Is Ethical Investing Less Profitable? A Comparative Analysis of ESG and Traditional Mutual Funds

Author: Filippo Anselmetti

Student ID: 58446

Supervisor: Giorgio Ottonello

Nova School of Business and Economics

MSc Finance

Abstract

This thesis aims to investigate the uncertainty surrounding ESG mutual funds and their profitability compared to traditional mutual funds. By reviewing the current literature and through the use of a sample of large-cap equity mutual funds, the study analyses four key performance metrics: Standard Deviation, Beta, Sharpe Ratio, and Alpha to observe how the two types of funds differ from each other. After conducting a t-test and regression analysis, the findings reveal no significant difference in volatility between ESG and traditional funds, while also exhibiting significantly lower Sharpe Ratios and Alphas in ESG funds, suggesting poorer risk-adjusted returns and underperformance relative to traditional funds. The results of the research suggest that while ESG funds align with ethical and sustainability goals, they may come at the cost of lower financial performance while highlighting the need for investors to balance ethical considerations with financial objectives and calling for greater transparency and standardisation in ESG reporting to mitigate concerns about greenwashing.

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Chapter 1: Introduction and Background

1.1 Introduction

Over the past decades, concerns about climate change have increased, with many people calling for action and accelerating the transition towards a more sustainable economy. The global financial sector plays a paramount role in this sustainable shift by allotting capital into industries that can further drive this change with sustainable activities. Accordingly, the Paris Agreement in 2015 clearly stated that the industry has to make finance flows consistent with a trajectory towards low emissions (United Nations, 2015). For this reason, in recent years environmental, social, and governance (ESG) matters received increasing attention from investors and financial institutions (Das et al., 2018) which started using them as an investment vehicle. Herein, the number of ESG-focused mutual funds available in the market increased by 33% over the period from 2016 to 2018. Furthermore, the number of ESG assets worldwide surpassed $30 trillion in 2022 and is on track to surpass $40 trillion by 2030, accounting for over 25% of the projected $140 trillion assets under management (AUM) (Bloomberg, 2024). ESG funds allow investors to participate in the market through investments in companies that care for ESG-related issues and differ from traditional funds in terms of objective function and management. Specifically, ESG funds' managers decide the portfolio allocation both in terms of risk and return, as well as in terms of the ESG performance of the companies chosen (Das et al., 2018; Da Silva and Mendes, 2021). Furthermore, these funds are constantly rated based on their ESG commitment as a way to track and rank them in terms of sustainability, with the higher grade corresponding to firms or funds complying the most with the cause and regulations (Baily and Gnabo, 2022). For this reason, ESG ratings became crucial tools in guiding investor decisions. Despite their growing popularity, the performance of ESG funds compared to traditional funds remains a subject of debate. According to Kim and Yoon (2020),

the great increase in sustainable investment vehicles in the market raised a lot of doubts about their trustworthiness and their difference from regular funds in terms of investment practices.

1.2 Aims and Objectives

The aim of this thesis is to offer a detailed comparison between ESG-focused mutual funds and traditional funds. The research will explore three critical dimensions of mutual funds: performance, risk, and portfolio composition. Specifically, it will first study the structure and composition of ESG funds and the ways in which they differ from traditional funds, to then address whether ESG funds can achieve competitive financial returns. The comparative analysis aims to contribute to the debate on the efficacy of ESG investments.

1.3 Summary of the Research Project

The research will contain six main sections. The first chapter offered an introduction to the purpose of this research as well as background information on the recent growth of ESG funds. The second chapter will provide a literature review in which past and present literature will be analysed to better understand the current status of ESG-related funds' performance compared to that of traditional funds. Furthermore, in the third chapter, the researcher will explain the methodology used to answer the research question and why such methodology was chosen. The research design and strategy for the gathering of the data will be provided in this chapter. Subsequently, in the fourth chapter, the paper will illustrate the findings of the research and will focus on answering the research question. In the fifth chapter – the discussion section – the paper will discuss the findings and will attempt to understand their relevance in expanding the existing body of literature. Ultimately, the final section of the research will be the formulation of a conclusion containing a summary of the key findings and results of the research, explaining the limitations encountered throughout and suggesting recommendations for future studies on the same topic.

Chapter 2: Literature Review

2.1 Introduction

The rapid growth of ESG investing has sparked the interest of both institutional and retail investors, together with a parallel rise in academic research on the topic. ESG investing aims to incorporate ethical, social, and environmental considerations into financial decisions, thus allowing investors to align their financial goals with ethical values. However, despite their incredible popularity momentum, the rise of ESG mutual funds has led to many debates about their uniqueness, financial performance, and real impact on societal outcomes. Accordingly, this literature review explores the characteristics, performance, criticisms, and influences of ESG mutual funds as compared to traditional funds. By analysing the available research, this literature review provides an overview of the potential benefits of ESG funds, as well as their limitations and ambiguities.

2.2 ESG Funds Structure

The way ESG funds are structured is very similar to traditional mutual funds, but they differ in having a focus on investing in companies that meet specific ESG criteria. Herein, according to the Corporate Finance Institute (2023), ESG funds are usually managed by professional fund managers who use ESG scores as the criteria to select companies that align with sustainable goals that respect the view of the fund. An ESG score is a rating that evaluates a company's performance in ESG factors, allowing fund managers to determine whether that company is suitable or not to be included in a sustainable fund. The process of calculating ESG scores involves assessing many aspects of a company. Specifically, for the environmental component, factors such as carbon emissions, waste management, and use of resources are taken into account. The social component, on the other hand, evaluates labour practices, the impact on the community, and the diversity policies of the firm. Finally, the governance component

assesses the internal structure of a company, such as its corporate leadership, pay, and shareholders' rights. Accordingly, fund managers analyse these scores, often provided by third-party agencies, to build a portfolio that is aligned with the sustainability goals of the fund (ET Money, 2023). This approach allows investors to develop investment strategies and pick funds to build diversified portfolios that align with their ethical considerations while also looking to obtain financial returns. Furthermore, the construction of sustainable funds, the same as traditional mutual funds, can be either actively or passively managed. On the one hand, active ESG funds involve fund managers actively selecting stocks of companies based on their ESG scores and financial performance (ET Money, 2023). On the other hand, passive ESG funds track an index that consists of companies with high ESG ratings. Both approaches have their pros, with active funds offering potentially higher returns at a higher cost, while passive funds provide more cost-effective exposure to sustainable companies (ET Money, 2023).

Moreover, ESG funds can also use different investment strategies such as positive and negative screening, and impact investing. Positive screening involves choosing companies that perform well in ESG compliance, while negative screening, opposite to the former strategy, excludes companies that are involved in harmful activities or industries, such as tobacco, firearms, or fossil fuels. Ultimately, impact investing goes a step further by looking for investments that have a direct and measurable impact on social or environmental issues (Corporate Finance Institute, 2023). This diversification in strategies allows ESG funds to satisfy many investor preferences, from those wanting to avoid harmful industries to those looking to have a positive impact with their investments (ET Money, 2023).

2.3 Characteristics and Performance of ESG Mutual Funds

As mentioned in the previous sections of the research, the strong gain in popularity of ESG funds has been mainly driven by growth in concerns over climate change, corporate social

responsibility, and sustainability as a whole. Herein, research by Baily and Gnabo (2022) examines whether ESG mutual funds are actually different from traditional funds in terms of portfolio characteristics and financial returns. Their findings revealed that, while there was a notable difference at the beginning, ESG funds' portfolio compositions and strategies began to become similar to those of traditional funds over time. Furthermore, Baily and Gnabo's (2022) analysis of financial performance found that ESG funds often underperform traditional funds in these terms. However, ESG funds proved to be more resilient in times of heightened climate risks, thus narrowing the performance gap during challenging periods of market cycles (Baily and Gnabo, 2022). Further analysing funds' performance, Das et al. (2018) employed the Fama-French 5-factor model to evaluate ESG funds between 2005 and 2016, encompassing the period of the Great Recession. As a result, their study concluded that during periods of economic downturn, ESG-focused funds performed comparably and, in some cases, even slightly better than traditional funds, suggesting that including sustainable investments does not always result in financial compromise. These results indicate that while ESG funds might underperform in regular economic conditions, they can be a good countermeasure to hedge risk during cycles of economic downturns (Das et al., 2018).

2.4 Investor Demographics and Behaviour

Another interesting aspect of sustainable investing is the profile of ESG investors, which shows differences compared to traditional ones not only in terms of financial objectives but also in terms of demographics. Herein, Pereira da Silva and Mendes (2021) analysed investor behaviour in the Portuguese market, finding that those investing in socially responsible funds tend to reside in urban areas, have higher educational levels and demonstrate higher financial education compared to traditional investors. Furthermore, the research showed that these investors are also more likely to engage in frequent trading while also exhibiting greater diversification in their investments, suggesting that those investing in ESG funds are more

financially sophisticated and dynamic (Pereira da Silva and Mendes, 2021). Additionally, the motivations for choosing ESG funds often go beyond financial returns. As elaborated before, ESG investors are also driven by ethical aspects and a desire to make a positive contribution to society and a shift towards a better future. This investor behaviour can be described as a mix of financial and non-financial goals, where individuals are willing to accept lower returns in exchange for the societal and environmental benefits coming from their investments. This ethical behaviour is the distinctive factor between ESG investors and traditional ones, who are usually more focused on financial returns above the rest.

2.5 Risk-Adjusted Returns and Evaluation Models

Another aspect thoroughly analysed in the literature is the evaluation of the performance of ESG funds in terms of risk-adjusted returns. Herein, Yue et al. (2020) assess the performance of ESG and traditional funds using the Capital Asset Pricing Model and the Fama-French three-factor model. As a result, the study suggests that ESG funds have lower volatility compared to traditional funds, making them more appealing to risk-averse investors. However, despite the lower risk, ESG funds do not deliver higher returns than their traditional counterparts. Moreover, Javidi and Larsson (2023) support these findings by showing that ESG funds entail a higher degree of risk-adjusted returns compared to traditional funds, with the increased risk associated with the sectoral biases related to ESG investing. The divergence between ESG and traditional funds is primarily a result of the different exposure to industries and the different weights put on sustainability factors (Yue et al., 2020; Javidi and Larsson, 2023).

Moreover, what emerges from the literature is that ESG funds could offer a form of downside protection during market turbulence, as the lower volatility in ESG funds can be partially attributed to not investing in high-risk industries and preferring more sustainable companies. Accordingly, these factors contribute to building a more stable investment profile, which allows

investors to be protected during market downturns. Conversely, the downside of ESG funds is that, in periods of market growth, ESG funds could not yield the same returns as traditional funds, which are usually focused on riskier and, therefore, higher-rewarding sectors.

2.6 Criticisms and Challenges in ESG Investing

Despite its growing popularity, ESG investing has always been criticised at the same time. In this regard, Bonaparte and Koslowsky (2022) study the concerns regarding the authenticity of ESG funds, highlighting that many ESG funds mimic traditional index funds in their investment approach, showing a practice known as "closet indexing." As a result, their findings point out that ESG funds are often not as distinct as they claim to be, focusing on industries that are inherently high scoring in ESG criteria, such as technology and finance while ignoring sectors like utilities and manufacturing that play a critical role in the sustainable transition. Here, the criticism is that this cherry-picking approach undermines the true purpose of sustainable investing and contributes to the rising skepticism of greenwashing practices (Bonaparte and Koslowsky, 2022). Furthermore, Raghunandan and Rajgopal (2022) explore these criticisms by investigating the actual impact of ESG funds on the companies that they invest in. As a result, they found that companies held by ESG funds often show worse compliance with labour and environmental laws than those in traditional funds, suggesting that ESG investing could be more about appearances rather than actual impact. According to their research, this increases the concerns over the potential asymmetry between the ESG facade and the actual contributions of ESG funds to society, highlighting issues of greenwashing and strengthening the skepticism around this topic (Raghunandan and Rajgopal, 2022).

Finally, another discussion around ESG investing in the existing literature is the one regarding standardised metrics and ratings. As a matter of fact, ESG scores are provided by third-party agencies which use different methodologies, leading to inconsistent ESG ratings. This lack of

uniformity makes it difficult for investors to compare ESG funds and assess their true impact accurately. Furthermore, the absence of a regulatory body guarding what qualifies as an ESG fund led to a proliferation of funds that may not actually respect ESG principles but still label themselves as such, fueling concerns about greenwashing even more (Bonaparte and Koslowsky; Raghunandan and Rajgopal, 2022).

2.7 Impact of ESG Funds on Portfolio Firms

The influence of ESG mutual funds on the corporate policies of the companies in which they invest is also a topic worth mentioning. Herein, Couvert (2022) studies the impact of mutual funds' voting policies on corporate governance within their firms in their portfolios. His study finds that mutual funds have quite a strong influence on the adoption of governance policies by portfolio companies. However, the impact is less consistent in the domains of environmental and social policy, suggesting that while ESG funds may succeed in influencing corporate governance, their impact in driving environmental and social change remains quite limited, highlighting a gap between the objectives of ESG investing and the outcomes they actually achieve (Couvert, 2022). Additionally, ESG funds may also influence corporate behaviour through directly involving communication between fund managers and company executives, aimed at encouraging better ESG practices. This can include discussions on reducing carbon footprints, improving labour conditions, or enhancing transparency in corporate governance. While there is evidence that active engagement can lead to positive changes, the extent of its impact varies, and many companies may only make superficial changes to appease investors without implementing substantial reforms (Couvert, 2022).

2.8 Regional Analysis of ESG Funds

Reviewing the existing literature also showed the geographical influence on sustainable funds, as their performance varies significantly across different regions. Abate et al. (2020) conducted

an empirical analysis of European mutual funds, finding that high-ESG-rated funds proved to be more efficient than the lower-rated ones. However, the study highlighted that the greater performance depended on a mix of market conditions and economic environment. This finding suggests that the benefits of ESG investing are also influenced by regional regulations, specific market characteristics, and regional investor preferences. The context-dependent nature of these results implies that ESG investing may not offer a universally superior financial return but can provide other benefits, such as lower volatility and better crisis resilience, under specific conditions (Abate et al., 2020).

Ultimately, differences in regulatory support for ESG investing across different regions influence the performance and adoption of ESG funds. In Europe, for example, regulatory bodies have been active in promoting sustainability through different policies and regulations, such as the Sustainable Finance Disclosure Regulation (SFDR), which mandates market participants to disclose how they integrate sustainability risks and considerations into their investment strategies, enhancing transparency and fostering a more favourable environment for ESG funds (European Commission, 2024). Conversely, regions with less support from regulatory bodies may be slower in adopting ESG investing, as companies are not as inclined to comply with sustainability standards. Herein, a report by the European Leveraged Finance Association (2023) highlights that regional discrepancies and cross-border regulatory differences can affect the ESG landscape, leading to inconsistent adoption of ESG principles across jurisdictions. These aspects highlight the paramount importance of regulatory frameworks in shaping the ESG investment landscape.

2.9 Conclusion

As seen throughout this chapter, the existing literature on ESG mutual funds shows a complex and fragmented picture of their characteristics, performance, and impact, highlighting many

grey areas and criticism. While ESG investing promises to align financial performance with social responsibility, it also presents financial challenges, such as lower returns, sectoral biases, and greenwashing allegations. Despite being very attractive investment vehicles due to their resilience during market downturns and the possibility to develop an investment strategy aligned with your personal values, there are a lot of criticisms related to their authenticity and ability to truly deliver sustainable outcomes. Herein, the reviewed literature highlights both the good and the bad of ESG mutual funds, suggesting that while they may be a strong vessel in advancing sustainability, there is still work to do to make sure that ESG investing achieves its intended goal of positive societal impact.

Chapter 3: Methodology

This research studies the volatility, risk, and performance of ESG mutual funds compared to traditional mutual funds. The first step involved selecting a sample of both ESG and traditional large-cap equity mutual funds to ensure a balanced comparison between the two groups. Historical performance data spanning from March 2014 to March 2024 for these funds were extracted from the CRSP Mutual Funds database provided by Wharton Research Data Services (WRDS). Additionally, benchmark index data, specifically the S&P 500 index, was sourced from Yahoo Finance to serve as a comparison for the broader market performance. Specifically, the dataset included the following metrics: Standard Deviation, Beta, Sharpe Ratio, and Alpha in order to have a comprehensive base to compare the risk and performance characteristics of ESG and traditional funds.

The analysis focused on both descriptive statistics and regression analysis. The descriptive statistics phase involved calculating the means and standard deviations of each performance metric for ESG and traditional funds. Furthermore, to determine if the differences between ESG and traditional funds were statistically significant, t-tests were conducted to compare the means of the two groups for each performance metric.

To then gain a deeper understanding of the relationship between fund type and performance metrics, multiple linear regression models were conducted. The regressions aimed at quantifying the effect of being an ESG fund on the Sharpe Ratio and Alpha while controlling for other relevant factors. In these models, the independent variable in these models was the fund type, represented as a binary dummy variable (1 for ESG funds and 0 for traditional funds), while the control variables included Beta and Standard Deviation, which accounted for market sensitivity and volatility. The whole analysis was conducted with Python and Excel for data manipulation, statistical testing, and regression modelling.

This study has certain limitations that may ultimately affect the results and their interpretation. Due to time constraints, the sample size used was relatively small. Moreover, the analysis did not explicitly control for sectoral biases, which may influence the performance of ESG and traditional funds. Lastly, the timeframe used, despite being quite comprehensive, may not fully reflect the long-term performance trends of the funds analysed.

Chapter 4: Findings

4.1 Introduction

This chapter presents the findings of the analysis conducted between ESG-focused mutual funds and traditional mutual funds to address the central research question: *"Do ESG-focused mutual funds exhibit lower volatility compared to traditional mutual funds?"*. The results are sourced from descriptive statistics, independent sample t-tests, and regression analyses.

4.2 Descriptive Statistics

To begin, descriptive statistics offer an initial understanding of the key performance metrics for ESG and traditional mutual funds. As shown by Table 1, the primary metrics analysed are Standard Deviation, Beta, Sharpe Ratio, and Alpha which show notable differences and similarities between the two fund types.

Metric	ESG Mean	Traditional Mean
Standard Deviation	0.0384	0.0443
Beta	-0.1513	-0.1519
Sharpe Ratio	0.0912	0.1348
Alpha	-0.0351	-0.0327

Tab. 1 Mean results of main metrics for ESG and Traditional funds

From this initial analysis, what emerges is that the Standard Deviation shows that ESG funds have a slightly lower average volatility of 0.0384, compared to 0.0443 for traditional funds. Although this difference suggests that ESG funds might be marginally less volatile, the gap is not that big, meaning that this lower volatility may derive from ESG funds' tendency to avoid high-risk and harmful industries. When considering Beta, ESG and traditional funds display almost identical values, with ESG funds averaging -0.1513 and traditional funds -0.1519. This similar result might indicate that both fund types exhibit comparable market sensitivity, meaning that ESG funds are influenced by overall market movements to the same extent as

traditional funds. Accordingly, we can interpret that ESG funds do not appear to offer a strong hedge against market volatility, reinforcing the notion that their performance is still tied to broader market trends.

In terms of the Sharpe Ratio, ESG funds show an average of 0.0912, while traditional funds have it higher at 0.1348, indicating that ESG funds provide lower risk-adjusted returns. The reason behind this behaviour might be that the constraints imposed by ESG criteria, such as avoiding certain sectors or adhering to sustainability mandates, may limit the range of assets they can invest in and, therefore, lead to higher management costs and minimised diversification, ultimately affecting risk-adjusted performance. Ultimately, Alpha further highlights the underperformance of ESG funds as the average Alpha for ESG funds is -0.0351, compared to the -0.0327 of traditional funds. This suggests that ESG funds generate lower excess returns relative to their benchmarks, even after adjusting for market movements. One possible explanation for this is the exclusion of high-performing sectors like energy and industrials, which ESG funds tend to avoid.

4.3 T-Test Results

To determine the statistical significance of the metrics analysed in the first part of the analysis, independent sample t-tests were conducted, obtaining the results presented in the table below.

Metric	**P-value**
Standard Deviation	0.2004
Beta	0.9041
Sharpe Ratio	0.0021
Alpha	0.0406

Tab. 2 T-Test results of main metrics

As we can see from Table 2, for Standard Deviation, the p-value of 0.2004 indicates no statistically significant difference in volatility between ESG and traditional funds, confirming that while ESG funds show slightly lower volatility, the difference is not meaningful enough

to draw definitive conclusions. Furthermore, the p-value for Beta is 0.9041, suggesting no significant difference in market sensitivity between the two fund types. This result reinforces the conclusion that ESG funds do not offer greater protection against market fluctuations compared to traditional funds.

On the other hand, the Sharpe Ratio yields a p-value of 0.0021, indicating a statistically significant difference in risk-adjusted returns. Specifically, ESG funds' lower Sharpe Ratios highlight a potential drawback of ESG investing, where the constraints of ESG criteria may lead to suboptimal returns relative to risk. Similarly, the t-test for Alpha produces a p-value of 0.0406, showing again a statistically significant difference in excess returns. Herein, the underperformance of ESG funds compared to traditional funds may suggest that investors may need to accept lower Alpha in exchange for aligning their investments with sustainability principles.

4.4 Regression Analysis

Moving on, multiple linear regression models were employed to investigate the relationship between ESG classification and fund performance further. Here, the analysis focuses on two dependent variables: Sharpe Ratio and Alpha, while controlling for Beta, and Standard Deviation.

Sharpe Ratio Regression

The regression model for the Sharpe Ratio is expressed by the following equation:

$$\boldsymbol{Sharpe\ Ratio} = \beta_0 + \beta_1(ESG\ Dummy) + \beta_2(Beta) + \beta_3(Standard\ Deviation) + \epsilon$$

The results of the regression are depicted in the following table:

Variable	Coefficient	P-value
Intercept	0.1059	0.002
ESG Dummy	-0.0617	0.000
Beta	0.4921	0.036
Standard Deviation	28.957	0.014

Tab. 3 Sharpe Ratio regression results

The results shown in Table 3 show that the ESG Dummy has a negative coefficient of -0.0617 with a p-value of 0.000, indicating that ESG funds have significantly lower Sharpe Ratios compared to traditional funds. This result supports the conclusion that ESG constraints negatively impact risk-adjusted returns. Moreover, the Beta coefficient of 0.4921 suggests that higher Beta values are associated with higher Sharpe Ratios. Interestingly, the Standard Deviation coefficient of 2.8957 implies that higher volatility can also lead to higher Sharpe Ratios, reflecting the rewards of taking on greater risk.

Alpha Regression

The regression model for Alpha is expressed by the following equation:

$$\boldsymbol{Alpha} = \beta_0 + \beta_1(ESG\ Dummy) + \beta_2(Beta) + \beta_3(Standard\ Deviation) + \epsilon$$

The results of the regression are depicted in the following table:

Variable	Coefficient	P-value
Intercept	-0.0328	0.000
ESG Dummy	-0.0024	0.000
Beta	0.0561	0.000
Standard Deviation	0.2170	0.000

Tab. 4 Alpha Regression results

Here, the ESG Dummy has a negative coefficient of -0.0024 with a p-value of 0.000, confirming that ESG funds generate significantly lower Alpha compared to traditional funds. Furthermore, the positive Beta coefficient of 0.0561 indicates that higher market sensitivity is linked to higher excess returns. Additionally, the Standard Deviation coefficient of 0.2170

suggests that higher volatility is associated with higher Alpha, implying that riskier funds may achieve greater excess returns.

To better understand and interpret the results, the findings are illustrated through the following two scatter plots that compare ESG and traditional mutual funds.

Sharpe Ratio vs Beta

The scatter plot in Figure 1 highlights how the Sharpe Ratios of ESG and traditional funds vary with Beta values, clearly showing the lower Sharpe Ratios for ESG funds relative to traditional ones.

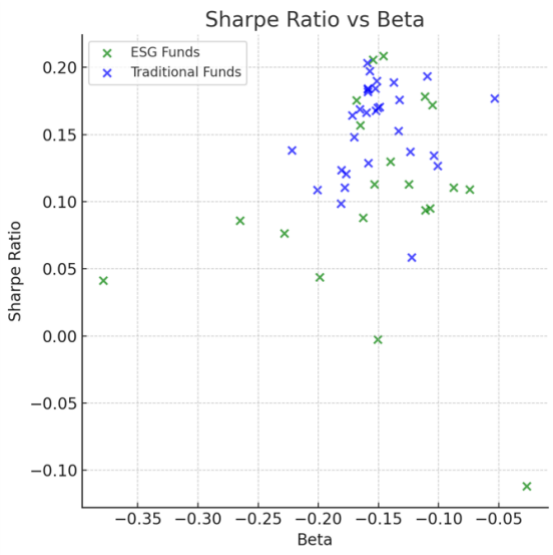

Fig. 1 Sharpe Ratio vs Beta Regression Graph

Alpha vs Beta

Similarly, Figure 2 shows the relationship between Alpha and Beta for ESG and traditional funds. ESG funds generally display lower Alpha values compared to traditional funds.

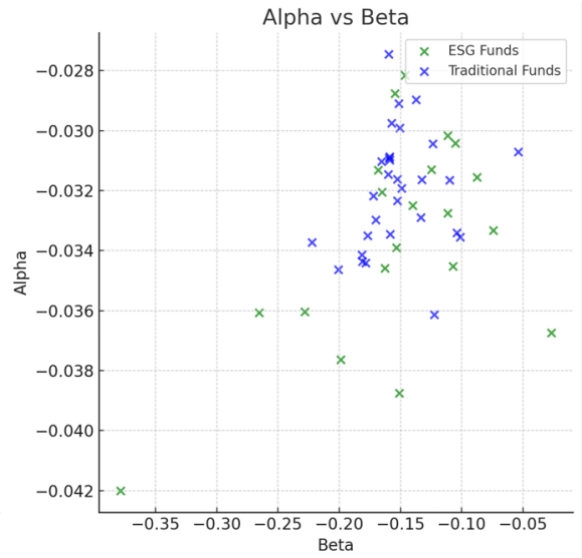

Fig. 2 Alpha vs Beta Regression Graph

Chapter 5: Discussion

5.1 Introduction

This chapter further interprets and discusses the findings presented in Chapter 4, placing them within the context of the existing literature and the broader research question: *"Do ESG-focused mutual funds exhibit lower volatility compared to traditional mutual funds?"* The discussion explores the implications of the descriptive statistics, t-tests, and regression analyses performed in Chapter 4, offering insights into the performance, risk, and characteristics of ESG and traditional funds. Ultimately, this chapter tries to address the potential reasons behind the observed differences and evaluates the practical and theoretical implications of these findings.

5.2 Volatility and Risk

The analysis of volatility and risk, measured through Standard Deviation and Beta, showed no significant difference between ESG and traditional funds as the former had an average Standard Deviation of 0.0384, while the latter averaged 0.0443, and the t-test result (p-value = 0.2004). This result challenges the perception that ESG funds inherently offer greater stability during volatile market conditions.

Similarly, the Beta values for both ESG and traditional funds were nearly identical, with -0.1513 for ESG funds and -0.1519 for traditional ones. Here, the p-value of 0.9041 confirms that the difference in market sensitivity between the two fund types is negligible and implies that ESG funds are influenced by overall market movements to the same extent as traditional funds. Studies by Yue et al. (2020) and Javidi and Larsson (2023) support these results, indicating that ESG funds do not consistently exhibit lower risk profiles.

Accordingly, the lack of significant differences in Standard Deviation and Beta suggests that ESG funds may not provide strong risk mitigation. As a result, investors trying to minimise volatility or market sensitivity in their portfolios may not find ESG funds as the solution

compared to traditional funds. This highlights the importance of considering additional factors, such as ethical preferences and long-term sustainability objectives, when choosing to invest in ESG funds.

5.3 Performance Metrics

Sharpe Ratio

In terms of performance metrics, Sharpe Ratios revealed that ESG funds deliver significantly lower risk-adjusted returns compared to traditional funds, with an average Sharpe Ratio of 0.0912, against the 0.1348 of traditional ones. This difference was further confirmed by a t-test with a p-value of 0.0021, which indicates a statistical significance. Furthermore, the regression analysis produced a negative coefficient for the ESG Dummy (-0.0617, p-value = 0.000), strengthening the conclusion that ESG funds underperform on a risk-adjusted basis. This outcome aligns with previous research by Baily and Gnabo (2022) and Bonaparte and Koslowsky (2022), which highlight the constraints ESG criteria impose on fund managers. These constraints can reduce the pool of assets someone can invest in, increase management costs, and limit diversification, ultimately affecting the performance of the fund. From the investor's perspective, this suggests a trade-off between aligning investments with ethical principles and achieving higher risk-adjusted returns.

Alpha

Furthermore, the analysis conducted on Alpha underscores the underperformance of ESG funds relative to traditional ones. In this context, ESG funds showed an average Alpha of -0.0351, compared to -0.0327 for traditional funds. The significance of this difference was also confirmed by the t-test (p-value = 0.0406) and the regression analysis, which showed a negative coefficient for the ESG Dummy (-0.0024, p-value = 0.000). The lower Alpha values for ESG funds may be attributed to the exclusion of high-performing sectors. Additionally, the

costs associated with ESG compliance and reporting may further detract from performance. These results are coherent with the findings of Raghunandan and Rajgopal (2022), who questioned the financial benefits of ESG investments.

5.4 Interpretation of Results in the Context of the Literature

The findings of this study meaningfully contribute to the ongoing debate surrounding ESG investing. While ESG funds are designed to promote sustainability, their financial performance appears to be poorer than that of traditional funds, with lower Sharpe Ratios and Alphas suggesting that ESG funds may not be able to deliver competitive financial returns. The results of this analysis support the concept that investing in ESG funds is not always a win-win situation but, instead, involves trade-offs. As mentioned by Das et al. (2018), ESG funds may perform comparably to traditional funds during times of economic stability but struggle to maintain this performance during downturns. Additionally, the sectoral biases inherent in ESG investing, as highlighted by Bonaparte and Koslowsky (2022), may contribute to the underperformance observed in this research.

5.5 Practical Implications

In terms of practical implications, the results can be interpreted by the two different perspectives of the investor and the fund manager.

Investors

Investors considering investing in ESG funds have to weigh the ethical and sustainability benefits against the potential for lower financial returns as, while these funds may align with their personal values and long-term environmental goals, they may not provide the same level of risk-adjusted returns or excess returns as traditional funds. Accordingly, investors who are more focused on financial performance may prefer and should rely more on traditional funds.

Fund Managers

On the other hand, fund managers of ESG-focused portfolios should explore strategies to enhance financial performance without compromising compliance with ESG principles. This may involve portfolio diversification, reducing management costs, and adopting new investment strategies that balance sustainability with financial returns. Additionally, greater transparency and standardised ESG metrics could help build investor confidence and reduce concerns about greenwashing.

5.6 Limitations of the Study

This research has several limitations that should be acknowledged. First of all, the sample size was relatively small, potentially affecting the representation of the broader market. Second, the study focused on data from March 2014 to March 2024, which may output results that would differ if the time frame was different. Finally, the analysis did not control for sectoral biases, which also influence the performance of ESG funds.

Herein, future research should consider expanding the sample size and performing the analysis on a longer timeframe. Another good measure could be to incorporate additional control variables, such as fund size and expense ratios. These adjustments could provide a more comprehensive understanding of ESG fund performance compared to traditional funds.

Chapter 6: Conclusion

6.1 Summary of Key Findings

This thesis had the objective to compare the volatility, risk, and performance of ESG mutual funds with traditional mutual funds and to determine whether ESG funds provide any advantages in terms of financial performance, particularly in relation to volatility and risk-adjusted returns.

The findings revealed that there is no significant difference in volatility between ESG and traditional funds since both categories displayed similar levels of market sensitivity. In terms of risk-adjusted returns, ESG funds underperformed traditional funds, as reflected by their lower Sharpe Ratios, suggesting that ESG funds provide less favourable returns for the amount of risk taken. Additionally, analysing Alpha highlighted that ESG funds deliver lower excess returns relative to traditional funds due to the exclusion of high-performing sectors or the costs of complying with ESG standards.

6.2 Implications for Investors and Policymakers

The findings of this study carry significant implications for both investors and policymakers.

For Investors

On the investors' side, they need to carefully evaluate their priorities when deciding between ESG and traditional mutual funds. Herein, those who prioritise ethical considerations and sustainability may still decide to invest in ESG even if they result in poorer financial returns. Conversely, investors whose focus is financial performance may prefer traditional mutual funds as the evidence suggests that traditional funds offer better risk-adjusted returns and higher excess returns compared to ESG funds.

For Policymakers

In this context, policymakers play a crucial role in shaping the future of ESG investing as they need to implement greater transparency and standardisation in ESG reporting in order to enhance the credibility and effectiveness of ESG funds. Clear and consistent ESG reporting standards would not only increase investor confidence but also improve the overall quality of ESG investments.

6.3 Recommendations for Future Research

Building upon the findings of this study, future research should explore several key areas to provide a more comprehensive understanding of ESG investing.

Future research should investigate the long-term performance of ESG and traditional mutual funds across different market cycles by implementing a longer time frame, which would help determine whether the performance trends observed in this study hold over different economic conditions, such as periods of growth, recession, and market recovery. Another important aspect for future research is the impact of sectoral biases on the performance of ESG funds since they often avoid sectors like energy and industrials while favouring technology and healthcare. Furthermore, the incorporation of additional performance metrics, such as expense ratios and fund size, could also enhance the analysis as these metrics can significantly influence fund performance and investor returns.

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