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Sustainable and conventional mutual funds compared as an investment for retail investors

Performance and fees

School of Accounting and Finance
Master’s Thesis in Finance
Master’s Degree Programme in Finance

Vaasa 2024

UNIVERSITY OF VAASA
School of Accounting and Finance
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Title of the thesis: Sustainable and conventional mutual funds compared as an investment for retail investors: Performance and fees
Degree: Master of Science in Economics and Business Administration
Programme: Master's Degree Programme in Finance
Supervisor: Timo Rothovius
Year: 2024 **Pages: 69**

ABSTRACT:
This thesis explores the differences in sustainable and conventional fund's performance and fees. Sustainable investing has been increasingly popular as themes around ESG have become increasingly important. This thesis concentrates on actively managed mutual funds. In addition, this thesis concentrates on funds targeted at retail investors. Most research on the topic has been on passive funds targeted to institutional investors. This thesis addresses the gap in the literature. As there is no unanimous consensus on the topic, there is still a need for further research. This thesis aims to see how a retail investor can utilize sustainability in their investments. Also, the aim is to see how portfolio managers use sustainability and whether it favors the investor.

This thesis utilizes the data from Morningstar, using the Morningstar Sustainability Rating. Morningstar is a popular database for investments, especially mutual funds. The simplicity of the Morningstar Sustainability Rating attracts retail investors which makes it the perfect database. The data will be used to show performance, risk, and fees which all impact the profitability of the investment decision. Based on previous research the hypotheses are that sustainable funds have worse performance and higher fees than conventional funds. To examine the differences in performance for the sustainable and conventional funds there is a 1-factor model and a 3-factor model used. In addition, a novel approach is presented to investigate the effect of whether the fund is sustainable on Morningstar-provided risk figures, different categories of fees, and overall fee level.

The findings of this thesis indicate several noteworthy findings. Firstly, sustainable mutual funds have exhibited worsened performance over recent years, proving the notion that sustainable funds underperform their conventional counterparts. This finding contradicts some previous research and underscores the evolving environment of sustainable investing, where factors beyond financial returns play a significant role in investor decision-making. Moreover, conventional mutual funds have been found to have lower fees compared to sustainable funds, which can make them an attractive investment option for retail investors. Thus, if an investor wants to invest in sustainable options, the investor does miss out on returns. Furthermore, the analysis of fund flow dynamics in previous literature has revealed a trend of more positive net flows into sustainable mutual funds compared to conventional funds, particularly over the past couple of years. This trend underscores the growing investor appetite for sustainable investment opportunities and suggests a shift in investor preferences towards aligning their investments with ESG considerations.

KEYWORDS: Responsibility, funds, ethical investing, social responsibility, yield

VAASAN YLIOPISTO
School of Accounting and Finance

Tekijä:	Aura Leppänen
Otsikko:	Sustainable and conventional mutual funds compared as an investment for retail investors: Performance and fees
Tutkinto:	Kauppatieteiden maisteri
Koulutusohjelma:	Master’s Degree Programme in Finance
Ohjaaja:	Timo Rothovius
Valmistumisvuosi:	2024 **Sivumäärä: 69**

TIIVISTELMÄ:

Tässä tutkielmassa tarkastellaan eroja vastuullisien ja perinteisien rahastojen tuotoissa ja palkkioissa. Vastuullinen sijoittaminen on ollut yhä suositumpaa, kun ESG-teemat ovat tulleet yhä tärkeämmiksi. Tämä tutkielma keskittyy aktiivisesti hallinnoituihin rahastoihin. Lisäksi tässä tutkielmassa keskitytään yksityissijoittajille suunnattuihin rahastoihin. Suurin osa aihetta koskevasta tutkimuksesta on kohdistunut institutionaalisille sijoittajille suunnatuille passiivisille rahastoille. Tämä tutkielma käsittelee tätä aukkoa tutkimuksessa. Koska aiheesta ei ole yksimielisyyttä, lisätutkimusta tarvitaan edelleen. Tämän tutkielman tavoitteena on nähdä, miten yksityissijoittaja voi hyödyntää vastuullisuutta sijoituksissaan. Tavoitteena on myös nähdä, miten salkunhoitajat käyttävät vastuullisuutta ja suosiiko se sijoittajaa.

Tässä tutkielmassa hyödynnetään Morningstarin tietoja Morningstar Sustainability Rating -luokitusta käyttäen. Morningstar on suosittu sijoitustietokanta, erityisesti rahastoille. Morningstar Sustainability Rating -luokituksen yksinkertaisuus houkuttelee yksityissijoittajia, mikä tekee siitä täydellisen tietokannan tutkielmalle. Tietokantaa käytetään tuoton, riskin ja palkkioiden tiedon saamiseen, jotka kaikki vaikuttavat sijoituspäätöksen kannattavuuteen. Aiempien tutkimusten perusteella oletetaan, että vastuullisilla rahastoilla on huonompi tuotto ja korkeammat palkkiot kuin perinteisillä rahastoilla. Vastuullisen ja perinteisen rahastojen tuloserojen tarkastelussa käytetään 1-faktorimallia ja 3-faktorimallia. Lisäksi esitellään uusi lähestymistapa, jolla selvitetään rahaston vastuullisuuden vaikutusta Morningstarin riskilukuihin, eri palkkioihin ja rahaston kokonaispalkkiotasoon.

Tämä tutkielma tuo esille useita huomionarvoisia havaintoja. Ensinnäkin vastuulliset rahastot ovat osoittaneet huonompaa tuottoa viime vuosina, mikä vastaa käsitystä siitä, että vastuulliset rahastot ovat heikompia kuin perinteiset rahastot. Tämä havainto on ristiriidassa joidenkin aikaisempien tutkimusten kanssa ja korostaa vastuullisen sijoittamisen kehittyvää ympäristöä, jossa taloudellisen tuoton ulkopuolisilla tekijöillä on merkittävä rooli sijoittajan päätöksenteossa. Lisäksi perinteisten rahastojen palkkiot on havaittu olevan alhaisemmat verrattuna vastuullisiin rahastoihin, mikä voi tehdä niistä houkuttelevampia sijoitusvaihtoehtoja yksityissijoittajille. Siten, jos sijoittaja haluaa sijoittaa vastuullisiin vaihtoehtoihin, sijoittaja saattaa menettää tuottoa arvovalinnassa. Lisäksi rahastovirtoja tutkiva tutkimus on paljastanut trendin, jonka mukaan vastuullisiin rahastoihin kohdistuu positiivisempia nettorahastovirtoja perinteisiin rahastoihin verrattuna, erityisesti parin viime vuoden aikana. Tämä suuntaus korostaa sijoittajien kasvavaa halukkuutta vastuullisiin sijoitusmahdollisuuksiin ja viittaa siihen, että sijoittajien mieltymykset mukautetaan ESG-näkökohtiin kasvavissa määrin.

AVAINSANAT: Vastuullisuus, rahastot, vastuullinen sijoittaminen, sosiaalinen vastuu, tuotto

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1 Introduction

Sustainability has been getting increasingly popular. Sustainable investing has become a part of the sustainability movement, and investors are looking at more ways to give back to the environment and society through investing in sustainable options. Investing sustainably can also be called responsible investing. The Global Sustainable Investment Alliance discloses that global ESG investments have risen 15 % from 2019 to 2021 and overall, in 2021 35.9 % of investments are ESG investments (Lee et al., 2023).

Without the time or knowledge to invest in individual assets, mutual funds are an easy and affordable way. Especially, when an investor wants to contribute to the sustainability movement through its investments. With ESG investments growing, the number of sustainable mutual funds is growing as well. There are a lot of factors that impact an investment decision. In recent years Mirza et al. (2023) found that investors want their investments to reflect their values. Also, Dunbar et al. (2023) show that 88 % of BlackRock's clients value sustainability in their investment decisions.

There has been evidence that actively managed mutual funds perform worse than index funds, which can make them an unattractive investment. An and Argyle (2021) elaborate that mutual fund managers make irrational decisions, making their portfolios worse while index funds can even out over time. Additionally, sustainable mutual funds have had a pattern of being overpriced. Alternative energy mutual funds were seen to have lost profit because of the sustainability investment decisions (Reboredo et al., 2017). Nevertheless, the results across many studies are inconclusive and usually only study a specific market or field.

There have been a lot of blind spots regarding sustainable mutual funds. With companies trying to greenwash for the companies' benefit, it is hard for an investor to know if the assets in the mutual funds are correctly picked to represent the sustainability level given. ESG scores are best trusted by third-party agencies by investors, but they are found to have mixed results (Lee et al., 2023). The most difficult aspect of sustainability is the inconclusiveness of the definition (Fang & Parida, 2022). Now that Morningstar has created one that takes data from many different third-party sources, the results are perhaps more legitimate and more accessible to retail investors.

Governing bodies have noticed the popularity of sustainable investing and there have been changes to create, for example, legislation to protect investors. The European Union has created a regulation for all financial parties in the European Union to follow if they have sustainable mutual funds. Also, internationally there is a network that is an advocate for sustainable investing for financial service providers, PRI.

A mutual fund can have a risk or an advantage from investing in sustainable companies. On the other hand, there is a possibility that a sustainable approach may not be profitable enough because for example sustainable materials can be more expensive and can change the products market to premium. However, companies without sustainable acts can get boycotted and get into ESG controversies. Still, there is a possibility that a company can falsely better its ESG scoring which can lead to an ESG controversy too.

1.1 Purpose of the Thesis

The research on sustainable mutual funds' performance is mixed. Investors can lose money while doing good and investing in mutual funds that meet their values. This thesis explores how sustainable mutual funds compare with conventional mutual funds when using a clear and accessible benchmark, the Morningstar Sustainability Rating™.

Morningstar is a well-known financial service provider that many investors trust with mutual funds. Using a well-known provider gives an example of how a regular investor could make a sustainable investment decision. Then we can illustrate the same process but with conventional funds, using the same service. In addition, there will not be cuts in what market the mutual fund invests in, or which investment company the fund is from. In addition, the thesis will focus on actively managed mutual funds.

The results can show if investors should be doing more research when investing sustainably. Also, to see if it is a risk or advantage to invest sustainably. In addition, we can see if it pays off to companies to make more sustainable decisions. Society benefits if the sustainability movement is favorable for every part of society.

1.2 Hypotheses

The first hypothesis is about the performance differences between sustainable and conventional mutual funds. This hypothesis is based on existing literature. Often existing literature shows that sustainable mutual funds have a premium compared to conventional mutual funds. Also, sustainable mutual funds are found to be mutually dependent, worsening a portfolio's performance.

H1: Sustainable mutual funds underperform conventional mutual funds.

Also, sustainability is increasingly a worry in investors' minds and portfolio managers can take that as an advantage to have higher fees. Retail investors have a fraction of the information that portfolio managers have.

H2: Sustainable mutual funds have higher fees than conventional mutual funds.

As stated, investors want to invest sustainably. If the second hypothesis holds, then wealth advisors can recommend selling conventional mutual funds and buying sustainable mutual funds with the funds from the selling. It is beneficial for wealth advisors to recommend high-fee mutual funds, especially from their own asset management company.

1.3 Structure of the Thesis

The paper starts with laying out what sustainability is and what legislation and agreements are related to sustainable mutual funds' progress through recent years. Also, the core of the study, the Morningstar Sustainability Rating™, is clarified. In addition, other important terminology. Then the theoretical background will explain The Efficient market theory, Portfolio Theory, portfolio performance models, and shareholder and stakeholder theory, which are all relevant to the topic. Then the literature review and data and methodology. After that, analyze the results and end off with the conclusion.

2 Sustainability

2.1 Sustainability terminology

2.1.1 ESG

ESG stands for environmental, social, and governance. Environmental refers to how the environment is affected or benefited. For example, pollution and carbon emissions are important factors. Social means how people are affected or benefited. For example, labor rights and diversity can be subjects of "social". Lastly, governance refers to operations, for example, board composition and corruption. (Bank of Finland, n.d.).

There is a negative and positive approach to practicing ESG funds. A negative approach includes not selecting certain companies or, for example, industries such as the arms industry. A positive approach is to add companies to the fund that have good ESG practices and that can be seen from, for example, third-party ESG scores or even their research. ESG scores have been created to help the positive approach. (Dorfleitner et al., 2015).

Most ESG data comes from the companies themselves and companies execute ESG differently (Humphrey & Li, 2021). They show that good ESG statements do not necessarily equal good ESG actions. Sustainable mutual funds follow at least one of the ESG criteria. Zhang et al. (2023) find that only ¼ of Chinese companies state their ESG reports. Although, 86 % of companies published non-financial reports in 2021 (Mandas et al., 2023). Still, Dunbar et al. (2023) state that investors do not always feel confident about the trustworthiness of companies' ESG ratings.

Third-party ESG scorings have been created to fight the problem with ESG ratings. The goal of ESG scoring is to show the investors how the investment is impacting the world sustainably. Also, third parties are seen to not have bias so they can be more trustworthy. In addition, ESG score analysts can give feedback to companies on how they can improve their sustainability. In addition, analysts can provide a border view of the companies' sustainability act rather than with just numbers or the companies' display. (Mandas et al., 2023).

Overall, companies have increased non-financial reporting such as ESG reporting so that the investor can feel more secure about their investment. Although, this can even lead to an overwhelming amount of information. Still, the study found that investors want to have a lot of ESG information about the companies they invest in. Also, ESG vocabulary has a significant positive effect on investors. (Ignatov, 2023).

ESG fund portfolio managers can pick the sustainability investment strategy on how the fund executes the ESG values. One of the positive approaches is being an active shareholder. Morningstar ESG valued funds are active sustainability advocates as shareholders. Although, the effect is more significant with index funds than active funds. (Dikolli et al., 2022).

Raghunandan and Rajgopal (2022) study the companies that Morningstar ESG valued funds invest in. They found that the companies in the funds have a bad performance history related to stakeholders, for example, labor objectives. In addition, the research finds that higher ESG score companies are more connected to ESG-related disclosures than actual ESG actions. Further, especially socially responsible funds are found to not solve stakeholder uncertainties.

There is also evidence that funds concentrate on the governance of the ESG. It can be explained by ESG funds having sizable amounts of technology firms in their asset pool. Technology firms stereotypically have good governance qualities as is. (Raghunandan and Rajgopal, 2022).

Companies deciding to follow ESG practices must weigh out short-term and long-term benefits. Short term it is much easier to get profit without having to have resources for keeping up with the level of ESG followed. Although, in the long term it will probably become more profitable. ESG is so new that there is not that much research on the topic. (Yang et al., 2023).

Further, Yang et al. (2023) suggest that while many companies are starting to follow ESG practices, the legislation will change to also motivate the companies that do not follow ESG to follow ESG practices. In addition, when a local company has better turnover because of ESG practices, it will encourage other local companies to do the same. Risk aversion and development benefits from ESG implementation showed many companies to have a strategic plan for the implementation of their own company.

All in all, ESG practices are usually for all the stakeholders' benefit. However, the benefits can only be shown in the long term. That makes ESG funds tricky because funds should make a profit from the companies that the funds invest in. Still, a good ESG score might not even benefit society or the planet as the investors expect.

2.1.2 CSR

CSR stands for corporate social responsibility. Corporate social responsibility is a company's juridical, ethical, and unrestricted responsibility to society. It has been seen that incorporating corporate social responsibility into a company's strategy can influence better performance and profitability. In addition, it helps for long-term sustainability. (Bhaskar, 2023).

Corporate social responsibility is often connected to ESG funds. A company that has good corporate social responsibilities usually has similar elements to ESG. For example, not exploiting their employees and cutting down emissions. Like ESG scores, corporate social responsibility is not always straightforward and there have been many corporate social responsibility scandals over the years. Scandals shake the stakeholders' trust (Brunk & Boer, 2020).

For example, the Volkswagen group did their pollution testing in favorable and unrealistic conditions making it look better than it was. Still, the Volkswagen group has responsible projects. It is found that controversies can be balanced with good acts of corporate social responsibility. (Brunk & Boer, 2020).

It is also an important how the companies react to these controversies. Also, there are collective corporate social responsibility scandals. Tu et al. (2023) study the reaction of companies in a collective corporate social responsibility scandal. They find that companies in the scandal come together to find the best solution. It can be an indicator that with collective scandals, the companies involved can keep their good picture because negative and positive acts of corporate social responsibility even out.

Still, it is seen that companies paint themselves to look more socially responsible than they are. Companies benefit from stakeholders having a good picture of the company. Yet, this creates more of a risk of having a scandal. It is expected that with the rising number of policies made around non-financial disclosures, the less scandals will happen. Also, stakeholders have been mandating that corporate social responsibility be an obligatory report. In addition, third-party agencies that rate corporate social responsibility scores have increased. (Utz, 2019).

Wirba (2023) examines the impact of government on corporate social responsibility. The research found that when the government creates examples and soft policies around corporate social responsibility it will positively affect companies. Especially in developing countries with little to no government action regarding corporate social responsibility, the companies do not care for their community, and practicing corporate social responsibility is not on their radar. That is one of the reasons why it is important not to just compare one geographical area of mutual funds.

In conclusion, corporate social responsibility is an important factor in ESG funds. Some issues that ESG scoring faces with having a bad track record can still lead to a good ESG score, corporate social responsibility acts evening out might be one of the reasons. Although, companies coming together to fix controversies benefits society. As corporate social responsibility is fully voluntary, especially disclosures of them, it is easier for companies to fake it. With sustainable funds, it would be highly beneficial to have a certain standard so there are not any surprises for investors.

2.2 Sustainable investment strategies

2.2.1 Negative/exclusionary screening

The negative/exclusionary screening strategy excludes clearly unsustainable companies or industries. For example, the alcohol or the arms industry could be excluded using the negative/exclusionary screening strategy. The strategy is said to be the easiest to implement and has been the most popular for sustainable open-end funds. (Billio et al., 2021).

2.2.2 Positive/best-in-class screening

Positive/best-in-class screening does not exclude any business sectors or industries as the exclusionary screening. Instead, this approach focuses on selecting companies with the highest ESG performance within their respective sectors. For example, while the oil industry as a whole may not be considered sustainable, there are companies within this sector actively working to make it more sustainable. (Billio et al., 2021).

2.2.3 Sustainability themed investing

Sustainability themed investing strategy invests in certain targeted investments related to a sustainability theme. For example, companies involved in clean energy or efficient food production could be in a sustainability themed investing fund. (Billio et al., 2021).

2.2.4 Impact/community investing

Impact/community investing is committing to specific sustainability projects. These private investments can contribute to, for example, the housing crisis. (Billio et al., 2021).

2.2.5 ESG integration

ESG integration uses ESG scores to determine what companies to invest in. ESG rating agencies are in an important role in this strategy. (Billio et al., 2021).

2.2.6 Corporate engagement and stock activism

Corporate engagement and stock activism involves influencing the choices made by companies in which one has invested. However, to effectively enact change through this strategy, a significant stake in the company's shares is typically required. This makes it more practical for institutional investors, who typically hold larger portions of shares. (Billio et al., 2021).

2.2.7 Norm-based screening

Norm-based screening strategy only invests in companies that respect minimum standards of ethical business practices established on international principles. (Billio et al., 2021).

2.3 Policies and legislation

2.3.1 PRI

PRI or UN PRI stands for Principles for Responsible Investment and is a network for sustainable investing. The network is UN-backed. PRI has six principles that reinforce ESG and support investors to match their investment decisions to the principles. PRI wants to influence the whole society with its agenda. (PRI, 2021).

The PRI started in the year 2006. The network has over 1500 members. The network holds over $80 trillion combined in assets. PRI is mostly intended for asset managers. Although, it has been seen that asset managers have been the slowest in taking up ESG in their investment decisions. Asset managers hold 34 % of the GDP of OECD countries. (Hoepner et al., 2019)

When an investor signs the PRI, they commit to the next principles:

1. “We will incorporate ESG issues into investment analysis and decision-making processes.
2. We will be active owners and incorporate ESG issues into our ownership policies and practices.
3. We will seek appropriate disclosure on ESG issues by the entities in which we invest.
4. We will promote acceptance and implementation of the Principles within the investment industry.
5. We will work together to enhance our effectiveness in implementing the Principles.
6. We will each report on our activities and progress towards implementing the Principles.”. (PRI, 2021).

There are no obligatory actions that need to be done by investors who sign the principles. PRI does give an example of the actions of every principle to help investors incorporate the principles into their investment decisions. In addition, PRI provides services to the network’s investors. For example, PRI has an academy training for professionals to educate themselves. (PRI, 2021).

PRI is working with governing bodies. There are signatories all over the world and PRI is focusing on influencing locally. Local signatories know their local market and know how to incorporate the principles and influence others. (PRI, 2021).

Bauckloh et al. (2021) study the effects of signing the PRI. They find that signatories have way more ESG acts in comparison to those outside of the network. However, the power of the PRI has significantly slowed down. The latest signatories have not been seen to have implicated as many ESG acts as the ones from the early days. Still, this can be an implication of companies being more sustainable as is rather than when it was just some companies.

The voluntary aspect of PRI has been shown to work well to influence the financial sector to use ESG. When there is more time to, for example, plan out the change to a more sustainable approach. With regulation, it has the same change period for everyone, and it can discourage the financial sector because some might not have enough time or resources to execute the change under the deadline. The parties also benefit from the guidance that PRI has. (Hoepner, 2021).

Majoch et al. (2017) find that investors see PRI as something that creates value as ESG is popular. Also, PRI's legitimacy and the size of the network play a part in the signing decision process. In addition, as stated before later signatories do not do as many acts. That can be a reason why the number of signatories is still growing.

To conclude, PRI has given a low-threshold opportunity for the financial industry to become more sustainable by providing information, courses and so much more. It can be argued that networks of PRI are even better at providing standards for, for example, ESG funds. PRI also lets different industries take their time with timing and resourcing the change.

2.3.2 SFDR

In the year 2019, the European Union put in effect the Sustainable Finance Disclosure Regulation (SFDR) to promote sustainable investments and cut greenwashing (EUR-Lex, 2019). This regulation was applied to all parties in the European financial market. The SFDR created categories for products so that investors have a clear indicator of how sustainable the financial product is. The products are categorized into Article 6, 8, and 9 mutual funds (Becker et al., 2022). All financial products must be categorized and have SFDR information and Article 9 products need to have the most information (Brühl, 2021).

Depending on the mutual fund's categorization, there must be a disclosure on how the mutual fund is sustainably investing. However, the financial parties categorize the products themselves. There is a possibility that the parties will choose an article category that may not represent the mutual fund. Still, there are regulations and European Union authorities have the power to monitor these categorizations. (Birindelli et al., 2022).

Nevertheless, SFDR has helped the confidence of investors that their sustainable mutual funds are sustainable (Birindelli et al., 2023). Still, this is only for European financial parties. There are not as strict rules or regulations internationally. For example, as stated, the PRI works on a cooperation basis. SFDR has come with benefits. Becker et al. (2022) find that SFDR and better ESG scores have gone hand in hand with mutual funds. In addition, there has been an inflow of sustainable mutual funds from SFDR.

Chiu (2022) finds that the SFDR is built for companies to already have good ESG closures. The funds under SFDR need to have a lot of sustainability information about the companies they invest in. As previously stated, there is not any international legislation regarding ESG scoring, and the scores for third-party agencies can vary. Also, companies might not know themselves to execute information that protects the investor. Chiu (2022) states that the European Union needs to have more emphasis on companies' ESG scoring and sustainability to get the SFDR to execute the best.

Zetzsche and Anker-Sørensen (2022) research the formation of SFDR. They state that the European Union has built SFDR "in the dark". There is not any previous similar regulation that they could have referenced. The research suggests that SFDR has been too quickly executed. As stated in PRI, legislation can make it when there is no time to delegate resources and there is not enough information to accomplish the demand. The research also shows that this can also happen when regulators try to further legislation regarding sustainability.

In conclusion, the SFDR is the most compelling legislation for sustainable mutual funds. The uncertainty of regulators has come with challenges regarding SFDR, but the regulation evolves and will certainly come with improved versions. In addition, bettering cooperation with involved parties and making information more accessible will help the future of sustainability regulation.

2.3.3 SEC's Climate and ESG Task Force

The United States has been behind Europe in sustainability legislation, especially when the European Union came up with the SFDR. There have been concerns about the climate especially and a need to better the regulation regarding sustainability. The United States Securities and Exchange Commission (SEC) started a task force to fight for ESG and climate issues. (Karpoff et al., 2022)

As the PRI and SFDR, the SEC's task force's goal is to protect investors from greenwashing. The mutual funds from the United States can still have false information about sustainability and that needs to be noted in the research. There are some regulations, still not at the same level as in the European Union. Karpoff et al. (2022) show that there are opposing views on how the task force should execute the regulation. The two views are to either increase regulation or to maintain current ones. Karpoff et al. (2022) propose for the task force to increase the disclosures but not to mandate them.

2.4 Morningstar Sustainability Rating™

The Morningstar Sustainable Rating™ is used on mutual funds. Morningstar develops an ESG risk level for funds. The risk level is created by using outsourced data about the companies and/or countries in the mutual fund then concludes a sustainable rating for the mutual fund. Morningstar uses globes where one globe is the highest ESG risk, and five globes are the lowest ESG risk. (Morningstar, 2019)

Morningstar ratings are available to everyone which makes them an accessible way to invest sustainably. There is a feeling of doing good when investing in sustainable mutual funds according to the Morningstar Sustainability Rating where the performance is not that big factor. Also, investors appreciate the simplicity of the sustainability rating and that is one of the reasons the Morningstar Sustainability Rating is so well-known and popular.

3 Theoretical background

3.1 The Efficient Market Theory

The Efficient Market Theory was presented by Eugene Fama in 1970. The theory states in an efficient market the prices match the available information, although with a couple of exceptions. There are three information scenarios: strong form, semi-strong form, and weak form. (Fama, 1970).

The strong form scenario matches actively managed mutual funds and that will be concentrated on. The strong form is the situation where in the market there is monopolistic access to applicable information. In the example of mutual funds of the strong form scenario, the portfolio managers cannot pick stocks to win the market, even when looking at returns before fees. There is only a little evidence rejecting the theory. All in all, for example, portfolio managers do not seem to have access to all applicable data. (Fama, 1970).

Thus, the theory regarding the strong form test is that portfolio managers are on the same level as each other. However, the theory is aware that portfolio managers have different sets of information. For example, different asset management companies have different databases. Hence, the theory focuses on how portfolio managers use the additional information they have if they have any. (Fama, 1970).

From 1955 to 1964 Micheal C. Jensen researched the performance of mutual funds. The research resulted in evidence of mutual funds' portfolio managers not having additional information in comparison to a retail investor. As figure 1 illustrates, portfolio managers cannot have higher returns than a combination of a riskless asset and the market portfolio. In addition, there must be fees to pay the portfolio manager, there is a challenge to compare the combination of a riskless asset and the market portfolio as is. In Jensen's research 89 out of 115 mutual funds underperformed the market line, 72 out of them before fees. (Jensen, 1968).

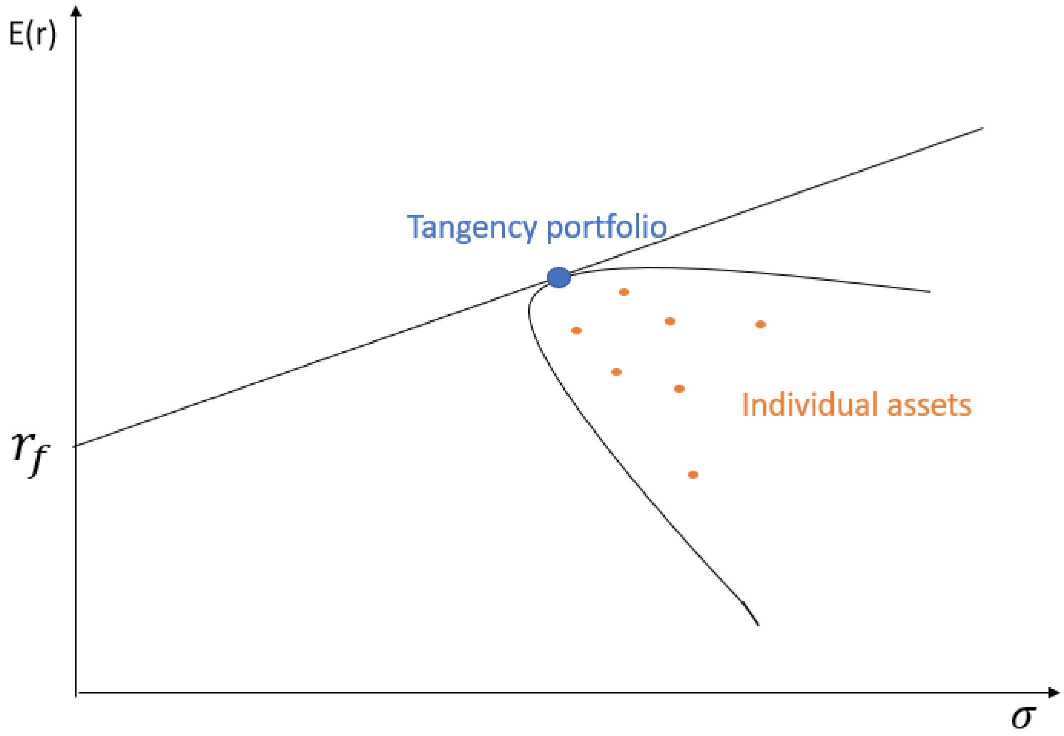

Figure 1: A riskless asset and the market portfolio.

In addition, to Fama's (1970) theory also Jensen's (1968) theory supports the strong-form scenario. There are exceptions but the theory is in general applicable to situations. Portfolio managers have connections and asset management companies have, for example, large databases, many analysts to utilize, and connections. Occasionally, the portfolio manager can outperform the market, still all in all they cannot achieve abnormal returns.

Actively managed sustainable and conventional mutual funds both deal with portfolio managers losing to the market. Picking the assets based on the evidence stated cannot compete with a riskless asset and the market portfolio combination. That is why this thesis does not compare mutual fund performances to the market. Instead focusing on comparing sustainable and conventional mutual funds is more reasonable.

3.2 Portfolio Theory

Harry Markowitz came up with the modern portfolio theory as early as 1952. The modern portfolio theory has evolved to be the base of theories in financial research. For example, the portfolio theory had an impact on the previously stated efficient market theory (Fama, 1970).

The portfolio theory examines how to create a portfolio of assets with the preferred risk level and the highest expected return. The theory states that the portfolio should be built with a diverse set of assets to get the best combination (figure 2). Although the theory states that it is possible to reach the same combination without much diversity, it is less likely. One of the examples of diversification is picking stocks from different industries. (Markowitz, 1952)

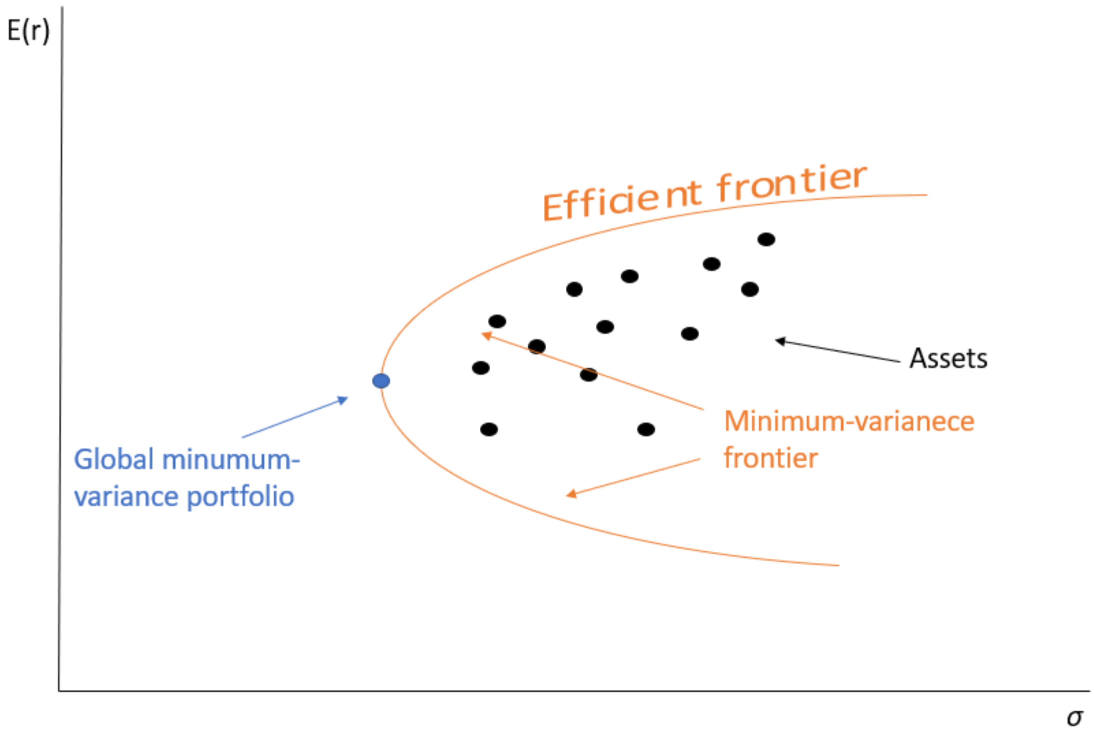

Figure 2: Portfolio theory.

Regarding mutual funds, following the portfolio theory portfolio managers should have a diversity of assets in mind when picking assets. Although, investors can also make a diverse portfolio by combining different mutual funds. In addition to diversification, it is also important to have many stocks in the portfolio (figure 3). Figure 3 shows that when you have enough different stocks, there is only the market risk. (Markowitz, 1952)

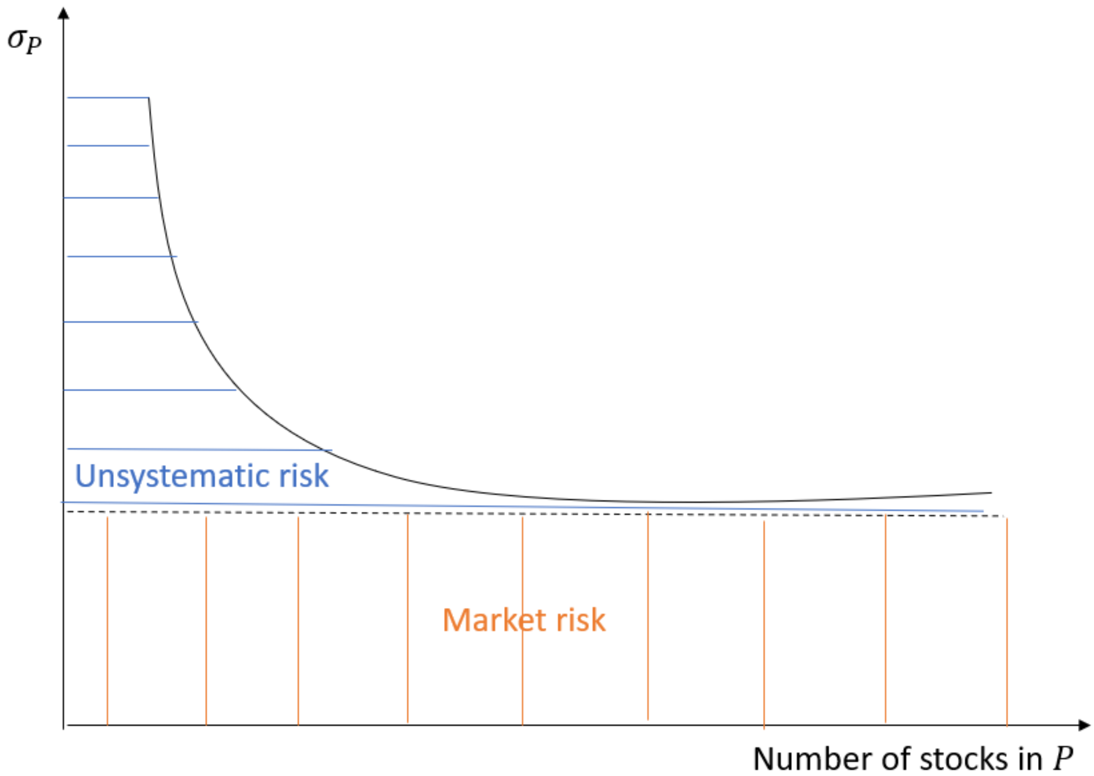

Figure 3: Risk in a portfolio.

3.2.1 Conventional mutual funds

Conventional mutual funds have the benefit of being able to pick assets in any industry. Portfolio managers of conventional mutual funds have a better ability to follow the portfolio theory when given a bigger selection and have more opportunities. When there are not any restricted industries, it will more easily create an excellent example of the theory suggestion of a great portfolio. In addition, there is a never-ending selection of assets, and the market risk is the only concern.

3.2.2 Sustainable mutual funds

Mirza et al. (2023) find that sustainable mutual funds are mutually dependent. Especially during a crisis, the mutual dependency increased between sustainable mutual funds. The logic behind the diversification of the portfolio is the assets to even each other out. The research of Mirza et al. (2023) shows that it is challenging to create a diverse portfolio while using sustainable assets or investors mixing multiple sustainable mutual funds.

The claim is also supported by the research of Martí-Ballester (2019) who researched renewable energy mutual funds. He finds that the reason the mutual funds researched are underperforming is the result of a small number of options to invest in. Firstly, the funds can only be invested in the energy industry. Secondly, the variety of energy companies is not high. There are not that many energy companies in the field of renewable energy. In addition to energy companies, the transition can be slow in companies with big investments in, for example, machines.

Still, Mirza et al. (2023) state that portfolio managers of sustainable mutual funds have various hedging strategies. In addition, the returns often even out over time. Further, Mirza et al. (2023) examine that the lowest geographical dependency is between Taiwan and Japan. Thus, Japanese, and Taiwanese sustainable companies benefit from the diversification of sustainable mutual funds.

Research by Zhang et al. (2023) also supports the statement that portfolio managers in sustainable mutual funds have a disadvantage when having fewer companies to choose from. Their study focuses on Chinese portfolio managers. They find that portfolio managers are not even allowed to invest in companies with poor ESG ratings or in those that do not state them. This restriction is found to worsen the effect because there are even fewer options. In addition, they examine that the funds' reduced downside risk correlates with ESG accomplishments. Although, the effect softened during the COVID-19 pandemic.

Further, the selection being restricted for the sustainable mutual funds also shows in the number of stocks to pick from. Sustainable mutual funds have the disadvantage of having a higher possibility of having unsystematic risk in the portfolio. Sustainable mutual funds would have to perform better than conventional funds to get the same risk-adjusted returns.

All in all, conventional mutual funds can outperform sustainable mutual funds just based on portfolio theory. Still, the growing interest in sustainability has created pressure for companies to be more sustainable. In addition, different legislation and policies can make it more difficult to change to a sustainable way of business.

3.3 Portfolio performance

There are various ways to measure a portfolio's performance. When looking at the literature regarding the performance of both sustainable and conventional mutual funds, the most typical ways are the Sharpe ratio and factor models. There is a never-ending stream of different kinds of formulas that are based on these portfolio performance measures. This thesis will only cover some of them that are the most relevant to the study.

3.3.1 Sharpe ratio

William Sharpe created the Sharpe ratio in 1966. The Sharpe ratio is a typical measure of performance in literature. The Sharpe ratio determines the risk-adjusted performance of mutual funds (Sharpe, 1966). The Sharpe ratio is presented as

$$SR_i = \frac{(\overline{r_p} - r_f)}{\sigma_p} \ , \tag{1}$$

where $\overline{r_p}$ is the return of p, r_f is risk-free return, and σ_p is the standard deviation of p (Sharpe, 1966). When comparing sustainable and conventional mutual funds it is necessary to look at the risk-adjusted performance. One or the other can have a higher risk rate which makes the performance worse even if the returns are the same. (Reboredo et al., 2017).

As stated before, there are many variations of the Sharpe ratio because the Sharpe ratio is usually too simple for research. For more complex needs, the adjusted Sharpe ratio (ASR) was created. Naqvi et al. (2021) demonstrate the formula to be:

$$ASR_i = SR_i\left(1 + \frac{S_k}{6} \times SR_i - \left(\frac{k_r - 3}{24}\right)\right) \times SR_i^2, \qquad (2)$$

where S_k is Skewness and $K_r$is Kurtosis. It has been used in literature by Mirza et al. (2020), Naqvi et al. (2021), and Rizvi et al. (2020). The papers listed have similarities in the make-up of authors, but the authors are forerunners in research of sustainable investing.

3.3.2 Factor models

The factor models are created to determine the abnormal return of a portfolio. The abnormal return is stated as α (alpha). Like the Sharpe ratio, the factor models have different adjustments. For the various factor models, the alpha is related to the nature of the factor model. The most classic ones are the Fama-French three-factor model and the Carhart four-factor model (Fand & Parida, 2022; Kemp & Osthoff, 2007; Naqvi et al., 2021; Climent & Soriano, 2011; Klinkowska & Zhao, 2023; Ji et al., 2021; Jo et al, 2022). The listed research papers are related to sustainable mutual funds or sustainable investing and are relevant to the thesis.

The classic Fama-French three-factor model is

$$R_{it} - R_{ft} = \alpha_{it} + \beta_{1i}(R_{mt} - R_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \varepsilon_{it}, \tag{3}$$

where R_{it} is the return of i at time t, R_{ft} is the risk-free rate of return at time t, α_{it} is alpha of i at time t, β_i is the coefficient of the factors, R_{mt} is the return of market at time t, SMB_t is Small Minus Big, HML_t is High Minus Low and ε_{it} is the abnormal return (Fama & the French, 1992). The Carhart four-factor model is

$$R_{it} - R_{ft} = \alpha_i + \beta_{1i}(R_{mt} - R_{ft}) + \beta_{2i}SMB_t + \beta_{3i}HML_t + \beta_{4i}MoM_t + \varepsilon_{it}, \tag{4}$$

where MoM_t is multiple of money invested (Carhart, 1997).

The Carhart model was based on the Fama-French model with adding the momentum factor (Carhart, 1997). The Fama-French three-factor model was based on the asset-pricing model and was developed for stocks (figure 4) (Fama & French, 1992). The Carhart model is developed for mutual funds (Carhart, 1977). Regarding this thesis, the Carhart model is more fitting. The developed versions have additional factors used, for example, the reaction to market conditions of portfolio managers. Also, volatility is an additional factor. (Naqvi et al., 2021; Ji et al., 2021).

3.3.3 ESG-adjusted Capital Asset Pricing Model

The Capital Asset Pricing Model (CAPM) was presented by William Sharpe in 1964. The Capital Asset Pricing Model shows how an asset's expected risk and return positively correlate. CAPM has assumed a simplified environment that the theory applies to. Sharpe's model is as follows:

$$E(r_i) = r_f + \beta_i[E(r_m) - r_f], \tag{5}$$

where $E(r_i)$ is the expected return of i, r_f is risk-free return, β_i is beta coefficient and $E(r_m)$ is market's expected return. (Sharpe, 1964)

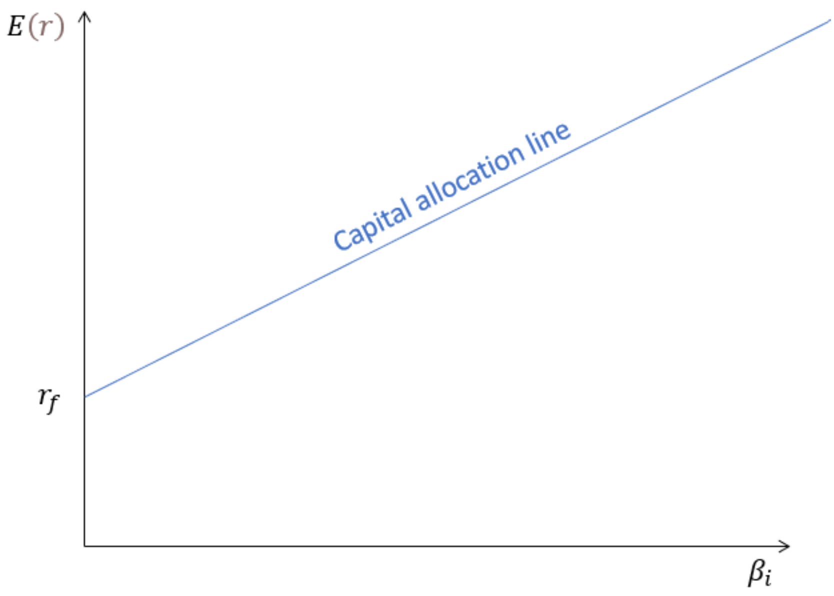

Figure 4: Capital Asset Pricing Model.

There have been many modifications made to the CAPM. There is an ESG-adjusted Capital Asset Pricing Model (ESG-CAPM) by Pedersen et al. (2021). Pedersen et al (2021) models are constructed with different investors in mind. They separate investors into three investor types: type-U, type-A, and type-M (figure 5). Type-U investors are ESG unaware and have no preference for ESG. Type-U investors would invest in conventional mutual funds. The ESG-CAPM for type-U investors are as follows:

$$E(r_i|s) = \beta_i E(r_m) + \lambda \frac{s_i - s_m}{p_i}, \tag{6}$$

where β_i is the beta coefficient, $E(r_m)$ is the market's expected return, λ is a parameter for future profits (if λ > 0 ESG companies are more profitable), s_i is i's ESG score and s_m is market's weighted-average ESG-score.

M-type investors invest in high ESG score and value ESG information in their investments, such as investing in sustainable mutual funds. For M-type investors, Pedersen et al. (2021) created the following model:

$$E(r_i|s) = \beta_i E(r_m|s) - \pi(s_i - s_m), \tag{7}$$

where $E(r_m|s)$ is conditional market's expected return. Type-A investors are aware of ESG but do not necessarily value it in their investments. For type-A investors, the same model can be used as for type-M [Eq. (7)], but for type-A investors $\pi = 0$,

$$E(r_i|s) = \beta_i E(r_m|s). \tag{8}$$

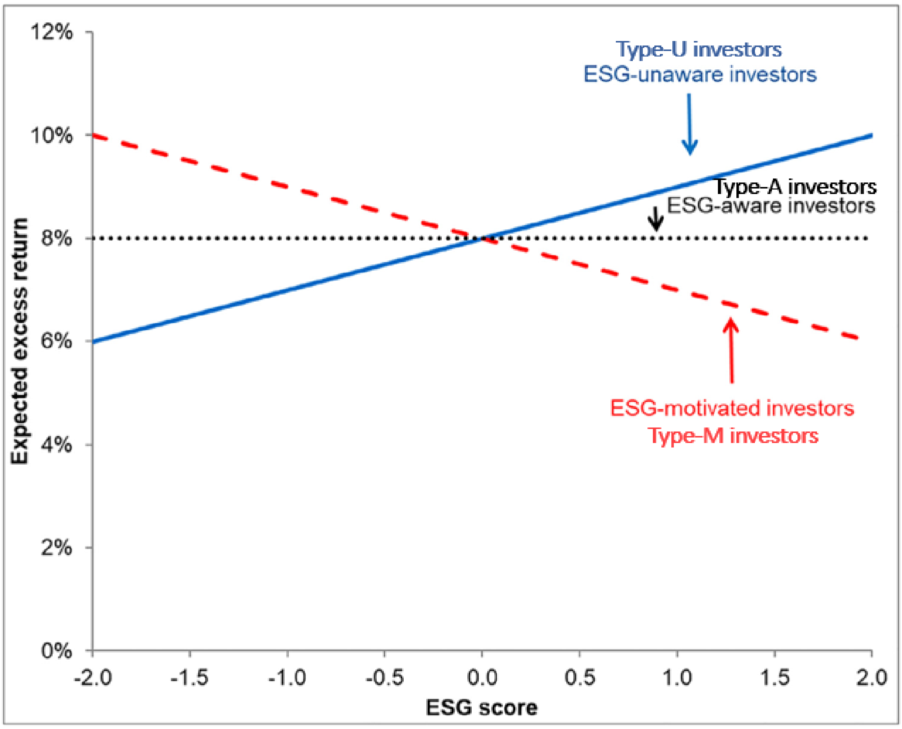

Figure 5: Investor's ESG-motivation (Pedersen et al., 2021).

3.4 Shareholder and stakeholder theory

Shareholder and stakeholder theories describe to whom a company should create value. Shareholder theory can be applied to conventional mutual funds because it entails that the main point of a company or an asset in a mutual fund is to create maximal profits. In comparison, stakeholder theory would show the importance of, for example, using ethical work conditions.

3.4.1 Shareholder theory

Shareholder theory was first presented in the New York Times by Milton Friedman (1970). The shareholder theory does not see that a business has responsibilities, only people do. In addition, the people working for companies should execute the company's mission, which is maximizing profits for its shareholders. The theory states that if the company uses money on, for example, society's well-being, then the shareholder's money is being used for something they necessarily did not want. Only corporate tax should be going to society.

You can argue that an investor can choose whether to invest in sustainable mutual funds rather than conventional mutual funds. Then the choice is made by the investor. However, the investor does not necessarily choose how the companies in the mutual funds perform sustainable acts.

Welch and Yoon (2022) investigate ESG projects' shareholder value. Picking a project can be challenging when typically, ESG projects are against shareholder theory and there is little evidence of how ESG affects a company. The research utilizes employee opinions. The study finds that satisfied employees, which intrinsically create a better ESG score, and favoring ESG projects create shareholder value. It is seen that the companies outperform their peers.

Lin et al. (2023) investigate companies' investment effectiveness when using ESG practices. They find that when a company has ESG practices, the investment for the shareholder is more effective. Also, ESG acts deduct the effect of controversies that a company may face. It creates shareholder value when there is communication with the companies' stakeholders.

Thus, even when shareholder theory is against ESG acts in a company, they can be beneficial to the shareholders. The shareholder theory is based on creating the most value and giving it back to the shareholder. In this stage of ESG companies and shareholders can use ESG as an advantage even if the values are not the top priority.

3.4.2 Stakeholder theory

The stakeholder theory was presented in the book “Strategic Management: A Stakeholder Approach" by Edward Freeman (1984). The stakeholder theory thinks that companies create value for all their stakeholders, for example, employees and society. The theory believes that when a company invests in their stakeholders, for example, well-being, that will benefit the company.

Stakeholder theory shows that mutual funds can be more profitable than conventional mutual funds because for example society is one of a company’s stakeholders. Sustainable decisions made by a company are beneficial for society. Although, the theory does not separate how beneficial is a good relationship between certain stakeholders. Still, when a company does have ESG controversies there is a possibility that the company loses customers from boycott. Also, suppliers can boycott companies so that they are not involved in an ESG controversy themselves.

Cornell and Sharpio (2020) state that contracts between stakeholders have been getting an increased amount of ESG measures. Without ESG acts that benefit the stakeholders, it can be hard to get contracts. Although, they state that companies should not be the first in line to tackle social issues. In addition, it is said that without investors there would not be any ESG measures done in society, just from for example money from taxes.

4 Literature review

4.1 Performance, fees, and risk

As stated, research has had differing results when analyzing the performance differences in conventional and sustainable mutual funds. Looking at the literature on the topic, there might be a pattern on why the results vary. Sustainable mutual funds have not had a specific rating until the 2016 Morningstar's rating (Fang & Parida, 2022). In addition, sustainable mutual funds can mean various things and in research, the study focuses on a certain group of sustainable mutual funds or in a specific geographical area. When comparing these studies of similar groups, the outcome is more similar.

When researching the performance difference between conventional and sustainable mutual funds, performance, risk, and fees are the most frequent factors taken into consideration. The overall picture of the performance is valued. In addition, returns and risk-adjusted returns are examined often.

4.1.1 Performance

Climent and Soriano (2011) study socially responsible, conventional, and environmental mutual funds from the United States. The study found that from 1987 to 2009 environmental mutual funds had a worse performance compared to their conventional peers. When comparing socially responsible and conventional mutual funds from 1987 to 2009, both mutual funds had a resembling performance.

In addition, Ibikunle and Steffen (2017) research European green (sustainable), black, and conventional mutual funds under the period of 1991-2014. Sustainable mutual funds were found to lose dramatically when looking at performance to conventional mutual funds. Sustainable and black mutual funds had similar performance.

On the other hand, Fang, and Parida (2022) researched sustainable mutual funds' performance through the COVID-19 pandemic. The research found that mutual funds that have a high sustainability rating beat the performance of sustainability mutual funds with a lower sustainability rating. In addition, the study states that a third of mutual funds are sustainable mutual funds or at least invest in sustainable assets in 2020. The research is not fully applicable to this thesis, but it can be assumed that adding more sustainable assets to a portfolio makes it more profitable. Also, an assumption can be made that sustainable mutual funds have become more profitable recently because both previously stated studies' most recent data was from 2014.

Despite this, Hartzmark and Sussman (2019) studied sustainable mutual funds from 2015 to 2017. In their research, it was seen that conventional mutual funds matched their sustainable peers or even beat them. Thus, the period from where the data was gotten might not be the only reason.

In addition, Mirza et al. (2023) and Lee et al. (2023) present in their studies that companies have a hard time considering both growth and sustainability. When companies find it hard to sustain the same profit level in the transition, it is easy for mutual funds' portfolio managers to fall into the sustainability trap. This would indicate that sustainable mutual funds perform worse than their peers.

Petridis et al. (2023) researches the effect of ESG controversies on mutual funds' performance during the COVID-19 pandemic. The study finds that during the pandemic investors started to consider more factors than profit, such as sustainability. The research looked at the costs, risks, and returns of the mutual funds. They find that fewer ESG controversies meant better performance for a mutual fund worldwide. This also encourages fund managers to invest in assets with fewer ESG controversies.

El Ghoul et al. (2023) investigate performance differences in socially responsible mutual funds (green) to non-socially responsible mutual funds (brown). They think that only comparing socially responsible funds to conventional mutual funds might not be beneficial. In addition, they have tried to have the exact counterparts to compare.

4.1.1.1 Socially responsible mutual fund

Statman (2000) studied socially responsible mutual funds from 1990 to 1998. The research was on the performance differences of socially responsible mutual funds related to conventional peers and the S&P 500 index. The study found that socially responsible mutual funds and conventional mutual funds had similar performance. In comparison to the index the socially responsible mutual fund lost. However, it is not reasonable to compare them as previously stated.

Further, Kemf and Osthoff (2007) study portfolios, such as mutual funds, that consider social responsibility to perform better than those that do not. This was also supported in the research of Edmans (2011), where he researched the effect of considering employee satisfaction. The research shows that better employee satisfaction means better performance in a company.

In a more recent study, Klinkowska and Zhao (2023) researched the performance of socially responsible mutual funds. The research states that conventional mutual funds had a similar performance to their conventional peers. Yet, the study found it to be only true for companies with the same management company and similar traits. Sustainable mutual funds with a different management company and similar traits outperformed conventional mutual funds.

Henke (2016) had similar results when studying socially responsible and conventional mutual funds. The study compared the funds' performance from 2001 to 2014. During the studied period the conventional mutual funds' performance was lost to the socially responsible mutual funds. The research also found that the effect is more prominent during crises.

Muñoz (2021) researches the socially responsible funds and the effect of the black industry companies in the mutual fund's portfolios. The study found that having an environmentally friendly approach and avoiding the black industry can be profitable to socially responsible mutual funds. This finding can be an implication that it would be profitable for socially responsible mutual funds to broaden the focus to all the aspects of sustainability, at least environmental.

El Ghoul and Karoui (2017) study the effect of corporate social responsibility on funds' performance, performance compared to an index, flow-performance relationship, and flow-performance compared to an index. They find that when looking at risk-adjusted performance, corporate social responsibility prominence worsens it. The findings are consistent even when using different definitions of corporate social responsibility. The research finds that fund performance is more sensitive to the advantages of corporate social responsibility than to the worries of it.

It is also found that better corporate social responsibility can mean worse future performance and vice versa. In addition, performance reversal declines when there is more corporate social responsibility. Further, investors of corporate socially responsible funds tend to care more about other aspects than performance because the funds have low outflow rates. (El Ghoul & Karoui, 2017).

There was seen outperformance by conventional mutual funds to their counterparts with social attributes, so looking for better performance is not the answer to choosing stocks with social attributes. Portfolio managers avoiding tobacco, alcohol, and gambling stocks might also be because it can be easier and not social norms and/or values. For example, benchmarks can have restrictions. However, there can also be legislation around sustainability too. (Borgers et al., 2015).

Bae et al. (2021) investigate the impact of corporate social responsibility on stock market returns during the COVID-19 pandemic. COVID-19 was an unexpected event where the demand for corporate social responsibility increased suddenly which makes it easier to see true results. In an ordinary time, corporate social responsibility acts create better value for a company and the companies' stakeholders should expect good returns from them.

During COVID-19 there was no benefit to corporate social responsibility on returns, only four industries showed a difference. Only healthcare and business equipment companies with high corporate social responsibility had higher returns during the pandemic. After the pandemic, only chemical and allied product companies showed high returns. In addition, political ideology, social trust, and proxies created higher evaluations. (Bae et al., 2021).

4.1.1.2 Renewable energy mutual funds

Naqvi et al. (2021) studied different categorized mutual funds. The research finds that alternative energy mutual funds perform the worst. In addition, overall, the research found that sustainable mutual funds lost to their peers. The study also finds Jil et al. (2021) researched renewable energy mutual funds and finds that they lose to their benchmarks.

4.1.2 Fees

Bofinger et al. (2020) study managing sustainable mutual funds. The study finds that portfolio managers seem to need to choose overpriced assets for their portfolio so that the mutual fund can have the desired sustainability rating. It is labeled as "the sustainability trap". Further, a better sustainability rating on a mutual fund could be the factor that makes it even more overpriced. Sustainable mutual funds' portfolio managers are also more prone to be seen as bad portfolio managers than the assets having bad performance but picked because of the sustainability trap.

Mirza et al. (2023) study the socially responsible mutual funds and conventional mutual funds in the same management companies. The study finds that socially responsible mutual funds have lower fees than their conventional peers. Yet, Ji et al. (2021) find that renewable energy mutual funds have higher fees compared to their conventional peers. Further, Martí-Ballester (2019) supports Ji et al. (2021) study's claim.

4.1.3 Risk

Naqvi et al. (2021) conduct that renewable energy mutual funds have higher risk with worse performance compared to conventional peers. The results were found both at a global level of 10 years and 15 years in the United States. All in all, the risk-adjusted performance was worse for renewable mutual funds.

Reboredo et al. (2017) study socially responsible, renewable energy, and conventional mutual funds. The research utilizes Jensen's alpha. The alpha is lower for socially responsible and renewable mutual funds. Thus, this study also supports that the risk-adjusted performance of renewable energy mutual funds is worse than their conventional peers. In addition, socially responsible funds have a worse risk-adjusted performance as well. On the other hand, Mirza et al. (2023) find that socially responsible funds have a special set of risks, and it has proceeded to create growth and a defense against market volatility.

All in all, it is seen that renewable energy mutual funds lose to their conventional peers. Socially responsible mutual funds have more research showing better performance than conventional peers. There cannot be a clear conclusion on whether sustainable mutual funds outperform or overperform their peers.

4.2 Flow-performance relationship

4.2.1 Halo effect

“The halo effect” was presented by psychologist Thorndike in 1920 (Thorndike, 1920). In the context of financial markets and sustainable investing, it means that sustainable assets can have a halo effect. It can lead to, for example, overpricing because the positive effect of sustainability on investors can hide the imperfections. The halo effect can mute regular flow-performance relationships in sustainable mutual funds. In addition, the performance can seem better to investors in sustainable mutual funds compared to conventional peers (Hartzmark & Sussman, 2019).

Bofinger et al. (2022) find that when sustainable mutual funds have negative earnings surprises the effect on fund flow is muted compared to conventional peers. The finding is supported by Benson and Humphrey (2008) who see that the reaction to conventional mutual funds is much more likely than in socially responsible mutual funds.

In their study, Hartzmark and Sussman (2019) utilize the Morningstar Sustainability Rating. The study finds that when investors invest in highly rated mutual funds by the Morningstar Sustainability Rating, the investors trust the rating and do not research themselves about the mutual fund’s sustainability. The finding supports the halo effect in sustainable mutual funds.

Further, Benson and Humphrey (2008) study the management styles of socially responsible mutual funds. They find that the management styles differ in socially responsible mutual funds compared to their conventional peers. The portfolio managers make more profit to themselves when the socially responsible fund matches the investors’ values. The act makes the performance worse. All in all, the halo effect is seen in socially responsible mutual funds too.

Barreda-Tarrazona et al. (2011) researches the preferences of investors regarding mutual funds. The results show that for the investors who pick a socially responsibility mutual fund, performance is not a priority in the investment decision. It can affect the market when the poorly performing mutual funds stay on the market.

4.2.2 Flow-performance sensitivity

The research on the Morningstar Sustainability Rating on fund flows shows that the highest-scored mutual funds have the most inflow. Investors prefer simple information and tend to not research sustainability themselves. In addition, it is clear to pick how much sustainability the investor wants in their investment. (Hartzmark and Sussman, 2019).

Ammann et al. (2019) examine the effect of Morningstar Sustainability Rating on mutual fund flow when it was first launched. As previously stated, there has been a lack of information or lack of credible information about the sustainability level of a sustainable mutual fund. When Morningstar announced its globe rating, it was an information shock to the market. The shock especially hit retail investors because professional investors already had databases with information such as sustainability.

Renneboog et al. (2011) study environmental and socially responsible mutual funds. The research finds that previous bad performance often does not affect the investment decision. In comparison, previous good performance is highly valued. Further, the smart money effect does not appear in socially responsible mutual funds. The focus is on other traits rather than performance for the investment decision. Bofinger et al (2022) also support that performance is not the most important factor when investing in sustainable mutual funds. Jo et al. (2022) find previous performance to be the most valued factor when making an investment decision.

Benson and Humphrey (2008) see that investors reinvest in socially responsible mutual funds more often than conventional mutual funds. The reasoning behind regular factors in investment decisions not applying to sustainable mutual funds might be because of the restricted selection. Especially to those that correctly reflect investors' values.

Borgers et al. (2015) study the investment behavior and performance of mutual funds with social attributes. In addition to investors wanting to match their investments to their values, the study also highlights social norms and their possible effect on investments. There is compelling evidence that for funds that would be considered sin (invests in tobacco, alcohol, and gambling), it is seen that portfolio managers consider many social norms of the customers.

It is seen that retail investors pulled money from their non-sustainable mutual funds and reinvested them into sustainable mutual funds. In addition, it is stated that retail investors are going to keep investing in these sustainable mutual funds. Further, the study shows that retail investors appreciate the simplicity of the information provided. (Ammann et al., 2019)

Like Petridis et al. (2023) find during COVID-19, El Ghoul et al. (2023) also find that during a crisis investors sift their investment preferences. El Ghoul et al. (2023) see that green mutual funds underperform brown mutual funds when the performance is risk-adjusted or raw. If a portfolio manager increases 10 % of increase socially responsible stocks, it is only a 0,35 % decrease (El Ghoul et al., 2023). If the portfolio manager is investing in socially responsible stocks because for example social norms presented by Borgers et al. (2015), then the investment decision is easy as the result of it having a low impact on performance.

When looking at attributes' correlation to fund performance, El Ghoul (2023) sees that the return that the funds have is from non-socially responsible characteristics. However, El Ghoul et al. (2023) detect that non-socially responsible mutual funds have less diversification which can cause risk. Related to Borgers et al. (2015) results, El Ghoul et al. (2023) also find that funds with tobacco, alcohol, and gambling companies and low corporate responsibility outperform their responsible peers.

4.2.3 Psychological factors

Ben-Rephael et al. (2012) find that investors' bad moods can lead to a higher chance of taking risks. Fernandez-Perez et al. (2022) see that investors' bad mood lead to more inflow in sustainable investments.

Ignatov (2023) examines reporting and how ESG wording affects investors. He utilizes the Unites State's 10-K report mandated by the Securities and Exchange Commission for public companies. Traditionally "community", "health" and "people" are shown as positive for stock returns, and "embezzlement", "crimes", and "discriminate" are as negative (Jegadeesh & Wu, 2013). Ignatov (2023) finds that it is beneficial for companies to have ESG wording in their 10-K reports. He sees that there are benefits to stock return and in addition, third-party ESG scores are better.

El Ghoul and Karoui (2020) research the effects of funds having a sustainable indicating name. Sustainability being a popular topic, it is seen that it also creates fund flow for sustainable mutual funds. The study shows that after a fund's name changed to a more sustainable one, the flow increased by 28 % a year after. It is also seen that this phenomenon does not appear in funds that have not also changed their investment strategy to a sustainable one.

In addition, when a fund's name is changed the turnover changes to over one on average. However, there is no difference in performance or risk after the name change (El Ghoul and Karoui, 2020). It is beneficial for a portfolio manager to change a fund's name if there are sustainability characteristics because as has been stated before investors who invest sustainably might not be concerned about the performance of the fund.

Becker et al. (2022) study the difference between European funds that are affected by SFDR and American funds that are not. They find that investors respect sustainability and choose to allocate their wealth there. Funds with higher SFDR articles experienced the most inflow. It is said that it is beneficial for portfolio managers to align their funds to Article 8 or 9 but there can be an overvaluation risk.

4.2.4 Fund flow

Morningstar reports on fund flows from 2021 to 2023 quarterly (figure 6). For sustainable mutual funds, in Europe, there has been an inflow but in the United States there has been an outflow for several quarters. From quarter 2 of 2023 onward the rest of the world had an outflow. In addition, figure 7 shows it even for a longer period. There have been consistent inflows for sustainable funds and for non-sustainable funds, there have been outflows from early 2022 with some exceptions.

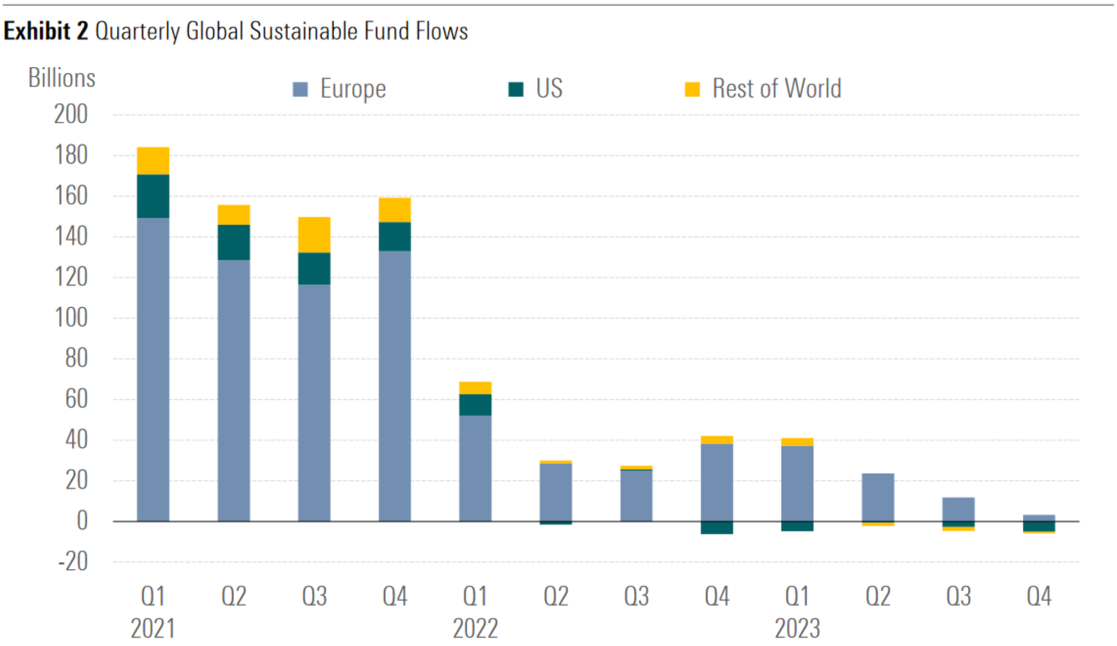

Figure 6: Quarterly Global Sustainable Fund Flows (USD Billion) (Bioy et al., 2024).

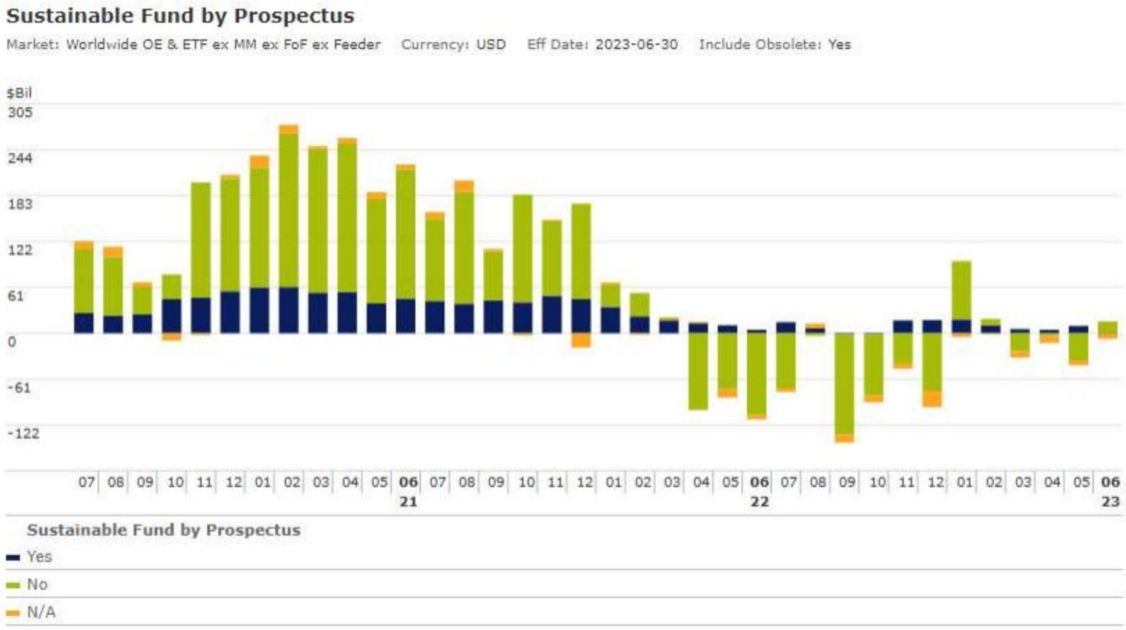

Figure 7: Fund flow July 2020-July 2023 (Flood, 2023).

Figure 8 shows the quarterly fund flows of sustainable mutual funds. The chart shows that Europe has had inflows of sustainable mutual funds. Although, it has slowed down. For example, the COVID-19 had many investors investing in sustainable mutual funds. Also, it would explain the outflow in the United States and the drop in inflows in Europe. Flood (2023) expects the controversies around ESG investing to be the reason for the outflows. In the report, unfortunately, there was not a global comparison of conventional and sustainable funds' flows (Flood, 2023). In figure 8 it is seen that also from early 2022 the netflow stayed around the same but the conventional funds dropped (as in figure 7). There is also the same positive flow in Europe as seen globally in figure 6. Also in figure 7, it is seen that the sustainable funds' trend is higher than the conventional funds' which concludes that sustainable funds have more positive netflow.

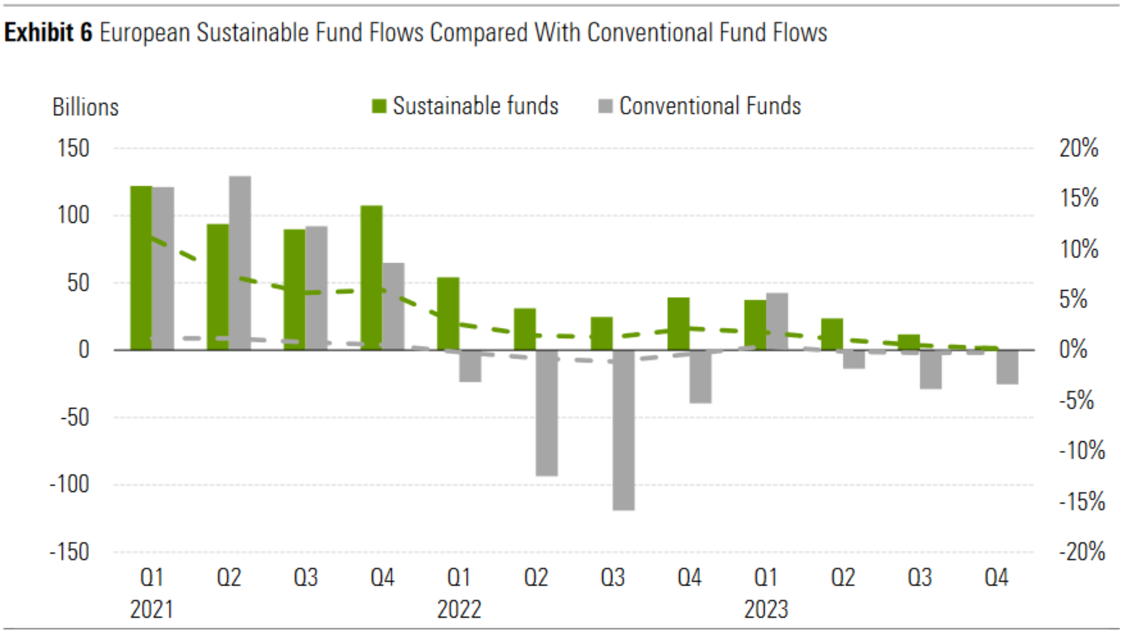

Figure 8: European Sustainable Fund Flows Compared With Conventional Fund Flows (USD Billion) (Bioy et al., 2024).

5 Data and methodology

5.1 Sample

In this thesis, it is wanted to replicate a retail investors investing decision of a mutual fund based on the preference of sustainability. Morningstar is available for all, and they have a simple tool to show mutual funds. Because of this Morningstar's Basic Fund Screener will be used. Although, the international site is behind a paywall, national sites like the Finnish (morningstar.fi) and United Kingdom (morningstar.co.uk) have it free for use. When looking at different Morningstar sites, the most mutual funds and information is on the United Kingdom website. The data will be taken from that site to get the most amount of data. The added information can provide insights that the other sites do not provide.

The study focuses on actively managed mutual funds that have 1 globe rating for conventional mutual funds and 5 for sustainable mutual funds. In addition, some funds are hedged in different currencies. In order to avoid false results, there is only one of each fund in the data. The order if there is more than one currency variant of a fund:

1. No currency specified.
2. USD
3. GDP
4. EUR
5. AUD.

Also, some funds are made, for example, to institutional investors, and those that are marketed clearly to other than retail investors, are not included. Still, there is a possibility that some might be accidentally included because Morningstar can have false information of some mutual funds. Mutual funds' with "Investor Type" that are marked as "Professional" or "Eligible counter party" are not included, only marked "Retail" are.

In addition, some mutual funds have both accumulation (Acc) shares and income (Inc) or distributing (Dis) shares. Accumulation shares reinvest, for example, dividends from stocks. Income and distributing shares gives, for example, dividends back to the investor. Even if mutual funds have both, they are both included in the dataset. For the 5-globe rating mutual funds 3910 funds will be in the sample and for the 1 globe-rated funds there are 1593 funds in the sample after automatic and manual data filtering.

5.2 Data tables

All the data in tables 1 and 2 are gathered from the Morningstar.co.uk (n.d.) site's fund screener. The yearly fund returns are from 2020 to 30th of April 2024. The returns from 2020 to 2023 are annual and the returns from 2024 are from the first four months of the year. The quarterly fund returns are from the start of 2014 to the middle of 2024. The fee level is changed from a character variable to a numerical one to ensure the possibility of using it in an analysis. The fee level is divided into five categories by Morningstar (2023): low, below average, average, above average, and high. The numerical scale ranges from 0 for low to 4 for high.

Table 1: Descriptive statistics of sustainable mutual funds.

Variable	Observations	Mean	Std. Dev.	Min	Max
Yearly Return	15668	4.3279	12.7633	-66.0000	100.2000
Quarterly Return	64 603	1.8905	7.2422	-42.0400	40.5300
Fee level (0-4)	2785	1.7440	1.3278	0.0000	4.0000
Initial Charge (%)	3598	2.0050	2.2870	0.0000	10.0000
On-going charge (%)	3810	1.1668	0.5736	0.0000	4.3100
Performance fee (%)	3612	0.0934	0.9623	0.0000	20.0000
Transactio	3809	0.2126	0.3279	-0.5400	3.7000

Variable	Observations	Mean	Std. Dev.	Min	Max
nal fee (%)					
Exit fee (%)	2630	0.0504	0.4072	0.0000	5.0000
3-Year Alpha	2850	-2.3411	4.3164	-23.5600	18.5400
3-Year Beta	2850	0.9874	1.1698	-0.6200	44.6100
3-Year Standard Deviation	2956	12.8274	4.7469	2.2800	44.2300
3-Year Sharpe Ratio	2956	0.0884	0.4818	-1.4500	2.1400

Table 2: Descriptive statistics of conventional mutual funds.

Variable	Observations	Mean	Std. Dev.	Min	Max
Yearly Return	6926	4.2962	13.5935	-99.3000	128.2000
Quarterly Return	29 152	1.7120	8.0286	-51.9000	59.6200
Fee level (0-4)	1121	1.8225	1.4122	0.0000	4.0000
Initial Charge (%)	1510	2.1833	2.3074	0.0000	7.0000
On-going charge (%)	1557	1.1479	0.5753	0.0000	3.5500
Performance fee (%)	1453	0.0529	0.4203	0.0000	5.0000
Transactional fee (%)	1559	0.2598	0.3040	-0.7300	2.4800
Exit fee (%)	1190	0.0390	0.2683	0.0000	3.0000
3-Year Sharpe Ratio	1273	-0.3575	5.9953	-28.5100	22.6100
3-Year Standard	1273	0.9891	0.2711	0.1700	2.9400

Variable	Observations	Mean	Std. Dev.	Min	Max
Deviation					
3-Year Beta	1352	11.8946	5.1095	1.1500	35.7100
3-Year Alpha	1352	0.1700	0.5478	-1.4200	2.2400

5.3 Methodology

The methodology that looks at the returns is inspired by a paper made by Billio et al. (2021). The following equations from the paper are used:

$$r_t - r_{f,t} = \alpha + \beta_{MKT}\left(r_t^m - r_{f,t}\right), \tag{9}$$

where r_t is the return of a portfolio, , $r_{f,t}$ is the return of a risk-free return, r_t^m is the market return.

$$r_t - r_{f,t} = \alpha + \beta_{MKT}\left(r_t^m - r_{f,t}\right) + \beta_{SMB} r_t^{smb} + \beta_{HML} r_t^{hml}, \tag{10}$$

where r_t is the return of a portfolio, $r_{f,t}$ is the return of a risk-free return, r_t^m is the market return. r_t^{smb} and r_t^{hml} represent small minus big and high minus low factors. α is the three-factor-adjusted return of a portfolio.

The fund fees and fund risk figures have a similar methodology. There is no previous comparable literature to base the methodology on which is why the model is simple and there are no fixed effects and only one independent variable. The following model is used for fund risk figures:

$$Risk = c + SustainabilityRating, \tag{11}$$

where $Risk$ is a fund risk figure, c is constant, and $SustainabilityRating$ is the Morningstar Sustainability Rating.

$$Fee = c + SustainabilityRating, \tag{12}$$

where Fee is the fund fee.

6 Results

The results of the analyses on fund returns, risk, and fees using methodologies inspired by Billio et al. (2021) for return analysis and a novel approach for fund risk and fee assessment are presented in this chapter. The results are presented in tables and the results are analyzed. The results will indicate the possible differences between sustainable and conventional funds in each category.

6.1 Fund performance

The equation 9 and 10 are used to model the excess return's changes effect on the different factors. Both the 1-factor model and the 3-factor model are displayed together in the tables. The tables are divided into sustainable funds, conventional funds, and "sustainable – conventional", which is a variable made from an equation of subtracting sustainable returns from conventional returns. The most important independent variable is the alpha as it demonstrates the excess return.

Table 3 shows the annual fund returns as the dependent variable for the different portfolios. For the sustainable funds, the alphas are highly statistically significant and noticeable negative for both the models. However, for the conventional funds there is not a statistically significant finding of the alpha. In addition, in both models, the alpha of the excess sustainable return is highly statistically significant and prominently negative.

Table 3: Factor models of annual returns from 2020 to 2024.

	Sustaina-ble funds	Conven-tional funds	Sustaina-ble - Con-ventional	Sustaina-ble funds	Conven-tional funds	Sustaina-ble - Conven-tional
Alpha	-2.4422 *** (0.0928)	-0.1095 (0.1832)	-1.6145 *** (0.0137)	-1.1611 *** (0.1099)	-0.1320 (0.2155)	-0.9987 *** (0.0131)
MKT	0.4748***	0.2488***	-0.0108 ***	0.4765***	0.2950***	-0.0062 ***

	Sustainable funds	Conventional funds	Sustainable - Conventional	Sustainable funds	Conventional funds	Sustainable - Conventional
	(0.0046)	(0.0090)	(0.0007)	(0.0054)	(0.0107)	(0.0006)
SMB				0.4409*** (0.0174)	0.1449*** (0.0344)	0.2291*** (0.0021)
HML				0.1106*** (0.0163)	0.0934*** (0.0102)	0.0626*** (0.0006)
N	3741	1554	5295	3741	1554	5295
R^2	0.4051	0.0995	0.0111	0.4296	0.1117	0.3760

Standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4 shows the quarterly fund returns as the dependent variable for the different portfolios. For the sustainable funds, the alphas are highly statistically significant and noticeably negative for both models. However, for the conventional funds, there is a statistically significant finding of a positive alpha for the 3-factor model. In addition, in both models, the alpha of the excess sustainable return is highly statistically significant and distinctly negative.

Table 4: Factor models of quarterly returns from 2014 to 2024.

	Sustainable funds	Conventional funds	Sustainable - Conventional	Sustainable funds	Conventional funds	Sustainable - Conventional
Alpha	-0.5148 *** (0.02154)	0.0094 (0.0461)	-1.0569 *** (0.0541)	-0.4072 *** (0.0226)	0.1778*** (0.0481)	-1.0989 *** (0.0567)
MKT	0.5383*** (0.0046)	0.3297*** (0.0045)	-0.2238 *** (0.0053)	0.5213*** (0.0024)	0.3011*** (0.0051)	0.2310 *** (0.0060)
SMB				0.0680*** (0.0044)	0.1095*** (0.0093)	- 0.0290*** (0.0110)
HML				0.0017 (0.0023)	0.0786*** (0.0049)	-0.0726* (0.0006)
N	64 603	29 152	29 148	64 603	29 152	29 148

	Sustaina-ble funds	Conven-tional funds	Sustaina-ble - Con-ventional	Sustaina-ble funds	Conven-tional funds	Sustaina-ble - Conven-tional
R^2	0.4952	0.1560	0.0582	0.4971	0.1690	0.0640

Standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In conclusion, the investors have worse returns from sustainable funds compared to conventional funds. In addition, as the alpha is negative for the sustainable funds, the sustainable funds are underperforming compared to their peers. Overall, sustainable funds seem to underperform their conventional peers. Although, The r-squared is considerably low.

6.2 Fund risk figures

Four risk figures are examined (Sharpe ratio, standard deviation, beta, and alpha) concerning sustainability rating in table 5. As previously stated, the Sharpe Ratio calculates the fund's risk-adjusted performance. The standard deviation indicates how consistent the fund returns are (Morningstar, 2023b). The higher the score, the more volatility the 3 years of returns have had. As stated, the beta in Morningstar is the average monthly excess return (Morningstar, 2023c). The higher the beta, the better. The Morningstar's alpha is based on the Jensen's alpha (Morningstar, 2023c). It is calculated by taking the average monthly excess return of the mutual fund (beta) from the average monthly excess return of the mutual fund (Morningstar, 2023c). The better the alpha, the better the investment decisions made.

Table 5: Fund risk figures model.

	3-Year Sharpe Ratio	3-Year Std. Dev.	3-Year Beta	3-Year Alpha
Sustainability rating	-0.0204***	0.2332***	-0.0004	-0.4959***
	(0.0041)	(0.0399)	(0.0083)	(0.0413)
Constant	0.1904***	11.6614***	0.9896***	0.1384
	(0.0173)	(0.1669)	(0.0083)	(0.1732)

	3-Year Sharpe Ratio	3-Year Std. Dev.	3-Year Beta	3-Year Alpha
N	4306	4306	4121	4121
R^2	0.0056	0.0079	0.0000	0.0338

Standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

There is a statistically significant find that higher sustainability rating has a negative relationship with Sharpe ratio. Standard deviation as the dependent variable presents a positive value of the sustainability rating and it indicate that sustainable funds have more inconsistent returns compared to conventional funds. As the alpha is negative, it indicates that sustainable funds have a worse alpha. There is not a statistically significant find on beta. As expected, the r-squared is extremely low as there is only one independent variable that is not straightforwardly connected to the dependent variables. These results support the conclusion of table 3 and 4 that sustainable funds are underperforming conventional funds.

6.3 Fund fees

The fund fees are presented through five categories of different fees and the fee level and the significance of the sustainability of funds are shown in table 6. The fee level presents an overall look at different fees charged by the investor which makes it the most reliable measure. To control if there is a difference in the results in different fee categories, the different fees are also included as dependent variables.

Table 6: Fund fee model.

	Fee level	Initial Charge (%)	On-going charge (%)	Performance fee (%)	Transactional fee (%)	Exit fee (%)
Sustainability rating	-0.0196* (0.0120)	-0.0446** (0.0176)	0.0047 (0.0043)	0.0101 (0.0066)	-0.0118*** (0.0024)	0.0028 (0.0032)
Constant	1.8421*** (0.0509)	2.2279*** (0.0744)	1.1431*** (0.0183)	0.0428 (0.0279)	0.2716*** (0.0103)	0.0361*** (0.0135)

	Fee level	Initial Charge (%)	On-going charge (%)	Performance fee (%)	Transactional fee (%)	Exit fee (%)
N	3906	5106	5365	5063	5366	3818
R^2	0.0007	0.0013	0.0002	0.0005	0.0044	0.0002

Standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The fee level has a negative relationship with the sustainability rating. It indicates that sustainable funds have lower overall fees than conventional peers. In addition, the initial charge and transactional fee have a similar finding. As in table 5, the r-squared is expectedly significantly low.

7 Conclusions

This thesis' goal was to replicate an investor's experience when investing in a sustainable mutual fund compared to a conventional mutual fund. As many companies' greenwashing accusations and ESG investments are concerning investors, it was important to see sustainable investing from the eyes of a retail investor. Many previous studies have been made to figure out how sustainable mutual funds compare to conventional funds, but the results have been mixed. In addition, research has usually been done with information that only institutional investors have access to.

The thesis explored the hypotheses with accessible data from Morningstar that a regular retail investor would use in their investment decisions. Firstly, comparing the performance showed that sustainable mutual funds are underperforming the conventional mutual funds. Secondly, when looking at risk figures, sustainable mutual funds performed worse compared to conventional peers. As the first hypothesis states that sustainable mutual funds outperform their conventional peers, the hypothesis is approved as there is supporting evidence.

The sustainable mutual funds had lower fees. An especially significant finding is that the fee level provided by Morningstar had a negative relationship with an increase in sustainable rating. This makes sustainable mutual funds a more attractive mutual fund to invest in in terms of fees. In conclusion, sustainable mutual funds underperform on returns and risk-adjusted returns but have lower fees. This makes sustainable mutual funds an overall worse investment for a retail investor even when the fees are lower.

Table 7: Conclusion of thesis' hypotheses.

H1: Sustainable mutual funds underperform conventional mutual funds.	Approved
H2: Sustainable mutual funds have higher fees than conventional mutual funds.	Rejected

For future research, a study where a different data provider would be used would give further evidence of the topic. In addition, a different time sample especially for a future time period could provide additional evidence. Comparing different periods studied in this thesis could show if sustainable funds perform better under COVID-19.

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