Sustainable investment preferences among the clients of a fund manager in the Netherlands

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ABSTRACT:

Sustainability is a very important concept of the 21st century. Reason being is a number of unresolved problems in the world, among those problems are climate change, and natural resource scarcity. As a result, the financial sector has also been getting involved in sustainability, which has given rise to sustainable investments. Sustainable investments refer to financial strategies that seek to generate positive environmental, social, and governance (ESG) outcomes in combination with financial returns. While considerable research has explored the financial returns of sustainable investments compared to conventional ones, there is a noticeable gap in understanding investor preferences within this landscape. This study aims to analyze the determinants influencing investor preference for sustainable investment strategies and the role of financial sacrifice in shaping these preferences. This leads to the aim of this study, which is to analyze what the determinants are of investor preference for sustainable investment strategy, and what the influence of investor financial sacrifice is on the preference for a specific sustainable investment strategy. Binary logistic regression indicates that on the research group the variables political preference, and expected return positively influence whether an investor prefers sustainable investment, while investment knowledge negatively influences this preference. In addition to this, the amount of money that investors are willing to sacrifice under the impact and ethical strategies is influential in determining which specific sustainable investment strategy an investor might prefer. This research contributes to the literature by further investigating determinants for investor's interest in sustainable investing. Additionally, it adds to the literature by diving into unexplored territory regarding the financial sacrifice that investors are willing to make under the premise that they invest with a specific sustainable strategy, adding insights to the existing body of knowledge in sustainable investing.

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1.   Introduction

In the twenty-first century, "sustainability" is one of the hot topics, and is considered to be very important (Schaefer & Crane 2005). The high importance linked to the concept of sustainability is strongly related to a number of unresolved problems in the increasingly interconnected world, such as poverty, natural resource scarcity, climate change, and the pollution of the environment (Buerke et al., 2017). Increasingly, the financial sector has also gotten involved with sustainability, with socially responsible investing playing a crucial role in achieving the Sustainable Development Goals (SDG's) set by the United Nations (UN) (Faradynawati & Söderberg, 2022). As a result, the socially responsible investment market is gaining increasing momentum worldwide and investments in sustainable and responsible stocks have experienced significant growth in recent years (Busch et al., 2016). In the United States alone, socially responsible investments accounted for $8.4 trillion of professional assets under management at the beginning of 2022 (US SIF, 2022). In 2005, socially responsible investments constituted 10-15 percent of European assets under management, a figure that has risen to 34 percent in 2022 (Gangi et al., 2022). This trend is indicative of the growing importance placed on environmental protection, with 94 percent of Europeans stating that it is important to them (Eurobarometer, 2020) and 88 percent of Europeans expressing their willingness to vote on environmental, social and governance (ESG) related issues at corporate annual meetings (UNPRI, 2011). In the Netherlands, a significant market for socially responsible investing in Europe, sustainability has become increasingly significant over time, with many Dutch pension funds employing a sustainable investment strategy (DNB, 2016).

1.1 Problem Statement

Studying socially responsible investing is relevant due to the growing importance of sustainability and the growing incorporation of ESG factors in the investment landscape. The socially responsible investment market is experiencing significant growth globally, with a substantial portion of assets under management dedicated to sustainable and responsible investments. Understanding the characteristics and preferences of socially responsible investors can help financial institutions tailor their approaches and products to attract these investors. Moreover, studying socially responsible investing can shed light on the potential benefits and challenges associated with integrating social and environmental considerations into investment decision-making. Despite socially responsible investing being extensively researched, previous research shows mixed results on whether socially responsible investing has a positive or negative impact on returns. Positive results from sustainable investments compared to conventional investments were found by e.g. Fulton et al. (2012), while Renneboog et al. (2008) find that investors pay a price for being ethically responsible. Thus, having to sacrifice some of their returns. However, what has been researched to a much lesser extent is whether investors are willing to sacrifice some of their financial returns in exchange for the good feeling they get from the positive contribution that comes along with their investment. In a study on trends in the literature on socially responsible investing, Capelle-Blancard & Monjon (2012) find that from 2000-2009 1.6% of newspaper articles and 4.9% of academic papers on the topic of socially responsible investing were about sacrifices that investors make. This is a paper that is over 10 years old, and more recent literature has covered that investors are willing to make a sacrifice. However, to the author's knowledge, the only research that has

been conducted about how much the investors are willing to sacrifice, was by Brunen & Laubach (2022), and by AFM (Dutch Authority of Financial Markets) (2022). The method of AFM has been taken as an example to determine the sacrifice that investors are willing to make. In this method, AFM asked respondents to indicate how much of an expected €1.000 return they are willing to sacrifice given that they invest in a sustainable manner. Additionally, to the author's knowledge, there is no previous study conducted on whether the willingness to sacrifice financial returns has an influence on what investment strategy investors prefer. A possible reason for this could be that it is difficult to get reliable data on how much investors are willing to sacrifice from their financial returns.

1.2 Purpose Statement and Research Question

Within the existing body of literature, there is a recurrent exploration of the determinants shaping investors' preference towards sustainable investing, with a focus on socio-demographic and investment-related factors. The primary objective of the present study is to discern the influential factors that guide the preferences of customers associated with a fund managing company. In addition to that, the study aims to explore the impact of the investor's willingness to sacrifice financial return on whether the investor has a preference for a specific sustainable strategy. The specific sustainable strategies that are examined are the ethical, engagement and impact investment strategies. Each of these strategies becoming progressively more sustainable, and with each progressive step requiring the investor to keep more factors in mind when pursuing this strategy. In determining the investors' preference for specific sustainable strategies, the earlier determined variables which prove to significantly influence whether the investor is interested in general in sustainable investment are used. The literature review will go more into detail which socio-demographic variables and investment related variables are examined, as well as key differences between the different sustainable investment strategies.

1.3 Outline of the Thesis

The first chapter of this thesis is the introduction, which introduces the background and problematization of this paper, following the purpose statement and the research question. The second chapter addresses the existing literature with a literature review concerning important definitions and central theories connected to the topics of socially responsible investing. The third chapter describes the research methods used to conduct this research. It consists of the research design, the data collection method, explanation of the sample, and description of the research analysis. The fourth chapter lists the empirical findings by presenting the collected data. The fifth chapter discusses the empirical findings in relation to existing theories on the topic to add further insights into the topic and current theories. Following the analysis and discussion of the data, the final chapter concludes and summarizes the results of the research findings. Furthermore, this chapter provides theoretical and practical implications as well as addressing the limitations of this research and indications for future research on the topic of socially responsible investments.

2.   Literature Review

The subsequent literature review presents a summary of the current research and theories that establish the theoretical basis for the study. Initially traditional investing is discussed, after which socially responsible investing and the different strategies for socially responsible investing are introduced. Afterwards, the profile of socially responsible investors, their motives, and the dual-aim of utility in socially responsible investing is discussed. The literature review is concluded with a discussion of the role of socially responsible investing, its benefits, and the challenges which it has to overcome.

2.1 Traditional investing

In order to balance risk and return, Markowitz's Portfolio Theory, developed in 1952, highlighted the significance of diversification and the effective allocation of assets. Markowitz argued that because most investments offer either low return and low risk, or high return and high risk, investors can choose an optimal mix between the two assets to create a portfolio tailored to their individual level of risk. William Sharpe's Capital Asset Pricing Model (CAPM), introduced in 1964, further expanded on Markowitz's work by incorporating the concept of systematic risk, or beta. CAPM provided a framework for determining the expected return of an asset based on its beta, the risk-free rate and the market risk premium. Investors utilized CAPM to assess the risk-adjusted returns of individual assets and construct efficient portfolios. These theories served as the foundation for traditional portfolio management, in which investors seeking to maximize their returns focused primarily on elements like asset allocation, diversification, and risk management. ESG factors were not (normally) taken into account while making investments during this time. However, in recent years, there has been a significant shift in investor preferences and motivations. Factors such as sustainability, ethical considerations, and corporate social responsibility have gained prominence. Following the traditional portfolio theory, and taking the extra criterion of ESG as a consideration when constructing the portfolio, would result in an increase of risk, or a reduction in return, making the portfolio less efficient (Rudd, 1981).

2.2 Sustainable investments

Sustainable investment is a form of investment that not only focuses on financial returns but also takes into account environmental, social, and governance (ESG) factors. (Busch et al., 2016). There are various definitions and perspectives regarding sustainable investments, including socially responsible investments (SRI), ethical investments (EI), morally responsible investments, and green investments (GI). These terms encompass a range of definitions and perspectives, hereafter the terms are used interchangeably but they generally involve investing in companies and funds that align with ethical values, promote sustainability, and contribute to social and environmental well-being. Various researchers and organizations have put forward different definitions, highlighting different aspects of sustainable investment:

1. Sustainable investment can be described as investments that strive to minimize greenhouse gases and air pollution in addition to financial goals. (Du et al., 2019).
2. Sustainable investment corresponds to the notion of ecological civilization, concentrating on investments that adhere to environmental principles (Han et al., 2020).
3. Sustainable investment incorporates social, ethical, and environmental (SEE) considerations into investment decisions (Sandberg et al., 2009).
4. Sustainable investments are those investments that prioritize ethical ideals, environmental conservation, good governance, and better social situations. (Revelli & Viviani, 2015).
5. Sustainable investment intends to contribute to long-term development by combining environmental, social, and governance (ESG) considerations into investment criteria (US Sustainable Investment Forum (SIF), 2000; Busch et al., 2016).

In addition to these definitions, it's worth noting that Shariah compliant funds, which adhere to Qur'anic principles, are similar to sustainable investment. These funds do not include investments in activities that are harmful to humans and the environment, such as alcohol and gambling (Ghoul & Karam, 2007; Ghoul et al., 2007). While socially responsible investing is often associated with corporate social responsibility (CSR), Lingnau et al. (2022) suggest that CSR and sustainable investment represent two different perspectives. CSR examines companies' actions from their own viewpoint, whereas sustainable investment focuses on investments from the investor's standpoint.

2.3 The different socially responsible investment strategies

Within sustainable investing there are different strategies, with differing degrees of sustainability. Folqué et al. (2021), based on Renneboog (2008), the European Sustainable Investment Forum (Eurosif, 2018) and the Global Sustainable Investment Alliance (GSIA, 2019) make the distinction between five generations of sustainable investing strategies. Each generation becoming progressively more sustainable by incorporating an additional criterion in the decision making process. Table 1 lists these five generation of sustainable investment strategies as state in Folqué et al., (2021). For clarification conventional investing has been included as well.

No SI strategies	First generation SI strategies	Second generation SI strategies	Third generation SI strategies	Fourth generation SI strategies	Fifth generation SI strategies
Conventional investing	Negative screening	Positive screening	Negative screening + positive screening	Negative screening and/or positive screening + engagement	Impact investment

Table 1: Different investment strategies (Folqué et al., 2021)

Negative screening, which involves excluding investments in businesses engaged in undesirable activities, and positive screening, which focuses on selecting the best-in-class environmentally and socially responsible businesses (Berry & Junkus, 2013), and a combination of positive and negative

screening comprise the first three "generations" of sustainable investing. AFM (2022) describes an engagement strategy as a strategy that has the goal of making unsustainable businesses more sustainable by engaging with them. Impact investing is defined by the Global Impact Investing Network (GIIN) as investments undertaken with the aim of producing both a financial return and positive, quantifiable social and environmental change. Engagement and impact investing comprise the fourth and fifth generations of sustainable investment strategies respectively.

Circling back to the difference between sustainable investing and conventional investing. Traditional portfolio theory acknowledges that diversification lowers an investor's risk exposure without lowering return. A highly diversified investment portfolio is only vulnerable to market or economy-wide risk that cannot be avoided. Negative screen-based sustainability-conscious investment portfolios are less diversified since certain investments are excluded. Therefore, it is thought that sustainable investing has a higher risk exposure than conventional investment (Michelson et al., 2004). Conversely, Patten & Nance (1998) argue that irresponsible businesses may in the future have to comply with higher costs due to changing regulations, which results in reduced returns for these irresponsible businesses. Thus, arguments can be made both for sustainable investments having an increased risk, but also a decreased risk.

2.4 The profile of socially responsible investors

Several studies shed light on the characteristics and preferences of socially responsible investors. Bauer & Smeets (2015) found that young, highly-educated, and low-wealth investors exhibit high levels of social identification. This aligns with the findings of Junkus & Berry (2010), who identified the typical socially responsible investor as female, single, younger, less wealthy, and better educated compared to their non socially responsible counterparts. Gender and education were also highlighted as important factors by Nilsson (2008) and Dorfleitner & Nguyen (2016). Moreover, Rossi et al. (2019) discovered that investors with tertiary education allocated more funds to their socially responsible savings accounts compared to respondents with lower education levels. Gutsche et al. (2019); Gutsche & Zwergel (2020) and Gutsche & Ziegler (2019) found a positive relationship between environmental values and individual sustainable investment. They also noted that individual political identity may influence sustainable investment decisions, with left-leaning individuals being more likely to invest sustainably, even though left-leaning individuals are less likely to participate in stock markets (Hong & Kostovetsky, 2012). Riedl & Smeets (2017) observed that socially responsible investors engage in more discussions about their investments compared to conventional investors, potentially to create a positive image of themselves. Additionally, Riedl & Smeets (2017) suggested that sustainable investors tend to have longer investment horizons. Interestingly, According to Riedl and Smeets (2017), investors are prepared to hold socially responsible mutual funds even if they anticipate lesser returns and similar risks when compared to conventional investments. They also find that investors with higher risk tolerance are more likely to have a larger portfolio share of sustainable investments, and that investors with higher investment knowledge are less likely to hold sustainable investments. Bauer & Smeets (2015) find that investors were less likely to invest at other financial institutions if they expect the returns of sustainable funds to be higher than conventional funds. They also find that investors who perceive sustainable funds to have higher risk than conventional funds, invest a smaller proportion into them. Additionally, they emphasize that social

preferences influence investors' willingness to hold socially responsible investment funds in the face of lower expected returns. Gutsche et al. (2021) noted that this might be because individuals with higher social preferences look for ways to express themselves and contribute to society, and as such might be more aware of sustainable investments. Furthermore, Landry et al. (2006) mentioned that investors fitting the profile of socially responsible investors represent a valuable group for financial institutions to engage with. Identifying and targeting these potential customers efficiently can be achieved through rigorous quantitative methods and innovative survey designs (Rossi et al., 2019). Socio-demographic characteristics are easily obtained, making the identification of typical investor groups relevant for asset and fund managers to tailor their approaches accordingly (Gutsche et al., 2021). Considering the insights from the literature, we can construct a profile of a sustainable investor. This profile is shaped by a range of factors, covering socio-demographic elements like age, gender, income, and political preferences, as well as investment-related aspects such as expectations regarding risk and return on sustainable investments, along with the investor's risk and return preferences. Based on this, we will be testing the following hypotheses:

H1a: Younger investors have a larger preference for sustainable investments than older investors.

H1b: Female investors have a larger preference for sustainable investments than male investors.

H1c: Low wealth investors have a larger preference for sustainable investments than high wealth investors.

H1d: Higher educated investors have a larger preference for sustainable investments than lower educated investors.

H1e: Investors who are single have a larger preference for sustainable investments than investors who are in a relationship.

H1f: Politically left-aligned investors have a larger preference for sustainable investments than politically right-aligned investors.

H1g: Investors with a long time-horizon have a larger preference for sustainable investments than investors with a short time-horizon.

H1h: Investors with lower investment knowledge have a larger preference for sustainable investments than investors with a higher investment knowledge.

H1i: Investors who often discuss their investments have a larger preference for sustainable investments than investors who rarely discuss their investments.

H1j: Investors with a higher risk tolerance have a larger preference for sustainable investments than investors with a smaller risk tolerance.

H1k: Investors who anticipate higher returns from sustainable investments have a larger preference for sustainable investments than investors who anticipate lower returns for sustainable investments.

H1l: Investors who do not anticipate higher risk have a larger preference for sustainable investments than investors who anticipate higher risk from sustainable investments.

2.5 Motives for Investors to Invest Sustainably

Researchers have found that investors in sustainable investments are motivated by a combination of factors, including environmental, social, and governance (ESG) aspects, as well as personal and societal values. These findings are supported by studies conducted by Webley et al. (2001), Bollen (2007), Adam & Shauki (2014), Bauer & Smeets (2015), Busch et al. (2016), and Belghitar et al. (2014). Pasewark & Riley (2010) note that private investors seek investments that align with their personal values, to which Bauer & Smeets (2015) add that investors gain non-financial utility from having their savings and investments at a bank that shares their values. In addition, investors experience direct utility from the socially responsible attributes of funds (Ariely et al., 2009; van Dooren & Galema, 2018). Dorfleitner & Nguyen (2016) find that investors derive satisfaction when a portion of their portfolio is invested sustainably. They may also feel a "warm glow" from not contributing to social damages, providing non-monetary utility (Dam & Heijdra 2011; Gutsche & Ziegler, 2019). Michelsen et al. (2004) name this feeling of warm glow "psychic income". Williams (2007) further demonstrates that socially responsible investing is driven by the investor's appreciation of the social aims of a firm rather than solely focusing on the firm's financial performance. Riedl & Smeets (2017) find that investors are willing to hold socially responsible mutual funds, even when they expect the returns to be lower, and risk similar to conventional investments. Finally, van Dooren & Galema (2018) find that the disposition effect, the tendency to sell stocks that have profited and hold on to stocks that have made a loss, is stronger with socially responsible investors. An explanation for this could be that the investors' monetary utility loss is compensated by the social utility of holding socially responsible investments. These findings highlight the multifaceted motivations and considerations that drive investors to invest sustainably.

2.6 The dual-utility aim of socially responsible investments

Sustainable investing introduces an additional factor that investors consider alongside traditional utility maximization. Sustainability has emerged as a crucial factor in modern investment decision-making, expanding the traditional "magic triangle" of risk, return, and liquidity into a "magic square" (Von Wallis & Klein, 2015). Lingnau et al. (2022) present an integrated model demonstrating the significant influence of sustainability as a decision parameter. They find that a lack of commitment to sustainability reduces investors' willingness to invest (WTI), while above-average sustainability commitment does not lead to increased WTI. This suggests that sustainability plays a vital role in investors' utility perception. Furthermore, Michelsen et al. (2004) suggest that investors in socially responsible investments derive positive utility from investing responsibly, even if it means accepting a lower financial gain.

While the majority of studies suggest that socially responsible investors are willing to accept lower financial returns in pursuit of social or ethical goals, there is some disagreement. Renneboog et al. (2008) emphasize the need for more conclusive evidence regarding investors' willingness to accept lower returns. They also question whether socially responsible investors are willing to compromise optimal financial outcomes solely to achieve social goals. Lingnau et al. (2022) mention that the classical theories by Markowitz & Sharpe may no longer accurately reflect the utility that investors derive from their

investments. Sustainability shows to be making a clear and decisive impact in addition to the traditional factors. Since the goal of maximizing utility has not changed, it will be very interesting to find out what the utility is that investors obtain from investing in a socially responsible manner, and whether this utility influences whether investors have a preference for a specific sustainable strategy.

H2: Investors who are willing to sacrifice more of their financial return have a larger preference for specific sustainable strategies

2.7 The role of socially responsible investing in sustainable development and financial mobilization

Socially responsible investing plays a crucial role in achieving the United Nations' Sustainable Development Goals (SDGs) (Faradynawati & Söderberg, 2022). Mobilizing substantial financial resources for sustainable investments has become increasingly important, emphasizing the role of the financial sector. Capital markets influence firms' sustainability efforts through financial influence and investor advocacy (Waygood, 2011). To promote the SDGs, the EU introduced the "Strategy for Financing the Transition to a Sustainable Economy" in July 2021. One of the most difficult issues in the implementation of this policy is making sustainable investment products accessible to retail investors (Faradynawati & Söderberg, 2022). Understanding the preferences of institutional and individual investors is essential for capital mobilization. Digital wealth managers can leverage the provision of sustainable investment strategies as a selling point alongside performance and costs (Brunen & Laubach, 2022). Pressures from stakeholders, changing market demand, and product and service complexity drive organizations to adopt new capabilities and management practices for competitiveness (Rauter et al., 2019; Yen, 2018). Companies adhering to high ethical standards may gain a competitive advantage and generate higher returns for investors compared to less ethical firms (Porter & Kramer, 2011). Stakeholder theory supports this idea by emphasizing that incorporating stakeholder expectations and improving social and environmental aspects creates business value and positively impacts stock performance (Freeman, 2010). Positive actions are reciprocated with positive reactions, while negative actions lead to adverse reactions (Fehr & Schmidt, 2006). Environmentally focused policies enable companies to grow in harmony with the environment (Yen, 2019). Increased green investments indirectly foster the development of the environmental protection-related industry and the creation of environmental protection funds (Shi et al., 2016; Han, 2020). Sustainable investments can also reduce the total cost of the supply chain (Ghosh et al., 2020), attract government funds (Owen et al., 2018), and mitigate government regulation risk (Bassen et al., 2006). Socially responsible investing can have practical implications for risk reduction, particularly concerning environmental risks and regulations (Dobler et al., 2014; Chatzitheodorou et al., 2019). Investors may avoid irresponsible industries due to expectations of stricter environmental regulations and associated costs to comply(Patten & Nance, 1998). This avoidance can help reduce the exposure to potential risks related to non-compliance and reputation damage. Furthermore, socially responsible investing has also been shown to positively influence factors like firm reputation and financial performance (Dobler et al., 2014).

2.8 Additional benefits of socially responsible investments

Bauer & Smeets (2015) found that nearly half of the investors at banks exclusively offering socially responsible investments expected higher returns on socially responsible equity funds compared to conventional funds. Conversely, Riedl & Smeets (2017), who studied clients of a bank that provided both conventional and socially responsible funds, discovered that the majority of socially responsible investors expected socially responsible funds to underperform compared to conventional funds. These findings suggest that clients of banks exclusively focused on socially responsible investments hold a more optimistic outlook on the returns of socially responsible funds compared to clients of traditional financial providers. Additionally, Bauer & Smeets (2015) found that over half of the investors at socially responsible banks perceived the risk of socially responsible investment funds to be lower than that of conventional funds. This aligns with previous empirical evidence indicating that investments in firms with good corporate social responsibility (CSR) scores often carry lower risk than those with lower CSR scores (Luo and Bhattacharya, 2009; Godfrey et al., 2009; Oikonomou et al., 2012; Nofsinger and Varma, 2014).

2.9 Challenges for socially responsible investments

Negative screening can limit the level of diversification possible, while also increasing management costs. (Girard et al., 2007; Gutsche & Zwergel, 2020). These expenses are the result of gathering and interpreting information, as well as determining which stocks meet and which fall short of the criteria for socially responsible investing (Revelli & Viviani, 2015). Rudd (1981) contends that when a portfolio is constrained, its performance suffers. According to Riedl and Smeets (2017), there is a positive relationship between an investor's risk preferences and the proportion of sustainable investments in their equity portfolio. This could imply that risk-takers accept limited diversification as a result of negative screening (Gutsche et al., 2021). Furthermore, green technologies involve costly expenses that developing companies often cannot pay, and firms suffer demand uncertainty when investing in the development of green products, especially given that the concept of green consumption is not yet widely accepted by consumers (Xing et al., 2019). Striking the right balance is crucial for companies, as too little or too much effort on the environment can have detrimental effects on their economic performance (Pekovic et al., 2018). Research indicates that the implementation of green projects generally yields a lower rate of return and carries higher risks compared to fossil fuel projects, primarily due to the long payback period (Taghizadeh-Hesary & Yoshino, 2020; Zhang et al., 2015). However, long-term institutional investors, such as pension funds, play an important role in advocating directors to prioritize long-term value creation over short-term profitability (Busch et al., 2016). This long-term outlook may result in enhanced economic value development inside for-profit firms (Porter & Kramer, 2006). Furthermore, it is worth noting that there is a considerable unexploited interest in socially responsible investing that remains unexplored due to a lack of knowledge about the subject (Wins & Zwergel, 2016). Interestingly, certain "sin" enterprises in areas such as alcohol, tobacco, and gambling have been found to earn significantly higher alphas than firms in other industries (Hong & Kacperczyk, 2009). Companies that actively engage in sustainable practices can solve the issues connected with green technologies while potentially achieving long-term economic benefits. The focus of institutional investors on long-term value creation fits with the goals of socially responsible investing and may create

economic value while taking environmental considerations into account. This makes the clients of a pension fund especially interesting to study, as greater awareness and knowledge about socially responsible investing can attract more investors seeking both financial returns and positive social and environmental impact. This is ultimately beneficial for the company and its stakeholders.

3.   Methodology

The following section outlines the methodology chosen to investigate the research problem. This section will describe the specific processes and strategies used in the study to identify, collect, and analyze the necessary data. First, the overall research approach and research design are explained. Second, the case study sampling, including the selection of cases and interviews, is outlined and justified. Following that, the data collection process is presented, followed by a discussion about how the data was analyzed. Lastly, recommended measures are discussed in terms of ethical considerations.

3.1 Research Approach and Design

The research interest is in determining what the determinants are of the investment strategy preference. The data collected from the participants is mostly numerical or on a Likert-scale which can be recoded into numbers. Hence, a quantitative research approach is more appropriate than qualitative. The design of the study is a survey which has as an advantage that it can be used to rapidly collect large amounts of data from a large number of participants. An additional benefit of this is that sampling a diverse and large group of participants, can provide insights into differences in this aspect between socio-demographic groups. Furthermore, the standardized approach to collecting data ensures consistency between the information collected, which in turn facilitates comparison and statistical analyses.

3.2 Survey design

The survey questions which were posed were based on previously mentioned literature. A summary of the survey items, the corresponding hypothesis, and the supporting literature can be found in the table below.

Survey item	Hypothesis	Variable	Supporting literature
1.1	H1h	Investment knowledge	Gutsche et al. (2021); Riedl & Smeets (2017); Bauer & Smeets (2015); Rossi et al. (2019);
1.2	H1j	Risk-level	Riedl & Smeets (2017);
1.3	H1i	Social signaling	Riedl & Smeets (2017); Bauer & Smeets (2015)

1.4	H1g	Time horizon	Riedl & Smeets (2017);
1.5	H1k	Expected return	Bauer & Smeets (2015); Riedl & Smeets (2017);
1.6	H1l	Expected risk	Nillson (2008); Bauer & Smeets (2015); Wins & Zwergel (2016); Riedl & Smeets (2017); Gutsche & Ziegler (2019;
2.1	H2	Preference between different investment strategies	See H1a – H1l
2.2	H2	Preference between different investment strategies	See H1a – H1l
3.1	H2a	Willing to sacrifice with ethical strategy	AFM (2022)
3.2	H2a	Willing to sacrifice with engagement strategy	AFM (2022)
3.3	H2a	Willing to sacrifice with impact strategy	AFM (2022)
4.1	H1a	Age	Bauer & Smeets, (2015); Junkus & Berry (2010); Gutsche et al. (2021);
4.2	H1b	Gender	Junkus & Berry (2010); Junkus & Berry (2010); Nilsson (2008); Dorfleitner & Nguyen (2016);
4.3	H1c	Wealth	Bauer & Smeets, (2015); Junkus & Berry (2010);
4.4	H1d	Education	Bauer & Smeets, (2015); Junkus & Berry (2010); Nilsson (2008); Dorfleitner & Nguyen (2016); Rossi et al. (2019);

4.5	H1e	Marital status	Junkus & Berry (2010); Gutsche et al. (2021);
4.6	H1f	Political identity	Gutsche et al. (2019); Gutsche & Zwergel (2020); Gutsche & Ziegler (2019);

Table 2: Survey items with corresponding hypotheses, variables and supporting literature

The survey started off with some general questions about the investment knowledge of the respondents, followed by questions about their expectations from sustainable investments, when compared to conventional investments. After that the different investment strategies were introduced. The respondents were given the following table (translated from Dutch):

Strategy	Goal	Type of asset which may be invested in
Conventional investing	• Obtaining financial return	• All assets may be invested in
Ethical investing	• Aligning investments with personal norms and values • Obtaining financial return	• Selecting "good" investments. • Excluding "bad" investments.
Engagement investing	• Positively influence the behavior of companies • Obtaining financial return	• All assets may be invested in
Impact investing	• Creating a positive societal or ecological impact • Obtaining financial return	• Only assets which have a positive impact on the world

Table 3: Translation of the table shown to respondents of the survey

and asked whether they would require some additional information about the different investment strategies and what role fund managers play in these strategies if they manage the money of the respondents on their behalf. In the following questions the table would return every time to help the respondent fill in the questions. In the next part, the respondents had to put the different strategies in a list ranging from their most preferred strategy to their least preferred strategy. After that, the respondents were given a hypothetical situation in which they would have €10.000 available to invest in any of the strategies, and they had to divide this €10.000 over the four strategies. The goal of this part was to see if people put their money where their mouth is and actually invest in the strategy which they said had their preference. After that, the main question to determine how much money the respondents was willing to sacrifice in order to invest sustainably was asked. The respondents were given a hypothetical situation, where they would expect to earn €1.000 on a portfolio of conventional, non-sustainable assets. The respondents would have to fill in how much they would at least require the

different sustainable strategies to earn as return in order for them to invest in it. These questions had a filter applied to them, meaning that the respondents would only be shown for example the question about how much they would at least require a portfolio which follows an engagement strategy to yield if they said in the previous question that they would invest with an engagement strategy with the €10.000 they could invest. If the respondent said that they would invest at least some amount of money in each of the strategies if they could invest €10.000, they would be asked how much money they would at least require for every strategy if a conventional strategy would earn them €1.000. Initially another approach was considered, where the respondents would be given a hypothetical situation in which they would invest €200 monthly, and be provided with a table which showed them how much their money would grow to with different percentages of expected yearly return. However, this approach was opted out of due to the expectation that the average Joe would not fully understand what would be asked from them, and thus the aforementioned method was used instead, which was based on a study conducted by AFM in 2022. This other method is briefly discussed in the next paragraph. Finally, some socio-demographic questions were asked, and the respondents were thanked for their time and their answers.

3.3 Pre-testing of survey

When testing whether the survey produced mostly the desired results, most survey items were easy to understand for the respondents, and produced results which could easily be used for analysis such as socio-demographics and questions which were answered on a Likert-scale. However, when it came to the question where first the respondent had to indicate with what strategy they would invest €10.000 if they stumbled across this amount of money, all of the test respondents filled in that they would invest at least a little bit of this amount into each of the four possible investment strategies, conventional, ethical, engagement and impact. And since this question had a filter applied to it, meaning that the actual respondents were not shown a follow up question asking them how much of their return they would be willing to sacrifice given that they would invest under one of three sustainable strategies, some of the actual respondents were not shown later questions, resulting in less data entries. This was only realized after the survey had been sent out. As a result, the question regarding how much of the financial return the respondent was willing to forego, was only asked to respondents who indicated that they would be willing to invest some of this hypothetical money that they stumbled across into this sustainable strategy. This means that the answers are potentially biased. How the missing data is handled is discussed later on in more detail.

Initially, in the question where the aim was to figure out how much of the financial return the respondent was willing to sacrifice under the assumption that they would be investing through a sustainable strategy was planned to be asked by giving the respondents a hypothetical situation, where they would put €200 monthly in an investment account, and present a table to them that shows how their investment would grow over a period of 5, 10, 15, and 20 years with a yearly return on their investment of between 2% and 10%. The respondents would be shown this table:

Expected return	Years invested			
	5	10	15	20
2%	€ 12.609,47	€ 26.543,93	€ 41.942,61	€ 58.959,37
3%	€ 12.929,34	€ 27.948,28	€ 45.394,54	€ 65.660,40
4%	€ 13.259,80	€ 29.449,96	€ 49.218,10	€ 73.354,93
5%	€ 13.601,22	€ 31.056,46	€ 53.457,79	€ 82.206,73
6%	€ 13.954,01	€ 32.775,87	€ 58.163,74	€ 92.408,18
7%	€ 14.318,58	€ 34.616,96	€ 63.392,46	€ 104.185,33
8%	€ 14.695,37	€ 36.589,21	€ 69.207,64	€ 117.804,08
9%	€ 15.084,83	€ 38.702,86	€ 75.681,15	€ 133.577,37
10%	€ 15.487,41	€ 40.969,00	€ 82.894,07	€ 151.873,77

Table 4: Growth of a monthly €200 investment over a period of 5, 10, 15 or 20 years with an expected yearly return of 2% to 10%

The thought process of showing the respondents this table was to give them an indication of the impact of sacrificing 1% of their returns over a long period of time such as 5, 10, 15, or 20 years. However, it turned out that this gave the average person some difficulties with grasping exactly what the table was trying to show them. Therefore, another approach was chosen which was based on research by AFM (Dutch Authority of Financial Market, 2022), who employed a method where they asked respondents of their survey what the least amount of return the respondent thought was acceptable for a portfolio of sustainable assets, if they expected to receive €1000 return on a portfolio of assets which followed a conventional investment strategy.

3.4 Data Collection

Survey sent out to a subset of mainly new customers of the company. The reason that this group was chosen was that the company only recently introduced sustainable investment options. Thus, if the chosen subset would contain more longer-term customers, there would likely be less customers who made use of the new sustainable options. The company is a Dutch fund manager offering savings, investing, and pension services. Before the research, the respondents of this survey are assumed to be representative of all customers of the company. The survey can be found in the appendix. The survey participants are posed questions which they can either answer by filling in a number or by filling in a multiple choice question. The multiple choice questions are later quantified, and statistically analyzed. Additionally, the participants were asked socio-demographic questions to be able to distinguish between different socio-demographic groups. During all the stages of the research the identity of the participants will remain anonymous.

3.5 Data cleaning

During the two-week data collection period, 486 individuals completed the survey. Out of these, three respondents disagreed with the use of their data for research purposes, leading to their exclusion, resulting in 483 usable submissions.

For variables such as respondent age, income, and investment time horizon, participants were asked to select in which range of answers they belonged. The midpoints of these ranges were taken as the

assigned values, except for cases where averages couldn't be determined. In such instances, assumptions were made. For example, an age of 70 for respondents aged 61 and older, €1500 for incomes of €2500 or less, €6500 for incomes of €5501 or more, and a 22,5-year horizon for those with horizons 20 years and over. In hindsight, a more refined approach, allowing respondents to provide precise values, would have eliminated the need for assumptions during data analysis.

3.6 Methodology for first hypotheses

In this part we will discuss how we will analyze which variables, if any, have an influence on whether an investor has a stated preference for sustainable investing or not. Before doing so, we will compare the group which prefers conventional investing to the group which prefers sustainable investing to see whether the groups are statistically different.

To predict whether an investor will have a preference for sustainable investment or whether they prefer conventional investment we can use a binary logistic regression model. The model consists of the dependent variable Y, which takes on the values of 1 if the investor prefers sustainable investing, and 0 if they do not prefer sustainable investing. The model additionally consists of 12 independent variables, X1, X2, ..., X12, an intercept α and a residual term, $\mathcal{E}$. This logistic regression model looks as follows:

$$Y = \alpha + \beta 1\, X1 + \beta 2\, X2 + \cdots + \beta 12\, X12 + \mathcal{E}$$

Or: $Y = \alpha + \sum \beta i\, Xj + \mathcal{E}$

In logistic regression models, the probability of having a preference for a sustainable investment strategy is estimated using a logistic cumulative distributive function of the standard normal distribution, P, given by: $P = \left(\gamma = \frac{1}{X} \right) = \frac{e^y}{1 + e^y}$

The predicted sustainable investment logit model is then specified as:

$$Y = Ln \left(\frac{P}{1-P} \right) = \alpha + \sum \beta i\, Xj + \mathcal{E}$$

The logistic regression model provides an exponent for all the independent variables the corresponding standard error, a Wald value, degrees of freedom, a p-value, and a log-odds ratio, Exp(B). The Wald value is used to test the null hypothesis, and corresponds to a p-value to determine whether the exponent of the independent variable can be considered significantly different from zero. The log-odds ratio, Exp(B) shows how a one-unit change in independent variable affects the odds of the binary outcome of the regression analysis. If the odds ratio is below 1, it suggests that as the independent variable's value increases, clients are less inclined to opt for sustainable investments. Conversely, if the odds ratio exceeds 1, it indicates that there is a higher likelihood of selecting sustainable investments as the predictor variable increases. In the model, the independent variables can take on the values given in the table below, based on the answers of the respondents in the survey.

Variable	Value 0	1	2	3	4	5
Constant	-	-	-	-	-	-
Preference for SI	No	Yes	-	-	-	-
Investment knowledge	-	Very bad	Bad	Average	Good	Very good
Risk tolerance	-	Very risk averse	Somewhat risk averse	Neutral	Somewhat risk tolerant	Very risk tolerant
Social signaling	-	Never	Almost never	Sometimes	Frequently	Often
Investment horizon	-	Less than 5 years (2,5)	5 to 10 years (7,5)	10 to 15 years (12,5)	15 to 20 years (17,5)	More than 20 years (22,5)
Expected return		Far less return	Less return	Similar return	More return	Far more return
Expected risk		Far less risk	Less risk	Similar risk	More risk	Far more risk
Age	-	18-30 (26)	31-45 (38)	46-60 (53)	61 and older (70)	
Gender	Not female	Female	-	-	-	-
Marital status	Not in a relationship	In a relationship	-	-	-	-
Education	-	Primary school	Highschool	Community college	Bachelor degree	Master's degree or higher
Income	-	Less than 2500 (1500)	2501 to 3800 (3150)	3801 to 5500 (4650)	More than 5501 (6500)	-
Political preference	-	Left	Middle-left	Middle	Middle-right	Right

Table 5: independent variables and their coded values

The logistic regression outcome produces a probabilistic score ranging from 0 to 1, which depends on the observed values of the dependent variable Y concerning the specified independent variables. This logistic regression model employs a decision threshold at 0.50. At this level, a transition occurs in the predictive outcome, shifting from a negative classification of non-sustainability to a positive classification indicating sustainability. In simpler terms, when the computed score is around 0.499, the model predicts a preference for non-sustainable investing, whereas a score near 0.500 suggests a preference for sustainable investing.

3.7 Methodology part two of hypotheses

For the second part of the research we will have a look at whether the willingness of the investor to sacrifice some of their returns has an influence on the specific (sustainable) investment strategy they choose. As with testing the previous hypothesis we will run a logistic regression. However, as the dependent variable can now take on more than two categories, namely conventional, ethical, engagement or impact investing, a multinomial logistic regression will be applied instead of a binary logistic regression. In the model, the independent variables are the amount of financial return the investor is willing to forego under sustainable strategies ethical, engagement and impact investment. The

dependent variable is the preference for the investment strategy. In addition, the independent variables from the first analysis that show significance, or close to significance will be added as well. Conventional investing has been set as the reference category.

Multinomial logistic regression is conducted in a similar way as binary logistic regression. The main difference is that the dependent variable can take on more than two categories, in this case four categories. The model predicts the probability, or odds, of different outcomes for the categorical dependent variable of occurring based on the values for the independent variables. The multinomial logistic regression model can be seen as multiple binary logistic regression models in which one category is chosen as the reference category, and the other categories are regressed against this reference category. Another difference between the multinomial and binary logistic models is that the multinomial model provides probabilities for each of the categories, rather than predicting membership of one category after a certain cutoff point such as the 0.50 in the previous regression. This probability is determined by the following formula:

$$P(Y = k) = \frac{e^{\beta 0k + \beta 1kX1,...,\beta 6jX6}}{\sum_{j=1}^{3} e^{\beta 0j + \beta 1jX1,...,\beta 6jX6}}$$

In this case the β0 is the intercept, and β1 through β6 and X1 through X6 are the independent variables and their coefficients respectively. The probability of each category is then defined as:

P (Y = 1): Probability of belonging to category 1.

P (Y = 2): Probability of belonging to category 2.

P (Y = 3): Probability of belonging to category 3.

P (Y = 4): Probability of belonging to category 4.

The category with the highest probability is selected as the predicted category.

3.7.1 Reason for missing data

As touched upon earlier, the question where the respondents filled in how much of their €1000 expected return they were willing to sacrifice under a certain investment strategy was asked after a filter question. The result of this is that there were a lot of missing cases. Only 155 out of the total 483 respondents filled in all three categories of financial sacrifice. In total, 277 filled in their sacrifice for the ethical strategy, 215 for engagement and 289 for impact. The filter question was centered around the amount of money respondents would be willing to invest in various strategies if they had €10.000 lying around. If a respondent expressed a willingness to allocate funds to a sustainable strategy, an additional question followed. This subsequent question sought to determine, for that specific sustainable strategy, the extent to which the respondent would be willing to sacrifice from a return of €1.000 in their investment. From the number of respondents that allocated money to the sustainable strategies, the least respondents did this for engagement. This indicates that people have a lesser preference for this strategy. The reason for

this is unclear to the author. The table which was provided to the respondents at every question related to this topic showed an indication of the investment strategies becoming gradually more sustainable, and thus the expectation was that the respondents would show an increase in interest at every progressive step. The same can be seen from the mean amount that the respondents were willing to sacrifice under the engagement strategy, this is lower than the other two sustainable strategies. More than half of the respondents indicated that they would not sacrifice any money under this strategy, shown by a median of 0. Additionally, the 90th percentile of the engagement group is only at €370 sacrificed, compared to 500 of both the ethical and impact groups. A possible reason that could explain this is that the engagement strategy can be viewed as requiring effort from the respondent in actively engaging with the companies of whom they hold shares, and thus requiring to be compensated for this extra effort.

3.7.2 Handling of missing data

As touched upon previously, the missing data occurred because the respondent would not be shown the question about the financial sacrifice because they indicated that they would not invest even a single eurocent in a specific sustainable strategy if they had €10.000,- to invest. For this reason, the choice has been made that the investor would also not be willing to sacrifice anything from their financial return if they would have been asked the question. Thus, the assumption has been made that the amount of money they are willing to sacrifice is equal to zero euros.

3.8 Sample Description

The survey consisted of a part socio-demographic questions, a part investment knowledge questions, a part about sustainable investment expectations, and some other questions related to investing and sustainable investing. Below the descriptive statistics of the socio-demographic, investment knowledge and sustainable investment expectations questions can be found.

Descriptive statistics:

Entire Sample		N	%
Variable		N	%
Age	18 to 30	53	10,97%
	31 to 45	177	36,65%
	46 to 60	170	35,20%
	61 or older	83	17,18%
Household income	Less than 2500	43	8,90%
	2501 to 3800	71	14,70%
	3801 to 5500	140	28,99%
	More than 5500	229	47,41%
Education	Primary school	2	0,41%
	High school	21	4,35%
	Community college	34	7,04%
	Bachelor degree	214	44,31%
	Master degree or higher	212	43,89%
Marital status	Single	65	13,46%
	Divorced	17	3,52%
	In a relationship	119	24,64%
	Registered partnership	54	11,18%
	Married	228	47,20%
Political orientation	Left	93	19,25%
	Middle-left	118	24,43%
	Middle	77	15,94%
	Middle-right	131	27,12%
	Right	64	13,25%
Gender	Male	371	76,81%
	Female	106	21,95%
	Other	6	1,24%

Table 6: descriptive statistics of socio-demographic variables of the entire sample

The sample consists of 483 respondents. The ages of the respondents are spread somewhat evenly across the age groups. The majority of respondents is highly educated, with almost 90% of the respondents having attained at least a bachelor degree. The majority of the sample is either in a relationship, or married. About 45% of the respondents is left leaning, politically speaking, about 40% of the respondents is right leaning, and about 15% is neither left nor right. About 22% of the respondents is female, 77% male, and a small remainder indicated that they do not consider themselves male or female.

Entire sample			
Variable		N	%
Investment knowledge	Very bad	7	1,45%
	Bad	56	11,59%
	Average	223	46,17%
	Good	150	31,06%
	Very good	47	9,73%
Risk tolerance	Very risk averse	3	0,62%
	Risk averse	45	9,32%
	Average	53	10,97%
	Somewhat risk tolerant	256	53,00%
	Very risk tolerant	126	26,09%
Social signaling	Never	38	7,87%
	Almost never	135	27,95%
	Sometimes	203	42,03%
	Frequently	85	17,60%
	Often	22	4,55%
Time horizon	Less than 5 years	40	8,28%
	5 to 10 years	76	15,73%
	10 to 15 years	90	18,63%
	15 to 20 years	128	26,50%
	More than 20 years	149	30,85%
Expected return	Far less return	36	7,45%
	Less return	202	41,82%
	Similar return	151	31,26%
	More return	91	18,84%
	Far more return	3	0,62%
Expected risk	Far more risk	16	3,31%
	More risk	147	30,43%
	Similar risk	223	46,17%
	Less risk	94	19,46%
	Far less risk	3	0,62%

Table 7: descriptive statistics of investment related variables of the entire sample

The majority of respondents indicate that they have at least average or good investment knowledge, and that they have an average or good tolerance for risk. A majority of respondents occasionally discusses their investments with their peers, but not a large proportion indicates that they do this often. For the variable time horizon, the responses are quite varied. The proportion of respondents that choose for a certain time horizon increases with the duration of the time horizon. When it comes to the risk and return expectations for sustainable investments, the respondents mostly indicate that they expect the same or less return (80%), and the same or more risk (also 80%).

Representativeness of sample

Variable	Mean	Mean alternative paper	Median	Median alternative paper
Investment knowledge	3,36	3,266	3	3
Risk tolerance	3,946	4,699*	4	5*
Social signaling	2,83	3,117*	3	3*
Investment horizon	15,295	32,132	17,5	-
Expected return	2,633	2,249	3	3
Expected risk	3,164	2,82	3	3
Age	47,242	56,606	53	56
Gender	0,219	0,177	0	0
Marital status	0,83	0,551	1	1
Education	4,369	4	4	4
Income	5026,2	-	4650	-
Political preference	2,906	0,49**	3	0
* In the compared paper, this item was measured on a 7-point Likert scale compared to our 5-point Likert scale ** In the compared paper, this item was measured as a binominal variable taking on the value of 1 if the respondent is left aligned and 0 if the respondent is not				

Table 8: comparison of mean and median to similar paper(s)

The main differences between the sample of this research and the samples of comparable research are the time-horizon of the investment and the relationship status of the respondent. The other variables appear to be relatively similar to the studies which were used in comparison. The studies which were used for comparison are Bauer & Smeets (2015), Riedl & Smeets (2017), Faradynawati & Söderberg (2022), Wins & Zwergel (2016) and Brunen & Laubach (2021). An explanation for the large difference between the mean investment horizon of this sample and the compared study could be that in this study the investment horizon was asked with the largest value being "more than 20 years" which was assumed to be on average 22,5 years which is already a lot shorter than the compared paper.

In another part of the survey, the respondents were asked to indicate their preference for a conventional or one of three sustainable investment strategies. Based on their response, the respondents were divided into two groups, one having a preference for sustainable investment, the SI-group, and one having preference for conventional investment, the non SI-group. The SI-group consists of 311 respondents while the non SI-group consists of 172 respondents. The descriptive statistics of these two groups are given below.

Sample divided into two groups		SI		Non SI	
Variable		N	%	N	%
Age	18 to 30	34	10,93%	19	11,05%
	31 to 45	119	38,26%	58	33,72%
	46 to 60	108	34,73%	62	36,05%
	61 or older	50	16,08%	33	19,19%
Income	Less than 2500	25	8,04%	18	10,47%
	2501 to 3800	20	6,43%	51	29,65%
	3801 to 5500	117	37,62%	23	13,37%
	More than 5500	149	47,91%	80	46,51%
Education	Primary school	2	0,64%	0	0,00%
	High school	13	4,18%	8	4,65%
	Community college	19	6,11%	15	8,72%
	Bachelor degree	128	41,16%	86	50,00%
	Master degree or higher	149	47,91%	63	36,63%
Marital status	Single	43	13,83%	22	12,79%
	Divorced	13	4,18%	4	2,33%
	In a relationship	73	23,47%	46	26,74%
	Registered partnership	37	11,90%	17	9,88%
	Married	145	46,62%	83	48,26%
Political orientation	Left	86	27,65%	7	4,07%
	Middle-left	109	35,05%	9	5,23%
	Middle	48	15,43%	29	16,86%
	Middle-right	59	18,97%	72	41,86%
	Right	9	2,89%	55	31,98%
Gender	Male	216	69,45%	155	90,12%
	Female	90	28,94%	16	9,30%
	Other	5	1,61%	1	0,58%

Table 9: descriptive statistics of socio-demographic variables of the sample divided in a sustainable investment preferring group and a not sustainable investment preferring group

Both groups have a somewhat similar age distribution as the entire sample. The largest difference appears to be that the non-SI-preferring group has a larger proportion of individuals that fall in the last age category, 61 or older. When it comes to income, both groups have the largest part of them consisting of the "more than 5500" monthly income, which is very similar to the entire sample population. Similarly, the part of the groups makes up the lowest income are also not far from each other and from the sample population. There is a notable difference between the groups when it comes to the amount of respondents that fall in the 2nd and 3rd category of income. The SI-preferring investors have proportionally far more people in the 3rd category and the non-SI-preferring investors have proportionally far more people in the 2nd category. When it comes to education, the spread of both

groups appears to be very similar, both groups have a large proportion that have at least a bachelor's degree, but that is no surprise as the entire population consists of almost 90% of bachelor degree owners. When it comes to the marital status of the groups, the spread of both groups appears to be very similar to one another. As for political orientation, both groups have around 15% of the group consisting of people who are in the middle. For the SI-preferring group, about 60% are left leaning, while for the other group about 70% are right leaning. This is a very clear difference between the groups. As for gender, quite a substantial difference between the groups is present.

Sample divided into two groups		SI; N = 311		Non SI; N = 172	
Variable		N	%	N	%
Investment knowledge	Very bad	6	1,93%	1	0,58%
	Bad	46	14,79%	10	5,81%
	Average	154	49,52%	69	40,12%
	Good	85	27,33%	65	37,79%
	Very good	20	6,43%	27	15,70%
Risk tolerance	Very risk averse	2	0,64%	1	0,58%
	Risk averse	32	10,29%	13	7,56%
	Average	40	12,86%	13	7,56%
	Somewhat risk tolerant	168	54,02%	88	51,16%
	Very risk tolerant	69	22,19%	57	33,14%
Social signaling	Never	27	8,68%	11	6,40%
	Almost never	96	30,87%	39	22,67%
	Sometimes	131	42,12%	72	41,86%
	Frequently	45	14,47%	40	23,26%
	Often	12	3,86%	10	5,81%
Time horizon	Less than 5 years	27	8,68%	13	7,56%
	5 to 10 years	55	17,68%	21	12,21%
	10 to 15 years	58	18,65%	32	18,60%
	15 to 20 years	78	25,08%	50	29,07%
	More than 20 years	93	29,90%	56	32,56%
Expected return	Far less return	5	1,61%	31	18,02%
	Less return	100	32,15%	102	59,30%
	Similar return	122	39,23%	29	16,86%
	More return	81	26,05%	10	5,81%
	Far more return	3	0,96%	0	0,00%
Expected risk	Far more risk	2	0,64%	14	8,14%
	More risk	75	24,12%	72	41,86%
	Similar risk	159	51,13%	64	37,21%
	Less risk	73	23,47%	21	12,21%
	Far less risk	2	0,64%	1	0,58%

Table 10: descriptive statistics of investment related variables of the sample divided in a sustainable investment preferring group and a not sustainable investment preferring group

When it comes to investment knowledge, the SI-preferring group has a majority (about 65%) consisting of either average or below average investment knowledge. As for the other group, a majority (about 55%) consists of respondents who rate their investment knowledge to be above average. When it comes to risk tolerance, the main difference between the groups is that the non-SI-preferring group has proportionally about 1,5 times the amount of very risk tolerant investors. As for social signaling, the non-

SI group is almost perfectly normal distributed, whereas the SI-group would be skewed towards talking less frequently about their investments. For the time horizon, both groups have the same pattern, as the time horizon increases, a larger proportion chooses for that category. The main difference appears to be that the non-SI-preferring group is more skewed towards longer investment periods when compared to the SI-group. When looking at the expected return, the SI-group is for the most part (over 95%) centered around the middle, they expect sustainable investments to not yield far less, but also not far more returns. For the other group, almost 80% expects that sustainable investments yield less returns than conventional investments. As for expected risk, the SI-group is almost perfectly normal distributed, while the non-SI-group is skewed towards expecting more risk from sustainable investments when compared to conventional investments.

3.9 Determining whether there are statistical differences between the groups and comparison to other papers.

To determine whether there are actual statistical differences between the means of the investors who prefer sustainable investments and investors who prefer conventional investments, we will perform an independent samples t-test, of which the results can be seen below.

Variable	t	df	p	Groups statistically different?
Investment knowledge	-5,083	481	0,000	Yes
Risk tolerance	-2,596	481	0,010	Yes
Social signaling	-2,805	481	0,005	Yes
Investment horizon	-1,384	481	0,167	No
Expected return	11,048	379,212	0,000	Yes
Expected risk	-5,829	314,870	0,000	Yes
Age	-0,894	481	0,372	No
Gender	5,774	470,639	0,000	Yes
Marital status	-0,809	481	0,419	No
Education	1,689	481	0,092	No
Income	0,457	481	0,648	No
Political preference	-14,938	387,749	0,000	Yes

Table 11: t-test for independence results for all independent variables

As can be seen, the groups are statistically different for the variables investment knowledge, risk tolerance, social signaling, expected return, expected risk, gender and political preference. The groups are not statistically different from each other for the variables investment horizon, age, marital status education and income. When looking at the descriptive statistics, the only unexpected result here is for the variable income, where the groups are quite different from each other, but when comparing the mean income of the groups this differences appear to cancel each other out.

3.9.2 Descriptives for second hypothesis

		Before filling in missing values				After filling in missing values		
		Ethical	Engagement	Impact		Ethical	Engagement	Impact
	N	277	215	289		483	483	483
	Missing	206	268	194		0	0	0
	Mean	151,48	119,63	186,4		86,87	53,25	111,53
	Median	50	0	100		0	0	0
	st. dev	203,593	183,471	222,675		171,345	135,967	194,922
	Minimum	0	0	0		0	0	0
	Maximum	1000	1000	1000		1000	1000	1000
Percentiles	10	0	0	0		0	0	0
	20	0	0	0		0	0	0
	30	0	0	0		0	0	0
	40	0	0	25		0	0	0
	50	50	0	100		0	0	0
	60	100	100	200		0	0	0
	70	200	200	250		50	0	100
	80	250	300	300		200	50	200
	90	500	370	500		300	200	460

Table 12: Descriptive statistics for the financial sacrifice investors are willing to make under the three sustainable investment strategies

Now, as can be seen from the descriptives, and as mentioned earlier in the methodology part, there are some missing values thanks to the filter question. Also mentioned in the methodology, we will replace the missing values with a 0 because we assume that the reason that the respondents were not asked the question was because they were not interested in that particular sustainable investment strategy and thus it is relatively safe to assume that they would not be willing to sacrifice financial return in order to invest with this sustainable strategy. The result of this is that 60% of the sample is not willing to sacrifice any of their financial returns.

4.1 Results

The binary logistic regression model produced the following result.

Variable	B	Wald	Exp(B)
Knowledge	-0,775***	15,859	0,461
	(0,195)		
Risk tolerance	-0,044	0,070	0,957
	(0,165)		
Social signaling	0,204	1,558	1,227
	(0,164)		
Investment horizon	-0,014	0,401	0,986
	(0,022)		
Expected return	1,081***	35,259	2,948
	(0,182)		
Expected risk	-0,264	2,104	0,768
	(0,182)		
Age	<0,001	<0,001	1,000
	(0,010)		
Gender	-0,012	0,001	0,988
	(0,383)		
Marital status	-0,583	2,236	0,558
	(0,390)		
Education	0,276	2,355	1,317
	(0,180)		
Income	<0,001	0,424	1,000
	(<0,001)		
Political preference	-1,000***	66,232	0,368
	(0,123)		
Constant	3,334**	5,195	28,056
	(1,463)		
The values in parentheses are the standard errors			
*** significance at the 0,01 level			
** significance at the 0,05 level			
* significance at the 0,1 level			

Table 13: binary logistic regression results

The logistic regression analysis results reveal several insights into the factors influencing preference for sustainable investing. Among the variables examined, three factors stand out as significant predictors. First, higher knowledge levels are associated with a lower preference for sustainable investing, as indicated by a negative coefficient of -0,775, with the odds decreasing by a factor of 0,461 for each unit increase in knowledge, meaning that each unit increase in the independent variable investment knowledge, it is expected that the preference of the investor decreases by 54%.

Secondly, higher return expectations for sustainable investments than for conventional investments is associated with a higher preference for sustainable investing. Indicated with a positive coefficient of 1,081 and a corresponding odds ratio of 2,948.

Finally, individuals with right political preferences are less likely to prefer sustainable investing, as indicated by a substantial negative coefficient of -1,000, leading to a substantial reduction in the odds (0.368).

In contrast, the other variables do not demonstrate a statistically significant impact on the preference for sustainable investing in this analysis. This means that we accept the hypotheses H1f, H1h and H1k. Conversely, based on this research, we do not have evidence to accept the other hypotheses.

		Predicted		
		0	1	Correct
Observed	0	125	47	72,70%
	1	36	275	88,40%
	Overall	161	322	82,80%

Table 14: model prediction table for binary logistic regression

Even though most of the variables in the model are not statistically significant, the model manages to correctly predict whether the investor has a preference for sustainable investing in 82,8% of the cases.

The multinomial logistic regression produced the following result (below).

Strategy	Variable	B	Wald	Exp(B)
Ethical	Intercept	1,181 (0,885)	1,781	-
	Sacrifice ethical	0,004* (0,002)	3,811	1,004
	Sacrifice engagement	-0,003 (0,002)	2,058	0,997
	Sacrifice impact	0,006*** (0,002)	8,523	1,006
	Knowledge	-0,727*** (0,18)	16,231	0,483
	Political preference	-0,706*** (0,134)	27,721	0,494
	Return expectations	1,176*** (0,195)	36,328	3,242
Engagement	Intercept	0,061 (-1,124)	0,003	-
	Sacrifice ethical	-0,005* (0,003)	3,112	0,995
	Sacrifice engagement	0,004 (0,003)	2,415	1,004
	Sacrifice impact	0,004 (0,003)	1,766	1,004
	Knowledge	-0,223 (0,225)	0,977	0,800
	Political preference	-0,692*** (0,165)	17,619	0,501
	Return expectations	0,666*** (0,239)	7,772	1,947
Impact	Intercept	1,189 (0,974)	1,491	-
	Sacrifice ethical	-0,002 (0,002)	0,610	0,998
	Sacrifice engagement	-0,002 (0,002)	0,419	0,998
	Sacrifice impact	0,010*** (0,002)	18,805	1,010
	Knowledge	-0,527*** (0,201)	6,919	0,590
	Political preference	-1,231*** (0,156)	62,148	0,292
	Return expectations	1,290*** (0,218)	35,151	3,632
The values in parentheses are the standard errors *** significance at the 0,01 level ** significance at the 0,05 level * significance at the 0,1 level				

Table 15: multinomial logistic regression results

In predicting the probability that an investor prefers the ethical strategy over the conventional strategy, what they are willing to sacrifice for the ethical strategy is slightly significant. A sacrifice of €1 in this strategy roughly translates to an increased probability of preferring this strategy of 0,4%. What they are willing to sacrifice in the impact strategy is significant as well. A sacrifice of €1 in the impact strategy increases the probability of preferring the ethical strategy by 0,6%. Additionally, investment knowledge, and political preference are negatively correlated in determining the probability of preferring this strategy. Respectively reducing the probability for the ethical strategy by 51,7% and 50,6% for a one-unit increase in this variable. Optimistic expectations for the return of sustainable investments in general has a positive influence on the probability of preferring ethical investments. A one-unit increase in this variable results in an increased probability of preferring this strategy of 224,2%.

In predicting the probability that an investor prefers the engagement strategy over the conventional strategy, a sacrifice of €1 in the ethical strategy causes the odds of preferring this strategy to decrease by 0,5%. A one-unit increase in the political preference variable causes a decrease in the odds of preferring this strategy of 49,9%, and a one-unit increase in return expectation causes an increase in the odds of preferring this strategy of 94,7%.

In predicting the probability that an invest prefers the impact strategy over the conventional strategy, a sacrifice of €1 in the impact strategy translates to an increase in likelihood of preferring this strategy of 1,0%. A negative effect is caused by investment knowledge and political preference. A one-unit increase in these variables respectively cause a decreased odds of 41% and 70,8%. Conversely, optimistic return expectations result in an increased odds of 263,2% for a one-unit increase.

In all cases except for the engagement strategy, the willingness to sacrifice financial return results in an increased odds of preferring the specific sustainable strategies, as can be seen from the positive exponents and the respective odds ratios which are larger than 1. Additionally, the variables which showed to be significant in predicting whether an investor prefers sustainable investments or not, show significance once more in determining whether an investor has a preference for a specific sustainable investment strategy.

6. Conclusion and discussion

In conclusion, the findings from the Binary Logistic regression shed light on the influential factors shaping the sustainable investment preferences among my company's clientele. Notably, return expectations, political preference, and investment knowledge emerged as significant contributors to an investor's interest in sustainable investments. Further analysis of the factors which influence investor's preference for specific sustainable investment strategies revealed that these same variables also influence whether an investor is interested in a specific sustainable investment strategy. Additionally, the amount of money that the investors are willing to sacrifice under the ethical and impact strategies is influential for determining which strategy the investor prefers. From these two, the money sacrificed under the impact strategy is a stronger determinant than the money sacrificed under the ethical strategy. The financial sacrifice that investors are willing to make while investing with an engagement strategy has no strong

influence on whether the investor is more interested in any of the specific strategies. This could suggest that investors perceive the additional effort required for engagement as a potential barrier or desire financial compensation for the extra involvement.

6.1 Theoretical Implications

This research contributes to the literature by further investigating determinants for investor's interest in sustainable investing. Additionally, it adds to the literature by diving into unexplored territory regarding the financial sacrifice that investors are willing to make under the premise that they invest with a specific sustainable strategy, adding insights to the existing body of knowledge in sustainable investing.

6.2 Practical Implications

The developed model provides the company with a predictive tool to gauge customer interest in sustainable investing, enabling the company to tailor targeted advertisements for prospective clients, and tailor their offering to their existing clientele. By considering factors such as investment knowledge, political orientation, and return expectations, the company can accurately predict an investor's inclination towards sustainable investments in approximately 83% of cases. This predictive capability can be leveraged to align investment strategies with customer preferences, fostering customer satisfaction and loyalty.

Challenges exist in obtaining information on customers' investment knowledge, political preferences and expected returns from sustainable investments. Despite these challenges, employing the model can enhance the company's ability to cater to customer needs and preferences while working on customer retention and accurately targeting new customers.

6.3 Limitations and Future Research

While this research focused on a single company, future studies could expand by incorporating a broader sample from multiple firms. Addressing variables presented as ranges, such as age and income, in a more precise manner would enhance data accuracy. Removing the filter question in future research would eliminate assumptions related to respondents, ensuring a more accurate portrayal of their willingness to make financial sacrifices.
The non-representative sample distribution, being predominantly male and well-educated, highlights a potential limitation. While the sample was not much different from other samples used in previous research, future research should aim for a more diverse sample to improve the generalizability of findings. Additionally, exploring the correlation between stated preferences for sustainable investing and actual ownership of sustainable investments could provide further insights into investor behavior.

References

Adam, A. A., & Shauki, E. R. (2014). Socially responsible investment in Malaysia: behavioral framework in evaluating investors' decision making process. *Journal of cleaner production*, *80*, 224-240.

Ariely, D., Bracha, A., & Meier, S. (2009). Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *American economic review*, *99*(1), 544-555.

Bassen, A., Meyer, K., & Schlange, J. (2006). The influence of corporate responsibility on the cost of capital. *Available at SSRN 984406*.

Bauer, R., & Smeets, P. (2015). Social identification and investment decisions. *Journal of Economic Behavior & Organization*, *117*, 121-134.

Belghitar, Y., Clark, E., & Deshmukh, N. (2014). Does it pay to be ethical? Evidence from the FTSE4Good. *Journal of Banking & Finance*, *47*, 54-62.

Berry, T. C., & Junkus, J. C. (2013). Socially responsible investing: An investor perspective. *Journal of business ethics*, *112*, 707-720.

Bollen, N. P. (2007). Mutual fund attributes and investor behavior. *Journal of financial and quantitative analysis*, *42*(3), 683-708.

Brunen, A. C., & Laubach, O. (2022). Do sustainable consumers prefer socially responsible investments? A study among the users of robo advisors. *Journal of Banking & Finance*, *136*, 106314.

Buerke, A., Straatmann, T., Lin-Hi, N., & Müller, K. (2017). Consumer awareness and sustainability-focused value orientation as motivating factors of responsible consumer behavior. *Review of Managerial Science*, *11*, 959-991.

Busch, T., Bauer, R., & Orlitzky, M. (2016). Sustainable development and financial markets: Old paths and new avenues. *Business & Society*, *55*(3), 303-329.

Chatzitheodorou, K., Skouloudis, A., Evangelinos, K., & Nikolaou, I. (2019). Exploring socially responsible investment perspectives: A literature mapping and an investor classification. *Sustainable production and consumption*, *19*, 117-129.

Dam, L., & Heijdra, B. J. (2011). The environmental and macroeconomic effects of socially responsible investment. *Journal of Economic Dynamics and Control*, *35*(9), 1424-1434.

van Dooren, B., & Galema, R. (2018). Socially responsible investors and the disposition effect. *Journal of Behavioral and Experimental Finance*, *17*, 42-52.

Dobler, M., Lajili, K., & Zéghal, D. (2014). Environmental performance, environmental risk and risk management. *Business Strategy and the Environment*, *23*(1), 1-17.

Dorfleitner, G., & Nguyen, M. (2016). Which proportion of SR investments is enough? A survey-based approach. *Business Research*, *9*, 1-25.

Du, H. S., Zhan, B., Xu, J., & Yang, X. (2019). The influencing mechanism of multi-factors on green investments: A hybrid analysis. *Journal of cleaner production*, *239*, 117977.

Faradynawati, I. A. A., & Söderberg, I. L. (2022). Sustainable Investment Preferences among Robo-Advisor Clients. *Sustainability*, *14*(19), 12636.

Fehr, E., & Schmidt, K. M. (2006). The economics of fairness, reciprocity and altruism–experimental evidence and new theories. *Handbook of the economics of giving, altruism and reciprocity*, *1*, 615-691.

Folqué, M., Escrig-Olmedo, E., & Corzo Santamaría, T. (2021). Sustainable development and financial system: Integrating ESG risks through sustainable investment strategies in a climate change context. *Sustainable Development*, *29*(5), 876-890.

Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., & De Colle, S. (2010). Stakeholder theory: The state of the art.

Fulton, M., Kahn, B., & Sharples, C. (2012). Sustainable investing: Establishing long-term value and performance. *Available at SSRN 2222740*.

Gangi, F., Varrone, N., Daniele, L. M., & Coscia, M. (2022). Mainstreaming socially responsible investment: Do environmental, social and governance ratings of investment funds converge?. *Journal of Cleaner Production*, *353*, 131684.

Ghoul, W., & Karam, P. (2007). MRI and SRI mutual funds: A comparison of Christian, Islamic (morally responsible investing), and socially responsible investing (SRI) mutual funds. *The Journal of Investing*, *16*(2), 96-102.

Ghoul, W., Azoury, N., & Karam, P. (2007, April). Islamic mutual funds: how do they compare with other religiously-based and ethically-based mutual funds?. In *IIUM International Conference on Islamic Banking and Finance (IICiBF), IIUM Institute of Islamic Banking & Finance (IIiBF), Kuala Lumpur* (pp. 23-25).

Girard, E. C., Rahman, H., & Stone, B. A. (2007). Socially responsible investments: Goody-two-shoes or bad to the bone?. *The Journal of Investing*, *16*(1), 96-110.

Godfrey, P. C., Merrill, C. B., & Hansen, J. M. (2009). The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis. *Strategic management journal*, *30*(4), 425-445.

Gutsche, G., & Ziegler, A. (2019). Which private investors are willing to pay for sustainable investments? Empirical evidence from stated choice experiments. *Journal of Banking & Finance*, *102*, 193-214.

Gutsche, G., & Zwergel, B. (2020). Investment barriers and labeling schemes for socially responsible investments. *Schmalenbach Business Review*, *72*, 111-157.

Gutsche, G., Köbrich León, A., & Ziegler, A. (2019). On the relevance of contextual factors for socially responsible investments: an econometric analysis. *Oxford Economic Papers*, *71*(3), 756-776.

Gutsche, G., Nakai, M., & Arimura, T. H. (2021). Revisiting the determinants of individual sustainable investment—The case of Japan. *Journal of Behavioral and Experimental Finance*, *30*, 100497.

Han, S. R., Li, P., Xiang, J. J., Luo, X. H., & Chen, C. Y. (2020). Does the institutional environment influence corporate social responsibility? Consideration of green investment of enterprises—evidence from China. *Environmental Science and Pollution Research*, 1-18.

Hong, H., & Kacperczyk, M. (2009). The price of sin: The effects of social norms on markets. *Journal of financial economics*, *93*(1), 15-36.

Hong, H., & Kostovetsky, L. (2012). Red and blue investing: Values and finance. *Journal of Financial Economics*, *103*(1), 1-19.

Junkus, J. C., & Berry, T. C. (2010). The demographic profile of socially responsible investors. *Managerial Finance*, *36*(6), 474-481.

Kramer, M. R., & Porter, M. (2011). *Creating shared value* (Vol. 17). Boston, MA, USA: FSG.

Landry, C. E., Lange, A., List, J. A., Price, M. K., & Rupp, N. G. (2006). Toward an understanding of the economics of charity: Evidence from a field experiment. *The Quarterly journal of economics*, *121*(2), 747-782.

Lingnau, V., Fuchs, F., & Beham, F. (2022). The link between corporate sustainability and willingness to invest: new evidence from the field of ethical investments. *Journal of Management Control*, *33*(3), 335-369.

Luo, X., & Bhattacharya, C. B. (2009). The debate over doing good: Corporate social performance, strategic marketing levers, and firm-idiosyncratic risk. *Journal of marketing*, *73*(6), 198-213.

Markowitz, H. (1952). Portfolio Selection. *The Journal of Finance, 7(1), 77–91*. https://doi.org/10.2307/2975974

Michelson, G., Wailes, N., Van Der Laan, S., & Frost, G. (2004). Ethical investment processes and outcomes. *Journal of Business Ethics*, *52*, 1-10.

Nilsson, J. (2008). 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*, 307-325.

Nofsinger, J., & Varma, A. (2014). Socially responsible funds and market crises. *Journal of banking & finance*, *48*, 180-193.

Oikonomou, I., Brooks, C., & Pavelin, S. (2012). The impact of corporate social performance on financial risk and utility: A longitudinal analysis. *Financial Management*, *41*(2), 483-515.

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.

Pasewark, W. R., & Riley, M. E. (2010). It'sa matter of principle: The role of personal values in investment decisions. *Journal of business ethics*, *93*, 237-253.

Patten, D. M., & Nance, J. R. (1998). Regulatory cost effects in a good news environment: The intra-industry reaction to the Alaskan oil spill. *Journal of accounting and public policy*, *17*(4-5), 409-429.

Pekovic, S., Grolleau, G., & Mzoughi, N. (2018). Environmental investments: too much of a good thing?. *International Journal of Production Economics*, *197*, 297-302.

Porter, M. E., & Kramer, M. R. (2006). The link between competitive advantage and corporate social responsibility. *Harvard business review*, *84*(12), 78-92.

Rauter, R., Globocnik, D., Perl-Vorbach, E., & Baumgartner, R. J. (2019). Open innovation and its effects on economic and sustainability innovation performance. *Journal of Innovation & Knowledge*, *4*(4), 226-233.

Renneboog, L., Ter Horst, J., & Zhang, C. (2008). Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of banking & finance*, *32*(9), 1723-1742.

Renneboog, L., Ter Horst, J., & Zhang, C. (2008). The price of ethics and stakeholder governance: The performance of socially responsible mutual funds. *Journal of corporate finance*, *14*(3), 302-322.

Revelli, C., & Viviani, J. L. (2015). Financial performance of socially responsible investing (SRI): what have we learned? A meta-analysis. *Business Ethics: A European Review*, *24*(2), 158-185.

Riedl, A., & Smeets, P. (2017). Social preferences and portfolio choice.

Riedl, A., & Smeets, P. (2017). Why do investors hold socially responsible mutual funds?. *The Journal of Finance*, *72*(6), 2505-2550.

Rossi, M., Sansone, D., Van Soest, A., & Torricelli, C. (2019). Household preferences for socially responsible investments. *Journal of Banking & Finance*, *105*, 107-120.

Rudd, A. (1981). Social responsibility and portfolio performance. *California Management Review*, *23*(4), 55-61.

Sandberg, J., Juravle, C., Hedesström, T. M., & Hamilton, I. (2009). The heterogeneity of socially responsible investment. *Journal of business ethics*, *87*, 519-533.

Schaefer, A., & Crane, A. (2005). Addressing sustainability and consumption. *Journal of macromarketing*, *25*(1), 76-92.

Sharpe, W. F. (1963). A simplified model for portfolio analysis. *Management science*, *9*(2), 277-293.

Shi, B., Yang, H., Wang, J., & Zhao, J. (2016). City green economy evaluation: Empirical evidence from 15 sub-provincial cities in China. *Sustainability*, *8*(6), 551.

Taghizadeh-Hesary, F., & Yoshino, N. (2020). Sustainable solutions for green financing and investment in renewable energy projects. *Energies*, *13*(4), 788.

Von Wallis, M., & Klein, C. (2015). Ethical requirement and financial interest: a literature review on socially responsible investing. *Business Research*, *8*, 61-98.

Waygood, S. (2011). How do the capital markets undermine sustainable development? What can be done to correct this?. *Journal of Sustainable Finance and Investment*, *1*(1), 81-87.

Webley, P., Lewis, A., & Mackenzie, C. (2001). Commitment among ethical investors: An experimental approach. *Journal of Economic Psychology*, *22*(1), 27-42.

Williams, G. (2007). Some determinants of the socially responsible investment decision: A cross-country study. *Journal of Behavioral Finance*, *8*(1), 43-57.

Xing, G., Xia, B., & Guo, J. (2019). Sustainable cooperation in the green supply chain under financial constraints. *Sustainability*, *11*(21), 5977.

Yen, Y. X. (2018). Buyer–supplier collaboration in green practices: The driving effects from stakeholders. *Business Strategy and the Environment*, *27*(8), 1666-1678.

Zhang, X., Wu, Z., Feng, Y., & Xu, P. (2015). "Turning green into gold": a framework for energy performance contracting (EPC) in China's real estate industry. *Journal of Cleaner Production*, *109*, 166-173.

US Sustainable Investment Forum (SIF), 2022. Infographic on sustainable investing https://www.ussif.org//Files/Trends/2022/Overview%20infographic.pdf, accessed on June 21, 2023.

Eurobarometer, 2020. Report on results of Eurobarometer survey,
https://ec.europa.eu/commission/presscorner/detail/en/ip_20_331, accessed on June 21, 2023.

United Nations Principles for Responsible Investment (UN PRI), 2011. Annual report of 2011.
https://www.unpri.org/download?ac=3953, accessed on June 21, 2023.

Dutch National Bank (DNB), 2016. Annual report of 2016.
https://www.dnb.nl/media/u4ifadw4/jaarverslag-16.pdf, accessed on June 21, 2023.

Authoriteit Financiële Markten (AFM), 2022. "Duurzame beleggers in kaart",
https://www.afm.nl/~/profmedia/files/afm/trendzicht/duurzame-beleggers.pdf, accessed on June 28,
2023.

Appendix

Appendix A: Survey (translated from Dutch)

Welcome to this survey on investing, sustainable investing, and your preferences in this area. We are delighted with your participation in this research, conducted on behalf of the University of Twente in collaboration with *Company name*.

Before you begin, we would like to inform you of some important matters:

- Your participation in this survey is entirely voluntary.
- As a participant, you will remain completely anonymous.
- The survey will take approximately 10 minutes of your time.
- You can stop filling out the survey at any time.
- The information you provide will be used solely for this research at the University of Twente.
- After the research is concluded, all data will be deleted.
- By checking "yes" below and proceeding to the next page, you indicate your consent to the use of your answers for this research.

We appreciate your participation and your contribution to expanding our knowledge

I understand that and wish to proceed.

Checkbox

Part one: investment related questions.

(1)How would you rate your investment knowledge?

- Very bad (1)
- Bad (2)
- Neutral (3)
- Good (4)
- Very good (5)

(2)How would you rate your risk level?

- Very risk averse (1)
- Somewhat averse (2)
- Neutral (3)
- Somewhat tolerant (4)
- Very risk tolerant (5)

(3)How often do you talk about investments to other people?

- Never (1)
- Almost never (2)
- Sometimes (3)

- Often (4)
- Very often (5)

(4)What is the time horizon for your investment?

- Less than 5 years (1)
- Between 5 and 10 years (2)
- Between 10 and 15 years (3)
- 15 years or more (4)

(5)When comparing socially responsible investments to conventional investments, what is your expectation about the level of return? I expect socially responsible investments to have:

- Far less return (1)
- Less return (2)
- The same return (3)
- More return (4)
- Far more return (5)

(6)When comparing socially responsible investment to conventional investments, what is your expectation about the level of risk? I expect socially responsible investments to have:

- Far more risk (1)
- More risk (2)
- The same risk (3)
- Less risk (4)
- Far less risk (5)

(7)Do you also have investments and or savings at other financial institutions? Please select all that apply.

- Yes, at another financial institution that offers sustainable options
- Yes, at another financial institution that offers conventional options
- Yes, at another financial institution that offers sustainable and conventional options
- I invest exclusively at *Company name*
- Prefer not to say

(8)Proportion of portfolio invested at *Company name*?

- Approximately…
- Prefer not to say

(9)Proportion of portfolio invested sustainably?

- Approximately….
- Prefer not to say

Part two of the survey:

The next part of the survey is about the various strategies within (sustainable) investing. Below, the strategies are summarized. For investors, participating in one strategy does not exclude participation in another strategy. There is some overlap within the strategies.

In summary, it looks as follows.

Definitions of the different strategies in investing:

Strategy	Goal	Type of asset which can be invested in
Conventional	• Financial returns	• All assets may be invested in
Ethical	• Investments should fit with personal norms and values • Financial returns	• Select "good" assets • Exclude "bad" assets
Engagement	• Positively influence companies • Financial returns	• All assets may be invested in
Impact	• Create positive societal or ecological impact • Financial returns	• Only investments which are aimed at creating positive change

The table above will be shown during the next part of the survey. Here is some additional information about what is mentioned in the table. If everything is clear you may proceed to the next part of the survey.

Below, the different (sustainable) investment strategies are explained, along with the role of fund managers.

Conventional Investing: This refers to the traditional approach to investing, primarily focused on achieving financial returns. The main objective of conventional investing is to maximize profits by investing in various "assets," such as stocks (funds), bonds (funds), investment (funds), and real estate (funds). Conventional investing primarily emphasizes the financial performance of the investment, with less specific attention to social or environmental factors.

Ethical Investing: Ethical investing is an approach that considers both financial returns and ethical factors in investment decisions. Ethical investors aim to align their investment choices with their personal values or specific ethical guidelines. This may mean choosing not to invest in companies involved in activities such as tobacco, gambling, or weapon production because they find these activities ethically problematic. Ethical investing can also include positive criteria, where investors choose to invest in companies engaged in activities like renewable energy or promoting fair labor practices.

Engagement Investing: Also known as active shareholder engagement, it involves investors actively participating in the management of companies in which they hold shares. The goal is to influence the behavior and practices of companies by participating in shareholder meetings, using voting rights, and promoting changes in line with the investor's values. This encourages companies to improve their

social and environmental performance. Unlike ethical investment strategies that exclude companies based on criteria, engagement investing aims to influence companies to act more ethically. This may involve investors engaging in discussions with companies about their sustainability policies, working conditions, human rights, or other social issues. Through their engagement, investors seek to steer companies in the desired direction and promote positive changes. Conventional investing also includes engagement, but its focus is on financial returns, while sustainable engagement investing aims to improve company practices.

Impact Investing: In impact investing, individuals invest in projects, companies, or funds specifically focused on addressing social or environmental challenges. These investments aim to achieve tangible results, such as poverty alleviation, promoting sustainable agriculture, advancing clean energy, or providing affordable housing. Investors seek not only financial returns but also actively contribute to creating positive changes in society. They deliberately select investment projects that demonstrably and measurably contribute to social or environmental goals. This means that, in addition to the financial performance of the investment, there is also an explicit focus on the actual impact generated.

The Role of Fund Managers:

If you have your money invested by, for example, a fund manager, the fund manager performs the tasks of the different strategies, such as excluding certain "bad" assets and selecting certain "good" assets. Fund managers also participate in shareholder meetings of companies with the aim of representing the interests of investors and positively influencing companies. Since fund managers represent the interests of multiple investors, they are relatively large shareholders. This theoretically allows them to exert significant pressure on companies to behave better.

Place the different investment strategies in order of your preference.

- Conventional
- Ethical
- Engagement
- Impact

Now imagine you have €10.000 to invest or save. How would you divide it into the 5 categories of: conventional, ethical, engagement and impact investing, or saving? Fill in percentage

- I will invest ... % in the conventional investment strategy
- I will invest ... % in the ethical investment strategy
- I will invest ... % in the engagement investment strategy
- I will invest ... % in the impact investment strategy

If the respondent indicated that they would put a certain percentage in the ethical strategy, they would be shown a follow up question which looked like this:

In the previous question, you mentioned that you would invest according to an ethical investment strategy.

If you were to achieve a return of €1000 with a portfolio of conventional, non-sustainable investments, what is the lowest amount of return you would also find acceptable with an ethical investment strategy? Assume a similar level of risk.

A similar question would be asked for engagement and impact if the respondent indicated that they would put a certain percentage to this strategy.

Part four: socio-demographic profile of the investor.

Age:

- 18 to 30
- 31 to 45
- 46 to 60
- 61 and older

Gender:

- Male
- Female
- Other

Highest education:

- Primary school
- Middle school
- MBO
- HBO
- University bachelor degree
- Master degree or higher

Approximate monthly household income in euros.

- 2500 or less
- 2501 to 3800
- 3801 to 5500
- 5501 or more
- Prefer not to say

Political alignment

- Left
- Middle-left
- Middle
- Middle-right
- Right

Marital status:

- Married

- Unmarried but living together
- In a relationship but not living together
- Single
- Other

A brief thank you for filling in the survey.