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Bank-Advisor Certification
and Willingness to Pay for Sustainable Finance Products

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Bank-Advisor Certification and Willingness to Pay for Sustainable Finance Products

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Abstract

We examine Swiss retail investors' willingness to pay (WTP) for sustainable finance products and the influence of bank advisor certification. In a hypothetical choice experiment with a randomized controlled trial (RCT), we assigned participants to either a priming treatment with a bank advisor certified in sustainable investing or a control group. We found a WTP between 1 and 1.5 percentage points of annual return for sustainable mutual funds, especially among financially literate investors. The presence of a certified green finance advisor further increased WTP between 0.2 and 0.8 percentage points, particularly for investors with low financial literacy.

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1   Introduction

In recent years, sustainable investing, i.e., investment strategies that considers environmental, social, and governance (ESG), has gained increasing importance (Eurosif 2021). Sustainable investing in Europe and the US increased five-fold, with retail investors' involvement rising nine-fold (Eurosif 2021).[3] This trend is essential to reduce carbon emissions but requires significant scaling to meet the Paris Agreement goals (Eurosif 2021). Nevertheless, retail investors face knowledge barriers that prevent their participation, with low knowledge on both the financial advisor and the investor side.

While a minority of retail investors make their investments alone, 66% of US retail investors consult a financial advisor for mutual funds (Investment Company Institute 2024). However, advisors are mainly generalists; only a few are trained and accredited in sustainable finance. Coupled with the complex nature of sustainable finance, the lack of knowledge can induce private investors to choose products that are not sustainable - even though they would prefer green investments. The inability of private investors to identify and evaluate sustainable finance products could allow greenwashing, where companies exaggerate or misrepresent their sustainability practices (Eurosif 2021). Consequently, retail investors may find it daunting to invest in sustainable assets, resulting in lower participation rates.

This study analyzes whether the support of an advisor certified in sustainable finance influences retail investors' investment choices. While initiatives exist, such as Singapore's wealth manager training program, it is unclear how advisor training and certification in sustainable finance affect retail investors.[4] We study the effect of bank-advisor sustainability certifications with a hypothetical choice experiment in the context of a household survey conducted in Switzerland, a country known for its robust financial sector and growing interest in sustainable finance.

We conducted a pre-registered Randomized Controlled Trial (RCT) embedded in a hypothetical choice experiment to analyze the effect of bank advisor certifications and investors' knowledge on sustainable investments. Our setup presented respondents with several choice cards, including mutual funds with different degrees of sustainability and

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[3]Our analysis focuses on retail investors, that is, non-professional, individual investors. These investors are of significant interest from an academic and political standpoint. Socially Responsible Investments (SRI) provides a means to actively involve individual investors in sustainable development, which can positively impact citizens' acceptance of these processes. This acceptance is crucial as it can significantly affect people's lifestyles.

[4]The Singaporean government has recently started subsidizing wealth manager training to promote sustainable investing and enhance the competency of financial advisors. The Central Bank of Singapore (MAS) has collaborated with the financial sector to outline the 12 technical skills and competencies required for individuals to undertake various roles in sustainable finance (e.g., sustainable risk management). See https://www.mas.gov.sg/news/media-releases/2022/ibf-and-mas-set-out-12-technical-skills-and-competencies-in-sustainable-finance.

annual returns. It used a conjoint analysis to determine the stated willingness to pay (WTP) for sustainable investment products, i.e., the willingness to forgo return, considering the participants' financial and sustainable finance literacy. Participants were randomly divided into two groups: the treatment group was primed by a hypothetical bank advisor with certified expertise in sustainable investing. In contrast, the control group was primed with an advisor without a sustainability certification.[5]

Our setup contextualizes advisor accreditation with investors' financial and sustainable finance literacy, which critically influence financial decision-making (Aristei and Gallo 2021, Filippini et al. 2024b).

We follow the definition of financial literacy by Lusardi and Mitchell (2008), who describe financial literacy as the skills and knowledge necessary for financial decision-making. Similarly, sustainable finance literacy can be understood as an extension of financial literacy by focusing on knowledge about sustainable finance products (Filippini et al. 2024b). Integrating these literacy measures into our evaluation of advisor accreditation allows us to study whether financial advice and financial literacy are substitutes or complements.

Our results suggest that bank advisor certification and high financial and sustainable finance literacy increase the demand for sustainable investments. We found a WTP between 1 and 1.5 percentage points of annual returns for sustainable funds, which increased by 0.2 - 0.8 percentage points if a certified green finance advisor pre-selected the funds. For policymakers, these results suggest that encouraging or requiring banks to train their advisors in sustainable finance, along with enhancing retail investors' knowledge, can lead to increased investments in sustainable finance products. This, in turn, can help facilitate the green transition.

The remainder of this paper is structured as follows. In Section 2, we provide a detailed description of the related literature. In Section 3, we present the experimental design and econometric approach; next, we describe the data in Section 4. In Section 5, we show the estimation results, followed by a discussion in Section 6 and a concluding section.

2 Related Literature

This paper contributes to three streams of literature: the factors influencing demand for sustainable investment products, financial advice-seeking, and the effect of priming.

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[5]The RCT was pre-registered under:
https://osf.io/qk934/?view_only=08121ceecef0466f9ef2f341c54e64e9.
The ethical commission of ETH Zurich approved this study under 2023-N-238.

The literature on demand for sustainable finance products generally finds a positive WTP for these investments. Studies using revealed investment data (Bauer et al. 2021, Hartzmark and Sussman 2019, Henke 2015, Riedl and Smeets 2017) or hypothetical choice experiments (Apostolakis et al. 2018, Gutsche and Ziegler 2019, Lagerkvist et al. 2020) both indicate that multiple factors influence the WTP for sustainable finance and that sustainability-friendly attitudes constitute a major determinant.

This paper also relates to the literature exploring financial advice-seeking. Trust plays, in general, an important role in financial advice search (Guiso and Jappelli 2006, Hackethal et al. 2012, Monti et al. 2014), andCalcagno and Monticone (2015) argued that investors were more likely to seek advice from trusted advisors due to conflicts of interest in financial markets.

Several studies specifically focus on the role of credentials and certified advice. Agnew et al. (2018) found that certified financial advisors were perceived as more trustworthy and competent. Bhattacharya et al. (2012) suggested that the available unbiased financial advice is necessary but insufficient to benefit retail investors. They found that investors who lack financial sophistication and trust are less likely to seek advice, even when it is unbiased and offered for free. Hence, financial literacy is essential to a consumer's decision to seek and follow financial advice.

While some studies have reported a negative relationship between financial literacy and financial advice-seeking, i.e., substitutes (Georgarakos and Inderst 2014, Inderst and Ottaviani 2012, Kramer 2016), the majority have found a positive, i.e., complementary, relationship (Bhattacharya et al. 2012, Bucher-Koenen et al. 2019, Calcagno and Monticone 2015, Hackethal et al. 2012, Laudi et al. 2022). Calcagno and Monticone (2015) and Bucher-Koenen et al. (2019) suggested that individuals with higher financial literacy were more likely to consult an advisor, but less likely to delegate portfolio choices. In addition, Laudi et al. (2022) showed that advisors charge a premium to sustainable investors with low financial literacy but do not charge a premium to those with high financial literacy. In addition, highly financially educated individuals are more likely to receive better advice than those with less financial knowledge (Laudi et al. 2022).

Further, our study is related to the literature on priming. This technique refers to the influence of stimuli on behavior by activating implicit memory (Schacter and Buckner 1998). Social psychologists and behavioral economists have employed priming techniques to demonstrate that choice architectures can affect preferences (e.g., Bargh et al. 1996). A typical priming experiment consists of two stages. Participants engage with a specific stimulus in the first stage through tasks such as reading paragraphs. After completing these tasks, they move to the second stage, where test items are presented to evaluate the influence of priming on their subsequent behaviors (Bermeitinger 2016).

One frequently studied dimension in the priming literature consists of monetary stimuli. Research has shown that exposure to money can lead to antisocial behaviors, reduce willingness to help others, and encourage social distancing (Vohs 2015). A new area of investigation in the literature explores whether priming environmental attitudes can influence the perceived value of environmental goods. Bimonte et al. (2020) conducted a web experiment using an animated video to examine how priming impacts environmental attitudes and individuals' WTP for environmental protection. The findings indicated that while priming made pro-environmental attitudes more salient, the framing of priming affected both the likelihood of individuals being willing to pay a premium for environmentally friendly goods and the amount of that premium.

This study adds to Gutsche and Ziegler (2019) and Kleffel and Muck (2023), who conducted two hypothetical choice experiments using a mixed logit model to investigate the WTP among German retail investors but without an RCT. In both studies, the authors compared the effects of including a sustainability certification as a product characteristic. Gutsche and Ziegler (2019) showed that the mean WTP estimate for the consideration of sustainability criteria with a certificate (0.25 percentage points) was twice as high as the corresponding value for the consideration of sustainability criteria without a certificate (0.112 percentage points). This suggests an additional considerable WTP for the certification of sustainable investment products. Similarly, Kleffel and Muck (2023) found that investors were willing to sacrifice an additional 3.14% in expected returns for the certificate, which they interpret as an "insurance premium."

We complement these papers along several dimensions. First, we added an RCT with a priming treatment that consists of a hypothetical financial advisor to the choice experiment. Similarly to the approach of De Beckker et al. (2021), who combine an RCT with a discrete choice study to test the effect of financial education for schools, we combine an RCT with a conjoint experiment to test the impact of advisor certification on WTP for sustainable finance. This setup allows us to learn about the additional WTP that a certified bank advisor could induce.

This study contributes to the literature on three dimensions: First, it explores the demand for sustainable finance products through a hypothetical choice experiment, emphasizing the role of financial and sustainable finance literacy. Second, this paper examines how financial advisors influence decision-making, highlighting the interplay between financial advice, financial literacy, and sustainable finance literacy via an RCT design. Third, our analysis investigates how priming impacts the WTP of individuals for sustainable finance products, providing information on the behavioral drivers of ethical investment choices.

Most hypothetical choice experiments in the relevant literature were designed as conjoint experiments, a widespread class of methods for eliciting preferences (Greene and Hensher 2003). Due to their hypothetical character, this type of choice experiment is prone to hypothetical bias (e.g., Fifer et al. 2014, Haghani et al. 2021, Hensher 2010).[6] For example, Fifer et al. (2014) found that hypothetical bias affected at least one in every five participants. However, while some studies find that hypothetical bias affects the magnitude in stated choice experiments (e.g., Fifer et al. 2014, Haghani et al. 2021, Hensher 2010), the determinants of the decision-making process may not differ from real-world settings (Hainmueller et al. 2015). Similarly, Haghani et al. (2021) suggested that substitution patterns between choices usually do not suffer from hypothetical bias. Further, multiple studies show that survey responses are correlated with real-world or real-stakes behaviors (Dechezleprêtre et al. 2022, Fehr et al. 2021, Funk 2016). Thus, even if our results could suffer from hypothetical bias, the determinants and treatment effects are still likely to exhibit the correct patterns and signs as in a real-world setting.

3 Experimental Design and Econometric Approach

The hypothetical choice was embedded in a larger survey on perceived barriers to sustainable investing and more general preferences for ESG dimensions. The relevant sections of the questionnaire are shown in Figure 1 and consisted of three parts: First, participants received the priming treatment, where the treated group received the support of a hypothetical bank advisor with special training in sustainable finance, whereas the control group received the support of a bank advisor without this special training. Next, respondents participated in a hypothetical choice experiment, followed by questions to measure financial and sustainable finance literacy.

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[6]Hypothetical bias broadly refers to the deviation from real market evidence. It can arise if participants respond strategically or give answers they believe are socially desirable (e.g., Fifer et al. 2014, Hensher 2010).

Figure 1: Study Design
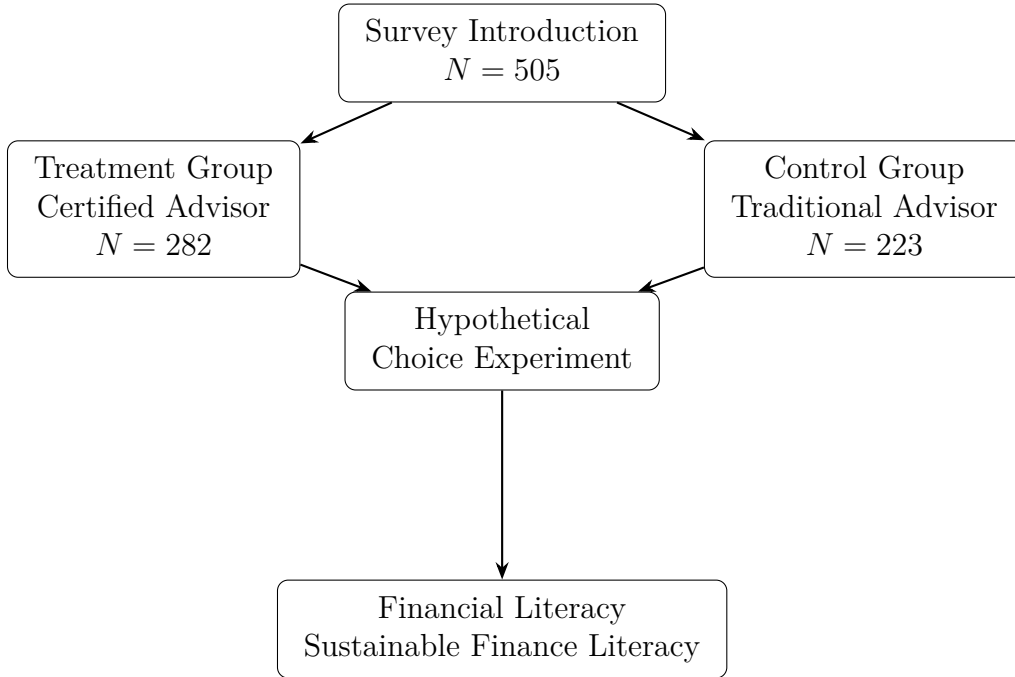
Note: This figure displays the survey structure. After an introductory section, respondents were randomly allocated to the treatment or control group, followed by the hypothetical choice experiment. Then, respondents answered various sustainability-related questions, including literacy questions and several questions on their preferences among ESG dimensions.

3.1 Hypothetical Choice experiment

Our primary interest consisted of determining the WTP, considering the advisor's certification in sustainable investing. We included a priming treatment prior to the choice experiment, where we varied the bank advisor's experience level. We informed all participants that an imaginary bank advisor had pre-selected the investment products displayed in the choice experiment. For classic investments, the bank advisor showed the same level of experience in the treatment and control groups (*Classic investments: many years of experience*). For sustainable investments, primed individuals faced an advisor certified in sustainable finance, as shown below. Below the main explanation, we included a note for both groups ("∗") explaining that the certification in sustainable finance indicates more experience in this field and the ability to detect greenwashing. We ensured that participants read and understand the treatment and the note with comprehension checks.

- `Control`: Sustainable investments: no special training*

- `Treatment`: Sustainable investments: special training with certificate*

This training enables the advisor to recognize better greenwashing, i.e., whether the sustainability information corresponds to reality.

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Following the priming treatment, participants were presented with a series of choice sets featuring potential investment opportunities with various attributes. The experiment consisted of eight rounds; hence, each respondent made eight choices. Participants were instructed to imagine they inherited CHF 10,000 and would like to invest this amount over ten years.

The hypothetical investment scenario started with a detailed description of the experimental setup, including a comprehension check on the sustainability levels of the mutual funds and the bank advisor certification. Respondents who failed the comprehension test twice were disqualified from continuing the survey.[7] Out of 594 respondents, 89 did not pass the attention check, which corresponds to 15%. The information was spread across three pages to avoid information overload, with the most important information highlighted on the screen.

Table 1 summarizes the choice attributes and their levels. The three investment product alternatives were described along three dimensions: *return* (annual nominal interest rate in percent), *risk*, and *sustainability* level. For *return*, defined as annual nominal interest rates, we used five levels between 1.30% and 3.7%. The second attribute *risk* was identical for all funds. For *sustainability*, we used three levels, "None," "Medium," and "High." The definition of the attributes can be seen in the Appendix in Table 8. By randomly varying these dimensions on the choice cards and observing the participants' selections, we can infer the preferences for each attribute.

Table 1: Attributes in the conjoint experiment

| Attribute	Attribute level
Return	1.3% , 1. 9%, 2.5 % , 3.1%, 3.7 %
Risk	4/7
Sustainability level	None, Medium, High

Note: This table presents the attributes and their levels used in the conjoint experiment.

To emphasize the significance of the bank advisor's certification, we displayed this text within a speech bubble accompanied by an image of a bank advisor. Figure 2 illustrates an exemplary choice set consisting of three alternatives labeled as Funds A, B, and C. Returns have been randomly varied, and respondents could choose between a

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[7]We included four comprehension questions in the survey to ensure respondents understood the choice task and the Priming treatment. Two questions were directly targeted at the different sustainability levels. The other two questions referred to the advisor's education, differentiated by priming and control. This ensured that the respondents understood their treatment and made the specific education and benefits of it more salient. Further, throughout the survey, we emphasized the importance of the respondent's answers despite their hypothetical nature and aimed to design the scenarios as realistic as possible. For example, in the hypothetical choice experiment, we asked respondents to imagine they inherited CHF 10,000 and invested it over ten years, a scenario that can likely happen in real life.

high, medium, and non-sustainable option in each choice. The choice cards were drawn without replacement; hence, a respondent did not face a repeated choice combination.

Figure 2: Screenshot of an exemplary choice set in the hypothetical choice experiment.
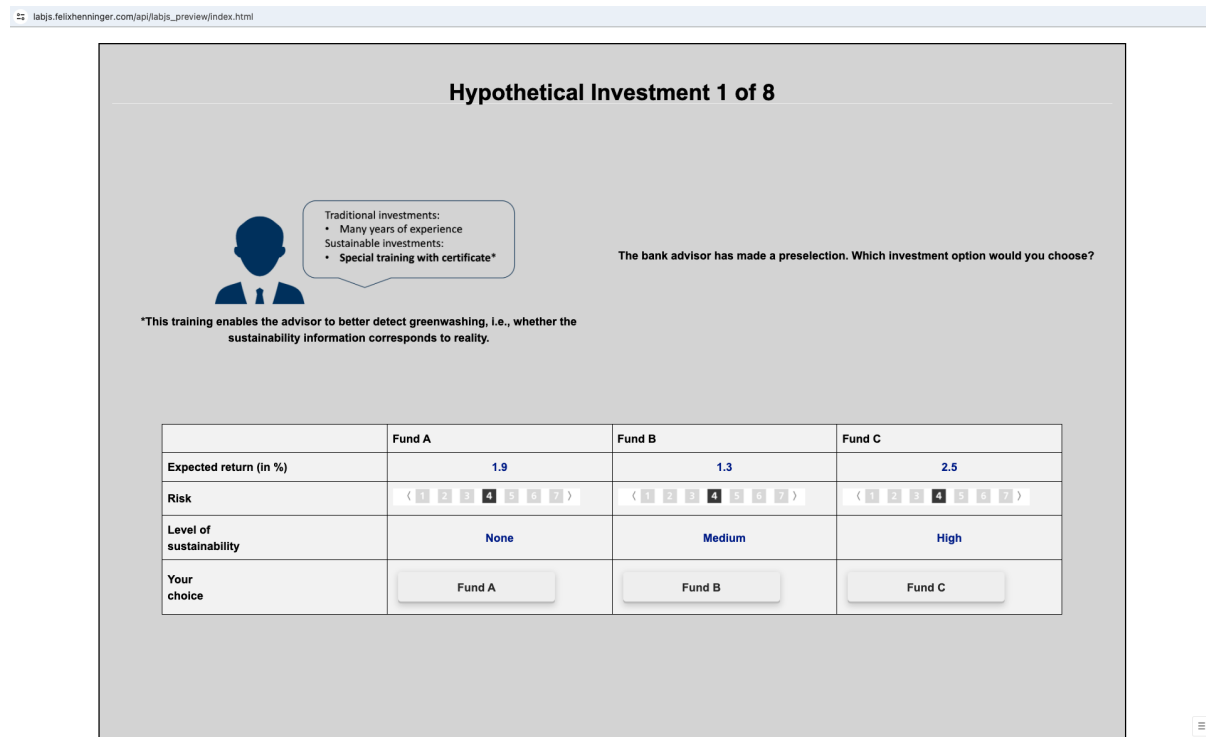
Note: this screenshot shows respondents in the treatment group with the certified advisor.

3.2 Econometric Approach

We based our econometric analysis on a mixed logit model, a discrete choice model suitable for analyzing unordered multiple choices that depend on choice-specific attributes and individual-specific characteristics (Greene and Hensher 2003).

Compared to the standard logit model, the mixed logit provides more flexibility because it allows individual taste heterogeneity, delivering a more nuanced analysis of individual preferences (Greene and Hensher 2003). This model also accounts for the panel structure of the data, which arises due to the repeated choices (Greene and Hensher 2003).

Discrete choice models are usually motivated by a random utility maximization theory (McFadden and Train 2000). In our case, the assumed utility function for respondent i ($i \in \{1, .., N\}$) for investment product j ($j \in \{1, 2, 3\}$) in the choice set m ($m \in \{1, ..., 8\}$) is

$$U_{ijm} = \beta_i{}^{'} x_{ijm} + \epsilon_{ijm}$$

where x_{ijm} are observed variables related to attributes and decision-maker characteristics. β_i is a vector of coefficients of these variables for participant i representing that

individual's tastes. The values $U_{i,j,m}$ cannot be observed and depend on ϵ_{ijm}, the error term. If the respondent selects product j, we assume that U_{ij} is the maximum utility among the J investment products; hence, $Prob(U_{ij} > U_{ik})$.

Depending on the assumptions regarding the error term, we can obtain different logit models, e.g., multinomial or mixed logit. For a mixed logit model, we assume identical and standard (type 1) extreme value distributed error terms (Greene and Hensher 2003, McFadden and Train 2000). In the random coefficient model, the random parameter for a specific attribute is defined as follows

$$\beta_i = \beta + \eta_i$$

where β is the population's mean preference for an attribute. η_i describes individual-specific deviations.

In summary, our model describes the probability that an individual chooses a particular alternative from a set of available alternatives based on the given attributes. We estimated five versions of the model. The baseline model includes return, the sustainability levels, and the treatment, which interacts with the sustainability attributes. The second model adds a financial literacy dummy variable, which interacts with the sustainability attributes; this allows us to show if respondents with high financial literacy have different preferences for the sustainability attribute. Model three adds an interaction term between treatment and financial literacy, as before, separately for each attribute (allowing for different treatment effects on each attribute for high and low financial literacy). Models four and five add a sustainable finance literacy dummy in a similar setup to financial literacy.

The common routine to estimate the parameters of a mixed logit model is using a simulated maximum likelihood estimation.

Our analysis included return, sustainability levels, and specific socio-demographic variables as explanatory factors. To assess the impact of the priming across different sustainability levels, we generated a dummy variable indicating the treatment and control groups, which then interacted with the two sustainability levels (medium and high). This interaction allows for estimating the treatment effect across varying levels of sustainability.

We estimate this model with the software "R", using the "logitr" package from Helveston (2023). Following, Revelt and Train (1998) and Gutsche and Ziegler (2019) we set the return (or price) parameter as fixed; consequently, we allowed the sustainability, treatment, and literacy coefficients to be "random coefficients," which follow a normal distribution across respondents. The mixed logit model estimates the coefficients' un-

derlying normal distribution's mean and standard deviation for the random coefficients (sustainability and other covariates). In contrast, the return coefficient is usually specified as fixed (Gutsche and Ziegler 2019, Hensher et al. 2005).

Goett et al. (2000) and Revelt and Train (1998) argued that fixing the price parameter avoids the problem that random coefficient models are nearly unidentified empirically if all coefficients follow a distribution.[8] Setting the return and sustainability coefficient as random leads to unreasonable implied distributions of WTP, implying very large WTP by a large population share. Therefore, we used random parameters for sustainability, financial literacy, sustainable finance literacy, and the interaction terms but a fixed parameter for return. Since mixed logit models have non-convex log-likelihood functions, we employed a multi-start search to run the optimization loop multiple times to search for different local minima as recommended by Helveston (2023).

Our estimation strategy allows us to obtain two key results: first, the preferences for the choice-based attributes, known as marginal utilities (Helveston 2023); second, the estimation of the mean WTP. This second result is estimated based on the utility function previously discussed, representing the change in one financial variable (here: return) required to maintain constant utility for a change in the explanatory variable of interest. It is calculated by dividing the parameter for the explanatory variable of interest by the negative value of the return parameter. The following formula can express it:

$$(-1) \cdot \frac{\beta_{expl.var.}}{\beta_{return}}$$

WTP estimates tend to be positive in choice experiments involving cost or price attributes, which typically show a negative effect on selecting different alternatives (e.g., for different modes of transport, a higher price is associated with lower usage). This effect is vice versa for financial returns: WTP estimates for annual returns are negative because they imply the amount of return a respondent is willing to sacrifice for a given product. Despite the negative sign, WTP estimates are interpreted in absolute terms, where higher absolute values indicate a greater estimated WTP.

4 Data

This study is based on a survey organized in January 2024, which included 505 participants in the German-speaking part of Switzerland. The market research company

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[8]Note that a fixed return coefficient does not imply that response to return is assumed to be the same for all respondents. Instead, a fixed coefficient for return implies that the ratio of the marginal utility of return to the standard deviation of unobserved factors is the same for all respondents. Although this may be unrealistic, the alternative of varying the return parameter between respondents is econometrically problematic. For a detailed discussion, see Hensher et al. (2005).

"intervista" recruited participants from a large panel of households, which were incentivized to participate in the survey with a payment. Moreover, "intervista" provided several demographic background variables on the respondents.

The survey company invited 8978 panel members to participate in our study. The invited participants were randomly sampled from the overall panel population and stratified by age and gender. In total, 1,941 respondents started the survey, which implies a response rate of 21.7%. 241 participants did not pass the screening because they did not hold a pension plan. 152 respondents could not participate because the quota based on age and gender had already been fulfilled for these particular respondents. 1,941 respondents started to answer the survey, 955 of these respondents quit the survey after a couple of questions, most likely because of lacking interest, and 89 respondents did not pass the attention check, which resulted in 505 complete responses.

We conducted six pretests between October 2023 and January 2024. The pretests were used to develop the survey's technical aspects and test the questions' and treatment's clarity.

4.1 Sample characteristics

To ensure that the respondents had minimal investment experience, the interviewees must have invested in the "3rd pension pillar", the Swiss voluntary pension plan. The "3rd pillar" is a voluntary pension plan allowing investment in financial markets for retirement. Approximately 62% of adult Swiss residents participated as of 2019.[9] Official statistics only exist for the Swiss working population actively contributing to a "third pillar" pension plan.[10] A comparison with our sample is challenging because we included the entire population with such a pension plan, including pensioners who are no longer part of the workforce.

Table 2 presents the summary statistics for all respondents for socioeconomic variables for the treatment and control groups. We tested for differences between the two groups using a t-test and a Mann-Whitney-U-Test as a robustness check. The groups are well-balanced in terms of demographic variables and individual preferences. Only university degree significantly differs between the groups, but not at a 1% significance level.

The sample consists of slightly more men than women, with 48.23% women in the treatment group and 45.1% in the control group. The mean age of the respondents was 49 in both groups. Half of the sample was married, and 17.73% of the respondents in the

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[9]For more information, see https://www.bfs.admin.ch/bfs/de/home.html.

[10]Within this group, the average age is 43 years, 43% are women, and 50% hold a university degree. In the subset of our sample with only working individuals, the mean age was 46 years, 46% women and 63% held a university degree.

Table 2: Summary statistics, by treatment

	Mean Values		p-value
	Treatment	Control	(T = C)
Demographics			
% Female	48.23%	44.84%	0.45
Age	49.35	49.18	0.89
% University Degree	55.67 %	68.61%	0.02
% Married	48.58%	47.98%	0.89
% Pensioner	17.73 %	13.00%	0.14
Household size	2.34	2.37	0.78
Income[CHF]	9,360	9,450	0.80
N	282	223	

Note: This table presents the summary statistics of the sample of retail investors by treatment. The first two columns report mean values of the variables by treatment; the third column reports p-values of a t-test, testing for differences between the two treatments. 50 respondents in the treatment group and 37 in the control group did not report their income. Additional information on the variables can be found in the Appendix in Section B.

treatment group and 13% in the control were pensioners. The mean household consisted of 2.4 persons for both groups. The average monthly household income was around 9,000 CHF for both groups, and the mean household wealth was CHF 413,000 for treatment and 513,000 for control (median: 75,000 for both groups).[11] More detailed information on the precise questions for each variable can be found in the Appendix in Section B.

4.2 Literacy measures

To measure participants' general knowledge of investments, we have relied on the financial literacy index by Lusardi and Mitchell (2008), who have designed three fundamental questions widely used to determine financial literacy. The first question examines the knowledge of interest rates, the second question assesses the impact of inflation, and the third question addresses the significance of portfolio diversification. Each question has a right or wrong answer. We followed the methodology suggested by Lusardi and Mitchell (2008) and created a financial literacy indicator by adding the scores of the three questions. Therefore, the range of this indicator is from 0 to 3. Table 3 depicts the percentage of correct answers and the mean literacy score of our sample. In line with Filippini et al. (2024b), the financial literacy score among Swiss households is relatively high, partly due to our sample of experienced retail investors.

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[11]Income was displayed in income brackets. The overall mean corresponds to the income bracket of 4.5 in the treatment group and 4.47 in the control group.

Table 3: Summary Statistics Literacy Scores

Question	% correct	% incorrect	% do not know
(1) Knowledge of interest rates	93.86%	5.74%	0.40%
(2) Impact of inflation	92.48 %	5.34 %	2.18 %
(3) Portfolio diversification	95.05%	0.99%	3.96%
	Mean	Median	sd
Financial Literacy score [/3]	2.81	3	0.46
Treatment	2.80	3	0.48
Control	2.83	3	0.45
P-value (mean-difference)	0.63		

Note: This table depicts the three fundamental questions used to determine financial literacy by Lusardi and Mitchell (2008) and the percentage of correct, incorrect and "I don´t know" responses. The bottom part of the table shows the mean, median, and standard deviation of the literacy score. The score is calculated by adding up the sum of correct answers to the three questions.

In addition to investigating financial literacy, we also inquired about sustainable finance literacy (SFL). SFL is the skill allowing us to identify and assess the sustainability characteristics of finance products (Filippini et al. 2024b). Following Filippini et al. (2024a), we included five questions on the general rules and requirements of SFL and the impact on the real economy. Like Filippini et al. (2024a), we also included questions on the EU Sustainability Finance Disclosure Regulation (EU SFDR), one of the first sustainability regulations worldwide. The answers can be summarized in Table 4. The results of the individual questions on sustainable finance products clearly show that the level of knowledge about these products is generally low.

5 Estimation Results

Table 5 reports the parameter estimates for the baseline model, using 4040 observations from 505 respondents, each answering eight choice sets.[12] Note that the preference parameters can only be interpreted in terms of their signs, not in terms of their magnitude (Gutsche and Ziegler 2019). We set the reference value to the "no sustainability" option.

As expected, the return coefficient is positive and significant, indicating that a higher return increases utility. Sust-H refers to the high sustainability level, and Sust-M to the medium sustainability level, both of which show positive coefficients, with Sust-H being larger than Sust-M. Similarly, treat-H describes the treatment, interacted with high sustainability, and treat-M interacted with the medium sustainability level. These interaction terms reflect the effect of facing a choice selected by certified vs. uncertified

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[12]The number of observations is obtained by: number respondents × number of choice sets per respondent =505 × 8.

Table 4: Summary Statistics Sustainable Finance Literacy Scores

Question	% correct	% incorrect	% do not know
General			
Sust Standards	41.19%	15.45%	43.37%
Risk analysis	56.24%	11.68%	32.08%
Impact	37.03%	17.43%	45.54 %
Specific			
EU SFDR 1	31.88%	29.31%	38.81%
EU SFDR 2	22.77%	17.23%	60.00 %
	Mean	Median	sd
SFL score [/5]	1.89	2.00	1.29
SFL score treatment	1.97	2.00	1.25
SFL score control	1.79	2.00	1.33
P-value (mean-difference)	0.13		

Note: This table depicts the SFL questions and the percentage of correct, incorrect and "I don´t know" responses. The bottom part of the table shows the mean, median, and standard deviation of the SFL score, which is calculated by adding up the scores of the five questions.

bank advisors when choosing the sustainable attribute (i.e., the priming effect). In both cases, the coefficient is positive, with treat-H being larger than treat-M. Thus, the priming treatment had a positive effect on choosing sustainable options, with a stronger effect on the high-sustainable fund. We further estimated the standard deviation for all random coefficients. All are statistically significant, indicating heterogeneous effects among participants.

We analyze the WTP in the lower part of Table 5. The WTP is calculated as described in Section 3.2 by taking the negative value of the parameter for the explanatory variables divided by the estimated parameter of the return variable. WTP can be used to analyze the effect size of our treatment. [13]

In the baseline model, the estimated mean willingness to sacrifice return for the high sustainability variable is more than 1.56 percentage points and more than one percentage point for the middle sustainability level. Hence, the respondents show a significant WTP for sustainability, which is increasing in sustainability. Similarly, the treatment increased the WTP for the high-sustainability fund by 0.8 percentage points of annualized return and for the medium-sustainability fund by 0.2 percentage points.

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[13]Note again that WTP in this setting is usually negative due to the return variable, however, we interpret it in absolute terms. For a detailed explanation, see section 3.2

Table 5: Estimation results of mixed logit models - baseline model

Variable	Mean	SD
Return	1.979***	-
	(0.065)	
Sust-H	3.09***	2.253***
	(0.192)	(0.67)
Sust-M	1.998***	1.434***
	(0.160)	(0.127)
treat-H	1.494***	1.721***
	(0.300)	(0.199)
treat-M	0.461**	0.279**
	(0.229)	(0.168)
Mean WTP		
Sust-H	-1.561***	
	(0.096)	
Sust-M	-1.009***	
	(0.081)	
treat-H	-0.755***	
	(0.151)	
treat-M	-0.233**	
	(0.116)	

Note: *p<0.1; **p<0.05; ***p<0.01

This table presents the estimation results of a mixed logit model, with the standard errors in parentheses. The upper part of the table describes the parameter estimates in the baseline model. For the random parameters estimates for the mean and the standard deviation are reported, reflecting unobserved heterogeneity between participants. Standard deviation estimates are reported as absolute values and the return coefficient is specified to be fixed. The lower part of the table reports the mean WTP estimates, which are calculated by dividing the negative values of the estimated means of the random parameters by the estimated parameter of return. Standard errors for the WTP are computed using the Krinsky and Robb parametric bootstrapping method (Krinsky and Robb 1986).

Next, we include financial and sustainable finance literacy as covariates for the mixed logit estimation in Table 6. As reference, column (1) shows the baseline model, already presented in Table 5. As in the baseline model, we estimated the standard

deviation for all variables except for return but did not include the coefficients in Table 6.

Column (2) includes financial literacy, using the measure described in Section 4.2 following Lusardi and Mitchell (2008). We constructed a dummy variable that takes the value of one if a respondent's financial literacy score was 3 (the median) and zero otherwise. The effect of financial literacy is positive but only significant at the 10% level for the high-sustainable fund, indicating that high financial literacy increases the probability of choosing the high-sustainable option. Column (3) shows the heterogeneous treatment effect for financial literacy. This interaction effect is negative for both high and medium-sustainable funds, indicating that the treatment is weaker for respondents with high financial literacy.

We perform the same analysis for sustainable finance literacy in columns (4) and (5), where we used the measure described in Section 4.2. We construct a dummy variable, where one indicates that the respondent is above or equal to the median value of the SFL scores (2/5) and 0 below. The results were similar to financial literacy: sustainable finance literacy alone is associated with a higher probability of choosing the medium sustainable fund. Like financial literacy, the treatment effect is lower for high-sustainable funds for respondents with high SFL.

Table 6: Estimation results of mixed logit models - preferences

	(1)	(2)	(3)	(4)	(5)
Return	1.979***	2.04***	2.052***	2.026***	2.013***
	(0.065)	(0.067)	(0.068)	(0.067)	(0.066)
Sust-H	3.09***	2.924***	1.824***	3.133***	3.061***
	(0.192)	(0.399)	(0.46)	(0.24)	(0.278)
Sust-M	1.998***	2.335***	1.762***	2.018***	2.13***
	(0.16)	(0.375)	(0.454)	(0.208)	(0.245)
treat-H	1.494***	0.809***	3.273***	1.396***	1.297***
	(0.3)	(0.278)	(0.751)	(0.306)	(0.407)
treat-M	0.461**	0.236	1.793**	0.448*	0.409
	(0.229)	(0.253)	(0.705)	(0.248)	(0.388)
FL-H	-	0.795*	2.19***	-	-
	-	(0.417)	(0.547)	-	-
FL-M	-	0.495	1.315***	-	-
	-	(0.374)	(0.501)	-	-
FL-treat-H	-	-	-2.879***	-	-
	-	-	(0.817)	-	-
FL-treat-M	-	-	-1.93**	-	-
	-	-	(0.76)	-	-
SFL-H	-	-	-	0.245	0.594
	-	-	-	(0.29)	(0.382)
SFL-M	-	-	-	0.52**	0.542
	-	-	-	(0.254)	(0.343)
SFL-treat-H	-	-	-	-	-0.881*
	-	-	-	-	(0.53)
SFL-treat-M	-	-	-	-	-0.374
	-	-	-	-	(0.496)
Num Obs	4040	4040	4040	4040	4040
Log Likelihood	-2206.30	-2155.78	-2147.51	-2182.78	-2181.32
Adj. McFadden R2	0.501	0.511	0.512	0.505	0.505

Note: *p<0.1; **p<0.05; ***p<0.01

This table presents the estimation results of a mixed logit model, with the standard errors in parentheses. Column (1) describes the baseline model without individual-related characteristics; column (2) includes the dummy on financial literacy dummy; in column (3) financial literacy is additionally interacted with the treatment. Column (4) includes the SFL dummy and column (5), the SFL dummy, interacted with the treatment. Return was specified as a fixed parameter, and sustainability and interaction terms as random parameters. We do not report the random parameters' standard deviation estimates in this table.

Next, we analyze the WTP for each model specification with financial and sustainable finance literacy in Table 7; as before, we included the baseline model in column (1) as a reference. Column (2) includes financial literacy and has no significant effect on the medium sustainability level fund; however, financial literacy shows a significant positive WTP of nearly 0.4 percentage points of annualized returns when interacted with

the high sustainability level. This observation changes when the interaction of financial literacy with the treatment is included in column (3). The parameter on financial literacy becomes significant for both sustainable options, meaning financial literacy increases the WTP for sustainable financial products by one percentage point for the high-sustainable fund and by 0.6 percentage points for the medium-sustainability fund.

The heterogeneous treatment effects for financial literacy have the opposite effect, with a reduced WTP by 1.4 percentage points for the high-sustainability fund and a one percentage point reduction for the medium-sustainable fund, which cancels out the treatment effect for respondents with high sustainability. Hence, the credentials of the advisor mainly affected less financially literate investors. Thus, our results align with studies that found financial literacy to be a substitute for financial advisors (Calcagno and Monticone 2015, Kramer 2016). However, the overall treatment effect of the high sustainability fund is greater than the literacy effect that all participants reacted to, including highly literate individuals.

We included sustainable finance literacy (SFL) in columns (4) and (5) and observe that SFL only significantly increases the WTP for the medium sustainability fund by 0.25 percentage points. This effect disappears when SFL was interacted with the treatment in column (5). Column (5) indicates a heterogeneous treatment effect with SFL for the high-sustainability option, which was however lower than for financial literacy with only a 0.4 percentage point decrease. These results suggest that high SFL investors may react less strongly to the treatment with the advisor but to a lesser extent than highly financially literate investors.

In sum, both literacy measures display similar trends in our study and seem to partially substitute for certified advice: higher financial and sustainable financial literacy increases the WTP for sustainable products. However, the credentials of the bank advisor show less impact on high-literate investors.

Table 7: Estimation results of mixed logit models - WTP (based on return)

	(1)	(2)	(3)	(4)	(5)
Sust-H	-1.561***	-1.436***	-0.907***	-1.549***	-1.521***
	(0.096)	(0.197)	(0.228)	(0.117)	(0.137)
Sust-M	-1.009***	-1.137***	-0.851***	-0.998***	-1.057***
	(0.081)	(0.186)	(0.223)	(0.104)	(0.121)
treat-H	-0.755***	-0.398***	-1.567***	-0.686***	-0.643***
	(0.151)	(0.136)	(0.366)	(0.15)	(0.201)
treat-M	-0.233**	-0.117	-0.895***	-0.219*	-0.204
	(0.116)	(0.124)	(0.345)	(0.123)	(0.193)
FL-H	-	-0.385*	-1.046***	-	-
	-	(0.204)	(0.265)	-	-
FL-M	-	-0.249	-0.648***	-	-
	-	(0.185)	(0.244)	-	-
FL-treat-h	-	-	1.37***	-	-
	-	-	(0.398)	-	-
FL-treat-m	-	-	0.961***	-	-
	-	-	(0.372)	-	-
SFL-H	-	-	-	-0.119	-0.295
	-	-	-	(0.143)	(0.19)
SFL-M	-	-	-	-0.255**	-0.27
	-	-	-	(0.126)	(0.171)
SFL-treat-H	-	-	-	-	0.436*
	-	-	-	-	(0.264)
SFL-treat-M	-	-	-	-	0.186
	-	-	-	-	(0.247)

Note: *p<0.1; **p<0.05; ***p<0.01

This table presents the WTP using a mixed logit model and the standard errors in parentheses. The WTP is calculated by dividing the negative value of the explanatory variables' coefficients by the return variable's preference parameter. Standard errors are combited using the Krinsky and Robb parametric bootstrapping method (Krinsky and Robb 1986). Column (1) describes the baseline model without individual-related characteristics, column (2) includes financial literacy and column (3) adds financial literacy interacted with treatment. Column (4) includes sustainable finance literacy (SFL) and column (5) adds SFL interacted with the treatment. We do not report the random parameters' standard deviation estimates in this table.

6   Discussion

Our estimation results suggest that the survey participants generally displayed a high WTP for sustainable investment; this WTP increased when primed with a hypothetical bank advisor certified in sustainable finance. WTP also increased for respondents with high financial and sustainable finance literacy. However, the interaction effect between the

advisor treatment and the literacy measures decreased the treatment effect, suggesting that the literacy measures and advisor certification are substitutes to some degree.

Our result that Swiss retail investors show significant preferences for sustainable investments aligns with previous studies using revealed preferences (Barber et al. 2021, Bauer et al. 2021, Hartzmark and Sussman 2019, Henke 2015, Riedl and Smeets 2017) and hypothetical choice experiments (Apostolakis et al. 2018, Gutsche and Ziegler 2019, Heeb et al. 2023, Lagerkvist et al. 2020). Studies that used a conjoint analysis to examine the WTP of sustainable investment products found similar results and magnitudes for the WTP. For example, Gutsche and Ziegler (2019) found a mean WTP for considering the sustainability label of 0.21 percentage points. Thus, the sustainable investment product has a slightly lower valuation than our paper. Henke (2015) found a WTP between 0.4 and 1.2 percentage points of the returns for sustainable fund attributes, which is closer to our results. Because the study from Henke (2015) was based on revealed instead of stated preferences, we believe our results generally reflect investor behavior.

In addition, Gutsche and Ziegler (2019) and Kleffel and Muck (2023) found a higher WTP for green funds certified as sustainable. In the study by Gutsche and Ziegler (2019), the mean WTP estimate for the certified product was 0.25 percentage points, twice that of uncertified products. Kleffel and Muck (2023) found in a similar setting that the willingness to sacrifice returns more than doubled for certified products (from 1.13% to 3.14%). Both studies suggest an additional WTP for the certification of sustainable investment products. This result is similar to our treatment with the certified bank advisor, where we found a 50% higher WTP for high-sustainability products when facing a certified bank advisor.

We included financial and sustainable finance literacy as covariates to contextualize the priming effect. As described in section 4.2, there is an ongoing debate in the literature on the relationship between financial knowledge of investors and financial advice. Investors' own knowledge is either a substitute for a financial advisor or complementary. We found that the treatment effect was smaller for high-financially literate respondents. The same holds for sustainable finance literacy. Hence, in line with Kramer (2016) and Calcagno and Monticone (2015), knowledge partially acts as a substitute for advice seeking, where less financially literate investors might use financial advice as a substitute for their (low) knowledge.

These results have an important implication: fostering the education of financial advisors could help guide investors towards sustainable investing, and thereby help to enact emission reduction. This finding is especially important in today's non-transparent market for sustainable investments, where financial advisors have a crucial role to play.

7 Conclusion

Using a hypothetical choice experiment with Swiss retail investors, we investigated (i) the impact of bank advisors and their certification (via priming) and (ii) the role of financial and sustainable finance literacy on WTP for sustainable investing. The results show a WTP of approximately 1.6 percentage points of annual return for sustainable financial products. Individuals primed with an advisor certified in sustainable investing displayed an additional WTP for highly sustainable financial products of 0.7 percentage points of annual return. Financial and sustainable finance literacy increased the WTP for highly sustainable products between 0.3 and one percentage point. However, introducing the advisor's credentials mostly affected less knowledgeable investors. This suggests that literacy and advice-seeking behavior are partial substitutes in the sample.

Our results suggest that investors are willing to pay for sustainability. However, transparency issues and lack of financial knowledge still represent obstacles for retail investors. We showed that investors' financial literacy and bank advisors' certified education can be useful in overcoming the barriers preventing sustainable investing; both factors increase WTP for sustainable investment products.

These insights emphasize the need for certified advisor training to promote sustainable finance. Fostering advisor training, similar to initiatives in Singapore, could increase the participation of retail investors in sustainable finance. Financial and sustainable finance literacy, on the other hand, can be addressed through information campaigns. Easily accessible information about sustainable finance could help increase SFL.

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A Choice Experiment

Table 8: Definition of sustainability levels

Sustainability level	Description
None	This fund includes shares that are representative of the entire global market
Middle	This fund invests in companies with low CO2 emissions and that pay fair wages
High	This fund invests in companies with low CO2 emissions and that pay fair wages, additionally, the fund invests in companies that actively seek to reduce CO2 emissions, like building new wind parks

Note: This table shows the definitions of the sustainability levels used in the conjoint experiment.

B Survey Questions

Financial Literacy We assess financial literacy using the three questions Lusardi and Mitchell developed (2008). The percentage of respondents selecting each option is indicated in parentheses, with the correct choice underlined.

1. Assume you have CHF 100 in a savings account, and you get 2 % interest per year on that savings account. No further deposits or withdrawals will be made to this account. What would be the account balance after five years?

a) <u>More than CHF 102</u> [93.86%]

b) Exactly CHF 102 [3.96%]

c) Less than CHF 102 [1.78%]

d) I don't know. [0.40%]

2. Now assume that you receive 1% interest per year instead and that inflation is 2% in the same period. How much could you afford after a year of the money in the account?

a) More than today [2.18%]

b) Same as today [3.16%]

c) <u>Less than today</u> [92.48%]

d) I don't know. [2.18%]

3. Is the following statement right or wrong: "Buying shares of a single company usually offers a safer return than buying shares of multiple companies."

a) Correct [0.99%]

b) _False_ [95.05%]

c) I don't know. [3.96%]

Sustainable Finance Literacy

1. Do sustainability ratings and labels for funds follow a uniform standard that makes them directly comparable to each other?

a) Yes [15.45%]

b) _No_ [41.18%]

c) I don't know. [43.36%]

2. Suppose a fund considers sustainability-related risks in addition to the financial risk analysis. Is that sufficient for this fund to be regarded sustainable (according to common working definitions in sustainable finance)?

a) Yes [11.68%]

b) _No_ [56.23%]

c) I don't know. [32.08%]

3. The main prupose of a "lightgreen fund" is to aim for financial returns.

a) _Yes_ [31.88%]

b) No [29.31 %]

c) I don't know. [38.81 %]

4. According to current EU rules, a fund can be labeled as "light green" if it invests in companies that have low carbon emissions but poor social practices.

a) _Yes_ [22.77%]

b) No [17.23 %]

c) I don't know. [60.00 %]

5. Would it be sufficient for a fund to declare and monitor a sustainable investment objective to be considered sustainable?

a) Yes [17.43%]

b) <u>No</u> [37.03%]

c) I don't know. [45.54%]

Psychographic characteristics 1. How much do you agree with the following statement: "I assume that the providers of sustainable investments comply with the sustainability guidelines that they state in their investment information." (0="Do not agree at all", 10="Very strongly agree")

2. How willing or unwilling are you to take risks when making decisions in your life?" (0 = "Completely unwilling to taking risks,"10 = "Very willing to take risks")

3. How willing are you to give up something that benefits you today in order to benefit more from it in the future? (0 = "Not at all willing", 10 = "Very willing")

4. How would you rate your willingness to share something with others without expecting something direct and immediate in return? (0 = "Not at all willing", 10 = "Very willing")

5. How much do you agree with the following statement: "Climate change is a serious problem that needs to be tackled." (0="Not at all in agreement", 10="Very much in agreement")

6. How much do you agree with the following statement: "Unless I am convinced otherwise, I always assume that other people only have the best in mind." (0="Strongly disagree", 10="Strongly agree")

Donations 1. Have you made at least one donation to a social organization in the last 12 months (e.g. Salvation Army, Swiss Solidarity, SOS Children's Villages, etc.)?

- Yes

- No

- I don't remember.

2.Have you made at least one donation to an environmental organization (e.g. Greenpeace, WWF, myclimate, etc.) in the last 12 months?

- Yes

- No

- I don't remember.

Income 1. What is the total gross monthly income of your household (in CHF)?

- less than 3000

- 3'000 - 4'500

- 4'501 - 6'000

- 6'001-9'000

- 9'001 - 12'000

- 12'001-16'000

- more than 16'000

- I prefer not to answer.

C Comprehension Checks

Figure 3: Comprehension check 1

Note: Original screenshot of the first comprehension question regarding the sustainability attributes.

Figure 4: Comprehension check 2

Information and Comprehension question 2

Please assume that a **bank advisor** has made a preselection of the funds shown. From these three funds, you can choose as you wish. The bank advisor will inform you about his credentials in sustainable and classic investments. Please, read the advisor's statement and answer the questions below.

Traditional investments:
• Many years of experience
Sustainable investments:
• **Special training with certificate***

* This training enables the advisor **to better detect greenwashing** i.e., whether the sustainability information corresponds to reality.

What does the special training for sustainable investments enable the advisor to do?

○	**Recognize the highest return**
○	**Minimize financial risk**
○	**Better identify greenwashing**

Does your hypothetical bank advisor in this experiment (displayed above) have this special training?

| ○ | **Yes** |
| ○ | **No** |

Continue→

Note: Original screenshot of the second comprehension question regarding the bank advisor´s certification.

D Variable Definitions

Table 9: Definition of variables obtained from the survey company

Variable	Description
Female	A dummy variable that takes the value of 1 if the respondent identifies as female and 0 otherwise.
Age	Age in years.
University degree	A dummy variable that takes the value of 1 if the respondent holds a university degree and 0 otherwise.
Pensioner	A dummy variable that takes the value of 1 if the respondent's current employment status is "pensioner" and 0 otherwise.
Maried	A dummy variable that takes the value of 1 if the respondent is married and 0 otherwise.
Household size	Number of people living in the respondent's household.
Income	Respondents were classified into six intervals for their monthly income: "less than 3,000 CHF," "3,000 - 4'500 CHF," "4'501 - 6,000 CHF," "6,001 - 9,000 CHF," "9,001 - 12,000 CHF" and "more than 12,000 CHF." We converted the intervals into a continuous variable by taking the average value for the interval when possible. The new continuous income variable thus takes the values: 3,000 CHF, 3,750 CHF, 5,250 CHF, 7,500 CHF, 10,500 CHF, and 14,000 CHF.

Note: This table describes the variables obtained from the survey company.

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