Are preferences for sustainable investments universal?

A large scale experiment in five European countries

February 2022

Abstract

Sustainable investments have become increasingly important in recent years. So far, it has been unclear to what extent preferences for sustainable investments are universal across Europe or vary widely across countries. We conduct a large scale online experiment with broad samples of individual investors in five countries. We find that investors throughout Europe differ significantly in their sensitivities to rising fees for sustainable investments. Financial literacy is a key driver of this fee sensitivity. Two similiarities stand out. First, preferences for sustainable investments are stronger for a sustainable investment strategy with a focus on climate change than a broad ESG strategy that takes many sustainability dimensions into account. Second, consistent with previous single-country studies, social preferences play an important role in individual sustainable investment behavior in all five countries. These results have important implications for the development of financial products and asset pricing.

Keywords: Sustainable investments; lab-in-the-field experiment; retail investors; cross-country analysis

JEL codes: G02, G11, G20, G23, G28

1. Introduction

Individuals increasingly demand that their investments not only yield financial returns, but also social and environmental returns (Hartzmark and Sussman, 2019; Krueger, Sautner, and Starks, 2020; Barber, Morse, and Yasuda, 2021)[1]. Many investors are even willing to give up financial returns to invest in a sustainable manner (Riedl and Smeets, 2017; Bauer, Ruof, and Smeets, 2021). Previous single country studies could not answer the question whether preferences for sustainable investments are universal across Europe or vary widely across countries.

Insights into the sustainable investment behavior across Europe is important not only to academics, but also to financial institutions and policy makers. First, evidence shows that the demand for sustainable investments can influence asset prices, even in equilibrium (Heinkel, Kraus, and Zechner, 2001; Hong and Kacperczyk, 2009; Gollier and Pouget, 2021; Pastor, Stambaugh, and Taylor, 2021; Pedersen, Fitzgibbons, and Pomorski, 2021). Second, the European Union recently agreed on a strategy for financing the transition to a sustainable economy and to becoming the first climate-neutral continent. While Europe already has one of the largest markets for sustainable investments (e.g. United Nations, 2020), significant additional investment is crucial for reaching the European Unions' net zero goals (e.g. European Commission, 2018). European households could help to fill this funding gap, because they hold about 10 trillion worth of currency and deposits (Eurostat, 2021a). Fostering sustainable investments by retail investors is therefore a crucial component of the European Sustainable Finance Strategy (European Commission, 2021).

This paper shows how and why European retail investors consider sustainability aspects in their investment decisions. It also sheds light on whether individuals are willing to pay a premium for sustainable investments. Previous studies on individual sustainable investment behavior predominantly focused on single countries, and considered different target populations, methodological approaches, outcome variables, explanatory variables, and time periods. Thus, results may not readily generalize to other countries. A simple comparison of results across studies is also challenging, because differences in the results across countries could simply arise from the different study context and method. For example, past studies have used different investment products and concepts for sustainability to assess individual investors' preferences for sustainable investments such as the Morningstar Sustainability Rating (e.g. Hartzmark and

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[1] See also recent (working) papers: Bonnefon et al. (2019), Brodback, Guenster, and Mezger, 2019, Ceccarelli, Ramelli, and Wagner (2021), Heeb, Kölbel, Paetzold and Zeisberger (2021), Humphrey, Kogan, Sagi and Starks (2021).

Sussman, 2019), the consideration of Sustainable Development Goals (e.g. Bauer et al., 2021), or more generic definitions of ESG (e.g. Gutsche and Ziegler, 2019).

Multi-country studies on institutional investors suggest that country differences in sustainable investor behavior exist (e.g. Dyck et al., 2019; Gibson et al., 2021). More broadly, culture plays an important role in economic decisions (Guiso, Sapienza, and Zingales, 2006). It is unclear to what extent retail investors differ in their preferences for sustainable investments across countries. Institutional investors have vastly different incentives, market power and legal backgrounds than individuals. Moreover, European countries differ substantially in their economic strength, capital market participation of individuals, and prosocial and environmental behavior (see Table 1). For example, CO_2 emissions per capita are higher in Germany, the Netherlands, and Poland compared to France and Spain. Capital market participation is also very different, with people from Germany and the Netherlands being about twice as likely to hold mutual funds compared to people from France and Spain and about four times as likely than people in Poland.

< Table 1 here >

The question therefore arises whether individual investor preferences for sustainable investments prevail throughout Europe, or vary widely across countries. We aim to answer three other key questions in the paper. First, do individual investor preferences for sustainable investments depend on whether the investment product follows a broad ESG strategy or a narrower climate-related strategy? Second, to what extent do individual preferences for sustainable investments depend on i) financial beliefs, ii) social signaling motives, and iii) social preferences? Third, how does the relevance of the investor motives for sustainable investments vary across countries?

To answer these questions, we consider the same target population, methodological approach, outcome variables, explanatory variables, and time period across countries in order to rule out alternative explanations for country differences. To this end, we conduct a large scale online experiment with broad samples of individual investors from France, Germany, the Netherlands, Poland, and Spain. We chose those countries because of their differences in economic background, stock market participation, and prosocial and environmental behavior. Individual investors are defined as financial decision makers in their household who either currently or previously owned investment products, or are sufficiently informed about investment products.

To ensure that our samples are as representative as possible of the populations of household financial decision makers in the five countries, we applied a two-step recruitment strategy in collaboration with a professional survey institute present in all five countries. Information on

the distribution of typical sociodemographic characteristics of our target group of experienced investors is unavailable. Therefore, we recruited individuals in such a way that the samples of people who started the survey were, as close as possible, representative of citizens of at least 18 years of age for the respective country. In a second step, we then used screening questions to identify people from our desired target group who have investment experience. Only individuals who met the screening criteria were allowed to proceed with the survey. This procedure was carried out until a target of 1,000 suitable respondents per country was reached or exceeded, taking into account the aforementioned quotas. The final sample has a size of 5,162 individuals, with at least 1,000 respondents in each country.

The pre-registered incentivized experiment is carried out simultaneously in all five countries. In the experiment, individual investors allocate their endowment between sustainable and conventional MSCI World exchange traded funds (ETFs). Two different sustainable ETFs are considered, where one tracks an index that follows a broad ESG-based screening strategy, and the other follows a narrow climate-related strategy. The investment decisions in the experiment are incentivized to ensure that choices are consequential (e.g. Bauer et al., 2021), and that the experimental results generalize to real-life behavior (e.g. Riedl and Smeets, 2017). In addition, we measure a wide variety of preferences and beliefs, such as social preferences, risk preferences, time preferences, return expectations and risk perceptions. We control for important investor characteristics such as financial literacy, education, and income.

We find that investors throughout Europe differ significantly in their sensitivities to rising fees for sustainable investments. This fee sensitivity is highest in the Netherlands and Germany and is strongly driven by financial literacy. In addition to these differences, we find uniformly across all countries that sustainable investment preferences are stronger when the fund follows a specific climate-related investment strategy than a broader ESG strategy. Investors therefore prefer a narrower climate-related investment strategy over a broader ESG-related investment strategy. The experiment has predictive power for real-life reported sustainable investments, which shows the external relevance of these findings.

In terms of key drivers for sustainable investments, we find that social preferences play an important role. Social signaling and financial motives also matter, but with different relevance across countries. The relevance of other potentially important determinants such as time preferences or financial literacy also differs across countries. In contrast, the important role of social preferences can be observed universally in all countries considered, providing additional evidence on the important role of social preferences for investment decisions, irrespective of the

3

regional context. The relation between social preferences and sustainable investments is strongest in the Netherlands and Germany.

Our paper makes three main contributions. First, we contribute to the literature and discussion on sustainable investments. So far, empirical evidence on the sustainable investment behavior of retail investors has focused on single-country studies (e.g. Riedl and Smeets, 2017; Gutsche and Ziegler, 2019; Hartzmark and Sussman, 2019; Bauer et al., 2021) and it has not been clear to what extent these results generalize to other countries. Based on a large scale survey, with exactly the same target groups, experimental approaches, definitions of sustainable investments, and time period, we show that individual investors differ in their sensitivities to rising fees for sustainable investments across countries. Second, we contribute to studies analyzing social preferences and sustainable investments across countries (e.g. Falk et al., 2018; Dyck et al., 2019; Gibson et al., 2020). In particular, we show the important role of social preferences for sustainable investments in all countries studied. This finding stands in stark contrast to models in traditional finance postulating that investors' decisions are grounded solely on risk-return considerations. Third, we contribute to the current debate on financing the transition process to a low carbon economy and mobilizing private investors at the European level. Here, our findings show that investors are willing to pay a premium for sustainable investments throughout Europe. At the same time, the sensitivity to higher fees on sustainable investments varies significantly across countries. It also appears that individuals are more likely to invest in specific climate funds than broader ESG funds.

These insights can have implications for long run asset prices, whereby preferences for sustainable investments can impact expected returns of more and less sustainable companies (Heinkel et al., 2001; Pastor et al., 2021: Pedersen et al., 2021). The results could also help financial institutions and policy makers in finding ways to motivate individuals to allocate capital to companies and projects that positively contribute to the United Nations Sustainable Development Goals.

2. Data, experimental design, and variables

We base our analysis on a lab-in-the-field experiment, which was implemented in a large scale online survey among 5,162 households' financial decision makers in five European countries, namely France (1,007 respondents), Germany (1,009 respondents), the Netherlands (1,010 respondents), Poland (1,070 respondents), and Spain (1,066 respondents). The survey was carried out in collaboration with the professional market research institute Psyma+Consulting GmbH

(Psyma) during May and July 2021 and had the goal to survey about 1,000 people per country (i.e. about 5,000 respondents in total). Among other tasks, Psyma was responsible in particular for programming the questionnaire, conducting the online survey, and recruiting the respondents from own online panels.

For the recruitment process, it would have been ideal if previous studies had identified the characteristics of representative individual investors samples in the respective countries. But this evidence was not available. Consequently, we adopted the following two-step approach. First, the survey company recruited individuals in such a way that the samples of people who started the survey were, as close as possible, representative of citizens of at least 18 years of age for the respective country.[2] In a second step, we asked screening questions about the respondents' responsibility for financial decisions in their household and their current as well as previous investment experiences. Only individuals who either currently or previously owned investment products, or reported to be sufficiently informed about investment products were allowed to proceed with the questionnaire and to participate in the lab-in-the-field experiment. In the next section, we will show that this sampling approach indeed led to a broad representation of investors in our sample.

Furthermore, the survey company conducted quality checks (e.g. regarding systematic response patterns) on all completed questionnaires throughout the field time. Low-quality interviews, i.e. those in which it became evident that respondents were not reading or answering the questions adequately due to systematic responses or too short completion time were excluded from the sample and new respondents were re-recruited accordingly. The median time for completion of the survey across all countries is 30.1 minutes.

2.1 Survey and sample structure

The study was pre-registered at OSF Registries and our approach was ethically approved by the central ethics committee of one of the authors' universities. The survey consisted of nine different parts (A-I): Part A contained questions that allowed us to screen-out respondents who did not correspond to the target group (e.g., about age, gender, main place of residence). This part also included further questions about respondents' current forms of investments and some

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[2] For instance, whether invited persons responded to the survey differed for some strata of the invited population, and subsequent invitation waves were sent with higher weight for those strata that were less likely to respond (for example, if females less frequently opened the survey in the first invitation wave, they were sampled disproportionally in the subsequent invitation waves), such that in the end the distribution of age, gender, and region for people who finally started the survey are close to the respective distributions in the official population statistics.

background information on financial decision making processes in respondents' households. Part B contained the investment experiment, which was the core of our study. We describe the experimental design in the following section. Part C comprised several general questions on the respondents' investment and consumption behavior, and especially our measure for social signaling motives. Part D aimed to capture further background information on the respondents' sustainable investment behavior and knowledge. It particularly contained measures to capture individual financial performance perceptions concerning sustainable investments. Part E aimed to capture a variety of individual characteristics such as economic preferences, personality traits, or personal attitudes. In the context of the present study, this part particularly included items to measure individual risk, time, and social preferences. Part F included questions on financial literacy. The final parts (i.e. Part G, Part H, and Part I) comprised further questions on the socio-demographic background of our respondents.

Panel A of Table 2 shows country differences with respect to median net household income, age, gender, and education. Concerning net household income, the Netherlands ranks highest with a median class of €3,500 to €4,000, followed by France and Germany. The average age between about 45 and 48 years is very similar across countries, except for Spain, where respondents are somewhat younger. The share of females is higher in Poland and Spain compared to France, Germany, and the Netherlands. More than half of respondents have a university education in Spain, Poland, and the Netherlands. Compared to the general populations in each of these countries (see Tables A.1 to A.5 in Appendix A), we see that our investor samples tend to overrepresented by male and older individuals. These investor characteristics are in line with the characteristics of investors in previous studies (e.g. Guiso, Sapienza, and Zingales, 2008; Kaustia and Torstila, 2011; van Rooij, Lusardi, and Alessie, 2011; Riedl and Smeets, 2017; Choi and Robertson, 2020).

< Table 2 here >

Table 2 further shows significant country differences in terms of investment behavior, prosocial and environmental behavior and attitudes, and religious affiliation. Most important for our study, sustainable investments vary substantially across the countries (see Panel B). Here, 25.8% of Dutch respondents own sustainable investments, more than double the share of respondents from Poland. German investors rank second with about 19.2%, followed by French and Spanish respondents who own slightly fewer sustainable investments. The proportion of fund or share owners is also highest among German and Dutch respondents. It is striking that Polish respondents are in last place in all three cases.

With regard to social preferences, which have been shown to be an important driver for sustainable investment decisions (e.g. Riedl and Smeets, 2017), the highest average values are also observed for German and Dutch respondents (see Panel C). Yet, the distances to the other countries are small. When it comes to prosocial behavior, such as volunteering or the amount of donations, we also find the highest values for Germans and the Dutch. However, this does not apply to the proportion of people who have donated in the past 12 months. Here we find the highest proportion among Polish respondents. A different picture emerges, with regard to environmental attitudes (measured by the New Environmental Paradigm) or the extent to which respondents have an ecological political orientation. Here, high values occur among French and German respondents, and among Polish and Spanish respondents, respectively. In contrast to prosocial behavior, the Dutch are in last place here.

Finally, Panel D reports country differences in religious affiliation, which could also be an important motive for the consideration of sustainable, and especially ethical criteria in investment decisions (see e.g. Renneboog, Ter Horst, and Zhang, 2008 on the historic roots of sustainable investments). Country differences are obvious here: The majority of respondents from France and the Netherlands do not belong to any religious community, while a large majority of respondents from Poland are affiliated with the Roman Catholic Church. Germany and the Netherlands traditionally have higher shares of Protestants compared to the other countries. In the empirical analysis, we will consider the extent to which the differences highlighted here translate into differences in sustainable investment behavior.

2.2 Investment experiment

After the initial screening questions in Part A of the survey, we directly started with the incentivized investment experiment as the main part of our study. In this way, we minimize any priming effects, whereby investment behavior in the experiment could be influenced by previous questions. On the first screen of the experiment, we described the basic setting to the respondents. Accordingly, respondents had the opportunity to make eight subsequent investment decisions, with a freely allocatable endowment[3] in each decision situation. To incentivize investment decisions, we informed the participants that ten of them would be randomly selected after finishing the survey in July 2021 and that their investment decisions would be realized

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[3] Corresponding to the approach by Falk et al. (2018), endowments were scaled by median household income in each country, expressed in local currency (€ for France, Germany, the Netherlands, and Spain, and Zł for Poland), and rounded to the next multiple of 100 to facilitate calculations. The reference endowment was €1000 in Germany, and scaling resulted in endowments of €1000 for France and the Netherlands, €600 for Spain, and €300 for Poland (rounded and converted to Zł1300).

(indeed we invested real money in accordance with the investment decisions after the field phase). We further explained that the investment would last for one year. After this year, in July 2022, the funds will be sold again and the selected participants will receive the value of their portfolio net of fees.[4] For further clarification, we included two more examples to explain the procedure if a person were to be selected. We further guaranteed that all ten selected participants would be informed about their selection after the random selection is completed, and that all information would be true. Finally, we emphasized that respondents were totally free in their decision.[5]

Respondents were randomly assigned to two groups with equal probability and without their knowledge. Individuals assigned to the first group (set A) were first asked to make four investment decisions regarding ETFs for the MSCI World Index and the MSCI World ESG Screened Index. Thus, these participants could choose between an ETF based on a broad (conventional) global stock index covering more than 1,600 stocks from 23 developed countries, namely the MSCI World Index, and an ETF based on a narrower (sustainable) index taking ESG criteria into account, namely the MSCI World ESG Screened Index. After these four decisions, we asked these respondents to make four additional investment decisions between an ETF based on the MSCI World Index and an ETF based on the MSCI World Climate Change Index. We thus again offered an ETF based on a broad (conventional) global stock index, but replaced the rather generally oriented sustainable stock index by an index focusing on climate-related issues and transition risks towards a low-carbon economy. This distinction allows us to reveal to what extent individuals take different facets of sustainability into account.

When selecting the products used in the experiments, we deliberately chose ETFs, as these are straightforward investment products that enjoy a high degree of familiarity. The latter also applies to the MSCI World Index and its provider MSCI. By choosing MSCI, it was also possible to select two sustainability indices that are offered by the same financial services provider and are both based on the same parent index (the MSCI World Index). Ultimately, this approach also enables us to explore the extent to which investors are willing to move away from a broad market portfolio in order to invest sustainably instead.

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[4] To provide participants with realistically high investment amounts and to reduce administrative complexity, we follow earlier experimental studies analyzing individual investment behavior and only a pay randomly chosen subset of participants (e.g. Kirchler, Lindner, and Weitzel, 2018). Results from various review studies show that such an approach leads to only minor differences, if any, compared to the case where all participants are paid (e.g., Charness, Gneezy, and Halladay, 2016; Clot, Grolleau, and Ibanez, 2018). After the survey, we did indeed invest real money according to the investment decisions.

[5] Figure B.1 in Appendix B shows an exemplary screenshot of the first screen of our experiment.

To avoid any order effects, individuals assigned to the second group (set B) were first asked to make four investment decisions between an ETF based on the MSCI World Index and an ETF based on the MSCI World Climate Change Index, and were then asked to make four investment decisions between an ETF based on the MSCI World Index and an ETF based on the MSCI World ESG Screened Index. Otherwise, the experimental design for the two groups was identical (i.e., all texts and explanations that did not concern the specific ETFs were the same).

On the second screen, we explained the specific decision situation to the respondents. Accordingly, we described that they would be asked to allocate their endowment between two real ETFs in each decision situation. Moreover, individuals were free in their allocation and could invest the entire amount into one single fund or distribute the amount equally or unequally between the two funds. The only constraint was that they had to invest a minimum of €50 if they wanted to invest in an ETF. In the following, individuals assigned to set A received short descriptions about the MSCI World Index and the MSCI World ESG Screened Index and were then asked to make their first investment decision.[6] Analogously, individuals assigned to set B received information on the MSCI World Index and the MSCI World Climate Change Index and were then asked to make their first investment decision.

Figure 1 shows a screenshot of an exemplary decision situation for individuals from set A (in German language). This figure illustrates a key feature of our experiment: In addition to the short descriptions of the indexes in the upper part of this figure, we informed the participants about the fees charged on each ETF. Importantly, we did not provide any further specific information on the ETFs (e.g., past returns or a concrete International Securities Identification Number), which would allow participants to identify these funds by, for example, searching on the internet.[7] This allowed us to set the fees charged on the ETF based on the MSCI World Index to a constant value of 0.20% in all four decision situations, but to vary the fees charged on the respective sustainable ETFs by randomly drawing without replacement from the values of 0.20%, 0.90%, 1.60%, and 2.30%, respectively. For example, if the value of 0.20% had been randomly selected for the fees of the MSCI World ESG Screened Index ETF in the first decision situation, its fees in the second decision situation, which will be shown on the next screen, would be either 0.90%, 1.60% or 2.30%. This would then again be determined by random selection. The fees for the third and fourth decision situations are determined accordingly.[8] This

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[6] The descriptions of the indexes were based on the official documents provided by MSCI.

[7] In fact, the performance of the three indices has been very similar over the past few years.

[8] For exemplary screenshots showing the second, third, and fourth decision in the experiment, see Figures B.2, B.3, and B.4 in Appendix B.

approach allows us to reveal to what extent participants are willing to invest in a sustainable manner if fees differ.

< Figure 1 here >

2.3 Variables

2.3.1 Experiment variables

Share invested in sustainable ETFs

To gain insights into individuals' preferences towards sustainable ETFs across countries and sustainable investment strategies, we construct three variables. The variable *Share of endowment invested in sustainable ETFs* measures respondents' investments in either the MSCI World ESG Screened Index fund or the MSCI World Climate Change Index fund in each of the eight investment decisions as share of their endowment. This variable allows us to examine the distribution of individual investments in sustainable ETFs and to reveal whether respondents follow specific diversification strategies. Additionally, it also allows us to compare the distributions of individual sustainable investments across the four fee scenarios, and especially across countries. In addition, we construct the variables *Share of endowment invested in ETF based on MSCI World ESG Screened Index* and *Share of endowment invested in ETF based on MSCI World Climate Change Index* accordingly, which allow us to compare individual preferences across sustainable investment strategies.

Fees

As respondents' willingness to pay additional fees to invest in sustainable ETFs should depend on the level of fees on sustainable ETFs, we construct four dummy variables, one for each fee scenario, namely *Fees on sustainable ETF: 0.2%*, *Fees on sustainable ETF: 0.9%*, *Fees on sustainable ETF: 1.6%,* and *Fees on sustainable ETF: 2.3%.* These variables take the value of one if the corresponding fee scenario is considered, and zero otherwise.

Further variables

Finally, we construct several auxiliary variables. The variable *Decision* serves as an identifier of the respective decision situation and can take the integer values from one to eight. To control for potential order effects, we also create the dummy variable *Saw ESG Screened ETF first* that

10

takes the value of one if a respondent is assigned to the first group (set A) which is first asked to make four investment decisions between the ETFs based on the MSCI World ESG Screened Index and the MSCI World Index, and zero otherwise.

2.3.2 Survey variables

Return expectations and risk perceptions

To examine the relevance of financial motives for sustainable investment decisions, we follow previous studies and consider respondents' return expectations (e.g., Riedl and Smeets, 2017; Bauer et al., 2021) and risk perceptions (e.g., Riedl and Smeets, 2017; Gutsche and Ziegler, 2019). To capture return expectations concerning the MSCI World ESG Screened Index ETF compared to the MSCI World Index ETF, we asked the question "What returns do you expect on the MSCI World ESG Screened Index fund?" Respondents could choose among "much lower returns compared to the MSCI World Index fund," "a little lower returns compared to the MSCI World Index fund," "neither lower nor higher returns compared to the MSCI World Index fund," "a little higher returns compared to the MSCI World Index fund," "much higher returns compared to the MSCI World Index fund," and "don't know." Following Bauer et al. (2021), we construct one dummy variable for each response category, namely *Much lower returns compared to MSCI World, A little lower returns compared to MSCI World, Neither lower nor higher returns compared to MSCI World, A little higher returns compared to MSCI World, Much higher returns compared to MSCI World,* and *Do not know returns.* These variables take the value of one if the respondent selected the corresponding response category, and zero otherwise. We proceeded in the same way to capture respondents' return expectations concerning the MSCI World Climate Change Index ETF compared to the MSCI World Index ETF. Accordingly, we used the same question, but now referred to the MSCI World Climate Change Index ETF instead of the MSCI World ESG Screened Index ETF. Consequently, we again construct one dummy variable for each response category, as described before.

We capture risk perceptions concerning each of our two sustainable ETFs compared to the MSCI World Index ETF by asking respondents to indicate their agreement with the statements "The MSCI World ESG Screened Index fund is riskier than the MSCI World Index fund." and "The MSCI World Climate Change Index fund is riskier than the MSCI World Index fund." Consistent with the scale used by Riedl and Smeets (2017), for both statements, respondents could rate their agreement on a 7-point Likert scale ranging from 1 "fully disagree" to 7 "fully agree" or select "don't know." We construct six dummy variables; three for each sustainable

fund. The dummy variable *Lower risk compared to MSCI World* takes the value of one if the respondent perceives the MSCI World ESG Screened Index fund to be less risky than the MSCI World Index fund (Likert scale 1-3), and zero otherwise. The dummy variable *Higher risk compared to MSCI World* takes the value of one if the respondent perceives the MSCI World ESG Screened Index fund to be riskier than the MSCI World Index fund (Likert scale 5-7), and zero otherwise. We additionally construct the dummy variable *Do not know risk* that takes the value of one if a respondent selects the option "don't know", and zero otherwise. Thus, the base category refers to equal risk perceptions (Likert scale 4). In the same manner, we construct three dummy variables to capture individual relative risk perceptions of ETFs based on the MSCI World Climate Change Index compared to funds based on the MSCI World Index Therefore, equal risk perceptions (Likert scale 4) again form the base category.

Social signaling

To capture potential signaling motives, we follow Riedl and Smeets (2017). Accordingly, we ask respondents for their agreement with the statement "I often talk about investments with others." on a 7-point Likert scale ranging from "fully disagree" (Likert scale 1) to "fully agree" (Likert scale 7). The variable *Signaling* captures responses to this statement and thus takes values from one to seven.

Social preferences

We capture social preferences using validated survey questions from the Global Preferences Survey Module (Falk et al., 2016; Falk et al., 2018). A large advantage of using these validated questions is that they are already available in the languages of the five countries considered in our study.[9] Moreover, using identical formulations as earlier studies increases the comparability of our data. Accordingly, we ask the question "How willing are you to give to good causes without expecting anything in return?" Respondents can indicate their willingness on an 11-point Likert scale ranging from 0 "completely unwilling" to 10 "completely willing." Based on these answers, we construct the variable *Social preferences* that captures responses to this statement and thus takes values from zero to ten.

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[9] These questions can be downloaded from https://www.briq-institute.org/global-preferences/downloads (accessed on January 31, 2021). All other questions and texts are translated into the different languages by the survey institute and are cross-checked by the researchers involved in this project, with each of the researchers able to cover at least one of the five countries considered in our study.

Control variables

In addition, we also measure a large set of control variables. We measure respondents' risk and time preferences by using validated survey questions from the Global Preferences Survey Module (Falk et al., 2016; Falk et al., 2018). Concerning risk preferences, we ask respondents to tell us, in general, how willing or unwilling they are to take risks, using a scale from 0 to 10, where 0 means "completely unwilling to take risks" and 10 means "very willing to take risks." The responses to this question are coded by the variable *Risk preferences*. Regarding time preferences, we ask respondents to indicate their willingness to give up something that is beneficial for them today in order to benefit more from that in the future. Respondents can indicate their willingness on an 11-point Likert scale ranging from 0 "completely unwilling" to 10 "completely willing." The answers to this question are captured by the variable *Time preferences*. As financial literacy plays an important role for individual investment decisions (e.g. van Rooij, Lusardi, and Alessie, 2011, 2012), we apply an objective measure developed by Lusardi and Mitchell (2008) to measure financial literacy. This measure is based on three quiz questions referring to interest rates, inflation, and risk diversification, respectively. The variable *Financial literacy* comprises the number of correct answers and thus ranges between zero and three.

Finally, we consider socio-demographic and socio-economic variables. We construct the following variables: The variable *Age* denotes the respondents' age in years. The dummy variable *Female* takes the value of one if the respondent is a woman, and zero otherwise. The dummy variable *High education* takes the value of one if the respondent has at least a university entrance qualification, and zero otherwise. The dummy variable *Married* takes the value of one if a respondent is married or lives together with their partner, and zero otherwise. To capture the respondents' household net income, we construct four dummy variables, namely *Low income, Middle income, High income,* and *Do not know or report income*. *Low income* takes the value of one if the respondent's reported monthly net household income is below the median class in the sample for the respective country, and zero otherwise. *Middle income* takes the value of one if the respondent's reported monthly net household income is in the median class in the sample for the respective country, and zero otherwise. *High income* takes the value of one if the respondent's reported monthly net household income is above the median class in the sample for the respective country, and zero otherwise. Finally, *Do not know or report income* takes the value of one if the respondent does not know or disclose their monthly net household income, and zero otherwise. Given the differences in religious affiliations across countries and possible resulting influences on sustainable investment behavior (e.g. Salaber, 2013), we also construct

three dummy variables to capture respondents' religious affiliations: The dummy variable *Catholic* takes the value of one if a respondent belongs to the Roman Catholic Church, and zero otherwise. In the same manner, the dummy variables *Protestant* and *Other religion* take the value of one if the respondent belongs to the Protestant Church or has any other religious affiliation, respectively, and zero otherwise. The dummy variable *Do not report religion* takes the value of one if the respondent indicated that they are not willing to answer questions about the topic of religiosity, and zero otherwise. Finally, we construct the five country dummy variables *France*, *Germany*, *Netherlands*, *Poland*, and *Spain* that take the value of one if the respondent's main place of residence if in the corresponding country, and zero otherwise.

3. Results

3.1 Do individual investors' preferences for sustainable investments prevail throughout Europe, or do they vary widely across countries?

To answer our first research question, we first look at the extent to which respondents' sustainable investment behavior differs across the five countries considered. To this end, Figure 2 shows the shares of the endowment respondents invested on average in sustainable ETFs in the four fee scenarios. Thus, in this step we do not yet distinguish between the two sustainable investment strategies, i.e. whether an ETF is based on the MSCI World ESG Screened Index or the MSCI World Climate Change Index.

< Figure 2 here >

The four bars on the left side of the graph show the results for the four fee scenarios averaged across all decisions. It turns out that respondents invest on average slightly more than half of their endowment in a sustainable manner if the fees on the sustainable ETF and the MSCI World ETF are equal (grey bar).[10] But even if the fees charged on the sustainable option increase to 0.9% or 1.6%, the shares of sustainable investments do only slightly decrease and especially do not fall below 50% (light green and sand-colored bar), respectively. Even in the case that the fees on the sustainable option take the value 2.3%, the average share of sustainable investments is still 48.03%, and thus just below 50% (orange bar). Thus, we do not see a strong decrease in sustainable investments compared to the previous fee scenarios here either. Nevertheless, Table 3A shows that the corresponding declines are statistically significant compared to the 0.2%

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[10] These shares are also reported in Table A.6 in Appendix A.

baseline scenario.[11] Evidence for different average shares invested in sustainable funds across the fee scenarios is also supported by corresponding non-parametric Friedmann tests[12]. This implies that respondents are generally reacting to rising fees as expected, but still invest a considerable share in sustainable ETFs even if these funds become more expensive.

< Table 3A here >

Can we observe the patterns described above in all European countries considered, or are there differences? Reconsidering Figure 2, we indeed find the same basic pattern of decreasing investments in sustainable ETFs with increasing fees for all countries. However, we also observe some significant country differences. Table 3B shows that French respondents in the 0.2% scenario invest slightly but statistically significantly more in sustainable ETFs than respondents from Germany, Poland, or Spain. Only Dutch respondents invest slightly, but statistically significantly more than French respondents in this scenario. Moreover, French respondents seem to be less fee sensitive compared to the overall average, as the share of sustainable investments only decrease very moderately compared to the baseline scenario if fees increase to 0.9%, 1.6%, and 2.3%, respectively (see Table 3A). In contrast, German respondents not only seem to have weaker preferences for sustainable investments but are also considerably more fee sensitive. While the share of sustainable ETFs in the 0.2% scenario is close to the average share observed for the full sample, it is significantly lower compared to the French subsample. Moreover, we observe a significant decrease in the share of sustainable ETFs if fees charged on the sustainable option increase to 0.9%. Table 3B shows that this reaction is statistically and especially economically meaningful, as it is more than nine times as strong as among French respondents. The responses to the two other fee scenarios of 1.6% and 2.3% are also significantly stronger than in the French case, but also compared to the average over all countries. For example, the average share of sustainable ETFs decreases by 13.9 percentage points in the 2.3% scenario compared to the 0.2% scenario, which is about twice as high than the average reaction among French respondents.

< Table 3B here >

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[11] Table 3A presents the results of fixed effects estimations. By applying this estimation approach, we account for the panel data structure of our dataset (i.e. eight investment decisions per respondent) and control for individual fixed effects that are time-invariant across the eight decisions.

[12] (1) all countries, χ^2 test statistic = 318.639, p-value = 0.0000, (2) France, χ^2 test statistic = 19.859, p-value = 0.0002, (3) Germany, χ^2 test statistic = 223.472, p-value = 0.0000, (4) Netherlands, χ^2 test statistic = 138.648, p-value = 0.0000, (5) Poland, χ^2 test statistic = 24.887, p-value = 0.0000, and (6) Spain, χ^2 test statistic = 12.505, p-value = 0.0058.

The reaction of Dutch respondents to rising fees of sustainable ETFS is very similar to that of German respondents (see Tables 3A and 3B). However, Dutch respondents invest on average a bit, but statistically significantly more in sustainable ETFs than German respondents in the 0.2% scenario, implying slightly stronger preferences for sustainable investments among Dutch than German respondents. Finally, Polish and Spanish respondents show a very similar fee sensitivity as French respondents. However, both Polish and Spanish respondents invest significantly less in sustainable ETFs than French respondents in the 0.2% scenario implying slightly weaker preferences for sustainable investments.

Result 1: *Individual preferences for sustainable investments vary across Europe. The sensitivity to higher fees on sustainable funds varies across countries and is highest in the Netherlands and Germany.*

The previous discussion also shows that the average shares of investments in sustainable ETFs entirely fall into a rather narrow interval from 40% to 60%, regardless of the country (see also Table A.6 in Appendix A). This suggests that some respondents might use a naïve diversification strategy such as the 1/n heuristic, which means that individuals simply allocate their endowment equally across the investment options available (e.g. Benartzi and Thaler, 2001). To shed some light on this issue, Figure 3 plots the distributions of the shares invested in sustainable ETFs in the 0.2% scenario (Panel A) and 2.3% scenario (Panel B). Two decisions are reported per respondent in each fee scenario, one related to the ESG Screened fund and one related to the climate change fund. Panel A reveals that respondents follow the 1/n diversification heuristic in 37.1% of all decisions if the fees charged on the sustainable ETF and the MSCI World Index ETF are identical.[13] In 6.2% of decisions, respondents invest their entire endowment in the MSCI World Index ETF. In slightly more than twice as many decisions (13.47%), respondents invest all their money in the sustainable option. This shows that respondents follow one of these three investment heuristics in the majority of their decisions in the baseline scenario. Nevertheless, only about 2% of respondents invest their entire endowment in the MSCI World Index ETF in both investment decisions in the 0.2% scenario, that is regardless of which sustainable option is available. About four times as many, or 8% of respondents, invest their entire endowment in the sustainable option in both choices in this fee scenario. Thus, the latter group of respondents appears to have fairly strong preferences for sustainable funds, at least if the sustainable option is not more expensive than the conventional option.

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[13] Table A.7 in Appendix A reports the proportions of decisions in which respondents invested 0%, 50%, and 100% of their endowment in the sustainable ETF in the 0.2% and 2.3% scenarios.

< Figure 3 here >

Panel B shows that the distribution changes significantly if the fees charged on the sustainable ETF increase to 2.3%.[14] It turns out that the 1/n heuristic in particular is now used significantly less often (only in 12.9% of all decisions). In contrast, the number of decisions in which the entire endowment has been invested in the MSCI World Index ETF doubles. However, the share of decisions in which all the money is invested in the sustainable option decreases only slightly to 10.9%. Correspondingly, the fraction of respondents who invest their entire endowment in the MSCI World Index ETF in both decisions, i.e. regardless of which sustainable option is available for selection, now rises to just above 8%. However, the proportion of people who choose to invest their entire endowment in the sustainable option in both decisions remains relatively stable, falling only slightly to just below 7%. This suggests that a group of respondents would like to invest their entire money sustainably, even if the fee difference between the sustainable and conventional option increases substantially. We will look at the drivers of this behavior in Section 3.3.

To identify possible country differences in terms of the application of diversification heuristics in these two fee scenarios, Figure 4 shows in how many decisions (in percent) respondents invested 0%, 50%, or 100% in the sustainable option.

< Figure 4 here >

Panel A of Figure 4 reveals some differences in the extent to which respondents in the different countries follow the 1/n rule in the 0.2% scenario. Especially respondents from France and Spain seem to follow this simple diversification strategy, while German, Dutch, and especially Polish respondents use this approach less frequently. On the other hand, the proportion of decisions in which respondents invest their entire endowment in the MSCI World Index ETF is very similar in all countries. Yet, some significant differences exist in the frequency with which respondents invest all of their endowment in the sustainable alternative: Dutch respondents in particular follow this investment strategy, followed by German and French respondents. Polish and Spanish respondents use this strategy in only about 10% of all decisions, implying slightly smaller groups with such strong preferences for sustainable investments in these two countries. As seen in Figure 3, respondents are significantly less likely to apply the 1/n rule when the fees charged on the sustainable ETF increase to 2.3%. Similarly, the proportion of cases in which respondents invest all their money in the sustainable option is also declining. However, the

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[14] The corresponding Kolmogorov-Smirnov test for equality of the distribution functions indicates that the distributions in Panel A and B of Figure 3 are different at the 1% significance level.

decline is particularly noticeable for German and Dutch respondents. For these two countries, we also observe the largest increase in cases where respondents invest their entire endowment in the MSCI World Index ETF. This again supports the notion that respondents from these two countries are more sensitive to fees than respondents in other countries.

3.2 Do individual investors' preferences for sustainable investments depend on whether the investment product follows a broad ESG strategy or a narrower climate-related strategy?

To examine whether preferences for sustainable investments depend on the specific sustainable investment strategy, Figure 5 plots the average shares of the endowments respondents from the different countries invested in ETFs based on the MSCI World ESG Screened Index or MSCI World Climate Change Index. For all regions considered, the average shares of investments in ETFs based on the MSCI World Climate Change Index (blue bars) are about three percentage points higher than the averages shares of investments in ETFs based on the MSCI World ESG Screened Index (grey bars).[15] The corresponding parametric tests show that these differences are consistently statistically significantly different at the 1% significance level (see Table A.8 in Appendix A). Therefore, respondents from all different regions have on average slightly stronger preferences for sustainable investments following a specific climate-related than a broad ESG investment strategy. In addition, and in line with our previous discussion, the figure also reveals that the bars for the French subsample are higher than in all other regions implying stronger preferences for sustainable investments among French respondents.[16]

Result 2: *Preferences for sustainable investments are stronger for a specific climate change fund than a broad ESG fund.*

< Figure 5 here >

3.3 What drives individuals to invest sustainably?

In the next step, we examine the key motives of individuals to choose sustainable investment funds. To this end, we first pool the observations from all countries and examine the relationship between the aforementioned factors and the respondents' investment decisions in the experiment. Figure 6 shows the distribution of these potential key factors across all respondents: The

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[15] All average shares are also reported in Table A.8 in Appendix A.
[16] The reactions to the different fee scenarios are similar to those reactions that we have discussed in the previous section. For more information, see Figures B.5 and B.6 in Appendix B.

first four panels report the respondents' financial beliefs about ETFs based on the MSCI World ESG Screened Index (Panel A and C) and the MSCI World Climate Change Index (Panel B and D) compared to ETFs based on the MSCI World Index, respectively. Panel E shows the distribution of respondents' social preferences and Panel F refers to social signaling.

< Figure 6 here >

It turns out that the return expectations for both types of sustainable funds are very similar. Yet, the expectations on funds with a specific focus on climate change are somewhat more optimistic: 28.4% of respondents expect much lower or somewhat lower returns from the MSCI World ESG Screened Index relative to the MSCI World Index, compared to only 24.5% for the MSCI World Climate Change Index. At the same time, slightly more respondents expect higher returns on the climate change fund relative to the MSCI World fund (41.7%) than on the ESG screened fund relative to the MSCI World Index fund (36.6%). The shares of those who expect neither higher nor lower returns as well as the proportions of respondents who are unable or unwilling to make an assessment here are almost identical in both cases. Figure 6 also shows that the proportion of those who expect higher returns on sustainable funds than on funds based on the MSCI World Index is larger than the proportion of people who expect either the same or lower returns, respectively.

A similar pattern emerges with regard to the risk perceptions of the sustainable ETFs compared to the MSCI World Index fund: In general, respondents rate both sustainable alternatives as slightly riskier than the MSCI World Index fund. However, respondents perceive the ESG Screened fund as slightly riskier than the climate change fund. In other words, a broad sustainability strategy is perceived as riskier than a more specific climate-related investment strategy. The proportion of respondents who are unable or unwilling to give an assessment here is the same to the return expectations considered before. Panel E of Figure 6 shows the distribution of social preferences and social signaling.

To what extent do these expectations, assessments, and attitudes relate to the sustainable investment behavior of the respondents? For this purpose, Table 4 reports the estimation results of two random effects estimations based on all eight decisions of all respondents.[17] The dependent variable in the first model is the *Share of endowment invested in ETF based on MSCI World*

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[17] By applying random effects estimations, we again take the panel data structure of our dataset into account. In contrast to fixed effects estimations it also allows us to analyze the effects of explanatory variables, which are time-invariant across the eight decisions per respondent (e.g. age, gender, etc.). In addition, the number of observations is somewhat lower than in the previous analysis because respondents could select "do not know / no answer" for the questions on social preferences, risk preferences, and time preferences. These individuals are treated as missing values in the estimations.

ESG Screened Index and in the second model, we consider the *Share of endowment invested in ETF based on MSCI World Climate Change Index*. As explanatory variables, we consider individual preferences, return expectations, risk perceptions, but also control for other individual characteristics and experimental variables.

< Table 4 here >

For both investment strategies, return expectations and risk perceptions play an important role in the investment decision. Individuals who expect higher returns compared to the MSCI World Index invest a significantly higher proportion in the sustainable option. The effect of performance expectations appears to be much stronger for the climate change fund than for the ESG screened fund (the difference is about seven percentage points). In addition, people who expect lower returns also invest less in the corresponding funds, compared to the base category. However, the effects are roughly the same for both types of sustainable funds. In terms of risk perceptions, a very similar picture emerges. People who perceive the risks of sustainable funds as higher compared to the MSCI World ETF invest less in the sustainable investment option than people who expect the same risks. If they expect lower risks, they also invest more. These estimated effects, however, are slightly larger for the climate change fund than for the ESG screened fund.

More interestingly, we find a statistically and economically significant effect of social preferences on the share of sustainable ETFs. This shows that different from standard finance theory, investors in all five countries are also guided by non-pecuniary returns. The estimated social preference parameters imply that a person who reports being completely willing to give to good causes invests 7.37 (9.40) percentage points more in the ESG Screened fund (climate change fund) than a person who is completely unwilling to give to good causes.

Regarding the other economic preferences, we find no evidence that risk preferences play a role. However, time preferences matter. It turns out that patient people invest a larger share of their endowment in sustainable investments. This finding is in line with the idea that societal and environmental benefits are most likely to occur in the long run and investors need to be patient for these effects to materialize. This result is consistent with the finding that institutional investors with a longer run investment horizon invest more in companies with good ESG performance (Starks, Venkat, and Zhu, 2020). Concerning social signaling motives, individuals who talk about investing frequently, invest a lower proportion of their initial endowment in sustainable ETFs. Investing a low fraction in sustainable investments allows individuals to talk about these investments with others, without baring too much extra costs. This effect replicates

the one by Riedl and Smeets (2017) who found social signaling to matter for Dutch mutual fund investors.

In terms of other individual characteristics, older people invest less in the climate change fund. However, we do not see such an effect in the ESG Screened fund. We also see that women invest a higher proportion sustainably than men, regardless of the investment strategy of the sustainable fund. These findings are in line with previous literature. For example, Bauer et al. (2021) also find that female persons are more likely and older people are less likely to invest in a sustainable manner. Interestingly, especially Catholic respondents invest significantly less in sustainable funds than respondents without religious affiliation. Finally, our results hold if we control for potential order effects by including the dummy variable *Saw ESG Screened fund first*.

Result 3: *Social preferences play an important role in individual sustainable investment behavior in all five European countries. Social signaling and financial motives also matter.*

3.4 How does the relevance of the investor motives for sustainable investments vary across countries?

In a next step, we look at the extent to which the motives for sustainable investments differ in the various countries. Table 5A therefore reports the estimation results from five random effect estimations, one for each country considered.[18] The dependent variable in all five models is the *Share of endowment invested in sustainable ETFs*. As in the previous question, we consider as explanatory variables individual preferences, financial expectations, but also other individual characteristics and experiment variables.

< Table 5A here >

We find that especially the behavior of German, Dutch and Spanish respondents is strongly driven by high return expectations.[19] German respondents who expect higher returns on sustainable options relative to the MSCI World fund invest about 23 percentage points more sustainably than people who expect neither higher nor lower returns. In the Netherlands and Spain, the corresponding figures are about 22 percentage points and 19 percentage points, respectively.

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[18] As described before, we apply random effects estimations in order to account for the panel data structure of our dataset and to include explanatory variables, which are time-invariant across the eight investment decisions per respondent (e.g. age, gender, etc.).

[19] The financial beliefs in the single countries are illustrated by Figures B.7 to B.11 in Appendix B.

For France and Poland, these values are significantly lower. In France, however, the relationship between low expected returns relative to the MSCI World and investments in sustainable options is particularly pronounced. There are also clear country differences in terms of risk perceptions of sustainable investments compared to the MSCI World. However, the perception of lower risks (compared to the MSCI World) seems to play a slightly more important role than the perception of higher risks. For the former, we see a significant positive relationship with sustainable investment behavior in all countries except Spain. In particular, respondents from France invest significantly more in sustainable investments if they expect a lower risk compared to the conventional investment alternative. Therefore, risk perceptions seem to be a key driver for French respondents, whereas return expectations tend to be an important motive in Germany, the Netherlands and Spain. In Poland, we find rather smaller effects with regard to financial motives. In summary, our results thus show that financial motives do play a role in all countries, but they also reveal clear differences in the relevance of these motives.

Table 5A shows additional country differences. The correlation between individual risk preferences and investments in sustainable ETFs is not significant in any of the countries, except for the Netherlands where we find a weakly significant negative effect. Time preferences do not show a uniform picture across the countries either. Only in Germany and Spain, more patient people invest a significantly higher proportion of their endowment sustainably. We find no significant correlations for the other countries. That is, the aforementioned estimation results on time preferences based on the pooled data (see Section 3.3) are driven in particular by observations in Germany and Spain. We also find differences in social signaling motives across countries, with the largest effect for Germany followed by France and Spain, where the estimated effects are about the same. Neither for the Netherlands nor Spain do we find evidence that social signaling plays a role.

Most remarkably, social preferences are positively related to the share invested in sustainable ETFs in all countries. This result is consistent with previous studies considering sustainable investment behavior of Dutch investors (e.g. Riedl and Smeets, 2017; Bauer et al., 2021). It shows that social preferences play an important role for investment decisions, universally in all five different countries considered. However, in addition to these similarities, we also see differences between individual countries. Table 5B shows that the estimated effects of social preferences are stronger in Germany and the Netherlands than in France, Poland and Spain. The estimated effects for France, Poland and Spain are not significantly different from each other. This picture is consistent with the observation made earlier for our sample (see Table 2) that

individual social preferences are somewhat stronger in Germany and the Netherlands than in the other countries. It appears, therefore, that these differences are also reflected in sustainable investment behavior.

< Table 5B here >

Finally, we look at the other individual characteristics. The negative correlation between Catholic affiliation and sustainable investment behavior observed in the previous section, is especially driven by countries for which we observe the highest proportion of Catholics in the sample, namely France, Poland, and Spain. With respect to the other sociodemographic variables, there are no clear patterns, except for a few weakly significant results.[20]

With respect to the experiment variables, the observed patterns are consistent with those documented before. Dutch and German respondents in particular are especially sensitive to fees, as expressed by the very high estimated coefficients compared to the other countries. In contrast, Polish and French respondents in particular do not react at all to the first fee jump from 0.2% to 0.9% (i.e., the respective estimated parameters are not significantly different from zero here). In general, as before, the estimated parameters in France, Poland and Spain are also significantly lower than in Germany and the Netherlands. The previously observed order effect, captured by *Saw ESG Screened fund first*, appears to be driven in particular by German and Dutch respondents. That is, in particular, individuals from these countries invest significantly more in the sustainable option, regardless of its sustainability strategy, if they saw the ESG Screened ETF first and then the climate change funds.

Result 4: *Social preferences play an important role in explaining sustainable investments in all five countries. The strength of the relation varies somewhat across countries, with the highest importance in Germany and the Netherlands.*

3.5 How does financial literacy influence individual sustainable investment behavior?

Previous studies show the importance of financial literacy for individual financial decisions (e.g. van Rooij, Lusardi, and Alessie, 2011, 2012). We therefore consider how financial literacy relates to sustainable investment behavior. The results in Table 4 show that financially literate

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[20] With respect to the pooled estimation in Section 3.3, we can assume that the results related to female have been driven in particular by respondents from Germany and Spain (with the estimated coefficients in the Netherlands and Poland going in the same direction, although not significant at a 10% significance level). In Poland, we see mild evidence that individuals with higher levels of education are significantly less likely to invest in sustainable investments. In France, we find a weakly significant positive effect of married individuals on the selection of a sustainable option.

individuals tend to invest a smaller share of their endowments in sustainable ETFs, irrespective of the fund's sustainability strategy. Table 5A confirms this negative correlation for all countries except France. The magnitude of the correlations varies across countries. The estimated effects are about the same in the Netherlands, Poland, and Spain. In comparison to these three countries, the estimated effect is about twice as strong in Germany.

One plausible reason for the negative correlation between financial literacy and sustainable investments is that respondents with higher financial literacy may want to avoid investing in investment products with high fees. For this reason, we next analyze the interplay between fee sensitivity and financial literacy in regard to the share of endowment respondents invest in sustainable ETFs.

In line with our expectation, Figure 7 shows that the estimated effect of financial literacy significantly varies across the different fee scenarios.[21] As long as the fees of sustainable and conventional ETFs are the same, financial literacy has a significant positive effect on the share of investments in sustainable ETFs (blue line). However, if the fees on the sustainable fund are higher than on the conventional fund, we find a significant negative correlation between financial literacy and the share of endowment that has been invested in sustainable ETFs. These results suggest that financially literate respondents are aware of the importance of fees when making investment decisions, so that they reduce the share of sustainable investments when these investment products become more expensive.

< Figure 7 >

3.6 Do the experimental choices reflect real-world behavior?

It could be that our experimental results are not externally valid, because respondents' behavior in the experiment might deviate from their real-world sustainable investment decisions (Levitt and List, 2007; Falk and Heckman, 2009). For example, investors in our experiment invest money provided by us, instead of their own money. We therefore examine to what extent decisions in the investment experiment can predict respondents' reported real-world sustainable investment behavior. To this end, we also asked respondents whether they currently hold sustainable investments and created a dummy variable that takes the value of one if a respondent answered the question in the affirmative, and zero otherwise. We then regressed this variable

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[21] The figure is based on estimation results of a random effects estimation based on all eight decisions of all respondents (with *Share of endowment invested in sustainable ETFs* as dependent variable). The corresponding estimation results are reported in Table A.9 (column 1) in Appendix A.

on the average share of endowment that respondents invested in sustainable ETFs in the experiment. As our full sample also contains respondents that held no investment products at the time of the survey, and thus also cannot hold the usual sustainable investment products, we consider both the full sample and the subgroup of current investors[22].

Table 6 shows for both samples that respondents who invest a larger average share of their endowment in sustainable ETFs are significantly more likely to hold sustainable investments in real life. For instance, when considering no further control variables, current investors who on average invested above 75% to 100% of their experimental endowment in sustainable ETFs are 17.8 percentage points more likely to hold sustainable investments in real life than investors who have invested between 0% and 25%. This result remains stable when we control for potential further individual determinants of sustainable investment such as financial expectations, social preferences, or signaling. In further regressions (see Table A.10 in Appendix A), we also control for social desirability motives captured by six items from the Balanced Inventory of Desirable Responding developed by Paulhus (1984, 1991).[23] In these cases, we also find the described significant positive relationship between experimental and reported sustainable investment behavior. Thus, our results are in line with previous studies showing that social preferences elicited in experiments are reflected in the field (e.g., Karlan, 2005; Benz and Meier, 2008; Baran, Sapienza, and Zingales, 2010; Riedl and Smeets, 2017). Together, this suggests that our findings are relevant for real-word investment behavior.

< Table 6 here >

4. Conclusion

In this paper we investigate to what extent individual preferences for sustainable investments are universal in Europe, or whether they vary across countries. To this end, we analyzed data

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[22] We denote as current investors those respondents who indicated to hold at least one of the following investment products at the time of the survey: Stocks, passively managed stock funds, aktively managed stock funds, mixed funds, passively managed bond funds, actively managed bond funds, other non-fixed-income forms of investment, precious metals, and cryptocurrencies.

[23] We included the following six items from the Balanced Inventory of Desirable Responding (BIDR) developed by Paulhus (1984, 1991) in a random order: a) "My first impression of people usually turns out to be right," b) "I am very confident of my judgement," c) "I always know why I like things," d) "I have received too much change from a salesperson without telling him or her," e) "I am always honest towards other people," and f) "There have been occasions when I have taken ad-vantage of someone." Items a) to c) capture self-deceptive enhancement and items d) to f) impression management. Respondents could rate their agreement with each statement on a five-point Likert scale ranging from "not at all" (Likert scale one) to "completely" (Likert scale five). After reversing the negative statements d) and f), we give one point for every four or five. The variables *Self-Deceptive Enhancement* and *Impression Management* are the sum of the points for the corresponding three items. Thus, both variables can take values from zero to three.

from a large scale lab-in-the-field experiment among experienced household financial decision makers that have been conducted in France, Germany, the Netherlands, Poland and Spain during May to July 2021. We find that investors throughout Europe differ significantly in their sensitivities to rising fees for sustainable investments, implying different willingness to pay for sustainable investments. Financial literacy is a key driver of this fee sensitivity. Uniformly across countries, sustainable investment preferences are slightly stronger when the fund follows a specific climate-related investment strategy than a broader ESG strategy. At the same time, individuals in different countries indeed react differently to rising fees

We further show that social preferences play an important role in the countries considered, even though the countries differ significantly in many socio-economic factors (see Table 1). Thus, we provide further evidence for the relevance of social preferences for sustainable investments, independent of the regional context. As such, our results have important implications for asset prices and speak against models in financial theory postulating that investors' decisions are grounded solely on risk-return considerations. In contrast, our results are in line with theoretical models considering social preferences and corporate externalities ras potential driver of investment decisions (e.g., Heinkel et al., 2001; Fama and French, 2007; Gollier and Pouget, 2014; Broccardo, Hart, and Zingales, 2020; Pastor et al., 2021; Pedersen et al., 2021). For instance, recent theoretical considerations by Pastor et al. (2021) assume that investors with stronger tastes for ESG, but also for a stock's ability to hedge climate risks are willing to pay more for assets that generate positive externalities for society. Since, according to this model, investors' tastes can influence stock prices, a higher willingness to pay for shares in sustainable firms translates into lower capital costs for these (sustainable) firms. Similarly, we show that citizens from different European countries uniformly invest a remarkable share in climate-related funds, if they have the opportunity to do so. These are important findings for the current policy process at the European level, where financing the necessary measures for the transition process to a low-carbon economy is a key issue.

Future research could investigate sustainable investment behavior in other European countries and different continents, as sustainable investments are becoming increasingly important around the world. Climate change is a global challenge and understanding what motivates individuals to contribute to financing effective solutions is of paramount importance.

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Tables

TABLE 1 – COUNTRY DIFFERENCES

Country:	France	Germany	Nether-lands	Poland	Spain
Panel A: Economic strength, population, energy infrastructure, and investment behavior					
GDP per capita in 2020 (in €)	34762	41978	45238	27138	29668
Population in 2020 (in million)	67.3	83.1	17.4	37.9	47.3
Share of renewable energy generation in 2019 (in %)	11.2	14.8	6.2	9.5	14.1
Share of renewable electricity generation in 2019 (in %)	19.6	35.9	14.6	12.1	36.5
CO_2 emissions per capita in 2020 (in tons)	6.8	10.1	11.1	10.4	7.1
Share of households holding stocks in 2017 (in %)	11.6	10.9	4.6	11.6	2.3
Share of households holding mutual funds in 2017 (in %)	8.4	15.6	13.1	3.8	7.0
Panel B: Social preferences, volunteering, and donations					
Social preferences in 2018	-0.175	-0.051	-0.190	-0.370	-0.129
Agreement with "protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs" in 2017 (in %)	51.1	61.7	52.0	40.5	56.6
Agreement with "looking after the environment is important to me, to care for nature and save life resources" in 2014 (in %)	n.a.	65.0	58.7	88.9	86.6
Share of population who volunteered in the past month in 2019 (in %)	27.0	26.0	36.0	11.0	16.0
Share of population who donated in the past month in 2019 (in %)	27.0	49.0	71.0	28.0	30.0
Share of population who volunteered in the past month in 2020 (in %)	22.0	15.0	21.0	21.0	13.0
Share of population who donated in the past month in 2020 (in %)	23.0	34.0	56.0	36.0	26.0
Average donation amount per capita in 2013 (€)	52	78	116	n.a.	22

Data for GDP per capita is drawn from the OECD data base where it is measured in US$ and 2015 purchase power parities. The conversion to Euro is done using the average 2020 exchange rate of 1.14. Data for population refers to the inhabitants of the country on January 1st in the year 2020 and is drawn from the Eurostat database. The share of renewable energy generation refers to the share of renewables in the total energy available in the country in 2019 and is drawn from the Eurostat database. The share of renewable electricity generation refers to share of renewables in the total electricity supplied to the market in the country in 2019 and is drawn from the Eurostat database. CO2 emissions per capita refer to the CO2 equivalents of greenhouse gases (CO2, CH4, N2O, NF3, SF6) emitted in the country in 2020 divided by the population in 2020 and is drawn from the Eurostat database. The share of households holding stocks or mutual funds, respectively, in the respective country in 2017 is drawn from the 2017 wave of the Household Finance and Consumption Survey of the European Central Bank. Social preferences are drawn from the Global Preference Survey (Falk et al., 2018). They represent the national average of weighted indexes for each individual that

consist of i) a hypothetical choice that reads "Imagine the following situation: Today you unexpectedly received 1,000 Euro. How much of this amount would you donate to a good cause? (Values between 0 and 1000 are allowed)." and ii) the answer to the statement "How willing are you to give to good causes without expecting anything in return?" The values represent the difference to the world mean of social preferences in standard deviations, and they range between -0.940 and 0.906 for all countries worldwide. A value of -0.370, for example, means that the national average for social preferences is 0.37 standard deviations below the world average for social preferences. Agreement with "protecting the environment should be given priority, even if it causes slower economic growth and some loss of jobs" refers to the share of respondents from the 2017 wave of the European Values Survey that agreed with the statement in the respective country. Agreement with "looking after the environment is important to me, to care for nature and save life resources" refers to the share of respondents from the 2014 wave of the World Values Survey that indicated that the statement is at least "somewhat like me" in the respective country (France was not part of this wave). The share of population who volunteered in 2019 refers to the average share of participants in the Gallup World Polls from 2009 to 2018 who answered yes to the question "Have you done any of the following in the past month? Donated money to a charity?" in the respective country. The share of population who volunteered in the past month in 2019 is calculated in the same way as the share who donated, except that the question reads "Have you done any of the following in the past month? Volunteered your time to an organization?". The values the share of population who donated in 2020 and the share of population who volunteered in 2020 are calculated accordingly, except that they only refer to 2020 data. The average donation amount per capita in 2013 refers to the entire donations made by households in 2013 from the Giving in Europe study divided by the total population of the respective country in 2013 (data for Poland is missing).

Country:	France	Germany	Nether-lands	Poland	Spain
Panel A: Socio-demographic characteristics					
Median net income class	€3000 – €3500	€3000 – €3500	€3500 – €4000	€1000 – €1500	€2000 – €2500
Age (in years)	45.8	47.7	48.3	45.4	42.7
Share of females (in %)	41.0	35.7	35.9	46.4	47.2
Share that has university degree (in %)	34.9	35.5	56.0	52.5	52.0
Panel B: Financial behavior					
Share that owns mutual funds (in %)	23.0	45.3	40.0	21.6	35.0
Share that owns stocks (in %)	33.2	39.3	36.0	21.1	34.1
Share that owns sustainable investment products (in %)	17.4	19.2	25.8	11.7	16.3
Panel C: Social preferences, volunteering, and donations					
Social preferences	6.5	7.2	6.9	6.7	6.5
Average for New Ecological Paradigm	4.6	4.7	3.8	4.1	4.1
Ecological policy orientation	58.0	52.8	41.6	64.9	64.9
Share that volunteers (in %)	30.8	32.1	34.5	9.0	20.0
Share who donated in the past twelve months (in %)	52.7	55.7	64.5	68.3	49.7
Average donation amount (€)	195.4	281.4	305.1	95.4	237.9
Median donation amount (€)	100.0	140.0	120.0	43.8	100.0
Panel D: Religious affiliation					
Affiliated with Roman-Catholic church (in %)	35.4	27.7	20.4	77.8	48.1
Affiliated with Protestant churches (in %)	2.3	23.2	14.1	0.8	1.7
Affiliated with another religious community (in %)	6.3	5.9	6.0	2.2	3.1
Not belonging to a religion (in %)	56.1	43.3	59.5	19.2	47.0

Median net income class refers to the sample median class of the monthly household net income. Age refers to the average age of respondents in the sample. Share of females refers to the share of respondents in the sample who are female. Share that has university degree refers to the share of respondents in the sample that has at least an education that corresponds to level 6 in the international standard classification of education (ISCED). Share that owns mutual funds refers to the share of respondents that at least own one equity, bond, or mixed fund. Share that owns stocks refers to the share of respondents that at least own one stock. Share that owns sustainable investment products refers to the share of respondents that answered yes when asked "Are you currently invested in sustainable investments?". Social preferences refer to the sample mean of

agreement with the statement "How willing are you to give to good causes without expecting anything in return?" which is measured with the integer values ranging from 0 (not at all willing to do it) to 10 (very willing to do it). Respondents could also choose "don't know/not specified." Average for New Ecological Paradigm (NEP) refers to the average of an index that is based on the agreement to six statements "Humans have the right to modify the natural environment to suit their needs," "humans are severely abusing the planet," "plants and animals have the same right to exist as humans," "nature is strong enough to cope with the impacts of modern industrial nations," "humans were meant to rule over the rest of nature," and "the balance of nature is very delicate and easily upset." Respondents were asked how strongly they agree with these statements using the five ordered response categories "totally disagree," "rather disagree," "undecided," "rather agree," and "totally agree." The NEP index is then constructed on the basis of six dummy variables. For a positively worded statement, the corresponding dummy variables take the value one if a respondent rather or totally agrees with the statement and vice versa in the case of negatively worded statement. Adding up the single values of the six dummy variables yields the NEP index which can therefore vary between 0 and 6. Ecological policy orientation refers to the share of respondents in the sample who rather or strongly agree to the statement "I identify myself with ecologically oriented politics" on a symmetric scale with the five ordered response categories "totally disagree," "rather disagree," "undecided," "rather agree," and "totally agree." Share that volunteers refers to the share of respondents in the sample that answered "Yes" when asked "Do you volunteer"? Share who donated in the past twelve months refers to the share of respondents in the sample that answered "Yes" when asked "Have you made any voluntary payments such as donations or contributions to charitable organizations or institutions in the past twelve months?". Average donation amount refers to the average of the amount that respondents in the sample who donated in the past twelve months donated to charitable organizations or institutions. To calculate the average, donation amounts were winsorized at the 99th percentile in order to restrict the influence of outliers on the average. Median donation amount refers to the median of the amount that respondents in the sample who donated in the past twelve months donated to charitable organizations or institutions. For Poland, the donation amounts in Zł were converted into € based on the yearly average exchange rate for 2021 of 4.5652. Affiliated with Roman-Catholic church refers to the share of respondents in the sample who agreed to answer questions related to religion and who chose "Roman-Catholic church" when asked "Do you belong to a religious community?". Affiliated with Protestant churches refers to the share of respondents in the sample who agreed to answer questions related to religion and who chose "Protestant church" when asked "Do you belong to a religious community?" Affiliated with another religious community refers to the share of respondents in the sample who agreed to answer questions related to religion and who chose "Muslim" or "Other religious community" when asked "Do you belong to a religious community?". Not belonging to a religion refers to the share of respondents in the sample who agreed to answer questions related to religion and who chose "No, I do not belong to any religious community" when asked "Do you belong to a religious community?"

TABLE 3A – INVESTMENTS IN SUSTAINABLE ETFS ACROSS COUNTRIES AND FEE SCENARIOS

Dependent variable:	Share of endowment invested in sustainable ETFs					
Country:	All coun-tries	France	Germany	Nether-lands	Poland	Spain
Fees on sustainable ETF: 0.9%	-3.094***	-0.702	-6.541***	-5.515***	-1.036	-1.862***
	(0.301)	(0.693)	(0.654)	(0.709)	(0.663)	(0.633)
Fees on sustainable ETF: 1.6%	-5.158***	-2.778***	-9.937***	-8.727***	-2.040***	-2.632***
	(0.358)	(0.814)	(0.744)	(0.877)	(0.769)	(0.764)
Fees on sustainable ETF: 2.3%	-7.763***	-4.441***	-13.898***	-12.615***	-4.323***	-3.948***
	(0.403)	(0.921)	(0.840)	(0.996)	(0.860)	(0.840)
Constant	55.788***	57.535***	55.370***	59.906***	52.860***	53.571***
	(0.247)	(0.565)	(0.514)	(0.607)	(0.529)	(0.517)
Respondents	5,162	1,007	1,009	1,010	1,070	1,066
Decisions	41,296	8,056	8,072	8,080	8,560	8,528
R^2	0.009	0.003	0.027	0.020	0.003	0.002
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

This table reports the results of fixed effects estimations in linear regression models based on data from different country samples. The dependent variable captures the share of the endowments respondents invested in sustainable ETFs (i.e. either ETFs based on the MSCI World ESG Screened Index or ETFs based on the MSCI World Climate Change Index). The dummy variables "fees on sustainable ETF: 0.9%," "fees on sustainable ETF: 1.6%," and "fees on sustainable ETF: 2.3%" take the value one to indicate the amount of fees charged on the sustainable ETF, and zero otherwise. Consequently, the (estimated) constant terms represent the reference scenario where the amount of fees charged on the sustainable ETF is 0.2%. Fixed effects are considered at the level of respondents. R^2 indicates the squared correlation between the observed and fitted values, reported as *overall R^2* when using the Stata command xtreg (Stata version 15.1). *** (**, *) indicates that the corresponding estimated parameter is significantly different from zero at the 1% (5%, 10%) significance level (cluster-robust standard errors in parentheses).

TABLE 3B – COUNTRY DIFFERENCES IN FEE SENSITIVITY

Dependent variable:	Share of endowment invested in sustainable ETFs
Countries (references category: France)	
Germany	-2.165**
	(1.003)
Netherlands	2.371**
	(1.005)
Poland	-4.675***
	(0.885)
Spain	-3.964***
	(0.917)
Fees on sustainable ETF: 0.9%	-0.702
	(0.693)
Fees on sustainable ETF: 0.9% * Germany	-5.839***
	(0.953)
Fees on sustainable ETF: 0.9% * Netherlands	-4.813***
	(0.991)
Fees on sustainable ETF: 0.9% * Poland	-0.334
	(0.959)
Fees on sustainable ETF: 0.9% * Spain	-1.160
	(0.938)
Fees on sustainable ETF: 1.6%	-2.778***
	(0.814)
Fees on sustainable ETF: 1.6% * Germany	-7.159***
	(1.102)
Fees on sustainable ETF: 1.6% * Netherlands	-5.949***
	(1.196)
Fees on sustainable ETF: 1.6% * Poland	0.738
	(1.119)
Fees on sustainable ETF: 1.6% * Spain	0.145
	(1.116)
Fees on sustainable ETF: 2.3%	-4.441***
	(0.921)
Fees on sustainable ETF: 2.3% * Germany	-9.457***
	(1.246)
Fees on sustainable ETF: 2.3% * Netherlands	-8.173***
	(1.356)
Fees on sustainable ETF: 2.3% * Poland	0.118
	(1.260)
Fees on sustainable ETF: 2.3% * Spain	0.493
	(1.246)
Constant	57.535***
	(0.662)
Respondents	5,162
Decisions	41,296
R^2	0.019
Individual fixed effects	Yes

This table reports the results of random effects estimations in linear regression models based on data from different country samples. The dependent variable captures the share of the endowments respondents invested in sustainable ETFs (i.e. either ETFs based on the MSCI World ESG Screened Index or ETFs based on the MSCI World Climate Change Index). The dummy variables "fees on sustainable ETF: 0.9%," "fees on sustainable ETF: 1.6%," and "fees on sustainable ETF: 2.3%" take the value one to indicate the amount of fees charged on the sustainable ETF, and zero otherwise. We additionally include interaction terms between the aforementioned dummy variables for the different fee scenarios and country dummy variables, which take the value of one if the respondent's main place of residence is in Germany, the Netherlands, Poland, or Spain, and zero otherwise. Individual fixed effects are considered at the level of respondents. R^2 indicates the squared correlation between the observed and fitted values, reported as *overall R^2* when using the Stata command xtreg (Stata version 15.1). *** (**, *) indicates that the corresponding estimated parameter is significantly different from zero at the 1% (5%, 10%) significance level (cluster-robust standard errors in parentheses).

TABLE 4 – DRIVERS OF INVESTMENTS IN SUSTAINABLE ETFS

Dependent variable:	Share of endowment invested in ETF based on MSCI World *ESG Screened* Index	Share of endowment invested in ETF based on MSCI World *Climate Change* Index
	(1)	(2)
Preferences		
Social preferences	0.737***	0.940***
	(0.157)	(0.143)
Risk preferences	0.042	-0.071
	(0.188)	(0.175)
Time preferences	0.539***	0.570***
	(0.206)	(0.191)
Signaling	-0.747***	-1.131***
	(0.230)	(0.212)
Return expectations		
Much higher returns compared to MSCI World	8.972***	13.688***
	(1.601)	(1.243)
A little higher returns compared to MSCI World	4.669***	6.620***
	(0.998)	(0.924)
A little lower returns compared to MSCI World	-2.294**	-4.072***
	(1.131)	(1.112)
Much lower returns compared to MSCI World	-12.023***	-11.063***
	(1.887)	(1.961)
Do not know returns	-3.091**	-2.378*
	(1.372)	(1.326)
Risk perceptions		
Higher risk compared to MSCI World	-2.115**	-3.410***
	(0.898)	(0.877)
Lower risk compared to MSCI World	3.934***	4.921***
	(1.158)	(0.997)
Do not know risk	0.196	-1.303
	(1.382)	(1.375)
Individual characteristics		
Financial literacy	-2.176***	-1.951***
	(0.461)	(-0.425)
Age	-0.001	-0.053**
	(0.027)	(0.024)
Female	2.666***	1.819**
	(0.781)	(0.713)
High education	-1.148	-0.396
	(0.765)	(0.697)
Married	0.550	2.366***
	(0.846)	(0.773)
High income	-0.400	0.528

	(1.132)	(1.010)
Low income	-0.530	-0.156
	(1.146)	(1.024)
Do not know or report income	-0.550	0.858
	(1.655)	(1.487)
Catholic	-2.985***	-3.580***
	(0.852)	(0.782)
Protestant	-2.493	-1.591
	(1.606)	(1.461)
Other religion	-0.190	-2.718
	(2.058)	(1.783)
Do not report religion	0.733	-2.837***
	(1.148)	(1.033)
Experiment variables		
Fees on sustainable ETF: 0.9%	-2.580***	-3.480***
	(0.378)	(0.371)
Fees on sustainable ETF: 1.6%	-4.553***	-5.699***
	(0.435)	(0.425)
Fees on sustainable ETF: 2.3%	-6.987***	-8.572***
	(0.470)	(0.473)
Saw ESG Screened ETF first	2.713***	2.488***
	(0.733)	(0.669)
Constant	51.561***	55.576***
	(2.710)	(2.409)
Respondents	4,901	4,901
Decisions	19,604	19,604
R^2	0.057	0.102

This table reports the estimation results of two random effects estimations based on all eight decisions of all respondents. The dependent variable in the first model is the *Share of endowment invested in ETF based on MSCI World ESG Screened Index* and in the second model, we consider the *Share of endowment invested in ETF based on MSCI World Climate Change Index*. As explanatory variables, we consider individual preferences, return expectations, risk perceptions, but also control for other individual characteristics and experimental variables. All variables are defined in Section 2.3. R^2 indicates the squared correlation between the observed and fitted values, reported as overall R^2 when using the Stata command xtreg (Stata version 15.1). *** (**, *) indicates that the estimated parameters are significantly different from zero at the 1% (5%, 10%) significance level (cluster-robust standard errors in parentheses).

TABLE 5A – DRIVERS FOR INVESTMENTS IN SUSTAINABLE ETFS ACROSS COUNTRIES

Dependent variable:	Share of endowment invested in sustainable ETFs				
Country:	France	Germany	Netherlands	Poland	Spain
	(1)	(2)	(3)	(4)	(5)
Preferences					
Social preferences	0.510*	1.146***	1.517***	0.835***	0.692**
	(0.288)	(0.312)	(0.320)	(0.253)	(0.272)
Risk preferences	0.068	0.082	-0.710*	0.239	-0.145
	(0.357)	(0.360)	(0.408)	(0.289)	(0.350)
Time preferences	0.206	1.011***	0.477	-0.140	0.941***
	(0.368)	(0.388)	(0.546)	(0.308)	(0.358)
Signaling	-0.879**	-2.407***	-0.608	0.076	-0.793**
	(0.399)	(0.460)	(0.509)	(0.389)	(0.401)
Return expectations					
Much higher returns compared to MSCI World	5.930***	14.262***	13.471***	2.977	14.101***
	(2.029)	(2.683)	(2.608)	(2.541)	(2.447)
A little higher returns compared to MSCI World	1.939	9.101***	8.665***	3.431**	5.054***
	(1.610)	(1.551)	(1.498)	(1.565)	(1.523)
A little lower returns compared to MSCI World	-2.615	-0.059	-0.746	-2.982*	-0.693
	(1.991)	(1.658)	(1.655)	(1.687)	(1.861)
Much lower returns compared to MSCI World	-11.212***	-6.932**	-7.876**	-7.259***	-9.413***
	(3.430)	(3.056)	(3.098)	(2.583)	(3.348)
Do not know returns	1.281	-2.065	-4.112	-1.124	-6.063**
	(2.245)	(2.582)	(3.344)	(1.999)	(2.898)
Risk perceptions					
Higher risk compared to MSCI World	-1.983	-0.814	-3.248**	-2.463*	-3.728**
	(1.618)	(1.532)	(1.656)	(1.369)	(1.603)
Lower risk compared to MSCI World	8.787***	4.445**	5.150***	3.662**	1.377
	(2.165)	(1.787)	(1.950)	(1.581)	(1.982)
Do not know risk	-1.309	0.794	-1.828	-1.804	-0.164
	(2.507)	(2.196)	(3.332)	(2.403)	(2.555)
Individual charac-teristics					
Financial literacy	-0.548	-3.287***	-1.476	-1.737**	-1.613**
	(0.815)	(1.003)	(0.977)	(0.759)	(0.749)
Age	0.025	-0.003	-0.052	-0.010	-0.036
	(0.047)	(0.051)	(0.055)	(0.045)	(0.050)
Female	0.466	3.277**	2.127	2.057	2.386*
	(1.393)	(1.640)	(1.680)	(1.260)	(1.316)
High education	-0.169	-1.828	1.986	-2.167*	-1.643
	(1.458)	(1.640)	(1.514)	(1.252)	(1.310)

Married	2.833*	0.819	-1.492	2.284	2.172
	(1.644)	(1.664)	(1.866)	(1.409)	(1.391)
High income	-1.640	2.629	0.787	-0.147	1.088
	(2.177)	(2.779)	(2.771)	(1.522)	(1.971)
Low income	-1.109	0.908	2.793	-1.896	-0.600
	(2.207)	(2.790)	(2.778)	(1.709)	(1.986)
Do not know or re- port income	-4.993	1.334	4.801	-3.820	1.504
	(3.540)	(3.677)	(3.190)	(2.671)	(3.111)
Catholic	-5.190***	2.667	-2.384	-3.237**	-5.725***
	(1.637)	(1.966)	(1.983)	(1.639)	(1.445)
Protestant	-1.482	3.679*	-2.919	3.429	4.049
	(3.227)	(2.138)	(2.529)	(7.637)	(5.037)
Other religion	-6.212**	5.042	3.902	-10.066**	-1.140
	(3.057)	(3.677)	(3.429)	(5.013)	(3.725)
Do not report reli- gion	-4.650**	0.978	1.721	0.628	-1.209
	(1.912)	(2.112)	(2.140)	(2.355)	(2.067)
Experiment variables					
Fees on sustainable ETF: 0.9%	-0.514	-6.608***	-5.574***	-0.745	-1.862***
	(0.715)	(0.665)	(0.725)	(0.680)	(0.648)
Fees on sustainable ETF: 1.6%	-2.541***	-9.826***	-8.772***	-1.722**	-3.032***
	(0.841)	(0.758)	(0.892)	(0.785)	(0.783)
Fees on sustainable ETF: 2.3%	-4.258***	-13.866***	-12.752***	-4.171***	-4.198***
	(0.955)	(0.857)	(1.018)	(0.881)	(0.864)
Saw ESG Screened ETF first	2.301*	4.824***	3.980***	0.530	1.740
	(1.340)	(1.442)	(1.479)	(1.196)	(1.274)
Constant	54.917***	46.110**	51.720***	52.246***	50.962***
	(5.114)	(5.396)	(6.399)	(4.339)	(4.453)
Respondents	948	949	976	1,009	1,019
Decisions	7,584	7,592	7,808	8,072	8,152
R^2	0.059	0.140	0.123	0.051	0.071

This table reports the estimation results of five random effects estimations, one for each country subsample. In all five regressions, the dependent variable is *Share of endowment invested in sustainable ETFs*. As explanatory variables, we consider individual preferences, return expectations, risk perceptions, but also control for other individual characteristics and experimental variables. All variables are defined in Section 2.3. R^2 indicates the squared correlation between the observed and fitted values, reported as overall R^2 when using the Stata command xtreg (Stata version 15.1). *** (**, *) indicates that the estimated parameters are significantly different from zero at the 1% (5%, 10%) significance level (cluster-robust standard errors in parentheses).

TABLE 5B – RELEVANCE OF SOCIAL PREFERENCES ACROSS COUNTRIES

Dependent variable:	Share of endowment invested in sustainable ETFs
Countries (reference category: France)	
Germany	-13.215***
	(2.778)
Netherlands	-8.901***
	(2.874)
Poland	-4.419*
	(2.517)
Spain	-5.356**
	(2.491)
Preferences	
Social preferences	0.407
	(0.269)
Social preferences * Germany	0.933**
	(0.383)
Social preferences * Netherlands	1.065***
	(0.403)
Social preferences * Poland	0.276
	(0.354)
Social preferences * Spain	0.354
	(0.359)
Risk preferences	-0.072
	(0.158)
Time preferences	0.553***
	(0.171)
Signaling	-0.886***
	(0.191)
Return expectations	
Much higher returns compared to MSCI World	9.857***
	(1.092)
A little higher returns compared to MSCI World	5.650***
	(0.698)
A little lower returns compared to MSCI World	-1.443*
	(0.791)
Much lower returns compared to MSCI World	-8.392***
	(1.396)
Do not know returns	-1.886*
	(1.130)
Risk perceptions	
Higher risk compared to MSCI World	-2.449***
	(0.694)
Lower risk compared to MSCI World	4.830***
	(0.839)
Do not know risk	-1.139
	(1.193)

Individual characteristics

Financial literacy	-1.812***
	(0.377)
Age	-0.024
	(0.022)
Female	2.256***
	(0.640)
High education	-1.029
	(0.638)
Married	1.169*
	(0.705)
High income	0.075
	(0.932)
Low income	-0.297
	(0.956)
Do not know or report income	0.277
	(1.392)
Catholic	-3.190***
	(0.743)
Protestant	-0.713
	(1.381)
Other religion	-1.369
	(1.635)
Do not report religion	-0.825
	(0.944)
Experiment variables	
Fees on sustainable ETF: 0.9%	-3.030***
	(0.309)
Fees on sustainable ETF: 1.6%	-5.126***
	(0.366)
Fees on sustainable ETF: 2.3%	-7.779***
	(0.414)
Saw ESG Screened ETF first	2.672***
	(0.603)
Constant	58.152***
	(2.717)
Respondents	4,901
Decisions	39,208
R^2	0.082

This table reports the estimation results of a random effects estimation based on all eight decisions of all respondents. The dependent variable is the *Share of endowment invested in sustainable ETFs.* As explanatory variables, we consider individual preferences, return expectations, risk perceptions, but also control for other individual characteristics and experimental variables. We additionally include interaction terms between individual social preferences and country dummy variables, which take the value of one if the respondent's main place of residence is in Germany, the Netherlands, Poland, or Spain, and zero otherwise. All variables are defined in Section 2.3. R^2 indicates the squared correlation between the observed and fitted values, reported as overall R^2 when using the Stata command xtreg (Stata version 15.1). *** (**, *) indicates that the estimated parameters are significantly different from zero at the 1% (5%, 10%) significance level (cluster-robust standard errors in parentheses).

TABLE 6 – GENERALIZABILITY OF EXPERIMENTAL DECISIONS

Dependent variable:	Respondent reports to hold sustainable investments in real life			
Sample:	All	Only current investors	All	Only current investors
	(1)	(2)	(3)	(4)

Average share invested in sustainable ETFs in the experiment (reference category: 0% to 25%)

Above 25% to 50%	0.032*	0.049**	0.049***	0.055**
	(0.019)	(0.025)	(0.018)	(0.025)
Above 50% to 75%	0.045**	0.071***	0.045**	0.057**
	(0.019)	(0.026)	(0.019)	(0.026)
Above 75% to 100%	0.114***	0.178***	0.088***	0.126***
	(0.025)	(0.034)	(0.024)	(0.032)

Preferences

Social preferences	--	--	0.009***	0.013***
			(0.002)	(0.003)
Risk preferences	--	--	0.012***	0.008**
			(0.003)	(0.004)
Time preferences	--	--	0.012***	0.016***
			(0.003)	(0.004)
Signaling	--	--	0.026***	0.026***
			(0.003)	(0.005)

Return expecations

Much higher returns compared to conventional investments	--	--	0.021	0.059*
			(0.022)	(0.032)
A little higher returns compared to conventional investments	--	--	0.019	0.036*
			(0.014)	(0.020)
A little lower returns compared to conventional investments	--	--	-0.060***	-0.087***
			(0.014)	(0.020)
Much lower returns compared to conventional investments	--	--	-0.035	-0.049
			(0.022)	(0.031)
Do not know returns	--	--	-0.089***	-0.120***
			(0.022)	(0.034)

Risk perceptions

Higher risk compared to conventional investments	--	--	0.016	0.024
			(0.014)	(0.020)
Lower risk compared to conventional investments	--	--	0.031**	0.045**
			(0.014)	(0.020)
Do not know risk	--	--	-0.223***	-0.255***
			(0.033)	(0.044)

Individual characteristics

Financial literacy	--	--	0.004	-0.001
			(0.007)	(0.010)
Age	--	--	-0.000	0.000
			(0.000)	(0.001)
Female	--	--	-0.019*	-0.016
			(0.011)	(0.016)

High education	--	--	0.054*** (0.011)	0.050*** (0.015)
Married	--	--	0.011 (0.012)	0.020 (0.017)
High income	--	--	-0.011 (0.016)	-0.026 (0.022)
Low income	--	--	-0.044*** (0.017)	-0.052** (0.024)
Do not know or report income	--	--	-0.069*** (0.025)	-0.061* (0.036)
Catholic	--	--	0.013 (0.013)	0.009 (0.018)
Protestant	--	--	-0.022 (0.022)	-0.019 (0.031)
Other religion	--	--	0.016 (0.026)	0.003 (0.037)
Do not report religion	--	--	0.017 (0.017)	0.005 (0.024)
Germany	--	--	0.031* (0.019)	0.042 (0.026)
Netherlands	--	--	0.082*** (0.019)	0.114*** (0.026)
Poland	--	--	-0.073*** (0.016)	-0.072*** (0.024)
Spain	--	--	-0.033** (0.016)	-0.038 (0.024)
Respondents	5,162	3,250	4,901	3,124

This table reports, based on binary probit models, the estimates of average marginal and discrete probability effects of continuous and discrete explanatory variables, respectively. The dependent variable is a dummy variable that takes the value of one if a respondent reported to hold sustainable investments in real life, and zero otherwise. As explanatory variables, we consider the dummy variables *Above 25% to 50%*, *Above 50% to 75%*, and *Above 75% to 100%* that take the value of one if a respondent's average share of endowment invested in sustainable ETFs in the experiment (in %) falls into the respective interval, and zero otherwise. We control for return expectations, risk perceptions, individual preferences, and other individual characteristics and country-fixed effects. Return expectations are captured by asking the question "What returns do you expect on sustainable investments?" Respondents could choose among "much lower returns compared to conventional investments," "a little lower returns compared to conventional investments," "neither lower nor higher returns compared to conventional investments," "a little higher returns compared to conventional investments," "much higher returns compared to conventional investments," and "don't know." We construct one dummy variable for each response category, except for "neither lower nor higher returns compared to conventional investments," which serves as reference category. We capture risk perceptions concerning sustainable investments compared to conventional investments by asking respondents to indicate their agreement with the statement "Sustainable investments are riskier than conventional investments." Respondents could rate their agreement on a 7-point Likert scale ranging from 1 "fully disagree" to 7 "fully agree" or select "don't know." The dummy variable *Lower risk compared to conventional investments* takes the value of one if the respondent perceives sustainable investments to be less risky than conventional investments (Likert scale 1-3), and zero otherwise. The dummy variable *Higher risk compared to conventional investments* takes the value of one if the respondent perceives sustainable investments to be riskier than conventional investments (Likert scale 5-7), and zero otherwise. The medium category (Likert scale 4) serves as reference category. All further variables are defined in Section 2.3. The subsample of current investors only contains respondents who reported to hold at least one of the following investment products: Stocks, passively managed stock funds, aktively managed stock funds, mixed funds, passively managed bond funds, actively managed bond funds, other non-fixed-income forms of investment, precious metals, and cryptocurrencies. *** (**, *) indicates that the estimated average probability effects are significantly different from zero at the 1% (5%, 10%) significance level (standard errors in parentheses).

Figures

In each of the following decision situations, you now can choose between two exchange traded funds (ETFs). In each investment situation, please allocate 1000€ between these two funds to create your own portfolio. You can invest the entire 1000€ in one fund or divide the amount equally or unequally between the two funds. To do this, please enter the desired investment amounts in euros in the corresponding columns. If you want to invest in one fund, you must invest at least 50€.

In the first four decision situations, you now have a choice between one ETF on the MSCI World Index (left column) and one on the MSCI World Climate Change Index (right column).

The MSCI World Index is a stock index that covers the share price performance of more than 1,600 large and medium-sized stock companies from 23 industrialized countries. It is published by the U.S. financial services provider MSCI and is considered one of the most important stock indices worldwide.

The MSCI World Climate Change Index is also a stock index based on the MSCI World Index (its parent index). It therefore also includes large and medium-sized stock companies from 23 industrialized countries. Unlike the MSCI World Index, the MSCI World Climate Change Index is weighted more heavily toward companies that are more focused on the transition to a lower-carbon economy and weights less heavily toward companies that are less focused on the transition to a lower-carbon economy.

Please make your first decision now:

	1	2
	MSCI World Index fund (?)	MSCI World Climate Change Index fund (?)
Fees	0.20%	0.20%
Your investment amount	[ ] €	[ ] €

When you have made your decision, please click 'Next'.

[... back]   [next ...]

Figure 1: Screenshot of an exemplary choice set (translated into English)
This figure shows a screenshot of an exemplary first investment decision between an ETF based on the MSCI World Index with fees of 0.20% and an ETF based on the MSCI World Climate Change Index with fees of 0.2%. The upper part comprises a description of the first four investment decisions.
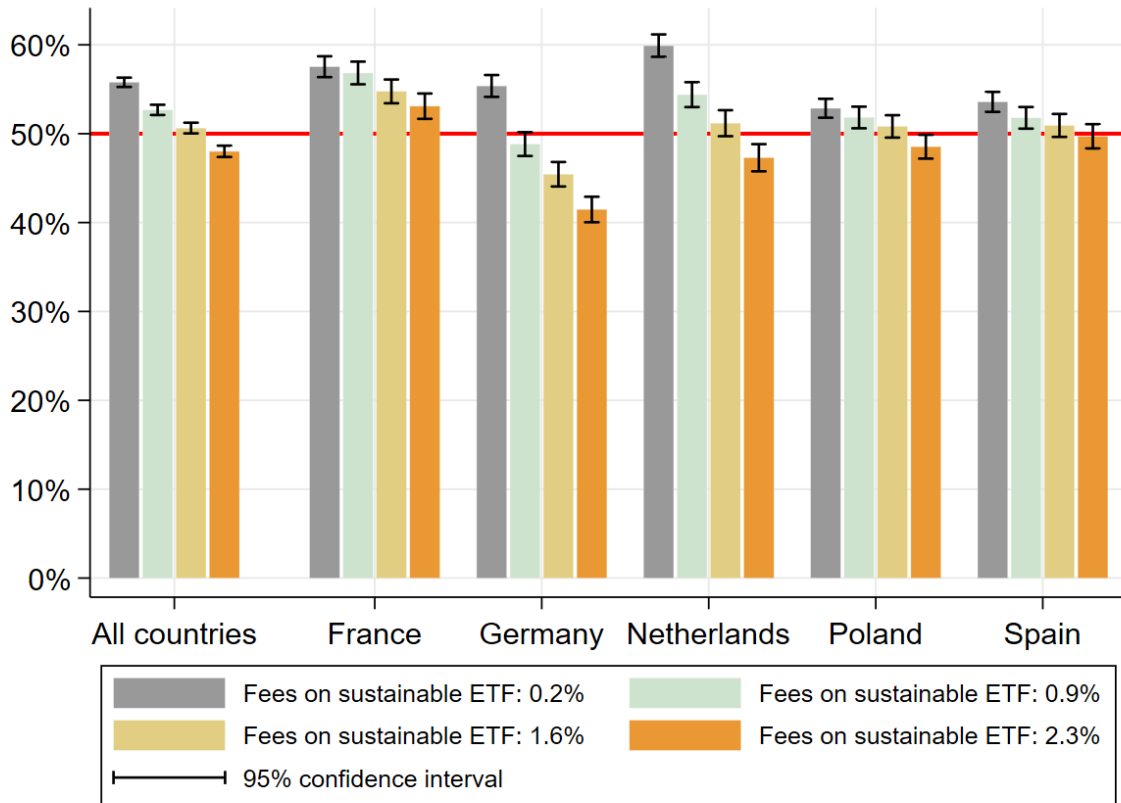
Figure 2: Investments in sustainable ETFs across countries and fee scenarios
This graph shows the shares of the endowment respondents invested on average in sustainable ETFs, i.e.
either in ETFs based on the MSCI World ESG Screened Index or in ETFs based on the MSCI World Climate
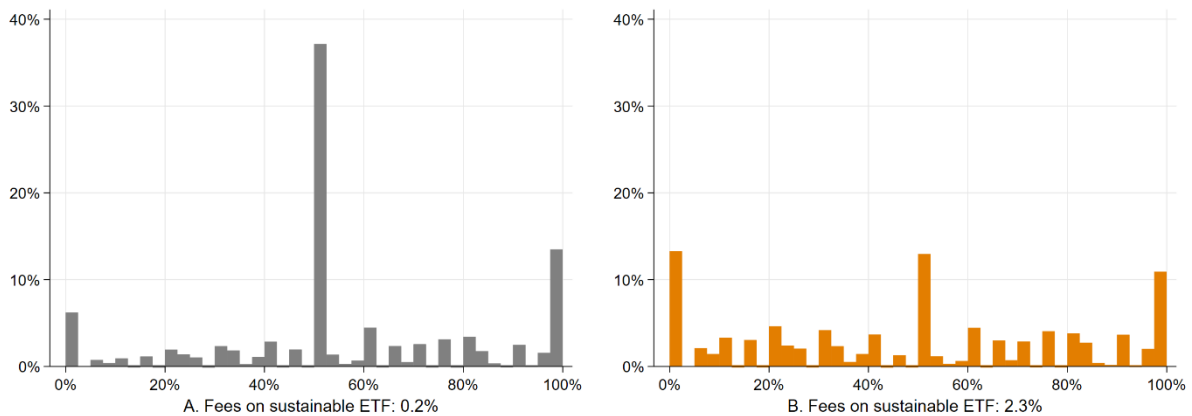Change Index, in the four different fee scenarios. Error bars represent 95% confidence intervals.

Figure 3: Individual investments in sustainable ETFs
Panel A shows the shares of the endowments respondents invested in sustainable ETFs (i.e. either ETFs based
on the MSCI World ESG Screened Index or ETFs based on the MSCI World Climate Change Index) for
investment decisions in which the fees charged on the sustainable ETF amount to 0.2% and were thus equal
to the fees charged on the ETF based on the MSCI World Index. Panel B shows the shares of the endowments
respondents invested in sustainable ETFs for investment decisions in which the fees charged on the sustain-
able ETF amount to 2.3% and the difference to the fees charged on the ETF based on the MSCI World Index
were largest.
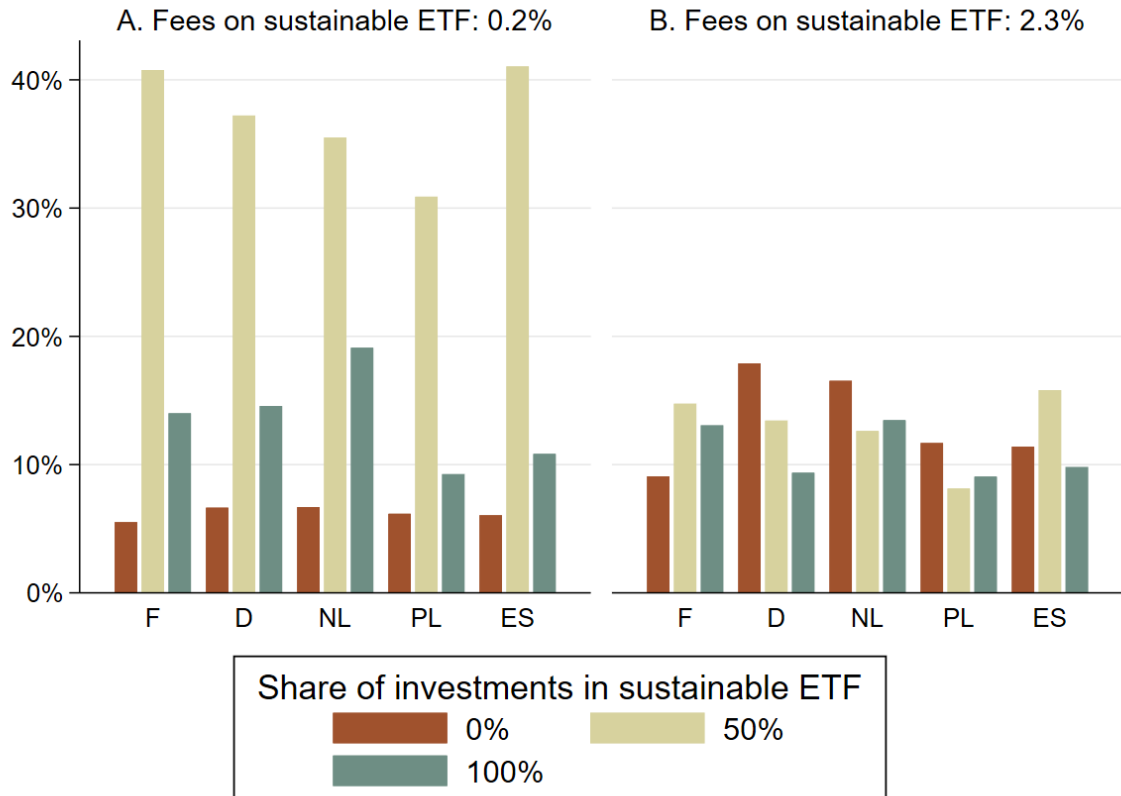
Figure 4: Diversification heuristics across countries and fee scenarios
Panel A reports the proportions of decisions in which respondents from the six different (sub-)samples invested 0%, 50%, and 100% of their endowment in the sustainable ETF (i.e. either ETFs based on the MSCI World ESG Screened Index or ETFs based on the MSCI World Climate Change Index) in the 0.2% scenario. Panel B reports the corresponding results for the 2.3% scenario.
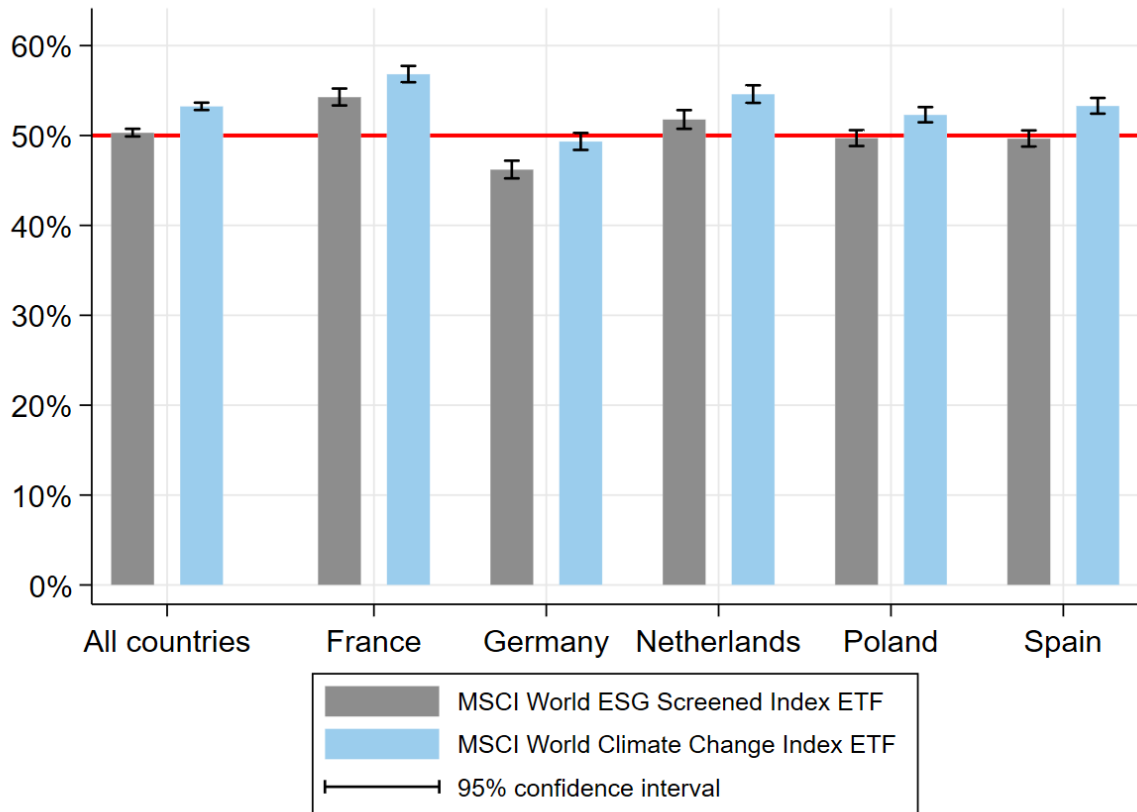
Figure 5: Investor preferences for different sustainable investment strategies
This figure shows the shares of the endowment respondents invested on average in ETFs based on the MSCI World ESG Screened Index or in ETFs based on the MSCI World Climate Change Index, averaged across all four fee scenarios. Error bars represent 95% confidence intervals.
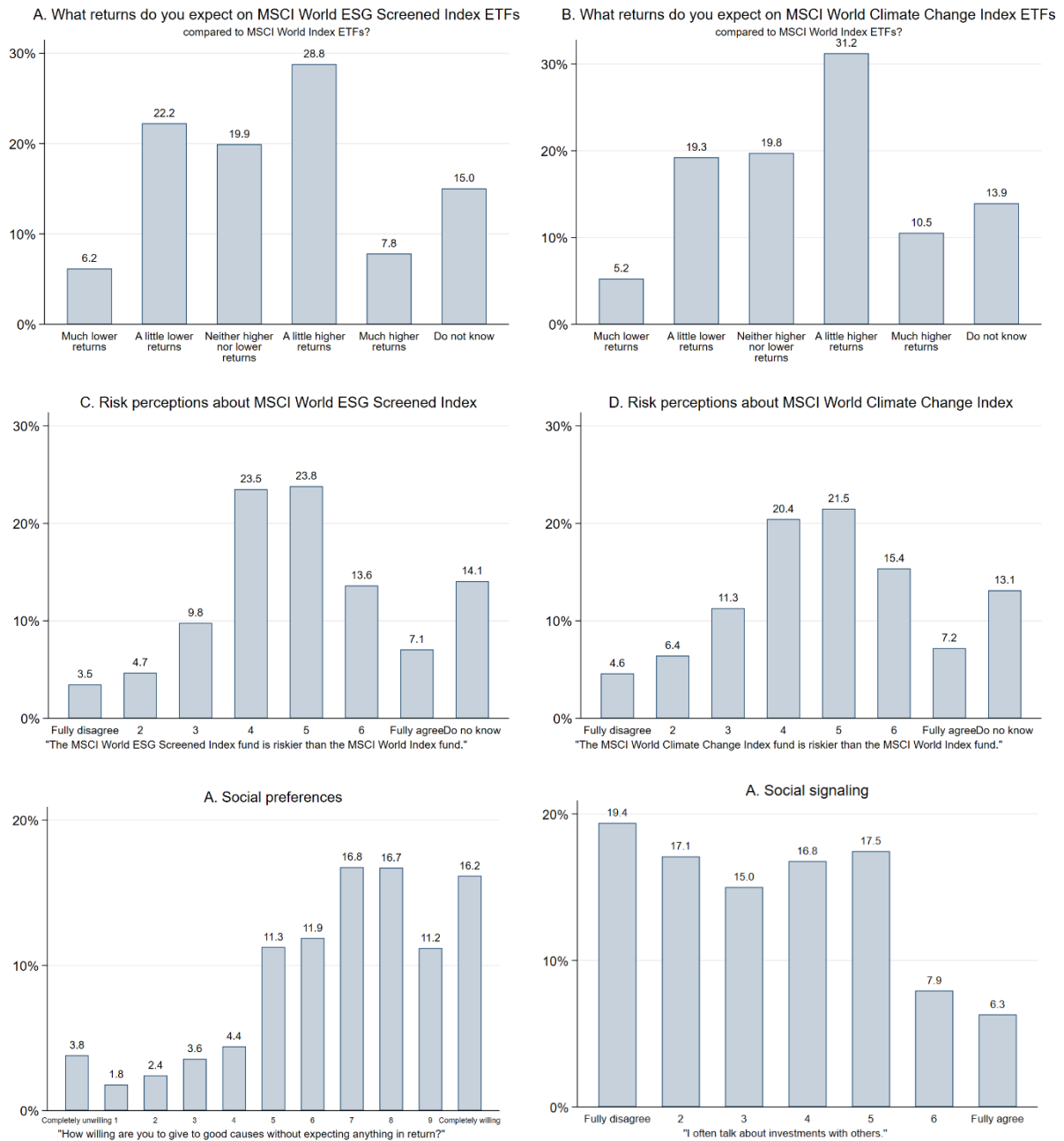
Figure 6: Financial beliefs, social preferences, and social signaling

This figure shows the distribution of our key variables for the full sample. Panel A reports the respondents' return expectations on ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel B reports the respondents' return expectations on ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. Panel C reports the respondents' risk perceptions of ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel D reports the respondents' risk perceptions of ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. Panel E reports the respondents' social preferences. Panel F reports the respondents' signaling motives. The corresponding questions are reported in Section 2.3.2.
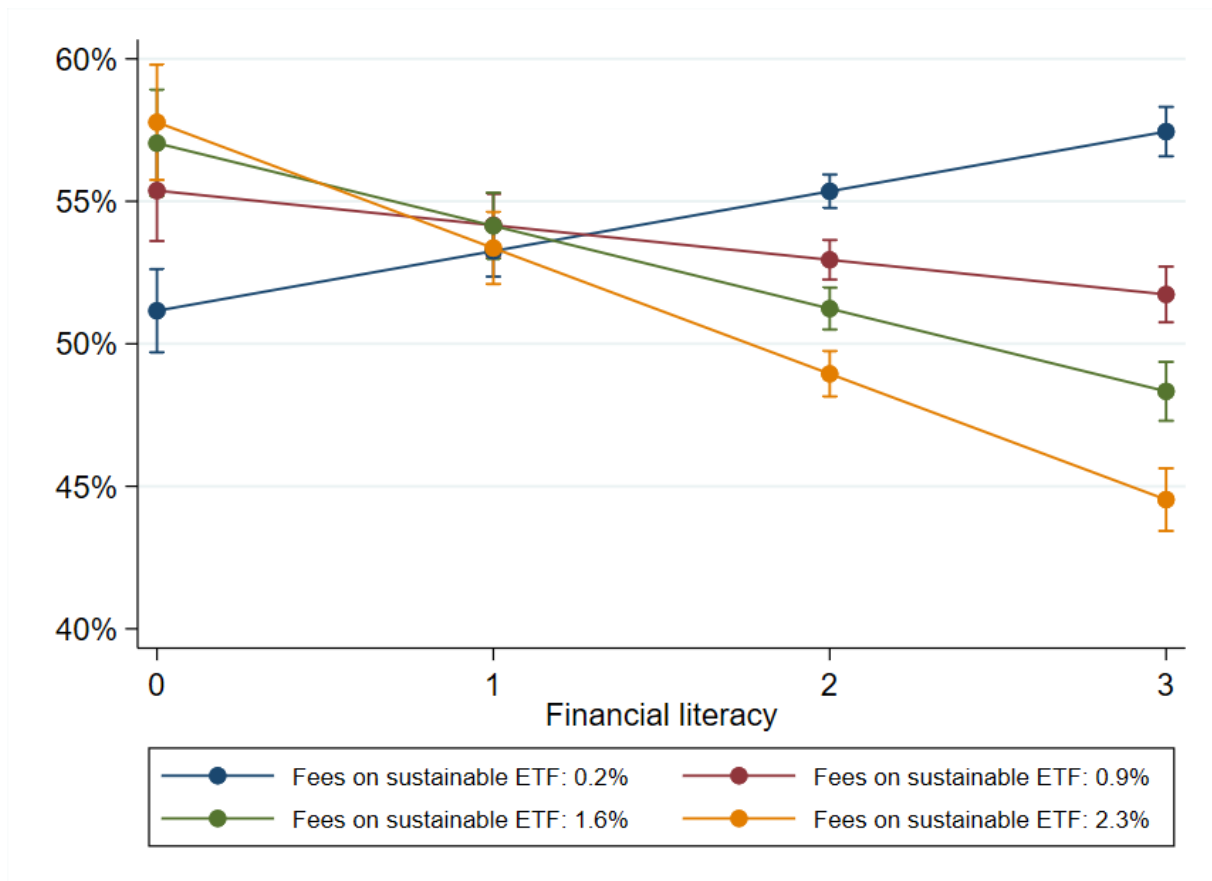
Figure 7: Fee sensitivity and financial literacy
This figure shows predicted values for the share of endowment respondents invested in sustainable ETFs across different values for financial literacy and the four different fee scenarios. Predicted values are based on estimation results of a random effects estimation based on all eight decisions of all respondents (with *Share of endowment invested in sustainable ETFs* as dependent variable). The corresponding estimation results are reported in Table A.9 (column 1) in Appendix A. Error bars represent 95% confidence intervals.

Appendix A: Additional tables

TABLE A.1 – REPRESENTATIVENESS OF THE FRENCH RESPONDENT SAMPLE

	Population (in %)	Persons who started the survey (in %)	Final sample of individual investors (in %)
Panel A: Gender			
Male	48.3	43.7	59.0
Female	51.7	56.1	41.0
Other	0.0	0.1	0.0
Panel B: Age			
18 to 24	10.2	8.7	6.5
25 to 29	7.2	8.3	9.7
30 to 39	15.8	16.9	21.7
40 to 49	16.5	16.7	22.4
50 to 64	24.5	29.6	24.9
65 and older	25.7	20.0	14.8
Panel C: Region			
Île de France	18.3	18.7	21.4
Centre – Val de Loire	3.8	3.9	3.5
Bourgogne – Franche-Comté	4.2	4.2	5.0
Normandie	4.9	4.5	3.1
Hauts-de-France	8.9	11.7	9.8
Grand Est	8.2	7.9	8.1
Pays de la Loire	5.7	7.1	6.6
Bretagne	5.0	5.9	5.8
Nouvelle-Aquitaine	8.9	8.9	8.0
Occitanie	8.8	8.5	7.9
Auvergne-Rhône-Alpes	12.0	12.0	12.2
Provence-Alpes-Côte d'Azur	7.5	6.0	7.9
Corse	0.5	0.1	0.0
RUP FR — Régions Ultrapériphériques Françaises	3.3	0.5	0.1

The column "population" refers to the distribution of age, gender, and region according to official population statistics derived from Eurostat. Since we had no prior information on the distribution of typical sociodemographic characteristics of the desired target group of individual investors in France, the survey institute recruited individuals in such a way that the sample of people who started the survey were, as close as possible, representative of French citizens of at least 18 years of age (for example, whether invited persons responded to the survey differed for some strata of the invited population, and subsequent invitation waves were sent

with higher weight for those strata that were less likely to respond (for instance, if females less frequently opened the survey in the first invitation wave, they were sampled disproportionally in the subsequent invitation waves), such that in the end the distribution of age, gender, and region for people who finally started the survey are close to the respective distributions in the official population statistics). Accordingly, the second column reports the distribution of age, gender, and region for all persons who started the survey. "Final sample of individual investors" then refers to the distribution of age, gender, and region in the final sample of experienced financial decision makers, that is, after screening out respondents who did not fulfil our criteria for experienced financial decision makers. Individuals who started the survey but were no financial decision maker in their household, did not hold investment products (e.g., stocks, funds, mutual funds, etc.) at the time of the survey or in the past, or did not inform themselves about those investment products were thus not part of the final sample.

TABLE A.2 – REPRESENTATIVENESS OF THE GERMAN RESPONDENT SAMPLE

	Population (in %)	Persons who started the survey (in %)	Final sample of individual investors (in %)
Panel A: Gender			
Male	49.3	62.0	64.4
Female	50.7	38.0	35.7
Other	0.0	0.0	0.2
Panel B: Age			
18 to 24	9.1	10.0	12.3
25 to 29	7.5	11.0	12.1
30 to 39	15.3	11.0	10.3
40 to 49	15.0	13.0	13.4
50 to 64	27.3	28.0	28.3
65 and older	25.8	26.0	23.6
Panel C: Region			
Baden-Württemberg	13.3	11.0	12.3
Bayern	15.8	16.0	13.5
Berlin	4.4	5.0	7.3
Brandenburg	3.0	2.0	3.2
Bremen	0.8	1.0	0.4
Hamburg	2.2	2.0	4.0
Hessen	7.5	8.0	8.1
Mecklenburg-Vorpommern	1.9	1.0	1.0
Niedersachsen	9.6	9.0	9.6
Nordrhein-Westfalen	21.6	22.0	22.2
Rheinland-Pfalz	4.9	5.0	4.8
Saarland	1.2	1.0	1.2
Sachsen	4.9	6.0	4.8
Sachsen-Anhalt	2.7	3.0	1.9
Schleswig-Holstein	3.5	4.0	3.2
Thüringen	2.6	3.0	2.7

The column "population" refers to the distribution of age, gender, and region according to official population statistics derived from Eurostat. Since we had prior information on the distribution of typical sociodemographic characteristics of the desired target group of individual investors in Germany based on a pilot study, the survey institute recruited individuals according to these quotas. The second column reports the distribution of age, gender,

and region for all persons who started the survey. "Final sample of individual investors" then refers to the distribution of age, gender, and region in the final sample of experienced financial decision makers, that is, after screening out respondents who did not fulfil our criteria for experienced financial decision makers. Individuals who started the survey but were no financial decision maker in their household, did not hold investment products (e.g., stocks, funds, mutual funds, etc.) at the time of the survey or in the past, or did not inform themselves about those investment products were thus not part of the final sample.

TABLE A.3 – REPRESENTATIVENESS OF THE DUTCH RESPONDENT SAMPLE

	Population (in %)	Persons who started the survey (in %)	Final sample of individual investors (in %)
Panel A: Gender			
Male	50.0	50.6	63.9
Female	50.0	49.0	35.9
Other	0.0	0.3	0.2
Panel B: Age			
18 to 24	10.7	7.0	8.0
25 to 29	8.0	6.2	7.6
30 to 39	15.0	14.4	18.1
40 to 49	16.0	21.1	18.8
50 to 64	25.6	26.9	28.6
65 and older	24.7	24.3	18.8
Panel C: Region			
Groningen	3.4	4.3	3.9
Friesland (NL)	3.7	4.9	4.9
Drenthe	2.8	2.7	2.3
Overijssel	6.7	6.8	5.5
Flevoland	2.4	3.6	4.0
Gelderland	12.0	11.5	11.8
Utrecht	7.6	7.6	8.4
Noord-Holland	16.5	13.5	14.4
Zuid-Holland	21.5	20.1	19.5
Zeeland	2.2	2.7	2.5
Noord-Brabant	14.7	14.7	15.4
Limburg (NL)	6.4	7.6	7.5

The column "population" refers to the distribution of age, gender, and region according to official population statistics derived from Eurostat. Since we had no prior information on the distribution of typical sociodemographic characteristics of the desired target group of individual investors in the Netherlands, the survey institute recruited individuals in such a way that the sample of people who started the survey were, as close as possible, representative of Dutch citizens of at least 18 years of age (for example, whether invited persons responded to the survey differed for some strata of the invited population, and subsequent invitation waves were sent with higher weight for those strata that were less likely to respond (for instance, if females less frequently opened the survey in the first invitation wave, they were sampled disproportionally in the subsequent invitation waves), such that in the end the distribution of age, gender, and region for people who finally started the survey are close to the respective distributions in the official population statistics). Accordingly, the second column reports the distribution of age, gender, and region for all persons who started the survey. "Final sample of individual investors" then refers to the distribution of age, gender, and region in the final sample of experienced financial decision makers, that is, after screening out

respondents who did not fulfil our criteria for experienced financial decision makers. Individuals who started the survey but were no financial decision maker in their household, did not hold investment products (e.g., stocks, funds, mutual funds, etc.) at the time of the survey or in the past, or did not inform themselves about those invest-ment products were thus not part of the final sample.

	Population (in %)	Persons who started the survey (in %)	Final sample of individual investors (in %)
Panel A: Gender			
Male	48.4	43.2	53.6
Female	51.6	56.6	46.4
Other	0.0	0.2	0.1
Panel B: Age			
18 to 24	8.1	7.9	7.0
25 to 29	9.8	8.3	9.0
30 to 39	20.8	19.6	23.2
40 to 49	18.4	17.3	20.4
50 to 64	21.6	24.0	27.7
65 and older	21.3	22.8	12.8
Panel C: Region			
Dolnoslaskie	7.1	7.5	6.7
Kujawsko-Pomorskie	5.2	5.4	5.1
Lubelskie	6.0	5.5	5.9
Lubuskie	2.4	2.6	2.5
Lódzkie	7.6	6.4	7.9
Malopolskie	8.8	8.9	8.3
Mazowiec / Warszawski stoleczny	13.0	14.2	15.4
Opolskie	2.9	2.5	2.6
Podkarpackie	5.2	5.5	5.3
Podlaskie	3.4	3.0	3.2
Pomorskie	5.5	6.1	6.1
Slaskie	12.1	11.8	11.8
Swietokrzyskie	3.1	3.2	3.6
Warminsko-Mazurskie	3.7	3.7	3.2
Wielkopolskie	9.5	9.2	7.8
Zachodniopomorskie	4.5	4.4	4.3

The column "population" refers to the distribution of age, gender, and region according to official population statistics derived from Eurostat. Since we had no prior information on the distribution of typical sociodemographic characteristics of the desired target group of individual investors in Poland, the survey institute recruited individuals in such a way that the sample of people who started the survey were, as close as possible, representative of Polish citizens of at least 18 years of age (for example, whether invited persons responded

to the survey differed for some strata of the invited population, and subsequent invitation waves were sent with higher weight for those strata that were less likely to respond (for instance, if females less frequently opened the survey in the first invitation wave, they were sampled disproportionally in the subsequent invitation waves), such that in the end the distribution of age, gender, and region for people who finally started the survey are close to the respective distributions in the official population statistics). Accordingly, the second column reports the distribution of age, gender, and region for all persons who started the survey. "Final sample of individual investors" then refers to the distribution of age, gender, and region in the final sample of experienced financial decision makers, that is, after screening out respondents who did not fulfil our criteria for experienced financial decision makers. Individuals who started the survey but were no financial decision maker in their household, did not hold investment products (e.g., stocks, funds, mutual funds, etc.) at the time of the survey or in the past, or did not inform themselves about those investment products were thus not part of the final sample.

TABLE A.5 – REPRESENTATIVENESS OF THE SPANISH RESPONDENT SAMPLE

	Population (in %)	Persons who started the survey (in %)	Final sample of individual investors (in %)
Panel A: Gender			
Male	49.0	46.5	52.8
Female	51.0	53.5	47.2
Other	0.0	0.0	0.0
Panel B: Age			
18 to 24	8.3	10.7	10.7
25 to 29	6.5	9.0	8.6
30 to 39	16.2	19.3	24.3
40 to 49	20.2	21.3	23.7
50 to 64	25.2	25.4	24.9
65 and older	23.6	14.4	7.8
Panel C: Region			
Galicia	5.7	6.1	6.0
Principado de Asturias	2.2	3.1	2.2
Cantabria	1.2	1.3	1.3
País Vasco	4.6	4.5	4.1
Comunidad Foral de Navarra	1.4	0.9	0.7
La Rioja	0.7	0.4	0.5
Aragón	2.8	3.4	2.9
Comunidad de Madrid	14.3	20.1	20.7
Castilla y León	5.1	5.0	4.9
Castilla-la Mancha	4.3	3.6	3.5
Extremadura	2.2	1.7	1.7
Cataluña	16.2	16.5	16.5
Comunitat Valenciana	10.6	5.1	6.2
Illes Balears	2.6	1.5	1.8
Andalucía	17.9	18.3	17.4
Región de Murcia	3.2	3.0	2.9
Ciudad de Ceuta	0.2	0.1	0.0
Ciudad de Melilla	0.2	0.0	0.0
Canarias	4.7	5.4	6.9

The column "population" refers to the distribution of age, gender, and region according to official population statistics derived from Eurostat. Since we had no prior information on the distribution of typical sociodemographic characteristics of the desired target group of individual investors in Spain, the survey institute recruited individuals in such a way that the sample of people who started the survey were, as close as possible, representative of Spanish citizens of at least 18 years of age (for example, whether invited persons responded to the survey differed for some strata of the invited population, and subsequent invitation waves were sent with higher weight for those strata that were less likely to respond (for instance, if females less frequently opened the survey in the first invitation wave, they were sampled disproportionally in the subsequent invitation waves), such that in the end the distribution of age, gender, and region for people who finally started the survey are close to the respective distributions in the official population statistics). Accordingly, the second column reports the distribution of age, gender, and region for all persons who started the survey. "Final sample of individual investors" then refers to the distribution of age, gender, and region in the final sample of experienced financial decision makers, that is, after screening out respondents who did not fulfil our criteria for experienced financial decision makers. Individuals who started the survey but were no financial decision maker in their household, did not hold investment products (e.g., stocks, funds, mutual funds, etc.) at the time of the survey or in the past, or did not inform themselves about those investment products were thus not part of the final sample.

TABLE A.6 – INVESTMENTS IN SUSTAINABLE ETFS ACROSS COUNTRIES AND FEE SCENARIOS

| Countries: | Share of investments in sustainable ETF (in %) | | | | | |
	All countries	France	Germany	Nether-lands	Poland	Spain
Fees on sustainable ETF						
0.2%	55.8***	57.5***	55.4***	59.9***	52.9****	53.6***
0.9%	52.7***	56.8***	48.8*	54.4***	51.8***	51.7***
1.6%	50.6**	54.8***	45.4***	51.2	50.8	50.9
2.3%	48.0***	53.1***	41.5***	47.3***	48.5**	49.6
Respondents	5,162	1,007	1,009	1,010	1,070	1,066
Decisions	41,296	8,056	8,072	8,080	8,560	8,528

This table reports the shares of the endowment respondents from the six different (sub-)samples invested in sustainable ETFs (i.e. either ETFs based on the MSCI World ESG Screened Index or ETFs based on the MSCI World Climate Change Index). *** (**, *) indicates that the corresponding t test indicated that the share is significantly different from 50% at the 1% (5%, 10%) significance level.

TABLE A.7 – DIVERSIFICATION HEURISTICS ACROSS FEE SCENARIOS AND COUNTRIES

| Fees on sustainable ETF: | 0.2% | | | 2.3% | | |
Share invested in sustainable ETF:	0%	50%	100%	0%	50%	100%
Countries						
All countries	6.2%	37.1%	13.5%	13.3%	12.9%	10.9%
France	5.5%	40.8%	14.0%	9.1%	14.8%	13.1%
Germany	6.6%	37.2%	14.6%	17.9%	13.4%	9.4%
Netherlands	6.7%	35.5%	19.1%	16.5%	12.6%	13.5%
Poland	6.2%	30.9%	9.3%	11.7%	8.1%	9.1%
Spain	6.1%	41.0%	10.8%	11.4%	15.8%	9.8%

This table reports the proportions of decisions in which respondents from the six different (sub-)samples invested 0%, 50%, and 100% of their endowment in the sustainable ETF (i.e. either ETFs based on the MSCI World ESG Screened Index or ETFs based on the MSCI World Climate Change Index) in the 0.2% and 2.3% scenarios.

TABLE A.8 – SHARES OF INVESTMENTS IN SUSTAINABLE ETFs ACROSS COUNTRIES AND INVESTMENT STRATEGIES

	Average share of endowment invested in sustainable ETF (in %)					
Countries:	All countries	France	Germany	Netherlands	Poland	Spain
ETF based on						
MSCI World ESG Screened Index	50.3	54.3***	46.2***	51.8***	49.7	49.7
MSCI World Climate Change Index	53.3***	56.8***	49.3	54.6***	52.3***	53.3***
Difference in averages	-2.9 a)	-2.5 a)	-3.1 a)	-2.8 a)	-2.6 a)	-3.6 a)
Decisions	41,296	8,056	8,072	8,080	8,560	8,528

This table reports the average shares of the endowment respondents from the six different (sub-)samples invested in ETFs based on the MSCI World ESG Screened Index or ETFs based on the MSCI World Climate Change Index. *** (**, *) indicates that the corresponding t test indicated that the share is significantly different from 50% at the 1% (5%, 10%) significance level. a) indicates that the difference between the average shares invested in ETFs based on the MSCI World ESG Screened Index and the MSCI World Climate Change Index is significantly different at the 1% significance level.

TABLE A.9 – FEE SENSITIVITY AND FINANCIAL LITERACY

Dependent variable:	Share of endowment invested in sustainable ETFs	
	(1)	(2)
Fees on sustainable ETF: 0,.9% * financial literacy	-3.310***	-3.351***
	(0.349)	(0.361)
Fees on sustainable ETF: 1.6% * financial literacy	-4.999***	-4.992***
	(0.400)	(0.415)
Fees on sustainable ETF: 2.3% * financial literacy	-6.510***	-6.466***
	(0.436)	(0.453)
Fees on sustainable ETF: 0.9%	4.217***	4.430***
	(0.831)	(0.865)
Fees on sustainable ETF: 1.6%	5.882***	5.985***
	(0.946)	(0.986)
Fees on sustainable ETF: 2.3%	6.615***	6.614***
	(1.019)	(1.066)
Financial literacy	2.096***	1.596***
	(0.336)	(0.373)
Constant	51.159***	44.534***
	(0.745)	(2.175)
Preferences	No	Yes
Return expectations	No	Yes
Risk perceptions	No	Yes
Individual characteristics	No	Yes
Experiment variables	No	Yes
Respondents	5,162	4,901
Decisions	41,296	39,208
R^2	0.016	0.081

This table reports the estimation results of two random effects estimations based on all eight decisions of all respondents. The dependent variable is the *Share of endowment invested in sustainable ETFs.* As explanatory variables, we consider individual preferences, return expectations, risk perceptions, but also control for other individual characteristics and experimental variables. We additionally include interaction terms between individual financial literacy and dummy variables indicating the different fee scenarios variables. All variables are defined in Section 2.3. R^2 indicates the squared correlation between the observed and fitted values, reported as overall R^2 when using the Stata command xtreg (Stata version 15.1). *** (**, *) indicates that the estimated parameters are significantly different from zero at the 1% (5%, 10%) significance level (cluster-robust standard errors in parentheses).

Dependent variable:	Respondent reports to hold sustainable investments in real life	
Sample:	All	Only current investors
	(1)	(2)
Average share invested in sustainable ETFs in the experiment (reference category: 0% to 25%)		
Above 25% to 50%	0.048***	0.055**
	(0.018)	(0.025)
Above 50% to 75%	0.045**	0.057**
	(0.019)	(0.026)
Above 75% to 100%	0.088***	0.125***
	(0.024)	(0.032)
Social desirability motives		
Self deceptive enhancement	0.002	0.009
	(0.005)	(0.007)
Impression management	-0.008	-0.008
	(0.005)	(0.007)
Preferences		
Social preferences	0.009***	0.013***
	(0.002)	(0.003)
Risk preferences	0.011***	0.007*
	(0.003)	(0.004)
Time preferences	0.012***	0.015***
	(0.003)	(0.004)
Signaling	0.026***	0.025***
	(0.003)	(0.005)
Return expectations		
Much higher returns compared to conventional investments	0.022	0.057*
	(0.022)	(0.032)
A little higher returns compared to conventional investments	0.020	0.036*
	(0.014)	(0.020)
A little lower returns compared to conventional investments	-0.060***	-0.088***
	(0.014)	(0.020)
Much lower returns compared to conventional investments	-0.035	-0.050
	(0.022)	(0.031)
Do not know returns	-0.089***	-0.120***
	(0.022)	(0.034)
Risk perceptions		
Higher risk compared to conventional investments	0.016	0.023
	(0.014)	(0.020)
Lower risk compared to conventional investments	0.032**	0.045**
	(0.014)	(0.020)
Do not know risk	-0.221***	-0.254***
	(0.033)	(0.044)

Individual characteristics

Financial literacy	0.005	0.000
	(0.007)	(0.010)
Age	0.000	0.001
	(0.000)	(0.001)
Female	-0.018	-0.016
	(0.011)	(0.016)
High education	0.054***	0.049***
	(0.011)	(0.015)
Married	0.010	0.018
	(0.012)	(0.017)
High income	-0.011	-0.026
	(0.016)	(0.022)
Low income	-0.044***	-0.051**
	(0.017)	(0.024)
Do not know or report income	-0.069***	-0.060*
	(0.025)	(0.036)
Catholic	0.013	0.008
	(0.013)	(0.018)
Protestant	-0.021	-0.019
	(0.022)	(0.031)
Other religion	0.016	0.003
	(0.026)	(0.037)
Do not report religion	0.017	0.005
	(0.017)	(0.024)
Germany	0.030	0.041
	(0.019)	(0.026)
Netherlands	0.082***	0.114***
	(0.019)	(0.026)
Poland	-0.073***	-0.071***
	(0.016)	(0.024)
Spain	-0.034**	-0.039
	(0.016)	(0.024)
Observations	4,901	3,124

This table reports, based on binary probit models, the estimates of average marginal and discrete probability effects of continuous and discrete explanatory variables, respectively. The dependent variable is a dummy variable that takes the value of one if a respondent reported to hold sustainable investments in real life, and zero otherwise. As explanatory variables, we consider the dummy variables *Above 25% to 50%*, *Above 50% to 75%*, and *Above 75% to 100%* that take the value of one if a respondent's average share of endowment invested in sustainable ETFs in the experiment (in %) falls into the respective interval, and zero otherwise. To capture social desirability motives, we include the variables *Self-deceptive enhancement* and *Impression management*, which are based on six items from the Balanced Inventory of Desirable Responding (BIDR) developed by Paulhus (1984, 1991), as described in footnote 22. We additionally control for return expectations, risk perceptions, individual preferences, and other individual characteristics and country-fixed effects. Return expecations are captured by asking the question "What returns do you expect on sustainable investments?" Respondents could choose among "much lower returns compared to conventional investments," "a little lower returns compared to conventional investments," "neither lower nor higher returns compared to conventional investments," "a little higher returns compared to conventional investments," "much higher returns compared to conventional investments," and "don't know." We construct one dummy variable for each response category, except for "neither lower nor higher returns compared to conventional investments," which serves as reference category. We capture risk perceptions concerning sustainable investments compared to conventional investments by asking respondents to indicate their agreement with the statement "Sustainable investments are riskier than conventional investments." Respondents could rate their agreement on a 7-point Likert scale ranging from 1 "fully disagree" to 7 "fully agree" or select "don't know." The dummy variable *Lower risk compared to conventional investments* takes the value of one if the respondent perceives sustainable investments to be less risky than conventional investments (Likert scale 1-3), and zero otherwise. The dummy

variable *Higher risk compared to conventional investments* takes the value of one if the respondent perceives sustainable investments to be riskier than conventional investments (Likert scale 5-7), and zero otherwise. The medium category (Likert scale 4) serves as reference category. All further variables are defined in Section 2.3. The subsample of current investors only contains respondents who reported to hold at least one of the following investment products: Stocks, passively managed stock funds, aktively managed stock funds, mixed funds, passively managed bond funds, actively managed bond funds, other non-fixed-income forms of investment, precious metals, and cryptocurrencies. *** (**, *) indicates that the estimated average probability effects are significantly different from zero at the 1% (5%, 10%) significance level (standard errors in parentheses).

Appendix B: Additional figures

Figure B.1: First screen of the investment experiment
This figure shows an exemplary screenshot of the first screen of the experiment (in German language). In the upper part, we explain the general setting such as that respondents have the opportunity to make eight consecutive investment decisions, each of which allows them to invest an amount of €1000. In addition, we explain the payout mechanism. In the lower part, we give concrete examples that show the amount the respondents would receive after one year if they were among the people randomly selected after the survey.

Figure B.2: Exemplary second investment decision in the experiment
This figure shows a screenshot of an exemplary second investment decision between an ETF based on the MSCI World Index with fees of 0.20% and an ETF based on the MSCI World Climate Change Index with fees of 0.9% (in German language).

Figure B.3: Exemplary third investment decision in the experiment
This figure shows a screenshot of an exemplary third investment decision between an ETF based on the MSCI World Index with fees of 0.20% and an ETF based on the MSCI World Climate Change Index with fees of 2.3% (in German language).

Figure B.4: Exemplary fourth investment decision in the experiment
This figure shows a screenshot of an exemplary fourth investment decision between an ETF based on the MSCI World Index with fees of 0.20% and an ETF based on the MSCI World Climate Change Index with fees of 1.6% (in German language).
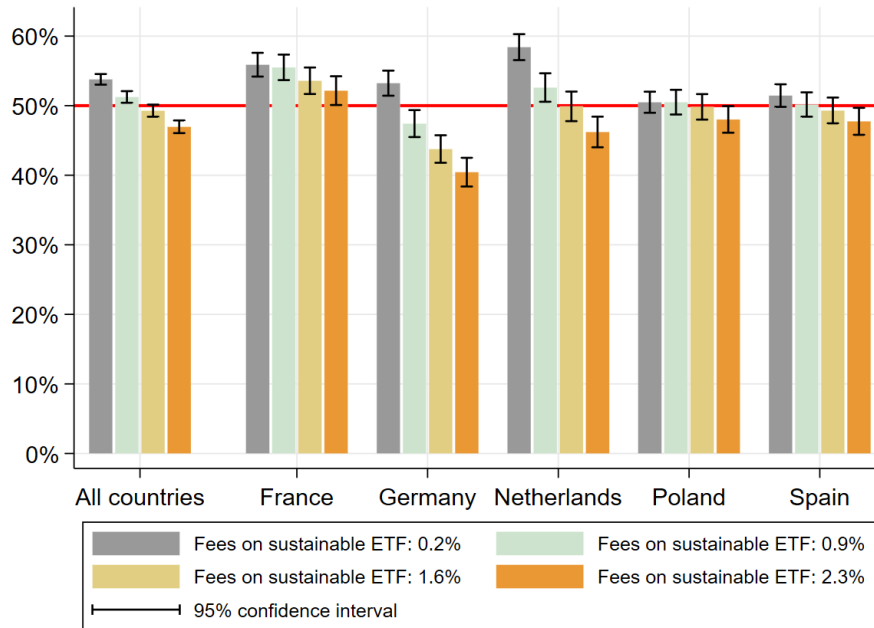
Figure B.5: Investments in ETFs based on the MSCI World ESG Screened Index across countries and fee scenarios
This graph shows the shares of the endowment respondents invested on average in ETFs based on the MSCI World ESG Screened Index in the four different fee scenarios. Error bars represent 95% confidence intervals.
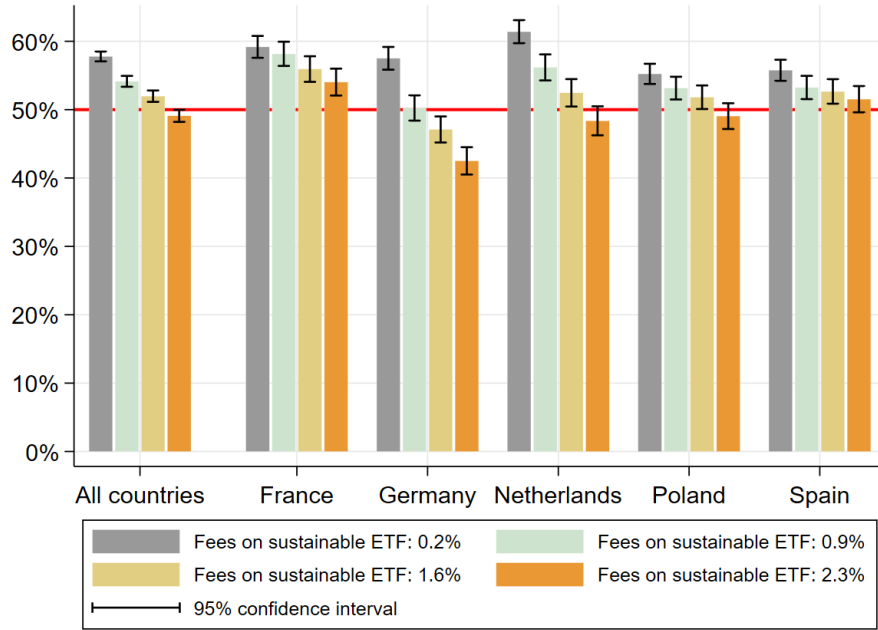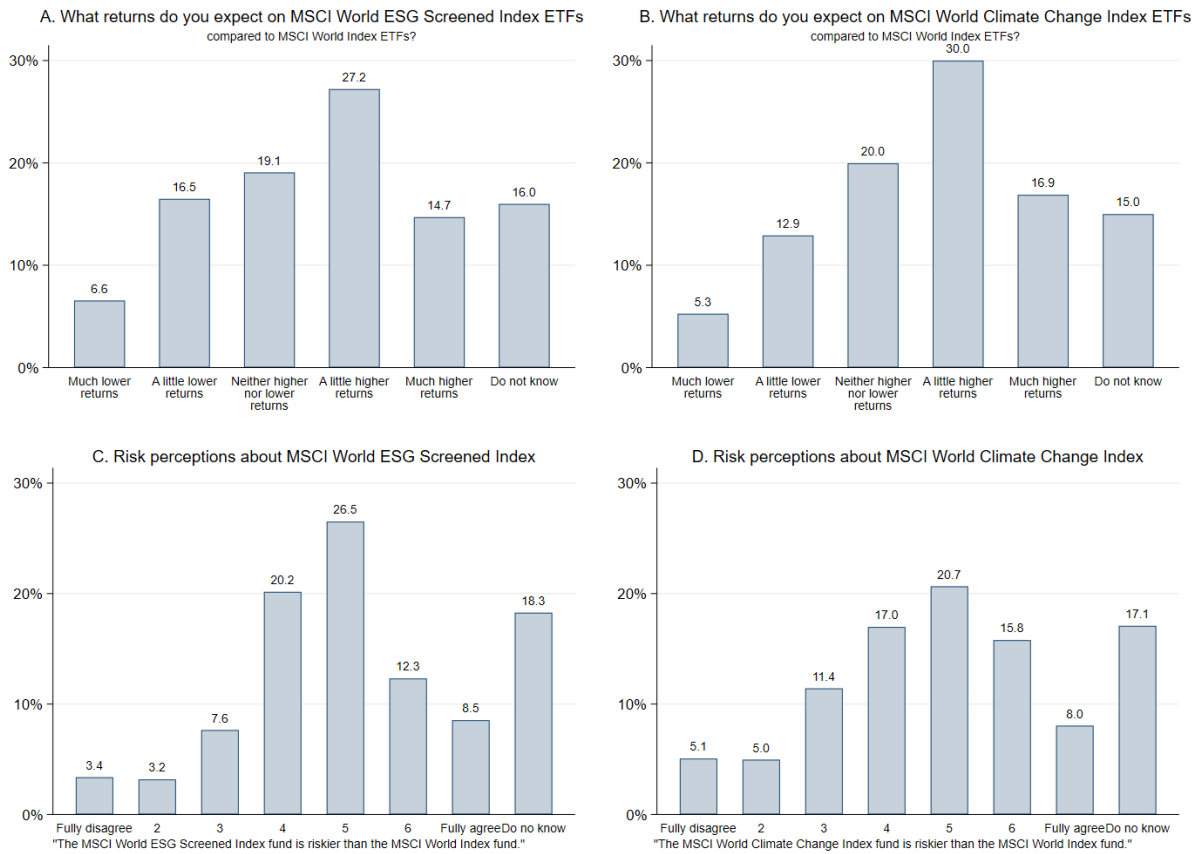
Figure B.6: Investments in ETFs based on the MSCI World Climate Change Index across countries and fee scenarios
This graph shows the shares of the endowment respondents invested on average in ETFs based on the MSCI World Climate Change Index in the four different fee scenarios. Error bars represent 95% confidence intervals.

Figure B.7: Financial beliefs among French respondents
This figure shows the distribution of financial beliefs among the subsample of French respondents. Panel A reports the respondents' return expectations on ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel B reports the respondents' return expectations on ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. Panel C reports the respondents' risk perceptions of ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel D reports the respondents' risk perceptions of ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. The corresponding questions are reported in Section 2.3.2.
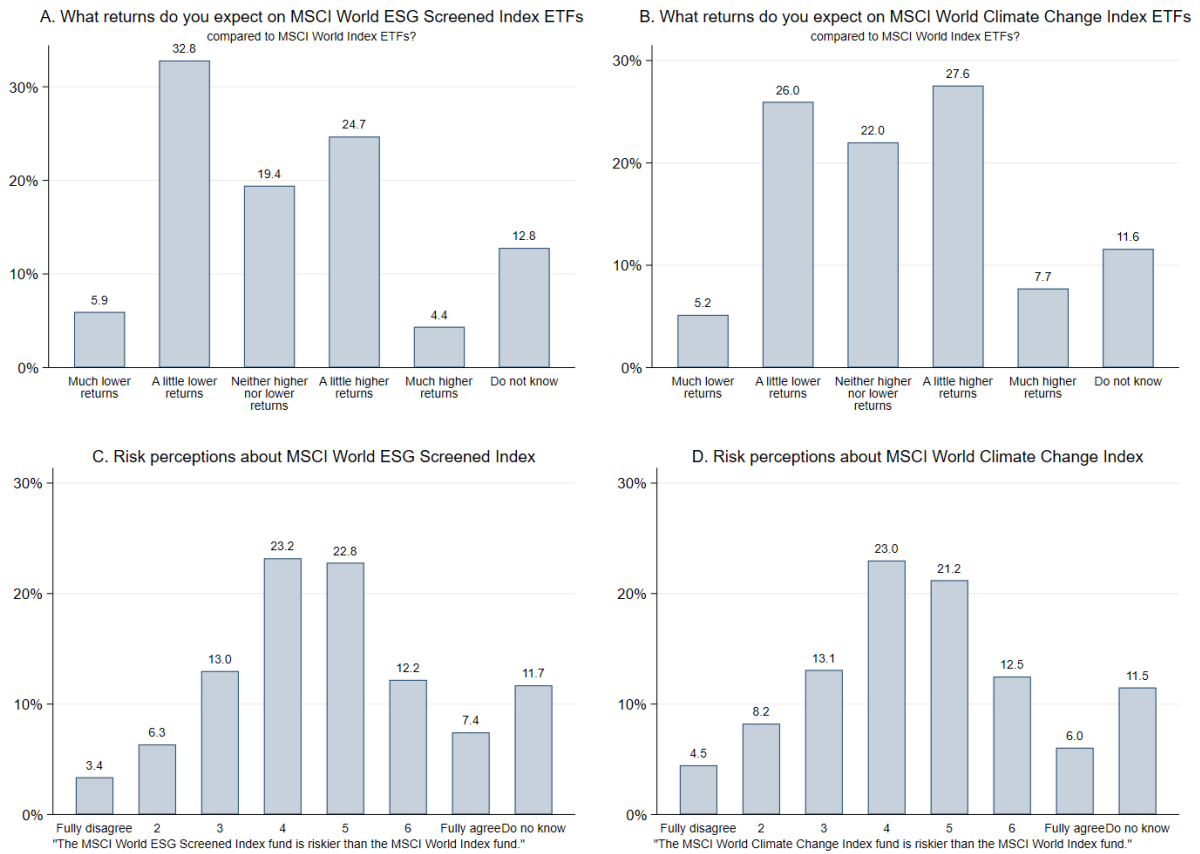
Figure B.8: Financial beliefs among German respondents

This figure shows the distribution of financial beliefs among the subsample of German respondents. Panel A reports the respondents' return expectations on ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel B reports the respondents' return expectations on ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. Panel C reports the respondents' risk perceptions of ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel D reports the respondents' risk perceptions of ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. The corresponding questions are reported in Section 2.3.2.
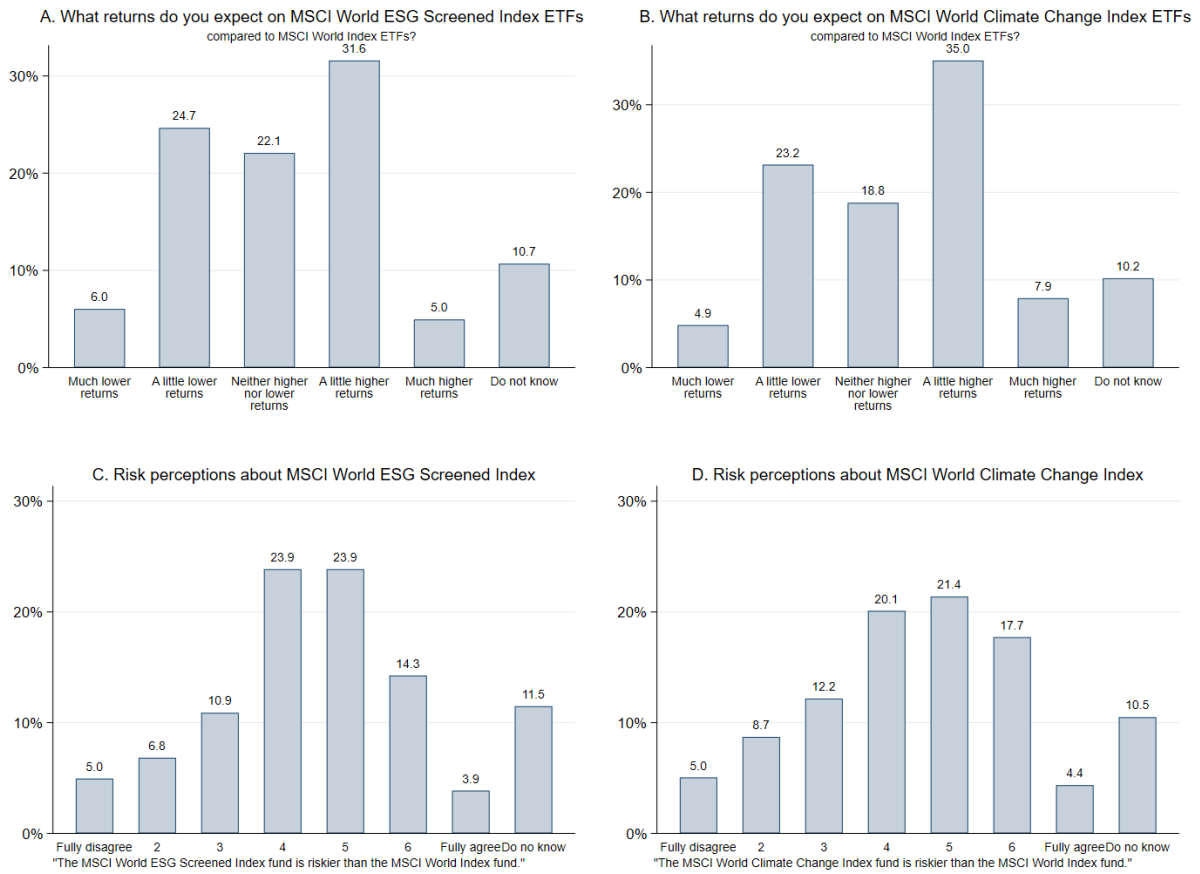
Figure B.9: Financial beliefs among Dutch respondents

This figure shows the distribution of financial beliefs among the subsample of Dutch respondents. Panel A reports the respondents' return expectations on ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel B reports the respondents' return expectations on ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. Panel C reports the respondents' risk perceptions of ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel D reports the respondents' risk perceptions of ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. The corresponding questions are reported in Section 2.3.2.
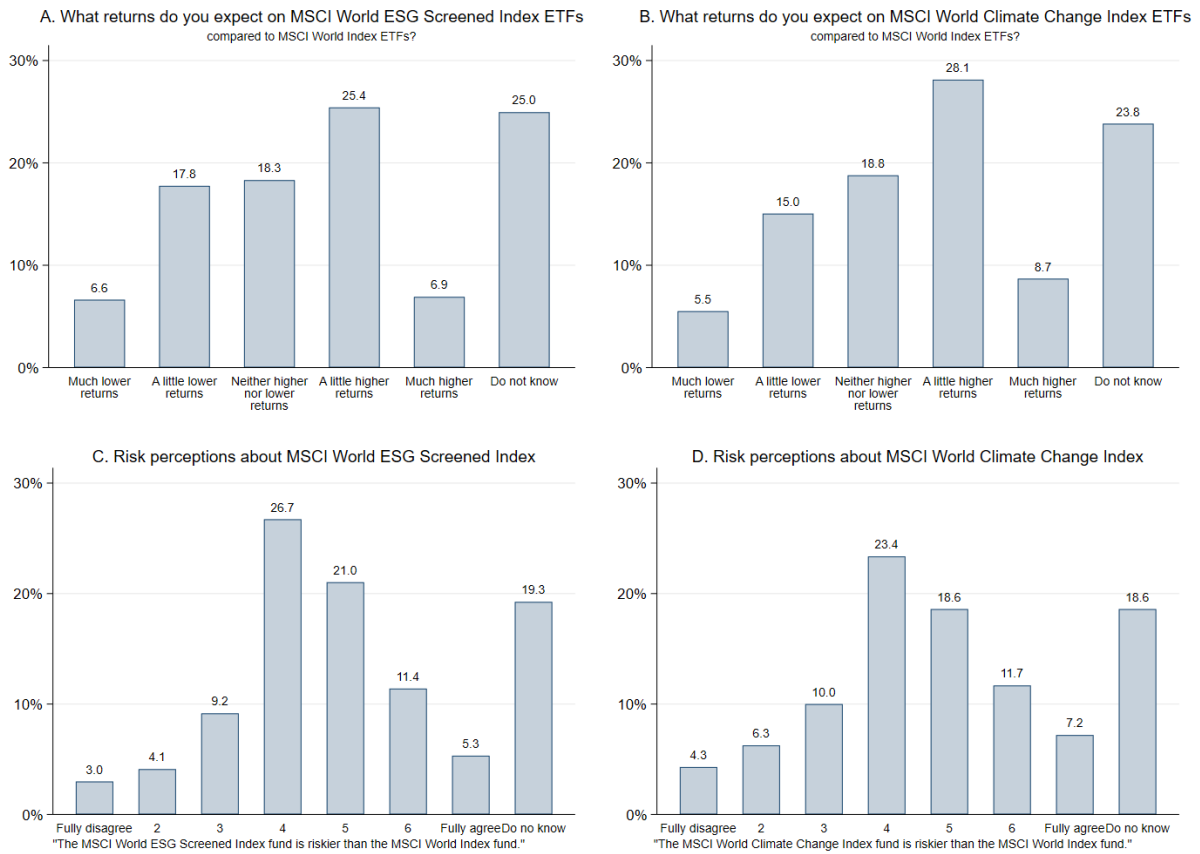
Figure B.10: Financial beliefs among Polish respondents
This figure shows the distribution of financial beliefs among the subsample of Polish respondents. Panel A reports the respondents' return expectations on ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel B reports the respondents' return expectations on ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. Panel C reports the respondents' risk perceptions of ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel D reports the respondents' risk perceptions of ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. The corresponding questions are reported in Section 2.3.2.
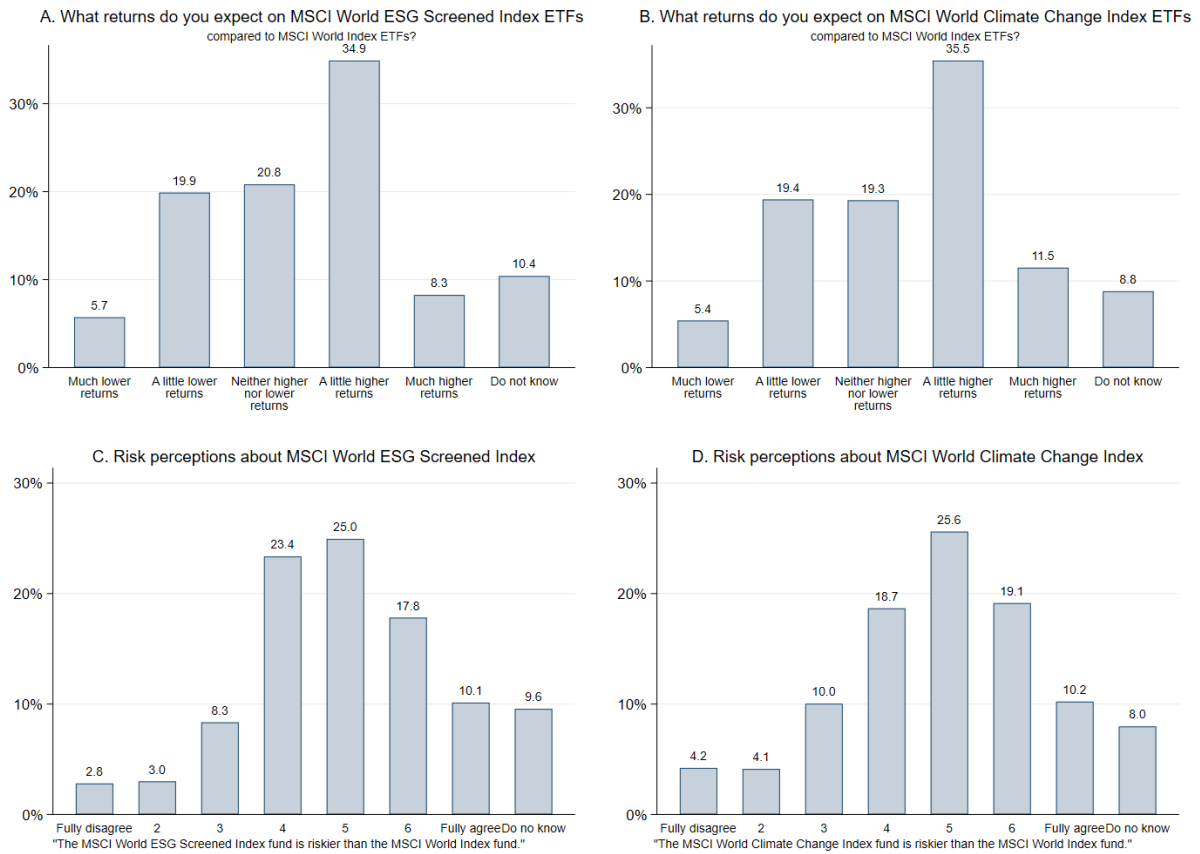
Figure B.11: Financial beliefs among Spanish respondents

This figure shows the distribution of financial beliefs among the subsample of Spanish respondents. Panel A reports the respondents' return expectations on ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel B reports the respondents' return expectations on ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. Panel C reports the respondents' risk perceptions of ETFs based on the MSCI World ESG Screened Index compared to ETFs based on the MSCI World Index. Panel D reports the respondents' risk perceptions of ETFs based on the MSCI World Climate Change Index compared to ETFs based on the MSCI World Index. The corresponding questions are reported in Section 2.3.2.