATED HERMES GLOBAL EQUITY FUND IS	-0.0022*	0.9903***	-0.1686**	-0.0726**	0.0304	0.977
FIDELITY ADVISOR GLOBAL CAPITAL APPREC FUND I	-0.0023	1.0661***	0.1158	-0.1459***	0.1216*	0.848
FIDELITY ENDURING OPPORTUNITIES FUND	0.0016	0.9571***	0.1004	-0.411***	-0.0823	0.961
FID SRS INTRINSIC OPPTYS FD	-0.0005	0.923***	0.3071***	0.1991**	-0.0584	0.870
FIDELITY WORLDWIDE FD.	-0.0051***	1.0343***	-0.1524	-0.332***	0.1287**	0.792
FIERA CAPITAL GLOBAL EQUITY FUND INST	-0.001	0.9393***	-0.5164***	-0.2708***	-0.0534	0.923
FRANKLIN GLOBAL EQUITY FUND FUND A	-0.0014	1.0106***	-0.1957**	-0.01	-0.0289	0.890
FRANKLIN MUTUAL BEACON FUND Z	-0.0043**	0.947***	-0.1978*	0.2235***	-0.141*	0.819
FRANKLIN MUTUAL GLOBAL DISCOVERY FUND Z	-0.0058***	0.9155***	-0.241**	0.3417***	-0.0701	0.793
FRANKLIN WORLD PERSPECTIVES FD.CL.A	-0.0077*	1.1151***	-0.1009	-0.0543	0.2029	0.782
FRONTIER MFG GLOBAL EQUITY INSTITUTIONAL	-0.0071**	0.9001***	-0.9024***	-0.5539**	-0.2013	0.549
FRONTIER MFG GLOBAL PLUS FUND INSTITUTIONAL	-0.0136	0.9753***	-1.0924**	-0.708*	-0.4374	0.305
FRTR MFG GLBL SUSTAINABLE FD INSTL	-0.0049*	0.7587***	-0.3841***	-0.2101***	0.0713	0.909
FRONTIER ROBECO SAM GLOBAL EQUITY FUND INST	-0.0188*	1.2541***	-1.3542*	0.2519	0.0393	0.465
GMO GLB.FOCD.EQ.FD.CL. III	-0.0144***	1.1969***	0.3247	-0.0319	-0.024	0.584
GQG PARTNERS GLOBAL QUALITY EQUITY FUND INST	-0.0072*	0.9566***	-0.4707**	0.2156*	0.6113***	0.846
GABELLI GLOBAL GROWTH FUND AAA	-0.0041**	1.0158***	-0.3128***	-0.6268***	-0.0096	0.848
GRANITE VALUE FUND DEAD - Liquidated	-0.006	0.8578***	-0.0947	0.0724	-0.1213	0.304
GREENWICH IVY LONG-SHORT FUND INST	-0.0006	0.2313	0.9733*	0.1198	-1.1768***	0.314
GUARDIAN CAPITAL DIV GRO FD INST	-0.0021	0.9141***	-0.6718***	-0.0396	0.1584***	0.943
GUARDIAN CAPITAL FNDM GLBL EQTY FD INST	0.0005	0.8865***	-0.0605	-0.137*	0.0144	0.892
GUIDE STONE GLBL IMPACT FD INSTL	-0.0017	0.6738***	0.2532***	-0.1688***	-0.2144***	0.975
GUINNESS ATKINSON GLOBAL INNOVATORS FUND INVESTOR	0.0001	1.0655***	-0.1873	-0.4478***	-0.2323**	0.799
HC ESG GROWTH PORTFOLIO HC STRATEGIC	-0.0041***	1.0014***	-0.1976***	-0.0819***	-0.0239	0.960
HSBC GLBL EQTY VOLATILITY FOCUSED FD I	0.0231	-1.1357	1.1767	-0.7376**	-0.7092	0.066
HARBOR GLOBAL LEADERS FUND INSTITUTIONAL	-0.0044*	1.0263***	-0.2395	-0.4762***	0.0145	0.748
HARBOR GLB.VAL.FD.INSTL. CL.	0.0021	1.0075***	0.1678	-0.5611	-0.3305***	0.853
HARDING LOEVNER GLOB.EQ. PRTF.ADVI.CL.	-0.0037*	0.9985***	-0.0221	-0.4132***	-0.0369	0.783
HARDING LOEVNER GLOBAL EQUITY RESEARCH PFLO INS	-0.005**	0.9365***	-0.0054	-0.1644**	-0.0778	0.834
HARTFORD CLIMATE OPPORTUNITIES FUND A	-0.0037	1.1161***	0.0698	-0.1281**	-0.0072	0.798
HARTFORD GLB.GW.FD.CL.A DEAD - Merged:30913E	0.0048**	1.113***	0.0748	-0.6579***	-0.0894	0.932
HARTFORD GLOBAL RESEARCH HLS IA	-0.0043	1.0684***	-0.2878	0.0809	0.1275	0.884
HOTCHKIS & WILEY GLOBAL VALUE FD.CL.I	-0.0034*	1.2263***	0.0739	0.597***	-0.2163***	0.876
IMPAX GLBL ENVIRON MARKETS FD INST	-0.0005	1.0623***	0.144*	-0.193***	-0.0241	0.890
IMPAX GLBL OPPTYS FD INSTL	0.0014	0.9541***	-0.2062**	-0.2107***	-0.0388	0.927

INVESCO GLOBAL CORE EQ. FD.CL.A	-0.0065***	1.0413***	-0.3028	0.0062	-0.0244	0.792
INVESCO GLOBAL FOCUS FUND Y	-0.0017	1.0872***	0.08	-0.6069***	-0.0644	0.819
INVESCO GLOBAL FUND A	-0.0044**	1.1635***	-0.1862	-0.3737***	-0.1653**	0.849
IVS.GLB.GW.FD.CL.A DEAD - Merged:517169	-0.008**	1.013***	-0.4124	-0.4876**	-0.4148*	0.593
INVESCO GLOBAL OPPS.FD. CL.A	-0.0039	1.1321***	-0.132	0.2427*	-0.323***	0.833
IRONBRIDGE GLOBAL FUND DEAD - Liquidated	-0.0067**	0.9585***	-0.3975**	-0.3735***	0.0404	0.641
JOHCM GLOBAL SELECT FUND INST	-0.005**	0.98***	-0.0999	-0.3393**	0.1416	0.695
JP MORG GLBL UNCONSTRAINED EQTY FD I	-0.0066*	1.0896***	-0.2127	0.1093	-0.1322	0.626
JANUS HENDERSON GLOBAL RESEARCH FUND D	-0.0022*	1.0543***	-0.0804	-0.1549**	-0.0389	0.901
JANUS HENDERSON GLOBAL SELECT FUND T	-0.0036*	1.0995***	0.139	0.1177	-0.023	0.815
JANUS HENDERSON GLBL SUSTAINABLE EQTY FD D	0.0038***	1.0385***	0.082	-0.2906***	-0.1445***	0.991
JANUS HENDERSON GLOBAL VALUE FUND D	-0.0069***	0.6984***	-0.1506	0.2069	-0.0814	0.314
JANUS PRESERVATION SERIES-GLOBAL C	-0.0075***	0.8701***	-0.1378	-0.1987	0.0376	0.624
JENSEN GLOBAL QUALITY GROWTH FUND I	0.0032	0.8993***	-0.4785***	-0.1968***	-0.0842	0.950
JOHN HANCOCK FDAMENTAL GLBL FRANCHISE FD NAV	-0.008***	1.0057***	-0.573***	-0.3527***	-0.1171	0.680
JOHN HANCOCK GLOBAL EQUITY FUND NAV	-0.0056**	0.9131***	-0.373**	-0.0303	-0.0366	0.723
JOHN HANCOCK FUNDS GLB. OPPS.FD.CL.A	-0.0029	0.9409***	0.1754	-0.1633	-0.4761***	0.715
JHAN.FUND.III GLB. SHAREHOLDER YLD.FD.CL.I	-0.0063***	0.8943***	-0.4366***	0.2179***	0.0648	0.832
JOHN HANCOCK GLOBAL THEMATIC OPPS FUND NAV	-0.0057*	0.8829***	-0.0534	-0.226***	-0.1182	0.851
JOHN HANCOCK MUTUAL SHARES FUND NAV	0.0002	0.7302***	-0.2498*	0.0038	-0.0294	0.548
JOHN HANCOCK TECHNICAL OPPORTUNITIES FUND NAV	-0.0116*	1.3633***	0.2199	-0.3443*	0.5225***	0.483
JUBAK GLOBAL EQ.FD. DEAD - Liquidated	-0.0088***	0.9501***	0.0241	-0.2547	-0.2451*	0.809
LSV GLOBAL MANAGED VOLATILITY FUND INST	-0.0046**	0.8209***	-0.3277***	0.2706***	0.0998	0.823
LSV GLOBAL VALUE FUND INST	-0.0028**	1.0703***	0.0676	0.4203***	-0.0692	0.950
LAZARD EQUITY FRANCHISE PORTFOLIO INSTITUTIONAL	-0.0082*	1.1365***	0.0724	0.3641***	-0.1098	0.787
LAZARD GLOBAL EQUITY SELECT PORTFOLIO INSTL	-0.0012	0.9206***	-0.2489***	-0.1397***	0.0483	0.939
LAZARD GLOBAL STRATEGIC EQUITY PORTFOLIO INST	-0.0157	1.0158***	-0.5193	-0.0425	0.235	0.146
LONGLEAF PARTNERS GLOBAL FD.	-0.005**	1.1007***	0.2701*	0.2801***	-0.1771*	0.790
LORD ABBETT GLOBAL EQUITY FUND A	-0.0038	0.9716***	-0.007	-0.1025	-0.0165	0.819
MFAM GLBL OPPTYS FD INVSTR	-0.0033	0.9873***	0.0925	-0.451***	0.0072	0.682
MFS BLENDED RESEARCH GLOBAL EQUITY FUND R6	-0.0057	1.1018***	-0.2015	0.0497	-0.0525	0.877
MFS GLB.EQ.FD.CL.B	-0.002*	1.03***	-0.3512***	-0.0747	-0.0262	0.929
MFS GLOBAL LEADERS FD. CL.A	-0.01*	0.9563***	-0.8991**	0.1136	0.1398	0.498
MAIN STAY EPOCH CAPITAL GROWTH FUND I	-0.0066	0.8769***	-0.3671	-0.4361***	-0.1302	0.594
MAINSTAY EPOCH GLB.CHO. FD.CL.I	-0.008**	1.1094***	-0.303**	-0.1457	0.1129	0.694
MAINSTAY EPOCH GLB.EQ. YLD.FD.CL.I	-0.0057***	0.9181***	-0.399***	0.2728***	0.114*	0.852
MAINSTAY ICAP GLB.FD.CL. I	-0.004*	1.0207***	-0.3361**	-0.0105	-0.0214	0.890
MNGD ACCT SRS BLKRK GA DYN EQTY FD K	-0.0028	1.0923***	0.0705	0.0597	0.0936*	0.949
MARSICO GLOBAL FUND INVESTOR	-0.0032	1.0156***	-0.025	-0.6381***	-0.0219	0.694
MASS MUTUAL GLOBAL FUND R5	-0.0073**	1.2139***	-0.2491	-0.4318***	-0.1848	0.739
MONDRIAN GLOBAL EQUITY VALUE FUND	-0.001	0.8193***	0.0615	0.3183***	-0.3697	0.833
MORGAN STANLEY GLOBAL CONCENTRATED PORTFOLIO I	0.0002	0.929***	0.132	-0.1992**	-0.0511	0.849
MORGAN STANLEY GLOBAL CORE PORTFOLIO I	-0.0017	1.0194***	-0.0167	-0.1046	0.0839	0.913
MORGAN STANLEY INSTL.FD. GLB.INSIGHT PRTF.CL.H	-0.0065	1.077***	0.141	0.2575	0.0315	0.431
MORGAN STANLEY GLOBAL SUSTAIN PORTFOLIO I	-0.003*	0.8798***	-0.609***	-0.2882***	0.0604	0.835
MGST.INSTL.FD.GLB.FRCH. PRTF.CL.I	-0.0029*	0.8676***	-0.7791***	-0.2524***	0.0958	0.802
MORG STAN INST GLBL PERMANENCE PFOLIO I	-0.0004	0.9238***	-0.0815	-0.4213***	-0.1743	0.766
MORG STAN INSTL CNTRPNT GLBL I	-0.0028	0.9542***	1.0639***	-0.8847***	-0.1328	0.677
MORG STAN INSTL GLBL INSIGHT PRT I	-0.0047	0.9901***	0.5525*	-1.1794***	-0.2549	0.555
MORGAN STANLEY INSTL.FD. GLB.GW.PRTF.CL.I	-0.0005	1.0128***	0.1079	-0.722***	-0.1287	0.735
MUNDOVAL FUND	-0.0005	0.9904***	-0.3474***	-0.0762*	-0.1433**	0.873
NATIONWIDE GLBL SUSTAINABLE EQTY FD R6	-0.0032*	1.0745***	-0.0016	-0.1038	-0.092	0.848
NATIXIS LOOMIS SAYLES GLOBAL GROWTH Y	-0.0039	0.9118***	-0.2856	-0.5115***	-0.1907*	0.832
NEUBERGER BERMAN FOCUS FD.	-0.0057**	0.9775***	-0.1718	-0.398***	-0.0804	0.662
NEUBERGER BERMAN GLOBAL THEMATIC OPPS.INSTL.CL.	-0.003	0.8228***	0.1522	0.0535	-0.1	0.691
NINETY ONE GLOBAL FRANCHISE FUND I	-0.0004	0.888***	-0.4334***	-0.2046***	0.0528	0.941
NORTHERN ENGAGE 360 FUND	-0.0063*	0.9685***	-0.288	-0.2138	-0.1964	0.787
NUVEEN GLOBAL GROWTH FD. CL.A	-0.0022	1.1386***	0.5454***	-0.2762*	0.2347**	0.855
NUVEEN NWQ GLOBAL ALL- CAP FUND I	-0.0033	0.5973	0.3314	-0.3776	-0.701	0.282
OAKMARK GLOBAL FUND INVESTOR	-0.0041**	1.2843***	0.1387	0.3499***	-0.1187*	0.880
OAKMARK GLOBAL SELECT FUND INVESTOR	-0.003*	1.2048***	-0.0227	0.2502***	-0.1533**	0.882
OLD WESTBURY ALL CAP ESG FUND	-0.0122*	0.8266***	0.611	-0.4014	-0.1473	0.726
PF MULTI-ASSET FUND P	-0.0075	0.9571***	0.2004	-0.2711	-0.1215	0.526
PGIM JENNISON GLOBAL OPPORTUNITIES FUND Z	0.0014	1.104***	0.2371*	-0.8171***	0.1008	0.847
PIMCO EQUITIES PFR. WORLD FD.CL.A	-0.0097	0.9426***	-0.6497	0.0117	-0.0459	0.334
PIMCO GLOBAL DIVIDEND FUND A	-0.0186**	1.1335***	-0.895	0.2453	-0.0878	0.257
PMC DIVERSIFIED EQUITY FUND ADVISOR	-0.0036**	1.0138***	0.0107	0.0397	0.0331	0.880
PARVIN HEDGED EQUITY SOLARI WORLD FUND	-0.0098**	0.5559***	-0.2998	0.1736**	-0.0567	0.776
PHAEACIAN GLOBAL VALUE FUND INST	-0.0072*	0.9873***	-0.1403	-0.1496	-0.1507	0.581
PION GLBL SUSTAINABLE EQTY FD A	-0.0036*	1.044***	0.0201	0.3007***	0.1753**	0.816
POLARIS GLB.VAL.FD.	0.0001	1.0373***	0.2361***	0.3294***	-0.0949*	0.936
POLEN GLOBAL GROWTH FUND INSTITUTIONAL	0.0006	0.9518***	-0.2423***	-0.4342***	-0.0007	0.936
PRINCIPAL SYSTEMAT EX INTERNATIONAL FUND R-6	-0.0088**	1.0839***	0.0263	0.162	0.0776	0.814
PURISIMA ALL-PURPOSE FD. DEAD - Liquidated	0.0	-0.0005	-0.0005	0.0009	0.0008	-0.081
QUAKER GLOBAL TACTICAL ALLOCATION FUND ADVISOR	-0.002	0.9634***	0.0626	-0.2425**	0.1133	0.805

RBC GLOBAL OPPORTUNITIES FUND I	-0.0003	1.0232***	0.0292	-0.2254***	0.035	0.918
ROCKEFELLER EQTY ALLOCTN FD INSTL	-0.0089*	0.8571***	0.1721	0.401	0.3691	0.403
RUSSELL INVESTMENTS GLOBAL EQUITY FUND S	-0.0076**	1.0222***	-0.5346*	0.0317	-0.0329	0.648
SEI INST INV GLBL MNGD VOLATILITY FD A	-0.0069**	0.7658***	-0.4157**	0.0699	0.0233	0.690
SEI INST MGD GLBL MNGD VOLATILITY FD F	-0.0056***	0.7353***	-0.4484***	-0.0474	0.1437	0.590
SGI GLOBAL EQUITY FUND I	-0.0031	0.8901***	0.0719	-0.1474	0.1866*	0.568
SALIENT GLOBAL EQ.FD.CL. I	-0.0057	0.8377***	0.0662	0.0156	-0.0008	0.659
SANDS CAPITAL GLBL GRO FD INSTL	-0.0016	1.0975***	0.3588***	-0.7165***	-0.0647	0.832
SCHARF GLOBAL OPPORTUNITY FUND INST	-0.0039	0.9092***	-0.3708**	0.0538	-0.0564	0.735
SCHRODER GLOBAL MULTI- CAP EQUITY FUND R6	-0.0317	0.6926*	-1.9447	-0.6	0.57	-0.030
SCOUT GLOBAL EQUITY FD. DEAD - Liquidated	-0.0043	0.9685***	-0.5015	-0.5674	-0.2031	0.354
SEGALL BRYANT & HAMILL GLOBAL ALL CAP FUND RTL	-0.0082***	0.8819***	-0.5868***	-0.1307	-0.0534	0.545
SELECTIVE OPPORTUNITY FUND FOUNDATION	-0.0071	0.7948***	1.0079*	-0.4026	-0.3982	0.365
SIRIOS FOCUS FUND INST	-0.0027	0.8971***	-0.4002	-0.1915	0.0024	0.804
SIT ESG GROWTH FUND I	-0.0021*	0.9803***	-0.3935***	-0.1361***	0.0029	0.970
STATE STREET DEFENSIVE GLOBAL EQUITY FUND I	-0.0129**	0.8303***	-0.8348**	-0.0955	0.0887	0.363
STATE STREET GLOBAL VALUE SPOTLIGHT FUND K	-0.0198	1.2237***	-0.9384	-0.3582	-0.5046	0.642
STRATEGIC EQUITY ALLOCATION FUND NAV	-0.0068**	0.9752***	-0.1446	-0.0594	-0.0072	0.625
T.ROWE PRICE GLB.LGCP. STK.FD.	-0.0012	1.0063***	0.0683	-0.3591***	-0.0612	0.815
T ROWE PRICE GLOBAL IMPACT EQUITY	0.0035	1.0697***	0.041	-0.4487***	0.0509	0.951
T ROWE PRICE GLB.STK.FD.	0.0018	1.0315***	0.2479*	-0.3566***	-0.0829	0.846
T ROWE PRICE GLOBAL VALUE EQUITY	-0.0045**	1.0109***	-0.1142	0.2432***	0.0263	0.797
T.ROWE PRICE INSTL. DEAD - Merged:9051FK	-0.0082*	1.2649***	-0.1361	-0.3905*	0.0839	0.531
T ROWE PRICE INSTL.GLB. LGCP.EQ.FD.	-0.0051*	1.1264***	-0.17	-0.0845	0.123	0.677
T ROWE PRICE QM GLOBAL EQUITY FUND	-0.0041	1.0091***	-0.5142*	-0.1383	-0.0531	0.857
TD GLOBAL LOW VOLATILITY EQUITY FUND INST	-0.0042	0.6051***	-0.5364***	-0.0587	-0.0301	0.244
TIF GLB.EQ.SERIES FUND DEAD - Liquidated	-0.0132*	0.4618	-1.5302	1.8033	0.4333	0.112
TEMPLETON GLB.OPPOR.TST. I	-0.0062***	1.1346***	-0.1513	0.5433**	-0.0584	0.765
TEMPLETON GROWTH FD.CL.A	-0.0045***	1.0259***	-0.1388	0.274***	-0.0675	0.885
TEMPLETON WLD.FUND.CL.A	-0.0069***	0.9982***	-0.2175*	0.081	-0.2392***	0.781
THORNBURG GLOBAL OPPORTUNITIES FUND I	-0.0004	0.9774***	0.1832	0.2172**	0.0518	0.767
THRIVENT GLOBAL STOCK FUND A	-0.0065***	1.0023***	-0.2959**	-0.1309*	-0.0331	0.746
THRIVENT LOW VOLATILITY EQUITY S	-0.0037**	0.7599***	-0.3601***	-0.0396	0.1496**	0.868
TRILLIUM ESG GLOBAL EQUITY FUND RETAIL	-0.0023	0.9878***	-0.2552**	-0.2064***	-0.0478	0.883
TWEEDY BROWNE INTL VALUE FUND II - CURR UNHGD	-0.0032**	0.8926***	-0.1144*	0.3121***	0.0301	0.890
TWEEDY BROWNE VAL.FD.	-0.0058**	0.8539***	-0.3443***	0.1648***	-0.0256	0.687
UBS ENGAGE FOR IMPACT FUND P	-0.004	1.0107***	0.3681**	-0.0061	-0.0064	0.869
US GLB.INVRS.FUND.GLB. MEGATRENDS FUND	0.0014	0.7246***	-0.0281	-0.1842	0.0755	0.722
USAA CAPITAL GROWTH FUND FUND	-0.0031**	1.0237***	-0.2238**	0.0049	0.0347	0.854
USAA SUSTAINABLE WORLD FUND FUND	-0.0047*	0.9376***	-0.3898**	-0.1956**	-0.0597	0.612
UPRIGHT GW.FD.	0.0	1.2487***	1.2238**	-0.0049	-0.3802	0.346
VANGD.BAIL GIFF GL POSITIVE IPCT.STK.FD INV	0.0049	1.0992***	0.4517	-0.6358***	0.0475	0.773
VANGUARD GLOBAL CAPITAL CYCLES FUND INVESTOR	-0.0063	0.8072***	0.7428**	0.3652*	-0.1849	0.269
VANGUARD GLBL ESG SEL STK FD ADMIRAL	-0.0003	0.9526***	-0.2616**	0.1154***	-0.1498*	0.929
VANGUARD HORIZON FD. VANGD.GLB.EQ.FD.	-0.0032**	1.0084***	-0.0251	-0.1516*	-0.0345	0.856
VICTORY NEWBRIDGE GLOBAL EQUITY FUND A	-0.0073**	1.0045***	-0.5182*	-0.3364	-0.0662	0.557
VICTORY RS GLOBAL FUND Y	-0.0018	0.9414***	-0.1736***	-0.134***	-0.0356	0.808
VIRTUS GLB.COMD.STK.FD. CL.I	-0.0109*	0.907***	0.7082**	-0.0444	-0.4814*	0.579
VIRTUS NFJ GLOBAL SUSTAINABILITY FUND INST	-0.0059*	1.0058***	-0.5597*	-0.4582***	-0.2577	0.722
VIRTUS SGA GLOBAL GROWTH FUND R6	-0.0011	0.9881***	-0.2103*	-0.3992***	-0.0372	0.875
VIRTUS SGA NEW LEADERS GROWTH FUND R6	-0.0067	1.0396***	0.7234***	-0.1306	-0.3143*	0.911
VIRTUS VONTOBEL GLOBAL OPPORTUNITIES FUND A	-0.0031*	0.95***	-0.3504***	-0.3298***	0.0323	0.779
VONTOBEL GLOBAL EQUITY INSTITUTIONAL FUND I	-0.0015	0.911***	-0.5083***	-0.3251**	0.0977	0.820
VOYA GLBL HI DIV LOW VOLATILITY FD A	-0.004***	0.9346***	-0.1953***	0.2215***	0.0555	0.866
VOYA GLOBAL OPPORTUNITIES FUND A	-0.0011	1.0414***	0.0559	-0.0308	-0.2255***	0.949
WCM FOCUSED GLB.GW.FD. INSTL.CL.	-0.0013	0.9126***	-0.0062	-0.5512***	-0.0015	0.814
WASATCH GLOBAL SELECT FUND INSTITUTIONAL	-0.0026	0.9263***	0.3178	-0.5481***	-0.1921	0.783
WASATCH GLOBAL VALUE FUND INVESTOR	-0.009**	0.9959***	-0.3803**	0.484***	-0.0227	0.514
WELLS FARGO INTRINSIC WORLD EQTY FD A	-0.0067**	0.9341***	0.0624	0.1585	-0.1612	0.310
WESTWOOD GLOBAL EQUITY FD.INSTL.SHS.	-0.0078	0.8087***	0.5069	-0.2319	-0.3736	0.067
WILLIAM BLAIR GLOBAL LEADERS FD.CL.I	-0.0039*	1.1125***	-0.1521	-0.3437***	0.0233	0.838
WINTERGREEN FD. DEAD - Liquidated	-0.0162**	0.9244***	-0.3375	0.2652	0.416	0.200
WINTON GLOBAL EQUITY PORTFOLIO INSTITUTIONAL	-0.011	1.0017***	0.1846	0.203	-0.0667	0.540
WORLD SELECT EQUITY FUND A	-0.0069**	1.075***	-0.1639	0.1967**	-0.0974	0.877
YORKTOWN CAPITAL APPRECIATION FUND A	-0.0099***	0.8887***	-0.1225	-0.2884***	-0.071	0.654
ABRDN EMERGING MARKETS EX-CHINA FUND A	-0.007***	0.9989***	-0.4017*	-0.1508	-0.0874	0.730
ABRDN GLOBAL EQUITY IMPACT FUND A	-0.0041**	1.0545***	-0.1115	-0.1532*	-0.0052	0.842

Net of fees	Alpha	Mkt-RF	SMB	HML	MOM	ADJ_R_SQ
1290 GLOBAL TALENTS FUND A	-0.003	0.731**	0.5809	-0.6282***	-0.963	0.489
1290 SMART BETA EQUITY FUND I	-0.003**	0.892***	-0.3865***	-0.0875*	0.0665	0.916
AB GLOBAL CORE EQUITY PORTFOLIO ADV	-0.003**	0.9597***	-0.2743***	-0.0334	-0.1051*	0.919

AB SUSTAINABLE GLOBAL THEMATIC FUND A	-0.002	1.0291***	0.1198	-0.4543***	-0.0143	0.827
AGF GLOBAL EQUITY FUND I DEAD - Liquidated	-0.013**	1.0659***	-0.5313	-0.2646	0.0233	0.920
AGF GLOBAL SUSTAINABLE EQUITY FUND I	0.001	1.0517***	0.1322	-0.4045***	0.0353	0.917
AMG TRILOGY GLOBAL EQUITY FUND I	-0.007**	0.8686***	-0.2615	-0.5114	-0.563	0.249
AQR GLOBAL EQ.FD.CL.I	-0.009***	1.0112***	-0.212*	0.0353	0.0303	0.499
ARTIO SELECT OPPS.FD. INCO.CL.A	-0.007**	0.9442***	-0.1572	0.0648	-0.1175	0.800
ADLER VALUE FUND INSTITUTIONAL	-0.001	1.1062***	0.0951	0.3347**	-0.0612	0.794
ADVISORY RESEARCH GLOBAL DIVIDEND FUND	-0.008***	1.0025***	-0.19	0.1737*	0.0127	0.624
ALGER GLOBAL FOCUS FUND A	-0.005***	1.0473***	0.2501**	-0.3899***	0.0462	0.857
ALL.BERN.GBL.VAL.FD. ADVI.CL.SHS.	-0.001	1.0821***	-0.0579	-0.0237	-0.1477**	0.926
ALLIANZGI BEST STYLES GLOBAL EQUITY FD.CL.R6	-0.025**	0.9168***	-1.7897	0.0108	0.5311	0.104
ALLIANZGI GLB.MGD.VOLT. FD.INSTL.CL.	-0.021*	0.9265***	-0.7787	0.2116	-0.2717	0.022
ALPHA OPPORTUNISTIC ALTERNATIVES FUND I	-0.003**	0.2565***	-0.1518	0.2475**	0.1178***	0.447
AMERICAN CENTURY FOCUSED GLOBAL GROWTH FUND INV	-0.007***	1.0134***	-0.4206**	-0.2674***	-0.0473	0.693
AMER.FUND.CAP.WLD.GW.& INC.FD.CL.A SHS.	-0.005***	0.9773***	-0.1434***	0.0383	0.0924**	0.932
AMERICAN FUNDS GLOBAL INSIGHT FUND F-3	-0.003**	0.9496***	-0.1814***	-0.0339	0.0726**	0.925
NEW ECONOMY FUND	-0.003*	0.9962***	0.1649	-0.3455***	0.0688	0.794
AMERICAN FUNDS NEW PERSPECTIVE FUND A	-0.004***	1.0555***	-0.2372***	-0.2854***	0.0386	0.884
ARIEL GLB.EQ.FD.INSTL. CL.	-0.002	0.7374***	-0.2173**	0.0942	0.0457	0.792
ARISTOTLE VALUE EQUITY FUND I	-0.0	1.0308***	-0.1191	0.0519	-0.0111	0.930
ARISTOTLE/SAUL GLOBAL EQUITY FUND I	-0.005**	0.9609***	-0.0118	0.0187	-0.0693	0.847
ARTISAN GLOBAL DISCOVERY FUND INVESTOR	0.001	0.9813***	0.3708**	-0.4199***	0.0007	0.893
ARTISAN GLOBAL EQ.FD. INVESTOR SHARES	-0.007**	1.032***	0.1615	0.0015	0.4919***	0.664
ARTISAN GLB.OPPS.FD. INVR.SHS.	-0.003	1.0078***	0.1797	-0.307***	0.2607**	0.798
ARTISAN GLB.VAL.FD. INVESTOR SHARES	-0.004**	1.0261***	0.0016	0.4157***	0.0282	0.877
AVE MARIA WORLD EQUITY FUND	-0.005***	1.0902***	-0.1927**	0.1408**	0.0663	0.921
BBH GLOBAL CORE SELECT CL.N	-0.007**	0.9957***	-0.3939***	-0.0692	0.0273	0.765
BMO GLOBAL LOW VOLT.EQ. FD.CL.I	-0.008**	0.7948***	-0.3124*	0.1181	0.2527**	0.529
BMO PYRFORD GLOBAL EQUITY FUND I	-0.004	0.8275***	-0.3602***	-0.0615	-0.2405	0.836
BNY MELLON GLOBAL STOCK FUND I	-0.004***	0.9216***	-0.4691***	-0.287***	-0.0861	0.851
BNY MELLON WORLDWIDE GROWTH FUND A	-0.006***	0.9824***	-0.6841***	-0.2931***	-0.0134	0.817
BAILLIE GIFFORD GLOBAL ALPHA EQUITY FUND 2	-0.007*	1.1205***	0.2166	-0.3454***	-0.0284	0.710
BAILLIE GIFFORD GBL. STEWD.EQTIES.FD.I	-0.003	1.0468***	0.6977***	-0.6911***	-0.0709	0.840
BAILLIE GIFFORD LONG TERM GLOBAL GROWTH 2	-0.0	1.1482***	0.2505	-0.9465***	0.0093	0.761
BARON GLOBAL ADVANTAGE FD.INST CL.	0.001	1.0767***	0.5526***	-0.8807***	-0.0538	0.780
BLACKROCK ADVANTAGE GLOBAL FUND INVESTOR A	-0.009***	1.0416***	-0.0129	0.1155**	0.1633*	0.622
BLACKROCK GLOBAL IMPACT FUND INST	-0.012**	0.8816***	0.4275	-0.3251***	0.0356	0.848
BLACKROCK UNCONSTRAINED EQUITY FUND INVESTOR A	-0.009***	0.9859***	-0.2475	-0.084	0.0795	0.643
BOSTON PRTNRS GLBL EQTY ADV FD INST	-0.013	0.6575**	0.9461	-0.1105	-0.5629	0.158
BOSTON PRTNRS GLBL EQTY FD INSTL	-0.003**	1.0761***	0.0107	0.4283***	0.0805	0.912
BRANDES GLOBAL EQ.FD.CL. I	-0.006***	1.0518***	-0.121	0.4968***	-0.0396	0.895
BRANDES GLBL OPPTYS VAL FD I	-0.006**	1.0017***	0.2331	0.4141***	-0.245***	0.845
BROWN ADVISORY GLOBAL LEADERS FUND INVESTOR	0.001	0.9797***	-0.1761*	-0.1349***	-0.0338	0.936
CMG MAULDIN CORE FUND I	-0.006***	0.4334***	-0.2326**	-0.1854**	0.0201	0.547
CRM GLOBAL OPPORTUNITY FD - INVESTOR SHS	-0.002	0.9768***	0.1022	-0.1822	-0.0595	0.900
CALAMOS GLB.EQ.FD.CL.I	-0.009**	1.1274***	-0.0987	-0.3482***	0.1154	0.672
CAMBIAR GLOBAL EQUITY FUND INVESTOR	-0.009**	0.9817***	-0.3847	-0.1177	-0.2313*	0.572
CASTLE FOCUS FD.INVESTOR SHARES	-0.006***	0.6798***	-0.2771*	0.0597	0.0431	0.574
CATALYST/MAP GLOBAL EQUITY FUND A	-0.004**	0.8672***	-0.1111	0.1429***	0.0753	0.836
CAUSEWAY CONCENTRATED EQUITY FUND INSTL	-0.008	1.0838***	0.1659	0.4703***	-0.1343	0.846
CAUSEWAY GLB.VAL.FUND INSTL.CLASS	-0.005**	1.1774***	0.081	0.4025***	-0.2085**	0.836
CHAUTAUQUA GLOBAL GROWTH FUND INSTITUTIONAL	0.001	0.9584***	0.2414**	-0.2448***	0.0497	0.867
COLUMBIA GLOBAL VALUE FUND A	-0.007***	1.0285***	-0.2464**	0.341***	0.046	0.865
COLUMBIA SELECT GLOBAL EQUITY FUND A	-0.003*	0.9838***	-0.296**	-0.4366***	0.0295	0.860
COLUMBIA SELECT GLOBAL GROWTH FUND A	-0.003	1.1739***	0.0926	-0.6278***	-0.0399	0.815
COMMONWEALTH GLOBAL FD.	-0.005***	0.9405***	-0.0339	0.0105	-0.0156	0.883
THE COOK & BYNUM FUND	-0.007***	0.7448***	-0.2982**	0.3994***	0.2352**	0.602
DWS CROCI SECTOR OPPORTUNITIES FUND S	-0.007**	0.848***	-0.1108	-0.1838	-0.1445	0.603
DAVIS GLB.FD.CL.A	-0.001	0.9765***	0.4895***	0.0965	-0.0726	0.692
DELAWARE GLOBAL EQUITY FUND A	-0.008***	0.8857***	-0.3867**	-0.0167	0.0947	0.590
DEL.GLB.VAL.FD.CL.A DEAD - Liquidated	-0.006**	0.8516***	-0.4603**	-0.024	-0.0602	0.570
DELAWARE IVY GLOBAL GROWTH FUND A	-0.008**	1.1126***	-0.5035	-0.2854	-0.0837	0.598
DIAMOND HILL GLOBAL FUND Y	-0.011**	1.0751***	0.3198	-0.1513	-0.3643	0.797
DODGE & COX GLOBAL STOCK FUND I	-0.004**	1.1041***	-0.0878	0.3893***	-0.1324	0.845
DREYFUS STRATEGIC BETA GLOBAL EQUITY FUND I	-0.003**	0.9587***	-0.2824**	-0.0681	-0.0703	0.894
DRIEHAUS GLB.GW.FUND DEAD - Liquidated	-0.03*	1.0751***	0.3881	1.4261	0.8723	0.255
ERSHARES GLBL ENTREPRENEURS FD INSTL	-0.006**	0.9747***	0.5331**	-0.465***	0.0018	0.632
EATON VANCE FOCUSED GLBL OPPTYS FD I	-0.003	1.0434***	-0.0829	-0.0805	-0.0724	0.906
EATON VANCE HEXAVEST GLB.EQ.FD.CL.I	-0.006***	0.9191***	-0.2025*	0.1555	0.07	0.801
EATON VANCE RICHD.BERN. EQ.STGY.FD.CL.I	-0.004***	0.884***	-0.2518***	-0.0628	0.0996*	0.796
EPOCH GLOBAL ALL CAP FUND INSTITUTIONAL	-0.008***	0.9931***	-0.3876***	-0.1536	-0.017	0.699
FEDERATED HERMES GLOBAL EQUITY FUND IS	-0.003**	0.9903***	-0.1685**	-0.0726**	0.0304	0.977
FIDELITY ADVISOR GLOBAL CAPITAL APPREC FUND I	-0.003*	1.0661***	0.1152	-0.1457***	0.1217*	0.848
FIDELITY ENDURING OPPORTUNITIES FUND	0.001	0.9573***	0.1004	-0.4107***	-0.0818	0.961
FID SRS INTRINSIC OPPTYS FD	-0.001	0.9232***	0.3053***	0.1956**	-0.0608	0.870

FIDELITY WORLDWIDE FD.	-0.006***	1.0341***	-0.1525	-0.3325***	0.1284**	0.792
FIERA CAPITAL GLOBAL EQUITY FUND INST	-0.002	0.9393***	-0.5164***	-0.2708***	-0.0534	0.923
FRANKLIN GLOBAL EQUITY FUND FUND A	-0.003*	1.0106***	-0.1963**	-0.0101	-0.0291	0.890
FRANKLIN MUTUAL BEACON FUND Z	-0.005***	0.9469***	-0.1978*	0.2233***	-0.1412*	0.819
FRANKLIN MUTUAL GLOBAL DISCOVERY FUND Z	-0.007***	0.9154***	-0.241**	0.3414***	-0.0703	0.793
FRANKLIN WORLD PERSPECTIVES FD.CL.A	-0.009**	1.1152***	-0.1011	-0.0538	0.2032	0.782
FRONTIER MFG GLOBAL EQUITY INSTITUTIONAL	-0.008**	0.9001***	-0.9024***	-0.5539**	-0.2013	0.549
FRONTIER MFG GLOBAL PLUS FUND INSTITUTIONAL	-0.014	0.9753***	-1.0924**	-0.708*	-0.4374	0.305
FRTR MFG GLBL SUSTAINABLE FD INSTL	-0.006**	0.7587***	-0.3841***	-0.2101***	0.0713	0.909
FRONTIER ROBECO SAM GLOBAL EQUITY FUND INST	-0.02*	1.2541***	-1.3542*	0.2519	0.0393	0.465
GMO GLB.FOCD.EQ.FD.CL. III	-0.015***	1.1968***	0.3244	-0.0324	-0.0243	0.584
GQG PARTNERS GLOBAL QUALITY EQUITY FUND INST	-0.008*	0.9566***	-0.4707**	0.2156*	0.6113***	0.846
GABELLI GLOBAL GROWTH FUND AAA	-0.005***	1.0158***	-0.3133***	-0.6252***	-0.009	0.848
GRANITE VALUE FUND DEAD - Liquidated	-0.007*	0.8578***	-0.0947	0.0725	-0.1213	0.304
GREENWICH IVY LONG-SHORT FUND INST	-0.002	0.2313	0.9733*	0.1198	-1.1768***	0.314
GUARDIAN CAPITAL DIV GRO FD INST	-0.003	0.9141***	-0.6718***	-0.0396	0.1584***	0.943
GUARDIAN CAPITAL FNDM GLBL EQTY FD INST	-0.0	0.8865***	-0.0605	-0.137*	0.0144	0.892
GUIDE STONE GLBL IMPACT FD INSTL	-0.002	0.6738***	0.2532***	-0.1688***	-0.2144***	0.975
GUINNESS ATKINSON GLOBAL INNOVATORS FUND INVESTOR	-0.001	1.0652***	-0.1871	-0.4483***	-0.2328**	0.799
HC ESG GROWTH PORTFOLIO HC STRATEGIC	-0.004***	1.0014***	-0.1978***	-0.0821***	-0.024	0.960
HSBC GLBL EQTY VOLATILITY FOCUSED FD I	0.022	-1.1357	1.1767	-0.7376**	-0.7092	0.066
HARBOR GLOBAL LEADERS FUND INSTITUTIONAL	-0.005**	1.0262***	-0.2395	-0.4763***	0.0143	0.748
HARBOR GLB.VAL.FD.INSTL. CL.	0.001	1.0076***	0.1681	-0.5609	-0.3304***	0.853
HARDING LOEVNER GLOB.EQ. PRTF.ADVI.CL.	-0.005**	0.9984***	-0.0224	-0.4132***	-0.037	0.783
HARDING LOEVNER GLOBAL EQUITY RESEARCH PFLO INS	-0.006**	0.9366***	-0.0051	-0.1641**	-0.0776	0.834
HARTFORD CLIMATE OPPORTUNITIES FUND A	-0.005	1.116***	0.0698	-0.1285**	-0.0075	0.798
HARTFORD GLB.GW.FD.CL.A DEAD - Merged:30913E	0.004	1.113***	0.0748	-0.6579***	-0.0894	0.932
HARTFORD GLOBAL RESEARCH HLS IA	-0.005	1.0683***	-0.2879	0.0808	0.1273	0.884
HOTCHKIS & WILEY GLOBAL VALUE FD.CL.I	-0.004**	1.2263***	0.0736	0.5972***	-0.2162***	0.876
IMPAX GLBL ENVIRON MARKETS FD INST	-0.001	1.0622***	0.1435*	-0.193***	-0.0243	0.890
IMPAX GLBL OPPTYS FD INSTL	0.001	0.9541***	-0.2061**	-0.211***	-0.0389	0.927
INVESCO GLOBAL CORE EQ. FD.CL.A	-0.008***	1.0414***	-0.3031	0.0061	-0.0244	0.792
INVESCO GLOBAL FOCUS FUND Y	-0.003	1.0872***	0.0797	-0.6067***	-0.0643	0.819
INVESCO GLOBAL FUND A	-0.005***	1.1634***	-0.1865	-0.3737***	-0.1654**	0.849
IVS.GLB.GW.FD.CL.A DEAD - Merged:517169	-0.009***	1.0128***	-0.4126	-0.488**	-0.4154*	0.594
INVESCO GLOBAL OPPS.FD. CL.A	-0.005*	1.132***	-0.1336	0.2398*	-0.3242***	0.834
IRONBRIDGE GLOBAL FUND DEAD - Liquidated	-0.008**	0.9585***	-0.3975**	-0.3735***	0.0404	0.641
JOHCM GLOBAL SELECT FUND INST	-0.006**	0.98***	-0.1001	-0.3389**	0.1418	0.695
JP MORG GLBL UNCONSTRAINED EQTY FD I	-0.007**	1.0905***	-0.2166	0.1103	-0.1327	0.625
JANUS HENDERSON GLOBAL RESEARCH FUND D	-0.003**	1.054***	-0.0808	-0.1556**	-0.0393	0.901
JANUS HENDERSON GLOBAL SELECT FUND T	-0.004**	1.0995***	0.139	0.1176	-0.0231	0.815
JANUS HENDERSON GLBL SUSTAINABLE EQTY FD D	0.003***	1.0385***	0.082	-0.2906***	-0.1445***	0.991
JANUS HENDERSON GLOBAL VALUE FUND D	-0.008***	0.6981***	-0.1504	0.2057	-0.0825	0.314
JANUS PRESERVATION SERIES-GLOBAL C	-0.01***	0.8702***	-0.1378	-0.1981	0.0378	0.624
JENSEN GLOBAL QUALITY GROWTH FUND I	0.002	0.8993***	-0.4785***	-0.1968***	-0.0842	0.950
JOHN HANCOCK FDAMENTAL GLBL FRANCHISE FD NAV	-0.009***	1.0057***	-0.5729***	-0.3527***	-0.1172	0.680
JOHN HANCOCK GLOBAL EQUITY FUND NAV	-0.006***	0.9131***	-0.3732**	-0.0303	-0.0366	0.723
JOHN HANCOCK FUNDS GLB. OPPS.FD.CL.A	-0.004	0.9409***	0.1754	-0.1636	-0.4761***	0.715
JHAN.FUND.III GLB. SHAREHOLDER YLD.FD.CL.I	-0.007***	0.8941***	-0.4371***	0.2177***	0.0646	0.832
JOHN HANCOCK GLOBAL THEMATIC OPPS FUND NAV	-0.006**	0.8829***	-0.0534	-0.226***	-0.1182	0.851
JOHN HANCOCK MUTUAL SHARES FUND NAV	-0.001	0.7302***	-0.2494*	0.0035	-0.0298	0.548
JOHN HANCOCK TECHNICAL OPPORTUNITIES FUND NAV	-0.013*	1.3627***	0.2182	-0.347*	0.5207***	0.483
JUBAK GLOBAL EQ.FD. DEAD - Liquidated	-0.01***	0.95***	0.0243	-0.2542	-0.2451*	0.809
LSV GLOBAL MANAGED VOLATILITY FUND INST	-0.005***	0.8209***	-0.3277***	0.2706***	0.0998	0.823
LSV GLOBAL VALUE FUND INST	-0.004***	1.0703***	0.0676	0.4203***	-0.0692	0.950
LAZARD EQUITY FRANCHISE PORTFOLIO INSTITUTIONAL	-0.009*	1.1365***	0.0724	0.3641***	-0.1098	0.787
LAZARD GLOBAL EQUITY SELECT PORTFOLIO INSTL	-0.002*	0.9207***	-0.2496***	-0.1388***	0.0489	0.939
LAZARD GLOBAL STRATEGIC EQUITY PORTFOLIO INST	-0.017	1.0159***	-0.5196	-0.0421	0.2353	0.146
LONGLEAF PARTNERS GLOBAL FD.	-0.006**	1.1008***	0.2692*	0.2804***	-0.1768*	0.791
LORD ABBETT GLOBAL EQUITY FUND A	-0.005*	0.9716***	-0.0068	-0.1023	-0.0164	0.819
MFAM GLBL OPPTYS FD INVSTR	-0.004*	0.987***	0.0923	-0.4527***	0.0057	0.682
MFS BLENDED RESEARCH GLOBAL EQUITY FUND R6	-0.006*	1.1018***	-0.2018	0.0496	-0.0525	0.877
MFS GLB.EQ.FD.CL.B	-0.004***	1.0298***	-0.3515***	-0.0749	-0.0267	0.929
MFS GLOBAL LEADERS FD. CL.A	-0.011**	0.9563***	-0.8991**	0.1136	0.1398	0.498
MAIN STAY EPOCH CAPITAL GROWTH FUND I	-0.007	0.8769***	-0.3671	-0.436***	-0.1303	0.594
MAINSTAY EPOCH GLB.CHO. FD.CL.I	-0.009***	1.109***	-0.3028**	-0.1471	0.1119	0.694
MAINSTAY EPOCH GLB.EQ. YLD.FD.CL.I	-0.006***	0.918***	-0.3989***	0.2728***	0.1139*	0.852
MAINSTAY ICAP GLB.FD.CL. I	-0.005**	1.0207***	-0.3361**	-0.0105	-0.0214	0.890
MNGD ACCT SRS BLKRK GA DYN EQTY FD K	-0.003*	1.0923***	0.0705	0.0598	0.0936*	0.949
MARSICO GLOBAL FUND INVESTOR	-0.004*	1.0156***	-0.0255	-0.6379***	-0.0218	0.694
MASS MUTUAL GLOBAL FUND R5	-0.008***	1.214***	-0.2491	-0.4317***	-0.1847	0.739
MONDRIAN GLOBAL EQUITY VALUE FUND	-0.002	0.8193***	0.0615	0.3183***	-0.3697	0.833
MORGAN STANLEY GLOBAL CONCENTRATED PORTFOLIO I	-0.001	0.929***	0.132	-0.1992**	-0.0511	0.849
MORGAN STANLEY GLOBAL CORE PORTFOLIO I	-0.003*	1.0194***	-0.0167	-0.1047	0.0839	0.913
MORGAN STANLEY INSTL.FD. GLB.INSIGHT PRTF.CL.H	-0.008*	1.0772***	0.1407	0.2578	0.0318	0.431

MORGAN STANLEY GLOBAL SUSTAIN PORTFOLIO I	-0.004**	0.8799***	-0.6095***	-0.2881***	0.0604	0.835
MGST.INSTL.FD.GLB.FRCH. PRTF.CL.I	-0.004**	0.8676***	-0.7792***	-0.2523***	0.0958	0.802
MORG STAN INST GLBL PERMANENCE PFOLIO I	-0.001	0.9238***	-0.0814	-0.4213***	-0.1743	0.766
MORG STAN INSTL CNTRPNT GLBL I	-0.004	0.9542***	1.0639***	-0.8848***	-0.1329	0.677
MORG STAN INSTL GLBL INSIGHT PRT I	-0.006	0.9899***	0.5523*	-1.1793***	-0.2553	0.555
MORGAN STANLEY INSTL.FD. GLB.GW.PRTF.CL.I	-0.001	1.0125***	0.1078	-0.7226***	-0.1295	0.735
MUNDOVAL FUND	-0.002	0.9903***	-0.3474***	-0.0761*	-0.1433**	0.873
NATIONWIDE GLBL SUSTAINABLE EQTY FD R6	-0.004**	1.0742***	-0.0017	-0.1042	-0.0924	0.848
NATIXIS LOOMIS SAYLES GLOBAL GROWTH Y	-0.005*	0.9118***	-0.2857	-0.5112***	-0.1905*	0.832
NEUBERGER BERMAN FOCUS FD.	-0.006**	0.9774***	-0.1719	-0.398***	-0.0804	0.662
NEUBERGER BERMAN GLOBAL THEMATIC OPPS.INSTL.CL.	-0.004	0.8228***	0.1522	0.0535	-0.1	0.691
NINETY ONE GLOBAL FRANCHISE FUND I	-0.001	0.888***	-0.4334***	-0.2046***	0.0528	0.941
NORTHERN ENGAGE 360 FUND	-0.007*	0.9685***	-0.288	-0.2138	-0.1964	0.787
NUVEEN GLOBAL GROWTH FD. CL.A	-0.003	1.1386***	0.5454***	-0.2764*	0.2346**	0.855
NUVEEN NWQ GLOBAL ALL- CAP FUND I	-0.004	0.5978	0.3318	-0.3768	-0.7001	0.283
OAKMARK GLOBAL FUND INVESTOR	-0.005**	1.2842***	0.1386	0.35***	-0.1186*	0.880
OAKMARK GLOBAL SELECT FUND INVESTOR	-0.004**	1.2047***	-0.023	0.2502***	-0.1533**	0.882
OLD WESTBURY ALL CAP ESG FUND	-0.013**	0.8266***	0.611	-0.4014	-0.1473	0.726
PF MULTI-ASSET FUND P	-0.008	0.9571***	0.2004	-0.2711	-0.1215	0.526
PGIM JENNISON GLOBAL OPPORTUNITIES FUND Z	0.0	1.1038***	0.2362*	-0.8173***	0.1002	0.847
PIMCO EQUITIES PFR. WORLD FD.CL.A	-0.011	0.9425***	-0.6497	0.0114	-0.046	0.334
PIMCO GLOBAL DIVIDEND FUND A	-0.02**	1.1335***	-0.895	0.2454	-0.0877	0.257
PMC DIVERSIFIED EQUITY FUND ADVISOR	-0.005***	1.0137***	0.0101	0.0399	0.0331	0.880
PARVIN HEDGED EQUITY SOLARI WORLD FUND	-0.01**	0.5559***	-0.2998	0.1736**	-0.0567	0.776
PHAEACIAN GLOBAL VALUE FUND INST	-0.008**	0.9877***	-0.1406	-0.1484	-0.1494	0.581
PION GLBL SUSTAINABLE EQTY FD A	-0.005**	1.044***	0.0199	0.3008***	0.1753**	0.816
POLARIS GLB.VAL.FD.	-0.001	1.0368***	0.2362***	0.3285***	-0.0961*	0.936
POLEN GLOBAL GROWTH FUND INSTITUTIONAL	-0.0	0.9518***	-0.2428***	-0.4338***	-0.0004	0.936
PRINCIPAL SYSTEMAT EX INTERNATIONAL FUND R-6	-0.009**	1.0839***	0.0262	0.1622	0.0776	0.814
PURISIMA ALL-PURPOSE FD. DEAD - Liquidated	-0.001***	-0.0005	-0.0005	0.0009	0.0008	-0.081
QUAKER GLOBAL TACTICAL ALLOCATION FUND ADVISOR	-0.004**	0.9619***	0.0631	-0.2466**	0.1114	0.806
RBC GLOBAL OPPORTUNITIES FUND I	-0.001	1.0232***	0.0282	-0.2249***	0.0353	0.918
ROCKEFELLER EQTY ALLOCTN FD INSTL	-0.01**	0.8571***	0.1719	0.4006	0.369	0.403
RUSSELL INVESTMENTS GLOBAL EQUITY FUND S	-0.009***	1.0222***	-0.5349*	0.0324	-0.0326	0.648
SEI INST INV GLBL MNGD VOLATILITY FD A	-0.007***	0.7658***	-0.4157**	0.0699	0.0233	0.690
SEI INST MGD GLBL MNGD VOLATILITY FD F	-0.007***	0.7353***	-0.4484***	-0.0474	0.1437	0.590
SGI GLOBAL EQUITY FUND I	-0.004	0.89***	0.0719	-0.1476	0.1863*	0.568
SALIENT GLOBAL EQ.FD.CL. I	-0.007*	0.8377***	0.0662	0.0156	-0.0008	0.659
SANDS CAPITAL GLBL GRO FD INSTL	-0.002	1.0974***	0.3586***	-0.7166***	-0.0649	0.832
SCHARF GLOBAL OPPORTUNITY FUND INST	-0.004*	0.9091***	-0.3707**	0.053	-0.0568	0.735
SCHRODER GLOBAL MULTI- CAP EQUITY FUND R6	-0.032	0.6926*	-1.9447	-0.6	0.57	-0.030
SCOUT GLOBAL EQUITY FD. DEAD - Liquidated	-0.005	0.968***	-0.5006	-0.5682	-0.2042	0.354
SEGALL BRYANT & HAMILL GLOBAL ALL CAP FUND RTL	-0.009***	0.8817***	-0.5867***	-0.1309	-0.0537	0.545
SELECTIVE OPPORTUNITY FUND FOUNDATION	-0.008	0.7957***	1.01*	-0.4018	-0.3972	0.366
SIRIOS FOCUS FUND INST	-0.004	0.8971***	-0.4002	-0.1915	0.0024	0.804
SIT ESG GROWTH FUND I	-0.003***	0.9803***	-0.3943***	-0.1361***	0.0027	0.970
STATE STREET DEFENSIVE GLOBAL EQUITY FUND I	-0.014**	0.8303***	-0.8352**	-0.0956	0.0886	0.362
STATE STREET GLOBAL VALUE SPOTLIGHT FUND K	-0.02	1.2237***	-0.9384	-0.3582	-0.5046	0.642
STRATEGIC EQUITY ALLOCATION FUND NAV	-0.007**	0.9752***	-0.1445	-0.0593	-0.0071	0.625
T.ROWE PRICE GLB.LGCP. STK.FD.	-0.002	1.0063***	0.0681	-0.3587***	-0.0612	0.815
T ROWE PRICE GLOBAL IMPACT EQUITY	0.003	1.0697***	0.0408	-0.4487***	0.0508	0.951
T ROWE PRICE GLB.STK.FD.	0.001	1.0314***	0.2476*	-0.3565***	-0.0829	0.846
T ROWE PRICE GLOBAL VALUE EQUITY	-0.005**	1.0109***	-0.1145	0.2434***	0.0266	0.797
T.ROWE PRICE INSTL. DEAD - Merged:9051FK	-0.009*	1.2649***	-0.1361	-0.3904*	0.0839	0.531
T ROWE PRICE INSTL.GLB. LGCP.EQ.FD.	-0.006**	1.1264***	-0.1701	-0.0845	0.1229	0.677
T ROWE PRICE QM GLOBAL EQUITY FUND	-0.005*	1.0091***	-0.5142*	-0.1384	-0.0532	0.857
TD GLOBAL LOW VOLATILITY EQUITY FUND INST	-0.005	0.6051***	-0.5364***	-0.0587	-0.0301	0.244
TIF GLB.EQ.SERIES FUND DEAD - Liquidated	-0.014**	0.4619	-1.5302	1.8038	0.4336	0.112
TEMPLETON GLB.OPPOR.TST. I	-0.007***	1.1346***	-0.1514	0.543**	-0.0586	0.765
TEMPLETON GROWTH FD.CL.A	-0.005***	1.0258***	-0.1389	0.2739***	-0.0676	0.885
TEMPLETON WLD.FUND.CL.A	-0.008***	0.9982***	-0.2176*	0.081	-0.2392***	0.781
THORNBURG GLOBAL OPPORTUNITIES FUND I	-0.001	0.9773***	0.1832	0.2171**	0.0517	0.767
THRIVENT GLOBAL STOCK FUND A	-0.007***	1.0022***	-0.2961**	-0.1309*	-0.0332	0.746
THRIVENT LOW VOLATILITY EQUITY S	-0.005***	0.76***	-0.3599***	-0.0381	0.1501**	0.868
TRILLIUM ESG GLOBAL EQUITY FUND RETAIL	-0.003**	0.9877***	-0.2553**	-0.2064***	-0.048	0.883
TWEEDY BROWNE INTL VALUE FUND II - CURR UNHGD	-0.004***	0.8925***	-0.1145*	0.3121***	0.0301	0.890
TWEEDY BROWNE VAL.FD.	-0.007***	0.8538***	-0.3444***	0.1647***	-0.0257	0.687
UBS ENGAGE FOR IMPACT FUND P	-0.005*	1.0107***	0.3681**	-0.0061	-0.0064	0.869
US GLB.INVRS.FUND.GLB. MEGATRENDS FUND	-0.0	0.7248***	-0.0269	-0.1839	0.0757	0.722
USAA CAPITAL GROWTH FUND FUND	-0.004***	1.0236***	-0.2245**	0.0049	0.0345	0.854
USAA SUSTAINABLE WORLD FUND FUND	-0.006**	0.9374***	-0.3901**	-0.1958**	-0.0601	0.612
UPRIGHT GW.FD.	-0.002	1.2487***	1.2237**	-0.0043	-0.3799	0.346
VANGD.BAIL GIFF GL POSITIVE IPCT.STK.FD INV	0.004	1.0992***	0.4517	-0.6362***	0.0472	0.773
VANGUARD GLOBAL CAPITAL CYCLES FUND INVESTOR	-0.007	0.8073***	0.7427**	0.3653*	-0.1848	0.269
VANGUARD GLBL ESG SEL STK FD ADMIRAL	-0.001	0.9526***	-0.2616**	0.1154***	-0.1499*	0.929

VANGUARD HORIZON FD. VANGD.GLB.EQ.FD.	-0.004***	1.0084***	-0.0254	-0.1515*	-0.0345	0.856
VICTORY NEWBRIDGE GLOBAL EQUITY FUND A	-0.008***	1.0045***	-0.5182*	-0.3364	-0.0662	0.557
VICTORY RS GLOBAL FUND Y	-0.003*	0.9414***	-0.1746***	-0.134***	-0.0356	0.808
VIRTUS GLB.COMD.STK.FD. CL.I	-0.012**	0.907***	0.7082**	-0.0444	-0.4814*	0.579
VIRTUS NFJ GLOBAL SUSTAINABILITY FUND INST	-0.007**	1.0058***	-0.5602*	-0.4574***	-0.2573	0.722
VIRTUS SGA GLOBAL GROWTH FUND R6	-0.002	0.9875***	-0.211*	-0.3999***	-0.0392	0.875
VIRTUS SGA NEW LEADERS GROWTH FUND R6	-0.007	1.0396***	0.7234***	-0.1307	-0.3144*	0.911
VIRTUS VONTOBEL GLOBAL OPPORTUNITIES FUND A	-0.004**	0.9498***	-0.3506***	-0.33***	0.032	0.780
VONTOBEL GLOBAL EQUITY INSTITUTIONAL FUND I	-0.002	0.911***	-0.5083***	-0.3251**	0.0977	0.820
VOYA GLBL HI DIV LOW VOLATILITY FD A	-0.005***	0.9343***	-0.1962***	0.2214***	0.055	0.866
VOYA GLOBAL OPPORTUNITIES FUND A	-0.002	1.0412***	0.0552	-0.0317	-0.2262***	0.948
WCM FOCUSED GLB.GW.FD. INSTL.CL.	-0.002	0.913***	-0.0051	-0.5502***	-0.0012	0.814
WASATCH GLOBAL SELECT FUND INSTITUTIONAL	-0.003	0.9263***	0.3178	-0.5481***	-0.1921	0.783
WASATCH GLOBAL VALUE FUND INVESTOR	-0.01***	0.9959***	-0.3803**	0.484***	-0.0227	0.514
WELLS FARGO INTRINSIC WORLD EQTY FD A	-0.008**	0.934***	0.0624	0.1582	-0.1615	0.310
WESTWOOD GLOBAL EQUITY FD.INSTL.SHS.	-0.009	0.8087***	0.5069	-0.2319	-0.3736	0.067
WILLIAM BLAIR GLOBAL LEADERS FD.CL.I	-0.005**	1.1124***	-0.1523	-0.3435***	0.0231	0.838
WINTERGREEN FD. DEAD - Liquidated	-0.018**	0.9245***	-0.3377	0.2656	0.4163	0.200
WINTON GLOBAL EQUITY PORTFOLIO INSTITUTIONAL	-0.012*	1.0017***	0.1846	0.203	-0.0667	0.540
WORLD SELECT EQUITY FUND A	-0.007**	1.0749***	-0.164	0.1963**	-0.0977	0.877
YORKTOWN CAPITAL APPRECIATION FUND A	-0.011***	0.888***	-0.1239	-0.2877***	-0.0713	0.654
ABRDN EMERGING MARKETS EX-CHINA FUND A	-0.008***	0.999***	-0.4016*	-0.1507	-0.0873	0.730
ABRDN GLOBAL EQUITY IMPACT FUND A	-0.006***	1.0556***	-0.1086	-0.1468*	-0.0023	0.842

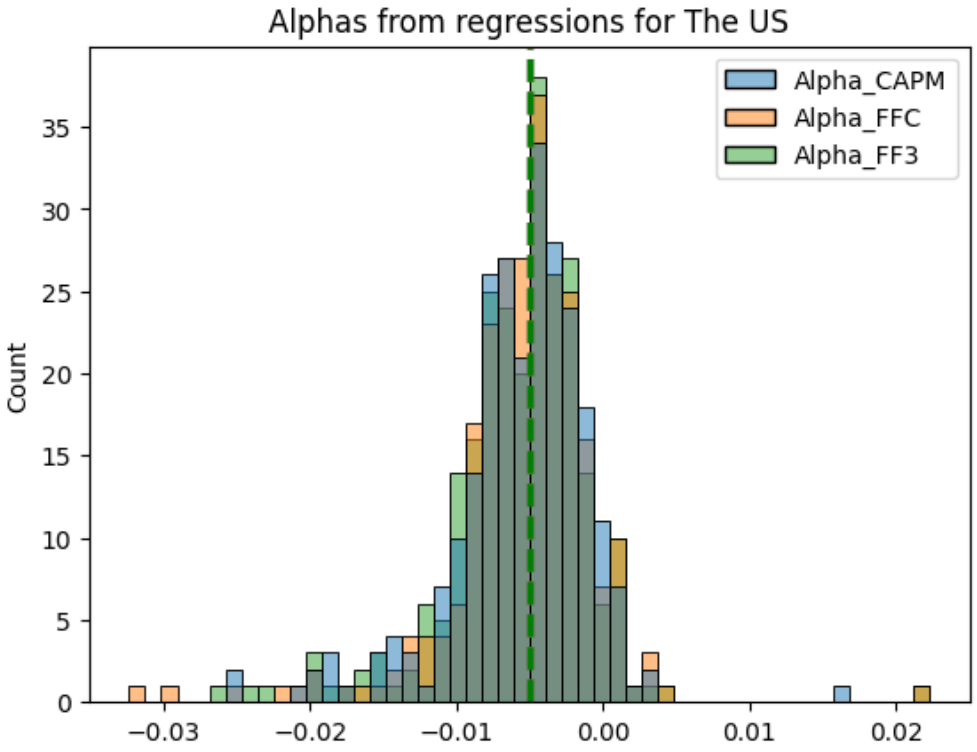

Figure 8: Histogram of monthly net alphas in the US

D Appendix: Cumulative Returns for Cost-Categories

In this appendix, we present the cumulative returns for the different equally-weighted cost-category portfolios before and after fees.

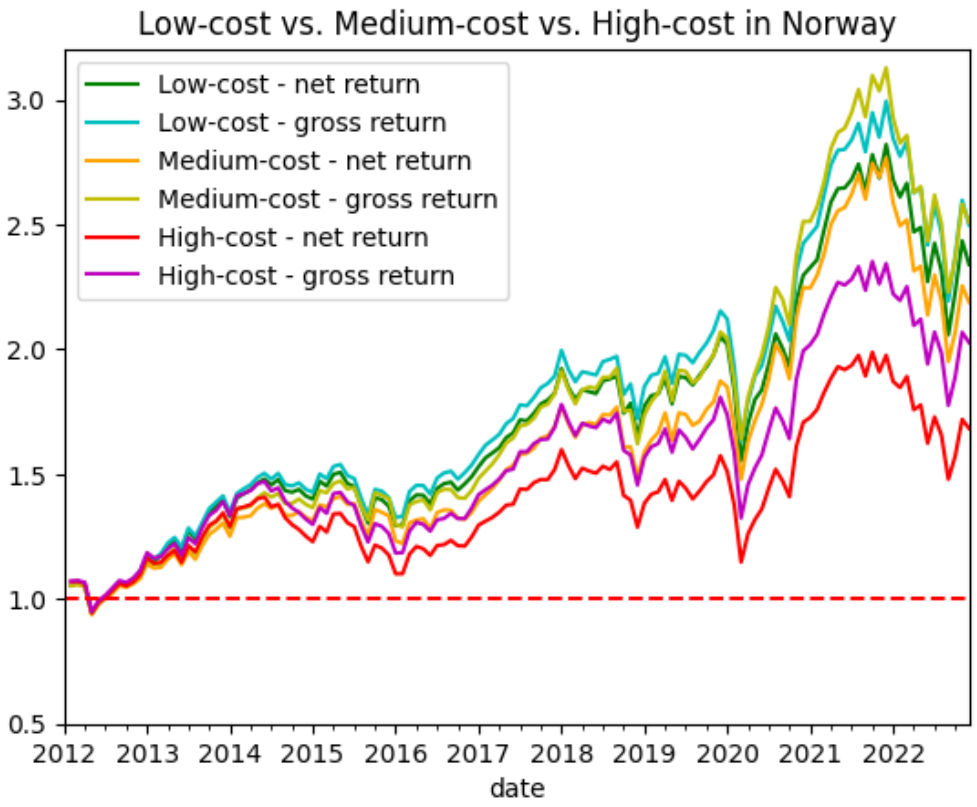

Figure 9: Different EW categories of funds plotted in Norway

As seen in Figure 9 for Norway, the medium-cost category is superior gross of fees, and the high-cost category has the worst cumulative return gross of fees. Nevertheless, the low-cost category outperformed both the medium-cost and the high-cost category net of fees on cumulative return. Note that also the low-cost category net of fees also beat the high-cost category gross of fees.

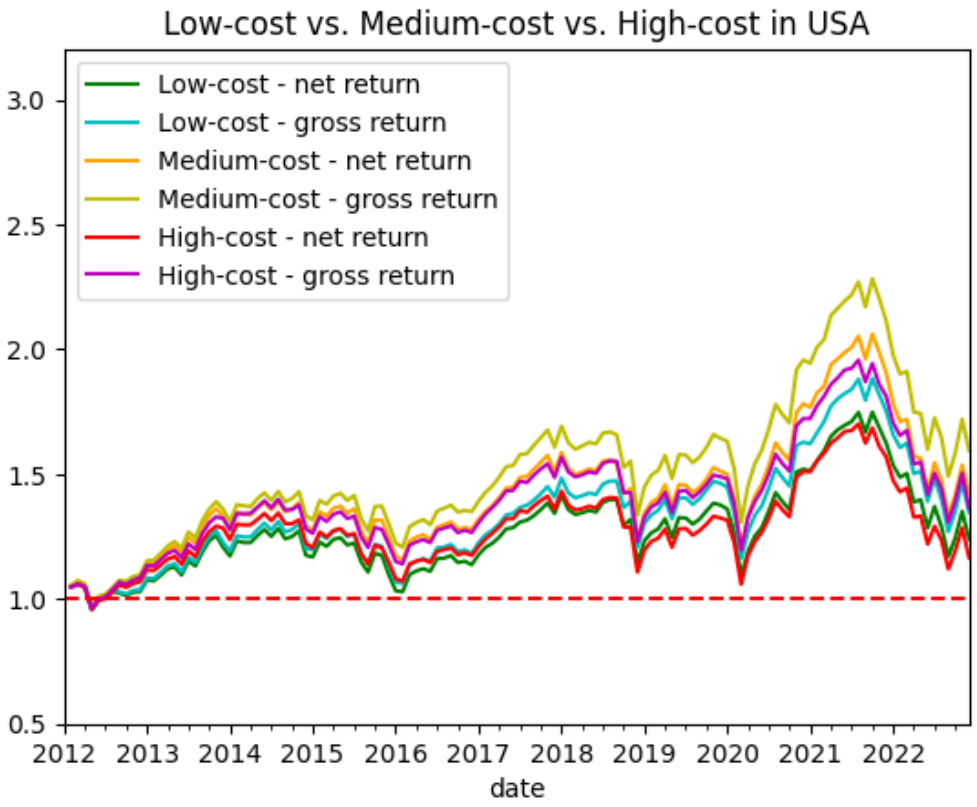

Figure 10: Different EW categories of funds plotted in US

As seen in Figure 10 for the US, medium-cost category is the best portfolio on a cumulative returns basis of the cost categories before and after fees. The high-cost gross return portfolio in US outperforms on a return basis compared to the low-cost portfolio, but when including the fees, the low-cost outperforms the high-cost category.

E Appendix: Individual funds Information ratios, Sharpe ratios and Style

Some of the funds have NaN in their style, these funds did not match any of the funds we had in the Morningstar Database, so they are excluded in the Morningstar style-box analysis.

E.1 Norway Individual funds: IR, SR, Cost and Style

	Avg Expense Ratio	Ann. Return	Style	Cost	SR	IR
ALFRED BERG GLOBAL	1.393	0.066	Large Blend	Medium-Cost	0.467	-0.599
C WORLD WIDE GLOBALE AKSJER	1.400	0.090	Large Growth	Medium-Cost	0.603	-0.130
C WORLD WIDE GLOBALE AKSJER ETISK	1.243	0.095	Large Growth	Medium-Cost	0.646	-0.049
C WORLD WIDE STABILE AKSJER	1.600	0.067	Large Blend	High-Cost	0.440	-0.442
CARNEGIE WORLD WIDE ETISK II	2.000	0.126	NaN	High-Cost	1.209	-0.639
DNB NOR KAPFORV.GLOBAL II	1.510	0.086	NaN	High-Cost	0.678	-0.440
DNB NOR KAPFORV.GLOBAL V DEAD - Merged:72937J	0.505	0.169	NaN	Low-Cost	1.266	0.773
DNB NOR KAPFORV. POSTBANKEN GLOBAL	1.815	0.187	NaN	High-Cost	1.426	-0.016
DNB GLOBAL A	1.516	0.093	Large Blend	High-Cost	0.559	-0.139
DNB NOR KAPFORV.GLOBAL ETISK IV	0.614	0.190	NaN	Low-Cost	1.455	0.409

DNB NOR KAPFORV.GLOBAL ETISK V	0.505	0.111	NaN	Low-Cost	0.886	-0.118
DNB GLOBAL LAVKARBON A	0.671	0.079	Large Value	Low-Cost	0.435	-0.063
DNB NOR KAPFORV.GLOBAL SELEKTIV I	1.805	0.189	NaN	High-Cost	1.438	0.034
DNB NOR KAPFORV. GLOBALSPAR	1.805	0.173	NaN	High-Cost	1.337	-0.722
DNB NAVIGATOR A DEAD - Liquidated	1.856	-0.094	NaN	High-Cost	-0.363	-1.014
DELPHI GLOBAL A	1.938	0.084	Large Growth	High-Cost	0.479	-0.209
DELPHI GREEN TRENDS A	1.501	-0.115	Mid Growth	High-Cost	-0.467	-0.732
EIKA GLOBAL	1.758	0.064	Mid Value	High-Cost	0.377	-0.831
EIKA SPAR	1.840	0.065	Mid Blend	High-Cost	0.319	-0.468
FIRST GLOBAL FOCUS	1.250	0.126	Large Value	Medium-Cost	0.371	0.260
FRAM GLOBAL	2.000	0.046	Large Blend	High-Cost	0.234	-0.503
HOLBERG GLOBAL A	1.236	0.092	Large Growth	Medium-Cost	0.551	-0.116
KLP AKSJE GLOBAL FLERFAK P	0.270	0.058	Large Blend	Low-Cost	0.402	-0.422
NORDEA GLOBAL II DEAD - Merged:88750W	0.255	0.222	NaN	Low-Cost	0.705	0.253
NORDEA GLOBAL NOK	0.250	0.087	Large Blend	Low-Cost	0.512	-0.232
NORDEA INTERNASJONALE AKSJER	1.449	0.097	Large Blend	Medium-Cost	0.781	-0.560
NORDEA INTERNASJONALE AKSJER II	1.019	0.106	NaN	Low-Cost	0.860	-0.531
NORDEA INTERNASJONALE AKSJER III	0.517	0.114	NaN	Low-Cost	0.919	-0.345
NORDEA STABILE AKSJER GLOBAL	0.558	0.072	Large Value	Low-Cost	0.331	-0.289
NORDEA STABILE AKSJER GLOBAL ETISK	1.500	0.090	Large Value	High-Cost	0.687	-0.134
ODIN GLOBAL C	1.798	0.092	Large Growth	High-Cost	0.524	-0.105
ODIN GLOBAL II DEAD - Merged:74930E	0.927	0.008	Large Growth	Low-Cost	0.008	-0.214
ODIN FORVALTNING AS MARITIM NOK	2.003	-0.024	NaN	High-Cost	-0.163	-1.044
PLUSS UTLAND AKSJE	1.200	0.083	Large Blend	Medium-Cost	0.491	-0.374
PLUSS UTLAND ETISK DEAD - Merged:88728F	1.200	0.084	Large Blend	Medium-Cost	0.497	-0.316
PARETO GLOBAL A	1.458	0.074	Large Blend	Medium-Cost	0.439	-0.153
SKAGEN GLOBAL A NOK	1.178	0.078	Large Growth	Medium-Cost	0.448	-0.339
SKAGEN GLOBAL II NOK	0.724	0.077	Large Growth	Low-Cost	0.423	-0.065
SKAGEN INSIGHT DEAD - Liquidated	1.500	-0.100	NaN	High-Cost	-0.550	-1.887
SKAGEN VEKST A NOK	1.093	0.062	Large Value	Medium-Cost	0.326	-0.483
SR-UTBYTTE A	1.638	0.073	NaN	High-Cost	0.351	-0.074
SPARE BANK 1 VERDEN VERDI C	1.500	0.077	Large Value	High-Cost	0.333	-0.001
STOREBRAND INT INV.FUND BARNESPAR	1.500	0.057	NaN	High-Cost	0.353	-0.744
STOREBRAND EQUAL OPPORTUNITIES A	1.050	-0.341	Large Growth	Medium-Cost	-1.526	-3.268
STOREBRAND GLOBAL ESG	0.402	0.084	Large Blend	Low-Cost	0.447	0.236
STOREBRAND GLOBAL MULTIFACTOR A	0.686	0.098	Mid Value	Low-Cost	0.618	-0.005
STOREBRAND INTL.INV.FD. GLOBAL SRI	0.600	0.138	NaN	Low-Cost	0.986	-0.660
STOREBRAND GLOBAL SOLUTIONS A	0.750	0.082	Large Growth	Low-Cost	0.470	0.030
STOREBRAND GLOBAL VALUE A	0.876	0.085	Large Value	Low-Cost	0.470	-0.206
STOREBRAND INTL.INV.FD. PENSJONSPAR	1.500	0.054	NaN	High-Cost	0.329	-0.758
STOREBRAND SMART CITIES A	1.050	-0.201	Mid Growth	Medium-Cost	-0.838	-1.109
TERRA GLOBAL DEAD - Merged:88738D	1.166	0.178	NaN	Medium-Cost	1.506	-0.415

E.2 US Individual funds: IR, SR, Cost and Style

	Avg Expense Ratio	Ann. Return	Style	Cost	SR	IR
1290 GLOBAL TALENTS FUND A	1.293	0.009	NaN	High-Cost	0.011	-0.549
1290 SMART BETA EQUITY FUND I	0.953	0.067	Large Blend	Medium-Cost	0.421	-0.619
AB GLOBAL CORE EQUITY PORTFOLIO ADV	0.871	0.046	Large Blend	Low-Cost	0.241	-0.702
AB SUSTAINABLE GLOBAL THEMATIC FUND A	1.373	0.076	Large Growth	High-Cost	0.405	-0.273
AGF GLOBAL EQUITY FUND I DEAD - Liquidated	0.800	-0.037	NaN	Low-Cost	-0.252	-1.570
AGF GLOBAL SUSTAINABLE EQUITY FUND I	0.800	0.086	Large Growth	Low-Cost	0.368	0.125
AMG TRILOGY GLOBAL EQUITY FUND I	0.914	-0.030	NaN	Low-Cost	-0.171	-0.802
AQR GLOBAL EQ.FD.CL.I	0.866	0.001	Large Value	Low-Cost	-0.026	-0.681
ARTIO SELECT OPPS.FD. INCO.CL.A	1.380	0.046	NaN	High-Cost	0.340	-1.939
ADLER VALUE FUND INSTITUTIONAL	1.255	0.078	NaN	High-Cost	0.292	-0.047
ADVISORY RESEARCH GLOBAL DIVIDEND FUND	1.206	0.007	NaN	High-Cost	0.006	-1.147
ALGER GLOBAL FOCUS FUND A	1.654	0.048	Large Growth	High-Cost	0.243	-0.660
ALL.BERN.GBL.VAL.FD. ADVI.CL.SHS.	1.734	0.111	NaN	High-Cost	0.867	-0.503
ALLIANZGI BEST STYLES GLOBAL EQUITY FD.CL.R6	0.400	-0.155	NaN	Low-Cost	-0.507	-0.889
ALLIANZGI GLB.MGD.VOLT. FD.INSTL.CL.	0.600	-0.190	NaN	Low-Cost	-0.564	-0.899
ALPHA OPPORTUNISTIC ALTERNATIVES FUND I	1.187	0.001	NaN	High-Cost	-0.124	-1.161
AMERICAN CENTURY FOCUSED GLOBAL GROWTH FUND INV	1.082	0.021	Large Growth	Medium-Cost	0.086	-0.758
AMER.FUND.CAP.WLD.GW.& INC.FD.CL.A SHS.	0.779	0.049	NaN	Low-Cost	0.305	-1.269
AMERICAN FUNDS GLOBAL INSIGHT FUND F-3	0.742	0.071	Large Blend	Low-Cost	0.468	-0.664
NEW ECONOMY FUND	0.794	0.062	Large Growth	Low-Cost	0.338	-0.436
AMERICAN FUNDS NEW PERSPECTIVE FUND A	0.757	0.062	Large Growth	Low-Cost	0.344	-0.581
ARIEL GLB.EQ.FD.INSTL. CL.	0.973	0.053	Large Value	Medium-Cost	0.403	-0.686
ARISTOTLE VALUE EQUITY FUND I	0.746	0.079	NaN	Low-Cost	0.380	0.061
ARISTOTLE/SAUL GLOBAL EQUITY FUND I	0.921	0.038	Large Blend	Medium-Cost	0.209	-1.035
ARTISAN GLOBAL DISCOVERY FUND INVESTOR	1.405	0.067	Mid Growth	High-Cost	0.277	-0.059

ARTISAN GLOBAL EQ.FD. INVESTOR SHARES	1.389	0.051	Large Blend	High-Cost	0.265	-0.441
ARTISAN GLB.OPPS.FD. INVR.SHS.	1.200	0.080	Large Growth	High-Cost	0.455	-0.197
ARTISAN GLB.VAL.FD. INVESTOR SHARES	1.305	0.059	Large Value	High-Cost	0.327	-0.589
AVE MARIA WORLD EQUITY FUND	1.366	0.050	Large Growth	High-Cost	0.272	-0.976
BBH GLOBAL CORE SELECT CL.N	1.259	0.042	NaN	High-Cost	0.231	-0.952
BMO GLOBAL LOW VOLT.EQ. FD.CL.I	0.850	-0.002	NaN	Low-Cost	-0.058	-1.098
BMO PYRFORD GLOBAL EQUITY FUND I	0.900	-0.071	NaN	Low-Cost	-0.616	-1.392
BNY MELLON GLOBAL STOCK FUND I	0.934	0.047	Large Growth	Medium-Cost	0.274	-0.779
BNY MELLON WORLDWIDE GROWTH FUND A	1.173	0.041	Large Growth	Medium-Cost	0.216	-0.725
BAILLIE GIFFORD GLOBAL ALPHA EQUITY FUND 2	0.663	0.017	Large Growth	Low-Cost	0.050	-0.589
BAILLIE GIFFORD GBL. STEWD.EQTIES.FD.I	0.650	0.031	Large Growth	Low-Cost	0.093	-0.424
BAILLIE GIFFORD LONG TERM GLOBAL GROWTH 2	0.749	0.099	Large Growth	Low-Cost	0.369	0.044
BARON GLOBAL ADVANTAGE FD.INST CL.	1.091	0.112	Large Growth	Medium-Cost	0.501	0.108
BLACKROCK ADVANTAGE GLOBAL FUND INVESTOR A	1.242	0.008	Large Blend	High-Cost	0.008	-0.820
BLACKROCK GLOBAL IMPACT FUND INST	0.845	-0.242	Mid Growth	Low-Cost	-1.242	-2.584
BLACKROCK UNCONSTRAINED EQUITY FUND INVESTOR A	1.251	-0.004	Large Growth	High-Cost	-0.060	-0.998
BOSTON PRTNRS GLBL EQTY ADV FD INST	0.648	0.050	NaN	Low-Cost	0.173	-0.985
BOSTON PRTNRS GLBL EQTY FD INSTL	1.019	0.074	Large Value	Medium-Cost	0.417	-0.441
BRANDES GLOBAL EQ.FD.CL. I	1.001	0.035	Large Value	Medium-Cost	0.169	-0.934
BRANDES GLBL OPPTYS VAL FD I	1.150	0.003	NaN	Medium-Cost	-0.025	-1.392
BROWN ADVISORY GLOBAL LEADERS FUND INVESTOR	0.873	0.111	Large Growth	Low-Cost	0.642	0.325
CMG MAULDIN CORE FUND I	1.956	-0.029	Large Blend	High-Cost	-0.383	-0.973
CRM GLOBAL OPPORTUNITY FD - INVESTOR SHS	1.500	0.071	NaN	High-Cost	0.569	-0.918
CALAMOS GLB.EQ.FD.CL.I	1.150	0.016	Large Growth	Medium-Cost	0.047	-0.713
CAMBIAR GLOBAL EQUITY FUND INVESTOR	1.069	-0.014	Large Growth	Medium-Cost	-0.109	-0.945
CASTLE FOCUS FD.INVESTOR SHARES	1.360	0.006	Large Value	High-Cost	-0.002	-0.966
CATALYST/MAP GLOBAL EQUITY FUND A	1.441	0.055	Large Value	High-Cost	0.367	-0.860
CAUSEWAY CONCENTRATED EQUITY FUND INSTL	0.850	-0.136	Large Blend	Low-Cost	-0.644	-0.261
CAUSEWAY GLB.VAL.FUND INSTL.CLASS	1.027	0.038	Large Blend	Medium-Cost	0.158	-0.606
CHAUTAUQUA GLOBAL GROWTH FUND INSTITUTIONAL	0.872	0.108	Large Growth	Low-Cost	0.578	0.125
COLUMBIA GLOBAL VALUE FUND A	1.154	0.023	Large Value	Medium-Cost	0.108	-1.115
COLUMBIA SELECT GLOBAL EQUITY FUND A	1.359	0.076	Large Growth	High-Cost	0.441	-0.347
COLUMBIA SELECT GLOBAL GROWTH FUND A	1.466	0.110	NaN	High-Cost	0.608	0.095
COMMONWEALTH GLOBAL FD.	2.805	0.029	Large Blend	High-Cost	0.156	-1.390
THE COOK & BYNUM FUND	1.554	0.016	Large Value	High-Cost	0.072	-0.817
DWS CROCI SECTOR OPPORTUNITIES FUND S	1.200	-0.035	NaN	High-Cost	-0.339	-1.253
DAVIS GLB.FD.CL.A	0.971	0.065	Large Blend	Medium-Cost	0.330	-0.344
DELAWARE GLOBAL EQUITY FUND A	1.486	0.001	Large Blend	High-Cost	-0.031	-0.906
DEL.GLB.VAL.FD.CL.A DEAD - Liquidated	1.553	0.013	Large Blend	High-Cost	0.048	-0.838
DELAWARE IVY GLOBAL GROWTH FUND A	1.423	0.016	Large Growth	High-Cost	0.045	-0.606
DIAMOND HILL GLOBAL FUND Y	0.743	0.052	Large Blend	Low-Cost	0.189	-1.084
DODGE & COX GLOBAL STOCK FUND I	0.634	0.057	Large Value	Low-Cost	0.277	-0.484
DREYFUS STRATEGIC BETA GLOBAL EQUITY FUND I	0.600	0.104	NaN	Low-Cost	0.987	-1.485
DRIEHAUS GLB.GW.FUND DEAD - Liquidated	1.975	-0.089	NaN	High-Cost	-0.430	-1.222
ERSHARES GLBL ENTREPRENEURS FD INSTL	1.623	0.015	Mid Growth	High-Cost	0.046	-0.658
EATON VANCE FOCUSED GLBL OPPTYS FD I	0.952	0.068	Large Growth	Medium-Cost	0.333	-0.596
EATON VANCE HEXAVEST GLB.EQ.FD.CL.I	0.990	0.030	NaN	Medium-Cost	0.169	-1.331
EATON VANCE RICHD.BERN. EQ.STGY.FD.CL.I	1.025	0.048	NaN	Medium-Cost	0.304	-0.744
EPOCH GLOBAL ALL CAP FUND INSTITUTIONAL	1.000	-0.046	NaN	Medium-Cost	-0.399	-1.337
FEDERATED HERMES GLOBAL EQUITY FUND IS	0.739	0.055	Large Blend	Low-Cost	0.244	-0.895
FIDELITY ADVISOR GLOBAL CAPITAL APPREC FUND I	1.052	0.072	Large Growth	Medium-Cost	0.402	-0.386
FIDELITY ENDURING OPPORTUNITIES FUND	1.078	-0.007	Large Growth	Medium-Cost	-0.065	-1.248
FID SRS INTRINSIC OPPTYS FD	0.477	0.091	NaN	Low-Cost	0.580	-0.580
FIDELITY WORLDWIDE FD.	0.989	0.044	Large Growth	Medium-Cost	0.226	-0.644
FIERA CAPITAL GLOBAL EQUITY FUND INST	0.900	0.079	Large Growth	Low-Cost	0.400	-0.010
FRANKLIN GLOBAL EQUITY FUND FUND A	1.367	0.071	Large Blend	High-Cost	0.416	-0.542
FRANKLIN MUTUAL BEACON FUND Z	0.802	0.028	Large Value	Low-Cost	0.140	-0.945
FRANKLIN MUTUAL GLOBAL DISCOVERY FUND Z	0.986	0.009	Large Value	Medium-Cost	0.016	-1.098
FRANKLIN WORLD PERSPECTIVES FD.CL.A	1.366	0.010	NaN	High-Cost	0.027	-1.122
FRONTIER MFG GLOBAL EQUITY INSTITUTIONAL	0.800	0.009	Large Growth	Low-Cost	0.016	-0.672
FRONTIER MFG GLOBAL PLUS FUND INSTITUTIONAL	0.800	-0.062	Large Growth	Low-Cost	-0.213	-0.581
FRTR MFG GLBL SUSTAINABLE FD INSTL	0.800	0.006	Large Growth	Low-Cost	0.001	-1.357
FRONTIER ROBECO SAM GLOBAL EQUITY FUND INST	1.200	-0.027	NaN	High-Cost	-0.156	-1.020
GMO GLB.FOCD.EQ.FD.CL. III	0.801	-0.084	NaN	Low-Cost	-0.528	-1.536
GQG PARTNERS GLOBAL QUALITY EQUITY FUND INST	0.750	0.087	Large Blend	Low-Cost	0.481	-0.389
GABELLI GLOBAL GROWTH FUND AAA	1.489	0.045	Large Growth	High-Cost	0.225	-0.607
GRANITE VALUE FUND DEAD - Liquidated	1.352	0.010	NaN	High-Cost	0.023	-0.909
GREENWICH IVY LONG-SHORT FUND INST	1.850	-0.027	Mid Blend	High-Cost	-0.120	-0.325
GUARDIAN CAPITAL DIV GRO FD INST	0.950	0.123	Large Blend	Medium-Cost	0.673	-0.563
GUARDIAN CAPITAL FNDM GLBL EQTY FD INST	0.990	0.027	Large Growth	Medium-Cost	0.117	-0.541
GUIDE STONE GLBL IMPACT FD INSTL	0.810	-0.201	Large Growth	Low-Cost	-1.248	-1.147
GUINNESS ATKINSON GLOBAL INNOVATORS FUND INVESTOR	1.304	0.083	Large Growth	High-Cost	0.414	-0.171
HC ESG GROWTH PORTFOLIO HC STRATEGIC	0.351	0.050	NaN	Low-Cost	0.264	-1.379
HSBC GLBL EQTY VOLATILITY FOCUSED FD I	0.950	-0.017	NaN	Medium-Cost	-0.165	-1.414
HARBOR GLOBAL LEADERS FUND INSTITUTIONAL	0.902	0.047	Large Growth	Low-Cost	0.231	-0.517

HARBOR GLB.VAL.FD.INSTL. CL.	0.970	0.131	NaN	Medium-Cost	0.951	-1.021
HARDING LOEVNER GLOB.EQ. PRTF.ADVI.CL.	1.163	0.042	Large Growth	Medium-Cost	0.211	-0.652
HARDING LOEVNER GLOBAL EQUITY RESEARCH PFLO INS	0.844	0.005	Large Blend	Low-Cost	-0.008	-0.977
HARTFORD CLIMATE OPPORTUNITIES FUND A	1.131	0.047	Large Growth	Medium-Cost	0.200	-0.514
HARTFORD GLB.GW.FD.CL.A DEAD - Merged:30913E	1.480	0.191	NaN	High-Cost	1.446	0.392
HARTFORD GLOBAL RESEARCH HLS IA	1.029	0.150	NaN	Medium-Cost	1.186	-0.688
HOTCHKIS & WILEY GLOBAL VALUE FD.CL.I	1.045	0.033	Large Value	Medium-Cost	0.126	-0.490
IMPAX GLBL ENVIRON MARKETS FD INST	1.048	0.084	NaN	Medium-Cost	0.469	-0.246
IMPAX GLBL OPPTYS FD INSTL	0.936	0.102	NaN	Medium-Cost	0.492	0.161
INVESCO GLOBAL CORE EQ. FD.CL.A	1.253	0.015	Large Blend	High-Cost	0.050	-1.064
INVESCO GLOBAL FOCUS FUND Y	1.026	0.071	Large Blend	Medium-Cost	0.342	-0.278
INVESCO GLOBAL FUND A	1.121	0.043	Large Growth	Medium-Cost	0.194	-0.653
IVS.GLB.GW.FD.CL.A DEAD - Merged:517169	1.320	-0.027	Large Growth	High-Cost	-0.154	-0.862
INVESCO GLOBAL OPPS.FD. CL.A	1.222	0.004	NaN	High-Cost	-0.015	-1.023
IRONBRIDGE GLOBAL FUND DEAD - Liquidated	1.000	0.013	NaN	Medium-Cost	0.056	-1.164
JOHCM GLOBAL SELECT FUND INST	1.060	0.032	Large Growth	Medium-Cost	0.145	-0.557
JP MORG GLBL UNCONSTRAINED EQTY FD I	0.653	-0.015	NaN	Low-Cost	-0.134	-0.946
JANUS HENDERSON GLOBAL RESEARCH FUND D	0.816	0.069	Large Growth	Low-Cost	0.386	-0.565
JANUS HENDERSON GLOBAL SELECT FUND T	0.926	0.052	Large Blend	Medium-Cost	0.257	-0.621
JANUS HENDERSON GLBL SUSTAINABLE EQTY FD D	1.000	-0.178	Large Growth	Medium-Cost	-0.795	-1.338
JANUS HENDERSON GLOBAL VALUE FUND D	0.881	-0.011	NaN	Low-Cost	-0.095	-0.942
JANUS PRESERVATION SERIES-GLOBAL C	2.647	-0.016	NaN	High-Cost	-0.201	-1.845
JENSEN GLOBAL QUALITY GROWTH FUND I	1.020	-0.015	Large Growth	Medium-Cost	-0.111	0.764
JOHN HANCOCK FDAMENTAL GLBL FRANCHISE FD NAV	0.877	-0.011	Large Blend	Low-Cost	-0.090	-0.833
JOHN HANCOCK GLOBAL EQUITY FUND NAV	0.886	0.002	Large Blend	Low-Cost	-0.029	-0.860
JOHN HANCOCK FUNDS GLB. OPPS.FD.CL.A	1.481	0.017	NaN	High-Cost	0.083	-1.526
JHAN.FUND.III GLB. SHAREHOLDER YLD.FD.CL.I	0.920	0.016	Large Value	Low-Cost	0.074	-1.229
JOHN HANCOCK GLOBAL THEMATIC OPPS FUND NAV	0.840	-0.008	Large Growth	Low-Cost	-0.072	-1.234
JOHN HANCOCK MUTUAL SHARES FUND NAV	1.009	0.116	NaN	Medium-Cost	1.071	-0.707
JOHN HANCOCK TECHNICAL OPPORTUNITIES FUND NAV	1.183	0.025	NaN	High-Cost	0.091	-0.503
JUBAK GLOBAL EQ.FD. DEAD - Liquidated	1.665	0.015	NaN	High-Cost	0.071	-3.291
LSV GLOBAL MANAGED VOLATILITY FUND INST	0.750	0.031	Large Value	Low-Cost	0.178	-0.904
LSV GLOBAL VALUE FUND INST	0.900	0.052	Mid Value	Low-Cost	0.249	-0.693
LAZARD EQUITY FRANCHISE PORTFOLIO INSTITUTIONAL	0.950	-0.011	Mid Value	Medium-Cost	-0.066	-0.800
LAZARD GLOBAL EQUITY SELECT PORTFOLIO INSTL	1.013	0.057	Large Growth	Medium-Cost	0.346	-0.535
LAZARD GLOBAL STRATEGIC EQUITY PORTFOLIO INST	1.038	-0.084	Large Growth	Medium-Cost	-0.258	-0.554
LONGLEAF PARTNERS GLOBAL FD.	1.333	-0.005	Mid Value	High-Cost	-0.056	-0.855
LORD ABBETT GLOBAL EQUITY FUND A	0.938	0.023	Large Blend	Medium-Cost	0.090	-0.704
MFAM GLBL OPPTYS FD INVSTR	1.208	0.088	NaN	High-Cost	0.514	-0.417
MFS BLENDED RESEARCH GLOBAL EQUITY FUND R6	0.583	0.050	Large Blend	Low-Cost	0.257	-1.121
MFS GLB.EQ.FD.CL.B	1.961	0.064	Large Blend	High-Cost	0.378	-0.786
MFS GLOBAL LEADERS FD. CL.A	1.450	-0.001	NaN	High-Cost	-0.049	-1.084
MAIN STAY EPOCH CAPITAL GROWTH FUND I	0.906	-0.002	Large Growth	Low-Cost	-0.039	-0.572
MAINSTAY EPOCH GLB.CHO. FD.CL.I	1.128	0.021	Large Blend	Medium-Cost	0.102	-1.030
MAINSTAY EPOCH GLB.EQ. YLD.FD.CL.I	0.852	0.031	Large Value	Low-Cost	0.175	-1.076
MAINSTAY ICAP GLB.FD.CL. I	0.900	0.045	NaN	Low-Cost	0.315	-1.244
MNGD ACCT SRS BLKRK GA DYN EQTY FD K	0.505	0.042	NaN	Low-Cost	0.166	-0.630
MARSICO GLOBAL FUND INVESTOR	1.534	0.048	Large Growth	High-Cost	0.220	-0.418
MASS MUTUAL GLOBAL FUND R5	0.931	0.014	Large Growth	Medium-Cost	0.039	-0.690
MONDRIAN GLOBAL EQUITY VALUE FUND	0.740	-0.070	Large Value	Low-Cost	-0.412	0.181
MORGAN STANLEY GLOBAL CONCENTRATED PORTFOLIO I	0.990	0.081	Large Growth	Medium-Cost	0.428	-0.246
MORGAN STANLEY GLOBAL CORE PORTFOLIO I	0.985	0.077	Large Growth	Medium-Cost	0.402	-0.378
MORGAN STANLEY INSTL.FD. GLB.INSIGHT PRTF.CL.H	1.663	0.015	NaN	High-Cost	0.055	-0.725
MORGAN STANLEY GLOBAL SUSTAIN PORTFOLIO I	0.963	0.042	Large Growth	Medium-Cost	0.236	-0.458
MGST.INSTL.FD.GLB.FRCH. PRTF.CL.I	0.956	0.065	Large Growth	Medium-Cost	0.420	-0.403
MORG STAN INST GLBL PERMANENCE PFOLIO I	0.997	0.032	Large Growth	Medium-Cost	0.112	-0.374
MORG STAN INSTL CNTRPNT GLBL I	1.038	-0.007	Large Growth	Medium-Cost	-0.043	-0.468
MORG STAN INSTL GLBL INSIGHT PRT I	1.155	0.007	Large Growth	Medium-Cost	0.004	-0.457
MORGAN STANLEY INSTL.FD. GLB.GW.PRTF.CL.I	1.014	0.076	NaN	Medium-Cost	0.361	-0.194
MUNDOVAL FUND	1.498	0.074	Large Growth	High-Cost	0.433	-0.406
NATIONWIDE GLBL SUSTAINABLE EQTY FD R6	0.981	0.051	Large Growth	Medium-Cost	0.261	-0.683
NATIXIS LOOMIS SAYLES GLOBAL GROWTH Y	1.010	0.041	Large Growth	Medium-Cost	0.191	-0.657
NEUBERGER BERMAN FOCUS FD.	0.922	0.019	Large Growth	Medium-Cost	0.068	-0.733
NEUBERGER BERMAN GLOBAL THEMATIC OPPS.INSTL.CL.	1.250	0.044	NaN	High-Cost	0.399	-1.457
NINETY ONE GLOBAL FRANCHISE FUND I	0.850	0.073	Large Growth	Low-Cost	0.382	0.006
NORTHERN ENGAGE 360 FUND	0.700	0.000	Large Blend	Low-Cost	-0.028	-0.893
NUVEEN GLOBAL GROWTH FD. CL.A	1.421	0.087	Large Blend	High-Cost	0.598	-0.122
NUVEEN NWQ GLOBAL ALL- CAP FUND I	0.934	-0.010	NaN	Medium-Cost	-0.101	-0.895
OAKMARK GLOBAL FUND INVESTOR	1.148	0.049	Large Value	Medium-Cost	0.208	-0.508
OAKMARK GLOBAL SELECT FUND INVESTOR	1.152	0.059	Large Blend	Medium-Cost	0.273	-0.490
OLD WESTBURY ALL CAP ESG FUND	1.000	-0.003	Large Growth	Medium-Cost	-0.043	-1.214
PF MULTI-ASSET FUND P	0.510	-0.021	NaN	Low-Cost	-0.103	-0.634
PGIM JENNISON GLOBAL OPPORTUNITIES FUND Z	1.077	0.118	Large Growth	Medium-Cost	0.568	0.180
PIMCO EQUITIES PFR. WORLD FD.CL.A	1.246	0.001	NaN	High-Cost	-0.031	-0.969
PIMCO GLOBAL DIVIDEND FUND A	1.185	-0.099	NaN	High-Cost	-0.423	-1.053

PMC DIVERSIFIED EQUITY FUND ADVISOR	1.248	0.046	Large Blend	High-Cost	0.257	-0.997
PARVIN HEDGED EQUITY SOLARI WORLD FUND	0.010	-0.121	Large Blend	Low-Cost	-1.009	0.142
PHAEACIAN GLOBAL VALUE FUND INST	1.169	0.003	NaN	Medium-Cost	-0.020	-0.910
PION GLBL SUSTAINABLE EQTY FD A	1.244	0.057	Large Value	High-Cost	0.319	-0.569
POLARIS GLB.VAL.FD.	1.057	0.079	Mid Value	Medium-Cost	0.448	-0.350
POLEN GLOBAL GROWTH FUND INSTITUTIONAL	1.074	0.097	Large Growth	Medium-Cost	0.546	0.008
PRINCIPAL SYSTEMAT EX INTERNATIONAL FUND R-6	0.625	-0.026	Large Blend	Low-Cost	-0.185	-1.601
PURISIMA ALL-PURPOSE FD. DEAD - Liquidated	1.500	-0.014	NaN	High-Cost	-16.254	-1.049
QUAKER GLOBAL TACTICAL ALLOCATION FUND ADVISOR	2.392	0.060	NaN	High-Cost	0.476	-0.778
RBC GLOBAL OPPORTUNITIES FUND I	0.897	0.098	Large Growth	Low-Cost	0.528	-0.143
ROCKEFELLER EQTY ALLOCTN FD INSTL	1.209	-0.034	NaN	High-Cost	-0.215	-0.848
RUSSELL INVESTMENTS GLOBAL EQUITY FUND S	1.197	0.008	Large Blend	High-Cost	0.009	-0.831
SEI INST INV GLBL MNGD VOLATILITY FD A	0.243	-0.003	Large Value	Low-Cost	-0.062	-0.892
SEI INST MGD GLBL MNGD VOLATILITY FD F	1.112	0.015	Large Value	Medium-Cost	0.070	-0.852
SGI GLOBAL EQUITY FUND I	0.859	0.057	Large Blend	Low-Cost	0.309	-0.396
SALIENT GLOBAL EQ.FD.CL. I	1.600	-0.051	NaN	High-Cost	-0.526	-1.546
SANDS CAPITAL GLBL GRO FD INSTL	1.019	0.070	Large Growth	Medium-Cost	0.326	-0.268
SCHARF GLOBAL OPPORTUNITY FUND INST	0.612	0.037	Large Value	Low-Cost	0.187	-0.621
SCHRODER GLOBAL MULTI- CAP EQUITY FUND R6	0.700	-0.231	NaN	Low-Cost	-0.479	-0.706
SCOUT GLOBAL EQUITY FD. DEAD - Liquidated	1.295	0.042	NaN	High-Cost	0.213	-0.636
SEGALL BRYANT & HAMILL GLOBAL ALL CAP FUND RTL	0.999	-0.012	Large Growth	Medium-Cost	-0.107	-0.919
SELECTIVE OPPORTUNITY FUND FOUNDATION	1.396	0.029	NaN	High-Cost	0.082	-0.481
SIRIOS FOCUS FUND INST	1.600	-0.154	Large Growth	High-Cost	-0.753	-0.503
SIT ESG GROWTH FUND I	1.056	0.063	Large Blend	Medium-Cost	0.336	-0.553
STATE STREET DEFENSIVE GLOBAL EQUITY FUND I	0.778	-0.011	NaN	Low-Cost	-0.093	-1.086
STATE STREET GLOBAL VALUE SPOTLIGHT FUND K	0.750	-0.277	NaN	Low-Cost	-1.493	-1.904
STRATEGIC EQUITY ALLOCATION FUND NAV	0.529	0.015	NaN	Low-Cost	0.051	-0.836
T.ROWE PRICE GLB.LGCP. STK.FD.	0.962	0.071	NaN	Medium-Cost	0.388	-0.347
T ROWE PRICE GLOBAL IMPACT EQUITY	0.944	-0.165	Large Growth	Medium-Cost	-0.669	-0.889
T ROWE PRICE GLB.STK.FD.	0.851	0.105	Large Growth	Low-Cost	0.578	0.088
T ROWE PRICE GLOBAL VALUE EQUITY	0.746	0.022	Large Value	Low-Cost	0.095	-0.782
T.ROWE PRICE INSTL. DEAD - Merged:9051FK	0.751	0.042	NaN	Low-Cost	0.188	-0.485
T ROWE PRICE INSTL.GLB. LGCP.EQ.FD.	0.749	0.063	NaN	Low-Cost	0.385	-0.508
T ROWE PRICE QM GLOBAL EQUITY FUND	0.734	0.058	Large Blend	Low-Cost	0.285	-0.538
TD GLOBAL LOW VOLATILITY EQUITY FUND INST	0.900	-0.008	NaN	Low-Cost	-0.110	-0.611
TIF GLB.EQ.SERIES FUND DEAD - Liquidated	0.848	-0.132	NaN	Low-Cost	-0.384	-0.609
TEMPLETON GLB.OPPOR.TST. I	1.329	0.033	NaN	High-Cost	0.184	-1.044
TEMPLETON GROWTH FD.CL.A	1.059	0.033	Large Blend	Medium-Cost	0.164	-1.056
TEMPLETON WLD.FUND.CL.A	1.055	-0.007	Large Growth	Medium-Cost	-0.078	-1.240
THORNBURG GLOBAL OPPORTUNITIES FUND I	0.985	0.080	Large Value	Medium-Cost	0.464	-0.226
THRIVENT GLOBAL STOCK FUND A	1.024	0.016	Large Blend	Medium-Cost	0.057	-0.971
THRIVENT LOW VOLATILITY EQUITY S	1.099	0.033	Large Blend	Medium-Cost	0.194	-0.614
TRILLIUM ESG GLOBAL EQUITY FUND RETAIL	1.364	0.059	Large Blend	High-Cost	0.345	-0.702
TWEEDY BROWNE INTL VALUE FUND II - CURR UNHGD	1.367	0.040	Large Value	High-Cost	0.245	-1.039
TWEEDY BROWNE VAL.FD.	1.369	0.007	Large Value	High-Cost	0.002	-1.044
UBS ENGAGE FOR IMPACT FUND P	0.850	0.031	Mid Growth	Low-Cost	0.112	-0.882
US GLB.INVRS.FUND.GLB. MEGATRENDS FUND	2.110	0.139	NaN	High-Cost	1.495	-0.944
USAA CAPITAL GROWTH FUND FUND	1.198	0.057	Large Blend	High-Cost	0.322	-0.668
USAA SUSTAINABLE WORLD FUND FUND	1.149	0.029	Large Blend	Medium-Cost	0.131	-0.631
UPRIGHT GW.FD.	2.222	0.049	NaN	High-Cost	0.122	-0.168
VANGD.BAIL GIFF GL POSITIVE IPCT.STK.FD INV	0.676	0.136	Large Growth	Low-Cost	0.483	0.280
VANGUARD GLOBAL CAPITAL CYCLES FUND INVESTOR	0.334	-0.029	Large Value	Low-Cost	-0.134	-0.553
VANGUARD GLBL ESG SEL STK FD ADMIRAL	0.455	0.034	Large Blend	Low-Cost	0.157	0.515
VANGUARD HORIZON FD. VANGD.GLB.EQ.FD.	0.519	0.054	NaN	Low-Cost	0.302	-0.726
VICTORY NEWBRIDGE GLOBAL EQUITY FUND A	1.400	0.009	NaN	High-Cost	0.021	-1.038
VICTORY RS GLOBAL FUND Y	0.875	0.064	Large Blend	Low-Cost	0.378	-0.519
VIRTUS GLB.COMD.STK.FD. CL.I	1.400	-0.076	NaN	High-Cost	-0.554	-2.147
VIRTUS NFJ GLOBAL SUSTAINABILITY FUND INST	0.833	0.019	Large Blend	Low-Cost	0.062	-0.624
VIRTUS SGA GLOBAL GROWTH FUND R6	1.238	0.077	Large Growth	High-Cost	0.445	-0.330
VIRTUS SGA NEW LEADERS GROWTH FUND R6	0.912	-0.349	Large Growth	Low-Cost	-1.528	-2.929
VIRTUS VONTOBEL GLOBAL OPPORTUNITIES FUND A	1.443	0.053	Large Growth	High-Cost	0.299	-0.539
VONTOBEL GLOBAL EQUITY INSTITUTIONAL FUND I	0.900	0.084	NaN	Low-Cost	0.657	-0.159
VOYA GLBL HI DIV LOW VOLATILITY FD A	1.201	0.039	Large Value	High-Cost	0.228	-1.038
VOYA GLOBAL OPPORTUNITIES FUND A	1.462	0.104	NaN	High-Cost	0.801	-1.368
WCM FOCUSED GLB.GW.FD. INSTL.CL.	1.081	0.045	Large Growth	Medium-Cost	0.220	-0.256
WASATCH GLOBAL SELECT FUND INSTITUTIONAL	0.954	-0.099	Mid Growth	Medium-Cost	-0.452	-1.263
WASATCH GLOBAL VALUE FUND INVESTOR	1.102	-0.017	Large Value	Medium-Cost	-0.114	-0.765
WELLS FARGO INTRINSIC WORLD EQTY FD A	1.377	0.008	NaN	High-Cost	0.006	-0.603
WESTWOOD GLOBAL EQUITY FD.INSTL.SHS.	1.000	-0.061	NaN	Medium-Cost	-0.259	-0.566
WILLIAM BLAIR GLOBAL LEADERS FD.CL.I	1.092	0.058	Large Growth	Medium-Cost	0.291	-0.532
WINTERGREEN FD. DEAD - Liquidated	1.905	-0.087	NaN	High-Cost	-0.465	-1.082
WINTON GLOBAL EQUITY PORTFOLIO INSTITUTIONAL	0.760	0.012	NaN	Low-Cost	0.042	-1.388
WORLD SELECT EQUITY FUND A	0.344	-0.006	NaN	Low-Cost	-0.058	-0.997
YORKTOWN CAPITAL APPRECIATION FUND A	1.625	-0.049	Mid Growth	High-Cost	-0.336	-1.475
ABRDN EMERGING MARKETS EX-CHINA FUND A	1.543	0.002	Large Blend	High-Cost	-0.023	-1.058

ABRDN GLOBAL EQUITY IMPACT FUND A	1.691	0.041	Large Growth	High-Cost	0.206	-0.866

F Fama-French Five-factor Model

Fama & French presented the Five-factor model in 2015. The fama french five-factor model adds two new factors to the fama french three-factor model. These factor are Robust minus Weak (RMW) and Conservatives minus Aggressive (CMA) (Fama & French, 2015).

We ran the Fama-French five-factor regression on each individual fund gross and net of fees and on an equally weighted portfolio gross and net of fees. The factors are obtained from Kenneth F. French website (French, 2023).

F.1 Fama-French five-factor in Norway

After running the Fama-French Five-factor model in Norway we obtained the following results. Without any significance level, from the 52 funds, 16 generated positive alpha before fees, and 8 generated positive alpha after fees. Before fees, 36 funds generated negative alpha, and 44 generated negative alpha after fees.

With a 10% significance level: Before fees, there is 1 fund that generates positive alpha and after fees there are none. Before fees, seven funds generate significant negative alpha. After fees, there are 14 funds that generate negative significant alpha.

In Table 35 the equally-weighted portfolio regression for Norwegian funds can be seen.

Table 35: Fama French five-factor - Norway - EW

	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{RMW}	β_{CMA}	$AdjR^2$	Obs
FF5 - Gross of fees	-0.0013^{**}	1.0408^{***}	0.0408	0.0665	0.0550	0.573	0.973	131
	(0.001)	(0.015)	(0.050)	(0.059)	(0.061)	(0.086)		
FF5 - Net of fees	-0.0023^{***}	1.0408^{***}	0.0413	0.0667	0.0556	0.570	0.973	131
	(0.001)	(0.015)	(0.050)	(0.059)	(0.061)	(0.086)		

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

F.2 Fama-French Five-factor in the US

After running the Fama-French Five-factor model in the US we obtained the following results. Without any significance level, from the 251 funds, 38 generated positive alpha before fees, and 25 generated positive alpha after fees. Before fees, 213 funds generated negative alpha, and 226 generated negative alpha after fees.

With a 10% significance level: there were seven funds that generates positive alpha before fees, after fees there are five funds. Before fees, 125 funds generate significant negative alpha. After fees, there are 159 funds that generate negative significant alpha.

In Table 36 the equally-weighted portfolio regression for US funds can be seen.

Table 36: Fama French five-factor - US - EW

	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{RMW}	β_{CMA}	$AdjR^2$	Obs
FF5 - Gross of fees	-0.0039^{***}	0.9578^{***}	-0.1745^{**}	0.0241	-0.0449	-0.2896^{*}	0.911	131
	(0.001)	(0.042)	(0.073)	(0.063)	(0.109)	(0.167)		
FF5 - Net of fees	-0.0049^{***}	0.9577^{***}	-0.1746^{**}	0.0243	-0.0441	-0.2896^{*}	0.911	131
	(0.001)	(0.042)	(0.073)	(0.063)	(0.109)	(0.167)		

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

G Appendix: Different Benchmark

To test our sample with another benchmark we used iShares ETF as an alternative benchmark and replaced MSCI world in our sample. The data for iShares ETF is from Yahoo Finance (Yahoo Finance, 2023). The MSCI index and the iShares MSCI ETF can be seen cumulative plotted in Figure 11. When using the new benchmark we obtained a non-significant positive alpha in Norway, gross of fees. However, the positive alpha disappeared when performing the same regression net of fees, still non-significant. In the US the alphas were negative gross and net of fees, but larger. The results can be seen in Table 37. We also ran the individual Carhart four-factor regression, the result for Norway can be seen in Table 38 for Norway and Table 39 for the US.

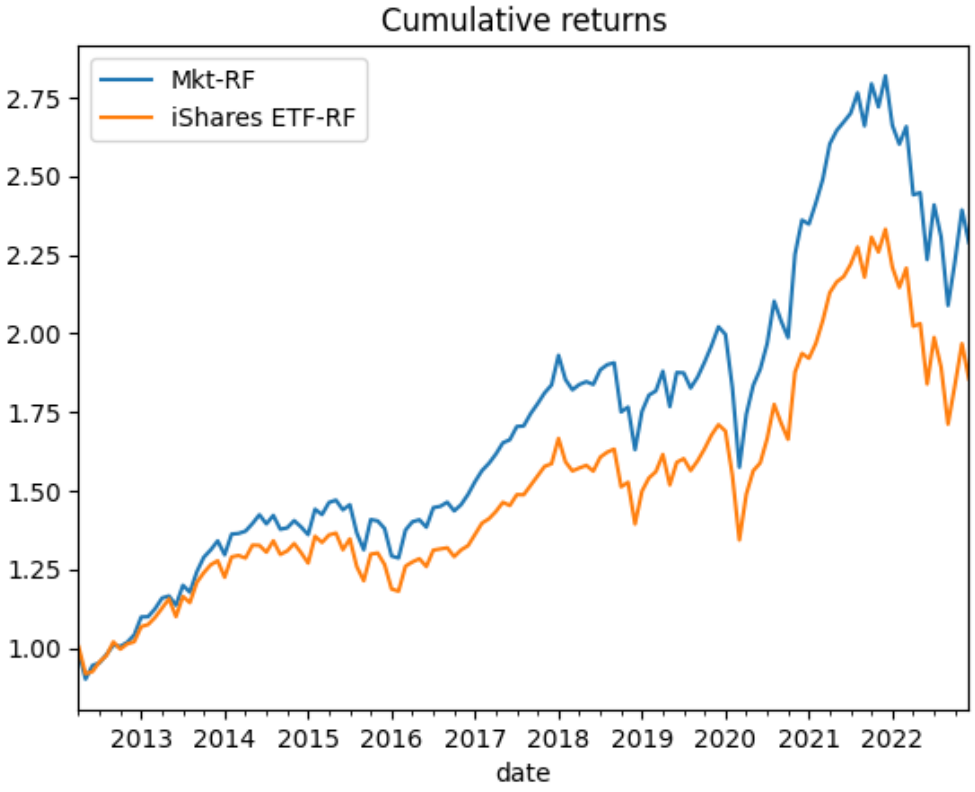

Figure 11: iShares MSCI ETF and MSCI index

Table 37: Different benchmark Carhart four-factor regression in Norway and in the US

	α	β_{Mkt-rf}	β_{SMB}	β_{HML}	β_{MOM}	$AdjR^2$
Norway - Gross returns	0.0007	0.9979^{***}	0.2349^{***}	0.1326^{***}	-0.0142	0.943
	(0.001)	(0.020)	(0.064)	(0.030)	(0.042)	
Norway - Net returns	-0.0004	0.9979^{***}	0.2352^{***}	0.1324^{***}	-0.0145	0.943
	(0.001)	(0.020)	(0.064)	(0.030)	(0.042)	
US - Gross returns	-0.0027^{***}	0.9526^{***}	0.0802	-0.0733^{**}	-0.0586	0.904
	(0.001)	(0.033)	(0.081)	(0.040)	(0.038)	
US Net returns	-0.0036^{***}	0.9524^{***}	0.0798	-0.0736^{*}	-0.0590	0.904
	(0.001)	(0.033)	(0.081)	(0.039)	(0.038)	

$^{***}p < 0.01$, $^{**}p < 0.05$, and $^{*}p < 0.10$. Standard errors are shown in parentheses.

Table 38: Carhart 4 individual regression overview - Different benchmark - Norway

	Gross of fees (No sign.)	Net of fees (No sign.)	Gross of fees (10% sign.)	Net of fees (10% sign.)
Positive alpha	39	30	9	3
Negative alpha	13	22	2	4
Zero alpha	0	0	41*	45*
Total funds	52	52	52	52

* Cannot distinguish from zero

Table 39: Carhart 4 individual regression overview - Different benchmark - US

	Gross of fees (No sign.)	Net of fees (No sign.)	Gross of fees (10% sign.)	Net of fees (10% sign.)
Positive alpha	54	37	7	5
Negative alpha	197	214	62	100
Zero alpha	0	0	182*	146*
Total funds	251	251	251	251

* Cannot distinguish from zero