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// BENNET JANSSEN AND YOUPENG ZHANG

Do Retail Investors Care About ESG Ratings?

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Do Retail Investors Care About ESG Ratings? *

Bennet Janssen Youpeng Zhang

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Abstract

This paper examines the causal impact of ESG ratings and their divergence on retail investors' sustainable investment decisions. Using a survey with a framed choice experiment conducted with 2,025 German retail investors, we document three key findings: (i) While about two in three investors claim they own sustainable equity funds, merely six percent actively incorporate ESG ratings into their own portfolio decisions; (ii) the sustainable investment is associated with the respondents' beliefs, motivations, and expectations; (iii) higher average ESG ratings increase investment in sustainable funds, but rating divergence reduces such allocations. We formally show that the results are consistent with an ESG portfolio choice model in which ESG rating divergence acts as noisy signals of sustainability and investors differ in their responsiveness based on rating credibility, sustainability preferences, and risk-return expectations. We provide further robust evidence that, while ESG rating divergence has a weaker effect on committed ESG investors, it significantly reduces the likelihood of sustainable investments among retail investors with lower exposure to green assets.

Keywords: Sustainable Finance, Portfolio Choices, ESG Ratings, Uncertainty, Investment Decisions
JEL Classification: G11, D14, G24, G41, G51, D83

*Janssen: University of Mannheim and ZEW - Leibniz Centre for European Economic Research. Email: bennet.janssen@zew.de. Zhang: University of Mannheim and ZEW - Leibniz Centre for European Economic Research. Email: youpeng.zhang@zew.de. We thank Tabea Bucher-Koenen, Karolin Kirschenmann, Alexander Glas, Andrej Gill, Katharina Holzheu, Marius Cziriak, seminar and workshop participants at ZEW and ifo Institut, and conference participants at Impact Investing & Measurement Conference in Mannheim, Conference on "Ageing and Sustainable Finance", Zurich Rising Scholar Conference in Finance, Liechtenstein Workshop of Sustainable Finance, GRASFI PhD Workshop in KU Leuven, MIFE Early Career Workshop 2025 for helpful comments and suggestions. The project is funded by the German Federal Ministry of Research, Technology and Space (Bundesministerium für Forschung, Technologie und Raumfahrt) under grant number 01LA2213A. We gratefully acknowledges financial support from the University of Mannheim's Graduate School of Economic and Social Sciences. The study obtained ethics approval from the German Association for Experimental Economic Research (No. eK3xs699). The study was preregistered at AEA RCT Registry (RCT ID: AEARCTR-0014364).

1 Introduction

Sustainable investing has grown rapidly among institutional and retail investors in the past decade, and ESG ratings have become a central tool for marketing and classifying these products.[1] Yet, despite the prominence of ESG ratings in financial markets, the extent to which ESG ratings actually influence investor behavior remains unclear. While ESG ratings aim to offer independent third-party evaluations of corporate sustainability performance, there is an ongoing debate about how reliable ESG ratings are and how ESG rating divergence, that is, inconsistencies of rating metrics across different rating agencies, undermines their informativeness and may confuse investors (see, e.g., Billio et al., 2021; Berg et al., 2022b; Chatterji et al., 2016). Previous studies have primarily focused on ESG rating measurements (Berg et al., 2022b) and how ESG ratings affect fund holdings (Berg et al., 2022a). Little is known about how and to what extent retail investors integrate these ESG concepts into their investment decisions.

In this paper, we examine whether and how ESG ratings and their divergence shape retail investors' sustainable investment decisions. We conduct a large-scale survey with a choice experiment among 2,025 German retail investors. This allows us to causally identify the effects of ESG rating levels and rating divergence between two leading rating providers (MSCI versus LESG) on sustainable fund allocation, and to explore heterogeneity by investor characteristics.[2] Our main findings are threefold. First, while about two in three investors claim they own sustainable equity funds, about 45 percent of investors have never heard of ESG ratings and approximately 31 percent though have heard of them but do not know what it means. Merely six percent actively incorporate ESG ratings into their actual portfolio decisions. These observations suggest that ESG ratings currently hold limited value for retail investors. This is surprising, because at least among retail investors, ESG flows may be less directly linked to ESG ratings than often assumed.

While recent research highlights the relevance of ESG ratings in institutional investment contexts, particularly in relation to regulatory compliance and mandate alignment,

[1] In Europe, nearly 60% of funds classified themselves as sustainable under the EU Taxonomy Regulation, collectively holding €5.5 trillion in assets (Morningstar, 2024).

[2] MSCI (Morgan Stanley Capital International) and LSEG (London Stock Exchange Group, incorporating Refinitiv) are two major ESG rating providers. Both firms assign sustainability scores to companies and funds, but their methodologies differ, often resulting in divergent ratings for the same asset. Refinitiv has been rebranded under the London Stock Exchange Group since 2023. For convenience, we use the name Refinitiv/LSEG interchangeably throughout this document to refer to the data and analytics services previously branded as Refinitiv.

our findings indicate that such information plays a much more limited role in retail investors' decision-making.[3] This observation also raises important questions for researchers and industry experts alike: If few retail investors actively use ESG ratings, what drives investment into sustainable equity funds? And does ESG rating divergence matter for how retail investors perceive or respond to sustainability information and investment?

Second, investment in sustainable equity funds appears to be primarily value-driven, rather than rating information-driven for retail investors. A rating information-driven investor would use ESG ratings the same way they would use credit ratings or earnings forecasts, as a credible signal of quality or risk that informs their allocation decision. A value-driven investor chooses ESG funds because they care about sustainability, want to "feel good", or believe they are doing the right thing. We distinguish between these motivations using a combination of survey measures that separately capture investors' beliefs, affective motivations, risk-return expectations, and their responses to ESG rating information. Specifically, we contrast ESG investing based on ESG ratings' signals, with investing rooted in personal values and social preferences, building on prior literature that explores heterogeneous non-pecuniary motives for sustainable investing (e.g., Bauer et al., 2021; Brodback et al., 2019; Cooper et al., 2005; Gutsche et al., 2023; Heeb et al., 2023; Riedl and Smeets, 2017). Our findings indicate that, while ESG ratings exert some influence, most of the variation in sustainable investment behavior is explained by retail investors' intrinsic beliefs, affective motivations, and risk-return expectations.

Third, when ESG ratings are present and observable as a primary feature of the experimental setup, our experimental results show that higher average ESG ratings lead to greater investment in sustainable funds, while rating divergence between two rating agencies discourages capital allocation to these assets. Both effects are economically significant. Specifically, an increase in the average ESG rating by one percentile results in an additional allocation of approximately €8 out of €1,000 to the sustainable fund. A one-percentile increase in divergence reduces the allocation to the sustainable fund by about €1.1. This suggests that disagreement between rating agencies weakens the perceived credibility of the signal, especially as divergence grows.

[3] See, for example, Hartzmark and Sussman (2019), who show that fund flows respond strongly to Morningstar ESG rating signals, and Parise and Rubin (2025), who document strategic "green window dressing" around disclosure dates to manipulate ESG scores. Amel-Zadeh and Serafeim (2018) provide survey evidence that ESG data is commonly used for investment performance relevance, while Berg et al. (2022a) highlight that MSCI ESG ratings drive fund holdings and stock returns, though often to fulfill mandates rather than reflect fundamental information. Note that all these studies focus on institutional investment.

We perform a series of robustness checks to assess whether our results are confounded by alternative explanations. First, we account for participants' stated preferences for specific ESG rating agencies, including whether they favor MSCI or LSEG ratings. Next, we test whether our estimate for the divergence effect is sensitive to the functional form of the rating variables by including dummy variables for rating ranges to capture potential non-linearities. Across all specifications, the divergence effect remains robust and statistically significant.

Finally, we re-estimate our main models to examine heterogeneous treatment effects based on participants' sustainable investment behavior, self-reported engagement, and financial literacy levels. The results suggest that ESG ratings do play an informational role when presented. The divergence effect is stronger among investors who are less engaged or less committed to ESG investing. In contrast, those already invested in sustainable funds or more attuned to ESG considerations appear much less affected by rating divergence. Moreover, heterogeneity by financial and sustainable finance literacy shows that while higher literacy amplifies the positive response to average ESG ratings, it also strengthens the negative response to rating divergence. In other words, investors who are more financially and sustainability-literate are more sensitive to inconsistencies between rating agencies, reducing their allocations when signals conflict. Thus, while rating divergence does not appear to undermine the behavior of existing ESG investors, it may serve as a barrier to entry for less committed investors or financially literate respondents. Investors, who already exhibit lower levels of trust, greater skepticism toward sustainable financial investments, or lower expectations of returns from sustainable funds, may be further discouraged from investing in sustainable funds due to the signal of uncertainty.

Related literature. A growing body of literature uses ESG ratings to examine how corporate sustainability performance relates to financial outcomes and investor behavior (see, e.g., Aboud and Diab, 2018; Carrillo et al., 2023; Christensen et al., 2022; Park and Ravenel, 2013). Despite their growing prominence in empirical work and practice, ESG ratings are far from standardized. ESG rating divergence arises primarily due to differences in methodologies, metrics, and weighting employed by various rating agencies when assessing ESG factors. Chatterji et al. (2016) assess the convergent validity of six major corporate social responsibility (CSR) rating agencies and find low agreement in their evaluation, suggesting that inconsistencies in how CSR is measured undermine the reliability of these ratings. Berg et al. (2022b) take a further step by analyzing the underlying reasons for the ESG rating divergence, highlighting that ESG rating agencies often

disagree on the same company's rating, due to variations in its scope, measurement, and weighting. Billio et al. (2021) show that divergence is particularly pronounced in the governance dimension, while environmental scores tend to dominate overall ESG ratings. Beyond methodological variation, financial incentives may also shape ESG rating assessments. For instance, agencies may tailor ratings to promote proprietary index products or enhance data demand by capturing specific return patterns, increasing their appeal to data purchasers (Agrawal et al., 2023; Berg et al., 2021). Rating divergence creates uncertainty in capital markets, increasing volatility and influencing stock returns (Christensen et al., 2022; Gibson Brandon et al., 2021). ESG rating uncertainty raises perceived market risk, heightens risk premiums, and lowers investor demand (Avramov et al., 2022). While most of this literature focuses on the corporate level, our paper extends the scope by examining fund-level ratings and their subsequent influence on investment decisions among retail investors. Our survey experiment provides novel insights into how retail investors respond to ESG rating divergence. To our best knowledge, this is the first study to establish the causal impact of perceived ESG uncertainty on sustainable investment decisions, offering a unique perspective on retail investor behavior in response to rating divergence.

Our paper contributes to the ESG investment literature by providing new insights into the factors that drive demand for sustainable investments. We distinguish value-driven and information-driven motivations in sustainable investment. Value-driven investors prioritize alignment with personal values and ethical considerations, often investing in ESG products regardless of expected financial performance (see, e.g., Bauer et al., 2021; Brodback et al., 2019; Derwall et al., 2011; Gutsche et al., 2023; Haber et al., 2022; Riedl and Smeets, 2017). Riedl and Smeets (2017) examined how social preferences and return expectations shape socially responsible investments (SRI), while more recent studies, for example, Giglio et al. (2023) show that while most investors expect ESG investments to underperform the market, their portfolio holdings are primarily driven by ethical motives and anticipated outperformance, with substantial heterogeneity in return expectations. In contrast, information-driven investors treat ESG ratings as credible signals of risk-adjusted returns or firm quality, analogous to credit ratings or financial disclosures, and adjust portfolios accordingly. For example, Hartzmark and Sussman (2019) show that mutual fund flows respond strongly to Morningstar ESG rating signals, while Parise and Rubin (2025) find that asset managers strategically adjust portfolios around disclosure dates to inflate ESG scores and attract flows, both consistent with information-

driven behavior. We find that while ESG ratings do exert some influence, they are often secondary to social preferences for retail investors. These findings add to recent literature suggesting that ESG investing by private investors is more often driven by personal norms than by analytical processing of ESG data.

At the same time, return expectations for sustainable assets vary significantly across investors and play a crucial role in shaping portfolio choices (Bauer et al., 2021; Giglio et al., 2023; Riedl and Smeets, 2017). ESG ratings and their uncertainty do not only affect investors with ethical concerns but also those that associate sustainability with assets' return distributions. Hence, ESG ratings and their uncertainty influence not only ethically motivated investors but also those who associate sustainability with return distributions, as these ratings signal an asset's exposure to sustainable return risks (Pastor et al., 2021; Pedersen et al., 2021). Importantly, an understanding of sustainable finance and the ability to effectively align sustainability preferences with investment decisions are critical to unlock retail investors' demand for sustainable assets (Anderson and Robinson, 2022; Auzepy et al., 2024; Filippini et al., 2024, 2025). Thus, our paper also contributes to the literature by explicitly incorporating financial expectations and financial literacy into the analysis of sustainable investment decisions, providing a more comprehensive view of the trade-offs retail investors consider when allocating capital to ESG products.

Our paper shifts the focus of ESG investing from institutional to retail investor behavior, providing novel evidence on the potential for ESG ratings to effectively guide sustainable investment decisions in retail investment. The low engagement with ESG ratings for investment decisions, despite their clear influence in our experimental setting, hints at the need to make ESG ratings more accessible to retail investors. In addition, the inconsistency in ESG ratings further complicates their utility, as rating divergence potentially creates uncertainty and may erode trust among retail investors. Coupled with the observed impact of rating divergence on investor behavior, this signals the importance of improving the reliability and transparency of ESG evaluation methods. Clearer and more transparent methodologies for sustainable compliance could reduce uncertainty, bolster investor confidence, and facilitate more effective capital allocation toward genuinely sustainable investments.

The remainder of the paper is organized as follows. Section 2 presents the theoretical framework. Section 3 describes the ESG rating data and documents ESG rating divergence. Section 4 outlines the survey and experimental design. Section 5 reports descriptive evidence, and Section 6 presents the main experimental results and heterogeneity

analyses. Section 7 concludes.

2 Theoretical Framework

With uncertainty about assets' sustainability and ESG ratings often varying significantly across assets, understanding how investors navigate these obstacles to sustainable investing is crucial.[4] This section introduces a theoretical framework to analyze how sustainability and its associated uncertainty influence portfolio allocation decisions. Building on the model of Pastor et al. (2021), Avramov et al. (2022) extend the framework by incorporating uncertainty regarding the non-pecuniary payoff from sustainable investing. The key distinction of our model is that ESG divergence affects not only the non-pecuniary payoff but also the variance of financial returns. This occurs because uncertainty about the ESG level of an asset introduces randomness in its exposure to the ESG market factor. The theoretical framework laid out here makes predictions about investment behavior that will be tested in the empirical analysis of our investment experiment in Section 6.

Consider an investor allocating her savings between two funds: an ESG fund offering a financial return R_s and a conventional fund delivering a return R_c. The ESG fund is characterized by a sustainability level θ, which provides additional utility to the investor. The returns of both funds depend on the overall market return M, but as the sustainability level increases, the ESG fund's exposure shifts from M to the ESG-specific market factor G. The returns for the two funds are defined as:

$$R_c = M + e_{R_c}, \tag{1}$$

$$R_s = \theta G + (1 - \theta)M - f + e_{R_s}, \tag{2}$$

where e_{R_c} and e_{R_s} represent idiosyncratic shocks specific to each conventional and ESG fund, respectively. Moreover, the ESG fund charges an additional management fee f. The true sustainability level θ is unobservable to the investor, who assumes that it follows a normal distribution with mean $\bar{\theta}$ and variance σ_θ^2. For analytical convenience, we assume that θ is independent of M, G, e_{R_c}, and e_{R_s}, reflecting the idea that the sustainability level of a single fund is unrelated to realized market returns. Furthermore, the market return, idiosyncratic shocks, and ESG level are assumed to be jointly normally distributed:

[4] The uncertainty refers to the uncertainty caused by ESG rating divergence.

$$\begin{pmatrix} G \\ M \\ \theta \\ e_{R_s} \\ e_{R_c} \end{pmatrix} \sim \mathcal{N} \left(\begin{pmatrix} \mu_G \\ \mu_M \\ \bar{\theta} \\ 0 \\ 0 \end{pmatrix}, \begin{bmatrix} \sigma_G^2 & \rho\sigma_M\sigma_G & 0 & 0 & 0 \\ \rho\sigma_M\sigma_G & \sigma_M^2 & 0 & 0 & 0 \\ 0 & 0 & \sigma_\theta^2 & 0 & 0 \\ 0 & 0 & 0 & \sigma_{e_{R_s}}^2 & 0 \\ 0 & 0 & 0 & 0 & \sigma_{e_{R_c}}^2 \end{bmatrix} \right) \tag{3}$$

While Pastor et al. (2021) and Avramov et al. (2022) assume constant absolute risk aversion (CARA), we will assume that the investor optimizes mean-variance utility U:

$$U = \max_{\{a\}} \mathbb{E}\Big[aR_s + (1-a)R_c\Big] + b\mathbb{E}\Big[a\theta\Big] - \frac{\gamma}{2}\text{Var}\Big(aR_s + (1-a)R_c\Big) - \frac{\delta b}{2}\text{Var}\Big(a\theta\Big) \tag{4}$$

where γ is the risk aversion parameter. Note that we assume that the conventional fund does not deliver any non-pecuniary payoff and also bears no uncertainty in its level of sustainability. We choose the mean-variance framework over the CARA utility assumption for two reasons: First, the mean-variance framework enables us to obtain closed-form solutions for a. The random exposure θ to the ESG factor G and the market factor M prevents closed-form solutions in the case of utility with CARA. Second, the mean-variance approach allows us to distinguish between the willingness to pay for additional ESG b and the risk aversion associated with sustainability δ. Plugging in definitions (1), (2) and (3) into (4) yields:

$$\begin{aligned} U = \max_{\{a\}} \; & a\bar{\theta}(\mu_G - \mu_M) - af + \mu_M + ab\bar{\theta} - \frac{\delta}{2}ba^2\sigma_\theta^2 \\ & - \frac{\gamma}{2}\Big(a^2(\sigma_\theta^2 + \bar{\theta}^2)(\sigma_G^2 + \sigma_M^2 - \rho\sigma_G\sigma_M) + a^2\sigma_\theta^2(\mu_G - \mu_M)^2 - 2a\bar{\theta}(\sigma_M^2 - \rho\sigma_G\sigma_M) \\ & + a^2\sigma_{e_{R_s}}^2 + (1-a)^2\sigma_{e_{R_c}}^2\Big) \end{aligned} \tag{5}$$

Equation (6) shows the optimal portfolio allocation for the investor.

$$a = \frac{\bar{\theta}(\mu_G - \mu_M) - f + b\bar{\theta} + \gamma\bar{\theta}(\sigma_M^2 - \rho\sigma_M\sigma_G) + \gamma\sigma_{e_{R_c}}^2}{\gamma\Big(\sigma_{e_{R_c}}^2 + \sigma_{e_{R_s}}^2 + (\sigma_\theta^2 + \bar{\theta}^2)\Big(\sigma_M^2 + \sigma_G^2 - 2\rho\sigma_G\sigma_M\Big) + \sigma_\theta^2(\mu_G - \mu_M)^2\Big) + \delta b\sigma_\theta^2} \tag{6}$$

The allocation to the sustainable asset bears a lot of resemblance to the asset allocation models of Pastor et al. (2021) and Avramov et al. (2022). However, there is an important difference from existing models. Not only does the investor account for the non-pecuniary sustainability and its uncertainty, but the uncertainty of the ESG market

risk exposure σ_θ^2 amplifies the impact of market risks on the allocation. Although high return expectations for sustainable assets contribute to higher ESG investments, these return expectations also increase portfolio variance in the presence of ESG uncertainty. This variance moderates the positive effect of high return expectations for sustainable assets on portfolio allocation.

An investor will use ESG ratings if she expects to obtain a better distributional profile for θ. That is, there are two motivations behind the use of ESG ratings in our framework: Retail investors may try to find funds that have the optimal expected level of ESG $\bar{\theta}$ or pursue a reduction in ESG uncertainty σ_θ^2. Although we abstract from modeling the cost of searching for a better ESG profile, we can derive the incentives behind improving on $\bar{\theta}$ or σ_θ^2. The incentive for a higher $\bar{\theta}$ is described by equation (7).

$$\frac{dU}{d\bar{\theta}} = a(\mu_g - \mu_M) + ab + \gamma a(\sigma_M^2 - \rho\sigma_G\sigma_M) - a^2\bar{\theta}\gamma(\sigma_M^2 + \sigma_G^2 - 2\rho\sigma_G\sigma_M) \tag{7}$$

The investor is willing to pay for a higher expected ESG level $\bar{\theta}$ if inequality (8) holds:

$$a\bar{\theta} < \frac{(\mu_g - \mu_M) + b + \gamma(\sigma_M^2 - \rho\sigma_G\sigma_M)}{\gamma(\sigma_M^2 + \sigma_G^2 - 2\rho\sigma_G\sigma_M)} \tag{8}$$

The right-hand side of the above inequality is the optimal exposure to the sustainable market factor G. Assuming that conventional and sustainable funds are well diversified, i.e. $\sigma_{e_{R_c}}^2 = \sigma_{e_{R_s}}^2 = 0$, and have the same fees, i.e. $f = 0$, the investor will always strive for a higher expected ESG level as long as she desires some sustainability in her portfolio if there is uncertainty about ESG, i.e. $\sigma_\theta^2 > 0$. If there is no uncertainty about ESG, changing $\bar{\theta}$ will not affect the investor's welfare as she can simply adjust her allocation a to suit her investment preferences. Similarly, we can analyze the incentive to reduce the portfolio's sustainability-related uncertainty.

$$\frac{dU}{d\sigma_\theta^2} = -\frac{\gamma a^2}{2}\left((\sigma_G^2 + \sigma_M^2 - 2\rho\sigma_G\sigma_M) + (\mu_G - \mu_M)^2\right) - \frac{\delta a^2 b}{2} \tag{9}$$

Equation (9) presents the cost that ESG uncertainty imposes on investors. If the investor incorporates sustainable assets in some way in her portfolio ($a \neq 0$), beliefs in sustainable assets having a different risk-return profile or risk aversion concerning the non-pecuniary payoff increase the cost of ESG uncertainty. Equations (7) and (9) describe the willingness to pay for improvements to the ESG profile. Hence, they capture the motivation to utilize ESG ratings as a tool to ensure the sustainability of their investments.

Importantly, both non-pecuniary motivations and return beliefs affect the incentive to use ratings.

We use the solution in equation (6) to calculate the marginal effect of the expected ESG level on investment allocation:

$$\frac{\partial a}{\partial \bar{\theta}} = \frac{(\mu_G - \mu_M) + b + \gamma(\sigma_M^2 - \rho\sigma_G\sigma_M) - 2a\gamma\bar{\theta}\left(\sigma_M^2 + \sigma_G^2 - 2\rho\sigma_G\sigma_M\right)}{\gamma\left(\sigma_{e_{R_c}}^2 + \sigma_{e_{R_s}}^2 + (\sigma_\theta^2 + \bar{\theta}^2)\left(\sigma_M^2 + \sigma_G^2 - 2\rho\sigma_G\sigma_M\right) + \sigma_\theta^2(\mu_G - \mu_M)^2\right) + \delta b\sigma_\theta^2} \tag{10}$$

If the sustainability level of the ESG fund is expected to be zero, the effect of higher expected sustainability levels on ESG investments is proportional to the allocation of perfect diversification and zero fees. Suppose that an investor prefers to have some sustainable market exposure in her portfolio. As $\bar{\theta}$ increases, its positive effect on sustainable investments decreases and turns negative as soon as the expected sustainability exposure $a\bar{\theta}$ reaches half of the preferred exposure to the sustainable market factor absent fees and idiosyncrasies.

$$\frac{\partial a}{\partial \bar{\theta}} > 0 \;\Leftrightarrow\; a\bar{\theta} < \frac{1}{2}\frac{(\mu_G - \mu_M) + b + \gamma(\sigma_M^2 - \rho\sigma_G\sigma_M)}{\gamma\left(\sigma_M^2 + \sigma_G^2 - 2\rho\sigma_G\sigma_M\right)} \tag{11}$$

Equations (10) and (11) show that utility gains from higher expected sustainability do not necessarily translate to more sustainable investments. Conversely, higher investments in sustainable funds as a result of higher sustainability expectations indicate preferences for sustainability. Higher sustainability will only lead to greater allocations only as long as the portfolio's sustainability exposure $a\bar{\theta}$ remains below half of the investor's preferred exposure to the sustainable market factor in the absence of fees, idiosyncratic risks and ESG uncertainty. Hence, if investors are found to invest more when facing higher sustainability levels, then this indicates that either of these factors is distorting allocations from the optimum.

Next, we will analyze how ESG uncertainty affects the investment allocation. It can be easily seen in equation (6) that sustainable investments react negatively and concave to ESG rating divergence.

$$\frac{\partial a}{\partial \sigma_\theta^2} = \frac{-a\left(\gamma(\sigma_M^2 + \sigma_G^2 - 2\rho\sigma_G\sigma_M) + \gamma(\mu_G - \mu_M)^2 + \delta b\right)}{\gamma\left(\sigma_{e_{R_c}}^2 + \sigma_{e_{R_s}}^2 + (\sigma_\theta^2 + \bar{\theta}^2)\left(\sigma_M^2 + \sigma_G^2 - 2\rho\sigma_G\sigma_M\right) + \sigma_\theta^2(\mu_G - \mu_M)^2\right) + \delta b\sigma_\theta^2} \tag{12}$$

Equation (12) shows how the effect of ESG rating divergence on sustainable invest-

ments depends on the return distributions and is negative for $a \geq 0$. It showcases how ESG uncertainty not only operates through the non-pecuniary payoff but also through return expectations. Note that the divergence effect is proportional to the marginal welfare loss from ESG uncertainty. Therefore, finding an empirical divergence effect is equivalent to investors disliking ESG rating divergence.

This theoretical framework shows that ESG rating divergence reduces sustainable investment, raising the question of whether such uncertainty also influences investors' financial decisions. If investors exhibit a low aversion to ESG uncertainty relative to the cost of verifying a fund's sustainability characteristics, funds with uncertain ESG credentials may still attract investments as long as investors believe it to be sustainable. As a consequence, fund managers may have limited incentives to provide verifiable proof of sustainability if investors do not actively seek or verify such information.

3 ESG Ratings in Mutual Funds

We use the ESG rating data from two leading providers: MSCI and Refinitiv/LSEG to evaluate the ESG profiles of the investment funds and examine how these ratings are distributed across real-world funds. Both agencies assess the ESG factors of funds, but they apply different methodologies, weighting criteria, and scopes. MSCI ratings are derived from the weighted average of ESG scores in a fund's portfolio. The ratings reflect the resilience of a fund's portfolio to long-term ESG risks and are presented on a seven-point letter scale, from CCC (laggard) to AAA (leader). The MSCI ESG Quality Score, which ranges from 0 to 10, is derived by rescaling holding weights, calculating the weighted average ESG score of the holding, and assigning a corresponding letter rating based on the predetermined thresholds (MSCI, 2023). Refinitiv/LSEG scores range from 0 to 100, based on ESG performance across Environmental, Social, and Governance pillars. Refinitiv/LSEG assigns ESG scores to funds on a scale ranging from 0 to 100, with higher scores indicating stronger ESG performance. The ratings are based on the performance of the underlying holdings of a fund, assessed across 10 categories that roll up into three main pillars: Environmental, Social, and Governance. These are combined into an overall ESG score for each fund. The rating process uses a so-called "fund roll-up" method, where ESG scores for individual holdings are aggregated and adjusted for any holdings that lack sufficient data. The ratings are then expressed as weighted average, taking into account the fund's total net assets and the proportion of holdings with available ESG data (Refinitiv, 2023).

Our sample is sourced from MyFairMoney, an independent, non-commercial platform with a comprehensive database of European funds. Of the 15,763 funds in the database with a total volume of $8.7 trillion, 12,579 have MSCI ESG ratings, and 8,747 have LSEG ESG ratings. A subset of 7,970 funds, managing $5.2 trillion in assets, have ratings from both agencies, forming the basis for our comparison. Specifically, we also rank all funds into percentiles based on their ESG scores from each rating provider. This percentile transformation standardizes comparisons across providers with potentially different scoring methodologies and distributions. As shown in Figure A1 in Appendix A, the correlation between MSCI and Refinitiv ESG ratings is modest at 0.58 for both ESG and non-ESG funds, suggesting substantial disagreement in how ESG ratings are assessed. The hexbin plots, supplemented by marginal histograms, further imply a pronounced divergence in the joint distribution of percentiles, even among ESG-labeled funds, highlighting cross-provider inconsistencies. This divergence aligns with studies with firm level analysis, such as Chatterji et al. (2016) and Berg et al. (2021) and suggests that ESG ratings provide noisy and conflicting signals about a fund's actual sustainability. Such noise may explain why retail investors rarely rely on ESG scores: If they perceive divergence as a sign of unreliability, then rating inconsistency undermines the ratings' perceived value and discourages their use in investment decisions.

Within this matched sample, 57% of funds identify themselves as ESG-integrated. To better understand how ESG ratings are distributed across sustainable funds, we examine their empirical cumulative distribution functions in Figure A2. When we condition the samples on the ESG rating percentiles of ESG-labeled funds, we only observe small deviations from the overall distribution of ESG ratings. Put differently, the likelihood of an ESG fund having a below-median MSCI rating is roughly 43% and having a Refinitiv rating below the median is about 50%, which suggest that ESG-labeled funds are not systematically concentrated at the upper end of the rating scale and often resemble conventional funds in their rating distribution. The next section explores this issue using our survey and experimental data, assessing the extent to which ESG ratings actually influence investment decisions.

4 Survey and Experiment Design

We conducted a survey among 2,025 retail investors in Germany, in collaboration with Norstatpanel, a leading survey agency. The survey was fielded between late September and early October 2024. It collects information on retail investors' conceptualization of

sustainability, views on ESG ratings and investment behavior when facing ESG ratings. The survey is structured in three main parts: a pre-experiment survey, an investment experiment, and a post-experiment section gathering additional socio-demographic and financial information.

We aimed to obtain a sample that is broadly representative of German equity investors by mapping the age and gender distributions reported in the latest DAI (Deutsches Aktieninstitut) report.[5] To be eligible for participation, respondents had to be at least 18 years old, reside in Germany, and have experience with investments in stocks and/or investment funds. Table 1 displays summary statistics on key sociodemographic characteristics of our sample. To ensure high-quality responses, we incorporated attention checks throughout the survey. As shown in Figure A3 in Appendix A, respondents take on average 18.8 minutes to complete the survey and the median completion time is about 16.1 minutes. Most of the respondents completed the survey within 10 to 40 minutes.

4.1 Pre-experiment Survey

The pre-experiment survey gathers information on participants' familiarity with ESG concepts, financial literacy, subjective expectations regarding sustainable investments, and social preferences. This provides us an understanding of each investor's prior knowledge and attitudes toward sustainability.

Sustainability and ESG ratings. To explore how investors perceive sustainability and ESG ratings, participants were asked which aspects (namely, environment, climate, social issues, human rights, energy efficiency, governance, and diversity) should financial investments take into account to be deemed sustainable. We then asked respondents whether they were familiar with ESG ratings, using the question: "Have you ever heard about the ESG ratings of stocks or funds?" Respondents selected one of four options: "No, I've never heard of it," "Yes, I've heard of it, but I'm not sure what it means," "Yes, I am familiar with ESG ratings, but I have not actively considered them," and "Yes, I am familiar with ESG ratings and actively consider them when making investment decisions." By including this question, we are able to capture the extent to which retail investors are aware of ESG ratings and the degree to which these ratings influence their decision-making processes.

Furthermore, we ask respondents to identify which specific ESG rating agencies they

[5]Specifically, we targeted a sample with 38% females and age shares of 29% below 40, 16% between 40 and 49, 24% between 50 and 59, and 30% aged 60 and above. The 2023 DAI report (in German) can be accessed here.

were familiar with and whether they had a preference for some ESG ratings over others.[6] Familiarity with specific rating providers is important, because it may influence how investors perceive the credibility and relevance of ESG information. Preferences for certain agencies could also reveal underlying biases or trust issues that affect investment decisions. We also assess the importance of various investment criteria when investing in mutual funds for retail investors. Participants rated the importance of return risk, sustainability, climate compatibility, past returns, fund volume, and fees on a 5-point Likert scale, where "1" represents "not at all important" and "5" represents "very important." The answers to this question reflect to what extent retail investors prioritize sustainability compared to financial criteria.

Financial literacy and sustainable finance literacy. Financial literacy and sustainable finance literacy have been shown to significantly influence investment behavior and the adoption of sustainable financial products (Filippini et al., 2024, 2025). Higher financial literacy mitigates the disengagement observed among pro-environment households (Anderson and Robinson, 2022). The survey includes a set of questions designed to measure both general financial literacy and sustainable finance literacy. General financial literacy is assessed using the "Big Three" questions from Van Rooij et al. (2011) with two additional questions related to mutual funds from Bucher-Koenen et al. (2025). Sustainable finance literacy is measured using questions adapted from Filippini et al. (2024). To complement respondents' self-reported familiarity with ESG, including knowledge-based questions, for example, asking participants to identify what the abbreviation "ESG" stands for. This allows us to distinguish between those who merely recognize the term and those who actually understand its meaning. Since our questionnaire assesses participants' understanding of basic financial concepts as well as specific knowledge related to sustainable finance, we are able to compare general financial literacy with understanding of sustainability-specific investment principles.[7]

Beliefs, motivations, and and subjective expectations. To understand whether sustainable investments are primarily value-driven or rating information-driven. We elicit investors' beliefs and motivations toward sustainable investments, which we define and group into intrinsic beliefs and affective motivations. We also include questions to capture respondents' subjective expectations by asking them to compare the long-term av-

[6] The answer options for the ESG ratings are: MSCI ESG Rating, ISS (Institutional Shareholder Services) ESG, Preqin ESG, Bloomberg ESG, Morningstar Sustainalytics, Refinitiv Lipper Fund ESG scores, ESG-Book, S&P Global (RobecoSAM), FTSE Russell, RepRisk, Moody's ESG (Vigeo-Eiris).

[7] The survey questions and the distribution of participants' responses for both financial literacy and sustainable finance literacy are documented in Appendix C.

erage risk, return, and fees of sustainable equity funds with those of conventional equity funds. This subjective assessment allows us to capture investors' financial expectations, which may influence their willingness to invest in sustainable products.

Specifically, participants rated the statements on a scale from "1" (strongly disagree) to "5" (strongly agree), covering the following dimensions of ESG-related social preferences. Intrinsic beliefs include (1) I only invest in a sustainable equity fund if I can be sure that it invests exclusively in sustainable companies (*Trust*); (2) I believe that the ratings issued by private-sector agencies to assess the sustainability of companies are credible (*Rating belief*); (3) Sustainable financial investments are just a marketing strategy with which financial institutions want to attract investors (*Skepticism*, modified from Riedl and Smeets (2017)). Affective motivations include (1) I feel good when I invest in sustainable financial assets, even if their impact on the environment and society cannot be assessed (*Warm glow*, modified from Gutsche and Zwergel (2020));[8] (2) Investments in sustainable financial assets have a positive impact on the environment and society (*Impact*, modified based on Brodback et al. (2019)); (3) I would only invest in sustainable investments on the financial market if they offer the same or higher returns as conventional investments (*Higher return*).

For financial expectations, each item was measured on a 5-point Likert scale, ranging from 1 (much lower) to 5 (much higher), with the answer option "don't know" and the response wording adapted from Riedl and Smeets (2017). (1) I expect the long-term average returns of sustainable equity funds to be higher (or lower) than those of conventional equity funds (Expected return); (2) I expect the long-term risk of sustainable equity funds to be higher (or lower) than that of conventional equity funds (Expected risk); (3) I expect the fees of sustainable equity funds to be higher (or lower) than those of conventional equity funds (Expected fees).

4.2 Investment Experiment

To test whether ESG ratings and their divergence affect retail investors' investment decisions, we conduct an investment experiment in which respondents allocate a hypothetical sum of €1,000 between two options: a conventional fund and a sustainable fund. The investment choices participants made in the experiment were hypothetical and did

[8] Warm glow, e.g., by Andreoni (1990), which describes how individuals may derive emotional satisfaction simply from the act of giving or contributing to a prosocial cause, regardless of its measurable impact. In the context of sustainable investing, recent findings by Heeb et al. (2023) suggest that many investors behave as "warm-glow optimizers". We extend the concept to our context by specifically referring sustainable investments using the clause: "even if their impact on the environment and society cannot be assessed".

not result in monetary payouts based on their allocations. The literature on incentivization shows that monetary incentives either do not affect participants' decisions (see, e.g., Brañas-Garza et al., 2021; Engler et al., 2025; Enke et al., 2023; Drichoutis et al., 2024; Hackethal et al., 2023; Hascher et al., 2021) or it reduces risk-taking in experiments (Beattie and Loomes, 1997; Berlin et al., 2024; Etchart-Vincent and l'Haridon, 2011; Holt and Laury, 2002).[9]

For the sustainable fund, we display ESG ratings from two leading providers, MSCI and Refinitiv/LSEG, and these ratings are varied exogenously across different scenarios. These ratings are presented as percentile ranks assigned by the respective agencies, reflecting how each fund compares to its peers in terms of ESG performance. Participants are asked to make nine hypothetical investment decisions, with all other fund characteristics comparable across the choice sets, except for the varying ESG ratings of the sustainable fund. In order to ensure that our empirical results are not driven by preferences for a specific rating agency or by ordering effects, we varied the experimental design between subjects.

Within-subject variation. In the within-subject design, each participant was presented with nine sets of investment choices. Participants were asked to allocate a fixed amount of €1,000 between two funds: one conventional fund with constant ratings of (50, 50) and one sustainable fund where the ratings varied between nine different combinations of ESG ratings: (25, 25), (25, 50), (25, 75), (50, 25), (50, 50), (50, 75), (75, 25), (75, 50), and (75, 75).[10] The two numbers in parentheses represent the percentile ranks compared to other funds' ESG rating from the respective rating provider. For example, (75, 50) indicates that one agency places the fund in the 75th percentile, while the other places it in the 50th percentile. The variation reflects how divergent ratings may influence investment decisions, with the hypothesis that larger divergence in ratings reduces investments in the sustainable fund. The ratings of the conventional fund remain constant at (50, 50) across all choice sets. All participants first completed the benchmark choice, in which

[9] Engler et al. (2025) provide the most recent evidence on this question in sustainable finance and compares non-incentivized and incentivized choice experiments with over 2,100 investors in Germany and France. Contrary to concerns about hypothetical bias, the study finds that willingness-to-pay for sustainable investments does not differ significantly across the two settings, and individual characteristics affect preferences similarly.

[10] A potential concern is why ESG-labeled funds in our experiment sometimes receive lower ESG percentiles than conventional funds. This setup reflects real-world data, where ESG ratings are often highly divergent across agencies. As discussed in Section 3, our matched sample of 7,970 funds shows that ESG-labeled funds can indeed have ESG percentiles below the median, depending on the rating provider. In fact, 43% of ESG funds have a below-median MSCI ESG rating, and 50% fall below the median using Refinitiv. This divergence underscores the noisy and inconsistent nature of ESG assessments across providers.

both ratings of the sustainable fund were set to 50. The remaining eight ESG rating combinations were then presented in randomized order. Figure 1 shows one example of the (50, 50) rating of the conventional fund and the (75, 75) rating of the sustainable fund.

[Figure 1 here]

Between-subject variation. In addition to the within-subject variation in ESG ratings, we implemented a between-subject design to control for potential ordering effects. The order in which participants enter their allocations between the conventional and sustainable funds may influence their decisions, as may the order in which the MSCI and Refinitiv/LSEG ratings are displayed. To control for such potential ordering effects, we assign each participant to one of four groups. We randomly assign the order in which they allocate the €1,000 between the conventional and sustainable funds. We also randomize the order in which the ESG ratings of the two agencies are presented. This mitigates any bias that might arise from the sequence in which choices or ratings are displayed, ensuring that any observed differences in investment preferences are attributable to the variation in ESG ratings themselves rather than the presentation format.

To ensure participants understood the experimental setup, they were required to complete a brief quiz before proceeding (see Figure 1). Participants who failed the quiz on their first attempt were given another opportunity to retake it. Those who failed a second time were shown the correct answers along with a short explanation. Figure A4 in Appendix A reports the percentage of the correct responses for the experiment quiz. The percentage of correct responses for each experiment quiz question is above 85% for each item. About 74% were able to answer all three questions correctly on the first attempt and 85% on the first and the second attempt. This implies that respondents took the sufficient time to provide thoughtful responses and showed a solid understanding of the experiment.[11]

The main outcome variable in our experiment is the amount of endowment allocated to the sustainable fund in each combination of ESG ratings. To assess how ESG ratings influence investments, we compare capital allocations between different groups and rating combinations, allowing us to causally identify whether ESG rating divergence leads to significant changes in sustainable investments.

[11] We kepp all respondents for the main analysis. As a robustness check, we re-estimate all main specifications excluding respondents who did not answer all quiz questions correctly on their first attempt. The findings remain very similar.

4.3 Post-experiment Survey

Following the investment experiment, participants completed a post-experiment survey designed to capture their reflections on the decision-making process, investment experience, and current portfolio composition.

Participants were first asked to describe the factors that influenced their investment decisions. Specifically, they responded to the open-ended question: "Now we are interested in which aspects played a role for you in this financial decision. Please briefly explain to us what was most important to you when making your investment decision." To assess the perceived significance of the hypothetical investment, participants rated how they viewed the investment amount of €1,000 on a scale from "1" (a small investment amount) to "7" (a significant investment amount). Participants were also asked to evaluate the importance of sustainability ratings and of rating divergence in their investment choices.

Investment experience and portfolio composition. To capture the participants' investment background, our survey includes questions about their experience with equity investments. Participants were asked, "How many years of experience do you have in investing in stocks or equity funds/equity ETFs?" (in years). They were also asked to estimate the proportion of their actual, non-hypothetical assets invested in stocks or equity funds/ETFs and the estimated proportion of their equity investments specifically allocated to sustainable equity funds. We surveyed basic sociodemographic information such as age, gender, education, occupation, income, and region in the final part of the survey. See Appendix E for details on survey design.

5 Descriptive Statistics and Survey Response

5.1 Sample of Retail Investors

We report summary statistics on the sociodemographics of our sample in Table 1. 36.7% of the respondents were female and the average age of the participants was around 50 years. 32.5% had a Master's degree and 19.4% had a Bachelor's degree. The majority of respondents (72.4%) were employed, while 21.7% were retired. Approximately 40% of the sample had a net income between €3,000 and €4,999 per month, while 10.5% earned less than €2,000.

As described in Subsection 4.2, we implemented a between-subject design to account for potential preferences between MSCI and Refinitiv/LSEG ESG ratings. Participants

were randomly assigned to one of two groups that differed only in the order in which the two ESG ratings were displayed: In one group, the MSCI ratings were displayed above the Refinitiv/LSEG ratings, while the other group saw the reverse order, with identical underlying rating variations. Table 1 shows that there are no substantial differences between the two groups. Additionally, to verify that our results are not driven by the order in which sustainable and conventional funds were presented in the choice tasks, we conduct a robustness check reported in Appendix A. As shown in Table B1, the descriptive characteristics are balanced across all conditions, indicating that ordering effects are unlikely to bias our results.

[Table 1 here]

5.2 Survey Responses

Sustainability perception. Figure A5 in Appendix A shows how respondents distributed their views on which aspects financial investments should incorporate to be considered sustainable. Respondents prioritize environmental aspects, with *environment* being the most frequently mentioned factor (64.6%), followed by *climate* (59.9%) and *social issues* (59.6%). Other aspects such as *human rights* (55.2%) and *energy efficiency* (53.5%) also garnered substantial recognition. Items like *governance* (44.6%) and *diversity* (30.9%) were comparatively less emphasized. A small but notable proportion of respondents (10.8%) indicated that none of the listed factors were relevant to sustainability in their view. 82% of the respondents' answers included environment, social or governance factors, proving that ESG broadly encapsulates investors' definition of sustainability.

ESG knowledge and asset holdings. Panel A of Table 2 examines how ESG awareness and engagement relate to portfolio choices. In the full sample, 38.9% of respondents report that sustainability plays a role in their investment decisions, and 68.4% report owning sustainable equity fund. However, these outcomes vary markedly by ESG awareness. Among respondents who report never having heard of ESG ratings, only 31.5% say sustainability plays a role in their investment, and just 64.6% own sustainable funds. In contrast, these figures rise to 62.8% and 80.8%, respectively, among respondents who are aware of ESG ratings. The most pronounced differences appear among those who actively incorporate ESG considerations into their investment decisions: 96.0% of this group reports sustainability playing a role, and 98.4% report owning sustainable equity funds. The pattern is less pronounced when considering portfolio composition. The average equity portfolio share is 48.9% in the full sample but rises only to 53.8% for those

aware of ESG ratings and 54.6% for those who actively consider ESG. More notably, the sustainable equity share increases from 17.6% in the full sample to 25.6% for those aware of ESG, and further to 42.5% for active ESG investors. These differences are statistically significant and economically meaningful, suggesting that sustainable investors tend to be more informed about ESG and sustainability-related information.

To distinguish between those who simply recognize the term ESG and those who actually understand its meaning, in Panel B we explore sustainable financial literacy (SFL) and examine how correctly answering ESG-related questions and sustainable financial literacy questions correlates with their portfolio behavior. *SFL ESG correct*, *SFL ESG incorrect*, and *SFL ESG don't know* refer to respondents who answered sustainable finance literacy regarding the abbreviation of ESG correctly, incorrectly or indicated "do not know", respectively.[12] The SFL above the median and the SFL below the median are the median split based on the five correct SFL questions. Surprisingly, the differences are muted. First, consider the variable *SFL ESG correct*, which captures whether the respondent correctly answered a single question regarding the meaning of ESG. While those who answered correctly show marginally higher rates of sustainable investment, e.g., 77.0% owning sustainable equity funds compared to 74.3% among those who answered incorrectly, the differences are statistically insignificant across all portfolio outcomes, including sustainable equity share. Even respondents who answered the ESG question incorrectly still exhibit high levels of sustainable fund ownership. Next, we consider the broader SFL index, based on five sustainable finance literacy questions. When splitting respondents by the median score, we find no significant differences in sustainability role, sustainable fund ownership, or overall equity share. For example, 40.5% of respondents with above-median SFL scores report that sustainability plays a role in their investments, almost identical to the 40.1% among those below the median. This might imply that sustainable investment decisions are less about the informational content of ESG.

[Table 2 here]

Beliefs, motivations, and expectations. To explore the role of value-driven motives, Figure 2 summarizes the distribution of respondents' beliefs, affective motivations, and financial expectations regarding sustainable equity funds, grouped by whether they hold such funds in their portfolios. Panel A displays differences in intrinsic beliefs. Respondents who hold sustainable funds are more likely to express the need for reassurance:

[12] In our sample, 28.7% of respondents correctly identified the meaning of the ESG abbreviation, comparable to the 26.4% reported by Filippini et al. (2024) using a Swiss sample.

50% agree or strongly agree with the statement "I only invest in a sustainable equity fund if I can be sure that it invests exclusively in sustainable companies," compared to 36% among those without such funds. A similar pattern holds for skepticism in sustainable financial investments: About 48% of those without sustainable funds agree that sustainable financial investments are mostly a marketing strategy, compared to 35% among holders, indicating that concerns about greenwashing are widespread regardless of actual ESG investment behavior. Interestingly, rating belief is relatively low in both groups, though a notable gap remains: only 29% of sustainable fund holders agree that ratings issued by private sector agencies are credible, compared to just 11% among non-holders. This suggests that even among ESG investors, confidence in the informational value of ESG ratings is limited.

Panel B reports affective motivations. Warm-glow preferences appear strongly predictive of actual sustainable financial investment behavior: 50% of respondents with sustainable funds agree that they "feel good" when investing sustainably, compared to just 21% among those without such funds. Similarly, 56% of sustainable fund holders agree that sustainable investments have a positive impact on the environment and society, in contrast to 29% among those without sustainable holdings. In line with this, 75% of investors without sustainable funds agree that they will only invest in sustainable assets if they offer the same or higher returns as conventional ones, compared to 54% among sustainable fund investors. These patterns suggest that many sustainable investment decisions are morally motivated for sustainable fund holders and financial return driven for those without such funds.

Panel C reports respondents' financial expectations. Overall, expectations regarding long-term risk and fees of sustainable equity funds are relatively similar across groups, though slightly more respondents without sustainable funds (45%) perceive sustainable funds as more expensive, compared to 41% among sustainable fund holders. A larger share of non-holders believes that sustainable funds yield much lower long-term returns, 57% compared to 41% among sustainable fund holders. These patterns imply that many investors are motivated by social preferences and are willing to forgo some financial returns in pursuit of sustainability goals, consistent with findings by Bauer et al. (2021) and Gutsche et al. (2023). Intrinsic beliefs and values-based motivations may offset financial concerns for some investors, while those who do not invest sustainable funds remain primarily return-oriented. Figure A6 and Figure A7 in Appendix A reports the detailed distribution by quartile and of pooled sample, respectively.

[Figure 2 here]

6 ESG Ratings and Investment Decisions

6.1 Engagement and Preferences of ESG Ratings

Much of the existing research evaluates the role of sustainability in financial markets and valuing assets. These studies primarily focus on the impact of different ESG ratings on asset prices, capital flows, volatility, and market behavior. In this section, we explore retail investors' engagement and preferences for ESG ratings, shedding light on the role these ratings play in sustainable investments. First, we examine how ESG ratings are perceived and utilized outside of institutional settings.

Figure 3 shows the percentage distribution of respondents' ESG rating awareness and engagement, grouped by whether they hold sustainable equity funds in their current portfolio. The responses are based on the question: "Have you ever heard about the ESG ratings of stocks or funds?" Among respondents who have sustainable equity funds, 37.9% reported they had never heard of ESG, while 34.2% were unsure of what ESG means. In contrast, only 8.7% actively considered ESG ratings in their decisions. For those who do not have sustainable equity funds, a much larger share of 61.1% had never heard of ESG ratings. Overall, 45.3% of respondents had never heard of ESG ratings, while only 6.1% actively incorporated them into their investment decisions.

[Figure 3 here]

Figure A8 in Appendix A shows the share of respondents who are familiar with various ESG rating agencies. The options are only displayed to the 23.6% of respondents who indicated that they are familiar with ESG ratings ($N = 478$), whether or not they have considered them in their investments. Panel A displays the recognition of ESG agencies that respondents are familiar with, with MSCI leading at around about 45%, followed by S&P Global, Bloomberg, and ISS. Panel B represents the preferred ESG ratings, where respondents indicated preferences for some ESG rating agencies over others ($N = 105$). Here, MSCI again stands out as the most preferred rating provider, followed by ISS and Bloomberg, with smaller shares for other agencies. In comparison to Figure 3, Figure A8 also indicates that investors are less familiar with specific ESG rating agencies than with the general concept of ESG. While many respondents have some awareness of ESG as a concept, much fewer can identify or express familiarity with particular rating agencies.

6.2 ESG Engagement, Investment Preferences and Beliefs

To understand the role of ESG ratings in retail investment, it is important to first understand the drivers of investments in sustainable equity funds. Some investors may trust fund managers' sustainability claims, while others may be motivated by personal values or be indifferent to uncertainty about the true sustainability of a fund. In Table 3, we analyze both the extensive (Columns 1 and 2) and intensive (Columns 3 and 4) margins of sustainable fund holdings, regressing them on investors' intrinsic beliefs and affective motivations toward sustainable investments.

[Table 3 here]

As expected, the warm glow motive and the belief in the impact of sustainable investments are strong predictors of sustainable investments. The coefficient on the *higher return* is negative and statistically significant in both the extensive and intensive margins, which implies that investors who are primarily return-driven are less likely to invest in sustainable equity funds. Approximately 45% of survey participants rated at least a four out of five on a Likert scale when asked whether they need to be certain that a sustainable fund invests exclusively in sustainable assets before investing in it. However, this need for assurance has no effect on the intensive but a positive effect on the extensive margin of sustainable fund investments. This is in line with the theory in Section 2: Aversion regarding the uncertainty about sustainability reduces investments on the intensive margin.

Financial literacy, measured by the number of correct answers to five financial literacy questions, is negatively correlated with sustainable fund holdings across all specifications. A potential explanation could be that financially literate individuals diversify their portfolio beyond mutual funds, for example through direct stock holdings or bond investment. However, since our survey did not collect data on other financial assets ownership, we cannot verify this possibility. Another explanation could be that financially literate investors have on average lower preferences for sustainable investments. Higher financial literacy is positively associated with stock market participation (Van Rooij et al., 2011). At the same time, pro-environmental views are often aligned with the political left, a group that tends to be more skeptical of financial institutions, corporations, and markets, and therefore less likely to participate in the stock market (see, e.g., Anderson and Robinson, 2022; Kaustia and Torstila, 2011; Ke, 2024). Consistent with prior research, we confirm that the number of correct answers to sustainable finance questions is posi-

tively correlated with sustainable fund ownership (see, e.g., Auzepy et al., 2024; Filippini et al., 2024, 2025). Moreover, we find that investors who know of ESG ratings are more likely to hold sustainable funds. Furthermore, those who actively use ESG ratings in their investment decisions allocate almost 12% more to sustainable funds. There are two potential reasons for this: First, the use of ESG ratings may enable investors to better identify sustainable funds, leading to an overall larger allocation to sustainable funds. Second, investors making large investments in sustainable funds have a greater incentive to check ESG ratings as discussed in Section 2.

In order to understand why only few retail investors refer to ESG ratings when deciding on their portfolio allocations, we regressed the use of ESG ratings on investment preferences and financial knowledge. The regression results are presented in Table 4. The belief in the impact of sustainable investments and warm glow are both positively correlated with investors' tendency to verify the sustainability of their investments using ESG ratings. The need for reassurance of sustainability claims and the perception of sustainable finance as a marketing scheme are both associated with a higher likelihood of investors considering ESG ratings.

Two variables stand out in their association with the use of ESG ratings. First, the belief that ESG ratings are credible is closely tied to their use. Taking the estimates at face value, a two-point increase in the average credibility score of 2.9 on a 1–5 Likert scale is associated with more than a doubling of the share of investors who report considering ESG ratings in their investments. We find a similarly strong correlation for sustainable finance literacy: given that the average respondent answered only 1.7 out of five questions correctly, sustainable finance literacy appears to be an important factor associated with investors' ability to verify sustainability claims.

[Table 4 here]

The above correlations are not driven by sociodemographic variables for which we control in Columns (2) and (4). Since almost all respondents who consider ESG ratings in their portfolio selection are also invested in sustainable funds, there may be the concern that the estimates are driven by ESG rating use being a proxy for sustainable investments. Therefore, we condition only on those investors who own sustainable funds in Columns (3) and (4), finding slightly greater estimates in this subgroup of investors.

6.3 Experimental Effects of Ratings on Investment Decisions

In light of retail investors' limited engagement with ESG ratings, an important question is how they respond to ESG ratings and their divergence when such information is made salient and presented as a primary feature. As shown by the theoretical framework in Section 2, we distinguish between two channels through which ESG ratings may influence investment decisions. First, higher average ESG ratings increase the expected sustainability level of a fund. In the face of fund-specific idiosyncratic risks, fees or ESG uncertainty, this should raise allocations to sustainable assets if the investor has favorable return expectations for sustainable assets or has a non-pecuniary preference for sustainable assets. Second, disagreement between rating agencies introduces uncertainty about the sustainability of a fund, which reduces the attractiveness of sustainable investments. Our experiment allows us to isolate these two effects by independently varying the average level of ESG ratings and the degree of rating divergence while keeping all other fund characteristics constant.

We vary the mean and variance perceptions of sustainability by presenting them with two distinct ESG ratings of varying levels. Let θ_1 and θ_2 represent the two sustainability ratings provided to retail investors. The amount allocated by respondent i to the sustainable fund when presented with a particular set of ratings k is denoted as y_{ik}. To analyze the effect of these ratings on investment decisions, we estimate a baseline regression in which the dependent variable, the amount allocated to the sustainable fund, is regressed on the mean of the two ratings $\bar{\theta} = \frac{\theta_1+\theta_2}{2}$ and the absolute difference between them. The specification is as follows:

$$y_{ik} = \beta_1 \bar{\theta}_k + \beta_2 |\theta_{1k} - \theta_{2k}| + c_i + \varepsilon_{ik} \tag{13}$$

where c_i is the individual fixed effect and ε_{ik} is the idiosyncratic error term for respondent i in set k. In this equation, the coefficient β_1 captures the effect of the average ESG rating on investment allocation, while β_2 reflects the impact of the divergence (absolute difference) between the two ratings. If investors tend to allocate more to the sustainable fund when the ratings indicate higher levels of ESG, we expect $\beta_1 > 0$. Conversely, if divergence between the ratings generates uncertainty and reduces investment in the sustainable fund, we expect $\beta_2 < 0$.

[Table 5 here]

Our empirical results support both hypotheses. As shown in Table 5, the average ESG

rating has a positive and significant effect on sustainable fund allocations. An increase in the average rating by one percentile leads to an additional allocation of about €8 out of €1,000 to the sustainable fund. The divergence between the two ratings, measured by $|\theta_1 - \theta_2|$, has a statistically significant, negative but small effect compared to the effect of the average rating. A one-percentile increase in divergence reduces the allocation to the sustainable fund by about €1.1. Specifically, increasing one of the two ratings by one percentile increases investment in the sustainable fund by about €5, if the rating is lower than the other one, and by approximately €3 if the rating is greater than the other one.[13] This pattern is consistent with the framework in Section 2, where ESG uncertainty reduces sustainable investment.

[Figure 4 here]

Given that we presented the names of the rating agencies, survey participants may assign a higher credibility to one of the two rating agencies. To test whether individuals react more to the MSCI rating, we included the MSCI rating as a separate variable into the regression in Column (2) of Table 5. We do find that participants reacted stronger to the MSCI rating compared to the Refinitiv rating but the size of this effect is small in magnitude.

One potential concern is that the identification of β_2 might be confounded by non-linear relationships, as y_{ik} is unlikely to vary linearly with the average of θ_1 and θ_2 while keeping the divergence constant. In particular, $|\theta_1 - \theta_2|$ is obviously highly correlated with $(\theta_1 - \theta_2)^2$ which captures both non-linear effects of the mean rating as well as rating divergence. As shown in Figure 4, moving from a 2nd rating of 25 to 50 results in a larger increase in investment compared to moving from 50 to 75, while keeping the 1st rating of 75 unchanged. To address this, we account for non-linearities in the mean rating by including dummies for the ratings of each rating agency. That is, we correct for the effect of the MSCI or Refinitiv rating being changed from the median to the 25th and 75th

[13] By taking the partial derivative of equation (13) with respect to θ_{1k}, we obtain:

$$\frac{\partial y_{ik}}{\partial \theta_{1k}} = \begin{cases} \frac{\beta_1}{2} + \beta_2, & \text{if } \theta_{1k} > \theta_{2k} \\ \frac{\beta_1}{2} - \beta_2, & \text{if } \theta_{1k} < \theta_{2k} \\ \emptyset, & \text{if } \theta_{1k} = \theta_{2k} \end{cases}$$

percentile. We estimate the following modified regression equation:

$$y_{ik} = \beta_2|\theta_{1k} - \theta_{2k}| + \beta_3 D_{\theta_{MSCI,k}=25} + \beta_4 D_{\theta_{MSCI,k}=75} + \beta_5 D_{\theta_{Ref.,k}=25} + \beta_6 D_{\theta_{Ref.,k}=75} + c_i + \varepsilon_{ik} \tag{14}$$

where $D_{\theta_{MSCI,k}=25}$, $D_{\theta_{MSCI,k}=75}$, $D_{\theta_{Ref.,k}=25}$, $D_{\theta_{Ref.,k}=75}$ are dummy variables that take the value 1 if, in set k, the corresponding ESG rating is at the 25th or 75th percentile and 0 otherwise.[14] The omitted category is the 50th percentile rating, which serves as the reference group. Column (3) in Table 5 shows that accounting for non-linearities modestly reduces the effect size of the divergence effect. Still, rating divergence significantly affects sustainable investments. Another potential concern is that some participants may not have fully understood the experiment. To address this, we exclude those who did not answer all three quiz questions correctly in the first round. As shown in Table B2 in Appendix B, our results remain robust.

6.4 Heterogeneous Treatment Effects

The theoretical framework in Section 2 predicts heterogeneity in investors' responses to ESG ratings arising from differences in sustainability preferences, beliefs about the financial performance of sustainable assets, and attitudes toward risk and uncertainty. We therefore examine heterogeneity along these dimensions. First, investors who expect sustainable assets to outperform conventional assets should increase their allocations in response to higher expected sustainability levels, although this effect is attenuated by uncertainty regarding sustainability. Second, investors who believe in the positive impact of sustainable finance or derive non-pecuniary utility from sustainable investing should respond more strongly to the average ESG rating. Third, investors who place greater value on the assurance regarding the sustainability of their investments should be more sensitive to ESG rating divergence, which increases uncertainty about the true sustainability level of an asset. Finally, there are dimensions along which the model does not yield sharp predictions. For example, it is a priori unclear how subjective risk perceptions of sustainable assets affect responses to average ESG ratings or rating divergence.

We interact each rating variable with indicators for respondents split by their intrinsic beliefs and affective motivations. Each belief or motivation - trust, skepticism, rating belief, warm glow, impact, and higher return, which is measured on a five-point Likert

[14] Here instead of treating the average rating as a single continuous variable, the regression includes dummy variables for the percentile positions of each agency's rating (25, 50 baseline, 75). This absorbs the variation in the mean rating into those dummies.

scale and split at the sample median. Individuals scoring below the median form the "below median" group; those at or above the median form the "above median" group. We estimate the baseline regression model equation (13) separately for each subgroup using interaction terms, while controlling for individual fixed effects and clustering standard errors at the respondent level.

[Figure 5 here]

Panel (a) in Figure 5 displays treatment effects based on the average ESG rating, while Panel (b) reports effects based on rating divergence. Panel (a) shows that investors with the need for reassurance about sustainability, a higher degree of warm glow, and greater belief in the impact of sustainable investments show significantly larger responses to the average ESG rating. These findings suggest that positive ESG signals are most effective among those with pre-existing pro-sustainability attitudes or emotional motivation. In contrast, the effect of rating divergence is more pronounced among respondents who deem ESG ratings to be non-credible, showing that rating divergence exacerbates their existing doubts, further reducing their willingness to allocate capital to sustainable funds. Those who indicated that they require trust in the sustainability of a fund before investing in it (our proxy for δ in the theoretical model) are also somewhat more reactive to ESG divergence.

[Figure 6 here]

Next, we analyze how financial expectations shape responses to ESG information in Figure 6. Panel (a) shows that expectations of higher returns from sustainable funds significantly increase the effect of average ESG ratings, indicating that at the effect ratings have on sustainable investments is driven in part by return expectations. We also observe pronounced heterogeneity based on perceived fees. Investors who find sustainable funds to be more expensive (above-median perceived fees) are more sensitive to the average rating. Consistent with equation (10), the higher fees of sustainable funds reduce their allocation. Once the sustainability level rises, the gains from investing in a more sustainable fund offset the higher fees.

[Figure 7 here]

Figure 7 presents heterogeneous treatment effects by respondents' sustainable investment behavior and engagement with ESG ratings. We stratify the sample by quartiles of

the sustainable equity share in respondents' portfolios (Q1 = lowest share, Q4 = highest), and by levels of ESG engagement, distinguishing between those who have never heard of ESG ratings or heard of ESG rating but not sure what it means ("Don't know"), those who are aware but do not actively use them ("Know"), and those who actively consider them when making investment decisions ("Consider").[15] Panel (a) shows that responsiveness to average ESG ratings is broadly consistent across all groups, with slightly stronger reactions among more engaged or more heavily invested participants. However, more striking differences emerge in Panel (b), which examines sensitivity to rating divergence. Here, we find that respondents in the highest quartile of sustainable fund holdings (Q4) are least sensitive to ESG rating disagreement, with treatment effects that are nearly three times smaller than those in the lowest quartile. Likewise, respondents who actively consider ESG ratings exhibit smaller sensitivity to divergence, despite their higher overall engagement. These patterns are not directly implied by the theoretical model but instead reflect differences in realized sustainable investment behavior. Retail investors who actively use ESG ratings and hold substantial positions in sustainable funds are also those least affected by ESG rating disagreement. Conversely, investors with low exposure to sustainable funds appear more responsive to ESG divergence, consistent with the interpretation that sustainability-related uncertainty discourages their participation in sustainable investing.

Motivated by evidence on the role of financial literacy in financial decision-making (Bucher-Koenen et al., 2025; Van Rooij et al., 2011) and the importance of sustainable finance literacy for sustainable investments (Filippini et al., 2024, 2025), we examine heterogeneity by literacy levels. Figure 8 examines heterogeneous effects by financial literacy and sustainable finance literacy scores. Panel (a) shows that investors with higher literacy allocate more to sustainable funds in response to higher average ESG ratings. Panel (b) shows, however, that these same groups are also more sensitive to rating divergence. In particular, investors with higher literacy scores reduce their allocations more sharply when confronted with inconsistent ratings across agencies. This indicates that more financially literate respondents are especially responsive to conflicting signals, making the effect of rating divergence more pronounced.[16]

[15] Quartiles are based on the respondent's share of sustainable equity funds in their portfolio (Q1 = lowest, Q4 = highest), where Q1 covers those with 0%, Q2 with 1–10%, Q3 with 11–25%, and Q4 with more than 26% of their equity portfolio allocated to sustainable funds. Note that the shares are not hypothetical investments, but the participant's current, real investments.

[16] For details on the regression results, see Appendix B Table B3 - Table B7.

[Figure 8 here]

These findings suggest that those who already invest heavily in sustainable funds or who are most attuned to ESG considerations are less affected by inconsistencies between ESG rating agencies. In contrast, rating divergence appears to matter most for those who are less engaged or less invested in ESG, potentially acting as a barrier to entry. This implies that while rating disagreement may not undermine the behavior of existing ESG investors, it could hinder the broader adoption of sustainable investing by less committed individuals. As shown in Figure A6 in Appendix A, which presents the detailed distribution of investors' social preferences and expectations by quartile, investors who already approach sustainable funds with greater skepticism, limited trust, or permissive return expectations may be further discouraged from engagement when confronted with inconsistent ESG assessments. Moreover, investors with higher financial literacy react more strongly to conflicting ratings, likely because sustainable financial products and ESG evaluations are complex and require specialized knowledge.[17]

7 Conclusion

ESG funds aim to align with investors' growing demand for sustainable investments. How- ever, ESG ratings, designed to objectively assess the sustainability of funds, often fail to distinguish ESG funds from conventional ones. Despite the growing salience of ESG ratings in the classification and marketing of financial products, we find that such ratings play a surprisingly limited role in actual investment behavior among retail investors. Using a large-scale survey and a choice experiment with 2,025 German retail investors, we uncover a notable disconnect: although the majority of participants claim to own sustainable equity funds, only a small fraction are familiar with ESG ratings, and fewer even actively use them in portfolio allocation. The disconnect between sustainability-conscious investors and the low adoption of ESG ratings suggests that ESG ratings may not be a primary driver of investment decisions.

Our survey evidence points to a clear distinction between value-driven and information-driven ESG investing. Our findings suggest that retail ESG investing is driven less by third-party rating information and more by beliefs, motivations, and financial expecta-

[17] For example, Anderson and Robinson (2022) argue that green investment decisions involve added informational complexity, which can prevent less financially sophisticated individuals from expressing their preferences in portfolio choices. They also note that while some view more information as essential for sound decision-making, others emphasize that excessive complexity can overwhelm investors and hinder effective decisions.

tions. Value alignment, trust in sustainability claims, emotional payoff ("warm glow"), and perceived social impact dominate ESG investment choices. Our findings align with Heeb et al. (2023), who show that investors' willingness to pay for sustainable investments is primarily driven by emotional rather than calculative assessments of impact. If retail investors were strongly motivated by a desire to maximize impact, we would expect them to seek out third-party evaluations, such as ESG ratings, to guide their investment decisions. However, impact is inherently difficult to measure, and the lack of consistency across ESG rating providers introduces additional uncertainty. This helps explain why ESG ratings, despite their intended role as informational signals, are rarely used among retail investors in practice.

Our experimental results indicate that when ESG ratings are made salient, they do influence investor behavior, pointing to a latent potential for ratings to guide investment, if trust and clarity can be improved. The experimental setting of the study shows that higher average ESG ratings do increase allocations to sustainable funds, while greater divergence across rating agencies undermines such allocations. This effect is particularly pronounced among investors who hold less sustainable assets, confirming the importance of perceived signal credibility. In contrast, investors who are already committed to ESG investing or who actively consider ESG ratings appear relatively immune to the negative effect of divergence. This asymmetry suggests that ESG rating divergence could act as a barrier to entry, preventing broader adoption of sustainable investments by more skeptical retail investors. Retail investors who are already less trusting, more skeptical of sustainable investments, or hold modest expectations about returns from ESG funds may become even more hesitant when faced with additional signals of uncertainty, such as divergent ESG ratings.

Our findings carry important implications for both policy and practice. From a regulatory perspective, greater compliance and transparency in ESG rating methodologies may help mitigate confusion and improve the informational value of ratings for retail investors. Current divergence across rating agencies sends noisy signals that may reduce trust and discourage engagement. In addition, the findings challenge the assumption that ESG ratings automatically translate into investor behavior. Instead, social preferences and perceived credibility are key drivers of retail investors' sustainable investment decisions.

Finally, our study contributes to a growing literature at the intersection of sustainable finance, behavioral economics, and household finance by highlighting the values-driven

and informational mechanisms underlying ESG investment. By integrating social preferences, subjective expectations, and experimental evidence into a unified analysis, we offer new insights into why ESG ratings matter, and for whom they matter most. If sustainable investment is to become more mainstream, improving the alignment between ESG information and investor perception is essential.

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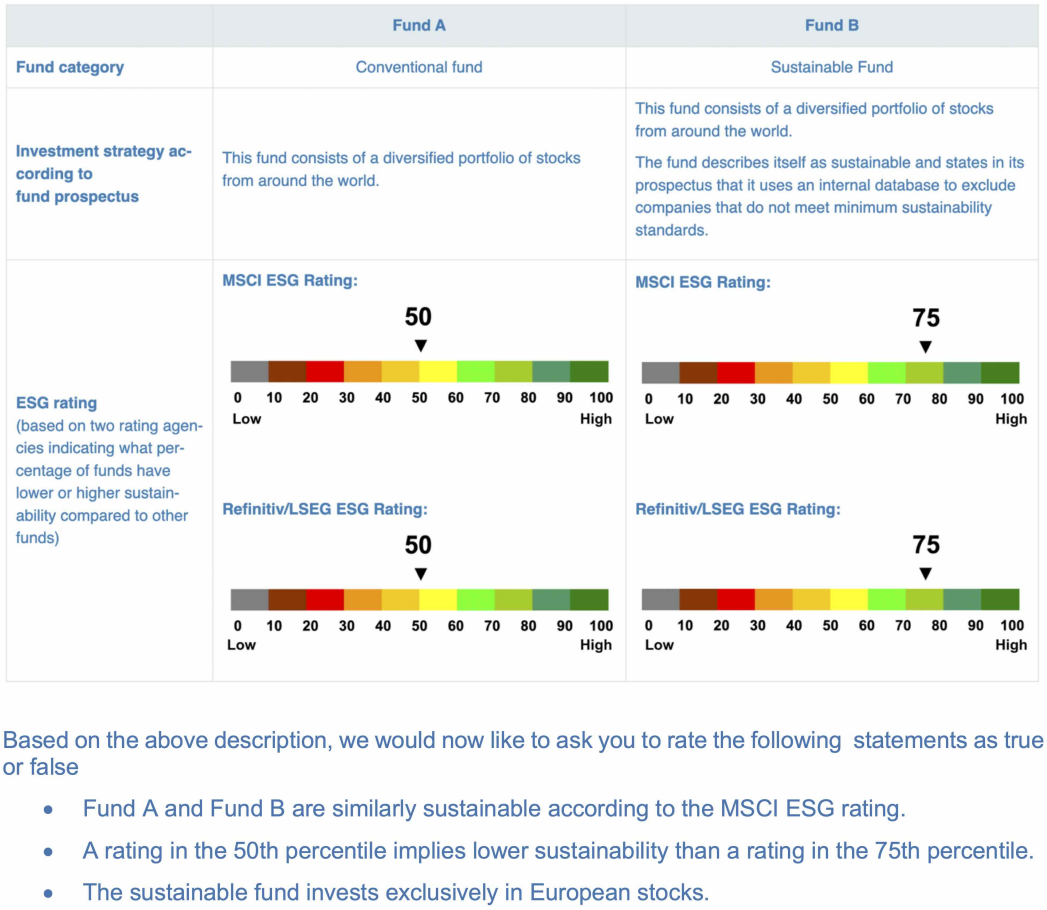
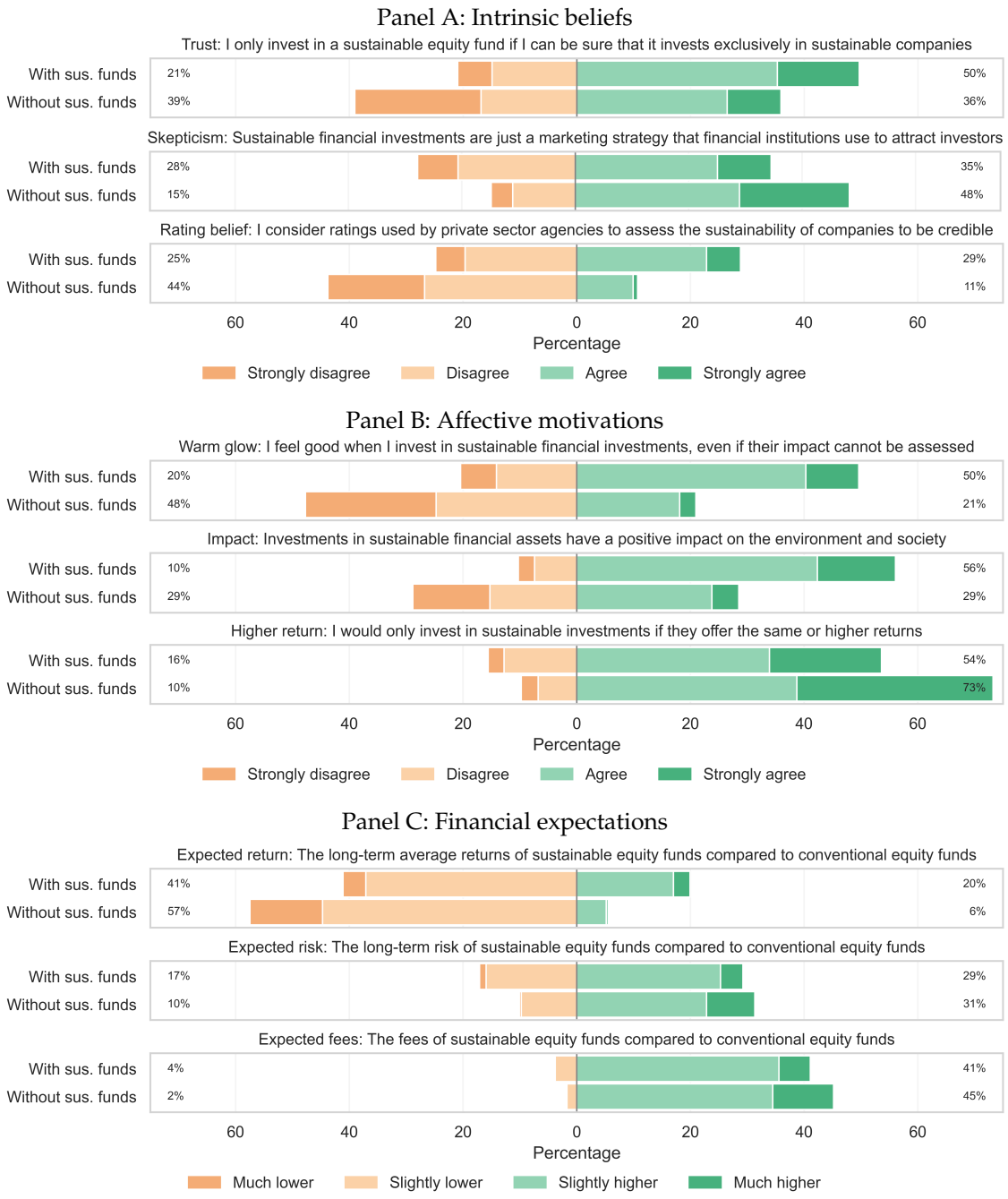
Figures

Figure 1: Fund information of the experiment choice set



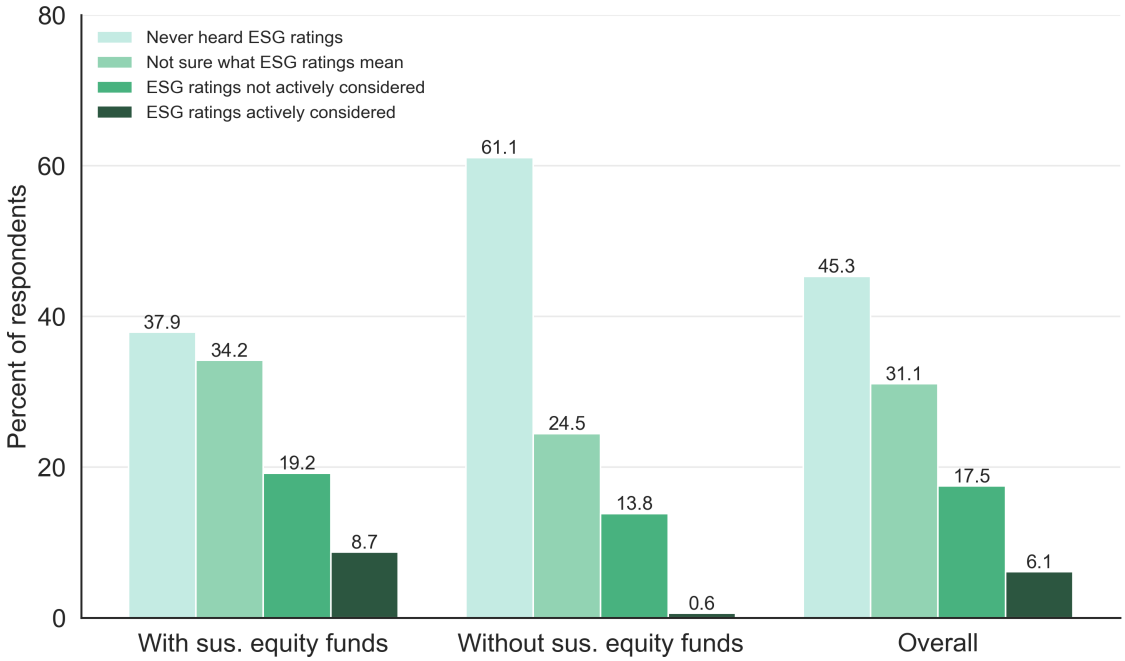
Notes: The figure shows one example of the choice set when the participant is asked to invest 1,000 Euro hypothetically between the conventional fund and the sustainable fund. For within subjects, we randomize the order of the nine investment choice sets. For the between subjects, we randomize the order of the two rating and answer options of the conventional fund and the sustainable fund. Overall, there are 4 x 9 combinations of choice sets.

Figure 2: Respondents' beliefs, motivations, and expectations



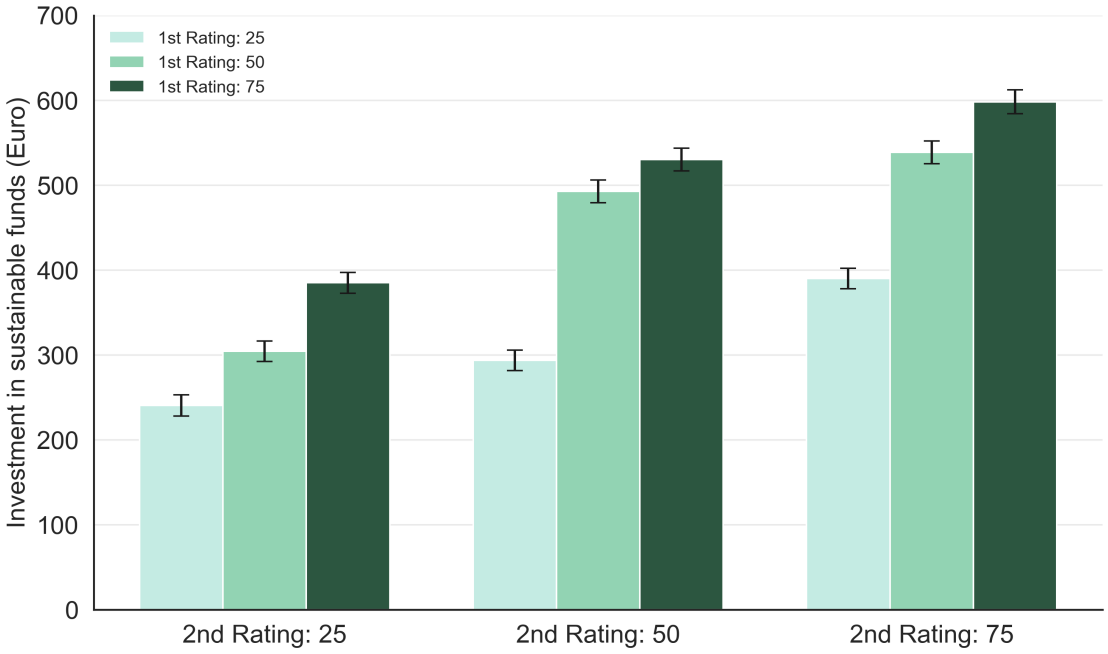
Notes: The figure shows the distribution of responses to statements on on intrinsic beliefs (Panel A), affective motivations (Panel B), and financial expectations (Panel C) grouped whether they own sustainable equity funds in real life investments. Responses were measured on a 5-point Likert scale ranging from 1 ("strongly disagree" or "much lower") to 5 ("strongly agree" or "much higher"), with the neutral midpoint excluded for clarity. Bars represent the percentage of respondents selecting each response category. Leftward bars indicate disagreement or lower expectations, and rightward bars indicate agreement or higher expectations. See Table C1 in Appendix D for the respective survey items.

Figure 3: Share of respondents in ESG rating awareness and engagement



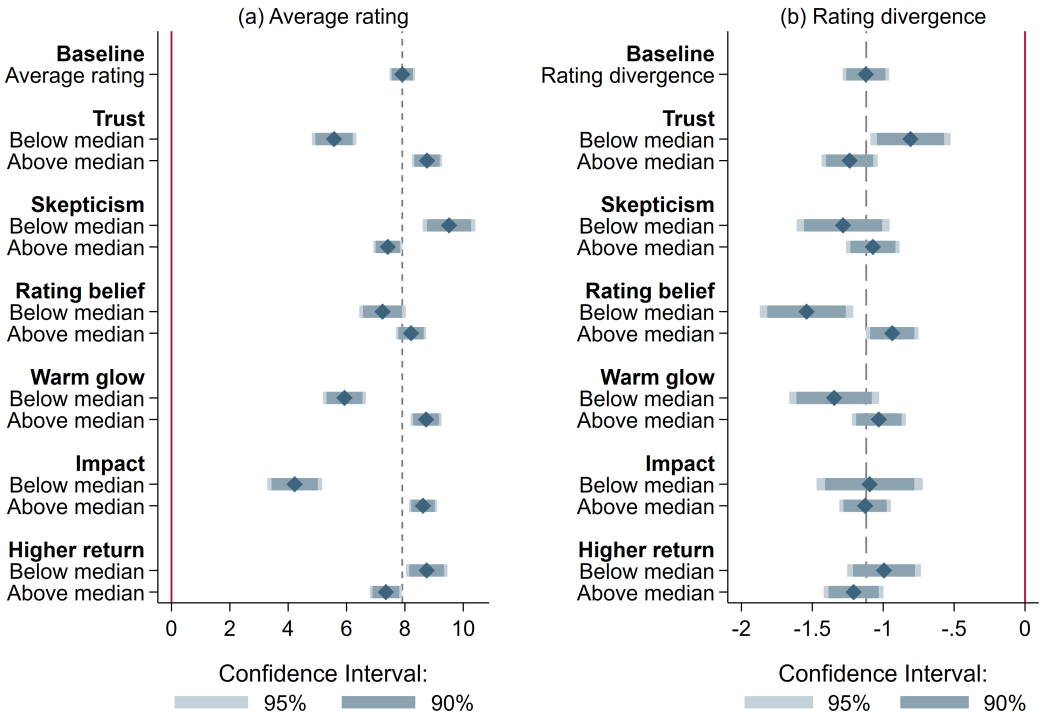
Notes: This figure shows the percentage distribution of respondents' ESG rating awareness and engagement. Respondents are grouped by whether hold sustainable equity funds and the overall distribution. The bars represent the survey question "have you ever heard about the ESG ratings of stocks or funds?" by the answer choice: "never heard of it", "heard of it, but not sure what it means", "familiar with ESG ratings, but not actively considered them", "familiar with ESG ratings and actively consider them when making investment decisions".

Figure 4: Effect of ESG rating divergence on investment allocations



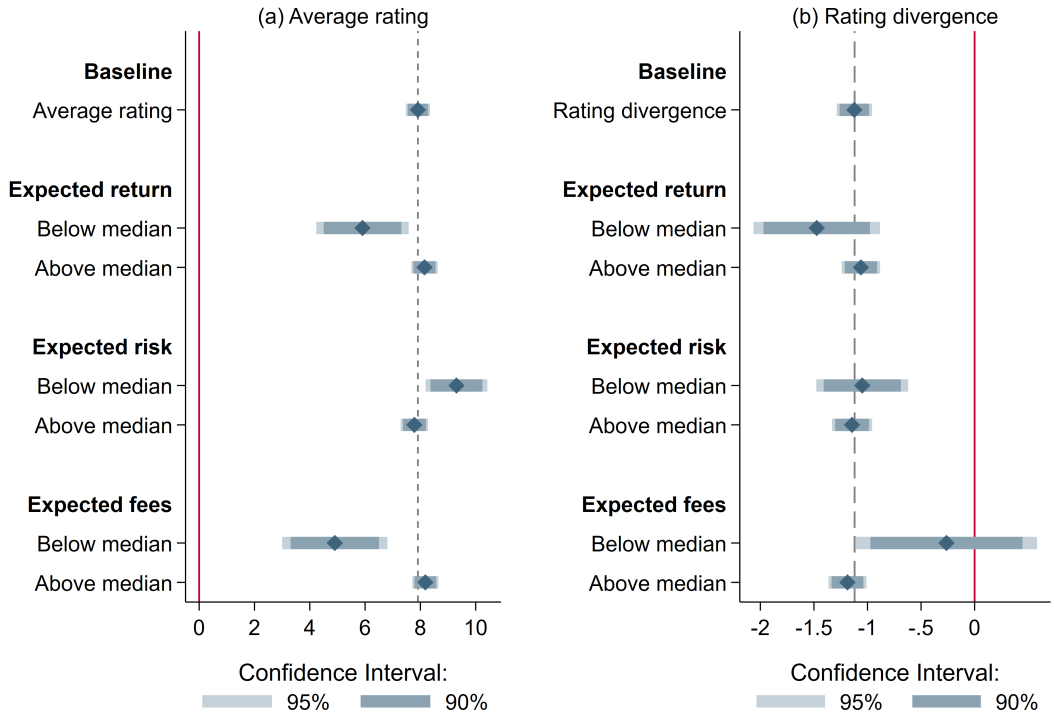
Notes: This figure shows the average investment allocation (in Euro) across combinations of two ESG ratings: the 1st ESG Rating (25, 50, 75) and the 2nd ESG Rating (25, 50, 75). Bars are color-coded by the level of the 1st ESG Rating, and clusters represent variations in the 2nd ESG Rating.

Figure 5: Heterogeneous treatment effects by intrinsic beliefs and motivations



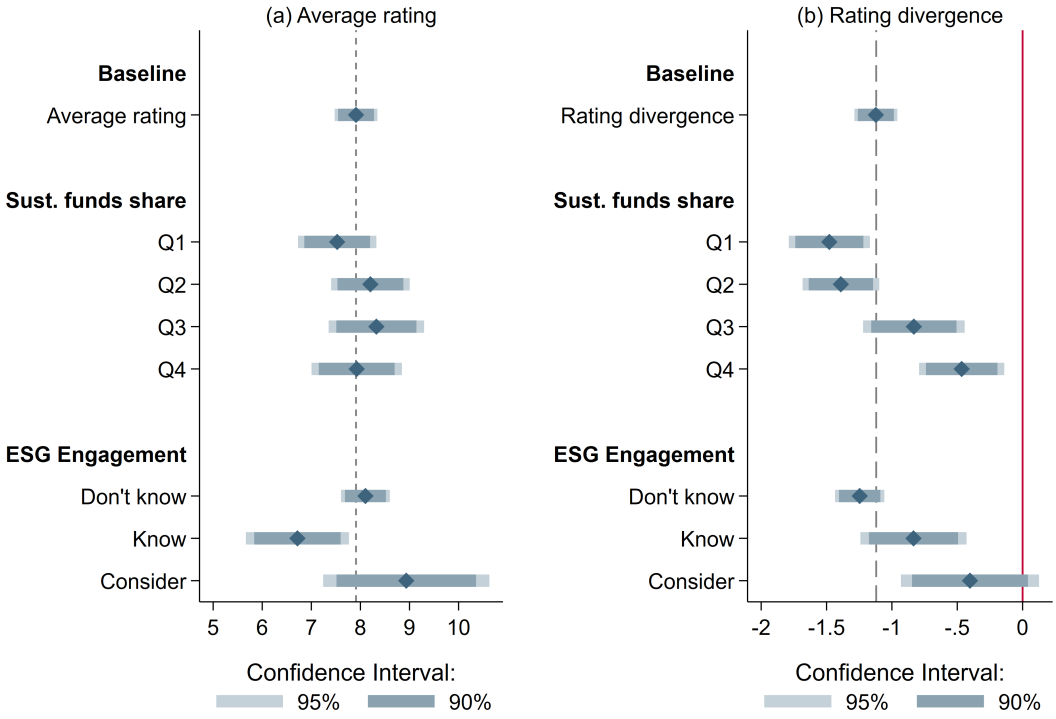
Notes: This figure shows heterogeneous treatment effects by intrinsic beliefs and affective motivations for: (a) based on the average ESG ratings, and (b) based on the divergence between ESG ratings. The outcome is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. The interaction effects are stratified by three intrinsic belief measures and three affective motivations measures: *trust, skepticism, rating belief, warm glow, impact*, and *higher return*. Each of these variables is measured on a five-point Likert scale ranging from 1 ("fully disagree") to 5 ("fully agree"). For each variable, a median split is used to define subgroups: below-median includes individuals with values strictly below the sample median; above-median includes those equal to or above the median. The dashed vertical line indicates the baseline treatment effect. Coefficient estimates are plotted along with 95% and 90% confidence intervals. All models include individual fixed effects and cluster standard errors at the respondent level. See Table C1 in Appendix D for the respective survey items.

Figure 6: Heterogeneous treatment effects by financial expectations



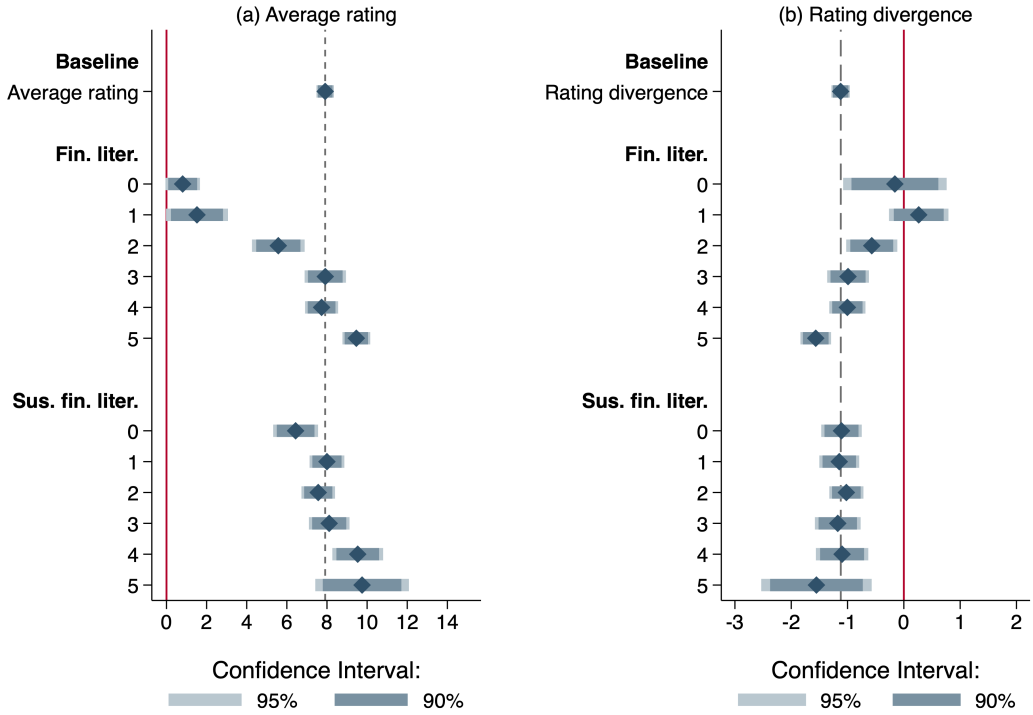
Notes: This figure shows heterogeneous treatment effects by financial expectations for: (a) based on the average ESG ratings, and (b) based on the divergence between ESG ratings. The outcome is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. The interaction effects are stratified by three financial expectation measures: *expected return*, *expected risk*, and *expected fees*. Each of these variables is measured on a five-point Likert scale ranging from 1 ("much lower") to 5 ("much higher") with additional option "don't know" answer. For each variable, a median split is used to define subgroups: below-median includes individuals with values strictly below the sample median; above-median includes those equal to or above the median. The dashed vertical line indicates the baseline treatment effect. Coefficient estimates are plotted along with 95% and 90% confidence intervals. All models include individual fixed effects and cluster standard errors at the respondent level. See Table C1 in Appendix D for the respective survey items.

Figure 7: Heterogeneous treatment effects by ESG investments and engagement



Notes: This figure shows heterogeneous treatment effects by sustainable equity fund investments and ESG engagement for: (a) based on the average ESG ratings, and (b) based on the divergence between ESG ratings. The outcome is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. The interaction effects are stratified by *Sustainable equity share*, split into quartiles based on the respondent's share of sustainable equity funds in their portfolio (Q1 = lowest, Q4 = highest), where Q1 covers those with 0%, Q2 with 1–10%, Q3 with 11–25%, and Q4 with more than 26% of their equity portfolio allocated to sustainable funds. *ESG engagement*, measured by the survey question "have you ever heard about the ESG ratings of stocks or funds?": "Don't know" (never heard of it or heard of it, but not sure what it means), "Know" (familiar with ESG ratings, but not actively considered them), and "Consider" (familiar with ESG ratings and actively consider them when making investment decisions). The dashed vertical line indicates the baseline treatment effect. Coefficient estimates are plotted along with 95% and 90% confidence intervals. All models include individual fixed effects and cluster standard errors at the respondent level. See Table C1 in Appendix D for the respective survey items.

Figure 8: Heterogeneous treatment effects by literacy scores



Notes: This figure shows heterogeneous treatment effects by financial literacy and sustainable finance literacy for: (a) based on the average ESG ratings, and (b) based on the divergence between ESG ratings. The outcome is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. The interaction effects are stratified by literacy score levels (0–5) for financial literacy and sustainable finance literacy, respectively, where the score corresponds to the number of correct answers to each five literacy questions (score 0 = no correct answers, score 5 = all correct). The dashed vertical line indicates the baseline treatment effect. Coefficient estimates are plotted along with 95% and 90% confidence intervals. All models include individual fixed effects and cluster standard errors at the respondent level. See Table C1 in Appendix D for the respective survey items.

Tables

Table 1. Descriptive statistics

	Full sample		**MSCI**	**LSEG**	**MSCI vs LSEG**	
	Mean	Std.Dev	Mean	Mean	Δ	T-stat.
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.367	0.482	0.367	0.366	-0.001	(-0.037)
Age	50.454	14.704	50.157	50.786	0.629	(0.960)
Age group						
18 - 39 years old	0.300	0.458	0.304	0.295	-0.008	(-0.414)
40 - 49 years old	0.160	0.366	0.159	0.160	0.001	(0.082)
50 - 59 years old	0.243	0.429	0.250	0.236	-0.014	(-0.730)
$>$ 59 years old	0.298	0.457	0.288	0.309	0.021	(1.033)
Education						
Master	0.325	0.468	0.337	0.311	-0.026	(-1.267)
Bachelor	0.194	0.395	0.179	0.210	0.032	(1.812)
A-levels	0.198	0.399	0.195	0.201	0.006	(0.322)
Secondary school	0.281	0.450	0.286	0.275	-0.011	(-0.529)
Others	0.002	0.050	0.003	0.002	-0.001	(-0.324)
Occupation						
Employed	0.724	0.447	0.728	0.720	-0.008	(-0.383)
In education	0.028	0.165	0.028	0.028	0.000	(0.032)
Unemployed	0.019	0.137	0.022	0.016	-0.007	(-1.110)
Retired	0.217	0.412	0.212	0.223	0.011	(0.592)
Others	0.011	0.104	0.009	0.013	0.003	(0.692)
Marital status						
Single	0.235	0.424	0.225	0.246	0.021	(1.102)
Married/Partner	0.651	0.477	0.667	0.633	-0.034	(-1.594)
Divorced	0.087	0.282	0.086	0.089	0.003	(0.235)
Widowed	0.027	0.161	0.022	0.032	0.010	(1.387)
Net income						
$<$2,000 EUR	0.105	0.306	0.096	0.114	0.017	(1.248)
2,000 - 2,999 EUR	0.206	0.405	0.201	0.212	0.012	(0.652)
3,000 - 4,999 EUR	0.398	0.490	0.424	0.368	-0.056**	(-2.545)
5,000 - 6,999 EUR	0.184	0.388	0.179	0.190	0.011	(0.637)
7,000+ EUR	0.108	0.310	0.100	0.116	0.016	(1.115)
Number of children	1.126	1.273	1.138	1.112	-0.026	(-0.462)
Risk preference	3.766	1.505	3.843	3.680	-0.163**	(-2.446)
Investment experiences	13.248	11.312	13.018	13.506	0.488	(0.968)
Equity share	48.922	30.478	48.547	49.342	0.796	(0.583)
Sus. equity share	17.612	22.793	18.312	16.827	-1.484	(-1.459)
Observations	2025		1070	955	2025	

Notes: * p$<$0.10, ** p$<$0.05, *** p$<$0.01. This table presents descriptive statistics for the full sample, as well as by experimental condition based on the presentation order of the MSCI and LSEG ESG ratings. Columns (1) and (2) report the mean and standard deviation for the full sample. Columns (3) and (4) show group means for respondents who saw the MSCI ESG ratings presented first versus those who saw the LSEG ESG ratings presented first. Column (5) shows the difference in means between the two groups, and Column (6) reports the corresponding t-statistics.

Table 2. Asset holdings by ESG knowledge and sustainable financial literacy

	Sus. role (1/0) (1)	**Sus. equity funds (1/0)** (2)	**Equity share (%)** (3)	**Sus. equity share (%)** (4)	**Obs.** (5)
Panel A: ESG awareness and engagement					
Full sample	0.389	0.684	48.922	17.612	2025
	(0.488)	(0.465)	(30.478)	(22.793)	
Don't know ESG	0.315	0.646	47.411	15.145	1547
	(0.465)	(0.478)	(31.529)	(21.248)	
Know ESG	0.628	0.808	53.769	25.585	478
	(0.484)	(0.394)	(26.284)	(25.642)	
Consider ESG	0.960	0.984	54.637	42.541	124
	(0.198)	(0.128)	(22.074)	(26.536)	
Know vs Don't know	-0.313***	-0.163***	-6.359***	-10.440***	2025
	[-12.468]	[-7.464]	[-4.390]	[-8.059]	
Consider vs Not consider	-0.608***	-0.319***	-6.092**	-26.540***	2025
	[-29.180]	[-20.113]	[-2.892]	[-10.818]	
Panel B: Sustainable financial literacy (SFL)					
SFL ESG incorrect	0.502	0.743	50.219	20.971	556
	(0.500)	(0.438)	(29.938)	(24.390)	
SFL ESG correct	0.485	0.770	51.310	20.409	582
	(0.500)	(0.421)	(27.820)	(23.709)	
SFL ESG don't know	0.255	0.591	46.532	13.668	887
	(0.436)	(0.492)	(32.298)	(20.438)	
SFL below median	0.363	0.668	46.623	19.261	801
	(0.481)	(0.471)	(31.158)	(24.838)	
SFL above median	0.405	0.695	50.411	16.527	1224
	(0.491)	(0.461)	(29.949)	(21.282)	
SFL ESG correct vs incorrect	0.017	-0.027	-1.090	0.562	1138
	[0.582]	[-1.062]	[-0.634]	[0.392]	
SFL above vs below median	-0.042	-0.027	-3.789**	2.734*	2025
	[-1.902]	[-1.259]	[-2.702]	[2.553]	

Notes: * p<0.10, ** p<0.05, *** p<0.01. *Sus. role (1/0)* is a binary variable indicating whether sustainability plays a role in the respondent's investment decisions (1 = yes, 0 = no). *Sus. equity funds (1/0)* is a binary variable indicating whether the respondent owns sustainable equity funds (1 = yes, 0 = no). *Equity share* represents the percentage of the respondent's portfolio allocated to equities, while *sust. equity share* is the percentage allocated to sustainable equity funds. In Panel A, the subsample *Don't know ESG* refers to respondents who have never heard of ESG ratings or are not sure what it means. *Know ESG* refers to respondents who have heard of ESG ratings, while *Consider ESG* refers to respondents who actively incorporate ESG ratings into their investment decisions. *Know vs Don't know* and *Consider vs Not consider* report the differences in means between the subgroups, along with the corresponding t-statistics. In Panel B, *SFL ESG correct*, *SFL ESG incorrect*, and *SFL ESG don't know* refer to respondents who answered sustainable financial literacy regarding ESG abbreviation correctly, incorrectly, or indicated "do not know", respectively. SFL above median and SFL below median are median split based on the five correct SFL questions. *SFL ESG correct vs incorrect* and *SFL above vs below median* report the differences in means between the corresponding subgroups, along with the t-statistics. Standard deviations are in parentheses. T-statistics are in brackets.

Table 3. Sustainable equity share and social preferences and knowledge

	Sus. equity funds (1/0) (1)	**Sus. equity funds (1/0)** (2)	**Sus. equity share (%)** (3)	**Sus. equity share (%)** (4)
Intrinsic beliefs				
Trust	0.008	0.006	1.506**	1.253**
	(0.010)	(0.010)	(0.598)	(0.599)
Skepticism	-0.016	-0.018*	1.155*	0.904
	(0.010)	(0.010)	(0.694)	(0.693)
Rating belief	0.043***	0.038***	1.128	0.607
	(0.012)	(0.013)	(0.861)	(0.855)
Affective motivations				
Warm glow	0.064***	0.064***	2.909***	2.742***
	(0.012)	(0.012)	(0.748)	(0.747)
Impact	0.056***	0.054***	2.305***	1.944**
	(0.013)	(0.013)	(0.848)	(0.842)
Higher return	-0.052***	-0.051***	-3.829***	-3.670***
	(0.010)	(0.010)	(0.661)	(0.654)
Financial knowledge				
Fin. liter. (0-5)	-0.027***	-0.026***	-1.788***	-1.689***
	(0.008)	(0.008)	(0.554)	(0.551)
Sus. fin. liter. (0-5)	0.027***	0.022***	0.023	-0.341
	(0.008)	(0.008)	(0.472)	(0.460)
Know ESG		0.065**		2.866*
		(0.026)		(1.498)
Consider ESG		0.035		9.031***
		(0.027)		(2.599)
Constant	0.130	0.161	15.493	20.799
	(0.310)	(0.315)	(15.786)	(16.087)
Sociodemo controls	✓	✓	✓	✓
Obs.	1933	1933	1325	1325
Adjusted R^2	0.173	0.176	0.165	0.181

Notes: * p<0.10, ** p<0.05, *** p<0.01. *Sus. equity funds (1/0)* is a binary variable indicating whether the respondent owns sustainable equity funds (1 = yes, 0 = no). *Sus. equity share* is the percentage allocated to sustainable equity funds. The investment preferences were elicited on a Likert scale from 1 to 5. *Know ESG* refers to respondents who have heard of ESG ratings and know what they mean, while *Consider ESG* refers to respondents who actively incorporate ESG ratings into their investment decisions. *Sociodemo controls* include all the sociodemographic variables in Table 1. Standard deviations are in parentheses. See Table C1 in Appendix D for details on the independent variables. Robust standard errors are in parentheses.

Table 4. The use of ESG ratings, investment motives and knowledge

	Dependent variable: Actively consider ESG ratings			
	(1)	(2)	(3)	(4)
Intrinsic beliefs				
Trust	0.010**	0.012***	0.020***	0.021***
	(0.004)	(0.004)	(0.007)	(0.007)
Skepticism	0.027***	0.020***	0.033***	0.021**
	(0.007)	(0.006)	(0.009)	(0.009)
Rating belief	0.038***	0.029***	0.048***	0.037***
	(0.007)	(0.007)	(0.009)	(0.009)
Affective motivations				
Warm glow	0.018***	0.014**	0.022***	0.018**
	(0.006)	(0.006)	(0.008)	(0.008)
Impact	0.025***	0.024***	0.035***	0.031***
	(0.007)	(0.007)	(0.010)	(0.010)
Higher return	-0.013**	-0.018***	-0.013	-0.019**
	(0.006)	(0.006)	(0.008)	(0.008)
Financial knowledge				
Fin. liter. (0-5)	-0.006	-0.011**	-0.005	-0.010
	(0.005)	(0.005)	(0.006)	(0.007)
Sus. fin. liter. (0-5)	0.019***	0.013***	0.026***	0.019***
	(0.004)	(0.004)	(0.006)	(0.006)
Constant	-0.271***	-0.262***	-0.418***	-0.375***
	(0.052)	(0.056)	(0.071)	(0.077)
Sociodemo controls		✓		✓
Obs.	2025	1947	1375	1325
Adjusted R^2	0.091	0.140	0.104	0.158

Notes: * p<0.10, ** p<0.05, *** p<0.01. The dependent variable *Consider ESG* is equal to one, if respondents actively incorporate ESG ratings into their investment decisions, and zero otherwise. Columns (3) and (4) condition on that sustainable equity funds are positive in the portfolio of those investors. The investment preferences were elicited on a Likert scale from 1 to 5. *Sociodemo controls* include all the sociodemographic variables in Table 1. Standard deviations are in parentheses. See Table C1 in Appendix D for details on the independent variables. Robust standard errors are in parentheses.

Table 5. Rating divergence effects on investment decisions

	Dependent variable: Sus. investment		
	(1)	(2)	(3)
Avg. rating (β_1)	7.911***	7.641***	
	(0.222)	(0.232)	
Rating divergence (β_2)	-1.123***	-1.123***	-0.824***
	(0.084)	(0.084)	(0.080)
MSCI rating		0.269***	
		(0.079)	
Dummy: MSCI rating 25			-129.632***
			(4.463)
Dummy: MSCI rating 75			74.867***
			(3.498)
Dummy: Refinitiv rating 25			-122.806***
			(4.433)
Dummy: Refinitiv rating 75			68.223***
			(3.457)
Individual FE	✓	✓	✓
Obs.	18225	18225	18225
Respondents	2025	2025	2025
Adjusted R^2	0.553	0.553	0.556

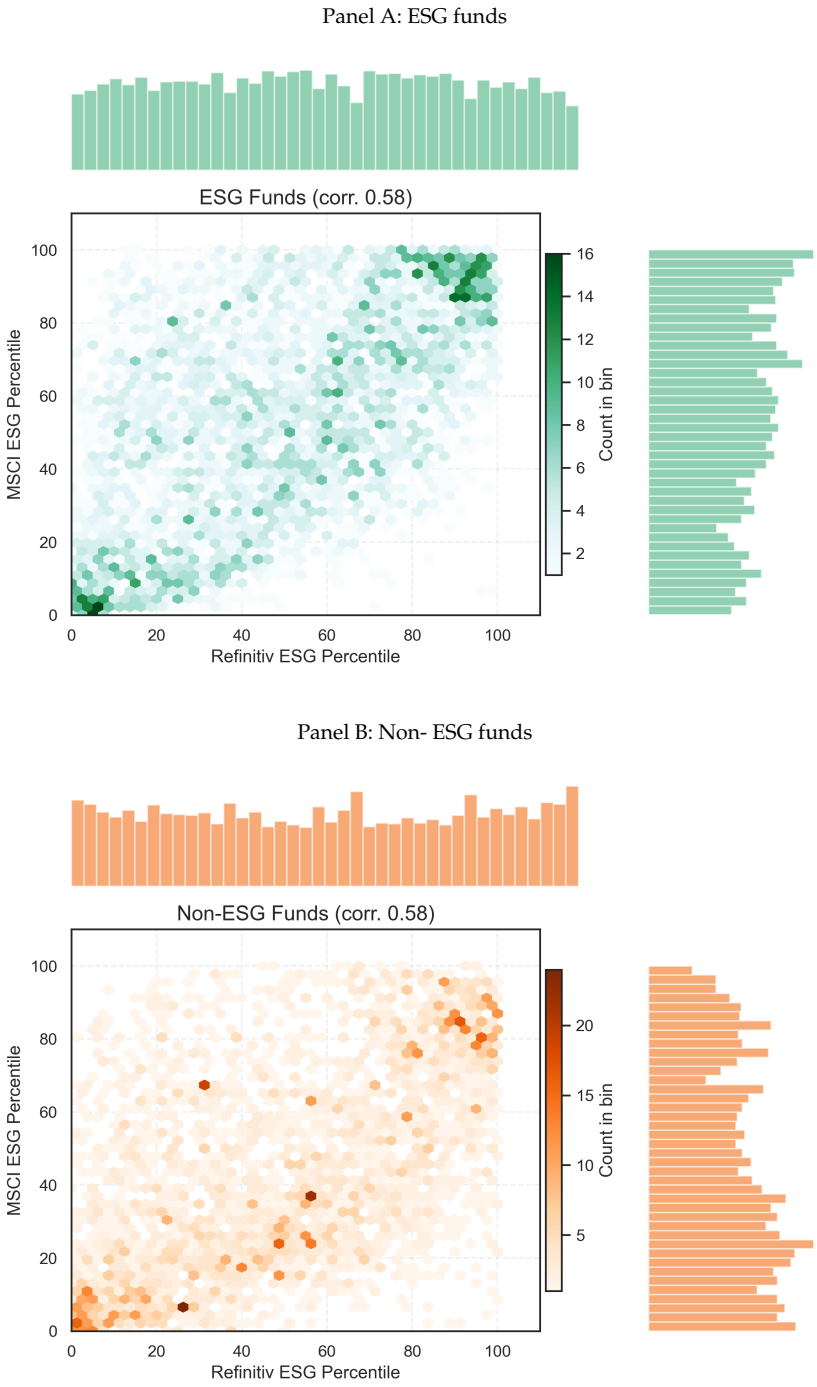
Notes: * p<0.10, ** p<0.05, *** p<0.01. The dependent variable is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. In Column (2), we specifically control for the value of the MSCI rating to test if participants react more to ratings from certain providers. Standard errors are in parentheses and are clustered on the respondent level.

Online Appendix for

Do Retail Investors Care About ESG Ratings?

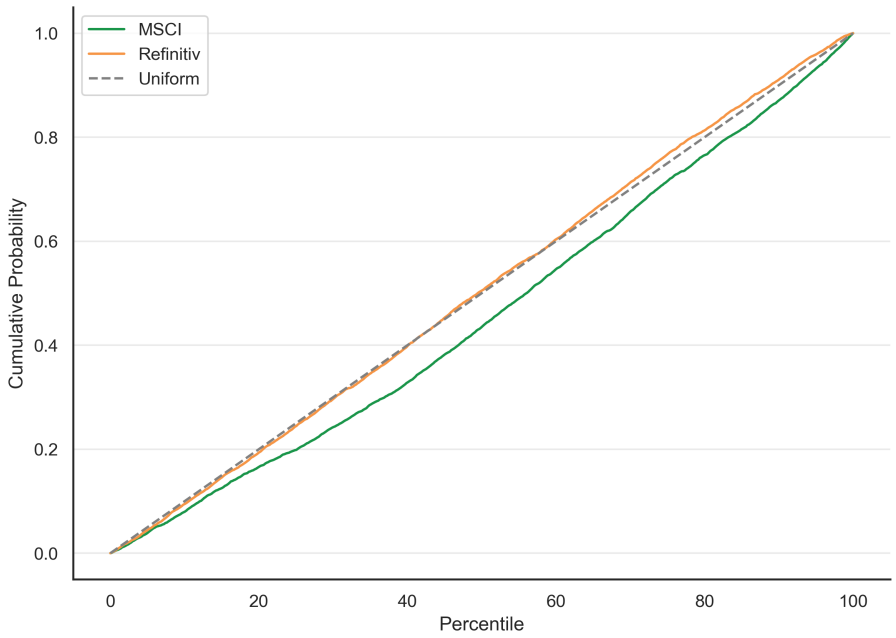
A Additional Figures

Figure A1: Hexbin plot of ESG ratings percentile of funds



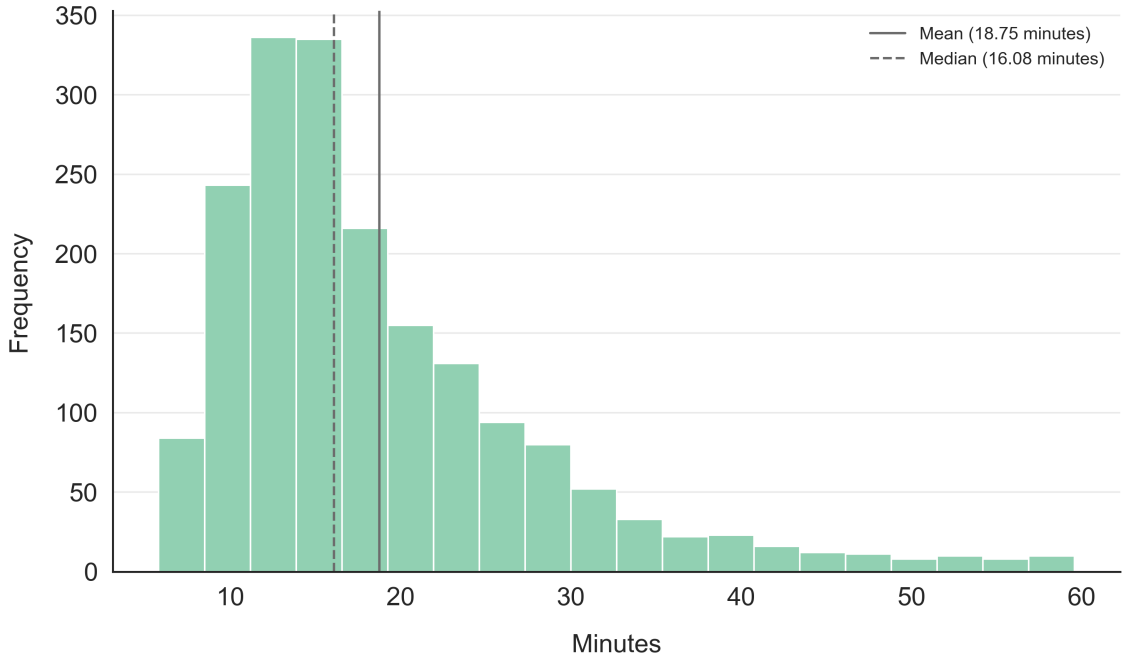
Notes: This figure shows the relationship between ESG ratings from MSCI and Refinitiv for two fund groups: Panel A shows sustainable (ESG-labeled) funds, and Panel B shows non-ESG funds. Each panel plots the MSCI ESG percentile against the corresponding Refinitiv ESG percentile for matched funds, using hexbin density plots overlaid with marginal histograms. The sample includes 7,970 funds for which ISINs could be matched across both the MSCI and Refinitiv databases. The histograms on the top and right margins illustrate the marginal distributions of the ESG percentiles from each provider. The correlation coefficients reported in each panel represent the Pearson correlation between MSCI and Refinitiv percentiles within the respective fund group.

Figure A2: ECDF plot of ESG ratings percentile of sustainable funds



Notes: This figure shows empirical cumulative distribution functions (ECDFs) of ESG rating percentiles assigned by MSCI and Refinitiv for sustainable (ESG-labeled) funds. The dashed diagonal line represents the benchmark of a uniform distribution, which would imply an even distribution of ratings across the percentile scale between sustainable funds and conventional funds.

Figure A3: Histogram of survey durations

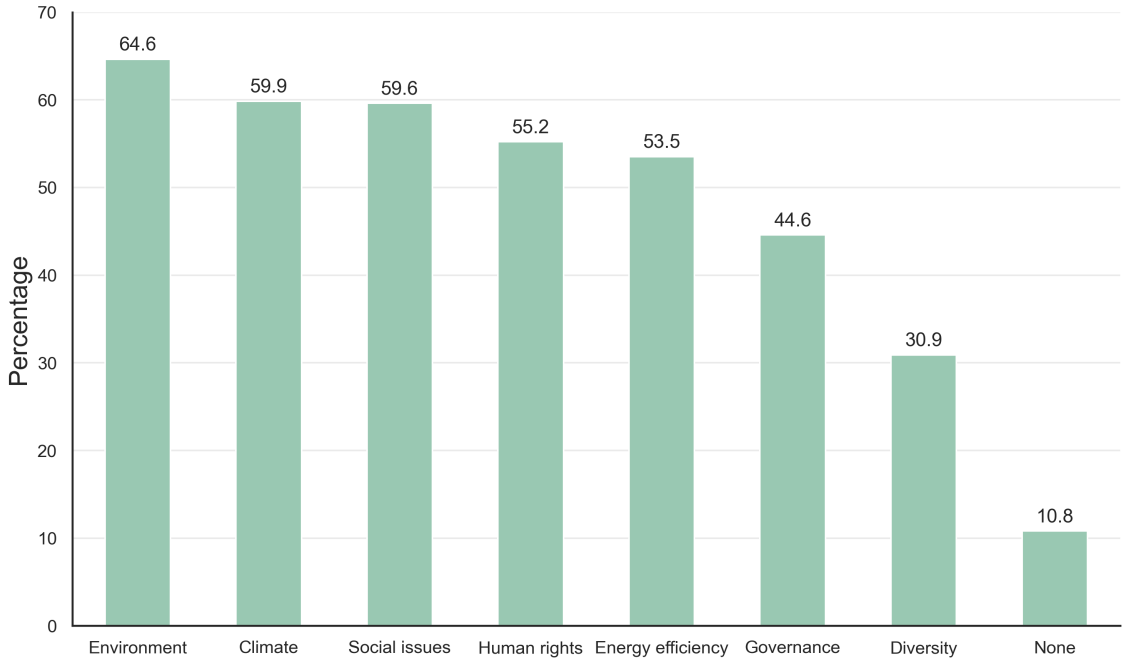


*Notes:*This figure shows the distribution of survey durations among respondents. Outliers beyond the 60-minute range were excluded from the visualization for clarity. The mean and median durations are indicated by vertical dashed lines (outliers included for calculation).

Figure A4: Distribution of correct answers across quizzes

*Notes:*This figure shows the percentage of the correct answers for the experiment quiz. The light green bar indicates the percentage of correct answers in the first round, while the dark green bar indicates the percentage of corrects answers in the first and the second round. The first six bars correspond to the three quizzes. The last two bars indicate the percentage of correct answers for all three questions, in the first round, and the first round plus the second round, respectively.

Figure A5: Share of respondents in sustainability perception



Notes: This figure shows the percentage distribution of respondents' sustainability perception by the survey question "What aspects should financial investments take into account in order to be sustainable in your opinion?".

Figure A6: Respondents' beliefs, motivations, and expectations

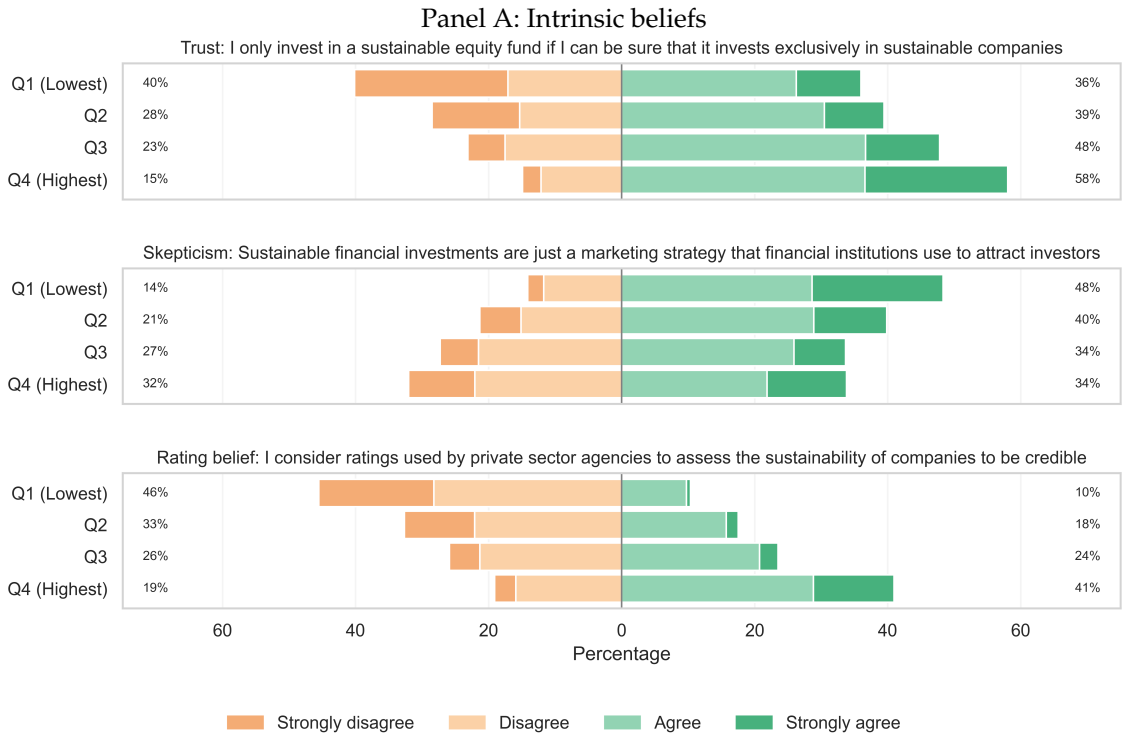


Figure A6: Respondents' beliefs, motivations, and expectations (cont.)

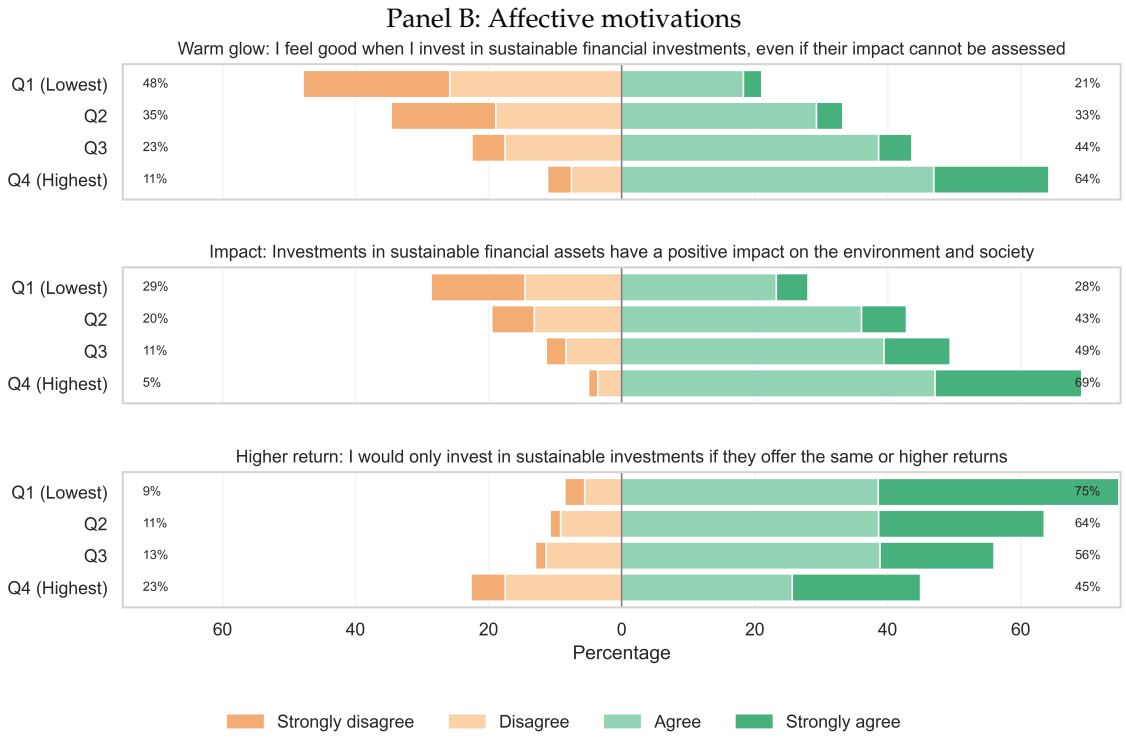
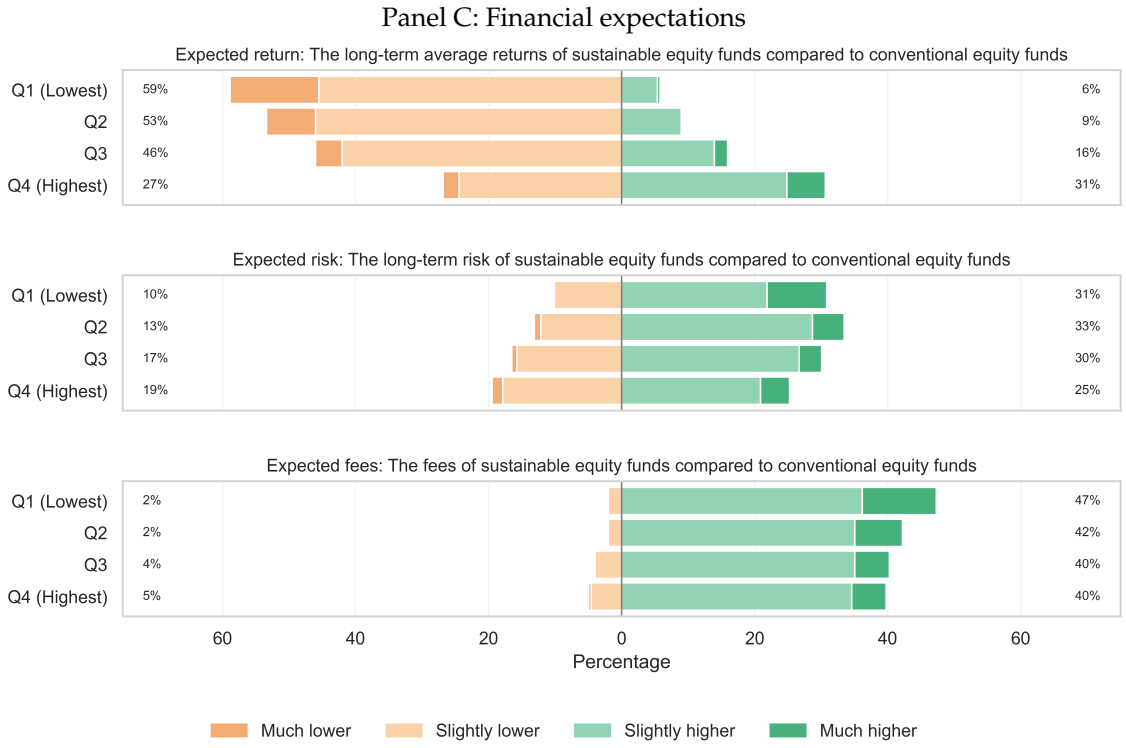
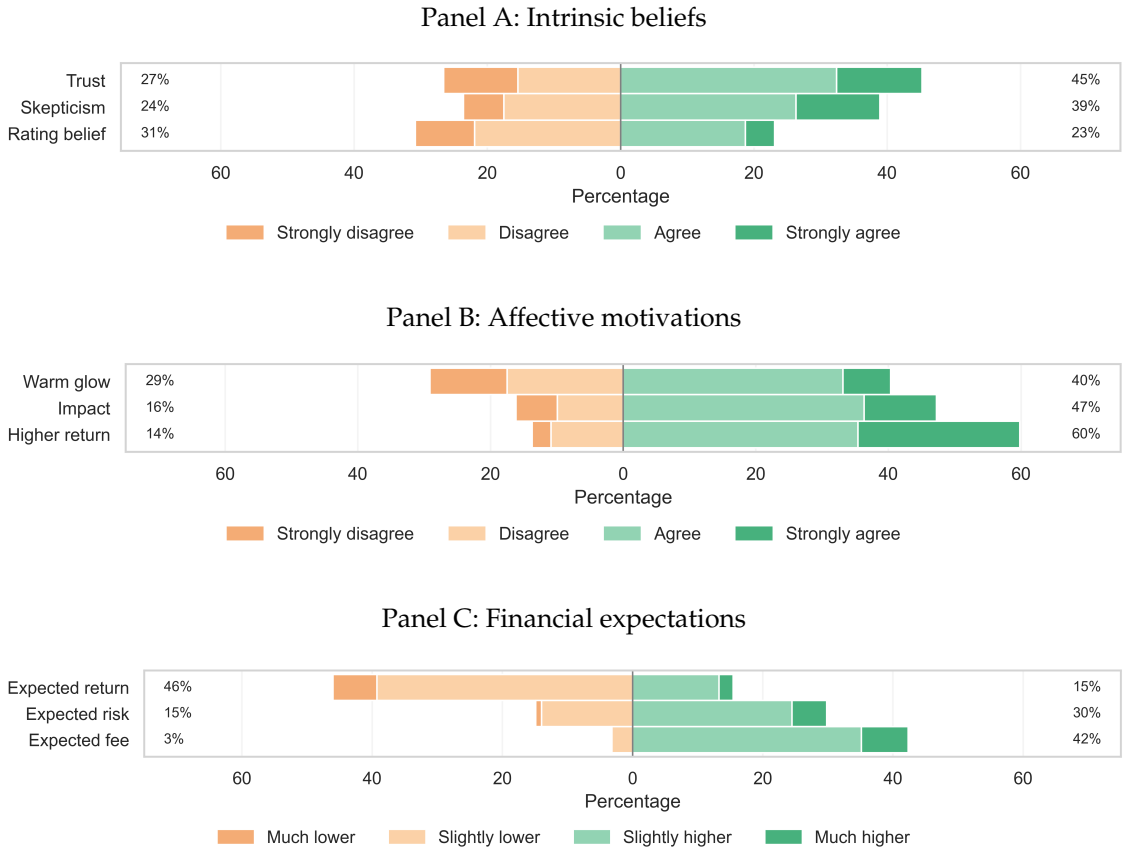


Figure A6: Respondents' beliefs, motivations, and expectations (cont.)



Notes: The figure shows the distribution of responses to statements on intrinsic beliefs (Panel A), affective motivations (Panel B), and financial expectations (Panel C) related to sustainable investment. Responses were measured on a 5-point Likert scale ranging from 1 ("strongly disagree" or "much lower") to 5 ("strongly agree" or "much higher"), with the neutral midpoint excluded for clarity. Bars represent the percentage of respondents selecting each response category. Leftward bars indicate disagreement or lower expectations, and rightward bars indicate agreement or higher expectations. Q1–Q4 denote quartiles based on the share of sustainable equity funds in respondents' equity portfolios. Q1 covers those with 0%, Q2 with 1–10%, Q3 with 11–25%, and Q4 with more than 26% of their equity portfolio allocated to sustainable funds. See Table C1 in Appendix D for the respective survey items.

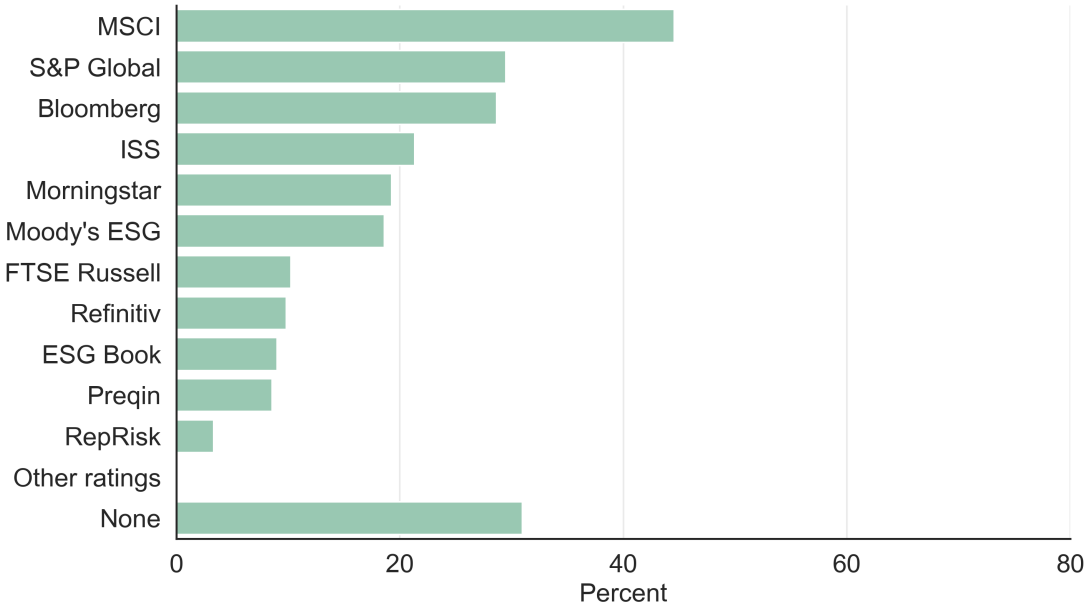
Figure A7: Respondents' beliefs, motivations, and expectations



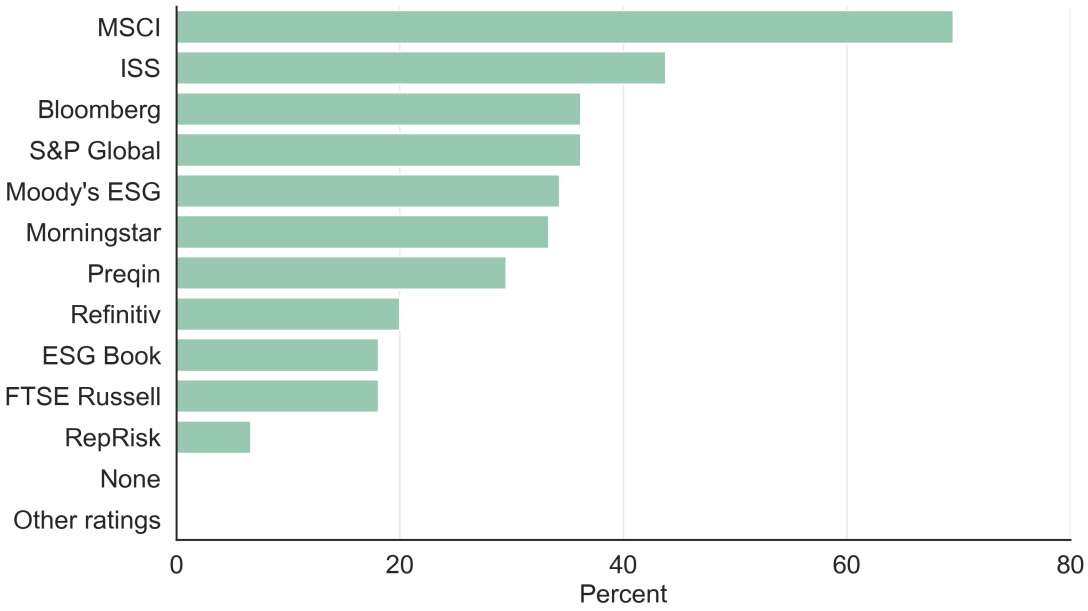
Notes: The figure shows the distribution of responses to statements on intrinsic beliefs (Panel A), affective motivations (Panel B), and financial expectations (Panel C) related to sustainable investment. Responses were measured on a 5-point Likert scale ranging from 1 ("strongly disagree" or "much lower") to 5 ("strongly agree" or "much higher"), with the neutral midpoint excluded for clarity. Bars represent the percentage of respondents selecting each response category. Leftward bars indicate disagreement or lower expectations, and rightward bars indicate agreement or higher expectations. See Table C1 in Appendix D for the respective survey items.

Figure A8: Share of respondents in ESG rating preferences

Panel A: Recognition of ESG ratings ($N = 478$)



Panel B: Preferred ESG ratings ($N = 105$)



Notes: This figure shows the share of respondents who are familiar with various ESG rating agencies. The options are only shown to the respondents who indicated "familiar with ESG ratings, but not actively considered them" and "familiar with ESG ratings and actively consider them when making investment decisions" after the question "have you ever heard about the ESG ratings of stocks or funds?". Panel A reports the share of the each ESG rating provider that the participants are aware of. Panel B shows the share of the each ESG rating provider that the participants trust one over other rating providers filtered by the question that respondents indicated that they would prefer any ESG rating agencies over others.

B Additional Tables

Table B1. Descriptive statistics by order of fund presentation

	Full sample		**Sust.**	**Conv.**	**Sust. vs Conv.**	
	Mean	Std.Dev	Mean	Mean	Δ	T-stat.
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.367	0.482	0.366	0.367	0.001	(0.038)
Age	50.454	14.704	51.059	49.881	-1.178	(-1.803)
Age group						
18 - 39 years old	0.300	0.458	0.289	0.310	0.020	(0.996)
40 - 49 years old	0.160	0.366	0.157	0.162	0.004	(0.257)
50 - 59 years old	0.243	0.429	0.238	0.248	0.011	(0.551)
$>$ 59 years old	0.298	0.457	0.316	0.281	-0.035	(-1.719)
Education						
Master	0.325	0.468	0.332	0.318	-0.014	(-0.658)
Bachelor	0.194	0.395	0.189	0.198	0.009	(0.526)
A-levels	0.198	0.399	0.214	0.183	-0.032	(-1.777)
Secondary school	0.281	0.450	0.263	0.298	0.035	(1.760)
Others	0.002	0.050	0.002	0.003	0.001	(0.389)
Occupation						
Employed	0.724	0.447	0.718	0.731	0.013	(0.654)
In education	0.028	0.165	0.026	0.030	0.003	(0.464)
Unemployed	0.019	0.137	0.019	0.019	-0.000	(-0.010)
Retired	0.217	0.412	0.227	0.208	-0.020	(-1.074)
Others	0.011	0.104	0.009	0.013	0.003	(0.732)
Marital status						
Single	0.235	0.424	0.220	0.250	0.030	(1.586)
Married/Partner	0.651	0.477	0.659	0.643	-0.015	(-0.709)
Divorced	0.087	0.282	0.088	0.086	-0.002	(-0.178)
Widowed	0.027	0.161	0.033	0.021	-0.013	(-1.744)
Net income						
$<$2,000 EUR	0.105	0.306	0.104	0.105	0.000	(0.018)
2,000 - 2,999 EUR	0.206	0.405	0.212	0.201	-0.011	(-0.628)
3,000 - 4,999 EUR	0.398	0.490	0.411	0.386	-0.025	(-1.139)
5,000 - 6,999 EUR	0.184	0.388	0.176	0.192	0.016	(0.920)
7,000+ EUR	0.108	0.310	0.097	0.117	0.020	(1.457)
Number of children	1.126	1.273	1.149	1.104	-0.045	(-0.804)
Risk preference	3.766	1.505	3.704	3.825	0.121	(1.816)
Investment experiences	13.248	11.312	12.965	13.517	0.552	(1.098)
Equity share	48.922	30.478	48.250	49.561	1.311	(0.963)
Sus. Equity share	17.612	22.793	17.624	17.601	-0.024	(-0.023)
Observations	2025		985	1040	2025	

Notes: * p$<$0.10, ** p$<$0.05, *** p$<$0.01. This table presents descriptive statistics for the full sample, as well as by experimental condition based on the presentation order of the sustainable and conventional funds. Columns (1) and (2) report the mean and standard deviation for the full sample. Columns (3) and (4) show group means for respondents who saw the sustainable fund presented first (Sust.) versus those who saw the conventional fund first (Conv.). Column (5) shows the difference in means between the two groups, and column (6) reports the corresponding t-statistics.

Table B2. Rating divergence effects on investment decisions

	Dependent variable: Sus. investment		
	(1)	(2)	(3)
Avg. rating (β_1)	9.096***	8.822***	
	(0.263)	(0.275)	
Rating divergence (β_2)	-1.335***	-1.335***	-0.998***
	(0.102)	(0.102)	(0.098)
MSCI rating		0.274***	
		(0.090)	
Dummy: MSCI rating 25			-148.920***
			(5.265)
Dummy: MSCI rating 75			85.339***
			(4.123)
Dummy: Refinitiv rating 25			-140.297***
			(5.321)
Dummy: Refinitiv rating 75			80.248***
			(4.158)
Individual FE	✓	✓	✓
Obs.	13536	13536	13536
Respondents	1504	1504	1504
Adjusted R^2	0.564	0.564	0.568

Notes: * p<0.10, ** p<0.05, *** p<0.01. We exclude the participants who did not pass all three quizzes in the first round. The dependent variable is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. In column (2), we specifically control for the value of the MSCI rating to test if participants react more to ratings from certain providers. Standard errors are in parentheses and are clustered on the respondent level.

Table B3. Heterogeneous treatment effects by intrinsic beliefs and motivations

	Dependent variable: Sus. investment						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Avg. rating (β_1)	7.911***						
	(0.222)						
Rating divergence (β_2)	-1.123***	-1.123***	-1.123***	-1.123***	-1.123***	-1.123***	-1.123***
	(0.084)	(0.084)	(0.084)	(0.084)	(0.084)	(0.084)	(0.084)
Trust							
Avg. rating × Below mdn		5.572***					
		(0.389)					
Avg. rating × Above mdn		8.757***					
		(0.264)					
Skepticism							
Avg. rating × Below mdn			9.513***				
			(0.460)				
Avg. rating × Above mdn			7.415***				
			(0.252)				
Rating belief							
Avg. rating × Below mdn				7.234***			
				(0.407)			
Avg. rating × Above mdn				8.212***			
				(0.264)			
Warm glow							
Avg. rating × Below mdn					5.931***		
					(0.375)		
Avg. rating × Above mdn					8.725***		
					(0.270)		
Impact							
Avg. rating × Below mdn						4.223***	
						(0.480)	
Avg. rating × Above mdn						8.621***	
						(0.244)	
Higher return							
Avg. rating × Below mdn							8.746***
							(0.364)
Avg. rating × Above mdn							7.349***
							(0.278)
Constant	48.836***	48.836***	48.836***	48.836***	48.836***	48.836***	48.836***
	(10.708)	(10.595)	(10.661)	(10.688)	(10.592)	(10.538)	(10.673)
Individual FE	✓	✓	✓	✓	✓	✓	✓
Observations	18225	18225	18225	18225	18225	18225	18225
Respondents	2025	2025	2025	2025	2025	2025	2025
Adjusted R^2	0.553	0.557	0.554	0.553	0.556	0.559	0.554

Notes: * p<0.10, ** p<0.05, *** p<0.01. This table shows heterogeneous treatment effects by intrinsic beliefs and affective motivations for the average ESG ratings. The outcome is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. The interaction effects are stratified by three intrinsic belief measures and three affective motivations measures: *trust*, *skepticism*, *rating belief*, *warm glow*, *impact*, and *higher return*. Each of these variables is measured on a five-point Likert scale ranging from 1 ("fully disagree") to 5 ("fully agree"). For each variable, a median split is used to define subgroups: below-median includes individuals with values strictly below the sample median; above-median includes those equal to or above the median. The dashed vertical line indicates the baseline treatment effect. Coefficient estimates are plotted along with 95% and 90% confidence intervals. All models include individual fixed effects and cluster standard errors at the respondent level. Robust standard errors are in parentheses. See Table C1 in Appendix D for the respective survey items.

Table B4. Heterogeneous treatment effects by intrinsic beliefs and motivations

	Dependent variable: Sus. investment						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Avg. rating (β_1)	7.911***	7.911***	7.911***	7.911***	7.911***	7.911***	7.911***
	(0.222)	(0.222)	(0.222)	(0.222)	(0.222)	(0.222)	(0.222)
Rating div. (β_2)	-1.123***						
	(0.084)						
Trust							
Rating div. × Below mdn		-0.808***					
		(0.144)					
Rating div. × Above mdn		-1.237***					
		(0.101)					
Skepticism							
Rating div. × Below mdn			-1.283***				
			(0.167)				
Rating div. × Above mdn			-1.073***				
			(0.096)				
Rating belief							
Rating div. × Below mdn				-1.541***			
				(0.168)			
Rating div. × Above mdn				-0.936***			
				(0.094)			
Warm glow							
Rating div. × Below mdn					-1.346***		
					(0.162)		
Rating div. × Above mdn					-1.031***		
					(0.097)		
Impact							
Rating div. × Below mdn						-1.096***	
						(0.191)	
Rating div. × Above mdn						-1.128***	
						(0.093)	
Higher return							
Rating div. × Below mdn							-0.994***
							(0.133)
Rating div. × Above mdn							-1.209***
							(0.108)
Constant	48.836***	48.836***	48.836***	48.836***	48.836***	48.836***	48.836***
	(10.708)	(10.723)	(10.713)	(10.700)	(10.697)	(10.709)	(10.704)
Individual FE	✓	✓	✓	✓	✓	✓	✓
Observations	18225	18225	18225	18225	18225	18225	18225
Respondents	2025	2025	2025	2025	2025	2025	2025
Adjusted R^2	0.553	0.553	0.553	0.553	0.553	0.553	0.553

Notes: * p<0.10, ** p<0.05, *** p<0.01. This table shows heterogeneous treatment effects by intrinsic beliefs and affective motivations for the ESG rating divergence. The outcome is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. The interaction effects are stratified by three intrinsic belief measures and three affective motivations measures: *trust*, *skepticism*, *rating belief*, *warm glow*, *impact*, and *higher return*. Each of these variables is measured on a five-point Likert scale ranging from 1 ("fully disagree") to 5 ("fully agree"). For each variable, a median split is used to define subgroups: below-median includes individuals with values strictly below the sample median; above-median includes those equal to or above the median. The dashed vertical line indicates the baseline treatment effect. Coefficient estimates are plotted along with 95% and 90% confidence intervals. All models include individual fixed effects and cluster standard errors at the respondent level. Robust standard errors are in parentheses. See Table C1 in Appendix D for the respective survey items.

Table B5. Heterogeneous treatment effects by financial expectations

	Dependent variable: Sus. investment						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Avg. rating (β_1)	7.911***				7.983***	8.061***	8.027***
	(0.222)				(0.234)	(0.234)	(0.231)
Rating divergence (β_2)	-1.123***	-1.092***	-1.153***	-1.129***			
	(0.084)	(0.088)	(0.088)	(0.088)			
Expected return							
Avg. rating × Below mdn		5.907***					
		(0.852)					
Avg. rating × Above mdn		8.150***					
Expected risk							
		(0.243)					
Avg. rating × Below mdn			4.906***				
			(0.971)				
Avg. rating × Above mdn			8.180***				
			(0.239)				
Expected fees							
Avg. rating × Below mdn				9.305***			
				(0.570)			
Avg. rating × Above mdn				7.782***			
				(0.252)			
Expected return							
Rating div. × Below mdn					-1.474***		
					(0.301)		
Rating div. × Above mdn					-1.061***		
					(0.092)		
Expected risk							
Rating div. × Below mdn						-0.263	
						(0.431)	
Rating div. × Above mdn						-1.187***	
						(0.090)	
Expected fees							
Rating div. × Below mdn							-1.049***
							(0.219)
Rating div. × Above mdn							-1.144***
							(0.096)
Constant	48.836***	44.904***	41.300***	45.056***	44.904***	41.300***	45.056***
	(10.708)	(11.279)	(11.239)	(11.148)	(11.302)	(11.265)	(11.169)
Individual FE	✓	✓	✓	✓	✓	✓	✓
Observations	18225	16587	16506	16857	16587	16506	16857
Respondents	2025	1843	1834	1873	1843	1834	1873
Adjusted R^2	0.553	0.555	0.556	0.553	0.554	0.555	0.552

Notes: * p<0.10, ** p<0.05, *** p<0.01. This table shows heterogeneous treatment effects by financial expectations for: (a) based on the average ESG ratings, and (b) based on the divergence between ESG ratings. The outcome is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. The interaction effects are stratified by three financial expectation measures: *expected return, expected risk*, and *expected fees*. Each of these variables is measured on a five-point Likert scale ranging from 1 ("much lower") to 5 ("much higher") with additional option "don't know" answer. For each variable, a median split is used to define subgroups: below-median includes individuals with values strictly below the sample median; above-median includes those equal to or above the median. The dashed vertical line indicates the baseline treatment effect. Coefficient estimates are plotted along with 95% and 90% confidence intervals. All models include individual fixed effects and cluster standard errors at the respondent level. Robust standard errors are in parentheses. See Table C1 in Appendix D for the respective survey items.

Table B6. Heterogeneous treatment effects by ESG investments and engagement

	Dependent variable: Sus. investment				
	(1)	(2)	(3)	(4)	(5)
Avg. rating (β_1)	7.911***			7.942***	7.911***
	(0.222)			(0.221)	(0.222)
Rating divergence (β_2)	-1.123***	-1.107***	-1.123***		
	(0.084)	(0.084)	(0.084)		
Sust. funds share					
Avg. rating × Q1		7.527***			
		(0.407)			
Avg. rating × Q2		8.203***			
		(0.408)			
Avg. rating × Q3		8.325***			
		(0.496)			
Avg. rating × Q4		7.924***			
		(0.469)			
ESG engagement					
Avg. rating × Don't know ESG			8.102***		
			(0.254)		
Avg. rating × Know ESG			6.716***		
			(0.535)		
Avg. rating × Consider ESG			8.934***		
			(0.864)		
Sust. funds share					
Rating div. × Q1				-1.479***	
				(0.158)	
Rating div. × Q2				-1.390***	
				(0.150)	
Rating div. × Q3				-0.832***	
				(0.198)	
Rating div. × Q4				-0.466***	
				(0.166)	
ESG engagement					
Rating div. × Don't know ESG					-1.246***
					(0.096)
Rating div. × Know ESG					-0.835***
					(0.207)
Rating div. × Consider ESG					-0.402
					(0.269)
Constant	48.836***	46.018***	48.836***	46.018***	48.836***
	(10.708)	(10.667)	(10.688)	(10.671)	(10.710)
Individual FE	✓	✓	✓	✓	✓
Observations	18225	18090	18225	18090	18225
Respondents	2025	2010	2025	2010	2025
Adjusted R^2	0.553	0.556	0.553	0.556	0.553

Notes: * p<0.10, ** p<0.05, *** p<0.01. This table shows heterogeneous treatment effects by sustainable equity fund investments and ESG engagement for: (a) based on the average ESG ratings, and (b) based on the divergence between ESG ratings. The outcome is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. The interaction effects are stratified by *Sustainable equity share*, split into quartiles based on the respondent's share of sustainable equity funds in their portfolio (Q1 = lowest, Q4 = highest), and *ESG engagement*, measured by the survey question "have you ever heard about the ESG ratings of stocks or funds?": "Don't know" (never heard of it or heard of it, but not sure what it means), "Know" (familiar with ESG ratings, but not actively considered them), and "Consider" (familiar with ESG ratings and actively consider them when making investment decisions). The dashed vertical line indicates the baseline treatment effect. Coefficient estimates are plotted along with 95% and 90% confidence intervals. All models include individual fixed effects and cluster standard errors at the respondent level. Robust standard errors are in parentheses. See Table C1 in Appendix D for the respective survey items.

Table B7. Heterogeneous treatment effects by literacy scores

	Dependent variable: Sus. investment				
	(1)	(2)	(3)	(4)	(5)
Avg. rating (β_1)	7.911***			7.911***	7.911***
	(0.222)			(0.222)	(0.222)
Rating divergence (β_2)	-1.123***	-1.123***	-1.123***		
	(0.084)	(0.084)	(0.084)		
Financial literacy					
Avg. rating × score 0		0.808*			
		(0.438)			
Avg. rating × score 1		1.521*			
		(0.788)			
Avg. rating × score 2		5.575***			
		(0.669)			
Avg. rating × score 3		7.915***			
		(0.526)			
Avg. rating × score 4		7.731***			
		(0.420)			
Avg. rating × score 5		9.463***			
		(0.353)			
Sustainable finance literacy					
Avg. rating × score 0			6.437***		
			(0.571)		
Avg. rating × score 1			7.999***		
			(0.442)		
Avg. rating × score 2			7.565***		
			(0.426)		
Avg. rating × score 3			8.110***		
			(0.516)		
Avg. rating × score 4			9.532***		
			(0.646)		
Avg. rating × score 5			9.749***		
			(1.190)		

Notes: * p<0.10, ** p<0.05, *** p<0.01. This table shows heterogeneous treatment effects by financial literacy and sustainable finance literacy for: (a) based on the average ESG ratings, and (b) based on the divergence between ESG ratings. The outcome is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. The interaction effects are stratified by literacy score levels (0–5) for financial literacy and sustainable finance literacy, respectively, where the score corresponds to the number of correct answers to each five literacy questions (score 0 = no correct answers, score 5 = all correct). The dashed vertical line indicates the baseline treatment effect. Coefficient estimates are plotted along with 95% and 90% confidence intervals. All models include individual fixed effects and cluster standard errors at the respondent level. Robust standard errors are in parentheses. See Table C1 in Appendix D for the respective survey items.

Table B7. Heterogeneous treatment effects by literacy scores (cont.)

	Dependent variable: Sus. investment				
	(1)	(2)	(3)	(4)	(5)
Financial literacy					
Rating divergence × score 0				-0.159	
				(0.469)	
Rating divergence × score 1				0.264	
				(0.269)	
Rating divergence × score 2				-0.570**	
				(0.231)	
Rating divergence × score 3				-0.991***	
				(0.189)	
Rating divergence × score 4				-1.003***	
				(0.164)	
Rating divergence × score 5				-1.565***	
				(0.139)	
Sustainable finance literacy					
Rating divergence × score 0					-1.107***
					(0.183)
Rating divergence × score 1					-1.147***
					(0.181)
Rating divergence × score 2					-1.021***
					(0.154)
Rating divergence × score 3					-1.174***
					(0.207)
Rating divergence × score 4					-1.097***
					(0.237)
Rating divergence × score 5					-1.552***
					(0.500)
Constant	48.836***	48.836***	48.836***	48.836***	48.836***
	(10.708)	(10.499)	(10.659)	(10.758)	(10.712)
Individual FE	✓	✓	✓	✓	✓
Observations	18225	18225	18225	18225	18225
Respondents	2025	2025	2025	2025	2025
Adjusted R^2	0.553	0.562	0.554	0.553	0.553

Notes: * p<0.10, ** p<0.05, *** p<0.01. This table shows heterogeneous treatment effects by financial literacy and sustainable finance literacy for: (a) based on the average ESG ratings, and (b) based on the divergence between ESG ratings. The outcome is the amount allocated by respondent to the sustainable fund out of 1,000 Euro when presented with a particular set of ratings. The interaction effects are stratified by literacy score levels (0–5) for financial literacy and sustainable finance literacy, respectively, where the score corresponds to the number of correct answers to each five literacy questions (score 0 = no correct answers, score 5 = all correct). The dashed vertical line indicates the baseline treatment effect. Coefficient estimates are plotted along with 95% and 90% confidence intervals. All models include individual fixed effects and cluster standard errors at the respondent level. Robust standard errors are in parentheses. See Table C1 in Appendix D for the respective survey items.

C Distribution of Literacy Question Responses

This section reports the distribution of participants' responses to the financial literacy and sustainable finance literacy questions. Correct answers are underlined.

Financial literacy

1. Let's say you have 100 Euro in your savings account. This balance earns interest at 2% per year and you leave it in the account for 5 years. No further deposits or withdrawals are made from the account. What do you think your balance will be after 5 years?

   (a) Higher than 110 Euro [78.47%]
   (b) Exactly 110 Euro [16.35%]
   (c) Less than 110 Euro [3.65%]
   (d) Don't know [1.43%]
   (e) No response [0.10%]

2. Suppose your savings account earns 1% interest per year and the inflation rate is 2% per year. What do you think: after a year, will the savings account's balance allow you to buy more, the same, or less than you can today?

   (a) More than today [2.27%]
   (b) Just as much [4.25%]
   (c) Less than today [90.91%]
   (d) Don't know [2.07%]
   (e) No response [0.49%]

3. Is the following statement true or false: "Investing in shares of a single company is less risky than investing in a fund containing shares of similar companies"?

   (a) True [8.74%]
   (b) False [86.27%]
   (c) Don't know [4.64%]
   (d) No response [0.35%]

4. Is the following statement true or false: "ETFs and other passive funds typically charge higher annual fees than actively managed mutual funds"?

(a) True [7.56%]

(b) False [64.64%]

(c) Don't know [27.36%]

(d) No response [0.44%]

5. Which of the following is NOT a potential benefit of a fund from an investor's perspective?

   (a) The opportunity to invest diversified [6.22%]

   (b) The opportunity to invest in specific markets [5.68%]

   (c) The opportunity to invest with small amounts [4.20%]

   (d) The opportunity to have a say in the title selection [66.72%]

   (e) Don't know [17.04%]

   (f) No response [0.15%]

Sustainable finance literacy

1. The English abbreviation "ESG" is often used in connection with sustainable investments. What does "ESG" stand for in this context?

   (a) Environmental and social goals [4.54%]

   (b) Environmental and sustainable goals [9.23%]

   (c) Environmental, social and governance [28.74%]

   (d) Environmental, sustainable and governance [13.68%]

   (e) Don't know [43.65%]

   (f) No response [0.15%]

2. Does a financial product that is advertised as a sustainable investment in Germany have to meet certain government-defined criteria?

   (a) Yes [44.15%]

   (b) No [20.40%]

   (c) Don't know [34.72%]

   (d) No response [0.74%]

3. Is the following statement true: "Sustainability ratings and labels for funds do not follow a uniform standard. As a result, they are not directly comparable with one another"?

(a) Yes [53.28%]

(b) No [16.59%]

(c) Don't know [29.88%]

(d) No response [0.25%]

4. Is the following statement true: "Investing in a sustainable fund that invests in companies with a small carbon footprint directly reduces global CO2 emissions"?

   (a) Yes [28.84%]

   (b) No [52.00%]

   (c) Don't know [18.91%]

   (d) No response [0.25%]

5. Let's assume that a fund takes sustainability-related risks into account in addition to financial risk analysis. Is that enough for such a fund to be considered sustainable?

   (a) Yes [18.72%]

   (b) No [44.59%]

   (c) Don't know [36.44%]

   (d) No response [0.25%]

D Construction of Variables

Table C1. Description of variables of survey responses

Variables	Descriptions
	Investment variable
Sus. investment	Share of endowment invested in the sustainable funds in the experiment.
Sus. role	Dummy variable equal to one if sustainability played a role in the participant' previous investment decisions, and zero otherwise.
Equity share	Share of stocks or equity funds/equity ETFs in the financial assets.
Sus. equity share	Share of sustainable stocks or equity funds/equity ETFs in the stocks or equity funds/equity ETFs portfolio.
	ESG awareness and knowledge
Heard ESG	Dummy variable equal to one if respondents who have heard of ESG ratings and but are not sure what it means, and zero otherwise.
Know ESG	Dummy variable equal to one if respondents who have heard of ESG ratings and know what it means, and zero otherwise.
Consider ESG	Dummy variable equal to one if respondents who have heard of ESG ratings and actively incorporate ESG ratings into their investment decisions, and zero otherwise.
	(Sustainable) financial literacy
Fin. liter.	Financial literacy scored from 0 (no questions answered correctly) to 5 (all questions answered correctly).
Sus. fin. liter.	Sustainable financial literacy scored from 0 (no questions answered correctly) to 5 (all questions answered correctly).
Fin. liter. DK	Financial literacy "don't know" scored from 0 (no questions indicated "don't know") to 5 (all questions indicated "don't know").
Sus. fin. liter. DK	Sustainable financial literacy "don't know" scored from 0 (no questions indicated "don't know") to 5 (all questions indicated "don't know").
	Investment expectations
Expected return	Expectation of the average returns of sustainable equity funds on a 5-point Likert scale from 1 (much lower) to 5 (much higher), modified based on Riedl and Smeets (2017).
Expected risk	Expectation of the average risk of sustainable equity funds on a 5-point Likert scale from 1 (much lower) to 5 (much higher), modified based on Riedl and Smeets (2017).
Expected fees	Expectation of the fees of sustainable equity funds on a 5-point Likert scale from 1 (much lower) to 5 (much higher).

Table C1. Description of variables of survey responses (cont.)

Variables	Descriptions
	Post experiment variables
Endowment relevance	Significance of 1,000 Euro for investment decisions on a 7-point Likert scale from 1 (not a significant amount of money) to 7 (a significant amount of money).
Rating relevance	Importance of the sustainable rating for investment decisions on a 7-point Likert scale from 1 (not important at all) to 7 (very important).
Divergence relevance	Importance of the divergence of sustainable rating for investment decisions on a 7-point Likert scale from 1 (not important at all) to 7 (very important).
	Intrinsic beliefs regarding sustainable investments *Participants indicate their agreement with the following statements on a 5-point Likert scale from 1 (fully disagree) to 5 (fully agree)*
Trust	"I only invest in a sustainable equity fund if I can be sure that it invests exclusively in sustainable companies.".
Skepticism	"Sustainable financial investments are just a marketing strategy that financial institutions use to attract investors", modified from Riedl and Smeets (2017).
Rating belief	"I consider ratings used by private sector agencies to assess the sustainability of companies to be credible".
	Affective motivations regarding sustainable investments *Participants indicate their agreement with the following statements on a 5-point Likert scale from 1 (fully disagree) to 5 (fully agree)*
Warm glow	"I feel good when I invest in sustainable financial investments, even if their impact on the environment and society cannot be assessed", modified from Gutsche and Zwergel (2020).
Impact	"Investments in sustainable financial assets have a positive impact on the environment and society", modified based on Brodback et al. (2019).
Higher return	"I would only invest in sustainable investments if they offer the same or higher returns than conventional investments".
	Preferences and investment experiences
Risk preference	Investment risk preference on a 7-point Likert scale from 1 (very risk-averse) to 7 (very risk-seeking).
Invest experiences	Investment experiences in years.

E Survey Questions (English Version)

Welcome Page

Dear participants,

Welcome to the survey on the investment behavior of private investors, which was designed by researchers from the University of Mannheim and the ZEW - Leibniz Center for European Economic Research. This research project is funded by the Federal Ministry of Education and Research.

The survey will take approximately 15 minutes to complete and your answers will be treated with the utmost confidentiality. All data collected will be anonymized and used solely for scientific research.

To ensure an optimal user experience, we recommend that you complete the survey on a computer or tablet if possible.

To ensure the quality of the data for scientific research, we conduct "bot checks" during the survey. It is therefore important that you read and answer all questions carefully, otherwise you may be excluded during the survey.

If you click "Continue" below, it means that you

- have read this information,
- voluntarily participate in the survey and
- are at least 18 years old.

Do you have any questions? Please contact us at [email address].

Survey Questions[18]

1. First, we would like to know more about you. Please indicate your gender:
   - male
   - female
   - divers
2. How old are you? _____ years old
3. Do you currently live in Germany?
   - Yes
   - No
4. Do you currently own stocks , equity funds or equity ETFs , or have you owned them in the past?

[18]The following numbering is for this appendix only. The survey participants do not see the numbering when they answer the questions.

- Yes
- No
- Don't know

5. When survey data is entered by bots, it affects the quality of the results. To show that you are not a bot and are answering the survey questions yourself, please select all three answer options.

   - Answer 1
   - Answer 2
   - Answer 3

6. What aspects should financial investments take into account in order to be sustainable in your opinion? (Select all that apply)

   - Environmental friendliness
   - Social responsibility
   - Ethical corporate governance
   - Climate protection
   - Energy efficiency
   - Human Rights
   - Diversity and inclusion
   - Miscellaneous: _____
   - None of these

7. Have sustainability aspects played a role in your previous investments?

   - Yes
   - No

8. In the next part of the survey, we would like to know about your knowledge of different financial concepts.

   How would you rate your personal knowledge regarding financial matters?

   Please rate on a scale of "1" (very low) to "7" (very high).

9. Let's say you have 100 Euro in your savings account. This balance earns interest at 2% per year and you leave it in the account for 5 years. No further deposits or withdrawals are made from the account. What do you think your balance will be after 5 years?

   - Higher than 110 Euro
   - Exactly 110 Euro

- Less than 110 Euro
- Don't know

10. Suppose your savings account earns 1% interest per year and the inflation rate is 2% per year. What do you think: after a year, will the savings account's balance allow you to buy more, the same, or less than you can today?

    - More than today
    - Just as much
    - Less than today
    - Don't know

11. Is the following statement true or false: "Investing in shares of a single company is less risky than investing in a fund containing shares of similar companies"?

    - True
    - False
    - Don't know

12. Is the following statement true or false: "ETFs and other passive funds typically charge higher annual fees than actively managed mutual funds"?

    - True
    - False
    - Don't know

13. Which of the following is NOT a potential benefit of a fund from an investor's perspective?

    - The opportunity to invest diversified
    - The opportunity to invest in specific markets
    - The opportunity to invest with small amounts
    - The opportunity to have a say in the title selection
    - Don't know

14. How do you rate your personal knowledge regarding sustainable financial investments?

    Please rate on a scale of "1" (very low) to "7" (very high).

15. The English abbreviation "ESG" is often used in connection with sustainable investments. What does "ESG" stand for in this context?

    - Environmental and social goals

- Environmental and sustainable goals
- Environmental, social and governance
- Environmental, sustainable and governance
- Don't know

16. Does a financial product that is advertised as a sustainable investment in Germany have to meet certain government-defined criteria?

    - Yes
    - No
    - Don't know

17. Is the following statement true: "Sustainability ratings and labels for funds do not follow a uniform standard. As a result, they are not directly comparable with one another"?

    - Yes
    - No
    - Don't know

18. Is the following statement true: "Investing in a sustainable fund that invests in companies with a small carbon footprint directly reduces global CO2 emissions"?

    - Yes
    - No
    - Don't know

19. Let's assume that a fund takes sustainability-related risks into account in addition to financial risk analysis. Is that enough for such a fund to be considered sustainable?

    - Yes
    - No
    - Don't know

20. To ensure that you read and answer all questions personally and no bot goes through our study: Please click on the three answers "Strongly interested", "Interested" and "Not interested at all".

    - Strongly interested
    - Interested
    - Somewhat interested
    - Almost not interested
    - Not interested at all

21. The following part of the survey deals with the ratings that assess the sustainability of stocks and funds. Such ratings are also known as ESG ratings. The abbreviation "ESG" stands for Environmental, Social and Governance.

    Before taking part in our survey, have you ever heard about the ESG ratings of stocks or funds?

    - No, I've never heard of it.
    - Yes, I've heard of it, but I'm not sure what it means.
    - Yes, I am familiar with ESG ratings, but I have not actively considered them.
    - Yes, I am familiar with ESG ratings and actively consider them when making investment decisions.

22. What is an ESG rating and what does it mean for stocks and funds?

    There are agencies that collect company data on environmental impact, social standards and corporate governance. They use this data to create so-called ESG ratings, which assess the sustainability of companies. The agencies themselves set the criteria for creating these ratings. ESG ratings are intended to help investors take sustainability and ethical standards into account in their investments.

23. [If 21 = the last two options] Which of the following ESG ratings on funds are you aware of? (Select all that apply)

    - MSCI ESG Rating
    - ISS (Institutional Shareholder Services) ESG
    - Preqin ESG
    - Bloomberg ESG
    - Morningstar Sustainalytics
    - Refinitiv Lipper Fund ESG scores
    - ESG-Book
    - S&P Global (RobecoSAM)

- FTSE Russell
- RepRisk
- Moody's ESG (Vigeo-Eiris)
- Miscellaneous: _____
- None of this

24. Are there any ESG rating agencies mentioned above whose ratings you would prefer over others?

    - Yes
    - No

25. [If 24 = Yes] Below you will find a list of rating agencies that rate the sustainability of companies. Please select all agencies whose ratings you would trust more than those of other agencies.

    - MSCI ESG Rating
    - ISS (Institutional Shareholder Services) ESG
    - Preqin ESG
    - Bloomberg ESG
    - Morningstar Sustainalytics
    - Refinitiv Lipper Fund ESG scores
    - ESG-Book
    - S&P Global (RobecoSAM)
    - FTSE Russell
    - RepRisk
    - Moody's ESG (Vigeo-Eiris)
    - Miscellaneous: _____
    - None of this

26. We are interested in your decisions regarding investments in stocks/funds.

    How important are the following criteria to you when investing in mutual funds? Please rate on a scale of "1" (not at all important) to "5" (very important).

    - Overall risk
    - Sustainability
    - Climate compatibility
    - Past returns
    - Fund volume

- Fees

27. We are interested in your assessment of financial markets and sustainable investment opportunities.

    Please indicate on a scale of "1" (not at all true) to "5" (completely true) how much the following statements apply to you.

    - I believe that the ratings issued by private-sector agencies to assess the sustainability of companies are credible.
    - Sustainable financial investments are just a marketing strategy with which financial institutions want to attract investors.
    - Investments in sustainable financial assets have a positive impact on the environment and society.
    - I feel good when I invest in sustainable financial assets, even if their impact on the environment and society cannot be assessed.
    - I only invest in a sustainable equity fund if I can be sure that it invests exclusively in sustainable companies.
    - I don't know what social benefits there are from investing in sustainable financial assets.
    - I would rather have a sustainable lifestyle than consider sustainability in my financial decisions.
    - I would only invest in sustainable investments on the financial market if they offer the same or higher returns as conventional investments.

28. How do you assess the long-term average returns of sustainable equity funds compared to conventional equity funds?

    The returns of sustainable equity funds are...

    - much lower
    - slightly lower
    - similar
    - slightly higher
    - much higher
    - don't know

29. How do you rate the fees of sustainable equity funds compared to conventional equity funds?

    The fees of sustainable equity funds are...

    - much lower
    - slightly lower

- similar
- slightly higher
- much higher
- don't know

30. How would you assess the long-term risk of sustainable equity funds compared to conventional equity funds?

    The risk of sustainable equity funds is...

    - much lower
    - slightly lower
    - similar
    - slightly higher
    - much higher
    - don't know

31. Please take the time to read the following information.

    In the following part of the survey, we present you with two equity funds. Imagine you unexpectedly have an extra 1,000 Euro in your savings account and want to invest this amount in full. We would like to know how you would divide the 1,000 Euro between these two equity funds:

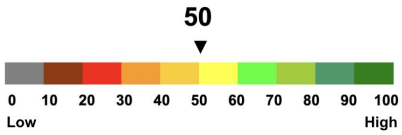
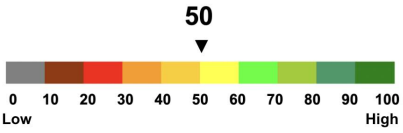
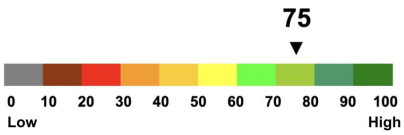
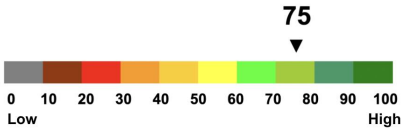
    - **Equity Fund A: Conventional equity fund**
    - **Equity Fund B: Sustainable equity fund**

    We will provide sustainability ratings from two rating agencies for both equity funds. The ratings represent the percentile rankings compared to comparable funds in terms of sustainability and are based on the equity portfolio held by the respective fund. **The higher the rating, the more sustainable the rating agency considers the fund to be**.

    We ask you to make a total of nine hypothetical investment decisions. The funds and ratings correspond to real investment options currently available on the market. Please make your investment decision as you would in real life, taking into account, among other things, risk and return in general.

32. We would first like to present you with two examples of the funds before we come to your investment decisions. Please read the descriptions of Equity Fund A and Equity Fund B carefully.

    Note: If you are using a smartphone, please rotate the smartphone to landscape mode for the best view.

	Fund A	Fund B
Fund category	Conventional fund	Sustainable Fund
Investment strategy according to fund prospectus	This fund consists of a diversified portfolio of stocks from around the world.	This fund consists of a diversified portfolio of stocks from around the world. The fund describes itself as sustainable and states in its prospectus that it uses an internal database to exclude companies that do not meet minimum sustainability standards.
ESG rating (based on two rating agencies indicating what percentage of funds have lower or higher sustainability compared to other funds)	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 

Based on the above description, we would now like to ask you to rate the following statements as true or false.[19]

33. Fund A and Fund B are similarly sustainable according to the MSCI ESG rating.

    - Correct
    - Incorrect

34. A rating in the 50th percentile implies lower sustainability than a rating in the 75th percentile.

    - Correct
    - Incorrect

35. The sustainable fund invests exclusively in European stocks.

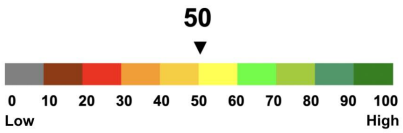
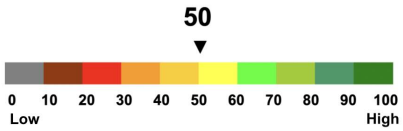
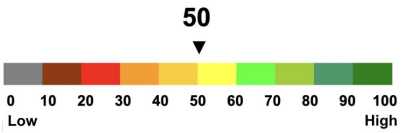
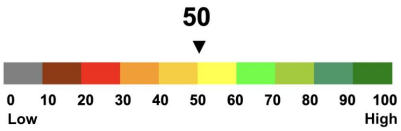
    - Correct
    - Incorrect

36. Please click on "Next" below and indicate how you would invest the 1,000 Euro in the following nine investment decisions.[20]

[19] If the participants answered the question incorrectly, they would be asked again. If still incorrect, the correct answer and its explanation will be displayed.

[20] For within subjects, we randomize the order of the nine investment choice sets. For the between subjects, we randomize the order of the two rating and answer options of the conventional fund and the sustainable fund. Overall, there are 4 x 9 combinations of choice sets.

37. Please make your investment decision as you would in real life.

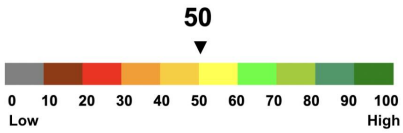
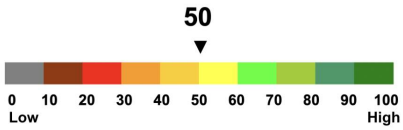
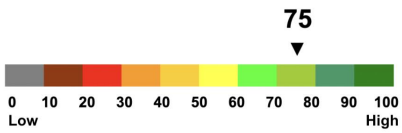
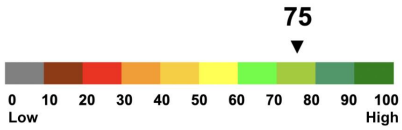
	Fund A	Fund B
Fund category	Conventional fund	Sustainable Fund
Investment strategy according to fund prospectus	This fund consists of a diversified portfolio of stocks from around the world.	This fund consists of a diversified portfolio of stocks from around the world. The fund describes itself as sustainable and states in its prospectus that it uses an internal database to exclude companies that do not meet minimum sustainability standards.
ESG rating (based on two rating agencies indicating what percentage of funds have lower or higher sustainability compared to other funds)	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 

How would you divide the 1,000 Euro into these two funds?

Conventional Fund:_____ Euro

Sustainable Fund:_____ Euro

38. Now a new scenario follows. Please read the information and make your investment decision again.

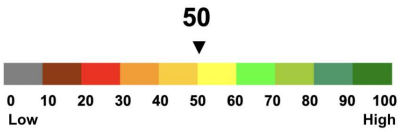
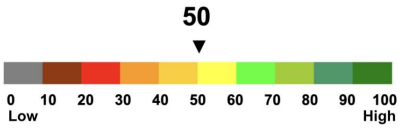
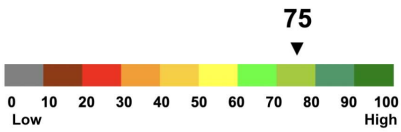
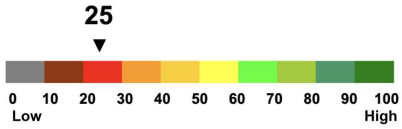
	Fund A	Fund B
Fund category	Conventional fund	Sustainable Fund
Investment strategy according to fund prospectus	This fund consists of a diversified portfolio of stocks from around the world.	This fund consists of a diversified portfolio of stocks from around the world. The fund describes itself as sustainable and states in its prospectus that it uses an internal database to exclude companies that do not meet minimum sustainability standards.
ESG rating (based on two rating agencies indicating what percentage of funds have lower or higher sustainability compared to other funds)	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 

How would you divide the 1,000 Euro into these two funds?

Conventional Fund:_____ Euro

Sustainable Fund:_____ Euro

39. Now a new scenario follows. Please read the information and make your investment decision again.

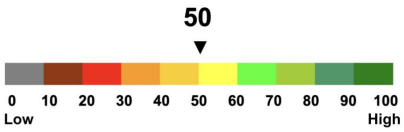
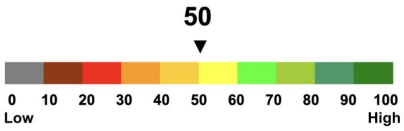
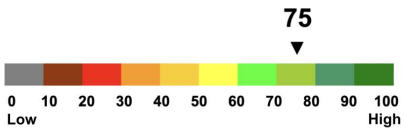
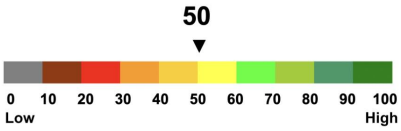
	Fund A	Fund B
Fund category	Conventional fund	Sustainable Fund
Investment strategy according to fund prospectus	This fund consists of a diversified portfolio of stocks from around the world.	This fund consists of a diversified portfolio of stocks from around the world. The fund describes itself as sustainable and states in its prospectus that it uses an internal database to exclude companies that do not meet minimum sustainability standards.
ESG rating (based on two rating agencies indicating what percentage of funds have lower or higher sustainability compared to other funds)	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 

How would you divide the 1,000 Euro into these two funds?

Conventional Fund:_____ Euro

Sustainable Fund:_____ Euro

40. Now a new scenario follows. Please read the information and make your investment decision again.

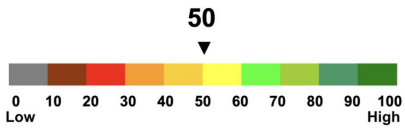
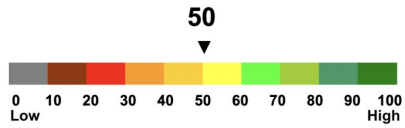
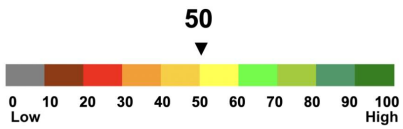
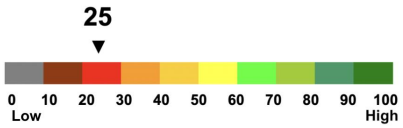
	Fund A	Fund B
Fund category	Conventional fund	Sustainable Fund
Investment strategy according to fund prospectus	This fund consists of a diversified portfolio of stocks from around the world.	This fund consists of a diversified portfolio of stocks from around the world. The fund describes itself as sustainable and states in its prospectus that it uses an internal database to exclude companies that do not meet minimum sustainability standards.
ESG rating (based on two rating agencies indicating what percentage of funds have lower or higher sustainability compared to other funds)	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 

How would you divide the 1,000 Euro into these two funds?

Conventional Fund:_____ Euro

Sustainable Fund:_____ Euro

41. Now a new scenario follows. Please read the information and make your investment decision again.

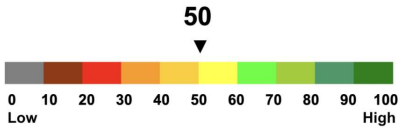
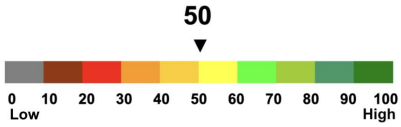
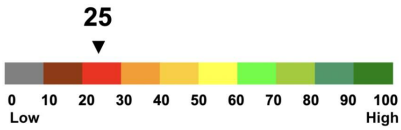
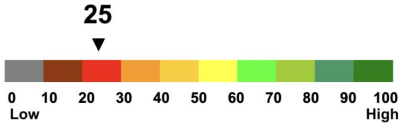
	Fund A	Fund B
Fund category	Conventional fund	Sustainable Fund
Investment strategy according to fund prospectus	This fund consists of a diversified portfolio of stocks from around the world.	This fund consists of a diversified portfolio of stocks from around the world. The fund describes itself as sustainable and states in its prospectus that it uses an internal database to exclude companies that do not meet minimum sustainability standards.
ESG rating (based on two rating agencies indicating what percentage of funds have lower or higher sustainability compared to other funds)	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 

How would you divide the 1,000 Euro into these two funds?

Conventional Fund:_____ Euro

Sustainable Fund:_____ Euro

42. Now a new scenario follows. Please read the information and make your investment decision again.

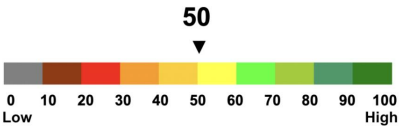
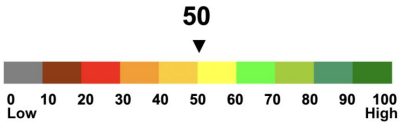
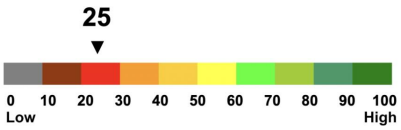
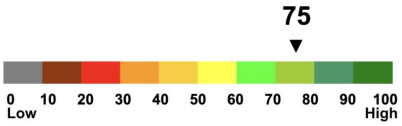
	Fund A	Fund B
Fund category	Conventional fund	Sustainable Fund
Investment strategy according to fund prospectus	This fund consists of a diversified portfolio of stocks from around the world.	This fund consists of a diversified portfolio of stocks from around the world. The fund describes itself as sustainable and states in its prospectus that it uses an internal database to exclude companies that do not meet minimum sustainability standards.
ESG rating (based on two rating agencies indicating what percentage of funds have lower or higher sustainability compared to other funds)	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 

How would you divide the 1,000 Euro into these two funds?

Conventional Fund:_____ Euro

Sustainable Fund:_____ Euro

43. Now a new scenario follows. Please read the information and make your investment decision again.

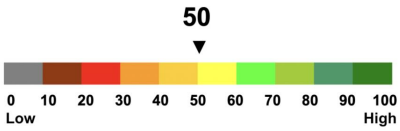
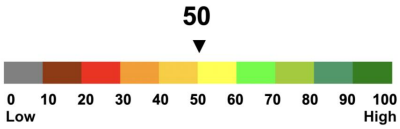
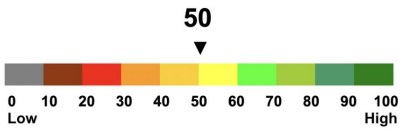
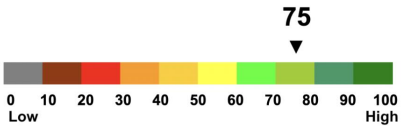
	Fund A	Fund B
Fund category	Conventional fund	Sustainable Fund
Investment strategy according to fund prospectus	This fund consists of a diversified portfolio of stocks from around the world.	This fund consists of a diversified portfolio of stocks from around the world. The fund describes itself as sustainable and states in its prospectus that it uses an internal database to exclude companies that do not meet minimum sustainability standards.
ESG rating (based on two rating agencies indicating what percentage of funds have lower or higher sustainability compared to other funds)	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 

How would you divide the 1,000 Euro into these two funds?

Conventional Fund:_____ Euro

Sustainable Fund:_____ Euro

44. Now a new scenario follows. Please read the information and make your investment decision again.

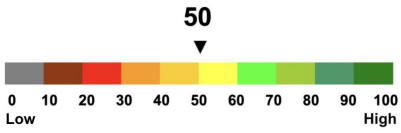
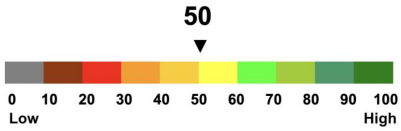
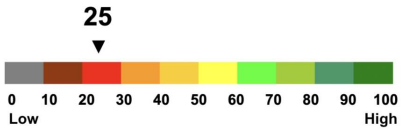
	Fund A	Fund B
Fund category	Conventional fund	Sustainable Fund
Investment strategy according to fund prospectus	This fund consists of a diversified portfolio of stocks from around the world.	This fund consists of a diversified portfolio of stocks from around the world. The fund describes itself as sustainable and states in its prospectus that it uses an internal database to exclude companies that do not meet minimum sustainability standards.
ESG rating (based on two rating agencies indicating what percentage of funds have lower or higher sustainability compared to other funds)	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 

How would you divide the 1,000 Euro into these two funds?

Conventional Fund:_____ Euro

Sustainable Fund:_____ Euro

45. Now a new scenario follows. Please read the information and make your investment decision again.

	Fund A	Fund B
Fund category	Conventional fund	Sustainable Fund
Investment strategy according to fund prospectus	This fund consists of a diversified portfolio of stocks from around the world.	This fund consists of a diversified portfolio of stocks from around the world. The fund describes itself as sustainable and states in its prospectus that it uses an internal database to exclude companies that do not meet minimum sustainability standards.
ESG rating (based on two rating agencies indicating what percentage of funds have lower or higher sustainability compared to other funds)	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 	**MSCI ESG Rating:**  **Refinitiv/LSEG ESG Rating:** 

How would you divide the 1,000 Euro into these two funds?

Conventional Fund:_____ Euro

Sustainable Fund:_____ Euro

46. Now we are interested in which aspects played a role for you in this financial decision.

    Please briefly explain to us what was most important to you when making your investment decision.

47. For you, an investment of 1,000 Euro...

    Please rate on a scale of "1" (a small investment amount) to "7" (a significant investment amount).

48. How important was the level of sustainability ratings for your investment decisions?

    Please rate on a scale of "1" (not at all important) to "7" (very important).

49. How important was it for your investment decisions if the sustainability ratings for the same fund differed?

    Please rate on a scale of "1" (not at all important) to "7" (very important).

50. How many years of experience do you have in investing in stocks or equity funds/equity ETFs?

_____ Years

51. This question is about how you have invested your financial assets. Please look at the following list of possible financial assets:

    - Savings investments, e.g. savings books, current accounts

    - Stocks

    - Fixed-interest securities, e.g. corporate or government bonds

    - Equity funds/equity ETFs, including mutual funds that invest predominantly in equities

    - Other funds, e.g. bond or real estate funds

    - Other financial investments, e.g. cryptocurrencies, discount certificates, hedge funds, gold, derivatives

    What do you estimate: What proportion of your assets in the categories mentioned have you invested in stocks or equity funds/equity ETFs ?

    Please note that these are not hypothetical investments, but your current, real investments.

    _____%

52. What do you think: What proportion of your investments in equities and equity funds/equity ETFs are made up of sustainable equity funds/equity ETFs?

    _____%

53. How would you describe your attitude towards risk in your personal investment decisions?

    Please rate on a scale of "1" (very risk averse) to "7" (very risk-taking).

Exit Page

Almost there! This is the last part of our survey. Please answer the questions to complete the survey. Your data will of course remain completely anonymous and will be treated with the utmost confidentiality.

54. In which state do you live? Please select ...

    - Baden-Württemberg
    - Bayern
    - Berlin
    - Brandenburg
    - Bremen
    - Hamburg
    - Hessen

- Mecklenburg-Vorpommern
- Niedersachsen
- Nordrhein-Westfalen
- Rheinland-Pfalz
- Saarland
- Sachsen
- Sachsen-Anhalt
- Schleswig-Holstein
- Thüringen

55. What is your highest level of education? Please select ...

- Master/Diploma/Teacher Training/PhD
- Bachelor/university of applied sciences degree
- (Technical) high school diploma
- Intermediate school leaving certificate/secondary school leaving certificate/polytechnic high school, 10th grade
- Secondary school/elementary school leaving certificate
- No degree
- Miscellaneous: _____

56. What is your current main occupation? Please select ...

- Employed/Self-employed
- In training/studies
- Military or alternative service
- Retired/Pension
- On parental leave
- Unemployed

57. What is your marital status? Please select ...

- Single (never married)
- Married or registered civil partnership
- Living together with a partner (not married)
- Divorced/separated from spouse
- Widowed

58. How many children or stepchildren do you have? _____

59. What is your household's monthly disposable net income , i.e. the amount of money available to the entire household to cover expenses after taxes and social security contributions have been deducted?

Technical Questions and Feedback

60. On which device did you complete the questionnaire?

    - PC
    - Laptop or tablet
    - Smartphone
    - Miscellaneous: _____

61. Did you have a technical problem during the survey?

    - Yes
    - No

62. How difficult did you find the questions in this survey?

    - Not difficult at all
    - Not difficult
    - Neutral
    - Difficult
    - Very difficult

63. Last but not least, do you have any feedback or comments about this survey? If so, please leave your feedback or comments below.

    _____

    Please click " Submit " below to submit your answers.

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ZEW – Leibniz-Zentrum für Europäische Wirtschaftsforschung GmbH Mannheim
ZEW – Leibniz Centre for European Economic Research

L 7,1 · 68161 Mannheim · Germany
Phone +49 621 1235-01
info@zew.de · zew.de