ESG & Sustainability in Financial Investment Decisions

Scotia Code

Dissertation written under the supervision of
Yan Vieites

With the assistance of Larissa Elmor

Dissertation submitted in fulfilment of requirements for the MSc in International Master's of Management, at Universidade Católica Portuguesa and for the Executive MBA in Sustainable Development in Emerging in Economies at Escola Brasileira de Administração Pública e de Empresas, at Fundação Getulio Vargas, June 2023

Abstract

English

Presently, there is a strong global movement supporting sustainable governmental, business, and personal efforts. However, there remains a lag in the adoption of environmentally conscious practices in financial markets, despite the fact that several investigations and meta-studies have shown that green financial assets out-perform traditional counterparts and many firms consider sustainability and ESG to be value-adding strategies.

This study explores this lag in consumer adoption by investigating perception, relevant heuristics, and behaviour regarding green financial investments. To achieve this, a survey was distributed using a between-subjects methodology collecting data on subjects' willingness to invest, expected performance and perceived risk of green financial assets, in this thesis represented by Green Funds based on a sustainability index, in contrast with a more traditional financial asset: a performance-based index fund. Data was also collected on demographics and environmental values.

Out of 166 valid responses, it was found that overall consumers are significantly more willing to invest in traditional funds, considering them to provide better performance and lower risk. The two most notable factors affecting attitude towards green investments were a) overall value of the environment and commitment to sustainability and b) age.

These findings have relevance to private companies, investing platforms, and fund managers seeking to optimize their engagement strategies and to environmental interest groups seeking to influence consumer behaviour and increase the adoption of sustainable investing behaviour. This also provides value to sustainability literature and academia as scholars continue to explore the attitude towards and adoption of sustainable practices by the public.

Keywords: ESG, Sustainability, Green Funds, Green Finance, Consumer Behaviour

Abstract

Portuguese

O objetico de este estudo e investigar a percepção e comportamento dos consumidores em relação a investimentos sustentáveis, essa pesquisa busca explorar a influência da sustentabilidade na percepção dos consumidores sobre ativos financeiros sustentáveis e sua lenta adoção por parte dos consumidores.

Este estudo foi realizado com dados obtidos através de uma pesquisa que explorava: 1) a disposição de investir e 2) o retorno esperado e risco percebido dos instrumentos financeiros ESG. Os instrumentos financeiros ESG são representados por Fundos Verdes, que são comparados ao índice de sustentabilidade, em contraste com os instrumentos financeiros tradicionais que são comparados apenas com índices baseados em desempenho. Também coletamos informação sobre os próprios participantes, como dados demográficos e seus valores ambientais, o que nos permitiu realizar análises estatísticas de regressão logística para comparar e explorar possíveis correlações entre as preferências médias dos investidores e seus fatores demográficos.

Com 166 respostas, encontramos que consumidores estão significativamente mais dispostos a investir em fundos tradicionais, com expectativas de melhores rendimentos e menores riscos. Os dois fatores que mais influenciam a disposição de realizar investimentos sustentáveis foram: a) valores pessoais em relação ao compromisso com a sustentabilidade b) idade.

Estas conclusões são relevantes para empresas privadas, plataformas de investimento e gestores de fundos que procuram otimizar as suas estratégias de envolvimento. Além disso, essas conclusões também são importante para a literatura sobre sustentabilidade e para o meio acadêmico, uma vez que os acadêmicos continuam a explorar o comportamento e a adoção de práticas sustentáveis pelo público.

Palavras-chave: ESG, Sustentabilidade, Green Finance, Fundos Verdes, Comportamento do Consumidor

Summary

English

Purpose - This study explores the effect of sustainability on consumer perceptions of green financial assets and the lag in consumer adoption of sustainable investing practices by investigating perception, relevant heuristics, and behaviour regarding green financial investments.

Methodology: This study was conducted on data obtained from a between-subjects design survey inquiring about subjects' 1) willingness to invest in and 2) their expected return and perceived risk of ESG financial instruments. The ESG financial instruments are represented by Green Funds, which are benchmarked against a sustainability index, and are in contrast to traditional financial instruments that are only benchmarked against performance-based indices. We also collected data on the participants themselves, such as demographics and their environmental values, which enabled us to conduct statistical logistic regression analyses to compare and explore potential correlations across mean investor preferences and demographic factors.

Findings - Out of 166 valid responses, it was found that overall consumers are significantly more willing to invest in traditional funds, considering them to provide better performance and lower risk. The two most notable factors affecting attitude towards green investments were a) overall value of the environment and commitment to sustainability and b) age of the respondent.

Research Limitations – This research is limited by the survey design, which may not accurately reflect decision making conditions. The sample size and large percentage of North American respondents in the distribution affects confidence and bias in respondents.

Originality - This survey was unique to this investigation, and to my knowledge no similar investigation exists with this study design and methodology.

Practical Implications - These findings have relevance to private companies, investing platforms, and fund managers seeking to optimize their engagement strategies and to environmental interest groups seeking to influence consumer behaviour and increase the adoption of sustainable investing behaviour. This also provides value to sustainability literature and academia as scholars continue to explore the attitude towards and adoption of sustainable practices by the public.

Keywords: ESG, Sustainability, Green Funds, Green Finance, Consumer Behaviour

Summary

Portuguese

Objetivo: Ao investigar a percepção, heurísticas relevantes e comportamento dos consumidores em relação a investimentos sustentáveis, essa pesquisa busca explorar a influência da sustentabilidade na percepção dos consumidores sobre ativos financeiros sustentáveis e sua lenta adoção por parte dos consumidores.

Metodologia: Este estudo foi realizado com dados obtidos através de uma pesquisa que explorava: 1) a disposição de investir e 2) o retorno esperado e risco percebido dos instrumentos financeiros ESG. Os instrumentos financeiros ESG são representados por Fundos Verdes, que são comparados ao índice de sustentabilidade, em contraste com os instrumentos financeiros tradicionais que são comparados apenas com índices baseados em desempenho. Também coletamos informação sobre os próprios participantes, como dados demográficos e seus valores ambientais, o que nos permitiu realizar análises estatísticas de regressão logística para comparar e explorar possíveis correlações entre as preferências médias dos investidores e seus fatores demográficos.

Resultados - Com 166 respostas, foi encontrado que, em geral, consumidores estão significativamente mais dispostos a investir em fundos tradicionais, com expectativas de melhores rendimentos e menores riscos. Os dois fatores que mais influenciam a disposição de realizar investimentos sustentáveis foram: a) valores pessoais em relação ao compromisso com a sustentabilidade b) idade.

Limitações da investigação - Esta pesquisa foi limitada pelo desenho do estudo, que pode não refletir as condições de tomada de decisão de forma acurada. Além disso, o tamanho da amostra e a grande percentagem de respostas de norte-americanos afetam a confiança e o viés dos respondentes.

Originalidade - Este questionário foi único para esta investigação e, do meu conhecimento, não existe nenhuma investigação semelhante com este desenho de estudo e metodologia.

Implicações práticas - Estas conclusões são relevantes para empresas privadas, plataformas de investimento e gestores de fundos que procuram otimizar as suas estratégias de envolvimento e para os grupos de interesse ambiental que procuram influenciar o comportamento dos consumidores e aumentar a adoção de um comportamento de investimento sustentável. Além disso, essas conclusões também são importante para a literatura sobre sustentabilidade e para o meio acadêmico, uma vez que os acadêmicos continuam a explorar o comportamento e a adoção de práticas sustentáveis pelo público.

Palavras-chave: ESG, Sustentabilidade, Green Finance, Fundos Verdes, Comportamento do Consumidor

Acknowledgements

My deepest gratitude goes out to the many, many people who made this research and my entire academic journey up to this point possible. This would not have been achievable without the support of so many wonderful people in my life.

I would like to thank Yan Vietes for being my advisor through all of this, for insight and flexibility during this project and Larissa Elmor for her incredible assistance with organization, statistical analysis, and proofreading and for furthermore being a delight to work with.

My deepest appreciation goes out to all the incredible professors and faculty I have met at both at FGV, remote and in-person, who have challenged me in the classroom and supported me outside of it, without whom I couldn't have dreamed of finishing a project like this.

And finally, my thanks goes out to my community, my parents, and my friends for their never-ending encouragement and support.

Table of Contents

Introduction

With the acceleration of global environmental degradation, the Earth presently faces numerous major environmental challenges. The rise in global temperature, caused in part by overconsumption, mismanagement of natural resources, and the emission of greenhouse gasses (Hoegh-Guldberg, et al., 2018; Mont et al., 2014; Trenberth et al., 2013) has drawn worldwide attention to sustainability and prompted the need for a course of action to mitigate and reverse damages. The increasing and unprecedented devastation caused by natural disasters, and irreparable damage to biodiversity has further spurred change and caught public attention. In the past decade, sustainability has received greater global attention and gained significance worldwide (Hoegh-Guldberg, et al., 2018; Friede et al., 2015). International organizations have developed sustainability goals, governments have implemented policies targeting sustainable development, and private companies have made efforts to incorporate sustainability into their practices.

Following this global trend, financial markets have witnessed the emergence of sustainability indices and benchmarking to measure these green efforts such as the Morningstar index, Bloomberg ratings, the Dow Jones Sustainability Index (DJSI), and an increase in green financial assets (Bauer et al., 2021). Private equity firms, such as BlackRock, have publicly started prioritizing sustainability, and even including it in their investing mandates (Fink, 2022). These green financial assets refer to stocks and portfolios of companies, bonds, and funds that make commitments not only to focus on profit maximization, but also on maintaining operations in a socially and environmentally responsible manner, operating under a business approach that contributes to sustainable development, and may include environmental and social benefits for the stakeholders (Roy, 2015). There has been a rise in alternative investments and other green financial assets, including green real estate indices, funds aligned with Paris and Climate Action Goals, and Carbon-neutral funds (S&P Global, 2023).

Despite its proliferation over the recent past, the common adoption of sustainable investment practices is still a relatively slow process (Friede et al., 2015; Reynolds, 2014), as ratings are not universally standardized, and some scales can be interpreted subjectively. This is an intriguing finding as by some metrics, green investments tend to outperform traditional assets (Friede et al., 2015; Whelan et al., 2020). Several supply-side aspects might be used to explain this phenomenon, such as the relative lack of availability or information concerning sustainability

ratings (Bauer et al., 2020; Briere & Ramelli, 2021; Yue et al., 2020). In the current research, we focus on the demand side to investigate (a) the extent to which investors consider sustainability in their financial decisions and (b) whether green assets are perceived as performing better than traditional investments.

Previous research in consumer behaviour has shown that aspects that are not readily salient at the moment of choice tend to be neglected in the decision-making process (Mittelman et al., 2020; Hoogland et al., 2007). Since sustainability is arguably not as salient as other typical aspects that influence investment choices (e.g., price and yield), it might be very seldom considered. Further, once prompted to consider sustainability, would investors expect greater or lower returns from greener assets? Empirical evidence on the topic is scarce and has produced mixed results. Indeed, while some studies found that investors perceive the financial return of socially responsible investments (SRI) to be equal or better than traditional investments (Nilsson, 2007; Whelan, 2021), other studies have found that investors perceive SRI to perform worse than conventional assets (Boulatoff & Boyer, 2009; Wins & Zwergel, 2016).

In investigating these possibilities, this research offers several contributions. First, we add to the literature on the barriers to the investment in green financial assets, investigating the effect of price (Miese et al., 2014), availability (Vermeir & Verbecke, 2006), understanding (Hoogland et al, 2007), and habit (Axon, 2017) by examining two potential mechanisms that have received little attention in the literature: consideration of sustainability in the decision-making process and expected returns from green assets. In doing so, we also extend previous research, which has focused on the study of how sustainability influences perceptions about products (Chernev, 2020; Luchs et al., 2010), to study whether and how it shapes perceptions about financial assets. Further, we inform the incipient debate (Wins & Zwergel, 2016; Bauer et al., 2021) on whether sustainability cues yield positive or negative impressions among investors. Overall, this research project contributes to the understanding of whether sustainability is a salient topic in the minds of investors when evaluating financial assets and explores attitudes of investors about these assets. The findings of this research will offer relevant insights about how the use of explicit sustainability indices influence investment decisions.

Literature Review

Sustainability in Product Decisions

The decision-making process is a complex task that requires the evaluation of multiple aspects of the product or service. Despite the established need to consider sustainability, several other factors that are considered more central product attributes (e.g., price, availability, habit, perception of quality) may end up taking precedence or even serving as a barrier to more environmentally friendly forms of consumption.

Price is a key factor that consumers consider when making purchasing decisions. Consumers commonly choose a cheaper product when given the opportunity, even when a more sustainable option is available (Hoogland et al., 2007; Miese et al., 2015). Furthermore, consumers commonly perceive more sustainable products to be more expensive and consequently exhibit a lower intention to purchase greener options (Hoogland, 2007; Park, 2018).

The availability of sustainable options (or information about them) has also been identified as an important barrier to greener decision making. While in some cases, the sustainable option is simply not available to consumers, in other cases, the consumer does not perceive an option to be more sustainable due to the absence of explicit information. As a result, research has expanded on the particularities of labeling, and tactics to raise awareness in consumers of the sustainability of products (Boz et al., 2020; Gutierrez, 2014). With the rise in consumer appeal of green products, there is the risk of green-washing, by which More recent studies investigate consumer backlash against this increase in green marketing, exploring the counter-effect: “green skepticism” (Nguyen et al., 2019).

Habit is another notable and well-studied influencing factor on consumer behaviour. Despite the widespread awareness of sustainability issues, research has repeatedly noted that consumers are largely set in their ways and that it is quite difficult to persuade consumers to change their habits once they are established, even if these consumers are aware of the negative implications of their choices (Axon, 2017), and there may be a gap in consumer intention and behaviour as a result (Park, 2018). Along similar lines, previous literature has found that when making purchase decisions, consumers may fail to consider more peripheral product attributes because they are not readily salient in the environment or accessible in their minds (Mittelman et al., 2020, Hoogland et al, 2007). As sustainability and ESG ratings are not fully standardized

and reporting and labelling is not always mandatory, sustainability continues to be a largely overlooked attribute.

Sustainability in Financial Decisions

When evaluating financial assets, consumers commonly consider core aspects such as expected returns, volatility, overall contribution to the portfolio (Markowitz, 1952; Nagy & Obenberger, 1994). More recently, however, aspects related to personal values have also gained importance (Pasewark & Riley, 2010). For example, a 2010 study investigated the role of personal values on investing decisions found that values did significantly affect investing behaviour where investors preferred not to invest in a company that did not align with their belief systems (Pasewark & Riley, 2010). Despite this increasing trend, information on the degree of sustainable impact of different firms is largely not readily accessible in a consumer-friendly format to investors, which may lead to neglect of such attribute (Frederick et al., 2009; Florack et al., 2021; Mittelman et al., 2020). In other words, do consumers take sustainability into consideration in their financial decisions? Although behavioural finance is an extensive field, this question has received little or no empirical investigation.

In fact, even after considering sustainability, it is not clear whether consumers would be more or less willing to invest in green financial assets. On the one hand, we could expect a positive effect: consumers have demonstrated a tendency to see green companies and practices through positive lenses, due to a green halo effect (Chernov, 2020) and would like to support and engage with these companies and projects, or consumers may recognize an inherent need to make sustainable choices regarding their environment. This effect, as coined by Chernov (2020), is prompted when consumers interpret the company as a moral agent with motives and actions promoting positive sustainable behaviour, which serves to bolster the overall company's reputation, and then "the increase in the overall attractiveness of the company can spill over the performance of the company's products, ultimately strengthening their perceived performance" (Chernov, 2020). On the other hand, there may be a perceived liability regarding green investment decisions in that by focusing on non-profit generating areas of the business, they may yield lower returns. In short, consumers may adopt compensatory beliefs that sustainability comes with the sacrifice of performance in other areas. We investigate both possibilities in the current research.

Hypothesis Development

Hypothesis 1

In this investigation, one hypothesis is that there is an overall positive perception of green financial assets and therefore consumers wish to engage with green finance. As a result, when sustainability is made salient, this will translate to an increasingly positive reaction and perception towards green financial assets, which can be measured by a greater reported willingness to invest in these assets.

As societies become increasingly aware of the effects of human involvement on the planet, sustainable practices are becoming more popular and more widely marketed. As a result, consumers are increasingly adopting greener lifestyles to curb their impact, even without financial incentives (Prothero et al., 2010). Consumers are increasingly making more environmentally responsible purchases and choosing more eco-friendly products for multiple reasons: some, out of their concern for the environment and some due to the snowball effect of popularity, wishing to fit in with their peers through virtue signaling (Prothero et al., 2010). As a result of this changing consumer behaviour, businesses react by developing new marketing tactics to attract consumers. They may increase the publicity of the business or product's green and sustainable attributes and the adoption of green marketing practices (Mishra & Sharma, 2010). While the financial sector has been slower to adopt these changes, there is an increasing focus on ethical investing where individuals seek to invest in companies that value ESG, green indexes are becoming more common, and ESG criteria is even making it into the mandate of private equity firms (Fink, 2020; KKR 2022).

A 2018 meta-study reviewing decades of literature concluded that investors were largely focused on fundamental factors and anchor their decisions on metrics such as profit margin, revenues, return on equity, as well as future growth options, but also found strong evidence that personality factors and personal values are relevant to investors where certain investing options may appear more appealing due to personal values associated with the asset or personal risk-aversion (Zahera, 2018).

Hypothesis 2

Another hypothesis is that there exists a positive attitude from consumers towards green and sustainable financial assets due to the financial incentives they provide. In other words, consumers expect higher returns or more stability from green financial assets. This hypothesis would be supported if participants in the survey not only demonstrated a higher willingness to invest in green funds, but also expected higher returns or lower volatility, which are characteristics of desirable investments. High performance is obviously a positive attribute to investors whose goal is to profit from their financial investment. Reducing risk is also usually a goal of investors as risk is defined as "any uncertainty with respect to your investments that has the potential to negatively impact your financial welfare" (Financial Industry Regulatory Authority [FINRA], 2023).

Affecting this hypothesis may be the green-halo effect (Chernev, 2020) which surrounds sustainable and green assets. The Green Halo as coined by Chernov is an effect that may have influence in the consumer assessment of product performance: This effect can spark a desire to engage and invest with certain products perceived to be more sustainable or aligned with ESG principles. It has been demonstrated that if a company is perceived as having a strong sustainability centered focus and brand image, it can strengthen the perceived product performance (Chernev, 2020). If businesses are perceived as moral agents, and have a brand image centered on sustainability, this may have a halo effect transferred to their stocks so that consumers perceive them to be more desirable, via higher performance. If this effect is significant when applied to financial assets, then investors should perceive these investments as more high-performing when compared to traditional financial investments.

In addition to the effect of the green halo on asset performance, consumers may also have the cognitive association that sustainable companies may be more forward thinking and may be a better long-term investment. Along these lines, there is a global trend of governments investing heavily in ESG and providing aid, stimulus, or tax benefits for firms that comply with or further sustainable initiatives. As a result, ESG-related companies receive government aid or stimulus (Owen et al., 2018). Government funds are an advantage to these companies, adding stability to the firms and in turn, the value of the stock asset. Potential investors would see this as an advantage and would invest accordingly.

Hypothesis 3

A third hypothesis is that green investments will be perceived as inferior to traditional stock options. At the center of this hypothesis is the so-called sustainability liability effect, which refers to the tendency for a sustainable product to be seen as lacking or deficient in another area (Chernev, 2007; Luchs et al., 2010). The underlying reasoning is that consumers naturally apply a zero-sum heuristic to their perception of sustainable products (Chernev, 2007). By this, consumers may believe an increase in one aspect, such as the sustainability of a product, must also be balanced by the presence of a negative aspect, such as a deficiency in effectiveness or quality.

It has been found in financial behaviour literature that investors are subject to many different biases, heuristics, and assumptions when making investing decisions (Jordan & Kaas, 2002; Özen et al., 2019; Zahera et al., 2018), including heuristics such as the zero-sum heuristic observed in purchase behaviour (Caseau & Grolleau, 2020). These heuristics also include recency and availability so that investors may base decisions on their knowledge of recent events or previously received information, which is readily available mentally, even though it may not be representative of actual conditions, the anchoring heuristic in which consumers rely on a numerical "anchor value" which may be explicitly or implicitly available (Jordan & Kaas, 2002). These heuristics may have relevant application to investor perceptions of how a more sustainable financial asset may behave, in the absence of further information about the performance data of the investment decision.

This creates a third hypothesis: that there will be a negative effect on consumer attitude towards sustainable investments, reflected by lower expected returns, and a lower willingness to invest once sustainability is made salient in the mind of the consumer. Consumers may perceive that since a company is more focused on the environment, they may be less competitive or profit-driven, given the established sustainability liability.

It is important to note that while there have been many studies on the financial performance of green financial investments such as green funds and ESG-graded ETFs, there is not a unanimous resolution as to whether there is a strong correlation between sustainability and financial returns. It has been found in studies that a positive perception of a company's ESG practices has a positive influence on the equity price of that company's stock (Bonaparte, 2021). A study of the performance of DJSI USA found that there was a significantly positive relation

between corporate sustainability and its market value (Lo & Sheu, 2007), when investigating the hypothesis that corporate sustainability was a value-adding strategy for a company. Another study observed that it was profitable companies that tended to be those allocating larger quantities of funding to ESG and sustainability reporting efforts (Frias-Aceituno, et al., 2012), which also indicates a correlation between profitability and ESG, although by a different mechanism. Portfolios that consider ESG demonstrate better returns overall (Maiti, 2019), and a 2015 meta-analysis of studies has overall found that there is beneficial correlation between ESG performance and financial returns for green assets (Bauer et al., 2015). As ESG became more widespread, a 2021 meta-study of over 1,000 financial studies found a significant and positive correlation between ESG and financial performance in 60% of studies, with less than 10% of studies demonstrating a negative relationship (Whelan et al., 2021). This study also investigated the effects during economic downturns in 2008 and 2020 and concluded that equities employing ESG strategies outperformed other firms, indicating that ESG was a risk-mitigating factor (Whelan et al., 2021). Further private studies have found lower risk associated with (Morgan Stanley, 2019) which is carried over in investing strategies for many financial service firms.

Methodology

Overview of the Study

This research implements a survey experiment strategy to assess the aforementioned hypotheses. The study was conducted via Qualtrics, an online platform, and was distributed through multiple web-based channels and personal networks. A convenience sample was taken using the personal, academic, and professional networks of the researcher.

The survey was divided into three parts. First, we assessed participant's priorities when making financial investment decisions in order to investigate whether environmental impact and sustainability are frequently considered in these decisions. Second, a between-subjects experimental design was implemented to assess prospective investors' perceptions about performance-based or green funds. Lastly, participants responded to questions tapping into their investment habits and gathering sociodemographic information.

Design and Procedure

When entering the study, participants were informed that they would be asked about their opinions and preferences regarding financial investments. After the introduction to the study and obtainment of informed consent, participants were asked to indicate which factors they consider when making decisions about financial assets. They were provided with a list of 11 attributes (including "Environmental impact and sustainability") in addition to an "other" option for those who felt their primary motivators were not represented (there were only two user-generated responses: “corporate ethics” and “financial ratios”). The options for the multiple choice of this survey came from previous literature investigating financial investing motivations and from a preliminary study conducted by the researcher using an unprompted and open-ended question, asking participants to enumerate the criteria that they take into account when making investment decisions. The full list of options is available in Appendix 1. The objective of this question is to investigate the extent to which investors consider sustainability in their financial decisions.

Participants were also asked to rank their level of experience and comfort with financial investing on a scale of 0 (new to financial investing) to 10 (experienced investor). It should be noted that no prior investing experience was required to participate in the study. This was to assess whether experience played a role in their subsequent decisions.

Critically, next participants were randomly assigned to one of two experimental conditions where sustainability is made salient or not by the presentation of 2 different ETFs: a green fund (treatment condition) or traditional performance-ranked funds (control condition). The use of an ETF or collection of stocks was chosen to eliminate any personal bias that may arise by asking participants to base their investing decisions on one particular firm. A brief explanation was provided for consumers unfamiliar with the terminology, as described below:

Control condition:

> *An exchange traded fund (ETF) is an investment option that allows people to invest their money in a collection of different stocks simultaneously. One category of ETF is index funds, which are portfolios of stocks or bonds designed to replicate the composition and performance of a financial market index.*

For example, the S&P 500 Index Fund is an investment composed of stocks that are listed in the Standard & Poor's 500 Index, which lists the largest 500 companies in the United States, ranked by market cap. Its performance will be nearly identical to the performance of the market index."

Treatment (Green fund) condition:

An exchange traded fund (ETF) is an investment option that allows people to invest their money in a collection of different stocks simultaneously.

One category of ETF refers to ESG or green funds, which consider environmental, social, and governance (ESG) principles in the selection of stocks that are included in the fund. For example, ETFs based on the Dow Jones Sustainability World Index represent a select group of large global companies based on long-term economic, environmental, and social criteria.

These descriptions were drawn from S&P Global (S&P Dow Jones Indices, 2023), a leading financial information provider and adapted for brevity and comprehension. Subsequently, the participants evaluated the fund they were randomly assigned to on the basis of their willingness to invest, expected returns, and perceived risk. These questions served as the main dependent variables for this study and were measured on a five-point scale, including a "neutral" option as the scale midpoint (1 = Extremely Unwilling, 5 = Extremely Willing).

After these questions, demographic data was collected, including gender, age, country of residence, education level, and employment status. The purpose behind these questions was to collect data to examine if there was a correlation between these factors and the respondents' willingness to invest in ESG funds.

Participants also answered a series of questions measuring their personal attitudes towards sustainability and ESG topics in general. The first three questions were multiple-choice closed questions that asked participants to self-report 1) their level of personal value of ESG topics, 2) their incorporation of sustainable principles into their lives, and 3) their willingness to pay more

for sustainable and ethical products. Specifically, participants were asked to rate the importance of ESG topics (1=Very Unimportant; 5=Very Unimportant), their personal frequency of making environmentally friendly choices (1=Never; 5=Very often), and how likely they were to pay a premium for a sustainably or ethically produced product (1=Very unlikely; 5=Very likely). Examples were included when applicable to provide landmarks and cues for which participants can identify; for example, when asking about the frequency in which participants make sustainable choices, behaviours such as recycling and ridesharing were presented (Converse and Presser, 1986). Questions regarding purchase preference and consumer behaviour were worded carefully to focus on the behaviour of the participant (what are they more willing or likely to do) as opposed to their objective preference, which may align with morality or obligation rather than behaviour (Alreck and Settle, 1985; Peterson, 1981) and choice selection was engineered based on established literature that found qualified responses provided a more effective and reliable responses (Alwin, 1997). The average of the responses to these 3 ESG value questions were used to create a new variable "environmental values" representative of the subjects' value to ESG factors. Simply asking participants their importance may be biased, since people often portray themselves in ways differently than their actions would suggest (Michikyan, Dennis and Subrahmanyam, 2015). Asking for their frequency of sustainability conscious behaviours and their premium on ethical and sustainable products may provide a less biased measurement.

Our last question measuring personal attitudes towards sustainability asked participants to rank the importance of particular topics under the umbrella of ESG, as stated in the UN Sustainable Development Goals (Legt & Malan, 2012). The topics included preventing pollution, respecting the earth, achieving unity with nature, protecting the environment, improving societal conditions, and reducing inequality. The scale provided ranged from 1 (Not important at all) to 7 (Very Important). This scale was adapted from the biospheric value orientation scale by De Groot and Steg (2008) and provides a closer look at the significance of particular sustainability related topics or lack thereof.

Participants

Two hundred thirty-three respondents initiated the survey, although not all completed the questionnaire. Participants who did not answer the main dependent variables were removed. The final sample provided 166 valid responses.

Of the valid recorded responses, 59% are male. The average age reported was 41 years, with a standard deviation of 17 years. Regarding country of origin, the majority of the respondents were from North America, with 44% of all respondents being from the United States and 11% from Canada. The next most represented countries were China (8%) and Brazil (6%), and the remaining represented countries had less than 10 respondents per country, including Sri Lanka, France, Spain, and Vietnam. Consequently, the results of this study may lean heavily towards representing the North American opinion.

Regarding the occupation of respondents: 75 were employed full time (47%), 41 were students (26%), 21 were retired (13%), 16 were employed part time (10%). 4 were unemployed, representing 2%. A total of 22% of the participants had completed some college, 36% had completed a bachelor's degree, 24% had a Masters, and 12% had a PhD.

The average comfort and experience with financial investing of the sample was 4.83 on a scale ranging from 1 to 10, with the modes occurring at 5 and 6. Please find a more detailed breakdown of the demographic information of this study in Appendix B.

Regarding the environmental attitude of the sample, the average was taken of the 3 questions on ESG values, and the mean was 3.46 on a 5-point scale, with a standard deviation of 1.0, meaning that overall the responses to all 3 questions were relatively similar for participants.

Results

Sustainability Consideration in Financial Decisions

When asked about which factors impact their investment decisions, only 16% (N = 27) of the total number of participants considered environmental impact and sustainability. Thus, although sustainability has gained momentum among companies, this is not a central factor influencing people's investment decisions. Importantly, it should be noted that this percentage may actually be lower outside of this experimental setting, as just having participants see that "Sustainability" was an option may have prompted them to consider it. This is further discussed in the limitations of the study.

The two most frequently chosen factors were Return on Investment and Risk, which corroborates the literature review that these are the two most significant factors that investors

consider when making investment decisions (Markowitz, 1952; Nagy & Obenberger, 1994). Table 1 (below) reports the frequency of consideration of all factors, from most to least considered.

Table 1: Reported Frequency of Attributes which affect Investing

Attributes that Affect Investing Decision	Frequency	Percentage
Return on Investment (ROI)	130	78.31%
Risk	121	72.89%
Investment Period	61	36.75%
Volatility	61	36.75%
Familiarity	50	30.12%
Taxation	48	28.92%
Liquidity	48	28.92%
Inflation Rate	40	24.10%
Environmental Impact & Sustainability	27	16.27%
Personal Meaning	21	12.65%
Popularity	17	10.24%
Other	2	1.20%

Notes: the sum of percentages exceeds 100% because participants could choose more than one attribute.

Hypothesis 1

Hypothesis 1 postulates that participants would be more likely to invest in green financial assets due to positive consumer perceptions of sustainability.

After being exposed to either experimental condition (the Green index fund or the traditional performance based fund) participants were asked to indicate their willingness to invest in the financial asset on a five-point scale (1 = Extremely unwilling; 5 = Extremely willing).

To test Hypothesis 1, we compared the means of the self-reported willingness to invest in the Green fund and the traditional performance-based fund using an independent-samples t-test. As described in Table 2, there was a significant difference in the willingness to invest across conditions, such that investors are significantly more willing to invest in traditional index (M = 3.98, SE = .09) funds compared to green funds (M = 3.42, SE = .15, t(164) = 3.25, p = 0.001). Thus, Hypothesis 1 was not supported. People preferred the traditional rather than the sustainable fund.

Table 2: Comparison of means of willingness to invest in green and traditional funds

	Mean	Standard Error
Performance ETF (Control Condition)	3.989	.095
Green ETF (Treatment Condition)	3.421	.152
Difference	.568	.174

Table Notes: Difference = mean(index) - mean (Green)

Despite this initial finding that overall green funds may be less attractive as an investment, other factors that contribute to an individual's willingness to invest in such funds, such as personal characteristics, can be investigated. We regressed participants' willingness to invest in the green fund (i.e., including only those assigned to the green fund condition) on gender, age, education and environmental values (i.e., average of the three items measuring personal attitudes towards sustainability and ESG topics). Table 3 displays the results.

Table 3: Dependent Variables of Willingness to Invest in a Green Fund

	Coefficient	Standard Error
Male	.206	.228
Age	-.018*	.006

Environmental Value	.990*	.105
Education	.049	.091

Table Notes: Significance at the 95% confidence interval is indicated with an *.

Although, on average, participants were significantly more willing to invest in a traditional fund, the level of willingness depended greatly on the participants' background. From this regression, it can be seen that the age and environmental values of the participant have a significant effect on willingness to invest in particular funds at the 95% confidence level. Results show that a person's value of environmental principles increases the willingness to invest in a green fund, whereas an increase in age has the opposite effect. No other sociodemographic variables reached significance.

Hypothesis 2

Hypothesis 2 postulates that investors may be attracted to green or ESG-focused financial investments because investors perceive that these assets will provide more financial benefit, for example by providing higher and/or more stable returns. After being exposed to one of the two experimental conditions and indicating their willingness to invest in the financial asset, participants were also asked to report, on a five point scale, the expected performance and the expected risk of the fund. To assess Hypothesis 2, we performed two independent-samples t-tests comparing the mean expected performance and the mean expected risk between the index and the green fund conditions.

Expected Performance

Results indicate that the mean of the perceived performance of the traditional fund ($M = 3.33$, $SE = .07$) is significantly higher than that of the green fund ($M = 2.87$, $SE = .09$, $t(164) = 4.06$, $p < .001$). Therefore, Hypothesis 2 was not supported in the expected performance dimension, since investors did not expect higher returns from the ESG-focused funds compared to the traditional fund (see Table 7).

Table 7: Comparison of mean expectations of performance between index and green funds

	Mean	Standard Error
Index	3.333	0.069
Green	2.868	0.094
Difference	.465	0.115

Table Notes: Difference = mean(index) - mean (Green)

As in Hypothesis 1, we also explored whether participant's personal characteristics might have played a role in their reported expected performance of the green fund specifically. These possibilities are displayed in Table 8, below.

Table 8: Dependent Variable of expected performance of green funds

	Coefficient	Standard Error
Male	.131	.176
Age	-.014*	.005
Env. Value	.443*	.081
Education	.056	.070

Table Notes: Significance at the 95% level is indicated with a *.

Table 8 exhibits that there was a positive and significant effect of environmental values and a negative and significant effect of age on expected performance of the green fund. This regression indicates that an increase in reported environmental values is correlated with an increase

in the perceived performance of a green stock. There is also a negative and significant effect of age on participants' reported environmental values.

Expected Risk

Results indicate that the average perceived risk of the traditional fund (M = 2.878, SE = .09) is significantly lower than that of the green fund (M = 3.289, SE = .09, t(164) = -2.90, p = .004). This indicates that, on average, investors perceive green financial assets to be riskier (see Table 9). As previously defined, in financial contexts, risk refers to the volatility of an investment (Zeisberger, 2022) or an option or likelihood of a negative outcome. Therefore, Hypothesis 2 also was not supported in the expected risk dimension since investors did not expect either higher returns or lower risk from the ESG-focused funds compared to the traditional fund.

Table 9: Comparison of mean perception of risk

	Mean	Standard Error
Index	2.878	0.10
Green	3.289	0.10
Difference	-0.412	0.14

Table Notes: Difference = mean(Index) - mean(Green)

We also explored the effect of sociodemographic variables on the perceived risk of the green fund specifically. This analysis revealed a negative and significant effect of environmental values, indicating that an increase of an individual's environmental values is associated with a decrease in perceived risk (see Table 10).

Dependent variable of perceived risk of green funds

	Coefficient	Standard Deviation
Male	-.118	.224

Age	.002	.006
Env. Value	-.362*	.104
Education	.012	.09

Table Notes: Significance at the 95% level is indicated with a *

Hypothesis 3

Hypothesis 3 held that consumers would prefer to invest in traditional financial assets over green financial assets. As shown in the previous analyses, hypothesis 3 was mostly supported by the data collected, i.e., the mean of the willingness of investors to invest in a traditional fund was significantly higher than that of the green fund.

There are multiple factors that might help explain these findings. For instance, the differences in the average expected performance between the traditional and the green fund may indicate that the sustainability liability heuristic is present in the minds of investors. When evaluating a green financial asset, investors could assume that the fund is zero-sum, that is, by being more environmentally friendly, it must be lacking in other relevant attributes.

It was also found in the data that the mean perceived risk of green funds was significantly higher than that of traditional funds. While the cause was not explored in this study, other literature indicates that consumers may perceive risk when they are faced with unfamiliarity (Forlain et al., 2000; Ross, 1975), or intangibility (Laroche et al., 2003; Aini et al., 2019). As the explanation of green funds given to participants was quite short and did not provide extensive details on the criteria and qualifications for the establishment of green funds, for consumers unfamiliar with green funds previously, this may have caused them to be more intangible and therefore more risky to investors.

Further Findings

This study did provide relevant data to examine the proposed hypotheses, showing that overall the mean willingness to invest in traditional performance-based index funds was higher than green funds, and it also revealed that the most significant factor on influencing willingness to

invest and perception of performance of the green fund was environmental values, indicating the presence of a green-halo effect.

In addition to these findings, there were several other noticeable trends in the data, which were of potential interest, such as demographic trends and reported environmental values.

When investigating the effect of demographic factors on willingness to invest in green funds, there were two metrics that appeared significant: environmental values and age, for which age had a significant and negative effect. When the effects of demographic factors were investigated on traditional funds, it was found that age also had a negative and marginally significant effect on willingness to invest ($\beta = -.01$, $SE = .005$, $p = .08$), indicating that an increase in age decreased the willingness to invest in either financial asset presented. There may be multiple explanations for this.

It may be because as people age, they become more averse to risky behavior and investing in these funds may be considered a high-risk behavior. If there is a downturn in the market, there is less time for the market to recover before the consumer retires and those funds are needed. This impact may be inadvertently heightened due to the nature of the study using index funds; perhaps there is a different financial asset that older generations may prefer to invest in.

Furthermore, age was determined to be a significant and negative factor on environmental values, indicating that the older population simply may not be interested in green investing due to a lack of concern for the environment which may translate to a lack of motivation to partake in environmentally sustainable behaviours.

Another interesting component of this study was the final Likert scale question, adapted from De Groot and Steg (2008), asking participants to rank their value of different ESG topics on a scale of 1 to 7.

Table 11: Likert Rating of ESG Topics

	Preventing Pollution: Protecting natural resources	Respecting the Earth: Harmony with other species	Achieving Unity with Nature: Fitting into nature	Protecting the Environment: preserving nature	Improving Societal Conditions: Decreasing hunger and poverty	Reducing Inequalities: Institutional change and justice
1 - Not at all Important	2	5	8	2	2	21
2	3	9	16	5	8	11
3	6	7	14	3	5	6
4 - Moderate	32	25	27	20	27	16
5	21	27	33	29	10	15
6	35	36	26	36	36	33
7 - Very Important	60	46	34	61	65	50
Weighted Sum	***889***	***817***	***749***	***889***	***862***	***748***
Sum of 1-3	*11*	*21*	*38*	*10*	*15*	*38*
Sum of 5-7	*116*	*109*	*93*	*126*	*111*	*98*

In Table 11, we can see that the number of people who feel that ESG topics are of importance increases, with a mode occurring at “Very Important” (7) in every single topical area polled. The weighted sum is the measurement of the frequency of the response multiplied by the numerical ranking of value, and this reveals that the most highly valued topics are Protecting the Environment and Preventing Pollution. Interestingly, Reducing Inequalities had the lowest

weighted sum, which does appear to comply with the thought that "S" and "G" are more overlooked in the ESG framework (S&P Global, 2019).

Overall, there is a clear trend across the breadth of the chart where a higher number of participants express that they consider these principles "Very Important" than "Not Important at all." To ease the visibility, the last two rows of the chart provide the sum of the reported frequencies for participants that responded with 1-3 or 5-7, excluding those that responded "Moderate." For every principle, over half of the participants ranked their value of the topic as more than "moderate" in importance. Compared to the first question in the survey, where only 16.27% of participants selected "Sustainability" as a factor that would affect their investing decisions, this may indicate that people care more about sustainability and ESG topics when they are made highly salient, such as they were in the Likert scale with examples.

Another component of this research project was an investigation into the effect of experience on these decisions: previous literature has explored if experience affects investing behaviour. Approximately half the participants in the sample (N = 68, 40.96%) did not identify themselves as experienced investors or comfortable with financial investing, which might have made them more susceptible to the halo effect as they have less financial experience to base their opinions on. As previously examined in the literature review, this is not to say that participants who consider themselves comfortable or more experienced with investing may be completely immune to judgement heuristics. To further investigate this, participants were divided by their reported level of investment experience. Participants who rated themselves as less than "moderately" comfortable or experienced with investing (coded as 5, see Appendix A) were removed from the analysis, leaving 98 participants of the original 166. Using the same comparisons between test conditions with this group, the results remained unchanged from the analysis using the full sample: The mean willingness to invest in green funds was significantly lower than that of the performance-based group, and the traditional index funds also had higher expected returns and green funds had higher perceived risk, significant at the 95% confidence interval. Further exploration is available in Appendix C.

General Discussion

Contributions

In a world where sustainable action and ESG compliance is becoming increasingly relevant, sustainable investing becomes a method for populations to adjust their behaviour to accommodate the need for change in the world. While the shift to more sustainable options has been extensively studies in the domain of physical goods, it has received less attention in the realm of intangible and financial assets.

Impact investing is rising in popularity as people seek to make a positive, measurable social and environmental impact alongside a financial return (Cervantes, 2022). Impact and sustainable investing and investing in ESG funds are ways to support companies that are improving the world while still participating in financial markets. However, this investigation has shown that while many people reported caring about environmental and ESG topics quite highly, there was still a disconnect between overall willingness to invest and their expectations for these investments compared to traditional financial assets.

While there is a great deal of evidence that supports that there is a value-generating property to green financial assets, the current research has revealed that there is lag in consumer confidence and willingness to invest in these assets. This demonstrates a gap in the understanding of the general population of the financial benefits of green assets and the marketing and public perception of these green financial assets, which could be affecting their willingness to invest and their perception of performance and risk.

This study showed that consumers are not convinced that sustainable financial assets will outperform traditional indices. In this case, a green fund may not only want to emphasize their sustainable approach in their marketing, but also make sure to emphasize their performance and their low risk in order to appeal to a broader customer segment.

Many leading private equity firms such as The Blackstone Group Inc., The Carlyle Group Inc., and KKR & Co, which are among the largest U.S.-based PE firms, already include sustainability in their investing mandates and even refer to sustainability and ESG as value-add strategies (Blackstone, 2021; Cervantes, 2022; KKR, 2022). These leading PE firms already incorporate this strategy into their marketing and prioritize their explanation as to how they use

ESG as a risk-mitigating framework for their evaluation of investment opportunities (Ammann, 2018; Cervantes, 2022)

Asset management firms, such as BlackRock, have made a point of emphasizing sustainability in their investing strategy. They believe that this prioritization is not only attracts more clients by further emphasizing the ethical significance of sustainable investing, but also that there is value created by sustainable portfolios and that ESG-compliant companies can hold less risk for investors (Blackstone, 2021; Fink, 2020; KKR, 2022).

In addition, the finding that age was a negative and significant factor in willingness to invest may go against traditional expectations of investor demographics and profiles. These findings suggest that green firms looking to attract investors can find value targeting younger demographics and should potentially adjust their outreach strategy to include this demographic, who may be attracted to more sustainable investing options. This study also found that age had a negative and significant effect on the willingness to pay more for sustainable or ethically produced goods, which could indicate that older generations are not necessarily willing to invest in green funds.

Limitations

While this study used a between-subjects methodology to investigate consumer opinions, it may be possible that when compared directly, investors may have different expectations. In this study, when consumers were asked to rate their expected returns from the green funds, they were not made aware of the performance-based fund as an option. If consumers were to be presented with the two investing options simultaneously, they may expect a comparatively higher return from a performance-based fund, which may in turn affect their willingness to invest in a traditional fund as compared to a green fund when performance is made more salient. A more in-depth study could use a within-subjects design to expose participants to both conditions.

The ranking mechanism for some of the questions also poses a limitation on the validity of the study: several of the questions were multiple choice options, with responses codified numerically for data analysis. They asked the participant to rate the importance of ESG (Very important to very Unimportant), their personal frequency of making environmentally friendly choices (Very often to Never), and how likely they were to pay a premium for a sustainably or ethically produced product (Very likely to Very Unlikely.) Verbal scales were used to provide

anchors for participants and to measure the likelihood of involvement in an activity. However, they do provide a disadvantage in that they do not provide the precision of numerical scales, so results may be subjective: a participant who answers they "often" make environmentally friendly choices may mean once a day, a week, or even a month (Baker, 2003).

There are also issues with the reliance on self-reporting and availability bias in the study. In the context of the first multiple choice question of the survey asking about which factors influence participants, "Sustainability" was presented as an option, to collect data on which factors affect investing behaviour. However, even presenting this as an option for participants can influence the results, as sustainability may not have been salient in the mind of the participant before reading the word in the survey. Even though the study was anonymous, participants may also have felt pressure to answer this survey based on how they felt they should answer, due to societal or personal bias or their behavioural intentions instead of reporting their actual behaviour, and it is widely accepted that there is discrepancy between self-reported and actual behaviour (Kormos, 2014; Petersen & Kerin, 1981). This phenomenon has been observed particularly with sustainability, where a meta-analytic study found a "positive and nominally large" variance between reported and objective behaviour (Kormos, 2014).

Furthermore, another factor revealed in the demographic section is the large skew towards North American respondents. This limited the analysis that could be conducted of international investing trends, since many countries were not highly represented, and heavily biased the results towards a North American perspective, which can affect the conclusions. A larger and more diverse sample size may provide different results if there is a different global trend, which is not represented in this dataset.

Another limitation of this study is the simplification of green versus traditional financial assets. There exist many types of traditional assets, such as real estate, bonds, or company equity, which may have elicited different reactions from the participants of the study. For the sake of simplicity, ETFs were used as proxies to represent the two investing options for the purposes of this study. The objective was to present a green investing option to participants in a way that would limit any bias about particular companies or sectors. A green index fund is a conglomeration of companies, and then the objective was to present a traditional financial asset that would be comparable: the traditional index fund. There are many other non-green or ESG centric financial assets which could have been used and may have elicited a different response, however this was

chosen as the closest comparison to a green fund and the most likely to be familiar to the overall population.

Another limitation of this study is the length and lack of explanation regarding the two test conditions. To keep the study short, which was intentional to maintain the attention of survey participants and obtain a larger sample, the descriptions of the two types of investments were relatively short. Consequently, information was omitted from the explanation of these funds, and for those unfamiliar with green or traditional index funds, this may lead to a lack of understanding or confusion. Furthermore, consumers were not given any historical data on these investments, or the criteria of the green or ESG funds, which may have prompted a more thoughtful analysis rather than one based on emotions and heuristics.

Further Research

The results of this study may change over the course of the next few years as green funds and indices become more mainstream, and more innovation develops, which makes sustainability more profitable. Further studies of financial investing should be conducted in the future to show the evolution of public opinion and understanding of the relationship between sustainability and financial investing.

As stated in the limitations of this study, the only information provided about green and traditional investment funds was a quick blurb. In a typical investing setting, investors would have access to more information, such as historical performance. For example, Morningstar's ESG reports include information on past performance, a sustainability score, scores for each of the ESG pillars, and a corporate risk breakdown. The fact sheet for the Dow Jones Sustainability World Index includes the historical performance, a description, the weight method, and more information about the calculation (see Appendix D for illustration). The entire methodology criteria is also available online for public viewing. The effect of seeing this information presented may have an effect on investors as it provides more familiarity, more data, and more statistical evidence about risk and performance which may, in turn, affect willingness to invest.

In this study, Hypothesis 3 was most supported: that consumers would prefer to invest in traditional financial assets over green financial assets, which leaves room for further research to explore the reasoning for this finding. This study was able to provide data to support that

sustainability liability may be an influencing factor, as the mean expected performance for green funds was lower than for traditional funds, however there are several other factors that may influence a preference for traditional financial assets, such as lack of familiarity with ESG and green finance, mistrust of green funds, fear of greenwashing. Further research could explore these variables and determine if there are other significant mental barriers that investors face when making decisions about green investments.

While this study did find that personal environmental values was a relevant factor in investing behaviour, significantly affecting willingness to invest in green funds and the expected returns, there is potential for future studies to further explore the motivation behind the specific motivations of this personal value. As mentioned in the introduction, people choose to "go green" for many reasons: to fit in with their peers, signal their virtues, uphold personal ethics, achieve personal satisfaction, or fulfill a sense of duty to their community, government, planet. These more personal motivations have potential relevance as it was the most significant factor affecting willingness to invest in green funds, and further understanding of this motivation could potentially give clues on how to make green investments more appealing to the overall population.

This study was conducted anonymously and the answers of each individual were kept private from other survey-takers. It may be that if one's choices were public or if participants could see the most popular option among other survey takers, that they may respond differently. In addition, the adding of a pre-selected default or "recommended" option may change participants' answers. Previous literature has established that people may behave differently when their actions are public, and that people tend to follow a majority trend (Armstrong & Madrigal, 2015). It has also been well-established that even having a default setting can greatly affect the results of a multiple-choice question (McKenzie et al., 2006). Other nudge tools could also have a significant impact on consumer choice, and this effect has been studied and even implemented on country-wide levels in the context of sustainable practices (Lehner et al., 2016). This could also have relevance to efforts to encourage green investing in the future: if a study found a particular nudge or external factor that could have a significant effect on consumer behaviour, it could be extremely relevant to investing platforms promoting consumer engagement and green funds seeking investors.

Furthermore, it was stated as a limitation that this experiment simplified the investment choices by using ETFs and indices. Consumer opinion may differ between willingness to invest,

perceived return, and perceived risk of individual assets. Sustainability liability has been found to be particularly strong on certain products (Chernov, 2020) and the same may be true for financial assets as well. If a further study were to be conducted where consumers were instead presented with individual stocks in companies or even funds in more specific sectors, the areas in which this sustainability liability is strongest could be identified.

References

Alreck, P.L. and Settle, R.B. (1985) The survey research handbook. Irwin, Home-wood.

Alwin, D. F. (1997). Feeling Thermometers Versus 7-Point Scales: Which are Better? *Sociological Methods & Research,* 25(3), 318–340. https://doi.org/10.1177/0049124197025003003

Ammann, M., Bauer, C., Fischer, S. & Muller, P. (2018) The impact of the Morningstar Sustainability Rating on mutual fund flows. *European Financian Management.* 25(3) 520-553. https://doi.org/10.1111/eufm.12181

Armstrong Soule, C. A., & Madrigal, R. (2015). Anchors and norms in anonymous pay-what-you-want pricing contexts. Journal of Behavioral and Experimental Economics, 57, 167–175. doi:10.1016/j.socec.2014.10.001

Axon, S. (2017). "Keeping the ball rolling": Addressing the enablers of, and barriers to, sustainable lifestyles. *Journal of Environmental Psychology*, *52*, 11–25. https://doi.org/10.1016/j.jenvp.2017.05.002

Bauer, R., Ruof, T., & Smeets, P. (2021). Get Real! Individuals Prefer More Sustainable Investments. *The Review of Financial Studies*, *34*(8), 3976–4043. https://doi.org/10.1093/rfs/hhab037

Baker, M. J. (2003). Data Collection – Questionnaire Design. The Marketing Review, 3(3), 343–370. doi:10.1362/146934703322383507

Blackstone (2021, Nov.) An Integrated Approach to ESG. *Blackstone.* https://www.blackstone.com/wp-content/uploads/sites/2/2021/11/Blackstone_An-Integrated-Approach-to-ESG-2021.pdf?v=1681133165

Boulatoff, C., & Boyer, C. M. (2009). Green Recovery: How Are Environmental Stocks Doing? *The Journal of Wealth Management*, *12*(2), 9–20. https://doi.org/10.3905/jwm.2009.12.2.009

Boz, Z., Korhonen, V., & Koelsch Sand, C. (2020). Consumer Considerations for the Implementation of Sustainable Packaging: A Review. *Sustainability*, *12*(6), 2192. https://doi.org/10.3390/su12062192

Brière, M., & Ramelli, S. (2021). Green Sentiment, Stock Returns, and Corporate Behavior. *SSRN Electronic Journal.* https://doi.org/10.2139/ssrn.3850923

Caseau, C., & Grolleau, G. (2020). *Impact Investing: Killing Two Birds with One Stone? Financial Analysts Journal, 1.* doi:10.1080/0015198x.2020.1779561

Cervantes, C. (2022, May 6). What is ESG? PitchBook. Retrieved May 18, 2023, from https://pitchbook.com/blog/what-is-esg

Chernev, A. (2007), Jack of All Trades or Master of One: The Halo Effect of Marketplace Morality. *Journal of Consumer Psychology*, *31*(3), 551–569. https://doi.org/10.1002/jcpy.1195

De Groot, J. I. M., & Steg, L. (2008). Value Orientations to Explain Beliefs Related to Environmental Significant Behavior. Environment and Behavior, 40(3), 330–354. doi:10.1177/0013916506297831

Fink, L. (2022). *Larry Fink's Annual 2022 Letter to CEOs*. BlackRock. https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter

Financial Industry Regulatory Authority (FINRA) Finra.org. Investing basics: Risk. https://www.finra.org/investors/investing/investing-basics/risk

Florack, A., Koch, T., Haasova, S., Kunz, S., & Alves, H. (2021). The Differentiation Principle: Why Consumers Often Neglect Positive Attributes of Novel Food Products. *Journal of Consumer Psychology*, *31*(4), 684–705. https://doi.org/10.1002/jcpy.1222

Frederick, S., Novemsky, N., Wang, J., Dhar, R., & Nowlis, S. (2009). Opportunity Cost Neglect. *Journal of Consumer Research*, *36*(4), 553–561. https://doi.org/10.1086/599764

Frias-Aceituno, J. V., Rodríguez-Ariza, L., & Garcia-Sánchez, I. M. (2012). Explanatory Factors of Integrated Sustainability and Financial Reporting. Business Strategy and the Environment, 23(1), 56–72. doi:10.1002/bse.1765

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment*, *5*(4), 210–233. https://doi.org/10.1080/20430795.2015.1118917

Gutierrez, A., & Thornton, T. (2014). Can Consumers Understand Sustainability through Seafood Eco-Labels? A U.S. and UK Case Study. *Sustainability*, *6*(11), 8195–8217. https://doi.org/10.3390/su6118195

Hoegh-Guldberg, O., Jacob, D., & Bindi, M. (2018). *Impacts of 1.5°C Global Warming on Natural and Human Systems*. IPCC. http://hdl.handle.net/10138/311749

Hoogland, C. T., de Boer, J., & Boersema, J. J. (2007). Food and sustainability: Do consumers recognize, understand and value on-package information on production standards? *Appetite*, *49*(1), 47–57. https://doi.org/10.1016/j.appet.2006.11.009

Jordan, J., & Kaas, K. P. (2002). Advertising in the mutual fund business: The role of judgmental heuristics in private investors' evaluation of risk and return. *Journal of Financial Services Marketing,* 7(2), 129–140. doi:10.1057/palgrave.fsm.4770079

KKR. (2022, April). Responsible Investment - Sustainable Investing. *KKR*. Retrieved May 18, 2023, from https://www.kkr.com/responsibility/sustainable-investing

Kormos, C., & Gifford, R. (2014). The validity of self-report measures of proenvironmental behavior: A meta-analytic review. *Journal of Environmental Psychology*, 40, 359–371. doi:10.1016/j.jenvp.2014.09.003

Laroche, M., Bergeron, J. and Goutaland, C. (2003), "How intangibility affects perceived risk: the moderating role of knowledge and involvement*", Journal of Services Marketing*, Vol. 17 No. 2, pp. 122-140. https://doi.org/10.1108/08876040310467907

Legt, C. v. d., & Malan, D. (2012). Making Investment Grade: The Future of Corporate Reporting [New trends in capturing and communicating strategic value]. *United Nations*

Department of Economic and Social Affairs. Retrieved 3 1, 2023, from https://sdgs.un.org/

Lehner, M., Mont, O., & Heiskanen, E. (2016). Nudging – A promising tool for sustainable consumption behaviour? *Journal of Cleaner Production,* 134, 166–177. doi:10.1016/j.jclepro.2015.11.086

Lo, S.-F., & Sheu, H.-J. (2007). Is Corporate Sustainability a Value-Increasing Strategy for Business? *Corporate Governance: An International Review,* 15(2), 345–358. doi:10.1111/j.1467-8683.2007.00565.x

Luchs, M. G., Naylor, R. W., Irwin, J. R., & Raghunathan, R. (2010). The Sustainability Liability: Potential Negative Effects of Ethicality on Product Preference. *Journal of Marketing*, *74*(5), 18–31. https://doi.org/10.1509/jmkg.74.5.18

Maiti, M. (2020). Is ESG the succeeding risk factor? *Journal of Sustainable Finance & Investment*, *11*(3), 199–213. https://doi.org/10.1080/20430795.2020.1723380

Markowitz, H. (1952). Portfolio Selection. *The Journal of Finance*, 7(1), 77. doi:10.2307/2975974

McKenzie, C. R. M., Liersch, M. J., & Finkelstein, S. R. (2006). Recommendations Implicit in Policy Defaults. Psychological Science, 17(5), 414–420. https://doi.org/10.1111/j.1467-9280.2006.01721.x

Michikyan, M., Dennis, J., and Subrahmanyam, K. (2015). Can you guess who I am? Real, ideal, and false self-presentation on Facebook among emerging adults. *Emerg. Adult.* 3, 55–64. doi: 10.1177/2167696814532442

Miese, J., Rudolph, T., Kenning, P., Phillips, D. (2014) Feed them facts: Value perceptions and consumer use of sustainability-related product information. *Journal of Retailing and Consumer Services.* 21(4), 510-519.

Mishra, P. & Sharma, P. (2010) Green Marketing in India: Emerging Opportunities and Challenges. *Journal of Engineering, Science, and Management.* 3. 9-14.

Mittelman, M., Gonçalves, D., & Andrade, E. B. (2020). Out of Sight, Out of Mind: Usage Frequency Considerations in Purchase Decisions. *Journal of Consumer Psychology*, *30*(4), 652–659. https://doi.org/10.1002/jcpy.1155

Mont, O., Neuvonen, A., & Lähteenoja, S. (2014). Sustainable lifestyles 2050: stakeholder visions, emerging practices and future research. *Journal of Cleaner Production*, *63*, 24–32. https://doi.org/10.1016/j.jclepro.2013.09.007

Morgan Stanley (2019) Sustainable Reality: Analyzing Risk and Returns of Sustainable Funds. *Morgan Stanley*. https://www.morganstanley.com/pub/content/dam/msdotcom/ideas/sustainableinvesting-offers-financial-performance-lowered-risk/ Sustainable_Reality_Analyzing_Risk_and_Returns_of_Sustainable_Funds.pdf

Morningstar. (2023). *ESG Reporting Solutions*. Retrieved from Morningstar: https://www.morningstar.com/products/esg-reporting

Nagy, R. A., & Obenberger, R. W. (1994). Factors Influencing Individual Investor Behavior. Financial Analysts Journal, 50(4), 63–68. doi:10.2469/faj.v50.n4.63

Nguyen, T.T.H.; Yang, Z.; Nguyen, N.; Johnson, L.W.; Cao, T.K. (2019) Greenwash and green purchase intention: The mediating role of green skepticism. *Sustainability 2019, 11(9), 2653; https://doi.org/10.3390/su11092653*

Nilsson, J. (2007). Investment with a Conscience: Examining the Impact of Pro-Social Attitudes and Perceived Financial Performance on Socially Responsible Investment Behavior. *Journal of Business Ethics*, *83*(2), 307–325. https://doi.org/10.1007/s10551-007-9621-z

Owen, R., Brennan, G., & Lyon, F. (2018). Enabling investment for the transition to a low carbon economy: government policy to finance early stage green innovation. Current Opinion in Environmental Sustainability, 31, 137–145. doi:10.1016/j.cosust.2018.03.004

Özen, E. and Ersoy, G. (2019), "The Impact of Financial Literacy on Cognitive Biases of Individual Investors", Grima, S., Özen, E., Boz, H., Spiteri, J. and Thalassinos, E. (Ed.)

Contemporary Issues in Behavioral Finance (Contemporary Studies in Economic and Financial Analysis, Vol. 101), Emerald Publishing Limited, Bingley, pp. 77-95. https://doi.org/10.1108/S1569-375920190000101007

Park, H. J., & Lin, L. M. (2020). Exploring attitude–behavior gap in sustainable consumption: comparison of recycled and upcycled fashion products. *Journal of Business Research*, *117*, 623–628. https://doi.org/10.1016/j.jbusres.2018.08.025

Peterson, R. A., & Kerin, R. A. (1981). The quality of self-report data: review and synthesis. Review of marketing, 5-20.

Pasewark, W. R., & Riley, M. E. (2010). It's a Matter of Principle: The Role of Personal Values in Investment Decisions. *Journal of Business Ethics,* 93(2), 237–253. doi:10.1007/s10551-009-0218-6

Prothero, A., McDonagh, P., & Dobscha, S. (2010). Is Green the New Black? Reflections on a Green Commodity Discourse. *Journal of Macromarketing*, 30(2), 147–159. doi:10.1177/0276146710361922

Ross, Ivan. (1975) "Perceived Risk and Consumer Behavior: A Critical Review*." ACR North American Advances*. www.acrwebsite.org/volumes/5741/volumes/v02/NA-02.

S&P Dow Jones Indices. (2023, April 28). *DOW JONES SUSTAINABILITY WORLD INDEX*. S&P Global. https://www.spglobal.com/spdji/en

S&P Global "The Forgotten Letters." (2019, Oct. 1) *The Forgotten Letters "S" & "G"*. S&P Global. https://www.spglobal.com/en/research-insights/featured/markets-in-motion/esg-monthly-october-2019.

Sivaramakrishnan, S., Srivastava, M., & Rastogi, A. (2017). Attitudinal factors, financial literacy, and stock market participation. *International Journal of Bank Marketing*, *35*(5), 818–841. https://doi.org/10.1108/ijbm-01-2016-0012

Trenberth, K. E., Dai, A., van der Schrier, G., Jones, P. D., Barichivich, J., Briffa, K. R., &

Sheffield, J. (2013). Global warming and changes in drought. *Nature Climate Change*, *4*(1), 17–22. https://doi.org/10.1038/nclimate2067

Vermeir, I., & Verbeke, W. (2006). Sustainable Food Consumption: Exploring the Consumer "Attitude – Behavioral Intention" Gap. *Journal of Agricultural and Environmental Ethics*, *19*(2), 169–194. https://doi.org/10.1007/s10806-005-5485-3

Wins, A., & Zwergel, B. (2016). Comparing those who do, might and will not invest in sustainable funds: a survey among German retail fund investors. *Business Research*, *9*(1), 51–99. https://doi.org/10.1007/s40685-016-0031-x

Whelan, Tensie, et al. (2021) "ESG and Financial Performance - NYU Stern." *Rockfeller Asset Management & NYU Stern Center for Sustainable Business.* https://www.stern.nyu.edu/sites/default/files/assets/documents/NYU-RAM_ESG-Paper_2021%20Rev_0.pdf.

Yue, B., Guanghua, S., Shengxiang, S., & Jiaqi, X..(2020, March 8.) Impact of Consumer Environmental Responsibility on Green Consumption Behavior in China: The Role of Environmental Concern and Price Sensitivity. *Sustainability* 2020, *12*(5), 2074; https://doi.org/10.3390/su12052074

Zahera, S. A., & Bansal, R. (2018). Do investors exhibit behavioral biases in investment decision making? A systematic review. *Qualitative Research in Financial Markets*, 00–00. doi:10.1108/qrfm-04-2017-0028

Zeisberger, Stefan, What is Risk? How Investors Perceive Risk in Return Distributions (2022, Sept. 4) *Radboud University, Institute for Management Research.* http://dx.doi.org/10.2139/ssrn.2811636

Appendices

Appendix A: Sample Survey
Below is a reproduction of the survey that was distributed via qualtrics.

Thank you for participating in this study!
In this survey, you will be asked for your opinions and preferences regarding financial investments for a Master's thesis at FGV. This survey will take approximately 4 minutes to complete.

No prior knowledge of financial investing is needed.
Thank you in advance!

Disclaimer: Your participation is voluntary and may be withdrawn at any time without penalty. There are no foreseen risks regarding involvement in this study. This data is being collected for academic usage, and your responses will be anonymous and confidential; only averages and general trends will be used in future publications. By continuing with this survey, you are confirming your agreement to participate.

→

When making decisions about financial assets, which of the following factors do you consider? Choose more than one if applicable:

- Investment Period
- Volatility
- Inflation Rate
- Personal Meaning
- Popularity
- Taxation
- Liquidity
- Risk
- Return on Investment
- Familiarity
- Environmental Impact and Sustainability
- Other _____

How would you identify your level of experience and comfort with financial investing?

→

On the next page, details about an investment option will be provided, followed by some questions.

Please read the text carefully.

→

Note
At this point, the participants were randomly assigned to an experimental test condition. The control group received the sample text about Performance Based Index Funds, which appears first below, and the other group received the sample text about Green Funds.

Test Condition: Control Group

An exchange traded fund (ETF) is an investment option that allows people to invest their money in a collection of different stocks simultaneously. One category of ETF is index funds, which are portfolios of stocks or bonds designed to replicate the composition and performance of a financial market index.

For example, the S&P 500 Index Fund is an investment composed of stocks that are listed in the Standard & Poor's 500 Index, which lists the largest 500 companies in the United States, ranked by market cap. Its performance will be nearly identical to the performance of the market index.

How willing would you be to invest in a performance-based index fund?
- Extremely Willing
- Somewhat Willing
- Neutral
- Somewhat Unwilling
- Extremely Unwilling

Regarding performance: do you believe that a performance-based index fund would provide returns that are…
- Very high
- High
- Neutral
- Low
- Very Low

Regarding risk: do you believe that a performance-based index fund would provide risks that are…
- Very high
- High
- Neutral
- Low
- Very Low

→

Test Condition: Green Fund

An exchange traded fund (ETF) is an investment option that allows people to invest their money in a collection of different stocks simultaneously.

One category of ETF refers to ESG or green funds, which consider environmental, social, and governance (ESG) principles in the selection of stocks that are included in the fund. For example, ETFs based on the Dow Jones Sustainability World Index represents a select group of large global companies based on long-term economic, environmental, and social criteria.

How willing would you be to invest in an ESG or Green fund?

- Extremely Willing
- Somewhat Willing
- Neutral
- Somewhat Unwilling
- Extremely Unwilling

Regarding performance: do you believe that an ESG or Green fund would provide returns that are…

- Very high
- High
- Neutral
- Low
- Very Low

Regarding risk: do you believe that an ESG or Green fund would provide risks that are…

- Very high
- High
- Neutral
- Low
- Very Low

→

Thank you for participating in this survey.
The following questions pertain to demographic information. Your answers are anonymous and confidential. Your participation is greatly appreciated!

Which gender do you identify with?

- Male
- Female
- Other or prefer not to answer

Age

What is the highest degree or level of school you have completed?

- Less than a high school diploma
- High school degree or equivalent (e.g. GED)
- Some college, no degree
- Associate or Bachelor's Degree
- Master's degree (e.g. MA, MS, MEd)
- Doctorate or professional degree (e.g. MD, DDS, PhD)

What is your current employment status?

- Student
- Unemployed
- Employed part time (up to 39 hours per week)
- Employed full time (40+ hours per week)
- Homemaker
- Retired

What is your country of origin? (Or with which you most identify)

How do you rate the importance of ESG (environmental, social, governance) topics?

- Very Important
- Important
- Neutral
- Unimportant
- Very Unimportant

How often do you consciously make choices in your life to positively affect the environment (ex: recycling, buying organic, ridesharing)?

- Very often
- Often
- Occasionally
- Seldom
- Never

How likely are you to buy a more expensive product if it is more sustainably or ethically produced than the alternative?

- Very likely
- Likely
- Neutral
- Unlikely
- Very Unlikely

Please indicate how important are the values below as a guiding principle in your life: (scale ranging from 1=Not important at all to 7=Extremely important)

	Not important at all 1	2	3	Moderate 4	5	6	Very Important 7
Preventing pollution: protecting natural resources	○	○	○	○	○	○	○
Respecting the earth: harmony with other species	○	○	○	○	○	○	○
Achieving unity with nature: fitting into nature	○	○	○	○	○	○	○
Protecting the environment: preserving nature	○	○	○	○	○	○	○
Improving societal conditions: decreasing hunger and poverty	○	○	○	○	○	○	○
Reducing inequalities: institutional change and justice	○	○	○	○	○	○	○

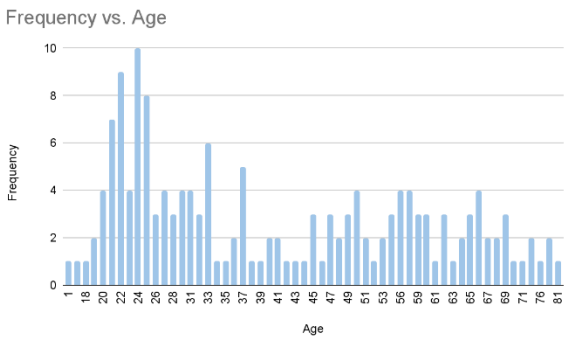
→

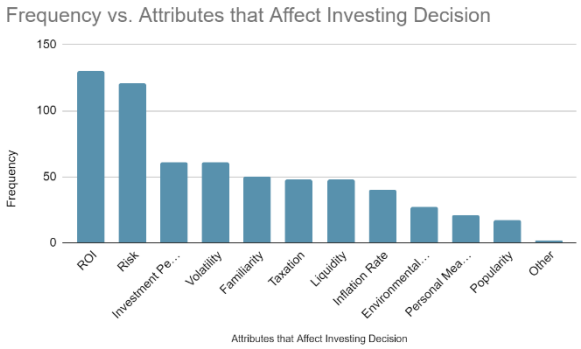
Thank you for completing this survey!

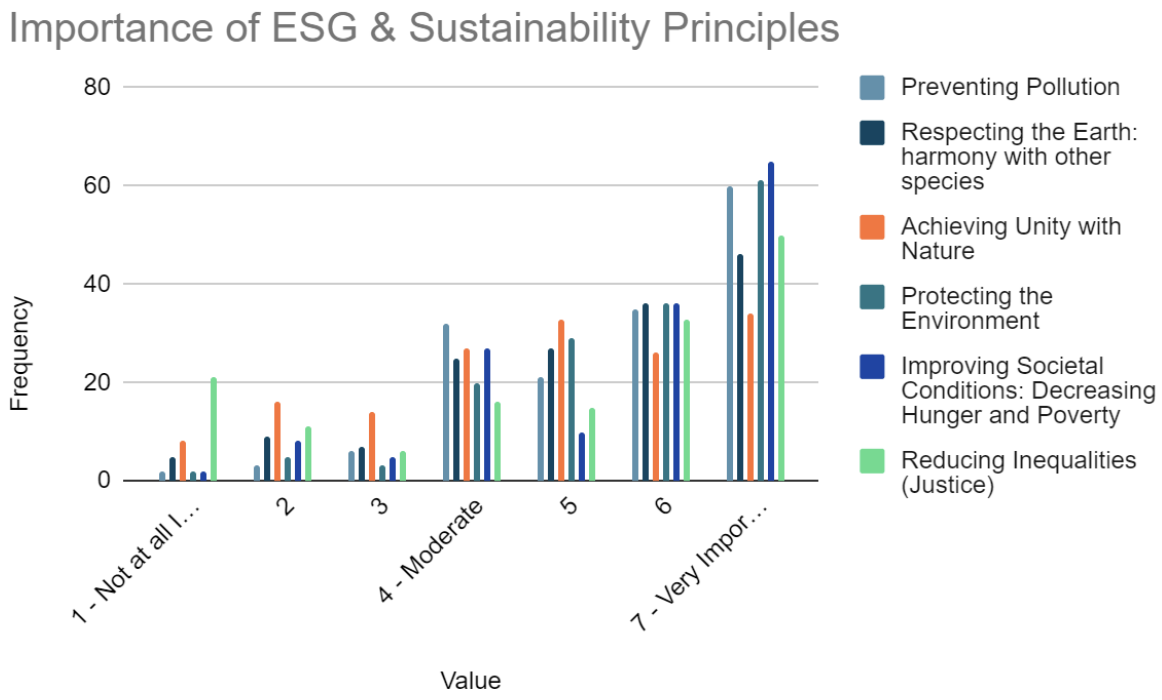
If you have any further comments regarding this survey or sustainable finance, feel free to share them here. If not, please click the arrow button below.

→

Appendix B: Demographic Information







Appendix C: Exploration of Experienced Investor Data

Below is a more in-depth data analysis of the sub-sample of experienced investors, contrasted with the total sample.

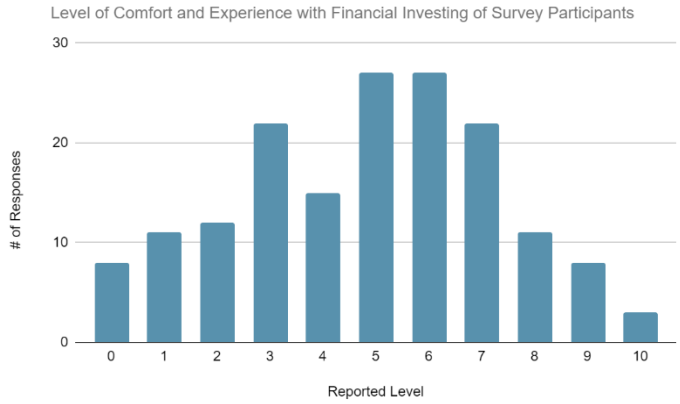


Chart Notes
1= New to Financial Investing
10= Experienced Investor

	New to Financial Investing Investor										Experienced
Ranking	0	1	2	3	4	5	6	7	8	9	10
Frequency	7	7	10	18	11	21	22	20	8	5	2
Percentage	5.34	5.34	7.63	13.74	8.40	16.03	16.79	15.27	6.11	3.82	1.53

Table A: Comparison of means of willingness to invest in green and traditional funds

	Total Sample		Experienced Investors	
	Mean	Standard Error	Mean	Standard Error
Index	3.989	.095	4.017	.121
Green	3.421	.152	3.175	.223
Difference*	.568	.174	.842	.236

Table Notes:
Difference = mean(index) - mean (Green)
Significance at the 95% confidence interval is indicated with an *

Table B: Comparison of perception of performance between green and traditional funds

	Total Sample		Experienced Investors	
	Mean	Standard Error	Mean	Standard Error
Index	3.333	.069	3.362	.084
Green	2.868	.094	2.775	.92
Difference*	.465	.115	.587	.158

Table Notes:
Difference = mean(index) - mean (Green)
Significance at the 95% confidence interval is indicated with an *

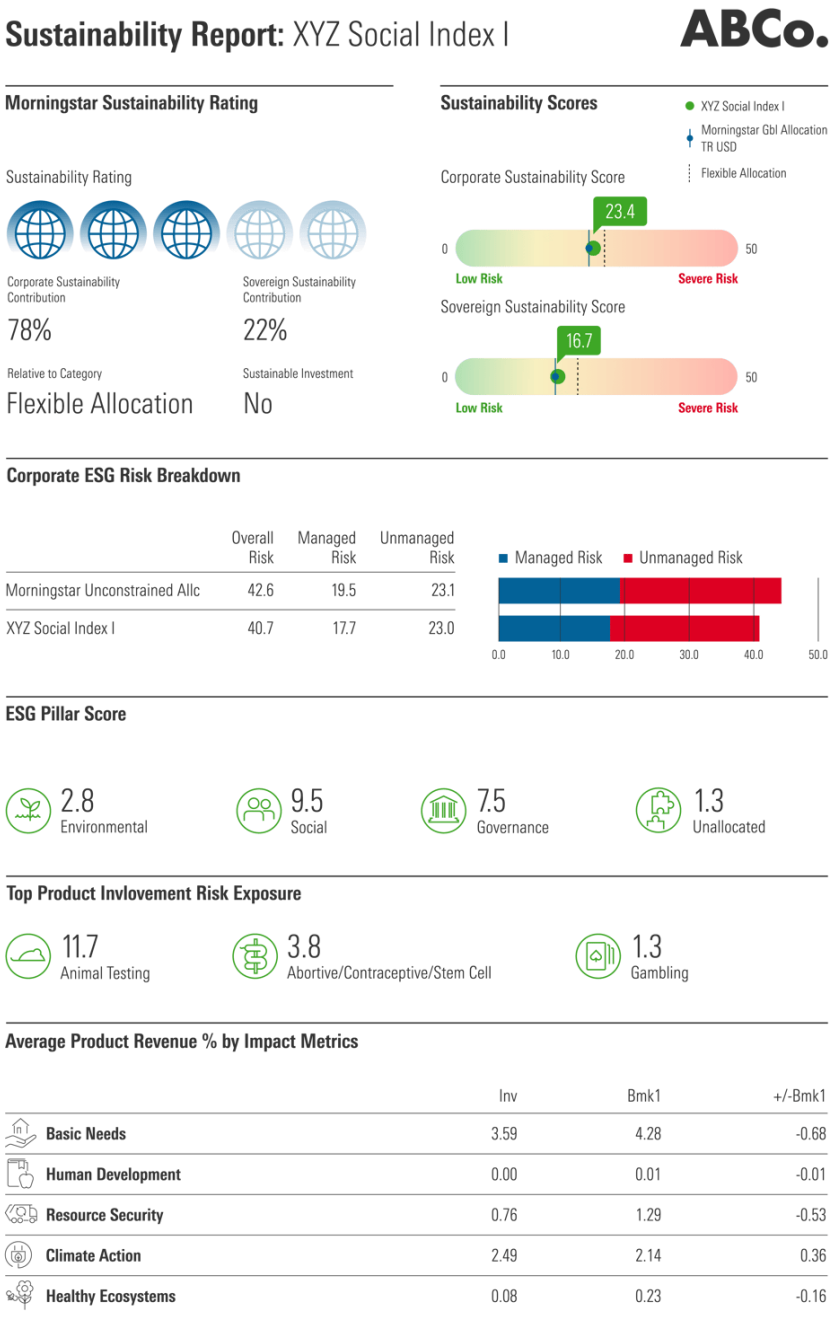
Table C: Comparison of perception of risk between green and traditional funds

	Total Sample		Experienced Investors	
Group	Mean	Standard Error		
Index	2.878	.1	2.931	.120
Green	3.289	.099	3.35	.132
Difference*	-.412	.142	-.419	.181

Table Notes:
Difference = mean(Index) - mean(Green)
Significance at the 95% confidence interval is indicated with an *
Risk is coded as 1=very low and 5 = very high

Appendix D: Sample Private Sustainability Reports

Sample Sustainability Report from Morningstar, including ESG Pillar scores, categorized and ranked risks, and other sustainability KPIs, benchmarked against indices. This provides an examples of available information that may affect consumer behaviour towards financial investing decisions if made readily available (Morningstar, 2023; S&P Dow Jones Indices, 2023).

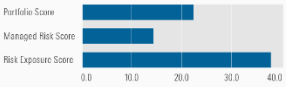


Sustainability Report:
Investment ABC

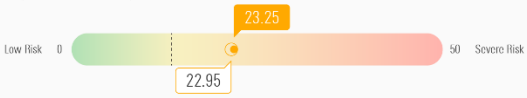
ABCo.

Sustainability Rating

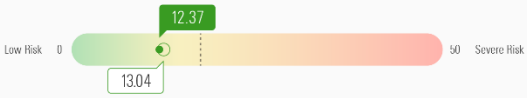
ESG Risk Score Variables



Corporate Sustainability Score



Sovereign Sustainability Score



Controversy Coverage

% of AUM	94.2
Number of Securities Scored	57
Number of Securities Not Scored	190

ESG Risk Score Coverage

% of AUM	94.2
Number of Securities Scored	71
Number of Securities Not Scored	170

Controversy Distribution

Severe Controversy	2.5
High Controversy	7.5
Significant Controversy	12.4
Moderate Controversy	32.4
Low Controversy	28.5
No Controversy	21.7

ESG Risk Score Distribution (% of AUM)

High ESG	3.7
Above Average ESG	7.6
Average ESG	50.2
Below Average ESG	37.1
Low ESG	1.3

S&P Dow Jones Indices
A Division of S&P Global

Equity
DOW JONES SUSTAINABILITY WORLD INDEX

AS OF APRIL 28, 2023

Description

The Dow Jones Sustainability™ World Index comprises global sustainability leaders as identified by S&P Global through the Corporate Sustainability Assessment (CSA). It represents the top 10% of the largest 2,500 companies in the S&P Global BMI based on long-term economic, environmental and social criteria.

Quick Facts

WEIGHTING METHOD	Modified market cap weighted
REBALANCING FREQUENCY	Annually in September
CALCULATION FREQUENCY	Real time
CALCULATION CURRENCIES	USD, AUD, CAD, CHF, CNY, EUR, GBP, HKD, JPY, LCL, SGD
LAUNCH DATE	September 8, 1999
FIRST VALUE DATE	December 31, 1993

For more information, view the methodology document at https://www.spglobal.com/spdji/en/documents/methodologies/methodology-dj-sustainability-indices.pdf.

All information for an index prior to its Launch Date is hypothetical back-tested, not actual performance, based on the index methodology in effect on the Launch Date. Back-tested performance reflects application of an index methodology and selection of index constituents with the benefit of hindsight and knowledge of factors that may have positively affected its performance, cannot account for all financial risk that may affect results and may be considered to reflect survivor/look ahead bias. Actual returns may differ significantly from, and be lower than, back-tested returns. Past performance is not an indication or guarantee of future results. This back-tested data may have been created using a "Backward Data Assumption". For more information on "Backward Data Assumption" and back-testing in general, please see the Performance Disclosure at the end of this material.

Historical Performance

Depending on index launch date, all charts below may include back-tested data.