The Structure of Sustainable Investment Demand

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Abstract

In this paper, we introduce a novel, incentive-compatible and consequential approach on how to measure sustainability preferences of retail investors, exploiting a very controlled setting of an online experiment with a large representative sample of Germany, France and Spain. Our measure allows us to map retail investors sustainable investment demand dependent on the return and determine distinct investor types. We complement our main analysis with an expert survey, providing insights into how experts from financial or regulatory institutions and the general public perceive sustainable investment preferences of retail investors. Subjects in our main study express substantial demand for SI even when returns are low. At the same time, we document large heterogeneity in SI preferences. Using a clustering approach, we identify four distinct demand types of investors. The willingness to offset carbon emissions, perceptions of social norms and financial literacy emerge as relevant predictors of SI demand on the aggregate and on the more parsimonious level. Lastly, experts in our follow-up hold significant misperceptions about retail investors in terms of SI; financial experts in particular.

JEL Classification: D14, D91, G41, G51, G53, Q50
Keywords: ESG, Sustainable Finance, Behavioral Finance, Sustainable Investment Demand, Experiment

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1 Introduction

In 2015, the EU member states, among other countries, have signed the Paris Climate Agreement and have committed to limiting global warming to 1.5 degrees compared to pre-industrial levels. The idea to reach this objective was to achieve a green transition through capital markets, one part of the European Green Deal (von der Leyen, 2019). This endeavor involves large investments which cannot be solely raised by public agents, hence, private funds are necessary as well. For this to be successful, (i) retail investors need to have a demand for sustainable financial products and (ii) experts need to correctly perceive their clients' sustainability preferences and offer appropriate products. Yet, given the current state of the literature private sustainable investment decisions are not fully understood.

In this paper, we contribute to that by offering a novel measurement tool of sustainable investment (SI) demand, assessing relevant predictors of it on an aggregate and a more parsimonious level by identifying distinct behavioral types and examining experts' perceptions of retail investors in terms of sustainability. To do so, we conduct a large online experiment (N = 1,219) with samples representative of the German, French and Spanish population in combination with a follow-up survey (N = 479) of financial professionals, experts from regulatory institutions such as ministries, NGOs or consumer protection and the general population of Germany. We elicit SI demand in an adapted, incentive-compatible and consequential version of Andreoni and Sprenger (2012)'s convex time budgets. For this, we exploit the twin bond concept from the German Federal Bank which entails a German government bond with an equal green twin. In line with Andreoni and Sprenger (2012), we vary the return of the green bond, while keeping the conventional bond‘s return constant. This enabled us to map subjects‘ demand for a sustainable financial product dependent on its return and to receive estimates of SI demand in cases were these products over- and underperform conventional assets. From this measure, we can create SI demand curves and by applying a clustering approach determine distinct investor types of SI. We disentangle demand for sustainable investments from the preference to create a positive impact against climate change by developing a second experimental measure. The approach is inspired by the findings of impact insensitivity by Heeb et al. (2023) and provides supporting evidence of it by holding everything constant between two incentive compatible and consequential carbon offsetting tasks, except the impact that the decision creates against climate change. Additionally, in our main study, we elicit economic preferences (like risk, time, social and policy preferences), personal factors such as beliefs about social norms or other social dynamics, literacy and demographics via survey items. By this, we obtain a rich dataset which we employ to describe our SI demand types. We complement our main analysis with our follow-up survey on

expert expectations of SI demand, retail investors' willingness to offset carbon, their willingness to pay (WTP) for sustainability information and perceptions about literacy.

Several findings emerge from our study. First of all, individuals in Germany, France and Spain express ample demand for sustainable financial products, on average, even when their returns are low. Despite a return of 1% for the green asset compared to 5% return of the conventional product, subjects still invest about 40% of their portfolio sustainably. Aggregate SI demand over all return scenarios is at about 50%, although we document substantial heterogeneity. Taking advantage of that, our clustering approach reveals four distinct types of sustainable investors. The largest group reacts insensitively to changes in the return of the green asset and always invests about 50% of their endowment sustainably; we call those investors the "indecisive". The second largest group (type 1) invests a median of around 25% of their budget sustainably across all return scenarios. As this type also includes subjects who do not invest sustainably regardless of the return, we refer to them as "skeptics". The third largest group exhibits a demand pattern that meets the traditional rational assumption. This type of demand reacts sensitively to changes in the return of the sustainable product and adjusts the proportion invested sustainably accordingly. We therefore call them the "maximizers", as they try to maximize their potential payout for each return scenario. The smallest of the four groups comprises those participants who almost always invest all their endowment in the green bond. Accordingly, we refer to this group as "advocates". Secondly, we provide evidence that the willingness to offset a part of subjects' carbon emissions, perceptions about social norms and financial literacy emerge as relevant predictors of SI demand, not only on the aggregate but also characteristically for our investor types. Finally, we document that experts and the general public overestimate the sensitivity of how retail investors react to return changes in sustainably assets, financial experts in particular. Also, individuals in our follow-up survey overestimate retail investors' impact sensitivity when assessing how much investors would compensate in CO_2 when the impact of the offsets is either high or low. Lastly, financial experts as well as experts from regulatory positions such as ministries, NGOs or consumer protection and members of the general public overestimate the competence of retail investors with regard to finance in general, environmental issues and sustainable financial products. And, our experts sample would expect women and Germans to invest more sustainably, although we do not find neither gender nor country differences in our main study.

Our primary contribution to the literature is with respect to studying the reasons for why individuals invest sustainably. One of the motives discussed in the literature is that individuals hold sustainable assets because they expect higher future returns from them. However, evidence

of outperformance is rather mixed (Avramov et al., 2025; Barber et al., 2021; Hartzmark & Sussman, 2019; Hong & Kacperczyk, 2009; Pástor et al., 2021; Pedersen et al., 2021). Still, it might be the case that investors anyhow believe in outperformance of sustainable investments (Hartzmark & Sussman, 2019). However, studies by Giglio et al. (2025), Heeb et al. (2023), and Riedl and Smeets (2017) show that on average this is not applicable. Thus, a lot of studies have investigated whether non-financial motives could play a role. Seminally, Riedl and Smeets (2017) demonstrate that social preferences can drive sustainable investments. Hartzmark and Sussman (2019) confirm this and suggest that it is these preferences that are responsible for the substantial, market-wide fund flows in sustainable assets. Also, Barber et al. (2021), Bauer et al. (2025), and Heeb et al. (2023) document ample WTP from investors towards sustainable assets. Whereas Heeb et al. (2023) indicate that this WTP does not entirely stem from purely altruistic motives but rather implies that investors seem to be warm glow optimizers. Bauer et al. (2025) also show that participants exhibit a WTP for sustainability, however, individuals seem to be insensitive to ESG intensity. Further, they indicate substantial variation in sustainability preferences. We add to Bauer et al. (2025) and Heeb et al. (2023) by also providing evidence on scope insensitivity. While we identify that CO_2 compensation as such is a relevant predictor of SI demand, the amount of carbon that can be offset per Euro does not seem to play a significant role. Moreover, we demonstrate that financial literacy has a correlational influence on sustainable investing and there contribute to Anderson and Robinson (2022). Further, we reveal that social dynamics such as beliefs about social norms of SI have a fair impact on sustainable investment allocations. Thereby, we make way for farther studies eximining the causal influence of social norms on SI as in Balbaa et al. (2025) and why social norms drive SI (Voigt, 2025).

2 Experimental Design

To provide a broad overview of the determinants of sustainable investment demand in the aggregate and on a more parsimonious level, we need an indication of peoples' individual demand for SI. For this purpose, we designed a novel behavioral measure which serves this purpose. Additionally, to disentangle SI demand from the will to act against climate change, we created an additional behavioral measure which elicits so-called impact preferences. Eventually, we evoke further explanatory variables of SI demand in survey questions, as well as an information treatment to examine the effect of sustainability information. This section outlines the experiment and how the behavioral measures are constructed. Figure 1 provides an overview of the experimental structure. Detailed instructions and measurements of all variables can be found in

Appendix X.[1]

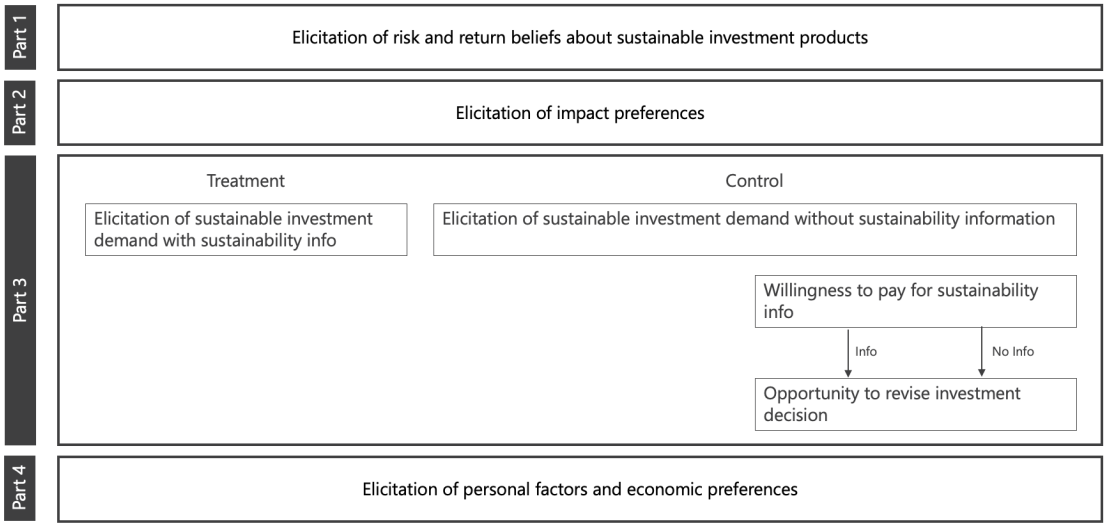

Figure 1: Experimental Design

Notes: The above figure depicts the design of the online experiment. It consists of four stages, while in part three the main outcome variable of SI demand is elicited. Part one contains a small pre-treatment survey on risk and return beliefs and part two concerns the elicitation of impact preferences via the second novel behavioral measure. Part 4 involves a large survey on various economic preferences, personal factors and demographics.

Sustainable Investment Demand: Regarding sustainable investment demand, our elicitation method is inspired by Andreoni and Sprenger (2012)'s convex time budgets and works as follows. Participants are endowed with 100 Euro and face five slider decisions all appearing on the same page, which involve splitting the endowment between two governmental bonds as investment. One bond contains a green component and is classified as a green bond, as its funds benefit sustainable projects, while the other bond is a conventional bond. However, for each of the five investment decisions the return, that the green bond promises, varies which can be seen in Figure 2 below.

[1] All details on the experiment, sample and analyses were pre-registered under osf.io/h2jms.

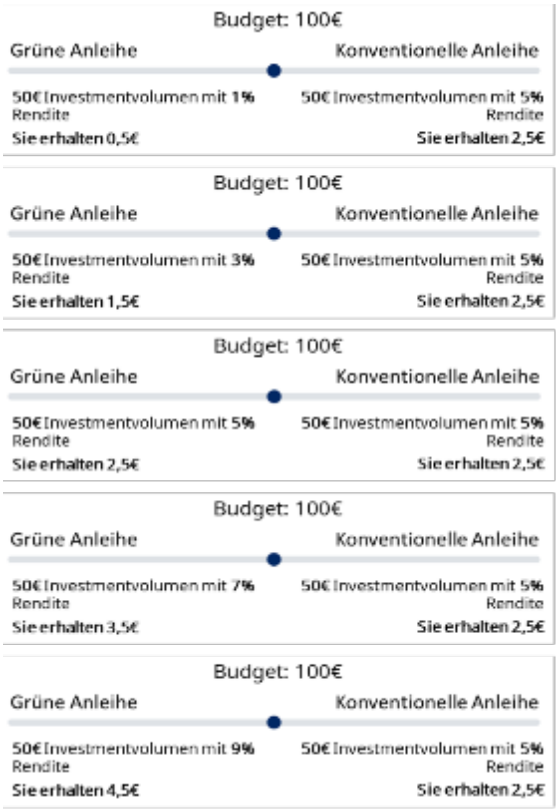

Figure 2: Measurement of Sustainable Investment Demand

Notes: The above figure depicts or measure of sustainable investment demand in the online experiment. In five slider decisions, subjects allocate their endowment of 100 Euro between a green and a conventional government bond. We can map participants demand for sustainable investments dependent on the return of the sustainable product. As indicated, the return for the conventional bond remains at 5%, while the return for the green bond varies between 1% and 9%.

While the return for the conventional bond remains at 5%, the green bond's return takes values of 1%, 3%, 5%, 7% and 9%. This allows us to draw subject's individual demand curves of SI dependent on the return.

Information Treatment, WTP and Revision: Participants are randomly allocated in a treatment and a control group. The treatment group is provided with detailed and transparent information about the projects that will be financed through the funds of the supplied green government bond. The control does not receive this kind of information. After the investment decision one half of the control group gets the opportunity to still receive this kind of information by paying for it. For this, participants are equipped with an additional 2 Euros. The mechanism for this works as follows. We elicit subjects willingness to pay (WTP) for the information by practically letting them state a number between 0 and 200 Cents using a slider. Then, a random number from the interval [1, 200] is drawn and evaluated whether the subject's stated WTP is smaller or larger than this random number. If it is larger or equal to the random number, the subject receives the sustainability information; if it is smaller, the participant does not get

the sustainability information of the green government bond. In line with a typical Becker-DeGroot-Marschak mechanism (BDM), this leads us to end up with two groups where one part receives the information, and the other part does not (Becker et al., 1964). Nevertheless, both parts (informed and uninformed) then receive the possibility to revise their previous investment decision. For this, they are provided with the exact same screen as in Figure 2 with the sliders in position of their previous investment allocation. Participants are informed that they now have the possibility to make changes to their decision from before. As we split the control group in two halves, we oversample this group beforehand such that we still ensure sufficient statistical power in both halves of the control group.

Impact Preferences: In order to elicit whether individuals have a preference for making an impact against climate change, we give them the opportunity to offset a part of their CO2 emissions in the form of a slider decision. For this purpose, they are provided with an endowment and can decide how much they are willing to donate to carbonkiller.org.[2] Subjects are presented with two impact certificates on the same page, a low impact certificate which offsets a maximum of 10 kg of CO2 and a high impact certificate which offsets maximum 100 kg of CO2.[3] Principally, subjects engage in two slider decisions in which they allocate a share of their endowment to the certificates independently of each other, i.e. they have the same endowment in both decisions and decide for each certificate how much they are willing to give to Carbonkiller and how much they want to keep for themselves. For this, we equip them with 10 Euros. Eventually, participants engage in two separate dictator games with Carbonkiller as the recipient in both games. Figure 3 illustrates both slider decisions.

[2]This charity buys carbon credits from the EU ETS and destroys them afterwards. The idea behind this action is that less credits are available on the carbon market which drives up their prices. By this, firms are forced to rethink their strategies to emit less carbon in the first place. Such a procedure does not simply compensate CO2 emissions that are already present in the atmosphere but rather prevents agents to further emit them. Thus, Carbonkiller's plan offers a greater impact against climate change than for example reforestation projects, as they have been criticized for lacking additionality in the past (Cames et al., 2016).

[3]To make this figure more relatable, we will express it as an equivalent of everyday activities like kilometers travelled by car or train or meat production, as individuals have been shown to have an imperfect understanding of what a specific amount of carbon translates into (Rodemeier, 2022).

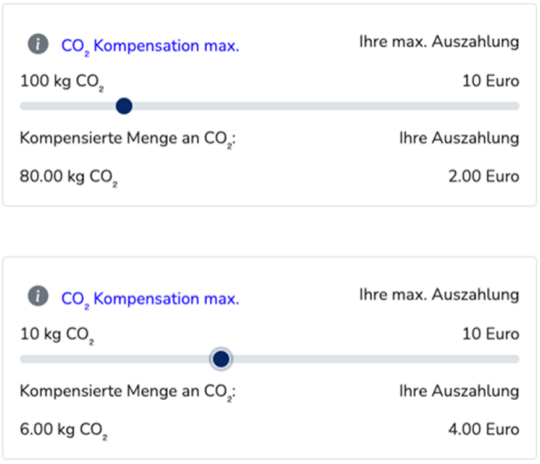

Figure 3: Measurement of Impact Preferences

Notes: The above figure depicts or measure of impact preferences. In two slider decisions with varying "prices" for CO2. In the "low impact" decision, the maximum CO2 amount that can be compensated is 10kg; in the "high impact" decision 100kg can be compensated. Both sliders appear on the same page in the experiment, but in random order.

Subsequent to the offsetting decisions, subjects answer some last questions relating to the previous tasks. To get an idea of their beliefs about the real costs of CO2, we ask them to give an estimate about how much a ton of carbon costs at the EU ETS. Regarding their belief about the effectiveness of the work of Carbonkiller, we ask them to indicate the extent to which they think that Carbonkiller can actually make an impact against climate change. Further, to lessen concerns that subjects keep the endowment to themselves in order to give it to another charity, we ask them how they are going to spend the money allocated to themselves. Additionally, to be further able to understand the donation decisions made towards Carbonkiller, we ask them questions regarding their trust in climate science which have been applied by Andre et al. (2024) to identify climate change deniers.

Risk and Return Beliefs: One reason that can explain demand of sustainable investment products is financial motives such as risk and return beliefs about said products (Hartzmark & Sussman, 2019). Giglio et al. (2025), Heeb et al. (2023), and Riedl and Smeets (2017) show that beliefs about outperformance of sustainable investments is on average not applicable. However, these studies examine specific samples of experienced investors. Especially, Giglio et al. (2025) survey clients from Vanguard, one of the largest asset managers in the US, who are predominantly male, wealthy and older. Heeb et al. (2023) also investigate various specific samples of sophisticated investors, including dedicated impact investors. Thus, although previous research suggests that investors do not believe in outperformance of sustainable investments, the general population might have different expectations. Hence, we exploit the representativeness of our

sample and elicit risk and return beliefs about sustainable financial products in comparison to conventional ones in accordance with Riedl and Smeets (2017) and Giglio et al. (2021, 2025). To receive unbiased estimates of risk and return beliefs about sustainable investments, we pose these questions prior to the investment decision in the experiment. Although we apply bonds, either the information treatment or the investment decision might alter subjects' beliefs unexpectedly. Therefore, we decided not to ask for posterior beliefs.

Economic Preferences: Riedl and Smeets (2017) show that social preferences can explain why people hold socially responsible funds funds and Andreoni (1990) stresses the need to distinguish between social preferences, as the motives for prosocial behavior might differ. Therefore, we evoke not only altruism, a preference for the well-being of others, but also warm glow, receiving a good feeling from giving. Riedl and Smeets (2017) also show that risk preferences can significantly, albeit marginally, influence peoples' decisions to make socially responsible investments. Thus, in this experiment also risk preferences are controlled for. Giglio et al. (2025) reveal that one motive for holding green investments is to be insured financially if climate risks materialize. This implies that these kinds of individuals value the future much and hence it suggests that time preferences could be positively linked to sustainable investment demand. We also account for an individual's preference for policy interventions, as political orientation has been shown to impact sustainable behaviors (Costa & Kahn, 2013; Halbheer et al., 2006; Thalmann, 2004). Survey items on altriusm, risk and time preferences are apprehended from the Global Preference Survey Module (Falk et al., 2018), while our item for warm glow stems from a study by Gutsche et al. (2023). Our policy preference question is inspired by the World Values Survey (Haerpfer et al., 2020).

Literacy: When analyzing financial decisions, it is also crucial to control for participants' financial literacy for the purpose of evaluating their proficiency in basic financial concepts. Hence, we also evoke measures of actual financial literacy, perceived financial literacy and overconfidence in accordance with Anderson et al. (2017), Hastings et al. (2013), Lusardi and Mitchell (2011), Moore and Healy (2008), and Van Rooij et al. (2011). After answering the financial literacy quiz, participants are asked to state the probability that they correctly identified a particular number of questions, from which the replies show the full range of the participants' beliefs. Anderson and Robinson (2022) further demonstrate that not only financial but also environmental literacy can be a relevant predictor of sustainable investment. Filippini et al. (2024) add to this and indicate that also sustainable finance literacy should be considered as a covariate when analyzing sustainable investment demand. Therefore, we also pose questions in line with the

aforementioned papers to measure these variables.

Social Dynamics: Various previous studies have demonstrated that social norms can influence financial behaviors (e.g. Beshears et al., 2015; Brown et al., 2008; Hong et al., 2004) and also spur pro-environmental behaviors (e.g. Allcott, 2011; Andre et al., 2024; Bhanot, 2021; Costa & Kahn, 2013). So, we ask subjects about their perceptions of social norms with regards to sustainable investing. Relating to this, not only social norms but also social perceptions may affect individuals' financial decisions (Henkel & Zimpelmann, 2022). Hence, we also include measures that reveal which character traits people associate with investors holding sustainable vs. conventional investments.

Demographics: Eventually, we examine whether certain demographics can predict sustainable investment demand, like age, gender, country, birthplace, religion, household income, occupation, political orientation, education or urbanization.

Incentivization: The measurement of SI demand is incentivized such that one of the five sliders is randomly chosen and subjects receive the respective returns indicated for the two bonds. Additionally, for every 10th participant, we realize the respective investment decision on the real stock market by investing in the two bonds and hold those until maturity. Our measure of impact preferences is incentivzed in a similar way. One of the two sliders is randomly chosen and the respective amount the subject keeps for herself is paid out. The funds she relinquished to Carbonkiller are transferred by us. Further, we do not pay out both of the novel measures with certainty. Instead, we randomly determine one task that participants receive as a payoff. The reason for this kind of incentivization is problems of moral licensing. If subjects engage in the elicitation of impact preferences task and then afterwards make their investment decision between the two government bonds, they might have a greater incentive to choose the conventional bond and justify this with their offsetting decision they executed previously in the experiment. By doing so, they practically rebuild the green bond and might argue that buying a green bond would not be necessary anymore. To diminish these kinds of concerns, we opted for the aforementioned randomization. Of course, this does not allow us to fully erase these problems but at least lessen their impact on our results. WTP for sustainability information is incentivized and made consequential by reducing the participant's additional 2 Euros by the random amount determined by the BDM; the remains participants are allowed to keep.

Sample: Our final dataset contains answers from 1,219 people representing one third each of the German, French and Spanish population in terms of age and gender. The survey was administered in and the sample recruited by *Qualtrics*. The median completion time was 18 minutes. One half of the whole sample is female and all age groups above the age of 18 are involved, whereas most subjects fall into the age group between 45 and 64 years. A little more than half of the sample is fully employed and allocates to Christianity in terms of confession. Also more than half of subjects prefers either socially oriented or liberally oriented politics. A little less than half of the sample expresses a high educational level and about 75% of respondents live in cities with more than 500,000 inhabitants. Just about 12% report to live in more metropolitan areas with more than a million inhabitants. Most participants report to have a net household income of between 2,000 and 2,500 Euros.

3 Results

This section presents the results of the study. First of all, we provide evidence on the SI demand of the average investor and which variables can predict average SI demand. Secondly, we investigate parsimonious investor types by applying a clustering approach which identifies four distinct types of SI investors. Lastly, we explore finance and regulatory experts' and the general populations' perceptions of retail investors in terms of sustainable investing.

3.1 SI Demand of the Average Investor

To quantify SI demand, we make use of our novel measure eliciting the sustainably invested share across five return scenarios of a green government bond. Appendix Figure A.1 averages SI demand over all five scenarios and displays the distribution of aggregated SI Demand. Most subjects invest 50% sustainably across all return states with 52.04% being the mean demand. We document considerable heterogeneity ($SD = 24.22\%$) in aggregate SI Demand with bunching at 50%, 60%, 100% and 0%. This is reinforced by Figure 4 which plots the average SI demand curve dependent on the return with individual scatter plots at each return scenario.

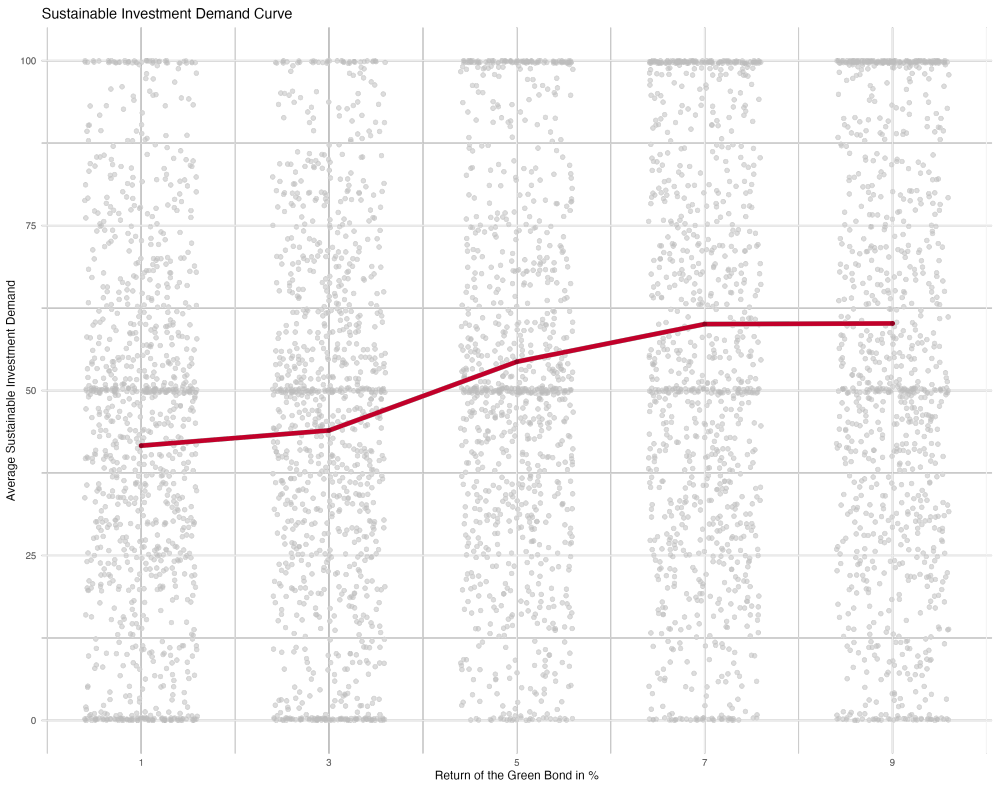

Figure 4: Average Sustainable Investment Demand Curve with Scattering
Notes: The above figure depicts the average SI demand curve by computing the mean sustainably invested share at each return scenario. Additionally, at each return scenario, individual demand is displayed in scatter plots.

Figure 4 displays how average SI demand varies with the return of the green bond and shows that it does not follow the traditional, profit maximizing pattern. Even at 1% return of the green bond, subjects invest a considerable amount sustainably. Nevertheless, we cannot rule out at this point whether a part of the sample still follows the neoclassical benchmark.
We explore various predictors of SI demand. For this purpose, we regress SI demand averaged over all five return scenario and SI demand in each scenario on (i) our impact preferences measure, (ii) economic preferences (such as risk and time preferences, altruism, warm glow and policy preferences), (iii) social dynamics like social norm beliefs, (iv) risk and return beliefs of SI, (v) financial, environmental and sustainable finance literacy and demographics. Table 1 reports the results.

As can be seen, CO_2 compensation, independent of the impact that can be reached, is a strong predictor of SI demand. Not only on the aggregate but in every return scenario, both variables of impact preferences seem to play a significant role. The coefficients are of moderate size. A one standard deviation increase in CO_2 compensation yields a 3 percentage point higher demand in SI, independent of the impact of the CO_2 compensation being high or low. Given the baseline demand of about 48%, this corresponds to an increase in SI demand of about 6%.

Table 1: Predictors of SI Demand

	SI Demand					
	Average Demand	1% Return	3% Return	5% Return	7% Return	9% Return
	(1)	(2)	(3)	(4)	(5)	(6)
Low Impact	2.902***	3.335***	3.387***	2.458***	2.378**	2.952***
	(0.689)	(0.944)	(0.961)	(0.916)	(0.941)	(0.939)
High Impact	3.088***	3.229***	2.910***	2.201**	3.437***	3.665***
	(0.695)	(0.952)	(0.969)	(0.923)	(0.949)	(0.947)
Risk	−1.733**	−1.100	−0.262	−3.406***	−1.874*	−2.025**
	(0.709)	(0.971)	(0.989)	(0.942)	(0.968)	(0.967)
Time	1.582**	1.505	1.494	2.358**	0.843	1.711*
	(0.750)	(1.027)	(1.046)	(0.996)	(1.024)	(1.022)
Altruism	0.753	0.650	0.675	0.147	1.134	1.160
	(0.742)	(1.016)	(1.035)	(0.986)	(1.013)	(1.012)
Warm Glow	2.185***	3.034***	1.885	3.729***	1.986*	0.291
	(0.835)	(1.143)	(1.164)	(1.109)	(1.140)	(1.138)
Liberal Policy	−1.825***	−1.041	−1.392	−2.789***	−2.052**	−1.850**
	(0.666)	(0.911)	(0.928)	(0.884)	(0.909)	(0.907)
Behavior Belief	−3.165***	−1.345	−2.253**	−4.150***	−4.029***	−4.047***
	(0.748)	(1.024)	(1.043)	(0.994)	(1.021)	(1.020)
Norm Belief	1.769**	−0.417	1.096	1.899*	2.868***	3.398***
	(0.790)	(1.081)	(1.101)	(1.049)	(1.078)	(1.077)
Socially Appr. Inv.	2.342***	2.628**	2.943***	2.591**	2.070**	1.481
	(0.758)	(1.037)	(1.056)	(1.006)	(1.034)	(1.032)
Stated SI	1.803	2.010	5.075**	1.562	−0.190	0.556
	(1.495)	(2.047)	(2.085)	(1.986)	(2.041)	(2.038)
Personal Norm	2.789*	1.485	2.359	1.635	3.663	4.801**
	(1.683)	(2.304)	(2.346)	(2.235)	(2.297)	(2.293)
SI More Risky	−1.299	1.039	0.541	−2.989	−2.599	−2.487
	(1.411)	(1.931)	(1.967)	(1.874)	(1.926)	(1.922)
SI Less Risky	−1.623	−3.291	−0.320	−2.404	−1.855	−0.244
	(2.052)	(2.810)	(2.861)	(2.726)	(2.802)	(2.797)
Overperformance	−0.796	−0.565	2.137	−0.517	−3.353	−1.684
	(1.607)	(2.200)	(2.240)	(2.134)	(2.194)	(2.190)
Underperformance	−2.402	−3.953*	0.300	−1.836	−4.036*	−2.487
	(1.625)	(2.225)	(2.265)	(2.158)	(2.218)	(2.214)
Financial Literacy	1.070	−2.475**	−1.644	2.270**	3.972***	3.229***
	(0.726)	(0.994)	(1.012)	(0.965)	(0.991)	(0.990)
Perceived FL	0.892	−1.655*	−1.808*	2.977***	1.746*	3.198***
	(0.679)	(0.929)	(0.946)	(0.902)	(0.927)	(0.925)
Environmental Literacy	−0.051	−1.447	−0.945	−0.270	1.126	1.281
	(0.656)	(0.898)	(0.915)	(0.872)	(0.896)	(0.894)
Sustainable Finance Literacy	−0.774	−0.416	−0.389	−0.601	−0.892	−1.572*
	(0.661)	(0.905)	(0.922)	(0.878)	(0.903)	(0.901)
Impact Belief	−0.066	0.091	0.545	0.486	−0.833	−0.621
	(0.741)	(1.015)	(1.033)	(0.985)	(1.012)	(1.010)
CC Skeptic	−1.353*	−1.065	−0.984	−3.000***	−0.580	−1.137
	(0.708)	(0.970)	(0.987)	(0.941)	(0.967)	(0.965)
Germany	−1.352	0.191	0.241	−2.667	−3.145	−1.379
	(1.710)	(2.341)	(2.383)	(2.271)	(2.334)	(2.330)
France	−1.039	−1.577	−0.475	−1.265	−1.683	−0.194
	(1.706)	(2.336)	(2.379)	(2.267)	(2.329)	(2.326)
Age	−0.288	−1.033	0.239	−0.406	−0.458	0.216
	(0.732)	(1.002)	(1.020)	(0.972)	(0.999)	(0.997)
Female	−1.473	−1.217	−1.256	−1.149	−1.553	−2.189
	(1.309)	(1.792)	(1.824)	(1.738)	(1.787)	(1.784)
Christianity	−1.025	2.528	0.753	−2.181	−3.179*	−3.044*
	(1.272)	(1.741)	(1.773)	(1.689)	(1.736)	(1.733)
Full-Time	1.346	3.671*	1.988	4.079**	−2.164	−0.847
	(1.419)	(1.943)	(1.978)	(1.885)	(1.937)	(1.934)
Conservative	−4.463**	−1.982	−2.053	−5.903**	−4.182	−8.195***
	(2.228)	(3.051)	(3.106)	(2.960)	(3.042)	(3.037)
Liberal	−1.474	−0.121	2.464	−2.806	−2.345	−4.561
	(2.125)	(2.910)	(2.963)	(2.823)	(2.901)	(2.896)
Social	1.550	4.504*	4.587*	0.762	−0.044	−2.060
	(1.924)	(2.634)	(2.682)	(2.556)	(2.627)	(2.622)
Ecological	0.463	5.425*	4.984	−1.219	−3.508	−3.369
	(2.406)	(3.294)	(3.354)	(3.195)	(3.284)	(3.278)
College	0.530	0.351	0.447	−1.436	1.310	1.981
	(1.351)	(1.849)	(1.883)	(1.794)	(1.844)	(1.841)
Rural	0.773	−0.609	−0.386	2.609	1.582	0.671
	(1.288)	(1.763)	(1.795)	(1.711)	(1.758)	(1.755)
Lower Income Quartile	0.948	0.639	1.709	2.156	0.875	−0.639
	(1.608)	(2.202)	(2.242)	(2.136)	(2.195)	(2.191)
Upper Income Quartile	−0.147	−2.342	−1.152	0.863	0.580	1.315
	(1.667)	(2.283)	(2.324)	(2.215)	(2.276)	(2.272)
Constant	47.661***	37.547***	36.864***	50.641***	58.360***	54.892***
	(3.051)	(4.177)	(4.253)	(4.053)	(4.165)	(4.158)
Data Quality Controls	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	1,219	1,219	1,219	1,219	1,219	1,219
R^2	0.268	0.117	0.107	0.258	0.270	0.303
Adjusted R^2	0.243	0.088	0.077	0.234	0.246	0.280

Notes: This table shows OLS regression estimates. The dependent variable in Column 1 is the aggregate SI demand of an individual computed as the average of SI Demand in all five return scenarios. Columns 2-6 show SI Demand in each return scenario from a 1% return to a 9% return compared to a fixed return of 5% of the conventional bond. Impact Preferences, economic preferences, social norm beliefs, literacy variables, impact beliefs, climate change skepticism and age are standardized. Whether an individual already holds SI ("Stated SI") or whether an individual thinks that one should hold SI ("Personal Norm") are binary variables. Also, risk and return beliefs, country variables, female, christianity, full-time, political orientation, college, rural and income variables are binary variables. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Wald tests on the coefficients of both CO_2 compensation variables demonstrate no statistic significance (Col. 1: $p = 0.8739$, Col. 2: $p = 0.9475$, Col. 3: $p = 0.7711$, Col. 4: $p = 0.8691$, Col. 5: $p = 0.5091$, Col. 6: $p = 0.6562$; Wald-Test). This implies that individuals invest more sustainably if they care about CO_2 compensation, but the magnitude of the impact they create by compensating plays a minor role. In fact, this is in line with the findings of scope insensitivity from Heeb et al. (2023). Indeed, in our sample we find evidence of scope insensitivity as well. A Kolmogorov-Smirnov-Test reveals that the distributions of both impact preferences variables are not statistically different from each other. In line with this, Heeb et al. (2023) suggest that SI investors can be rather referred to as warm glow optimizers. Also in our sample, warm glow seems to be a significant predictor of SI demand, especially when the return of SI is much lower or equal to the conventional product. Interestingly, our measure of altruism does not seem to be significantly related to SI demand, neither on the aggregate nor in any return scenario. Other economic preferences, such as risk, time or policy preferences do seem to predict SI demand. The more willing to take risk an individual is, the less sustainably they invest, especially when returns of SI are equal or larger to the conventional bond. As for time preferences, the more patient an individual is, the more sustainably they invest. Nevertheless, this relationship only holds if returns of SI are equal or much higher than those of the conventional product. People who state that, in terms of climate change, governments should provide more freedom to individuals and let them do as they wish invest less sustainably. This is particularly true if the return of the green bond is equal or higher than that of its conventional twin.

Beliefs about social norms are also important predictors of SI demand. Surprisingly, the more people one expects to already invest sustainably the lower one's own sustainable investment is. Based on Andre et al. (2024), we would presume a positive correlation between beliefs about other's sustainable behavior and one's own sustainable actions. However, for sustainable investing, this does not seem to be the case. Nevertheless, in line with Andre et al. (2024), the more people one assumes to say that one should hold SI, the higher one's own SI share is. This direction of the correlation also holds for peoples' beliefs about the socially appropriate share that should be invested sustainably. Another notable predictor of SI demand is financial literacy. In fact, the relationship between financial literacy and subjects' SI allocation is quite alluring. On the aggregate, neither financial literacy nor perceived financial literacy seem to play a role. This, however, is an artifact of the change in the correlational direction depending on the return of SI. If the return of the sustainable bond is lower than that of the conventional one, highly financially literate subjects invest less sustainably. Once the return of SI is equal or higher than that of the conventional twin, highly financially literate subjects invest more sustainably. This

suggests that financial literacy is a predictor of the traditional neoclassical benchmark in terms of SI demand. Further, demographics such as age, gender, country, education or income seem to be significantly related to SI demand. Nevertheless, it should be noted that people with a conservative political orientation invest less sustainably. Finally, Appendix Table A.1 exhibits no significant effect of the information treatment which implies that standardized sustainability information about the green product did not have an influence on the SI demand of subjects.

3.2 Parsimonious Investor Types

The previous section illustrated the SI demand and its predictors of the average investor. While Figure 4 indicates that people, on average at least, do not follow the neoclassical benchmark, the correlational evidence of financial literacy along with the substantial heterogeneity displayed in Figure 4, imply that there might be a part of the sample following this typical model. This section hence explores parsimonious investor types of sustainable investment demand [4]. To do so, we apply hierarchical clustering which is a common unsupervised machine learning technique which can locate clusters of similar demand curves while ensuring that the clusters themselves differ. The underlying algorithm uses an agglomerative or bottom up approach which starts with each individual demand curve on its own and combines various demand curves into clusters. The objective of this approach is to maximize within-cluster similarity and between-cluster difference. As optimization criterion, we employ Euclidean distances, as our outcome variable of SI demand is continuous, paired with Ward linkages (Murtagh & Contreras, 2012). To determine the optimal number of clusters, we make use of the silhouette score (Rousseeuw, 1987) which provides a more objective and endogenous measure than manually setting the number of clusters and is a popular method to determine the optimal number of clusters (Begenau & Siriwardane, 2024). Figure 5 presents the result of the clustering and depicts four distinct and stable investor types [5].

[4] The analyses in this section are purely exploratory and were not pre-registered.

[5] To determine cluster stability, we apply bootstrapping to resample the data for 100 times. Then Jaccard similarities of the original clusters to the most similar clusters in the resampled data are computed. The mean of these similarities serves as our measure of cluster stability. For all four clusters, this value is above 0.75 which indicates high stability (Hennig & Imports, 2015).

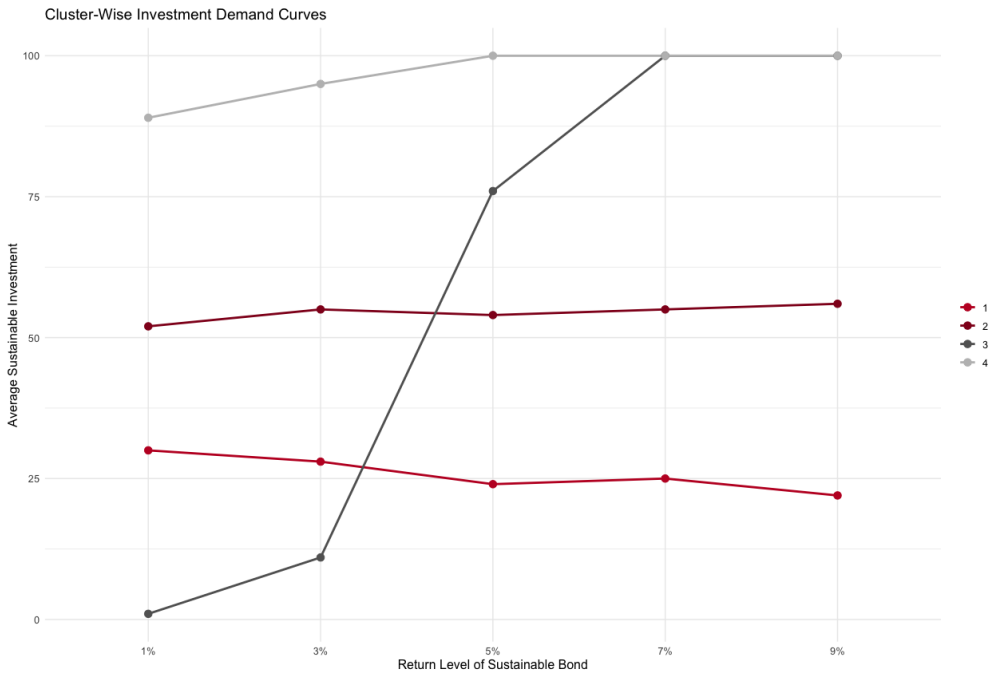

Figure 5: SI Demand Types

Notes: The above figure depicts the result of the hierarchical clustering yielding four investor types. For each type, we plot the respective demand curve dependent on the return scenario.

Figure 5 represents all four types by their median demand curve dependent on the return of the green bond. The largest group is "Type 2" ($N = 427$), which invests around 50% in the green bond regardless of the yield. We refer to this group as the "indecisive", as they seem to care about sustainability when investing but choose a rather naive strategy by allocating their funds according to $1/n$. The second largest group (type 1, $N = 378$) invests a median of around 25% of their budget sustainably across all return scenarios. As this type also includes subjects who do not invest sustainably regardless of the return, we refer to this type as "skeptics". The third largest group ($N = 256$) exhibits a demand pattern that meets the traditional rational assumption. This type of demand reacts sensitively to changes in the return of the sustainable product and adjusts the proportion invested sustainably accordingly. We therefore refer to this type of demand as "maximizers", as they try to maximize their potential payout for each return scenario. The smallest of the four groups ($N = 158$) comprises those participants who almost always invest all their endowment in the green bond. Accordingly, we refer to this group as "advocates". Tables 2, 3 and 4 show characteristics of the demand types with pairwise tests.

Skeptics tend to favor conservative policies and are more likely to argue that individuals should be given more freedom to fight climate change. They have had a basic education but are less financially literate than the other types. However, they seem to know more about sustainable financial products, are more impatient and less altruistically motivated.

Table 2: Demand Types by Demographic Subgroups with Chi Squared Tests

Subgroup	N	Skeptics	Indecisive	Maximizers	Advocates	P-Value
by Country						0.054
Germany	407.00	0.32	0.36	0.21	0.10	
France	402.00	0.34	0.32	0.22	0.12	
Spain	410.00	0.26	0.37	0.21	0.16	
by Age						<0.001
18-24 Years	128.00	0.33	0.44	0.18	0.05	
25-34 Years	197.00	0.39	0.41	0.13	0.07	
35-44 Years	219.00	0.31	0.39	0.16	0.14	
45-54 Years	253.00	0.34	0.34	0.21	0.11	
55-64 Years	249.00	0.25	0.30	0.27	0.18	
65-74 Years	141.00	0.21	0.27	0.32	0.20	
75-84 Years	30.00	0.27	0.17	0.43	0.13	
85 Years or older	2.00	1.00	0.00	0.00	0.00	
by Gender						0.560
Male	614.00	0.30	0.35	0.23	0.12	
Female	604.00	0.31	0.35	0.20	0.14	
Non-Binary	1.00	1.00	0.00	0.00	0.00	
by Religion						<0.001
Buddhism	5.00	0.60	0.40	0.00	0.00	
Hinduism	9.00	0.44	0.56	0.00	0.00	
Christianity	646.00	0.31	0.35	0.22	0.12	
Islam	82.00	0.49	0.35	0.09	0.07	
Judism	5.00	0.00	1.00	0.00	0.00	
Atheists	265.00	0.24	0.30	0.29	0.17	
Other	50.00	0.28	0.38	0.18	0.16	
No Answer	157.00	0.30	0.38	0.18	0.13	
by Occupation						<0.001
Full-time	668.00	0.32	0.38	0.18	0.12	
Part-time	144.00	0.39	0.31	0.20	0.10	
Unemployed and seeking	84.00	0.29	0.30	0.27	0.14	
Unemployed	16.00	0.50	0.00	0.31	0.19	
Retired	212.00	0.22	0.29	0.31	0.17	
Student	45.00	0.24	0.49	0.18	0.09	
Unable	27.00	0.30	0.26	0.22	0.22	
Paid Paternal Leave	10.00	0.10	0.60	0.20	0.10	
No Answer	13.00	0.31	0.31	0.23	0.15	
by Politics						<0.001
Conservative	206.00	0.38	0.30	0.24	0.08	
Liberal	246.00	0.35	0.35	0.21	0.09	
Socialist	405.00	0.26	0.39	0.21	0.15	
Ecologist	154.00	0.25	0.32	0.17	0.26	
No Answer	208.00	0.31	0.36	0.24	0.09	
by Education						0.278
Basic Education	61.00	0.44	0.30	0.18	0.08	
Secondary Education	540.00	0.30	0.35	0.20	0.14	
College	591.00	0.29	0.35	0.23	0.12	
No answer	27.00	0.37	0.44	0.11	0.07	
by Urbanisation						0.086
0-1000	101.00	0.35	0.34	0.21	0.11	
1000-10000	243.00	0.30	0.28	0.27	0.16	
10000-100000	365.00	0.30	0.37	0.21	0.13	
100000-500000	238.00	0.29	0.35	0.23	0.13	
500000-1000000	118.00	0.33	0.40	0.21	0.06	
More than 1000000	145.00	0.30	0.40	0.13	0.17	
No answer	9.00	0.56	0.33	0.11	0.00	
by Household Income						0.536
Lower Income Quartile	113.00	0.35	0.39	0.18	0.09	
Middle Income	829.00	0.29	0.36	0.22	0.13	
Upper Income Quartile	233.00	0.32	0.32	0.22	0.14	
	44.00	0.45	0.25	0.20	0.09	

Notes: This table shows summary statistics of demographics of our four SI demand types. Numbers indicate the share of people in each group for each variable. The last column indicates the results from Chi Squared test and implicates whether there are differences between the groups.

Table 3: Demand Types by Economic Preferences with Chi Squared Tests

Variable	N	Skeptics	Indecisive	Maximizers	Advocates	P-Value
Risk Aversion	1219.00	0.45	0.42	0.49	0.39	0.176
Risk Affinity	1219.00	0.40	0.40	0.38	0.43	0.764
Patience	1219.00	0.50	0.56	0.64	0.77	<0.001
Impatience	1219.00	0.32	0.23	0.19	0.09	<0.001
High Altruism	1219.00	0.57	0.63	0.67	0.83	<0.001
Low Altruism	1219.00	0.25	0.16	0.14	0.08	<0.001
High Warm Glow	1219.00	0.60	0.67	0.71	0.92	<0.001
Low Warm Glow	1219.00	0.25	0.18	0.13	0.03	<0.001
Liberal Policy Preferences	1219.00	0.53	0.51	0.40	0.32	<0.001
Paternalistic Policy Preferences	1219.00	0.26	0.28	0.38	0.55	<0.001
Low Impact	1219.00	3.24	4.87	4.14	4.75	<0.001
High Impact	1219.00	3.09	4.73	3.84	4.55	<0.001

Notes: This table shows summary statistics of economic preferences of our four SI demand types. Numbers indicate the share of people in each group for each variable. The last column indicates the results from Chi Squared test and implicates whether there are differences between the groups.

Table 4: Demand Types by Personal Factors with Chi Squared and Kruskal-Wallis Tests

Variable	N	Skeptics	Indecisive	Maximizers	Advocates	P-Value
SI Equally Risky	1219.00	0.51	0.57	0.62	0.59	0.030
SI Less Risky	1219.00	0.38	0.35	0.23	0.30	0.001
SI More Risky	1219.00	0.11	0.09	0.14	0.11	0.163
Overperformance	1219.00	0.26	0.22	0.15	0.22	0.002
Equal Performance	1219.00	0.49	0.59	0.67	0.64	<0.001
Underperformance	1219.00	0.25	0.20	0.18	0.14	0.011
High Financial Literacy	1219.00	0.14	0.20	0.42	0.37	<0.001
Medium Financial Literacy	1219.00	0.54	0.49	0.47	0.56	0.144
Low Financial Literacy	1219.00	0.32	0.32	0.11	0.07	<0.001
High Environmental Literacy	1219.00	0.08	0.10	0.13	0.11	0.224
Medium Environmental Literacy	1219.00	0.54	0.53	0.59	0.66	0.018
Low Environmental Literacy	1219.00	0.38	0.37	0.28	0.23	<0.001
High Sustainable Finance Literacy	1219.00	0.02	0.02	0.00	0.00	0.148
Medium Sustainable Finance Literacy	1219.00	0.63	0.60	0.57	0.55	0.250
Low Sustainable Finance Literacy	1219.00	0.35	0.39	0.43	0.45	0.094
Hold SI	1219.00	0.39	0.30	0.21	0.27	<0.001
Personal Norm	1219.00	0.68	0.74	0.78	0.94	<0.001
Behavior Belief †	1219.00	43.72	39.03	31.88	32.65	<0.001
Norm Belief †	1219.00	49.26	53.05	58.71	66.39	<0.001
Socially Appropriate Investment †	1219.00	49.81	52.34	55.75	72.66	<0.001
SI More Greedy	1219.00	-0.19	-0.51	-1.13	-1.60	<0.001
SI More Gambler	1219.00	-0.15	-0.31	-0.51	-1.01	0.007
SI More Selfish	1219.00	-0.17	-0.48	-1.22	-1.55	<0.001
SI More Generous	1219.00	0.16	0.38	1.07	1.64	<0.001
SI More Prudent	1219.00	-0.06	0.10	-0.04	0.64	0.056
SI More Altruist	1219.00	0.34	0.59	1.10	1.61	<0.001
High Impact Belief CK	1219.00	0.70	0.64	0.56	0.72	0.001
Low Impact Belief CK	1219.00	0.15	0.11	0.27	0.15	<0.001
Strong Climate Change Denier	1219.00	0.04	0.03	0.05	0.02	0.377
Weak Climate Change Denier	1219.00	0.90	0.92	0.89	0.97	0.015

Notes: This table shows summary statistics of personal factors of our four SI demand types. Numbers indicate the share of people in each group for each variable. The last column indicates the results from Chi Squared test and implicates whether there are differences between the groups. † indicates whether a Kruskal-Wallis test instead of a Chi Squared Test was conducted.

The indecisive are characterized in particular by the fact that they spend roughly the same amount of their initial budget on CO_2 offsetting, regardless of the level of impact against climate change that can be achieved. They compensate more than the sceptics and maximizers, and about as much as the advocates. In addition, this kind of demand type shows lower financial literacy and lower knowledge of environmental factors than the other types. This demand curve is mainly exhibited by younger people between the ages of 18 and 34, many of whom are already in full-time employment.

Maximizers tend to be older, i.e. retail investors over 55, and already retired, while at the same time they tend to have a high level of education and financial and environmental literacy. This is in line with their expectations regarding the performance of sustainable financial products, as they expect the same returns from these as from conventional products. They spend less on offsetting CO_2 than the indecisive or advocates. This can be explained by the fact that they are not convinced of their impact on climate change.

The advocates tend to prefer ecologically oriented policies and are more in favor of more political intervention to achieve climate targets. They also believe that we should invest sustainably and assume that other people share this view. They also state that the socially appropriate proportion that should be invested sustainably is around 70%. At the same time, they also associate sustainable investors more with positive characteristics such as generosity or altruism, and regardless of the level of impact against climate change, these subjects are willing to spend more on CO_2 compensation than the sceptics or maximizers. This is also consistent with their belief that such offsets can actually make a difference to climate change. Finally, it should be mentioned that this demand type tends to be patient, altruistic and feels good about sustainable actions.

Demand Types Robustness: Given the substantial heterogeneity observed in the data, we adopted a data-driven clustering approach. To examine the robustness of our final results, we considered using different models in terms of suitability or exclusion restrictions to enhance data quality.

- **Different Models:** Initially, we considered K-means clustering; however, since it is a centroid-based method, it proved unsuitable for capturing the structure of our demand curves. We therefore started with Gaussian Mixture Models (GMM), which produced four clusters. Yet, one of these clusters largely absorbed random noise, although the underlying cluster types remained relatively stable. However, a strong amount of noise in just one demand type could have great impact on our subsequent correlational analysis. To address

these limitations, we implemented a hierarchical clustering approach designed to maximize within-cluster similarity and between-cluster distance. This method also allowed for the optimization of clustering based on cosine similarity, in addition to traditional distance metrics.

- **Exclusion Restrictions:** When restricting the sample to participants who passed our attention check, we identified nine clusters; however, some of these were unstable, and approximately 40% of observations had to be excluded — a common issue in experimental settings (see Enke & Graeber, 2023). When applying additional restrictions based on the number of allowed attempts to pass a comprehension check, we again identified four clusters similar to the original ones, albeit with somewhat reduced stability. Restricting the sample to participants exhibiting strict monotonicity in their demand curve yielded nine clusters, yet again, with some instability across clusters.

- **Different distance metric:** As previously mentioned, hierarchical clustering also allows other distance metrics such as cosine similarity to capture correlations between input factors. To account for this, but to still consider levels when assigning subjects to demand types, we modified the loss function to incorporate a weighted average of Euclidean distance and cosine similarity (with each component weighted at 50%). Nevertheless, when including weighted averages of distance measures and correlations as loss functions, we successfully replicated the initial four-cluster solution, confirming the stability of our main findings.

Summarizing, our hierarchical clustering method with the common distance metric and without any strong exclusion restrictions proved to be the most robust approach to determine distinct and stable demand types, judged by our bootstrapping technique. In Figure 6, we plot demand curves of all four types including the inter quartile rage (IQR) which yields additional insights into within-type heterogeneity.

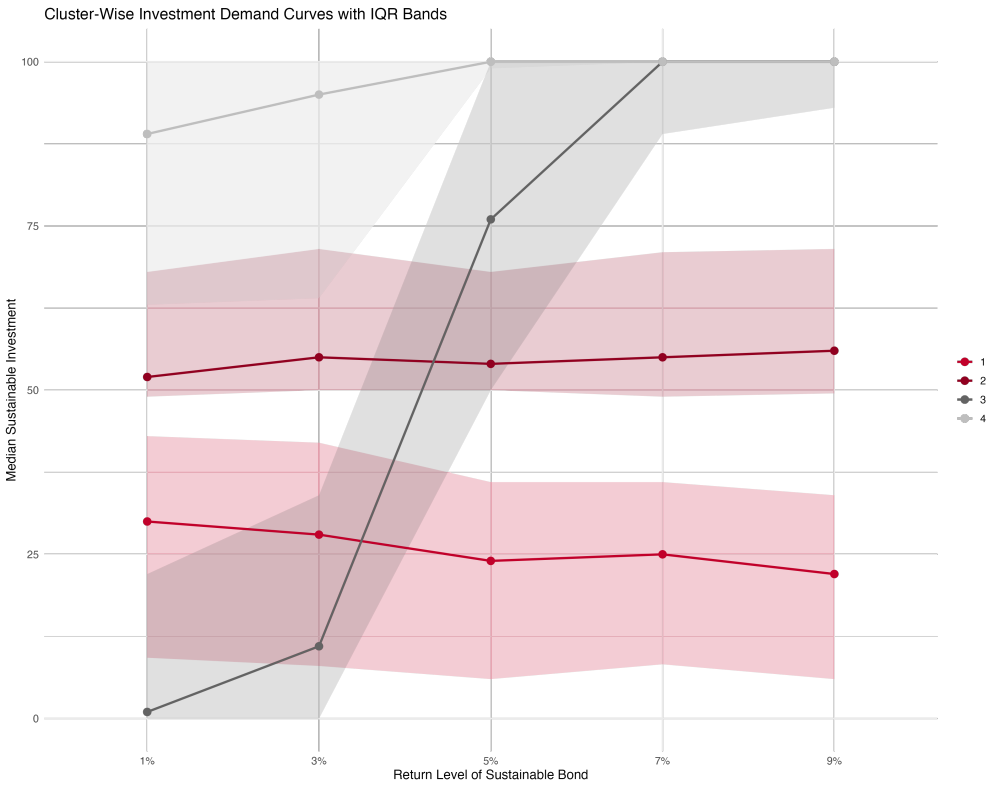

Figure 6: SI Demand Types with IQR bands

Notes: The above figure replicates Figure 5, adding inter quartile range bands as shaded areas to each of the four demand curves.

Figure 6 shows that heterogeneity is still present within the four demand types but equally distributed among the types. Especially, the advocates type seems to also include subjects that sensitively react to the return of SI, similar to the maximizers, but start at a higher initial level of SI demand. This observation is reinforced when plotting means of the demand curve types along with confidence intervals (CI), as displayed in Figure 7.

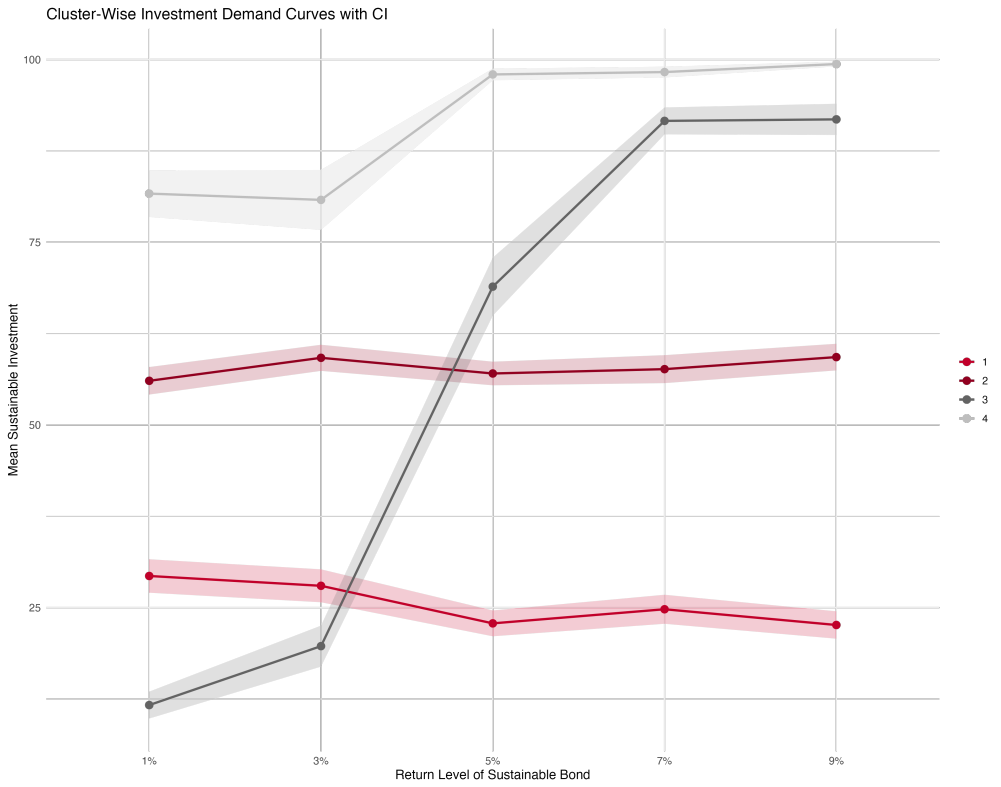

Figure 7: SI Demand Types with 95% confidence intervals

Notes: The above figure replicates Figure 6. Instead of plotting median SI demand on the y-axis, it displays mean SI demand. The shaded areas relate to 95% confidence intervals.

The 95% CIs of the demand curves do not overlap and are quite narrow. Hence, this provides additional evidence that we can distinctly identify four demand types with our hierarchical clustering approach.

3.3 Expert's Perceptions of SI Demand

Such that a green transition can be achieved via capital markets, not only retail investors need to express a demand for sustainable investments but it is also necessary for advisors to accurately assess this demand and offer appropriate products. Hence, in this section we evaluate how experts from financial or regulatory sectors and the general population perceive retail investors in terms of SI [6]. Our survey asks experts and the general public about their perceptions of retail investors (i) SI demand, (ii) their willingness to compensate CO_2, (iii) their willingness to pay (WTP) for sustainability information, (iv) their risk and return beliefs of SI, (v) their financial, environmental and sustainable finance literacy and (vi) whether there are country or gender differences in SI demand.

[6] We define financial experts as people working in the finance sector in a typical core position such as investment banking, wealth management or treasury management. Subjects are assigned to the regulatory experts group if they hold any political function or work in a ministry, at an NGO or in consumer protection. Respondents working in finance corporates in the HR department or administrative functions as well as auditors are screened out before entering our survey. The general population sample is representative in terms of age and gender.

Sample: The final sample encompasses 479 respondents from Germany, where 158 are finance experts, 17 regulatory experts and 304 people from the general public. To recruit the whole sample, we worked with sample provider *Bilendi*. The survey took a median time of about 20 minutes and was programmed in oTree (Chen et al., 2016). Appendix Table A.2 displays summary statistics for each group. Survey instructions can be found in Appendix C.

SI Demand Perceptions: We document in Figure 8 that all groups surveyed underestimate the demand for sustainable financial products with low returns. Financial experts in particular estimate the average demand curve of all retail investors to be roughly the same as that of our third demand type, the maximizers. Regulatory experts and members of the general public estimate the demand for sustainable investments to be lower on average in all return scenarios.

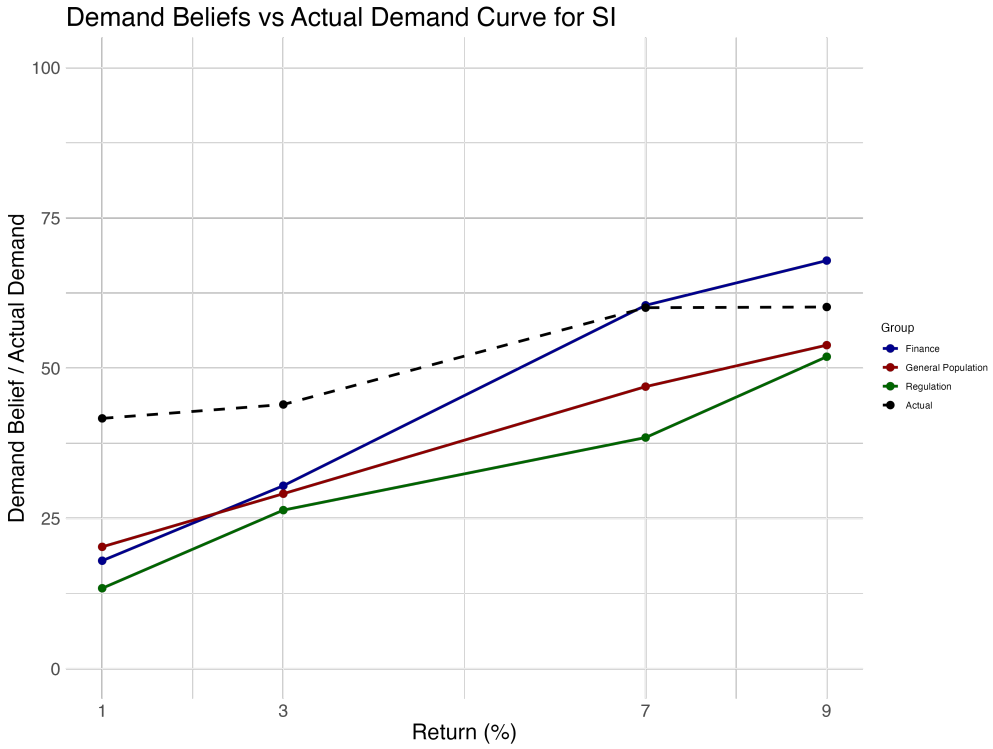

Figure 8: SI Demand Perceptions vs. Actual Demand of the Average Investor

Notes: The above figure depicts experts' and the general publics' perceptions of SI demand curves in comparison to the actual aggregate demand curve from our main study. The blue line represents finance expert's perceptions of retail investors' SI demand curve. The red line indicates the general population's expectations about how SI demand changes with returns. The green line displays this for experts from ministries, NGOs or consumer protection agencies. The black dotted line illustrates the actual demand curve from our main study.

Expectations about CO_2 compensation: With regard to carbon offsetting, all groups of people would expect small investors to spend more on offsetting if the impact of the certificate is greater, as Figure 9 shows. However, the indecisive and advocates from our main study, in particular, tend to be insensitive to the actual impact on climate change and invest almost half of their initial budget regardless of the amount of carbon offsetting.

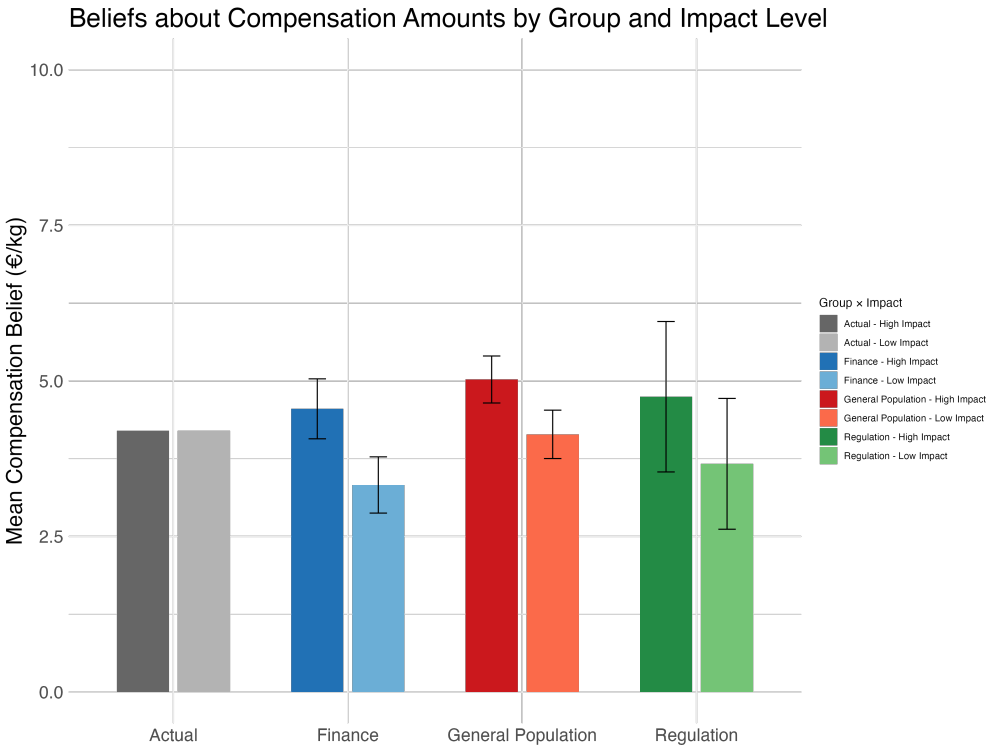

Figure 9: Offsetting Perceptions vs. Actual CO_2 Compensation

Notes: The above figure depicts experts' and the general publics' perceptions of willingness to offset their carbon emissions. Lighter bars represent the low impact decision in the CO_2 compensation decision of the main study, while darker bars relate to the higher impact decision. Blue bars represent finance expert's perceptions of retail investors' willingness to offset carbon. Red bars indicate the general population's expectations about how much CO_2 people are willing to compensate. Green bars display this for experts from ministries, NGOs or consumer protection agencies. Grey bars illustrate the actual amounts compensated from our main study.

Beliefs about WTP for sustainability information: Both experts groups and the general population underestimate how much retail investors are willing to relinquish, on average, for sustainability information of financial products. While financial experts, experts in regulatory positions and the general population believe that retail investors would spend a maximum of a quarter of their budget on such information, investors are on average willing to spend as much as half of their budget to obtain the information.

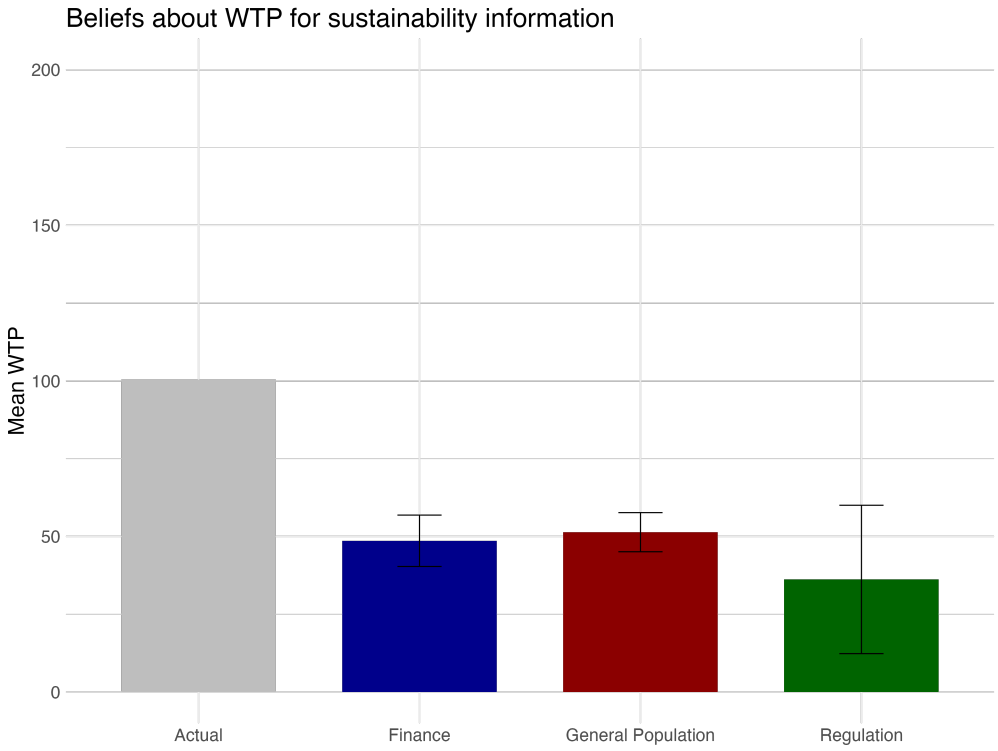

Figure 10: WTP Beliefs vs. Actual WTP for sustainability information of financial products
Notes: The above figure depicts experts' and the general publics' perceptions of willingness to pay for sustainability information of financial products. The blue bar represents finance expert's perceptions of retail investors' WTP. The red bar indicates the general population's expectations about how much people are willing to pay for such information. The green bars displays this for experts from ministries, NGOs or consumer protection agencies. The grey bar illustrates the actual WTP from our main study.

Impressions about retail investors' literacy, country and gender differences: All surveyed groups assume that women would tend to invest more sustainably than men, as demonstrated in Appendix Figure A.2. However, this assumption cannot be confirmed by the field study, as no gender differences were found between retail investors, neither in the aggregate nor for our investor types (see Tables 1 and 2). Further, finance experts and the general population would expect German investors to hold more sustainable products than people from France or Spain, as documented by Appendix Figure A.3. Also, here, at least on the aggregate, we do not find significant evidence for country differences in SI demand (see again Table 1). Finally, it should be mentioned that financial experts as well as experts from regulatory positions such as ministries, NGOs or consumer protection and members of the general public overestimate the competence of retail investors with regard to finance in general, environmental issues and sustainable financial products. This is shown in Appendix Figure A.4.

4 Conclusion

In this paper, we study peoples' SI demand and its determinants in a large online experiment with 1,219 individuals from Germany, France and Spain. By developing a novel measure, we document substantial demand for sustainable financial products on the aggregate even when returns are low. Using a clustering approach, we account for the considerable heterogeneity in SI demand and identify four distinct investor types of SI. Three of these types react rather insensitively to return changes and hence express a stable preference for a specific level of sustainability in their investment portfolios. The fourth type represents a pattern that is consistent with the classical profitmaximizing assumption. On the aggregate and the parsimonious level, we present evidence that the willingness to offset carbon, social dynamics such as beliefs about social norms and financial literacy are important predictors of SI demand. Further, we demonstrate that experts, also from the finance sector, misperceive retail investors' return sensitivity of SI demand, their sensitivity of changing impact of carbon offsetting and their literacy in terms of finance in general, environmental matters and sustainable finance. These findings are of particular policy relevance, as they provide an avenue for policy-makers and practitioners to (i) evaluate subjects' sustainability preferences when investing and (ii) correct experts' misperceptions about these preferences.

Especially with respect to the recent changes in the Markets in Financial Instruments Directive (MIFID) II in August 2022, our results hold specific pertinence. This regulation requires bank advisors to obtain their clients' sustainability preferences within their investments. It involves asking clients about whether they wish to include financial products in their portfolio that (i) allocate a specified minimum percentage to ecologically sustainable investments as defined by the EU Taxonomy Regulation, (ii) dedicate a minimum percentage to sustainable investments according to the EU Disclosure Regulation and (iii) consider the principal adverse impacts on sustainability factors. This presupposes that clients fully understand what these characteristics mean and are aware of their preferences in this regard. Yet, we show that financial experts overestimate retail investors competence in terms of sustainable financial matters. Therefore, we propose an easier way of measuring clients demand for such products.

Further, we offer correlational insights on relevant predictors of SI demand. Nevertheless, given the structure of our experiment we cannot make a statement on whether these determinants are causally responsible for SI. Balbaa et al. (2025) propose first evidence on the causal influence of normative perceptions and the demand for sustainable financial products. Future studies could farther examine the role of social norms.

Finally, our results show that standardized sustainability information does not affect the demand

for SI. This also presents an opportunity for additional studies that explore whether more tailored information campaigns can significantly stir SI demand.

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A Appendix

A.1 Additional Figures

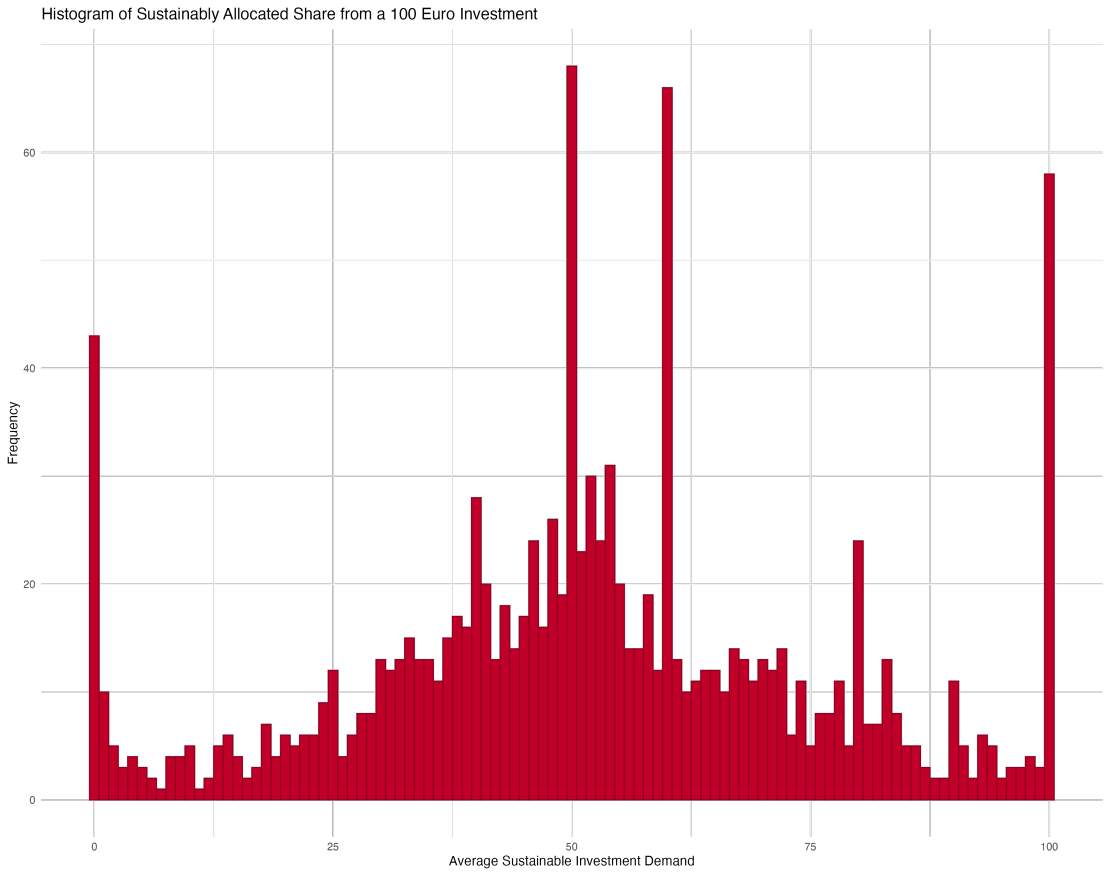

Figure A.1: Histogram of Average Sustainably Invested Share

Notes: The above figure depicts the distribution of participants' sustainably allocated share averages over all five return scenarios. The mean SI share is at 52.04%, while the median lies at 51.40%. The modal SI share is at 50%. There is considerable heterogeneity in SI demand (SD = 24.22%) and bunching at values such as 50%, 60%, 100% and 0%.

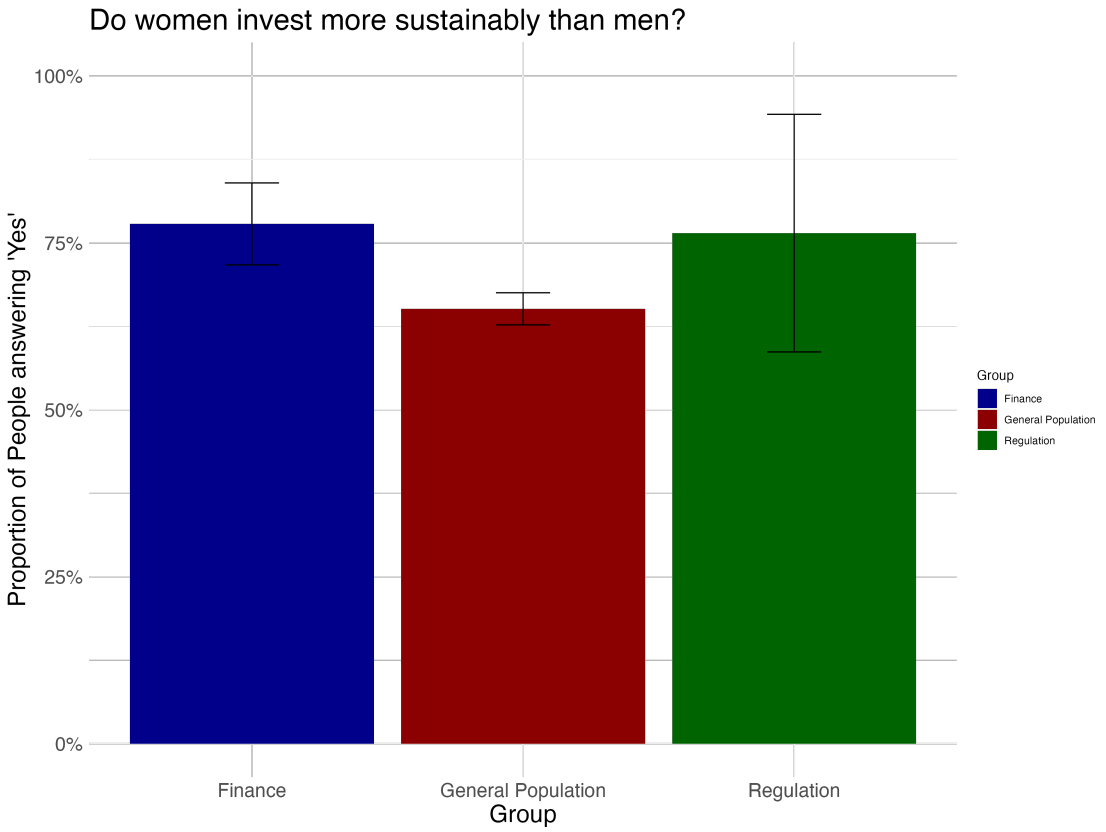

Figure A.2: Beliefs about whether Women invest more sustainably

Notes: The above figure depicts the shares of experts and the general public answering "yes" to the question of whether women invest more sustainably than men. The blue bar represents finance expert's perceptions, the red bar indicates the general population's expectations and the green bars displays this for experts from ministries, NGOs or consumer protection agencies.

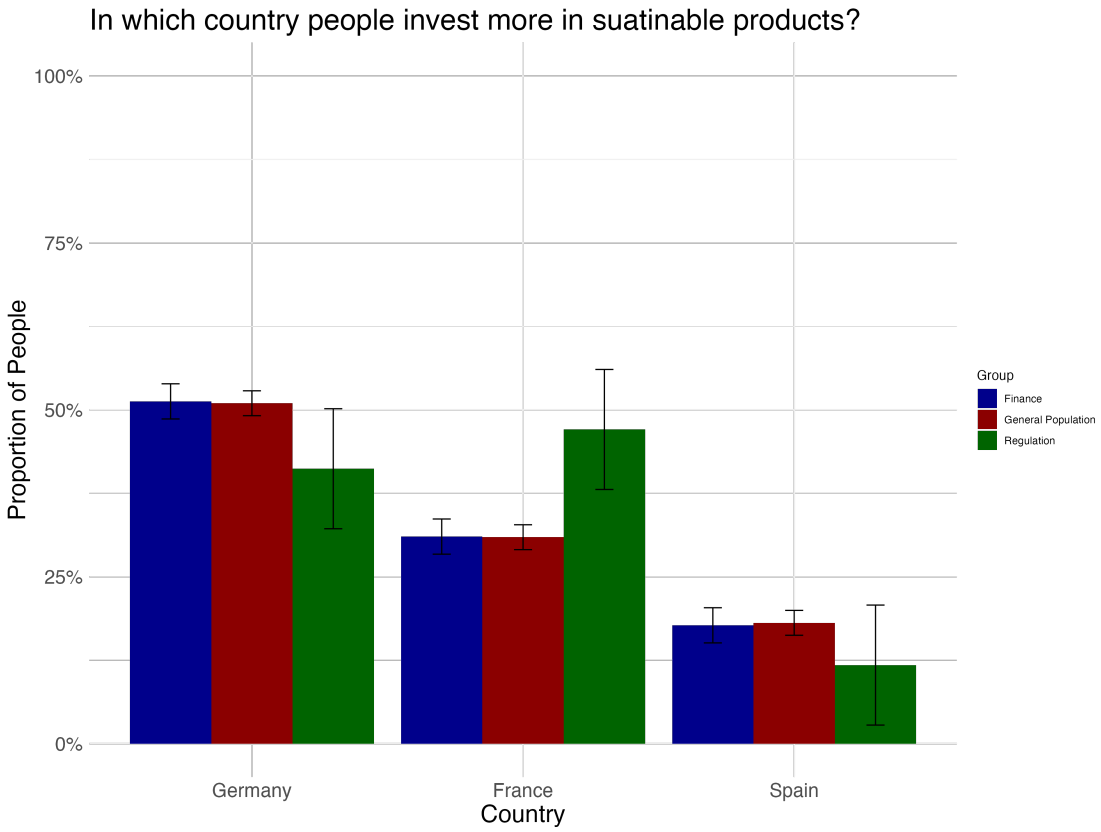

Figure A.3: Beliefs about in which country people invest more sustainably

Notes: The above figure depicts the shares of experts and the general public answering Germany, France or Spain to the question of in which country people invest more sustainably. The blue bars represent finance expert's perceptions, the red bars indicate the general population's expectations and the green bar display this for experts from ministries, NGOs or consumer protection agencies.

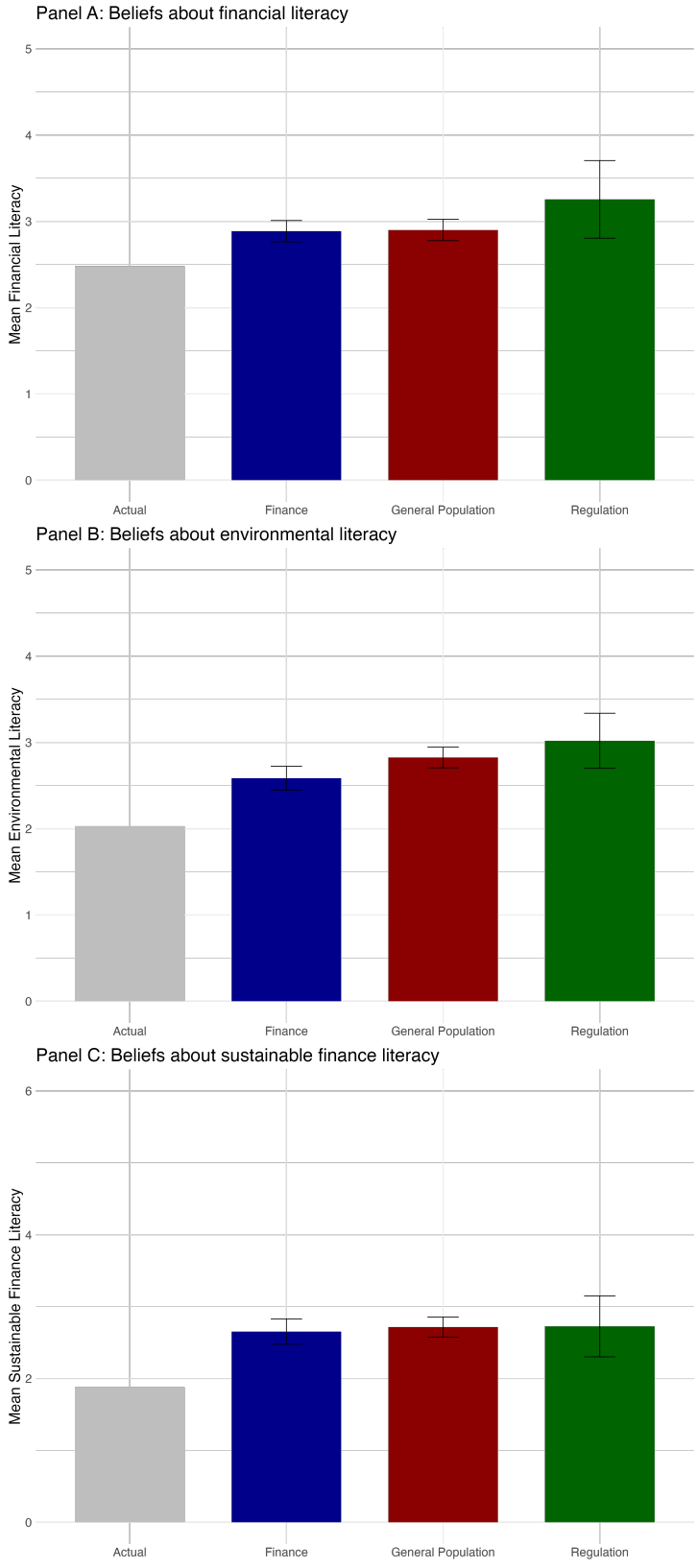

Figure A.4: Beliefs Literacy of Retail Investors

Notes: The above figure depicts experts' and the general publics' perceptions about retail investors' literacy. Panel A displays expectations about financial literacy of our main study subjects. Panel B does this for environmental literacy and Panel C for sustainable finance literacy. The blue bars represent finance expert's perceptions, the red bars indicate the general population's expectations and the green bar display this for experts from ministries, NGOs or consumer protection agencies.

A.2 Additional Tables

Table A.1: Information Treatment and SI Demand

	SI Demand					
	Average Demand	1% Return	3% Return	5% Return	7% Return	9% Return
	(1)	(2)	(3)	(4)	(5)	(6)
Info	1.974	0.538	0.916	2.617	2.570	3.226
	(1.445)	(1.803)	(1.825)	(1.907)	(1.976)	(2.019)
Constant	51.328***	41.451***	43.621***	53.424***	59.140***	59.006***
	(0.866)	(1.081)	(1.094)	(1.143)	(1.185)	(1.210)
Observations	1,219	1,219	1,219	1,219	1,219	1,219
R^2	0.002	0.0001	0.0002	0.002	0.001	0.002
Adjusted R^2	0.001	-0.001	-0.001	0.001	0.001	0.001

Notes: This table shows OLS regression estimates. The dependent variable in Column 1 is the aggregate SI demand of an individual computed as the average of SI Demand in all five return scenarios. Columns 2-6 show SI Demand in each return scenario from a 1% return to a 9% return compared to a fixed return of 5% of the conventional bond. The dependent variables are regressed on a binary variable indicating whether the subject was provided with transparent information about the sustainable character of the green bond. More specifically, the treatment included further information about the projects in which the funds from the green bond will flow. Significance levels: *p<0.1; **p<0.05; ***p<0.01

Table A.2: Expert Groups by Demographic Subgroups

Subgroup	Finance	General Population	Regulation
N	158	304	17
by Age			
18 - 24 years	0	31	0
25 - 34 years	0	52	0
35 - 44 years	0	53	0
45 - 54 years	0	63	0
55 years or older	0	105	0
by Gender			
Male	0	152	0
Female	0	152	0
by Income			
Below 1.000 Euro	3	17	0
1.000 - 1.500 Euro	4	30	0
1.500 - 2.000 Euro	11	33	0
2.000 - 2.500 Euro	25	47	5
2.500 - 3.000 Euro	26	37	2
3.000 - 3.500 Euro	20	28	1
3.500 - 4.000 Euro	17	28	2
4.000 - 4.500 Euro	14	23	1
4.500 - 5.000 Euro	14	26	2
5.000 Euro or more	19	20	4
Prefer not to say	5	15	0
by Occupation			
Full-time	123	189	14
Part-time	21	81	2
Freelancer	7	5	1
Retired	3	13	0
Student	2	9	0
Paid Paternal Leave	2	1	0
Unemployed	0	2	0
Unable	0	1	0
Other	0	3	0
by Industry			
Automotive	1	15	0
Banking & Finance	146	3	1
Education	1	4	1
Trade	1	27	2
IT & Telcom	1	52	1
Media	1	2	0
Public Service	3	14	4
Insurance	3	11	0
Other	1	52	6
Construction	0	21	0
Pharma	0	18	0
Energy	0	7	0
Health	0	52	0
Mechanics	0	18	0
Tourism	0	4	0
Prefer not to say	0	4	0
Ministry	0	0	1
Consumer Protection	0	0	1
by Education			
Secondary school (higher)	21	53	1
Advanced technical school	12	30	1
A-level	47	47	2
Apprenticeship	38	61	2
Bachelors	21	46	3
Masters	15	35	7
PhD	2	9	1
Other	2	5	0
No certificate	0	1	0
Secondary school	0	17	0
by Politics			
Conservative	62	75	5
Liberal	25	49	2
Social	27	100	8
Ecological	13	33	2
Prefer not to say	31	47	0

Notes: This table shows summary statistics of our three groups. Numbers indicate the number of people in each group for each variable. We did not ask for gender or age in our finance and regulatory experts prescreening.

Table A.3: Comparison of Sample to German, French and Spanish population

	Statistics in Percent					
Subgroup	Germany	GER EUROSTAT	France	FRA EUROSTAT	Spain	ESP EUROSTAT
by Age						
18-24 Years	10.47	11.61*	11.66	14.46*	9.18	12.44*
25-64 Years	69.72	62.25	75.43	59.76	81.64	64.06
65 Years +	20.10	26.02	15.14	25.78	7.73	23.62
by Gender						
Male	50.86	49.34	47.91	48.38	52.20	49.05
Female	48.89	50.66	52.09	51.62	47.80	50.95

Notes: This table shows summary statistics of age and gender of our three countries and compares them to data from Eurostat. The * indicates that these age groups from Eurostat also contain people from the age of 15 to 24 years.