Sustainability Preferences: The Role of Beliefs^{*} Rob Bauer[†] Bin Dong[‡] Peiran Jiao[§]

Abstract

Trillions of dollars flow into socially responsible investments (SRIs), and yet how investors trade off financial performance for sustainability is unclear. To formally evaluate this trade-off, we need a reliable method to elicit investors' beliefs about the financial performance of SRI, which is still lacking in the literature. In this study, we formally investigate investors' expectations for funds' financial performances associated with environmental, social, and governance (ESG) labels through a field survey experiment in which we compare three different belief elicitation methods: two incentivized and one unincentivized. Our findings from both incentivized methods indicate that knowledge of a fund's high ESG rating on average positively influences return expectations. This is in contrast to the same participants' answers to the unincentivized Likert scale question. The difference is likely just driven by the incentive, but not the question format. Furthermore, return expectations for highly rated ESG funds obtained from the incentivized methods are positively correlated with allocations to such funds in an incentivized allocation task. Taken together, our results suggest that the incentivized methods elicited beliefs that were closer to participants true beliefs. Our research contributes to understanding investors' motive for engaging in SRI and to practically dissecting sustainability preferences. Keywords: Socially Responsible Investment, Expectations, ESG, Belief Elicitation, Survey Experiment.

JEL Codes: C90, G40, G50.

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1 Introduction

Socially responsible investments (SRIs) have gained prominence in the midst of ongoing discussions about sustainability issues such as climate change, stakeholder benefits, and corporate accountability. Notably, environmental, social, and governance (ESG) factors increasingly attract a tremendous amount of capital and investors' attention.¹ Despite this rise in attention, the literature to date still lacks a formal investigation of how ESG factors can shape investors' return expectations. Without such an understanding, one cannot confidently answer the more important question of whether investors are willing to trade off financial performance for sustainability. With this study, our aim is to bridge this gap by formally eliciting investors' expectations in the ESG landscape through an incentivized field survey experiment with actual investors.

The literature indicates that ESG investments are mainly attributable to investors' social preferences (e.g., Riedl and Smeets, 2017; Bauer et al., 2021; Humphrey et al., 2021; Pástor et al., 2021; Cornell, 2021). For instance, Riedl and Smeets (2017) find a positive correlation between retail investors' ESG investments and their social preference measured in a trust game. Regarding return expectations, they only elicit participants' beliefs regarding SRI funds' return and risk compared to conventional funds using unincentivized Likert scale questions. They find that most of their sampled investors expect lower returns from SRI funds compared with conventional funds and argue that such investors are prepared to sacrifice financial gains to pursue SRI. Similarly, a number of studies (e.g., Barreda-Tarrazona et al., 2011; Apostolakis et al., 2018; Gutsche and Ziegler, 2019; Rossi et al., 2019; Gutsche et al., 2023; Heeb et al., 2023) support different forms of social preference explanation for sustainable investment.

However, our main argument in this study is that we cannot confidently conclude whether investors are willing to sacrifice financial performance to pursue social and/or environmental goals in their investments unless we have a reliable measure of return expectations. The studies which find that investors invest in SRI and expect lower financial performance from it mostly do not measure expectations formally, for example, relying solely on unincentivized Likert scale questions. Moreover, there is evidence indicating that investors either expect higher returns and lower risks associated with higher ESG performance or they have no idea about the financial implication of ESG.

In fact, investors often balance ESG factors with financial performance (e.g., Edmans, 2023). Hartzmark and Sussman (2019) find higher ESG rating causally attracted fund flows, whereas Bauer et al. (2021) find their pension fund participants voted to add another sustainability development goal to their pension fund's strategy. However, these and other sustainable investment behavior can be driven by either preferences for impact

¹To put this into perspective, one-third of the 51.4 trillion dollars in total US assets under professional management were using sustainable investing strategies as of 2021 (EUROSIF, 2021). Furthermore, the EU taxonomy (European Commission, 2021) requires insurance and investment advisors to collect information on their clients' sustainability preferences, which is also recently the need from MiFID II and IDD.

or expectations about financial performance. Indeed, in a follow-up survey, Hartzmark and Sussman (2019) find a perception among investors that funds with high sustainability ratings are likely to outperform and carry less risks compared to conventional funds. Using fund flow data after the publication of the MorningStar ESG ratings, Gantchev et al. (2024) demonstrate empirical results consistent with investors having erroneous beliefs about the superior returns associated with higher ESG ratings. Furthermore, expectations for ESG funds' performance relative to conventional ones may vary among different investor groups with different information sets, which has been shown as a driver of financial expectation heterogeneity (e.g., Battalio and Mendenhall, 2005; Branch and Evans, 2010; Eusepi and Preston, 2011). On the other hand, Bauer et al. (2021) find that when asked what they expect in terms of financial performance from the new strategy, almost half of their respondents had no idea and more than 40% expected higher or equal performance compared to the less sustainable strategy. Therefore, the motivation behind sustainable investments might be much more complicated than social preferences. And without a good assessment of investors' expectations for SRI's financial performance, we cannot conclude whether investors are willing to trade off financial returns for sustainability. Additionally, some studies find field evidence that return considerations account for a significant part of sustainable investment decisions (e.g., Siemroth and Hornuf, 2023; Hornuf et al., 2024).

The interaction between investors' social preferences and their perceptions of ESG factors can influence their return expectations (e.g., Pástor et al., 2021; Goldstein et al., 2022). For instance, in an incentivized lab experiment, Humphrey et al. (2021) find that social preferences can influence how investors process information to update their beliefs, which subsequently leads to biased expectations. Specifically, subjects are significantly more pessimistic about investment outcomes when the investment is linked to negative social externalities despite the objective prospects of the investment. This complex interplay calls for a serious investigation of investors' expectations for SRIs' financial performance, which may drive investments in sustainable funds.

Investor expectations play a crucial role in financial decision making. Most studies have elicited expectations using survey methods (e.g., Giglio et al., 2021; Liu et al., 2022; Jiang et al., 2024). To date, a widely adopted method in the SRI literature to elicit return expectations is the unincentivized Likert scale (e.g., Riedl and Smeets, 2017; Baker et al., 2022; Heeb et al., 2023). The advantage of Likert scale questions lies in their efficiency as survey data can be relatively quickly collected from a large number of participants due to the simplicity of the questions. However, the method has also been questioned. For instance, Manski (2004) advocates for the use of subjective probabilities over Likert scales and other non-cardinal measures to assess expectations to better align with the principles of modern economic theory. However, there are at least two primary issues with Likert scales. The first is the answer options may not be comparable across or within individuals (e.g., Wallsten et al., 1986). For example, interpretations of terms like "performance" and "social impact" in the context of sustainable investment can vary widely among individuals. Likewise, answer options such as "much lower, a bit lower, the same, a bit higher, or much higher" may not be uniformly understood. Variation may arise among subjects due to factors like cultural differences, which could potentially lead to difficulty in aggregation of answers (e.g., Lee et al., 2002; Heine et al., 2002; Wu and Leung, 2017). Even within the same individual, interpretations can vary across different contexts. The second issue is the coarseness of the answer options which limits the information contained in the answers. Typically, Likert scale options fail to capture the nuances of the underlying perceptions or expectations and, being qualitative, do not accurately capture precise return expectations.

A further issue arises, particularly related to SRI, when beliefs could be distorted by the decision maker's preferences. In such situations, beliefs elicited from unincentivized measures might not accurately reflect true expectations (e.g., Tsakas, 2021). In the case of a belief about ESG funds' financial performance, investors can overstate their expected returns due to wishful thinking or a desirability bias (e.g., Kunda, 1990; Grimm, 2010; Mayraz, 2011), if they have already invested in ESG funds, because doing so confirms their correct investment decision. In contrast, image concerns (either through self-signaling or social signaling) could lead them to understate return expectations for ESG funds, because doing so suggests that they invest in ESG funds not just for the money (e.g., Bénabou and Tirole, 2006; Bauer and Smeets, 2015; Riedl and Smeets, 2017). These issues obscure the picture of whether investors are primarily motivated by financial considerations or a genuine concern about societal benefits, or whether they are willing to sacrifice financial performance for higher ESG standards. Thus, a more accurate method to gauge and understand investors' true return expectations for ESG investments becomes crucial.

In this study, we conduct a formal investigation of investors' return expectations for ESG funds and the effect of these expectations on their investment decisions. This is accomplished through a field survey experiment by integrating data on investors' beliefs and preferences with their allocations of investments between an ESG fund and a conventional fund in an incentivized allocation task. In particular, we partnered with a Dutch asset management firm that offers a range of index fund products, including some ESG products and conducted the experiment with their retail clients.

Together, we use three methods to elicit return expectations. To address the shortcomings of the unincentivized Likert scale, we first adopt the belief-theoretic choice-based approach of the exchangeability method (e.g., Baillon, 2008). When faced with an investment opportunity, investors have a subjective probabilistic distribution of their future returns. Our method aims to elicit the median of this subjective return belief distribution. This method is robust to variations in risk attitudes, nonlinear probability weighting, and source dependence, enabling a precise elicitation of median return expectations (e.g., Hossain and Okui, 2013; Baillon, 2008; Abdellaoui et al., 2011; Schlag et al., 2015; Jiao, 2020). It is incentivized, cardinal, and allows for an unambiguous interpretation of the belief data. This method has also been adopted to assess inflation expectations recently (Goldfayn-Frank et al., 2024).² To implement this method, we selected a fund with a high ESG rating and elicited beliefs under two conditions: under the first, we disclose its high ESG rating, while under the second, we conceal it. All other information (excluding the fund's identification information), such as the fund's historical returns, remains consistent across both conditions. This design can reveal whether investors associate the high ESG rating with financial performance. Second, for comparison, we also asked the widely adopted, unincentivized Likert scale question. This question asks participants to assess the expected returns of ESG funds in comparison to conventional funds. And third, we use the choice matching method (as in Cvitanić et al., 2019) to obtain another incentivized, but qualitative, measure of return expectations. The method relies on the same question as the unincentivized Likert scale but then adds incentives based on an additional prediction task and a matching protocol. Overall, we have two incentivized methods to cross-validate, and we have both unincentivized and incentivized questions in the Likert scale format to compare with each other. The research indicates that incentivized methods tend to produce more accurate results than their unincentivized counterparts (e.g., Gächter and Renner, 2010; Wang, 2011; Trautmann and van de Kuilen, 2015). By employing these three elicitation methods, we aim to address the challenges in eliciting investors' return expectations.

We find that on average investors tended to understate their return expectations for ESG funds compared to conventional funds when responding to the unincentivized question, while the same group of subjects reported higher return expectations associated with a high ESG rating in both incentivized methods. Specifically, in response to the unincentivized question, 51.2% of participants expected ESG funds to financially underperform conventional funds, while only 28.5% anticipated ESG funds to outperform. This is consistent with the core insights from some studies that use the unincentivized method (e.g., Riedl and Smeets, 2017; Sultana et al., 2018). Conversely, based on the exchangeability method, investors predict a fund with a high ESG rating would produce a 3.3% higher median return over a 1-year horizon than the same fund without that rating information. Remarkably, participants who indicated that ESG funds would underperform in the unincentivized question reported a 5.8% higher return expectation for the fund with a high ESG rating relative to one without known rating in the exchangeability method. Additionally, the choice matching method corroborates the findings from the exchangeability method. Without incentives, the minority of participants (32.4%) expected ESG funds to outperform non-ESG funds, while 40.2% anticipated the opposite. However, with complete incentives, expectations shifted, with 44.1% predicting ESG funds to outperform non-ESG funds and 36.5% expecting the reverse. This pattern means that investors are prone to understate their return expectations for ESG funds in comparison to conventional funds in response to the unincentivized question. And this is likely not driven by

 $^{^{2}}$ For a review of various formal belief elicitation methods, see e.g., Trautmann and van de Kuilen (2015), Charness et al. (2021).

the way in which the question was asked, as they changed their answers on the Likert scale question when incentives became known. This could indicate that when participants answer the unincentivized question about return expectations, concern about their images is a main driver of biases. Therefore, relying solely on unincentivized belief elicitation methods could systematically bias results about investors' expectations of the financial performance related to ESG. And this bias could be a general problem in belief elicitations when the decision-maker potentially has systematic motivational biases.

Even though we could not tell what represents investors' true beliefs, we do document additional evidence that gave us some confidence that at least beliefs based on the incentivized methods were closer to true beliefs. We show that the beliefs from the incentivized methods correlate significantly with ESG investment decisions. To do so, we introduced a lottery incentive at the end of the survey, with a reward of $\in 400$ investment credits for two randomly drawn participants who completed the survey. Assuming they would win the prize, participants had to allocate this amount between two products offered by our collaborating fund: one with a strong emphasis on sustainability, and the other an index fund tracking a weighted blend of three MSCI indexes. Both funds are categorized under the same risk level and have similar management fees (0.5% vs. 0.4%). The participants were told that this allocation would be implemented if they were to win the prize. Our findings indicate that beliefs about ESG fund performance elicited from both incentivized methods significantly and positively correlate with allocations to the ESG product. Nevertheless, we cannot identify a significant relationship between the allocations and return expectations of ESG funds obtained through the unincentivized question. These results give us additional confidence that the beliefs elicited using the incentivized methods are closer to investors' actual beliefs.

In our exploratory analyses, we observe that investors showed substantial heterogeneity across their expectations for ESG fund returns, with variations significantly correlated with demographics and financial statuses, consistent with extant findings in the literature (e.g., Sandberg et al., 2009; Giglio et al., 2021, 2023). Moreover, the investors who perceived a low ESG rating as indicative of higher risk reported a lower expected return for the fund with that rating compared to the one without it, according to the exchangeability method.

Our formal examination of investors' beliefs addresses the issue of biased results stemming from unincentivized elicitation methods such as Likert scale questions. As reviewed in Danz et al. (2022), in the literature on belief elicitation, incentive compatible methods are generally better than non-incentive compatible ones (e.g., Schotter and Trevino, 2014) and unincentivized ones (e.g., Trautmann and van de Kuilen, 2015). The exchangeability method should also satisfy the behavioral incentive compatible criteria in Danz et al. (2022), because each decision is simply a binary choice and the instructions are relatively easy to understand. However, we do not claim that under incentivized methods investors can reveal what they truly believe. We we simply provide evidence suggesting that the incentivized methods generate more consistent results and results meaningfully correlate with incentivized portfolio allocation, and therefore these beliefs might be closer to participants' true beliefs.

Taken together, our findings show the importance of the belief elicitation method in a financial context and that investors' beliefs about the financial performance of ESG investments are pivotal in forming their sustainability preferences which in turn influence their decisions to invest in ESG. By gaining insights into investors' genuine return expectations for SRI, we can better understand their motives for SRI-related investment choices, and funds can better tailor their ESG strategies to cater to their clients.

2 Study Design

In order to investigate investors' expectations for the financial performance associated with a high ESG rating, we conduct an online survey experiment among index fund investors who are clients of a Dutch asset management firm, Meesman Indexbeleggen. Meesman is an investment firm founded in 2005 that manages over one billion euros in assets and serves more than 30 thousand clients. Meesman specializes in passive investing and provides a variety of index funds, including a selection of ESG-index funds. Meesman has two types of investment funds: those without sustainability considerations (such as Equity Worldwide Total) and those with sustainability characteristics (such as Equity Responsible Future).

In this section, we first provide an overview of the survey structure. Subsequently, we explain the detailed methods used for belief elicitation. Finally, we elaborate on other key measurements, including participant demographics, investment experience, preferences, financial literacy, and other survey items.

2.1 Design Overview

The survey comprises four main modules. It starts with a consent form and a brief introduction to the survey's content as well as the associated incentives. We provide three types of rewards to encourage participation and careful decision-making. First, we randomly selected one participant from the first 100 who completed the survey to receive a cash reward of $\in 200$. Second, we randomly selected one participant from all who completed the survey to receive another cash reward of $\in 200$ plus any monetary incentives determined by their answers in the survey and luck. For this participant, we randomly selected a payoff-relevant module to determine payment.³ Third, we randomly selected one participant from all who completed the survey to receive $\notin 400$ Meesman investment credits that could only be allocated between two Meesman products.

³Out of the four modules, three are payoff-relevant.

The first module elicits participants' beliefs about financial performance. In this module, participants were randomly assigned under two conditions: whether they had information about the ESG rating (the ESG-Info condition) or did not (the No-ESG-Info condition). Participants under both conditions were presented with the same fund. The fund chosen for our study was a product offered by Meesman that had the highest ESG score among their investment offerings; they recommended rating it a "dark green" fund. Specifically, the fund tracked the MSCI World Custom ESG Index that encompassed around 1600 shares of large and medium-sized companies from 23 developed countries. This fund excluded companies that did not adequately take into account people, the environment, and good corporate governance. Participants were not told which fund was selected, but were given a description of the fund without any details that could identify it or its sustainability performance. Furthermore, participants under the ESG-Info condition received information indicating that the fund's ESG rating was dark green, representing the highest level of ESG and also simple explanations about the ESG concept. The No-ESG-Info condition was not exposed to any ESG-related information. Further, participants observed historical annual returns of the fund for six consecutive years, and we elicited their beliefs about the fund's future returns using the exchangeability method. One of the questions to identify beliefs was randomly selected to determine the participant's payment if this module was selected as payoff-relevant.

The second module mainly served as a distraction task between the first and third belief elicitation modules. Its main objective was to gauge participants' ambiguity attitudes, adapted from the method used in Dimmock et al. (2016). We provide a detailed explanation of this module in Section A.1 in the Appendix A.

In the third module, we examined the participants' expected returns from the ESG funds as opposed to conventional funds through an alternative incentivized approach known as the choice matching method (e.g., Cvitanić et al., 2019). Therefore, we could compare the results from two incentivized approaches with those acquired through the widely adopted unincentivized Likert scale approach. In this module, we randomly assigned participants to three distinct treatments, each featuring different incentive scenarios: No Incentive, Partial Incentive, and Full Incentive. If this module was selected to determine payment, participants would receive rewards in accordance with the incentive scenario they were assigned to.

The fourth module consisted of a set of survey questions. It included unincentivized Likert scale questions concerning the comparison of sustainable funds to conventional ones in terms of both return and risk. In addition, participants were asked to express their perspectives on the impact of ESG investments, along with their preference for passive versus active investment strategies. This module also included questions about participants' financial background, financial literacy, and current financial situation. Furthermore, participants were asked to provide demographic information, such as their gender, age, and educational background. At the end of the experiment, we added a lottery incentive. All participants were asked to make an investment allocation of $\in 400$ Meesman credits to one of the two Meesman products assuming that they would win the lottery. These two funds were: "Aandelen Wereldwijd Totaal" (Equity Worldwide Total), an index fund that tracks a market-weighted combination of three MSCI indexes, the MSCI World Custom ESG Index, the MSCI Emerging Markets Custom ESG Index, and the MSCI World Small Cap Custom ESG Low Carbon Index; "Aandelen Duurzame Toekomst" (Equity Sustainable Future), designed for investors seeking an index fund with a stronger focus on sustainability with global investments in stocks aligned with various sustainable themes. Both funds were categorized within the same risk-return spectrum. It was highlighted to participants that the management fee for Equity Worldwide Total was 0.4%, slightly lower than the 0.5% fee for Equity Sustainable Future. Participants received detailed information about these two funds, including links to further explanations of their compositions and country allocations. In addition, participants were also informed that their investment decisions would be implemented if they were selected to receive the credits.

2.2 Belief Elicitation

In this section, we provide a detailed and comprehensive explanation of the three different belief elicitation methods used in the modules of our study.

2.2.1 The Exchangeability Method

Investors form subjective probabilistic belief distributions regarding the financial returns of funds. We use the exchangeability method to elicit investors' median return expectations for the selected fund in the first module. The method is based on Braithwaite (1931), Fellner (1961) and Baillon (2008), and was later adopted by Abdellaoui et al. (2011), Jiao (2020) and Goldfayn-Frank et al. (2024).

The exchangeability method is based on the idea of splitting the state space into equally likely complementary events that are elicited through binary lottery choices (e.g., Baillon, 2008). Denote S_R as the state space that in our case represents the range of all possible returns of the fund. (E, x) is a binary prospect that yields payoff $\in x$ if the event E occurs, if $E \subset S_R$ occurs, and $\in 0$ otherwise. Suppose the probability of E equals P(E), the agent's utility function is u(x), and the agent has a probability weighting function w(P). As the exchangeability method requires the agent to compare only the uncertainties from the same source, one weighting function is sufficient. Therefore, the expected utility of prospect (E, x) is presented by w(P(E))u(x).

In order to elicit the median return belief, we need to find the point $r_{\frac{1}{2}}$ that divides the state space into two complementary events R_2^1 and R_2^2 , such that the agent is indifferent between two prospects (R_2^1, x) and (R_2^2) : $(R_2^1, x) \sim (R_2^2, x)$. Therefore, $r_{\frac{1}{2}}$ is the agent's median return belief, and we have $w(P(R_2^1))u(x) = w_A(P(R_2^2))u(x)$ which is equivalent

to $P(R_2^1) = P(R_2^2)$. Figure 1 illustrates how the model above uses the exchangeability method to obtain a participant's median belief.

	$S_R = R_1^1$		
R_2^1	r _{1/2}	R_{2}^{2}	

Figure 1: Decomposition of Return State Space

Note: This figure illustrates the procedure of eliciting a participant's median return belief.

To elicit each expectation of the median return, participants were asked to make five rounds of binary lottery choices to reach the desired precision level of 1.25%, which is the maximum possible distance between the elicited median and the actual one. In the task, we randomly selected six consecutive years from the fund's historical data and showed subjects annual returns over these six years. We then designed the lottery contingent on the seventh-year return. For instance, in the first round, participants chose between the following two lotteries:

- Lottery A: win € 50 if the fund's return in the seventh year is equal to or greater than 0%, and € 0 otherwise;
- Lottery B: win € 50 if the fund's return in the seventh year is less than 0%, and € 0 otherwise.

We calculated that the annual returns of the fund were bounded in [-40%, 40%], but this was not disclosed to the participants. We simply used this information to compose the following lotteries. Choosing Lottery A in Round 1 indicated that the participant's median return expectation fell within the range of [0%, 40%], and choosing Lottery B indicated the opposite. Suppose a participant chose Lottery A in Round 1. The next question then divided the range [0%, 40%] further at the mid-point 20%, and the participants were asked to choose between two lotteries that yielded a reward depending on whether the seventhyear return was in [0%, 20%] or $[20\%, \infty)$. We then repeated this process for a total of five rounds. The elicited median return expectation corresponded to the mid-point of the range selected for the lottery in the fifth round.

After these five rounds to elicit participants' median return expectations for the seventh year, we continued the process to investigate how they would update beliefs given either a positive or negative return information scenario. We showed participants a positive seventh-year return and a negative seventh-year return scenario in random order and elicited their median return expectations for the eighth year following the same procedure in the exchangeability method as explained above. Participants were informed that one of the two scenarios was real, and if this module was selected, only the real scenario would be selected to be payoff-relevant. The exchangeability method offers multiple advantages over alternative approaches, such as circumventing the complications of differential risk attitudes, non-linear probability weighting, complex mathematics, and source dependence (e.g., Baillon, 2008; Schlag et al., 2015; Jiao, 2020). It also avoids the problem of participants' lack of statistical sophistication or that their stated probabilities of complementary events do not sum up to unity. Another advantage is that this method explicitly gives us the median return expectation, while other methods are not clear whether the elicited return is the mean, mode, or another measure on the subjective belief distribution.

2.2.2 The Choice Matching Method

In our third module, we elicited participants' return expectations using the choice matching method. The literature relies mainly on questions from the unincentivized Likert scale to elicit investors' expectations for the financial performance (such as return and risk) of funds, stocks, or other assets, as well as ESG funds compared to conventional funds (e.g., Riedl and Smeets, 2017; Hartzmark and Sussman, 2019). When asking participants to assess the relative performance in general (not for a particular fund as in our exchangeability method), it is difficult to assess whether participants say what they truly believe. The true subjective belief is therefore an unverifiable truth, just like beliefs about the probability that god exists, life quality, or customer satisfaction. Regarding the actual ESG funds' financial performance relative to conventional funds, there is no consensus even among researchers (e.g., Peloza, 2009; Aguinis and Glavas, 2012; Eccles et al., 2014; Friede et al., 2015). Eliciting beliefs for an unverifiable truth in an incentive-compatible way has been a challenge. To achieve this and to increase the comparability between incentivized and unincentivized beliefs about ESG performance, we adopt the choice matching method (e.g., Cvitanić et al., 2019). Importantly, this method adds incentives to the Likert scale question, allowing for a direct comparison of our results with the results in the literature from the unincentivized Likert scale, and it serves as an additional validation of our results from using the exchangeability method.

In the choice matching method, participants first answered a multiple-choice question (MCQ) that took the form of a Likert scale question. Subsequently, they engaged in an auxiliary task that asked them to predict the frequency of each answer being selected by all other participants. The incentives were contingent on two factors: their accuracy in the auxiliary prediction task (the prediction reward) and the performance of other participants whose MCQ answers were the same as their own (the matching reward) (e.g., Savage, 1971; Gneiting and Raftery, 2007; Cvitanić et al., 2019). Let us denote S_r the prediction reward calculated with a proper scoring rule for one participant r. \overline{S}^{-r} represents the mean prediction task. A participant r was assigned a score of zero if there was any unselected option in the MCQ, that is, an option not chosen by at least one other participant besides r. Otherwise, participant r received a score $\lambda S_r + (1-\lambda)\overline{S}^{-r}$.

where $\lambda \in (0, 1)$ denoted a predetermined weight factor. That is, the incentive received by participant r was a weighted average of their own prediction reward S_r and the average prediction reward of their matched participants \overline{S}^{-r} .

To implement this method and to compare the effect of different incentive schemes, in Module 3 we randomly assigned participants to three different treatments: the No Incentive, Partial Incentive, Full Incentive conditions. For all participants in these three conditions, the Likert scale question was to evaluate the financial performance of ESG funds relative to conventional funds. In particular, they had to choose an option that best reflected their opinion on the following statement: I expect that the returns of index mutual funds that exclude companies with a low ESG score compared to those that do not exclude companies with a low ESG score to be "Much lower," "A bit lower," "The same," "A bit higher," "Much higher," or "I don't know."

In the No Incentive condition, participants were solely required to respond to the Likert scale question without any additional incentives. Once they provided their answers, they were asked to confirm their choices. If they were unsatisfied with their responses, they could modify them and provide their answers again. And these steps were consistent across all three treatments.

In the Partial Incentive condition, participants had to answer the same Likert scale question and make a prediction in the auxiliary prediction task. Specifically, they were asked to predict the percentage of other participants (excluding themselves) who selected options "The same," "A bit higher," or "Much higher" in the Likert scale question. Participants were compensated based on their accuracy in answering the prediction question. The maximum reward was set at $\in 50$. Then for every 1% deviation from the true percentage, there was a deduction of $\in 5$ from the maximum reward. Consequently, the possible payoff varied from $\in 0$ to $\in 50$. If the participant's prediction deviated by 10% or more, they received no prediction reward. In essence, the more accurate the prediction, the greater the reward. The participants initially answered the Likert scale question. Following this, they were presented with the prediction question and informed about the reward. Subsequently, they were allowed to modify their answer to the Likert scale question once before confirming.

In the Full Incentive condition, similar to the Partial Incentive treatment, participants began by answering both the Likert scale and the prediction question. Just like in the Partial Incentive treatment, they were informed about the prediction reward and additionally the matching reward. We match participants who made the same selection on the Likert scale question. The matching reward was the average prediction reward of all other participants in one's matched group. After learning about both rewards, participants were allowed to modify their answer to the Likert scale question once before confirming.

2.2.3 The Unincentivized Likert Scale Question

In Module 4 of our experiment, we incorporate the commonly adopted unincentivized Likert scale question from the literature (e.g., Riedl and Smeets, 2017; Hartzmark and Sussman, 2019; Humphrey et al., 2021; Baker et al., 2022; Heeb et al., 2023). All participants were asked to express their opinions on the statement: I expect that the returns of sustainable investment funds compared to less sustainable investment funds to be: 0 = I don't know, 1 = much lower, 2 = a bit lower, 3 = the same, 4 = a bit higher, 5 = much higher.⁴

2.3 Other Measures

Apart from the unincentivized Likert scale question above, Module 4 also contains measures of participants' demographic information such as gender, age, origin, educational background, occupation, and income. These questions came from the Netherlands Census and Statistics Netherlands. We also asked questions about their investment experience, such as years of investment experience, portfolio size, and monthly investments. Meanwhile, we elicited their social preferences, which included trust, positive and negative reciprocity, and altruism as in the Global Preference Survey (e.g., Falk et al., 2018). Another set of questions asked about their opinions, such as preferences between index and active ESG funds, sustainability risk, impact of ESG, preference in energy transition, and commitment to energy efficiency. Additionally, we assessed participants' financial literacy through an incentivized question (received \in 50 from a lottery for correctly answering the question) focusing on the calculation of expected returns based on Kuhnen (2015). Table B.1 in the Appendix B provides details of the questions used in Module 4.

2.4 Procedure

Survey invitations were distributed to Meesman's clients along with the Meesman monthly newsletters. Almost all Meesman clients were subscribed to the newsletter and thus received the invitation. These invitations included a link to the survey, allowing clients to easily access and begin the survey with a simple click. The online survey was started on June 9, 2023, and it remained open to participants until August 31, 2023. Figure A.2 in the Appendix A graphically represents the number of participants in the survey, as well as those who took it following our subsequent reminders. In particular, at the initial launch, 408 participants started the survey, 134 of whom completed it. Following our two reminders, the total number of participants who started the survey rose to 901, with a total of 287 completing it. The average time to complete the survey was made on October 30, 2023.

⁴Note that this is a slightly different framing of the question than in the choice matching module.

2.5 Sample Characteristics

Table 1 provides a comprehensive overview of the demographic information, preferences, and beliefs of our survey participants. Table B.1 in Appendix B has the definitions of the specific items outlined in Table 1. The demographic breakdown of the sample shows that 65.85% were male, with an average age of 44.26 years. Educational attainment was relatively high, with 37.98% holding a university degree and a further 29.97% possessing a college degree (HBO, Higher Vocational Education in the Netherlands). The majority, slightly over two-thirds, were employed in paid positions. The average monthly income among participants was \in 3853. Regarding portfolio size, slightly over 60% had portfolios under \in 50000. In terms of financial literacy, just over one-third of the participants correctly answered the question about calculating the expected returns.

When it comes to investment preferences, participants showed a higher inclination for ESG index funds as compared to active ESG funds. On sustainability, there was a general skepticism for the idea that less sustainable funds were riskier than sustainable ones. Participants generally believed that ESG funds positively affected society. Concerning fund performance, there was a tendency to believe that index funds outperformed active funds financially, while ESG funds underperformed compared to conventional funds.

The participants displayed altruistic tendencies, moderate levels of trust, and a strong inclination for positive reciprocity. In contrast, their propensity for negative reciprocity was weaker for themselves than for others. On average, they were willing to donate 14.65% (≤ 146.54) of a ≤ 1000 windfall. Additionally, their interest in investing in energy transition was moderate, and they strongly agreed that asset managers should actively engage in improving companies' energy efficiency.

3 Results

This section presents our main findings in the following order: In Section 3.1, we first present the median return expectations obtained using the exchangeability method. This is followed by a comparison with their return expectations measured by the unincentivized Likert scale method, detailed in Section 3.2. Subsequently, in Section 3.3, we present the findings of the choice matching method to show that they are consistent with those of the exchangeability method. In Section 3.4, we further show that the return expectations obtained using both incentivized methods correlate significantly with the investment allocations. Section 3.5 shows additional results regarding the heterogeneity of return expectations and the perception of the risk-return trade-off for ESG funds.

Table 1: Summary Statistics

This table presents the summary statistics of participants in the survey. Table B.1 has the definitions of the variables. The lower number of observations in the ESG Return by the Likert scale and index Fund return questions is due to the exclusion of participants who responded with "I don't know."

	Mean	Median	SD	Obs.
Demographics				
Gender				287
Male	65.85%			
Female	34.15%			
Age	44.26	39	14.64	287
Origin				287
Dutch	91.99%			
Others	8.01%			
Investing Experience (year)				287
1-3	41.81%			
4-10	32.06%			
Above 10	26.13%			
Education				287
University	37.98%			
College	29.97%			
Lower than College	3.83%			
Other	28.22%			
Occupation				287
Paid Work	67.60%			
Other	32.40%			
Monthly Income	€3852.92	€4750	€1732.51	287
€0 to €3000	19.51%			
€3000 to €5000	40.42%			
Above $\in 5000$	38.33%			
Total Investment				287
$\in 0$ to $\in 10$ K	29.27%			
$\in 10$ K to $\in 50$ K	31.01%			
Above €50K	39.72%			
Correct Expected Return Calculation	34.84%			287
Social Preferences				287
Altruism $(1-7)$	5.02	5	1.72	
Trust $(1-7)$	3.56	3	1.45	
Positive Reciprocity $(1-7)$	5.62	6	1.04	
Negative Reciprocity (Self) $(1-7)$	2.68	3	1.30	
Negative Reciprocity (Others) (1–7)	3.69	4	1.39	
Donation $(1-1000)$	146.54	100	190.80	
Energy Transition Preference $(0-100)$	49.66	50	30.40	
Energy Efficiency Engagement (1-7)	5.54	6	1.47	
Beliefs by Likert Scale				
ESG Return by Likert Scale $(1-5)$	2.74	2	0.97	282
Index Fund Return $(1-5)$	3.78	4	0.98	286
ESG Index Fund Preference $(1-7)$	4.75	5	1.47	287
Active ESG Fund Preference $(1-7)$	3.39	3	1.74	287
Sustainability Risk $(1-7)$	3.52	3	1.43	287
ESG Impact $(1-7)$	5.24	5	1.28	287

3.1 Return Expectations from the Exchangeability Method

In this subsection, we analyze participants' median return expectations for the same fund based on the exchangeability method by comparing the ESG-Info condition and the No-ESG-Info condition. We had elicited three expectations: we presented participants with six years of annual returns and elicited the seventh-year return expectation, and then we presented a positive and a negative scenario and elicited the eighth-year return expectation.

Result 1: According to the exchangeability method, a high ESG rating leads to higher return expectations over a 1-year horizon under the ESG-Info condition compared to the No-ESG-Info condition, but not in subsequent belief updates.

Figure 2 presents the comparison of participants' median return expectations under both the ESG-Info and No-ESG-Info conditions, based on the three elicited median beliefs: the seventh-year return and the eighth-year return in a positive and a negative scenario. On average, participants who saw a high ESG rating under the ESG-Info condition expected higher financial returns relative to those under the No-ESG-Info for the same fund in the 1-year forecast horizon (p = 0.05). However, when either positive or negative return information was disclosed for the seventh year and participants were asked to forecast the eighth year, no statistically significant difference was observed between the two conditions.

In Table 2, we use regressions to investigate the determinants of median return expectations. We conduct Ordinary Least Squares (OLS) regressions, with participants' median return expectations obtained using the exchangeability method as the dependent variable. Our main independent variable is the binary treatment variable *High ESG Info*, which is equal to one for participants under the ESG-Info condition, and zero otherwise (the No-ESG-Info condition). We control for the measures of preferences and individual characteristics obtained from the end-of-experiment questionnaire.

Column (1) in Table 2 clearly shows that the high ESG rating label has a significantly positive effect on the median return expectations compared to no ESG information (p = 0.05). On average, participants' median annual return expectation is 3.32% higher when they know the fund has a high ESG rating compared to an unknown ESG rating. Columns (2) and (3) are the results from investigating the influence of a high ESG rating on participants' belief updating following the disclosure of negative or positive return scenarios. The high ESG rating does not yield a significant effect on participants' belief updating. We also test for the influence of their prior beliefs (specifically, their expectations for returns in the seventh year) on their belief updating in Table A.1 in the Appendix A. The results show that beliefs are sticky (a positive correlation between prior and posterior) in both positive and negative scenarios, but more so in the positive scenario.

Further, participants' investment experience and their perceptions of sustainability risk and the social impact of ESG have a significant negative correlation with their return expectations. Specifically, every three more years of investment experience corresponds to a 2.79% reduction in the median annual return expectation. A one unit increase on



Figure 2: Median Return Expectation Comparison

Note: This figure illustrates the participants' return expectations for the fund with a known high ESG rating under the ESG-Info condition, contrasted with the same fund with an unknown ESG rating under the No-ESG-Info condition. The comparisons are presented separately for the 1-year ahead forecast of the seventh year and the negative and positive return scenarios to forecast the eighth year. The green bars depict answers under the ESG-Info condition, while the grey bars represent answers under the No-ESG-Info condition. The difference between the treatment groups in the 1-year horizon forecast is indicated by p = 0.05 in a two-sided t-test.

the Likert scale in perceived sustainability risk and ESG impact results in an increase of 0.97% and a decrease of 1.88%, respectively, in the median annual return expectations.

Before launching our field survey, we conducted an online experiment using student subjects to validate our survey instruments. There, we find a similar positive effect of a high ESG rating on median return expectations in the 1-year horizon (10.8% under the ESG-Info condition vs. 8.0% under the No-ESG-Info condition, p = 0.02). Interestingly, we also find a significant effect in the negative return scenario. Specifically, beliefs are more resistant to (or respond less to) the negative signal when there is a high ESG rating versus no rating (7.0% under the ESG-Info condition vs. 4.8% under the No-ESG-Info condition, p = 0.07). See Figure A.3 in the Appendix A for details. Different samples also generate consistent results in their 1-year horizon expectations. The difference in belief updating, which might be due to sample characteristics such as investment experience and ESG knowledge, calls for future research.

Table 2: Expected Fund Return by Exchangeability Method

This table presents the the regression results of participants' return expectations for the fund in the survey. Columns (1), (2), and (3) correspondingly show the fund's one-year return expectation, negative scenario return expectation. The dependent variable is the median return expectation. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1 has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation					
	1-Y	Negative	Positive			
	(1)	(2)	(3)			
High ESG Info	3.321^{**}	-0.668	-0.448			
	(1.690)	(1.407)	(1.529)			
Investing Experience	-2.792^{***}	-0.250	-0.673			
	(0.791)	(0.658)	(0.715)			
Portfolio Size	0.001^{**}	0.000	0.000			
	(0.000)	(0.000)	(0.000)			
Correct Return Calculation	0.691	-0.227	-0.366			
	(1.841)	(1.533)	(1.666)			
Sustainability Risk	0.966^{*}	0.696	0.886^{*}			
	(0.586)	(0.487)	(0.530)			
ESG Impact	-1.884^{**}	-1.651^{**}	-1.345^{*}			
	(0.793)	(0.660)	(0.717)			
Negative Reciprocity (Others)	1.243^{*}	0.926^{*}	0.970			
	(0.657)	(0.547)	(0.594)			
Observations	287	287	287			
R^2	0.175	0.090	0.116			
Demographics control	YES	YES	YES			
Preferences control	YES	YES	YES			

3.2 Return Expectations from the Unincentivized Likert Scale

To compare with the literature and with the results obtained from the exchangeability method, we use the unincentivized Likert scale method. This method qualitatively elicits participants' beliefs on the return of ESG funds relative to conventional funds.

Result 2: According to the unincentivized Likert scale method, the majority of participants expect sustainable funds to financially underperform conventional funds. This contradicts the beliefs based on the exchangeability method from the same group of participants.

Based on the Likert scale, the majority of participants (51.2%) expected that ESG funds financially underperform conventional funds (4.9% expecting much lower returns and 46.3% expecting a bit lower returns from ESG funds); 18.5% believed the returns would not differ between the two types of funds; 28.5% expected ESG funds to outper-

form conventional funds (26.8% expecting a bit higher returns and 1.7% expecting much higher returns); 1.7% expressed that they did not know the answer. Therefore, the participants expected ESG funds to financially underperform conventional funds based on the unincentivized Likert scale. This is consistent with other studies using the same method (e.g., Renneboog et al., 2008; Riedl and Smeets, 2017). Figure 3 illustrates the distribution of return expectations based on the unincentivized Likert scale for the ESG-Info condition and the No-ESG-Info condition separately. Their patterns are similar.



Figure 3: Return Belief by Likert Scale

Note: This figure displays the distribution of return expectations obtained by asking participants the following question: "I expect that the returns of sustainable investment funds compared to less sustainable investment funds to be: a. Much lower, b. A bit lower, c. The same, d. A bit higher, e. Much higher, f. I don't know." The green bars depict answers under the ESG-Info condition, while the grey bars represent answers under the No-ESG-Info condition.

However, participants' return expectations for ESG funds as elicited through the unincentivized Likert scale method are not completely compatible with those obtained from the same group of participants through the incentivized exchangeability method. To show this difference, we conduct a subsample analysis. This analysis splits participants according to whether they said ESG funds would underperform or outperform conventional funds, and then compare their respective median beliefs on the fund's return elicited through the exchangeability method.

In Figure 4, Panel (a) reflects the participants who said ESG funds would financially underperform conventional funds in the Likert scale question, while Panel (b) reflects the participants who reported the opposite. Each panel displays plots of their median



Panel (a): Median Belief of Investors Expressing Lower ESG Returns by Likert Scale



Panel (b): Median Belief of Investors Expressing Higher ESG Returns by Likert Scale

Figure 4: Median Belief by Subgroup

Note: This figure illustrates the comparisons of participants' median return expectations for the fund that come from the exchangeability method under the ESG-Info and No-ESG-Info conditions. Participants are categorized by their answers to the unincentivized Likert scale question regarding ESG funds' performance relative to conventional funds. The green bars depict the answers under the ESG-Info condition, while the grey bars represent the answers under the No-ESG-Info condition. Panel (a) displays the return expectations of participants who indicated that ESG funds financially underperform conventional funds in the unincentivized Likert scale question. Panel (b) displays the return expectations of participants who indicated that ESG funds financially outperform conventional funds in the unincentivized Likert scale question.

return expectations, based on the exchangeability method, separately for the ESG-Info condition and the No-ESG-Info condition. Interestingly, participants who thought ESG funds would underperform have 5.8% higher median return expectations when there is a high ESG rating compared to none in the 1-year horizon (p = 0.03). Panel (b) shows a similar pattern: participants who thought ESG funds would outperform also have higher median return expectations of 2.9% (p = 0.40) when there is a high ESG rating compared no rating information. Table A.2 in the Appendix A presents the regression results for the subsample analysis, which supports this observation. Table A.3 in the Appendix A shows the discrepancy between exchangeability method and unincentivized Likert scale through regressions. Return expectations for ESG funds measured by the unincentivized Likert scale method have a statistically insignificant correlation with the median return expectations obtained from the exchangeability method.

3.3 Return Expectations from the Choice Matching Method

Our findings so far show inconsistencies between the results of the two methods, exchnageability and unincentivized Likert scale. But the difference could be driven by incentive or the question format. In order to ascertain which results are more reliable and whether there is an incentive effect even on the same question format, we also obtained beliefs using the choice matching method. This method also uses the Likert scale question, although rephrased and presented with incentives.

Result 3: Based on the choice matching method, the majority of participants expected ESG funds to financially outperform conventional funds. The incentives led them to adjust their return expectations for ESG funds upwards.

As indicated earlier, thi method has three distinct conditions: No Incentive, Partial Incentive, and Full Incentive. Figure 5 illustrates the return expectations under these different incentive conditions: In the No Incentive condition, 32.4% of participants expected ESG funds to financially outperform conventional funds, while 40.2% believed the opposite. In the Partial Incentive condition (with only prediction incentive), 32.6% predicted outperformance of ESG funds; while 46.7% expected underperformance. Conversely, in the Full Incentive condition (with both prediction and matching incentives), 44.1% anticipated ESG funds to outperform conventional funds; while 36.5% expected ESG underperformance. These results indicate that adding the matching incentive shifted expectations to better ESG performance, which is consistent with the results from the exchangeability method.

Furthermore, the experimental module that implemented the choice matching method first posed the questions and then disclosed incentives while allowing subjects to modify their answers after seeing those incentives. Doing so allowed us to investigate participants' reactions to incentives. Figure 6 illustrates the distribution of participants' modifications



Figure 5: Return Expectation Distribution by Choice Matching Method

Note: This figure illustrates the distribution of return expectations for ESG funds among participants under the three incentive conditions. The bars represent participants' answers to the statement, "I expect that the returns of index mutual funds that exclude companies with a low ESG score, compared to index mutual funds that do not exclude companies with a low ESG score are: a. Much lower, b. A bit lower, c. The same, d. A bit higher, e. Much higher, f. I don't know." The grey bars represent answers under the No Incentive condition, the yellow bars illustrate answers under the Partial Incentive condition, and the blue bars indicate answers under the Full Incentive condition.

under the three incentive conditions. The grey bars on the left side depict participants' shifts from choosing higher returns for ESG funds to choosing lower returns (including changes from "Much higher" or "A bit higher" to "A bit lower" or "Much lower"). Conversely, the blue bars on the right side depict participants' shifts from a lower return for ESG funds to a higher return (including changes from "Much lower" or "A bit lo

Under the No Incentive condition, 4.9% of participants modified their answers to a lower return, while 2.0% modified theirs to a higher return. However, this difference is not statistically significant (p = 0.25). Under the Partial Incentive condition, after observing the prediction incentive, 1.1% of the participants modified their answers to a lower return, while 2.2% modified them to a higher return (again insignificant difference, p = 0.56). Under the Full Incentive condition, after knowing the incentives, 4.3% of participants modified their answer to a lower return; in contrast, 11.8% modified it to a higher return. This difference is statistically significant (p = 0.06). These results indicate a significant tendency among participants to adjust their return expectations for ESG funds from lower to higher than conventional funds when there is the matching reward in the choice matching method.



Figure 6: Return Expectation Modification by Choice Matching Method

Note: This figure depicts the distribution of modifications in return expectations for ESG funds across participants under the three incentive conditions. The bars illustrate the percentage of participants adjusting their return expectations within these conditions. The grey bars depict answers where participants shifted their return expectations from a higher return to a lower return compared to conventional funds. Conversely, the blue bars represent the answers where participants adjusted their return expectations from a lower return to a higher return relative to conventional funds.

To further show the modification behavior of participants, Table 3 presents the results from Logit regressions in which the belief modification is the dependent variable. We capture two types of modifications. One raises expectations from the originally chosen level to any higher level (Column 1), and the other is modification from lower return expectations (either much lower or a bit lower) to higher (either a bit higher or much higher) (Column 2). In Column (1), participants under the Full Incentive condition are six times more likely (exp(1.826) = 6.209) to adjust upward compared to those under the No Incentive condition. Moreover, our findings in Column (2) show that the Full Incentive condition significantly increased the likelihood of modifying return expectations from lower to higher returns, while the Partial Incentive had no effect. Specifically, participants under the Full Incentive condition are almost 13 (exp(2.560) = 12.94) times more likely to adjust from lower to higher returns than those under the No Incentive condition.⁵

⁵Appendix A.7 further explores the modification patterns.

Table 3: Modification Direction in Choice Matching Method

This table presents the marginal effects derived from the binomial Logit regressions. In Column (1), the dependent variable has two distinct values: it is equal to one for upward shifts in the return expectation (raising their expectations from the originally chosen level to any higher level), and zero otherwise (expectation stayed the same or shifted downward). In Column (2), the dependent variable has two distinct values: it is equal to one for shifts from lower return expectations (either much lower or a bit lower) to higher (either a bit higher or much higher), and zero otherwise. The marginal effects of a Logit regression on the incentives of the three conditions are presented, with the No Incentive condition serving as the baseline. Participants who selected "I don't know" in the Likert scale question are excluded. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, ***, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable:			
	Upward	Lower to Higher		
	(1)	(2)		
Partial Incentive	-0.594	0.119		
	(1.276)	(1.308)		
Full Incentives	1.826^{**}	2.560^{**}		
	(0.927)	(1.036)		
Demographics control	YES	YES		
Preferences control	YES	YES		
Observations	273	273		
Log-Likelihood	-32.11	-34.11		
AIC	116.22	120.22		

3.4 Investment Allocation

In this subsection, we present the results from our end-of-experiment incentivized allocation task between a conventional fund and a sustainable fund and examine how beliefs elicited in the experiment correlate with allocation decisions.

Result 4: Return expectations of ESG funds obtained from the two incentivized methods significantly and positively correlate with allocations to the ESG fund, but the answers to the unincentivized Likert scale question do not.

We conduct OLS analyses with the participants' amount allocated (out of $\in 400$) to the green fund as the dependent variable. Our main independent variables are return expectations obtained from the exchangeability method and the choice matching method. The results are presented in Table 4. Column (1) pertains to the ESG condition with beliefs obtained from the exchangeability method. Columns (2) through (6) use beliefs obtained from the choice matching method. Column (7) shows the beliefs obtained from the unincentivized Likert scale method.

In Column (1) of Table 4, we show that the participants' median return expectations for the ESG fund significantly and positively correlate with their allocation to the sustainable fund (p = 0.07). The coefficient for beliefs obtained via the exchangeability method is 1.620. This coefficient indicates that a one percentage point increase in the participants' beliefs about the annual return is associated with a $\in 1.62$ increase in the allocation to the green fund, which is 0.405% of the total ≤ 400 budget. In other words, taking into account the considerable heterogeneity in participants' beliefs and allocations, a one standard deviation increase in return expectations for the ESG fund leads to a 0.156 standard deviation increase in allocation to the sustainable fund, which is equivalent to $\in 23.36$ (or 5.85% of the total investment amount of $\in 400$). At the beginning of the choice matching method, participants evaluated the financial performance of ESG funds relative to conventional funds by answering the Likert scale question without any incentives or information about incentives. In Columns (2)-(5), these beliefs also do not significantly correlate with the amount allocated to the green fund. However, in Column (6), only after the introduction of both incentives (prediction incentive and matching incentive) do the participants' return expectations for ESG funds significantly increase their allocation to the sustainable fund (p = 0.042). Specifically, a one unit increase (in the Likert scale answers) in return expectations for ESG funds relative to conventional funds results in approximately an $\in 31.23$ (equivalent to 7.81% of the total investment amount of $\in 400$) increase in the ESG fund's allocation. In Column (7), the return expectations from the unincentivized Likert scale question in the fourth module do not significantly correlate with the amount allocated to the sustainable fund.

Therefore, compared with the return expectations obtained from the unincentivized Likert scale method, those obtained through both of our incentivized methods consistently exert a positive influence on participants' allocations to the sustainable fund.

3.5 Additional Results

This subsection shows additional results along two dimensions: the heterogeneity of beliefs and risk perceptions. First, we observe significant heterogeneity in participants' median return expectations obtained from the exchangeability method due to differences in their demographic characteristics and financial statuses. Table 5 displays the participants' median return expectations that are summarized for different demographic and financial status subgroups respectively. In general, participants who are younger, employed, and less educated, have a smaller investment amount, and less investment experience are more inclined to expect that the fund with a high ESG rating financially outperforms the fund with an unknown ESG rating. These findings are consistent with the literature (e.g., Giglio et al., 2021, 2023). For the respective complementary groups, no significant difference is observed. Meanwhile, we do not find a significant gender difference. Participants whose monthly income aligns closely with the Netherlands' average gross monthly income (which was $\in 2855$ in 2023) expect that the fund with a high ESG rating significantly outperforms the fund with an unknown ESG rating. A more detailed analysis is presented in Section A.8 of the Appendix A.

Moreover, we find that participants who believe low ESG funds come with higher risk

Table 4: Allocation on ESG Fund

This table displays the regressions of participants' allocation decisions in the ESG fund of the allocation task at the end of the survey. The ESG fund allocation refers to the amount allocated by participants in the allocation task of the survey. In Column (1), the ESG return belief is elicited using the exchangeability method. In Column (2), ESG return belief is elicited using the choice matching method in the No Incentive condition. In Column (3), ESG return belief is elicited at the outset without knowing incentives using the choice matching method in the partial incentive condition. In Column (4), the adjusted ESG return belief is utilized after the matching incentive is offered, as obtained through the choice matching method in the partial incentive condition. In Column (5), the ESG return belief is elicited at the outset without knowing the incentives using the choice matching method in the Full Incentive condition. In Column (6), adjusted ESG return belief is utilized after the matching incentive is offered, as obtained through the choice matching method in the Full Incentive condition. In Column (7), the ESG return belief is elicited using the non-incentivized Likert scale method in the fourth questionnaire module. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

			Depend ESG Allo	ent variable: cation Amou	ent		
	Exchangeability		Choice Matching				
		(No Incentive)	(Partial	Incentive)	(Full In	centive)	
		Initial	Initial	Adjusted	Initial	Adjusted	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ESG Return Belief	1.620^{*} (0.892)	21.080 (17.250)	0.657 (17.478)	12.041 (17.555)	22.338 (14.999)	31.230^{**} (15.070)	13.600 (9.297)
Male	-26.130	-68.750^{*}	-54.120^{*}	-49.928^{*}	40.596	36.212	-20.930
Education	(19.410) -21.560^{**}	(40.110) -10.280	(29.991) 20.066	(29.904) 22.032	(20.307) -31.490^{**}	(30.397) -34.182^{**}	(13.100) -11.510^{*}
Income	(9.187) 11.630^{***} (2.672)	(11.830) 2.880 (4.500)	(15.182) 9.625 (7.022)	(15.216) 8.394 (7.074)	(15.105) 9.375^{*} (5.425)	(14.874) 9.481^{*} (5.528)	(7.046) 4.837^{*} (2.855)
Sustainability Risk	(5.072) -15.340^{*} (8.204)	(4.599) 12.910 (11.000)	(7.932) -20.794 (14.218)	(1.974) -21.634 (14.977)	(3.433) -16.103 (11.774)	(3.528) -15.631 (11.671)	(2.855) -3.440 (6.422)
ESG Impact	(8.294) 17.010* (0.066)	(11.090) 17.480 (14.160)	(14.318) 38.502^{**} (16.004)	(14.277) 36.297^{**} (16.048)	(11.774) 15.062 (10.110)	(11.071) 20.353 (18.720)	(0.423) 22.030^{***}
ESG Index Fund Preference	(9.900) 35.160^{***} (10.660)	(14.160) 28.360^{**} (14.080)	(10.904) 4.487 (14.783)	(10.948) 2.016 (14.925)	(19.119) 33.040^{*} (17.018)	(18.729) 38.137^{**} (16.342)	(8.085) 24.830^{***} (7.888)
Demographics control Preferences control	YES YES	YES YES	YES YES	YES YES	YES YES	YES YES	YES YES
Observations R^2	129 0.494	99 0.441	88 0.399	88 0.404	87 0.503	87 0.515	282 0.32

also believe highly rated ESG funds will have higher returns. We elicit the participants' risk perception on ESG funds compared with conventional funds using the unincentivized Likert scale question based on Riedl and Smeets (2017). Specifically, we asked participants their opinions on the following statement: Less sustainable investment funds carry more risk than sustainable investment funds. They could choose whether they "Totally disagree", "Disagree", "Fairly disagree", "Average", "Fairly agree", "Agree", or "Totally agree". We then analyzed the results with respect to this question in relation to their return expectations. In Figure 7, Panel (a) depicts the distribution of choices in the above question for the entire sample. Overall, 28.9% of participants totally disagree (4.2%) or disagree (24.7%) with the statement, indicating they believe less sustainable funds to be

Table 5: Median Beliefs by Demographics

This table presents participants' median return expectations for the fund, comparing the ESG-Info condition with the No-ESG-Info condition, categorized by age, gender, total investment, income, investing experience, education, return calculation, and occupation. Columns (1), (2), and (3) present the participants' median return expectations for the fund in the ESG-Info condition for the one-year return expectation, negative scenario return expectation, and the positive scenario return expectation, respectively. Columns (4), (5), and (6) present participants' median return expectations for the fund in the No-ESG-Info condition for the one-year return expectation, negative scenario return expectation, and the positive scenario return expectation, respectively. Columns (7), (8), and (9) present the differences in median return expectations between the ESG-Info and No-ESG-Info conditions for one-year return expectation, negative scenario return expectation, and the positive scenario return expectation, respectively. Table B.1 has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	ESG Me	edian Retur	n Expectati	on (%)	Non-ESG Median Return Expectat			ctation (%)	ESG - Non-ESG (%)		G (%)
	1Y (1)	Negative (2)	Positive (3)	Ν	1Y (4)	Negative (5)	Positive (6)	Ν	1Y (7)	Negative (8)	Positive (9)
By Age											
≤ 40	9.470	7.159	7.879	66	6.417	6.083	8.361	90	3.053^{*}	1.076	-0.482
41-50	9.150	5.550	7.950	25	-0.662	0.809	1.25	17	9.812^{*}	4.741	6.700
51 - 60	5.662	1.250	7.426	17	1.902	4.946	9.076	23	3.760	-3.696	-1.650
61-70	2.596	5.096	3.558	13	2.361	10.139	8.472	18	0.235	-5.043	-4.915
> 70	0.625	2.188	7.500	8	4.750	6.50	7.500	10	-4.125	-4.313	0
By Gender											
Male	7.250	6.344	8.531	80	4.782	6.250	7.833	109	2.468	0.094	0.699
Female	7.750	3.806	4.750	45	3.750	5.083	7.417	45	4.000	-1.278	-2.667
By Total Investment											
< €10K	13.045	5.737	7.788	39	7.250	6.972	9.472	45	5.795^{**}	-1.235	-1.684
€10K-€50K	8.824	8.456	8.824	34	1.523	4.114	6.659	55	7.301^{**}	4.342	2.164
€50K-€100K	3.194	3.056	3.611	18	10.139	5.694	7.778	18	-6.944	-2.639	-4.167
€100K-€250K	2.981	3.173	5.481	13	4.083	5.417	8.750	15	-1.103	-2.244	-3.269
> €250K	3.350	4.350	8.450	25	1.85	7.95	5.85	25	1.500	-3.60^{*}	2.600
By Income											
< €3K	4.167	3.333	4.750	30	5.927	4.879	7.782	31	-1.761	-1.546	-3.032
€3K-€5K	10.924	6.087	7.446	46	3.107	5.357	7.071	70	7.817^{***}	0.730	0.374
€5K-€7.5K	8.182	8.182	8.182	22	6.731	7.212	7.500	26	1.451	0.970	0.682
> €7.5K	5.847	5.040	9.23	31	3.992	6.733	8.992	31	1.855	-1.694	0.242
By Investment Experience											
< 3 years	12.215	5.461	7.303	57	6.091	5.179	9.187	63	6.124^{***}	0.282	-1.884
3–6 years	10.000	8.958	9.167	24	4.297	6.328	6.875	32	5.703^{**}	2.630	2.292
7–10 years	9.219	5.469	10.781	16	6.500	7.250	6.875	20	2.719	-1.781	3.906
>10 years	-2.969	3.203	4.453	32	1.134	5.785	6.366	43	-4.102	-2.582	-1.913
By Education											
Junior College or Lower	9.177	5.213	7.774	41	5.063	6.313	8.250	40	4.114	-1.099	-0.476
College	8.682	5.709	7.466	37	2.500	5.069	6.944	36	6.182^{*}	0.640	0.522
University or Higher	5.71	5.71	6.985	51	4.970	5.945	7.683	82	0.741	-0.234	-0.698
By Return Calculation											
Correct	7.238	6.250	7.471	43	6.075	4.934	6.732	57	1.164	1.316	0.738
Wrong	7.878	5.203	7.326	86	3.502	6.349	8.181	101	4.375^{**}	-1.146	-0.855
By Occupation											
Paid Work	8.947	6.081	7.879	89	5.369	6.226	7.107	105	3.578^{*}	-0.145	0.772
Others	4.813	4.375	6.250	40	2.571	5.071	8.750	53	2.242	-0.696	-2.500

riskier. Conversely, 10.4% of participants totally agree (1.7%) or agree (8.7%) with the statement, indicating less sustainable funds to be riskier, or sustainable funds to be less risky. The remaining 60.7% of participants had a moderate perception of risk concerning sustainable funds relative to less sustainable funds.⁶ Linking this with the median return expectations from the exchangeability method, we explore how participants perceive the risk-return trade-off of highly rated ESG funds. Panel (b) presents the median return expectations of participants for the fund under the ESG-Info and No-ESG-Info conditions. Participants are categorized according to their risk perceptions, and their median return

⁶We categorize participants who selected "Fairly disagree," "Average," or "Fairly agree" as having a moderate perception of risk regarding sustainable funds compared to less sustainable ones, reflecting an absence of strong and definitive opinions about the risks associated with sustainable investment funds.

expectations are summarized respectively.⁷ Our findings indicate that participants who tend to agree or totally agree with the idea that lower rated ESG funds carry higher risk also expect higher returns from the fund with a high ESG rating compared to the identical fund with an unknown ESG rating (15.9% Vs. 5.5%, p = 0.043). These results indicate a negative correlation between perceived risks and expected returns in the context of ESG-rated investments. On the other hand, those who disagreed or totally disagreed with the statement that lower rated ESG funds correlate with higher risk expect a similar return from the ESG fund and its counterpart with no ESG information (5.2% vs. 4.8%, p = 0.904). This expectation indicates participants tend to associate a lower expected return and higher risk with low/average rated ESG funds. This finding aligns with Hartzmark and Sussman (2019), who observe an inverse relationship between the expectations of risk and returns, which could be driven more by the affect heuristics than by rational analysis (e.g., Slovic et al., 2007).

⁷Our analysis specifically targets participants who expressed strong and definitive opinions about the risks associated with sustainable investment funds, namely those who selected "Totally disagree," "Disagree," "Agree," or "Totally agree" on the Likert scale question. When we add "Fairly agree" and "Fairly disagree", the difference still emerges but is less obvious.



Panel (a): Risk Perception of Non-ESG Funds Relative to ESG



Panel (b): Median Return Expectation Comparison by Risk Perception

Figure 7: Risk Perception Distribution and Return Expectation

Note: Panel (a) depicts the distribution of participants' perceived risk associated with less sustainable funds relative to sustainable funds in the entire participant sample. The bars illustrate participants' answers to the statement "Less sustainable investment funds carry more risk than sustainable investment funds: 1 = Totally disagree, 2 = Disagree, 3 = Fairly disagree, 4 = Average, 5 = Fairly agree, 6 = Agree, 7 = Totally agree." Panel (b) illustrates participants' median return expectations for the fund under the ESG-Info and No-ESG-Info conditions, categorized by their risk perceptions towards low ESG funds derived from their answers to the above statement in Panel (a). The green bars represent answers under the ESG-Info condition, while the grey bars represent answers under the No-ESG-Info condition.

4 Conclusion

In this study, we formally investigate index fund investors' return expectations for ESG funds through an incentivized field survey experiment. Our methods encompass both the widely used unincentivized Likert scale questions and the incentivized exchangeability and choice matching methods. This allows us to demonstrate a significant divergence in conclusions drawn from methods varying by incentive structures. Using the unincentivized Likert scale method, we observe that a majority of investors expect that ESG funds will financially underperform relative to conventional funds. Conversely, when applying the incentivized exchangeability and choice matching methods, investors report consistent beliefs that are in contrast with their beliefs from the unincentivized Likert scale. These differences are most likely driven by incentives, but not by question format. What gives us additional confidence that our incentivized methods elicit beliefs closer to investors' allocation choices. However, we do not claim that beliefs elicited from our incentivized methods reflect exactly the true subjective beliefs.

Our study uncovers three crucial insights into the motivations behind SRIs and their implications for asset pricing. First, investors are likely to understate their return expectations for ESG funds in unincentivized surveys, possibly due to image concerns (either through social signaling or self-signaling). This understatement could result in a systematic misunderstanding of investors' true motivations for SRI that lead to unreliable conclusions regarding how they trade off financial performances for sustainability, with the potential of exaggerating the role of ESG considerations in portfolio choice decisions.

Second, the significant influence of investors' return expectations on their allocations to SRIs underscores the importance of financial motivations in investment decisions related to SRIs. Therefore, return expectations play an important role in investors' decisions involving SRI. This points to the necessity of having precise and reliable measures of investors' return expectations for SRIs to accurately assess sustainability preferences, which is a combination of financial expectations and economic preferences (social preferences, risk preferences, ambiguity preferences, etc.). Without such measures, there is a risk of misinterpreting investors' true sustainability preferences, potentially leading to investment strategies that fail to accurately cater to their needs, such as risk-return balance and social preferences.

Third, based on the results of our incentivized methods, investors may hold systematically optimistic beliefs on ESG funds, or generally assets with high ESG ratings. These beliefs could lead to over-pricing of these assets and market inefficiency. These outcomes highlight the need for an understanding of the true driver of investments into high ESG assets, the discrepancies between investor expectations and the financial realities of ESG investments. They also call for policies that directly target investor expectations.

Our study focuses on index fund investors, who represent a relatively sophisticated cohort compared to the general investor population. Investigating the significance of financial motivations among different investor types presents an intriguing avenue for subsequent research. Moreover, our survey methodology does not capture investors' beliefs regarding funds with low ESG ratings relative to those without such information. Future studies could adopt methodologies similar to those in our research to explore investors' return expectations for funds with low ESG ratings. Our study introduces an innovative approach by adapting incentivized laboratory experimental methods for accurately capturing investors' beliefs through field surveys and applying these to investigate investment decisions. Consequently, our study makes a significant contribution to the domain of belief elicitation surrounding SRIs, engaging in debates on the challenges of incentivization and the applicability of laboratory experimental methods in practical settings.

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A Appendix A

A.1 Ambiguity Perception Elicitation

With the second module, we assess participants' domain-specific ambiguity attitudes, specifically by using an adapted version of the Ellsberg urns (e.g., Ellsberg, 1961) as proposed by Dimmock et al. (2016). In this module, every choice made by participants comes from an incentive.

As illustrated in Figure A.1, participants were tasked with choosing between two boxes, each containing exactly 100 balls labeled either with a positive sign (purple balls, indicating positive return funds) or a negative sign (orange balls, indicating negative return funds). Their choices were between an ambiguous Box U, with an undisclosed number of purple balls, and an unambiguous Box K, where the quantity of purple balls was clearly indicated. This decision involved up to five incentivized questions, each building on the previous answers and aimed at pinpointing the participant's threshold of indifference. If participants found no discernible difference between the two boxes, they could opt for the "I don't see the difference" choice and proceed to the next module. Furthermore, participants had the opportunity to win $\in 100$ if they were randomly selected for the reward and a purple ball was drawn from their chosen box.

You now have a chance to win €100 with the guessing game below.

Your task is to choose between Box K and Box U, both of which contain 100 mutual funds with either a positive annual return in 2022 ("+" or greater than 0) or a negative annual return in 2022 ("—" or less than 0). The computer will randomly select a ball from the box you choose. You win 100 euros if an investment fund with a positive return ("+") is selected.

What is the difference between the two boxes?

Box K contains a precise mix of 100 mutual funds with positive returns ("+") and negative returns ("—"). For example, Box K below contains 50 mutual funds with a positive return ("+") and 50 mutual funds with a negative return ("—"). Note: The mix in Box K may be different for different questions (for example, 60 mutual funds with a positive return and 40 mutual funds with a negative return).

Box U contains 100 mutual funds randomly selected from all mutual funds on the market, so the precise mix of mutual funds with a positive return ("+") and a negative return ("—") is not known.

How do you choose?

Please indicate your preferred box below and we will select a mutual fund from the box of your choice.

If you find both boxes equally attractive, you may choose the option "I don't see the difference". Then the computer will randomly choose a box for you and select a mutual fund from it.

Remember: You win 100 euros if an investment fund with positive returns ("+") is selected. Think carefully about your choice.



○ Box K ○ I don't see the difference ○ Box U

Figure A.1: An Exemplary Domain-specific Ambiguity Attitudes Elicitation Task

 $\it Note:$ This figure displays a screen shot depicting the task designed to elicit domain-specific ambiguity attitudes.

A.2 Participant Number

During the survey period from June 9 to August 31, 2023, we sent out two reminders on June 26 and August 23, 2023, respectively. After the two reminders and up to August

31, 2023, we had a total 901 participants who started the survey and 287 who completed it. The average completion time was approximately 25 minutes.



Figure A.2: Participant Number

Note: The figure presents the number of participants who started our survey and those who completed it over the period from June 9 to August 31, 2023.

A.3 Median Belief in Laboratory Experiment

The laboratory experiment was conducted at the Behavioral & Experimental Economics Laboratory (BEELab), School of Business and Economics, Maastricht University. The experiment had a total of 335 participants, comprising 59% females with an average age of 22 years (199 females and 136 males, aged between 19 and 36 years). The experiment was conducted in October and November of 2021. The No-ESG-Info condition included 171 subjects, with 61.4% being female; while the ESG-Info condition consisted of 164 subjects of which 58.5% were female. The majority of participants were students from economics and management (283 participants) or social sciences (20 participants) at the School of Business and Economics, Maastricht University. For our laboratory experiment, the fund rated as having the highest ESG was randomly selected from Morningstar. We implemented the same exchangeability method as in the field survey to assess participants' median beliefs about the fund's return in the forthcoming year, following observation of its returns in the previous six years.

Figure A.3 in the Appendix displays the participants' average median return expec-

tation about the fund under both the ESG-Info and No-ESG-Info conditions. Over both short-term (one-year) and long-term (three-year) investment horizons, the participants' median return expectation for the fund is significantly higher under the ESG-Info condition compared to the No-ESG-Info condition (2.8% and 1.9% higher respectively; p = 0.02 and p = 0.08). Further, we find that subjects' median belief is significantly higher under the ESG-Info condition compared to the No-ESG-Info condition when they observe a negative return of the fund in the previous year (2.2% higher; p = 0.07).



Figure A.3: Median Return Expectation Comparison in Laboratory Experiment

Note: This figure displays the plots of the comparisons of participants' median return expectation for the fund between the ESG-Info and No-ESG-Info conditions under the four scenarios, respectively (i.e., the 1-year and the 3-year investment horizons, a positive and a negative return in the previous year). The green bars depict answers under the ESG-Info condition, while the grey bars represent answers under the No-ESG-Info condition.

A.4 Belief Update

Participants may update their beliefs regarding the financial performance of the fund based on their prior beliefs after observing the realized return of the fund in the seventh year. In Table A.1, we show participants' belief updates by controlling for their prior beliefs.

Table A.1: Update of Beliefs by Controlling for Prior Belief

This table presents the regression results concerning participants update of their beliefs about the financial performance of the fund after observing its realized return in the previous year (7th year). The dependent variable is the median return expectation for the fund in the 8th year. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation Updating					
	Nega	ative	Pos	itive		
	(1)	(2)	(3)	(4)		
High ESG Info	-1.615	-1.380	-1.840	-0.733		
	(1.334)	(1.460)	(1.368)	(1.488)		
Prior Return Expectation (7th-Year)	0.285^{***}	0.302^{***}	0.419^{***}	0.500^{***}		
	(0.048)	(0.065)	(0.050)	(0.066)		
High ESG Info \times		-0.037		-0.175^{*}		
Prior Return Expectation (7th-Year)		(0.093)		(0.095)		
Investing Experience	0.546	0.530	0.497	0.424		
	(0.634)	(0.636)	(0.650)	(0.648)		
Correct Return Calculation	-0.424	-0.462	-0.656	-0.833		
	(1.443)	(1.448)	(1.479)	(1.476)		
Sustainability Risk	0.421	0.429	0.481	0.521		
	(0.461)	(0.462)	(0.473)	(0.471)		
ESG Impact	-1.114^{*}	-1.117^{*}	-0.556	-0.573		
	(0.628)	(0.629)	(0.644)	(0.641)		
Donation	-0.009^{**}	-0.009^{**}	-0.007^{*}	-0.007^{*}		
	(0.004)	(0.004)	(0.004)	(0.004)		
Observations	287	287	287	287		
R^2	0.197	0.197	0.306	0.315		
Demographics control	YES	YES	YES	YES		
Preferences control	YES	YES	YES	YES		

A.5 Subgroup Analysis: Median Belief Grouping by Return Expectation in Non-incentivized Likert Scale

The regressions reported in Table A.2 compare the median beliefs regarding the fund return among participants who express that ESG funds financially underperform conventional funds with those from the participants who express the opposite view—namely, that conventional funds financially underperform ESG funds. In the analysis, we examine the impact of a high ESG rating on participants' median beliefs on the fund return by categorizing participants based on their answers to ESG funds' financial performance in the non-incentivized Likert scale question.

Table A.3 shows the results for this question from regressions. Note that we exclude participants who selected "I don't know" in the Likert scale question. In Column (1), we regress their median return expectations from the exchangeability method under the ESG-Info condition on the belief obtained from the Likert scale method and other con-

This table presents the regression analyses on participants' median beliefs regarding fund returns, elicited by the exchangeability method, across sub-group analyses. The median beliefs about the fund returns of participants who indicated that ESG funds financially underperform/outperform conventional funds in the non-incentivized Likert scale question are compared under both the ESG-Info and No-ESG-Info conditions. Columns (1), (2), and (3) examine the effect of information about the high ESG rating on participants' median beliefs, elicited by the exchangeability method, about the fund returns among those who stated that ESG funds financially underperform conventional funds in the non-incentivized Likert scale question. These columns correspond to the one-year return expectation, negative scenario return expectation, and positive scenario return expectation, respectively. Columns (4), (5), and (6) show the effect of information on the high ESG rating on participants' median beliefs, elicited by the exchangeability method, about the fund returns among those who stated that ESG funds financially outperform conventional funds in the non-incentivized Likert scale question. These columns also correspond to the one-year return expectation, negative scenario return expectation, and positive scenario return expectation, respectively. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's return expectation						
	ESG Und (by Uninc	erperforms entivized Lik	Non-ESG $xert \ Scale)$	ESG Outperforms Non-ESG (by Unincentivized Likert Scale)			
	1-Y	Negative	Positive	1-Y	Negative	Positive	
	(1)	(2)	(3)	(4)	(5)	(6)	
High ESG Rating	5.402^{*}	-1.196	3.139	1.162	-0.296	-4.633	
	(3.219)	(2.953)	(3.434)	(3.645)	(3.181)	(3.364)	
Investing Experience	-2.113	-2.065	-1.824	-4.487^{**}	-1.684	-2.755	
	(1.614)	(1.481)	(1.722)	(2.153)	(1.879)	(1.987)	
ESG Return by Likert Scale	-6.035	-1.608	-8.203	22.170^{**}	-3.211	10.750	
	(5.014)	(4.599)	(5.348)	(9.038)	(7.888)	(8.342)	
Sustainability Risk	-1.930	-0.524	-0.187	0.631	-0.484	-2.152	
	(1.188)	(1.090)	(1.267)	(1.376)	(1.201)	(1.270)	
ESG Social Impact	-2.860^{**}	-2.147^{*}	-1.956	-1.488	-2.792	1.690	
	(1.353)	(1.241)	(1.444)	(2.565)	(2.238)	(2.367)	
ESG Investment Amount	0.008	0.020^{*}	0.005	0.041**	0.010	-0.016	
	(0.011)	(0.011)	(0.012)	(0.018)	(0.016)	(0.017)	
Observations	98	98	98	59	59	59	
R^2	0.320	0.325	0.230	0.603	0.372	0.460	
Demographics control	YES	YES	YES	YES	YES	YES	
Preferences control	YES	YES	YES	YES	YES	YES	

trol variables. Our analysis indicates that the return expectations for ESG funds, as measured by the non-incentivized Likert scale method, have a negative and statistically insignificant correlation with the median return expectations obtained through the exchangeability method. This disparity underscores the inconsistency in the results from these two different belief elicitation methods when assessing participants' return expectations. Consistent with the findings presented in Column (1) of Table 2, Column (2) of Table A.3 confirms the robust and strong and positive influence of high ESG ratings on participants' median return expectations for the fund. This impact is strong even after controlling for their answers to the non-incentivized Likert scale question regarding the comparison of financial performance between ESG and conventional funds.

Table A.3: Comparison Between Exchangeability Method and Likert Scale Method

This table presents the regression results of participants' return expectations for the fund in the survey. Column (1) provides the results for the correlation between respondents' return expectations about ESG funds obtained from the non-incentivized Likert scale question and those derived from the exchangeability method under the ESG-Info condition. Column (2) shows the participants' one-year median return expectations about the fund by controlling their return expectations elicited by the non-incentivized Likert scale question in the ESG-Info and No-ESG-Info conditions. Participants who expressed "I do not know" in the non-incentivized Likert scale question concerning the financial performance of ESG funds compared to conventional funds are excluded from the analysis. The dependent variable is the median return expectation identified by the exchangeability method. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation				
	1-Y	1-Y			
	ESG-Info	ESG-Info and No-ESG-Info			
	(1)	(2)			
High ESG Rating Info		3.606^{**}			
		(1.688)			
ESG Return by Likert Scale	-0.683	0.132			
	(1.294)	(0.892)			
ESG Knowledge	-0.007				
	(0.050)				
Investing Experience	-4.086^{***}	-2.735^{***}			
	(1.256)	(0.785)			
Investing Amount in Index Fund	0.001^{***}	0.001**			
	(0.000)	(0.000)			
Correct Expected Return Calculation	-4.333	0.769			
	(2.772)	(1.851)			
Sustainability Risk	-0.848	-0.801			
	(0.880)	(0.614)			
ESG Impact	-1.763^{*}	-1.912^{**}			
-	(1.021)	(0.788)			
Negative Reciprocity (Others)	1.608	1.371**			
	(1.021)	(0.654)			
ESG Investment Amount	0.016^{*}	0.011*			
	(0.010)	(0.006)			
Observations	126	282			
R ²	0.383	0.183			
Demographics control	YES	YES			
Preferences control	YES	YES			

A.6 Subgroup Analysis: Median Belief Grouping by ESG Social Impact Expectations

Figure A.4 presents the distribution of participants' perceptions of ESG's positive social impact. The bars illustrate investor answers to the statement "Investment funds with ESG integration have a positive effect on society: 1 =Strongly disagree, 2 =Disagree, 3 =Moderately disagree, 4 =Average, 5 =Fairly agree, 6 =Agree, 7 =Totally agree." Panel (a) depicts the answers from the entire sample of participants. In panel (b), the green bars depict the answers under the ESG-Info condition, while the grey bars represent the answers under the No-ESG-Info condition.

Figure A.5 depicts a comparison of median beliefs on the fund return between participants who believe that ESG funds positively affect society and those who do not hold this belief.

The regressions reported in Table A.4 compare the median beliefs on the fund return among participants who express that ESG funds have a positive social impact with those who do not hold this belief. We examine the impact of a known high ESG rating on participants' median beliefs on the fund return by categorizing them based on their perceptions of ESG's social impact in the non-incentivized Likert scale question.

A.7 Choice Matching Method: Upward Modification

Figure A.6 displays the patterns of modifications in expectations that are categorized as either upward or downward shifts under three different incentive conditions. The grey bars on the left side represent instances where participants decreased their expectations from their initial ones, indicating downward shifts. On the other hand, the blue bars on the right side illustrate instances where participants increased their expectations from their initial ones, indicating upward shifts. Overall, within the Full Incentive condition, there is no statistically significant difference observed between downward and upward return modifications (p = 0.65). However, the upward return modification observed under the Full Incentive condition is significantly higher than those seen in both the No Incentive (p = 0.006) and Partial Incentive (p = 0.026) conditions.

A.8 Investor Belief Heterogeneity

In our analysis spanning from Table A.5 to Table A.12, we estimate the coefficients for participants' demographics by accounting for their preferences and the treatment of the high ESG rating. Our findings indicate a notable heterogeneity in participants' median beliefs about the fund return, which is significantly influenced by demographic factors.



Panel (a): All Sample Distribution



Panel (b): Comparison between Conditions

Figure A.4: ESG Social Impact Perception Distribution

Note: This figure presents the distribution of participants' perceptions of ESG positive social impact. The bars illustrate investor answers to the statement "Investment funds with ESG integration (environmental, social, governance) have a positive impact on society: 1 =Strongly disagree, 2 =Disagree, 3 =Moderately disagree, 4 =Average, 5 =Fairly agree, 6 =Agree, 7 =Totally agree." Panel (a) depicts the answers from the entire sample of participants. In panel (b), the green bars depict the answers from the ESG-Info condition, while the grey bars represent the answers from the No-ESG-Info condition.



Figure A.5: Median Belief Comparison by ESG Impact Perception

Note: This figure illustrates the comparisons of participants' median beliefs on the fund return obtained from the exchangeability method under the ESG-Info and No-ESG-Info conditions as categorized by their answers to the non-incentivized Likert scale question regarding ESG's social impact. The green bars depict the answers under the ESG-Info condition, while the grey bars represent the answers under the No-ESG-Info condition. Panel (a) displays the median beliefs of participants who indicate that ESG funds have a positive social impact, while Panel (b) displays the median beliefs of participants who do not think that ESG funds have a positive social impact.

Table A.4: Sub-group Analysis: Median Belief by ESG Social Impact Perception

This table presents the regression analyses on participants' median beliefs regarding fund returns, elicited through the exchangeability method, using sub-group analyses. The median beliefs about the fund returns of participants who indicated that ESG funds have a positive social impact and those who indicated that ESG funds do not have a positive social impact are compared under both the ESG-Info and No-ESG-Info conditions. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's return expectation							
	High ESC	G Impact Pe	erception	Low ES	Low ESG Impact Perception			
	1-Y	Negative	Positive	1-Y	Negative	Positive		
	(1)	(2)	(3)	(4)	(5)	(6)		
High ESG Rating	2.854	-1.427	-0.556	10.470**	4.381	2.566		
	(1.996)	(1.631)	(1.731)	(4.062)	(4.053)	(4.477)		
Investing Experience	-2.473^{**}	-0.483	-1.073	-0.958	1.972	4.349		
-	(0.895)	(0.731)	(0.776)	(2.125)	(2.121)	(2.343)		
ESG Return by Likert Scale	1.095	1.251	0.652	0.903	3.627^{*}	1.419		
	(1.118)	(0.914)	(0.970)	(1.918)	(1.914)	(2.115)		
Sustainability Risk	-0.894	-0.256	-0.501	1.605	-1.056	-0.093		
	(0.714)	(0.583)	(0.619)	(1.779)	(1.776)	(1.961)		
ESG Investment Amount	0.006	0.008	0.001	0.011	-0.005	0.004		
	(0.007)	(0.006)	(0.006)	(0.018)	(0.018)	(0.020)		
Observations	222	222	222	65	65	65		
R^2	0.254	0.129	0.201	0.427	0.353	0.337		
Demographics control	YES	YES	YES	YES	YES	YES		
Preferences control	YES	YES	YES	YES	YES	YES		



Figure A.6: Choice Matching Method: Upward and Downward Modification

Note: This figure depicts the distribution of modifications in return expectations for ESG funds across participants under the three incentive conditions in the choice matching method. The bars illustrate the percentage of participants adjusting their return expectations. The grey abars on the left side represent instances where participants made downward shifts in their expectations from their initial ones. On the other hand, the blue bars on the right side illustrate instances where respondents made upward shifts in their expectations from their initial ones.

Table A.5:Heterogeneity – Age

This table presents the coefficient estimates for age while controlling for participants' preferences and the information o the high ESG rating, instead of solely categorizing them based on demographics. The demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1 has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation					
	1-Y	Negative	Positive			
	(1)	(2)	(3)			
High ESG Rating Info	3.667^{**}	-0.328	-0.257			
	(1.709)	(1.370)	(1.522)			
Age \in (40, 50]	-2.122	-2.066	-1.537			
	(2.440)	(1.957)	(2.173)			
Age \in (50, 60]	-3.384	2.334	1.224			
	(2.484)	(1.992)	(2.212)			
Age \in (60, 70]	-6.225^{**}	2.037	-1.705			
	(2.780)	(2.230)	(2.476)			
Age > 70	-6.593^{*}	-2.260	-1.024			
	(3.613)	(2.898)	(3.218)			
Observations	287	287	287			
R^2	0.135	0.113	0.102			
Demographics control	YES	YES	YES			
Preferences control	YES	YES	YES			

Table A.6:Heterogeneity – Gender

This table presents the coefficient estimates for gender while controlling for participants' preferences and information on the high ESG rating, instead of solely categorizing them based on demographics. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, ***, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation					
	1-Y (1)	Negative (2)	Positive (3)			
High ESG Rating Info Male	3.774^{**} (1.714) 0.964 (1.422)	-0.420 (1.367) 0.838	-0.198 (1.505) 1.866 (1.255)			
$\frac{\text{Observations}}{R^2}$	$(1.430) \\ 287 \\ 0.112$	$(1.140) \\ 287 \\ 0.113$	$(1.255) \\ 287 \\ 0.104$			
Demographics control Preferences control	YES YES	YES YES	YES YES			

Table A.7: Heterogeneity - Total Investment

This table presents the coefficient estimates for total investment while controlling for participants' preferences and information on the high ESG rating, instead of solely categorizing them based on demographics. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation		
	1-Y	Negative	Positive
	(1)	(2)	(3)
High ESG Rating Info	3.492**	-0.487	-0.383
	(1.698)	(1.372)	(1.516)
Total Investment $\in (10K, 50K]$	-4.474^{**}	-0.489	-0.914
	(2.142)	(1.731)	(1.913)
Total Investment \in (50K, 100K]	-3.685	-2.593	-3.082
	(2.820)	(2.278)	(2.517)
Total Investment $\in (100K, 250K]$	-5.934^{**}	-1.963	-1.330
	(3.039)	(2.455)	(2.713)
Total Investment $> 250 \text{K}$	-7.154^{***}	-0.585	-1.674
	(2.661)	(2.150)	(2.375)
Observations	287	287	287
R^2	0.139	0.104	0.102
Demographics control	YES	YES	YES
Preferences control	YES	YES	YES

Table A.8: Heterogeneity – Education

This table presents the coefficient estimates for the educational background while controlling for participants' preferences and information on the high ESG rating, instead of solely categorizing them based on demographics. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation		able: vectation
	1-Y	Negative	Positive
	(1)	(2)	(3)
High ESG Rating Info	3.524^{**}	-0.553	-0.501
	(1.721)	(1.375)	(1.518)
Education (College)	-1.566	0.096	-0.292
	(2.261)	(1.807)	(1.995)
Education (University Level or Above)	-2.229	-0.286	-1.022
	(1.991)	(1.591)	(1.757)
Observations	287	287	287
R^2	0.114	0.099	0.098
Demographics control	YES	YES	YES
Preferences control	YES	YES	YES

Table A.9: Heterogeneity – Investing Experience

This table presents the coefficient estimates for investing experience while controlling for participants' preferences and information on the high ESG rating, instead of solely categorizing them based on demographics. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation		
	1-Y	Negative	Positive
	(1)	(2)	(3)
High ESG Rating	3.218^{*}	-0.511	-0.486
	(1.658)	(1.371)	(1.515)
Investing Experience $\in (4, 6]$	-1.439	1.645	-0.036
	(2.195)	(1.814)	(2.006)
Investing Experience $\in (6, 10]$	-2.101	-0.397	-0.243
	(2.634)	(2.177)	(2.407)
Investing Experience > 10	-9.316^{***}	-0.870	-2.104
Ŭ.	(2.077)	(1.717)	(1.898)
Observations	287	287	287
R^2	0.177	0.105	0.101
Demographics control	YES	YES	YES
Preferences control	YES	YES	YES

Table A.10:Heterogeneity - Income

This table presents the coefficient estimates for income while controlling for participants' preferences and information on the high ESG rating, instead of solely categorizing them based on demographics. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation		
	1-Y (1)	Negative (2)	Positive (3)
High ESG Rating Info	3.884^{**} (1.722)	-0.426 (1.373)	-0.381
Income \in (3K, 5K]	(1.122) 2.283 (2.301)	(1.078) (1.834)	(1.510) 1.509 (2.024)
Income \in (5K, 7.5K]	(2.501) 2.703 (2.716)	(1.001) 2.557 (2.166)	(2.021) 1.319 (2.390)
Income $> 7.5 K$	(2.956)	(2.357) (2.357)	(2.600) (2.600)
$\begin{array}{c} \text{Observations} \\ R^2 \end{array}$	$287 \\ 0.116$	$\begin{array}{c} 287\\ 0.104 \end{array}$	$287 \\ 0.104$
Demographics control Preferences control	YES YES	YES YES	YES YES

Table A.11: Heterogeneity – Financial Literacy

This table presents the coefficient estimates for expected return calculation ability while controlling for participants' preferences and information on the high ESG rating, instead of solely categorizing them based on demographics. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation		
	1-Y (1)	Negative (2)	Positive (3)
High ESG Rating Info Correct Return Calculation	(1) 3.710^{**} (1.706) 1.884 (1.738)	$ \begin{array}{r} (2) \\ -0.508 \\ (1.363) \\ 0.139 \\ (1.389) \end{array} $	(0) (-0.407) (1.505) -0.344 (1.534)
$\frac{\text{Observations}}{R^2}$	287 0.114	287 0.099	287 0.096
Demographics control Preferences control	YES YES	YES YES	YES YES

Table A.12: Heterogeneity – Occupation

This table presents the coefficient estimates for employment status while controlling for participants' preferences and information on the high ESG rating, instead of solely categorizing them based on demographics. Demographic characteristics comprise the gender, age, education, investing experience, occupation, income, total investment, monthly investment, portfolio size, and financial literacy (measured by correct expected return calculation) of the participants. Preferences are altruism, trust, reciprocity, negative reciprocity (Self), negative reciprocity (Others), ESG index fund preference, active ESG fund preference, and donation. Table B.1has the definitions of the variables. Standard errors are reported in parentheses. The ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Dependent variable: Fund's Return Expectation		
	1-Y	Negative	Positive
	(1)	(2)	(3)
High ESG Rating Info	3.579^{**}	-0.530 (1.362)	-0.378
Occupation (Paid work)	(1.655)	(1.602)	(1.503)
	3.258^{*}	0.685	-0.796
	(1.747)	(1.401)	(1.548)
$\frac{\text{Observations}}{R^2}$	$287 \\ 0.122$	$\begin{array}{c} 287\\ 0.100 \end{array}$	$287 \\ 0.097$
Demographics control	YES	YES	YES
Preferences control	YES	YES	YES

A.9 Respondents' Risk Perceptions for a Lower ESG rating in Field Survey

To investigate participants' perceptions of the risk-return trade-off regarding ESG funds, we correlate their risk perceptions with their return expectations. These return expectations are obtained from the answers to the non-incentivized Likert scale question in section 2.3 of our study. Participants who selected "I don't know" in the Likert scale question are excluded from the sample in the analysis. Figure A.7 presents the correlation between the participants' return expectations and their perceptions of risk in relation to lower ESG rated funds. Our findings indicate that participants who perceive a low ESG rating as indicative of higher risk tend to expect a higher expected return for the fund rated highly compared to the one with no rating, according to the exchangeability method.



Figure A.T. Tusk-return reception towards LSG funds

Note: This figure depicts the correlation between participants' return expectations and their risk perceptions regarding lower rated ESG funds. Participants' return expectations are derived from the non-incentivized Likert scale question concerning the performance of ESG funds relative to conventional funds. The participants who selected "I don't know" in the Likert scale question are excluded from the sample in the analysis. Further, participants' risk perceptions of lower rated ESG funds are obtained from their answers to the statement "Less sustainable investment funds carry more risk than sustainable investment funds: 1 = Totally disagree, 2 = Disagree, 3 = Fairly disagree, 4 = Average, 5 = Fairly agree, 6 = Agree, 7 = Totally agree."

B Appendix B

Variable	Description	Measurement
High ESG Info	Treatment of information on	In the ESG condition, information about
-	high ESG rating	the fund concerning the high ESG rating
		is provided, while in the non-ESG con-
		dition, no ESG-related information about
		the fund is offered
ESG Return Belief	The participant's answer to the	0, I do not know; 1, Much lower; 2, A bit
	question "I expect that the re-	lower; 3, The same; 4, A bit higher; 5,
	turns of index mutual funds	Much higher;
	that exclude companies with a	
	low ESG score, compared to in-	
	dex mutual funds that do not	
	exclude companies with a low	
	ESG score:"	
Male	Dummy variable for partici-	Equal to one if the participant reports be-
	pants' gender	ing a man
Age	The participant's self-reported	
Ominin	age	0 Dutch hasheround: 1 First consection
Origin	i ne participant s'answer to the	6, Dutch background; 1, First generation
	question four origin.	eration foreign non-Western background:
		3 Second generation foreign Western
		background: 4 Second generation foreign
		non-Western background: 5. Origin un-
		known, or part of the information un-
		known (missing values);
Investing Experience	The participant's answer to the	0, no or less than 1 year; 1, 1 year -3
	question "Please state the num-	years; 2, 4 years $-$ 6 years; 3, 7 years $-$
	ber of years that you have expe-	10 years; 4, more than 10 years;
	rience with investing:"	
Income	The participant's answer to the	0, No income; 1, 500 euros or less; 2, 501
	question "Your personal gross	euros to 1000 euros; 3, 1001 euros to 1500 $$
	monthly income in categories:"	euros;

 Table B.1: Definitions of Variables

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Variable	Description	Measurement
Education	The participant's answer to the question "We request that you state your highest education:"	0, Primary school; 1, VMBO (Prepara- tory secondary vocational education, US: Junior High School); 2, HAVO/VWO (Higher General Secondary Educa- tion/Preparatory Scientific Education, US: Senior High School); 3, MBO (sec- ondary vocational education, US: Junior College); 4, HBO (Higher Vocational Education, US: College); 5, WO (Univer- sity); 6, Other; 7, Not (yet) completed education; 8, No education started yet;
ESG Knowledge	The participant's answer to the question "I think that my knowledge about ESG (Envi- ronment, Social, Governance: an English-language designa- tion for investing with an eye for the environment, soci- ety and good corporate gover- nance) in the investment con- text is better than of the re- spondents to this survey."	A value between 0% and 100%
Total Investment	The participant's answer to the question "How much money do you currently invest (in shares/mutual funds)?"	0, I'd rather not say; 1, 4999 euros or less; 2, 5000 euros to 9999 euros; 3, 10000 euros to 24999 euros; 4, 25000 euros to 49999 euros; 5, 50000 euros to 99999 eu- ros; 6, 100000 euros to 249999 euros; 7, More than 250,000 euros;
Monthly Investment	The participant's answer to the question "How much do you invest on a monthly basis?"	0, 0; 1, 100 euros or less; 2, 101 euros to 300 euros; 3, 301 euros to 500 euros; 4, 501 euros to 1000 euros; 5, 1001 euros to 1500 euros; 6, 1501 euros to 2000 euros; 7, 2001 euros to 2500 euros; 8, 2501 euros to 3000 euros; 9, 3001 euros to 4000 euros; 10, 4001 euros to 5000 euros; 11, More than 5000 euros; 12, I'd rather not say;

Table B.1 – Continued from previous page

Variable	Description	Measurement
Occupation	The participant's answer to the question "We request that you indicate your main occupa- tion:"	 Paid work; 2, Works or assists in the family business; 3, Independent profes- sional, freelancer, or independent; 4, Job seeker due to loss of job; 5, New jobseeker; Except for searching for work as a re- sult of loss of job; 7, Goes to school or study; 8, Takes care of the household; 9, Is retired (voluntary), early pension, pen- sion scheme; 10, Has (partial) incapacity for work; 11, Does unpaid work while us- ing unemployment benefits; 12, Does vol- unteer work; 13, Does something else; 14, Is too young to have a job;
Portfolio Size	The participant's answer to the question "Suppose you have 10,000 euros in a savings ac- count. You can leave this money in the savings account for the coming year and will then receive 5% interest with certainty. You will then re- ceive 500 euros. Or you can in- vest the amount in an invest- ment fund that tracks the per- formance of the stock market based on a stock index, with a 50% chance of a return of +40% (+4,000 euros) and a 50% chance of a return of -20% (-2,000 euros). Given this infor- mation, how much of the 10,000 euros will you invest in this eq- uity investment fund?"	Investment Amount in the Index Fund
ESG Return by Likert Scale	The participant's answer to the question "I expect that the re- turns of sustainable investment funds compared to less sustain- able investment funds:"	0, I do not know; 1, Much lower; 2, A bit lower; 3, The same; 4, A bit higher; 5, Much higher;
Index Fund Return	The participant's answer to the question "In general, I expect the returns of index mutual funds compared to active mu- tual funds to be:"	0, I do not know; 1, Much lower; 2, A bit lower; 3, The same; 4, A bit higher; 5, Much higher;
Trust	The participant's answer to the question "I assume that people only have the best intentions."	1, Totally disagree; 2, Disagree; 3, Fairly disagree; 4, Average; 5, Fairly agree; 6, Agree; 7, Totally agree;

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Variable	Description	Magauroment
	Description	
Sustainability Risk	The participant's answer to	I, Totally disagree; 2, Disagree; 3, Fairly
	the question "Less sustainable	disagree; 4, Average; 5, Fairly agree; 6,
	investment funds carry more	Agree; 7, Totally agree;
	risk than sustainable invest-	
	ment funds."	
ESG Impact	The participant's answer to	1, Totally disagree; 2, Disagree; 3, Fairly
	the question "Investment funds	disagree; 4, Average; 5, Fairly agree; 6,
	with ESG integration (envi-	Agree; 7, Totally agree;
	ronmental, social, governance)	
	have a positive impact on soci-	
	ety."	
Positive Reciprocity	The participant's answer to the	1, Totally disagree; 2, Disagree; 3, Fairly
	question "When someone does	disagree; 4, Average; 5, Fairly agree; 6,
	me a favor, I am willing to re-	Agree; 7, Totally agree;
	turn the favor."	
Negative Reciprocity (Self)	The participant's answer to the	1, Totally disagree; 2, Disagree; 3, Fairly
	question "If I am treated very	disagree; 4, Average; 5, Fairly agree; 6,
	unfairly, I will take revenge at	Agree; 7, Totally agree;
	the first opportunity, even if	
	there are costs involved."	
Negative Reciprocity (Others)	The participant's answer to the	1, Totally disagree; 2, Disagree; 3, Fairly
	question "I am willing to pun-	disagree; 4, Average; 5, Fairly agree; 6,
	ish someone who treats others	Agree; 7, Totally agree;
	unfairly, even if it may come at	
	a cost to myself."	
ESG Index Fund Preference	The participant's answer to the	1, Totally disagree; 2, Disagree; 3, Fairly
	question "I would like to invest	disagree: 4. Average: 5. Fairly agree: 6.
	in an index investment fund	Agree: 7. Totally agree:
	that excludes companies that	
	do not sufficiently take into ac-	
	count the environment, society.	
	and corporate governance, even	
	if this investment strategy is	
	at the expense of the financial	
	performance of the investment	
	fund "	
	14114.	

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Variable	Description	Measurement
Active ESG Fund Preference	The participant's answer to the	1, Totally disagree; 2, Disagree; 3, Fairly
	question "I would like to invest	disagree; 4, Average; 5, Fairly agree; 6,
	in an actively managed invest-	Agree; 7, Totally agree;
	ment fund that excludes com-	
	panies that do not sufficiently	
	take into account the environ-	
	ment, society, and corporate	
	governance, even if this invest-	
	ment strategy is at the expense	
	of the financial performance of	
	the investment fund."	
Energy Transition Preference	The participant's answer to the	A value between 0 and 100
	question "To what extent are	
	you prepared to invest part	
	of your invested capital in an	
	investment fund that focuses	
	purely on companies that di-	
	rectly contribute to the energy	
	transition (for example by de-	
	vising solutions that lead to	
	higher energy efficiency or the	
	development of renewable en-	
	ergy)?"	
Energy Efficiency Engagement	The participant's answer to the	A value between 0 (Not important) and 6 (Nor important)
	question To what extent do	(very important)
	you think it is important that	
	nice in their voting policy (vot	
	ing at romoto shareholder most	
	ing at remote shareholder meet-	
	ings) of their engagement pol-	
	panies) on their energy effi-	
	ciency and contribution to the	
	energy transition?"	
Donation	The participant's answer to the	A value between 0 and 1000
Donation	question "Imagine the follow-	
	ing situation: You have unex-	
	pectedly received 1000 euros to-	
	day. How much of this amount	
	would you donate to charity?	
	(Values between 0 and 1000 are	
	allowed.)"	
		Continued on next page

Table B.1 –	Continued	from	previous	page
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pant's answer to the 'Meesman has two vestment funds. Eq- ment funds for the your assets. World- l Shares is the ul- re index investment assive investors and stainable Future is	A value between 0 and 400
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st in Worldwide To-	
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The rest will be au-	
invested in Shares	
e Future."	
	A value between 1 (Definitely not willing)
pant's answer to the	and 7 (Very willing)
pant's answer to the How willing are you	
pant's answer to the How willing are you charities without ex-	
	ipant's answer to the How willing are you

Table B.1 – Continued	from	previous	page
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Variable	Description	Measurement
Correct Return Calculation	The participant's answer to the	$0, 0.5 \times (0.4X \text{-} 0.2X) + 0.05 \times (10000 \text{-} X); 1,$
	question "Suppose that when	$1.4X + 0.8X + 1.05 \times (10000-X); 2, 0.4 \times$
	answering the previous ques-	$(10.000-X)-0.2 \times (10.000-X) + 0.05X; 3,$
	tion you decided to invest X eu-	$0.5 \times [0.4 \times (10000-X)-0.2 \times (10000-X)] +$
	ros of the amount of $\in 10000$	$0.05X; 4, 0.4X-0.2X+0.05 \times (10000-X); 5,$
	in the stock index investment	$0.5 \times (1.4X + 0.8X) + 1.05 \times (10000 - X); 6,$
	fund and you are one of the	$1.4 \times (10000 - X) + 0.8 \times (10000 - X) + 1.05X;$
	selected winners and therefore	7, $0.5 \times [1.4 \times (10000-X) + 0.8 \times (10000-X)]$
	you have $(10,000 - you have$	[X)]+1.05 X ; 8, I'd rather not answer that;
	put. Remember that the return	
	of the stock index mutual fund	
	in the coming year will be ei-	
	ther $+40\%$ or -20% with equal	
	probability. The return for the	
	savings account is guaranteed	
	at 5%. How much money do	
	you expect to have at the end	
	of this one-year investment pe-	
	riod? Please choose one of the	
	answers below. If you choose	
	the correct answer, you will re-	
	ceive a bonus of $\in 50$ on top	
	of your payout for this experi-	
	ment"	