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Conference Paper

How relevant are economic preferences and personality traits for individual sustainable investment behavior? A framed field experiment

Beiträge zur Jahrestagung des Vereins für Socialpolitik 2020: Gender Economics

Provided in Cooperation with:
Verein für Socialpolitik / German Economic Association

Suggested Citation: Gutsche, Gunnar; Wetzel, Heike; Ziegler, Andreas (2020) : How relevant are economic preferences and personality traits for individual sustainable investment behavior? A framed field experiment, Beiträge zur Jahrestagung des Vereins für Socialpolitik 2020: Gender Economics, ZBW - Leibniz Information Centre for Economics, Kiel, Hamburg

This Version is available at:
https://hdl.handle.net/10419/224542

How relevant are economic preferences and personality traits for individual sustainable investment behavior?
A framed field experiment

Preliminary version

January 2020

Abstract

This paper analyzes the determinants of socially responsible investing (SRI) at the individual investor level. We examine data from an incentivized framed field experiment, which was part of a survey among a representative sample of financial decision makers in German households. Thus, we provide a new approach to elicit preferences for SRI. We further extend the set of potential determinants of SRI and consider all economic preferences according to Falk et al. (2018) and the Big Five personality traits. The analysis reveals that these factors are only of minor relevance in comparison to financial literacy, environmental values, and social norms.

Keywords: Socially responsible investing; economic preferences; personality traits; framed field experiment

JEL: G11, Q56, G02, A12, A13

1. Introduction

Socially responsible investing (SRI), i.e. investment processes that account for environmental, social, and/or governance (i.e. ESG) criteria, has developed from a niche market to almost mainstream during recent years (e.g. Eurosif, 2018; US SIF, 2018). It is further one key component for the achievement of international and national climate goals, as related tremendous investment needs are yet not met and require the mobilization as well as upscaling of private investments, e.g. for low-carbon infrastructure (e.g. OECD, 2017). Knowledge of the extent of SRI among private investors and its determinants is thus valuable in order to design adequate, supporting policy measures. Therefore, this paper analyzes the determinants of SRI at the individual (i.e. retail) investor level.

Previous empirical studies already reveal that both pecuniary and non-pecuniary factors play an important role for financial decisions in general (e.g. Hong and Kostovetsky, 2012) and particularly SRI (e.g. Riedl and Smeets, 2017; Døskeland and Pedersen, 2019; Gutsche et al., 2019; Gutsche and Ziegler, 2019) as well as controversial investing (e.g. Hong and Kacperczyk, 2009). However, with a few exceptions (e.g. Barreda-Tarrazona et al., 2011; Riedl and Smeets, 2017), previous evidence is either based on indirect approaches (e.g. fund flow analyses) or on surveys or stated choice experiments. While the former approaches do not allow to disentangle relevant determinants (or even investor types), the latter approaches might be prone to several biases, such as hypothetical or retrospective bias (e.g. Gutsche and Ziegler, 2019). Moreover, previous studies largely neglect possibly important factors such as economic preferences or personality traits, which have been shown to be relevant for other economic outcomes in general, and financial decisions in particular.

To this end, this study analyzes investment data from a large framed field experiment that was conducted among a representative sample of financial decision makers in Germany during September and October 2019. Each participant was asked to allocate 500€ among four real globally-oriented equity funds, which varied, inter alia, in terms of past performance, annual management and front-up fees, and particularly the level of sustainability measured by the Morningstar sustainability rating. In order to make choices incentive-compatible, we informed the participants that 20 out of them are randomly selected after finishing the survey in October 2019 and that their investment decisions are realized indeed. We further explained that the investment is lasting for one year. Accordingly, we invested real money according to their investment decisions in October 2019. After one year, i.e. in October 2020, we are selling the fund units again and the selected participants are receiving the actual value of their portfolio. For example, if the

value of their portfolio increased from 500€ to 550€ by October 2020, they would receive 550€. In line with previous studies, we used a survey to collect data on several possible determinants, such as personal values, social norms, economic preferences (i.e. risk, time, and social preferences) and personality traits (in terms of the Big Five, i.e. extraversion, agreeableness, conscientiousness, emotional stability, and openness to experiences).

We find that individual investors on average invest significantly more in socially responsible funds than they would invest under a naïve diversification strategy (i.e. where they would just allocate their endowment equally across all alternatives). Notably, against our expectations, individuals' economic preferences and personality traits are only of minor relevance for investments in socially responsible funds after controlling for a variety of other factors. Instead, we find that particularly individual financial literacy and, in line with previous studies, feelings of warm glow, an environmental orientation, and perceived expectations of the social environment are positively associated with investments in socially responsible funds. Additionally, we find that younger investors invest more in socially responsible funds than older investors. In contrast to previous studies, engaging in voluntary work and social signaling motives are negatively related to SRI, respectively.

Our paper makes four contributions. First, by incentivizing the investment decisions in our experiment, we extend previous studies in this field that are based on survey or stated choice data, as discussed above, and thus overcome their limitations. We secondly contribute to studies on the determinants of individual SRI (e.g. Nilsson et al., 2008; Riedl and Smeets, 2017; Nakai et al., 2018; Brodback et al., 2019; Døskeland and Pedersen, 2016, 2019; Gutsche et al., 2019; Gutsche and Ziegler, 2019; Rossi et al., 2019) and extend the set of potential determinants by implementing all dimensions of economic preferences according to Falk et al. (2018) as well as personality traits measured by the Big Five according to Gosling et al. (2003), which mitigates potential omitted variable bias. Thereby, we indirectly also provide further empirical evidence on the determinants of pro-environmental and pro-social behavior, but also financial decisions. Thirdly, we provide new empirical evidence on the role of economic preferences and personality traits on economic decisions in general (Borghans et al., 2008; Almlund et al., 2011) and financial decisions in particular (e.g. Conlin et al., 2015; Gerhard et al., 2018). Finally, by considering economic preferences and personality traits simultaneously we fourthly contribute to the discussion on the relationship between these two sets of factors (e.g. Becker et al., 2012).

The remainder of the paper is structured as follows: Section 2 describes the data from the survey, the experimental design, and the variables considered in the econometric analysis. In this

context, we also explain our expectations about how the individual sustainable investment behavior is related to the various explanatory variables. Section 3 reports and discusses the estimation results. Section 4 concludes.

2. Data and variables

2.1. Survey

Our empirical analysis is based on investment data from a large framed field experiment that was conducted within a representative (in terms of age, gender, and place of residence) online survey among financial decision makers in Germany. The survey has been carried out in cooperation with the professional market research institute Psyma+Consultic GmbH (Psyma) during September and October 2019. The target group of financial decision makers is defined in line with Gutsche and Ziegler (2019), who consider persons that are at least 18 years of age, mainly or equally responsible for financial decisions of the household, and familiar with investment activities. The last criterion is satisfied by only including those decision makers who (i) are currently invested in, (ii) had invested in, or (iii) have extensively informed themselves about stocks, equity funds, bonds, bond funds, or other investment products with flexible returns (such as options, certificates, open real estate funds, closed-end funds, mixed funds).

The respondents were recruited from online panels by Psyma, which was, among others, responsible for the programming of the questionnaire, hosting the survey, and particularly the recruitment process. In order to derive a sample that is representative for financial decision makers in German households and not for German citizens in general the recruitment procedure was split into two steps.[1] Firstly, Psyma recruited people according to quotas for age, gender, and place of residence at the federal state level for the general German population. In a second step, we asked screening questions about the respondents' responsibility on financial decisions in the household and their previous investment experiences. Only those who fulfilled the aforementioned requirements were allowed to proceed with the questionnaire and to participate in the field experiment. Furthermore, Psyma conducted quality checks (e.g. regarding systematic response patterns) on all completed questionnaires throughout the field time. Low quality interviews were excluded from the sample and new respondents were re-recruited accordingly.

[1] Thus, for our samples, we expected a larger share of male, highly educated, and high-income persons compared to the general German population.

The survey comprised several parts referring to general and SRI-related investment decisions, to economic preferences and personality traits, to financial literacy, to individual environmental and pro-social attitudes, to several contextual factors, especially social norms, as wells as to socio-demographic and socio-economic characteristics. The main part consists of a framed field experiment mapping an investment decision among a number of real globally-oriented equity funds that particularly differ with respect to their sustainability level.

Overall, the survey includes 2,500 respondents that participated in various treatments within the investment experiment. The baseline treatment with 749 participants serves as a control group and is the basis for the study at hand.

2.2. Experimental design

The investment experiment started with a detailed description of the choice situation. The 749 participants of the control group were asked to allocate 500€ among four globally-oriented real equity funds, which varied, inter alia, in terms of past performance, annual and front-up fees, and particularly the level of sustainability measured by the Morningstar sustainability rating. In order to make choices incentive-compatible, we informed the participants that 20 out of them are randomly selected after finishing the survey in October 2019 and that their investment decisions are realized indeed. That is, we invest real money according to their investment decisions. We further explained that the investment is lasting for one year. After this year, i.e. in October 2020, we will sell the fund units again and the selected participants will receive the actual value of their portfolio. For example, if the value of their portfolio increased from 500€ to 550€ by October 2020, they would receive 550€. Or if the value of their portfolio decreased to 450€ by October 2020, they would receive 450€. Further, we informed the participants that they can invest the entire 500€ into one fund, or distribute the amount evenly or unevenly between the different funds and that if they choose to invest in a fund, they must invest at least 50€.

In the next step of the experiment, a choice set of four equity funds was displayed to the participants. Thereby, the characteristics of the funds were described by eight attributes:

- Risk and return profile
- Maximum front-up fees
- Maximum redemption fees
- Annual management fees
- Degree of sustainability

- Returns in the last year
- Average returns in the last three years
- Average returns in the last five years

In addition, participants could choose to receive further information on the funds by clicking on a dialogue button that opened links to a number of documents such as the sales brochures. The participants were asked to review the fund profiles and to distribute the 500€ between the four equity funds. Figure 1 presents the screenshot of an exemplary choice set (in German) and Appendix A provides an English translation of the instructions that were given to the participants.

Each choice set was constructed by randomly drawing four out of eight equity funds from an underlying universe. The eight funds for the investment universe were carefully selected from a wide range of equity funds. All funds are globally-oriented equity funds, reinvest the returns in the fund, and are traded in euros. In addition, none of the selected funds has a sustainability mandate or includes any reference to its sustainability level in its name. Furthermore, and most importantly, in line with Hartzmark and Sussman (2019), we distinguish socially responsible funds from conventional funds by using the Morningstar sustainability rating as an indicator for a fund's sustainability performance. Four funds in the funds universe have a high Morningstar sustainability rating with four or five Morningstar globes, and four funds have a low Morningstar sustainability ranking with one or two Morningstar globes.[2] Within each choice set at least one funds is a socially responsible fund, i.e. a fund with a high Morningstar sustainability rating, and at least one is a conventional fund, i.e. a fund with a low Morningstar sustainability ranking. Hence, the number of socially responsible funds in a choice set can vary between one and three.

Finally, in order to achieve a good match between socially responsible and conventional funds, we aimed to obtain similar averages for the financial attributes of the four equity funds with a high Morningstar sustainability rating and the four equity funds with a low Morningstar sustainability rating from the underlying universe. Table 1 provides an overview of all equity funds included in the experiment's investment universe. In addition, the relatively low expected differences in the averages of the financial attributes shown in column six of Table 2 indicate that the we were quite successful in selecting suitable funds for the underlying universe. Only, for

[2] See https://www.morningstar.com/content/dam/marketing/shared/research/methodology/744156_Morningstar_Sustainability_Rating_for_Funds_Methodology.pdf for a detailed description of the Morningstar sustainability rating methodology, accessed on January 31th, 2020. .

the financial attributes "Average returns in the last three years" and "Annual management fees" meaningful differences can be seen. This will be controlled for in the econometric analysis.

2.3. Variables in the econometric analysis

2.3.1. Dependent variables

We construct three variables to capture the respondents' socially responsible investment behavior. The main variable 'amount invested in socially responsible funds' denotes the amount of money (in €) a respondent allocated towards equity funds with a high Morningstar sustainability rating, i.e. with four or five Morningstar globes.[3] As the choice sets and thus the number of socially responsible funds vary across respondents, they might invest more in socially responsible funds just because they find more of these funds in their choice set. In other words, persons who simply apply a naïve diversification strategy (also known as 1/n heuristic, e.g. Benartzi and Thaler, 2001), i.e. allocate their endowment equally across all four alternatives, will invest more in socially responsible funds if they are offered three of these funds instead of just one. We thus additionally construct the variable 'difference to 1/n strategy' which denotes the difference between the amount a respondent actually invested in socially responsible funds (i.e. 'amount invested in socially responsible funds') and the amount they would invest under a naïve diversification strategy. Thus, the active choice of socially responsible funds is associated with higher values of this variable. Lastly, we construct the variable 'relative difference to 1/n strategy' by dividing a respondents' value for 'difference to 1/n strategy' by the amount they would invest in socially responsible funds under a naïve diversification strategy multiplied by 100. Therefore, this variable takes the value zero (%) if the respondent follows the 1/n strategy. A value of 10% therefore indicates that the respondent invests 10% more in socially responsible funds than under a naïve diversification strategy. The descriptive statistics for these variables are discussed in Section 3.1.

2.3.2. Financial controls

Since the choice sets are constructed by randomly drawing four out of eight equity funds from the underlying universe, as described above, they do not only vary in terms of sustainability ratings, but also regarding financial attributes, such as annual management fees, front-up fees, the returns in the last year, and the average returns during the last three as well as five years.

[3] In the following we denote equity funds with a high Morningstar sustainability rating, i.e. those with four or five globes, as socially responsible funds.

Additionally, by construction, socially responsible and conventional funds differ in terms of these financial attributes as well (see Table 1 and Table 2). As both issues might severely affect respondents' choices, we need to control for these differences. To this end, for each choice set (i.e. respondent), we calculate the average values for each of the aforementioned financial attributes for funds with a high sustainability rating (i.e. for those with four or five Morningstar globes) and for funds with a low sustainability rating (i.e. for those with one or two Morningstar globes), respectively. The variables 'difference in average annual management fees', 'difference in average front-up fees', 'difference in average returns in the last year', 'difference in average returns in the last three years', and 'difference in average returns in the last five years' then just denote the absolute differences in the corresponding financial attributes between socially responsible and conventional funds within a given choice set (measured in percentage points). The means for these variables are reported in the last column of Table 2. Table 2 reveals that the four socially responsible funds on average have experienced slightly higher returns in the last year (0.06 percentage points), higher average returns in last three years (1.51 percentage points), but slightly lower average returns in the last five years (-0.16 percentage points) than the four funds with low Morningstar sustainability ratings. Moreover, the "portfolio" of socially responsible funds has lower average annual management fees (-0.51 percentage points), but slightly higher front-up fees (0.20 percentage points).

2.3.3. Economic preferences

Economic preferences, i.e. risk preferences, time preferences, and social preferences (i.e. altruism, trust, and positive as well as negative reciprocity) are important determinants of several economic outcomes (e.g. Falk et al., 2018). However, if at all, previous studies in the field of individual SRI only consider single factors (usually risk preferences, altruism, and/or trust) and not the full set of economic preferences. The latter is problematic in terms of potential omitted variable bias, given that indicators for economic preferences are typically correlated with each other (e.g. Falk et al., 2018) or other categories of explanatory variables, such as personality traits (e.g. Becker et al., 2012).

With respect to risk preferences, previous studies find ambiguous results. Bauer and Smeets (2015) find that risk tolerant clients allocate a smaller amount of their investments to socially responsible banks. Similarly, Bassen et al. (2019) find that risk tolerant persons put less weight on funds' climate performance in comparison to their financial performance. In contrast, Riedl and Smeets (2017) find a positive correlation between risk tolerance and the amount invested in socially responsible equity funds, but no significant impact on the probability to invest in a

socially responsible manner. Similarly, Nakai et al. (2018) find no significant effects on the stated preferences for investments in socially responsible companies. Generally, one could argue that risk tolerant persons evaluate the risk of climate change (or other ecological, social, or ethical threats) as less severe than risk averse persons and thus tend to invest less in socially responsible equity funds. This would be in line with the findings by Bauer and Smeets (2015) or Bassen et al. (2019), but is contradicted by the findings by Riedl and Smeets (2017). Ex ante, it is thus empirically not clear whether risk preferences are positively or negatively related to individual SRI. With respect to time preferences, one could argue that patient persons are more likely to behave in a sustainable manner, and thus allocate more resources to socially responsible investments. However, extant studies in the field of SRI either find no conclusive results (e.g. Nakai et al., 2018) or even that investors with longer investment horizons put a higher weight on a fund's financial performance than on climate performance (e.g. Bassen et al., 2019). In contrast, empirical evidence for altruism is rather consistent and rather reveals an intuitively expected positive relationship to the probability to invest in a socially responsible manner (e.g. Riedl and Smeets, 2017) or the importance of social responsibility in investment decisions (e.g. Brodback et al., 2019). We therefore also expect that altruistic persons invest a larger share of their endowment into socially responsible equity funds. Regarding trust, previous studies show its importance for many financial decisions, such as stock market participation (e.g. Guiso et al., 2008), but also for individual SRI (e.g. Nilsson, 2008; Gutsche and Zwergel, 2016). We therefore also expect a positive relationship between trust and investments in SRI. Finally, to the best of our knowledge, no study on individual SRI has considered the role of positive and negative reciprocity yet. It is therefore an empirical question to what extent these two economic preferences are related to individual SRI.

We measure economic preferences based on several qualitative measures. Risk preferences are measured by following, for example, Dohmen et al. (2011) or Falk et al. (2018). The dummy variable 'risk taking' takes the value one if the respondent indicated to be rather or very willing to take risks in general.[4] We capture individual time preferences by constructing the dummy variable 'patience' that takes the value one if the respondent indicated to be rather or very willing to give up something that is beneficial for them today in order to benefit more from that in the future (e.g. Falk et al., 2018).[5] Altruism is measured by the dummy variable 'altruism' that

[4] The respondents were asked to indicate their willingness to take risks on a symmetric scale with the five ordered categories "completely unwilling to take risks", "rather unwilling to take risks", "undecided", "rather willing to take risks", and "very willing to take risks".

[5] The respondents were asked to indicate their willingness on a symmetric scale with the fived ordered categories "completely unwilling", "rather unwilling", "undecided", "rather willing", and "very willing".

takes the value one if the respondent indicated to be rather or very willing to give to good causes without expecting anything in return (e.g. Falk et al., 2018).[6] Table 3 shows that about 32% of the respondents indicate to be willing to take risks, about 67% can be considered as patient, and 66% are altruistic according to our measures.

The further social preferences are captured by the variables 'trust', 'positive reciprocity', and 'negative reciprocity'. Our measure for trust is based on three items according to Dohmen et al. (2012). Accordingly, we asked the respondents to indicate to what extent they agree to the following three statements: "In general, one can trust people.", "These days you cannot rely on anybody else.", and "When dealing with strangers, it is better to be careful before you trust them.".[7] We constructed one dummy variable for each statement. The first dummy variable takes the value one if the respondent rather or totally agreed to the first statement, while the other two dummy variables take the value one if the respondent rather or totally disagreed to the latter two statements, respectively. The variable 'trust' is then just the sum of these three dummy variables and ranges between zero and three. The measures for positive and negative reciprocity are similarly constructed based on three items for each variable according to Dohmen et al. (2009). In the case of positive reciprocity, we asked the respondents to indicate to what extent they agree to the following three statements: "If someone does me a favor I am willing to return it.", "I am particularly trying to help someone who has helped me before.", and "I am willing to pay costs to help someone who has helped me before.".[8] We again constructed three dummy variables for each statement that takes the value one if the respondent rather or totally agreed to the corresponding statement. The variable "positive reciprocity" is then just the sum of these three dummy variables. The variable 'negative reciprocity' is constructed in the same manner, and is based on the statements "If I am faced with a great injustice, I will avenge myself at the next opportunity.", "If someone puts me in a difficult position, I'll do the same with him.", and "If someone insults me, I will also be offensive to him".[9] Therefore, this variable also ranges from zero to three, while a higher value indicates a higher individual degree of negative reciprocity. The means for these three variables amount to 0.82 for 'trust',

[6] The respondents were asked to indicate their willingness on a symmetric scale with the fived ordered categories "completely unwilling", "rather unwilling", "undecided", "rather willing", and "very willing".
[7] The respondents were asked to indicate to what extent they agree with corresponding statement on a symmetric scale with the five ordered response categories "totally disagree", "rather disagree", "undecided", "rather agree", and "totally agree".
[8] The respondents were asked to indicate to what extent they agree with corresponding statement on a symmetric scale with the five ordered response categories "totally disagree", "rather disagree", "undecided", "rather agree", and "totally agree".
[9] The respondents were asked to indicate to what extent they agree with corresponding statement on a symmetric scale with the five ordered response categories "totally disagree", "rather disagree", "undecided", "rather agree", and "totally agree".

2.62 for 'positive reciprocity', and 0.53 for 'negative reciprocity' (see Table 3). On average these figures indicate rather low levels for individual trust and negative reciprocity, and relatively high scores for positive reciprocity.

2.3.4. Personality traits

Gerhard et al. (2018) show that a holistic approach that includes individual attitudes, cognitive skills (e.g. in terms of financial literacy), but also personality traits, more adequately explains savings behavior than approaches just considering a few potential factors. We therefore additionally consider personality traits, which are defined as "[…] relatively enduring patterns of thoughts, feelings, and behaviors that reflect the tendency to respond in certain ways under certain circumstances." (Roberts, 2009, p. 140). Prior research has shown that personality traits are related to a variety of economic outcomes (e.g. Borghans et al., 2008; Almlund et al, 2011; Becker et al. 2012) and particularly individual financial behavior, such as savings behavior (e.g. Cobb-Clark et al., 2016; Gerhard et al., 2018), stock market participation (e.g. Conlin et al., 2015; Bucciol and Zarri, 2017), or portfolio monitoring behavior (e.g. Gherzi at al., 2014). Yet, no study has analyzed their role in the context of individual SRI. However, the recent study by Jacksohn et al. (2019) find that personality traits only play a minor role in the context of individual investments in renewable energy technologies and that economic benefits as well as socio-demographic factors seem to be more important.

While many measurement systems for personality traits exist, we consider the most prominent taxonomy, i.e. the Big Five (e.g. Borghans et al., 2008; Almlund et al., 2011). The Big Five, i.e. openness to experience, conscientiousness, extraversion, agreeableness, and emotional stability (or neuroticism), measure personality traits at the highest level of abstraction and can be further divided into several underlying facets (e.g. Almlund et al., 2011; Becker et al., 2012). Several studies in the field of financial economics have applied this taxonomy (e.g. Cobb-Clark et al., 2016; Gerhard et al., 2018). Openness to experience describes a person's tendency to being "open to new aesthetic, cultural, or intellectual experiences" (Dictionary of Psychology of the American Psychological Association, APAa, 2020). Empirical evidence varies across financial contexts and target groups, and we cannot derive a clear expectation based on previous studies (see the overview provided in Table C1 in Appendix C). Given that SRI is a rather new class of financial products, which should be rather new to the majority of individual investors, we expect that persons who are open to new experiences invest more strongly into socially

responsible equity funds. Conscientiousness is defined as "the tendency to be organized, responsible, and hardworking" (APA, 2020b). Thus, this trait is typically related to the ability to plan, being self-disciplined, and to delay gratification (e.g. Nyhus and Webley, 2001). Nyhus and Webley (2001) argue that such persons are be more likely to handle their finances and thus have a higher willingness as well as ability to save money. However, empirical studies again reveal no clear picture (see Table C1). In the context of SRI, one could argue that conscious persons are more farsighted, and thus take long-term consequences of (un-) sustainable activities into consideration. Consequently, we expect that those persons allocate a higher share of their endowment to socially responsible funds. Extraversion describes "relatively outgoing, gregarious, sociable, and openly expressive" persons (APA, 2020c) and tends to be negatively related to a variety of financial decisions (e.g. Nyhus and Webley, 2001; Brown and Taylor, 2014; Bucciol and Zarri, 2017; Gerhard et al., 2018). Nyhus and Webley (2001) argue that extraverted people are more strongly affected by financial behavior of their peers, as they meet and talk to persons more regularly. Therefore, its effect in the context of SRI is yet unclear and could severely depend on the attitudes of the social environment towards sustainable equity funds. Agreeableness is described as "the tendency to act in a cooperative, unselfish manner" (APA, 2020d). Accordingly, Nyhus and Webley (2001) argue that agreeableness is positively related to a person's pro-social behavior towards others, which might translate into higher and charitable giving. Consequently, these persons might have less money to save for themselves. This argumentation is line with findings in several studies revealing that agreeableness is negatively related to household savings (e.g. Nyhus and Webley, 2001; Gerhard et al., 2018) and stock market participation (e.g. Bucciol and Zarri, 2017). Consequently, we expect a positive relation between agreeableness and investments in socially responsible funds. Finally, emotional stability describes the "predictability and consistency in emotional reactions, with absence of rapid mood changes" (APA, 2020e). Empirical evidence is again mixed and tends to find no significant relationship to financial decisions (see Table C2). Therefore, we do not formulate any expectations on its association to individual SRI.

In order to capture the Big Five personality traits, we apply the Ten Item Personality Inventory (TIPI) introduced by Gosling et al. (2003). Though this scale does not allow to measure underlying facets in detail, its brevity is very appealing for online surveys, and has been applied to several economically- and environmentally-relevant fields, such as environmental engagement (e.g. Milfont and Sibley, 2012) and choices over public environmental goods (e.g. Boyce et al., 2019). Accordingly, we presented ten pairs of character traits (two pairs for each of the Big

Five traits) to the respondents and asked them to indicate how strongly they agree to what extent each pair applies to them. For example, the pairs "open to new experiences" and "conventional, uncreative" are used to capture openness to experience, while the first pair is the standard item and the latter the reverse-scored item.[10] The respondents were again asked to answer on a scale with five ordered response categories, i.e. "totally disagree", "rather disagree", "undecided", "rather agree", and "totally agree". For calculating a score for each personality trait, we translated these categories into numbers ranging from one to five (where 1 stands for "totally disagree" and 5 stands for "totally agree") for standard items and numbers ranging from five to one for reverse-scored items. The score for each Big Five personality trait is then just the average of the scores for the corresponding items and ranges from one to five. Table 3 shows the respondents on average score highest on conscientiousness (4.28), followed by agreeableness (3.83), openness to experiences (3.77), emotional stability (3.76), and extraversion (2.77).

2.3.5. Financial literacy

We further consider individual financial knowledge, or financial literacy, which is positively related to a variety of financial decisions, such as stock market participation (e.g. van Rooij et al., 2011) or retirement planning (e.g. van Rooij et al., 2012). The relevance of individuals' financial knowledge is far less clear in the context of SRI. For instance, previous studies find no significant relationship between self-rated financial knowledge and the amount invested at a socially responsible bank (e.g. Bauer and Smeets, 2015) or the importance of social responsibility in investment decisions (e.g. Brodback et al., 2019). Similarly, depending on the model specification, Riedl and Smeets (2017) find a non-significant or only weakly positive relation between self-assessed investment knowledge and the probability to hold socially responsible funds. Interestingly, they even find a weakly significant negative relation to the holdings of socially responsible funds as share the individuals' total portfolio. This is partly in line with Rossi et al. (2019) who find that persons scoring high on self-assessed financial literacy have lower stated preferences for investments at a socially responsible bank and particularly in socially responsible equity funds. However, though some of these scales are validated (e.g. Bauer and Smeets, 2015), self-assessed financial literacy is a very subjective measure and could be driven by overconfidence (e.g. Rossi et al., 2019). In order to address this issue, Rossi et al. (2019) also consider an objective measure designed by Lusardi and Mitchell (2008), which we

[10] The other pairs were "dependable, self-disciplined" and "disorganized, careless" for conscientiousness, "extraverted, enthusiastic" and "reserved, quiet" for extraversion, "critical, quarrelsome" and "sympathic, warm" for agreeableness, and "anxious, easily upset" and "calm, emotionally stable" for emotional stability.

describe below. Notably, when considering this indicator, their results partly change, for example, from significantly negative to positive effects in the case of socially responsible banks. Though, they still find a highly significant negative effect with respect to socially responsible equity funds. Therefore, we also consider two measures for individual financial literacy.

First, we use the three items designed by Lusardi and Mitchell (2008), which are widely accepted and aim to reveal the respondents' fundamental economic and finance knowledge. To construct this measure, the respondents were asked three questions referring to interest rates, inflation, and risk diversification, respectively.[11] The variable 'financial literacy' then just comprises the sum of correct answers and thus ranges between zero and three. Secondly, we asked the respondents to indicate how strongly they agree with the statement "I have a good knowledge of investments.".[12] The dummy variable 'good knowledge' takes the value one if the respondent rather or totally agreed to the statement. As reported in Table 3, most respondents answer the three questions correctly, which leads to 2.46 correct answers on average. This value is higher compared to previous studies considering financial literacy for representative German households (e.g. Bucher-Koenen and Lusardi, 2011) and can be traced back to our specific sample of rather financially experienced financial decision makers. Notably, this value expresses a higher financial knowledge than we would expect based on our self-assessed measure, which indicates that only 38.6% of the respondents state to have a good financial knowledge.[13] Moreover, the Pearsson correlation coefficient between 'financial literacy' and 'good knowledge' is rather low (0.1339). In sum, this suggests that these indicators measure different things indeed.

2.3.6. Perceived benefits and costs

It is well-known that individual investor not only consider the objective financial performance of their investment alternatives (i.e. the aforementioned financial attributes), but that also perceived benefits and costs matter. Therefore, we follow previous studies in the field of individual

[11] The questions and corresponding response categories were formulated as follows: (i) "Imagine you have €100 on a savings account and the interest rate is 2% per year. Please give your estimate of how much money you would have on the savings book after five years if you never withdraw money or interest payments during this time." (response categories: "less than 102€", "exactly 102€", "more than 102€", "don't know"), (ii) "Imagine that the interest rate on your savings book is 1% per year and inflation is 2% per year. Please give your estimate of how much you could buy with the money in your savings account after one year." (response categories: "less than today", "exactly the same", "more than today", "don't know", and (iii) "Please state your opinion as to whether the following statement is true or false: "The purchase of an individual share usually has a more secure return than an equity fund"." (response categories: "right", "wrong", "don't know").

[12] This statement is based on the item used by Riedl and Smeets (2017).

[13] This is still higher than in studies, which do not solely focus on financial decision makers. For instance, Brodback et al. (2019) report 25.5% of their respondents self-assess their investment knowledge as good.

SRI (e.g. Bauer and Smeets, 2015; Riedl and Smeets, 2017; Gutsche et al., 2019) and construct two dummy variables capturing individuals' perception towards returns and risk of socially responsible equity funds compared to their conventional counterparts. The variable 'perceived higher returns SRI' takes the value one if the respondent perceived returns of socially responsible equity funds to be rather or much higher than returns of conventional equity funds.[14] In the same vein, the variable 'perceived higher risk SRI' takes the value one if the respondent agreed rather or totally to the statement "Sustainable equity funds are riskier than conventional equity funds."[15]

Naturally, we expect that persons perceiving socially responsible equity funds to have higher returns compared to conventional equity funds allocate more money to the previous type of funds. Likewise, persons should invest less money in socially responsible equity funds if they perceive them to be riskier than conventional equity funds. As reported in Table 3, 20% of the respondents perceive that socially responsible equity funds have higher returns than their counterparts. Similarly, 21% of the respondents perceive socially responsible as riskier compared to conventional equity funds. These results are rather similar to those by Riedl and Smeets (2017) who report that 14.41% (17.04%) of the conventional (socially responsible) investors expect higher returns for socially responsible equity funds, and 16.62% (18.84%) perceive socially responsible equity funds to be riskier than their conventional counterparts. However, the results rather differ from those reported by Bauer and Smeets (2015) as well as Gutsche et al. (2019), which can be explained by different target underlying target groups and slightly different wordings of the questions.[16]

In order to control for further perceived psychological benefits, we additionally include a measures to capture feelings of warm glow (e.g. Andreoni, 1990) through acting in a sustainable manner. The dummy variable 'warm glow' takes the value one if the respondent rather or totally agreed to the statement "It makes me feel good to act sustainably.".[17] In line with previous studies in the field of individual SRI (e.g. Gutsche et al., 2019; Gutsche and Ziegler, 2019) or

[14] The respondents were asked to indicate their perception on a symmetric scale with the five ordered response categories "much lower", "rather lower", "neither lower nor higher", "rather higher", and "much higher".
[15] The respondents were asked to indicate to what extent they agree with corresponding statement on a symmetric scale with the five ordered response categories "totally disagree", "rather disagree", "undecided", "rather agree", and "totally agree".
[16] For example, Bauer and Smeets (2015) considered clients from two sustainability banks and Gutsche et al. (2019) asked for the perceived performance of socially responsible investments in general, and not particularly for socially responsible equity funds.
[17] The respondents were asked to indicate to what extent they agree with corresponding statement on a symmetric scale with the five ordered response categories "totally disagree", "rather disagree", "undecided", "rather agree", and "totally agree".

sustainable activities (e.g. Schwirplies and Ziegler, 2016), we expect that people receiving feelings of warm glow from sustainable behaviors allocate a larger share of their endowment to socially responsible equity funds. Unsurprisingly, about 77% of the respondents indicated that they feel good through sustainable behavior (see Table 3).

2.3.7. Attitudinal variables, personal values, and contextual factors

We additionally consider a variety of measures for individual attitudes, personal values, and contextual factors, especially social norms, as their relevance is evident for a variety of financial decision contexts.

Firstly, we construct two measures for individual environmental values, as the consideration of ecological criteria is one important component for socially responsible investment strategies. Following Gutsche et al. (2019), we construct the dummy variable 'membership environmental organization' that takes the value one if the respondent indicated to be a member of a group or organization that is committed to preserving and protecting the environment and nature. As reported in Table 3, we see that this applies to 11% of the respondents in our sample. In addition, we introduce the widely used New Environmental Paradigm (NEP) scale (e.g. Dunlap et al., 2000). Instead of using the original scale with 15 items, we follow Whitmarsh (2008) who finds that respondents had problems interpreting nine of the 15 items. The resulting six-item NEP scale has been applied in a variety of studies on energy- and climate-change-related topics (e.g. Schwirplies and Ziegler, 2017; Ziegler, 2017, 2019). To construct this measure, the respondents were asked to indicate to what extent they agree to six statements, while three statements were environmentally positively worded (e.g. "Humans are severely abusing the planet.") and three statements were environmentally negatively worded (e.g. "Humans have the right to modify the natural environment to suit their needs.")[18]. On this basis, we constructed one dummy variable for each statement. In the case of environmentally positively (negatively) worded statements each dummy variable takes the value one if the respondent rather or totally agreed (rather or totally disagreed) to the corresponding statement. The variable 'NEP' is then just the sum of these six dummy variables and consequently ranges between zero and six. The mean is 4.56 and thus indicates rather high environmental values among the respondents on average (see Table 3), which is in line with previous studies (e.g. Ziegler, 2019).

[18] The other two environmentally positively worded statements were "Plants and animals have the same right to exist as humans." and "The balance of nature is very delicate and easily upset.". The further environmentally negatively worded statements were "Nature is strong enough to cope with the impacts of modern industrial nations." and "Humans were meant to rule over the rest of nature.".

Social contextual factors, such as the behavior and expectations of peers, play an important role for individual economic and environmentally-friendly behavior (e.g. Nyborg et al., 2016), and particularly for financial behavior, such as stock market participation (e.g. Hong et al., 2004; Brown et al., 2008; Georgarakos and Inderst, 2014), retirement saving decisions (e.g. Beshears et al., 2015), but also individual SRI (e.g. Riedl and Smeets, 2017; Gutsche et al., 2019). Social norms might affect individual behavior via several channels. One potential channel is social signaling (e.g. Riedl and Smeets, 2017). As investment decisions and the intention to invest cannot be observed by others, people need to talk about their socially responsible investment behavior to others in order to signal pro-environmental behavior (e.g. Riedl and Smeets, 2017). Further, word-to-mouth learning could be an important driver for investment decisions (e.g. Hong et al., 2004). Therefore, in line with Riedl and Smeets (2017), we additionally construct the dummy variable 'talk about investments' that takes the value one if the respondent rather or totally agreed to the statement "I often talk to others about investments.".[19] As alternative measure, we construct the dummy variable 'talking social environment' that takes the value one if the respondent indicated to talk with relatives, acquaintances, or friends before making an investment (e.g. Gutsche et al., 2019). Table 3 shows that 29% of the respondents indicate to often talk about investments, while 38% typically talk to their social environment before making investments. Besides pure social signaling, persons might try to avoid social sanctions by relevant peers by adjusting their behavior towards the prevailing norms of the social environment (e.g. Akerlof and Kranton, 2000). In order to capture this motive, we follow Gutsche et al. (2019) and construct the dummy variable 'expectations social environment' that takes the value one if the respondent rather or totally agreed to the statement "My social environment (e.g. family, friends, colleagues) expects me to behave sustainably.".[20] About 39% of the respondents agree to this statement (see Table 3). Finally, also following Gutsche et al. (2019), we also construct the dummy variable 'volunteering' taking the value one if the respondent indicated to be engaged in volunteering activities. This applies to 35% of the respondents (see Table 3).

Moreover, a left-aligned political orientation tends to be positively related to SRI (e.g. Hood et al., 2014; Gutsche and Ziegler, 2019) and negatively to socially controversial investing (e.g.

[19] The respondents were asked to indicate to what extent they agree with corresponding statement on a symmetric scale with the five ordered response categories "totally disagree", "rather disagree", "undecided", "rather agree", and "totally agree".

[20] The respondents were asked to indicate to what extent they agree with corresponding statement on a symmetric scale with the five ordered response categories "totally disagree", "rather disagree", "undecided", "rather agree", and "totally agree".

Hong and Kostovetsky, 2012). However, there is also conflicting evidence finding a negative association between actual SRI and preferences for left-wing parties (e.g. Gutsche et al., 2019), which can be explained by general stock market aversion among left-wing oriented individuals (e.g. Kaustia and Torstila, 2011). Following Ziegler (2017, 2019), we measure the respondents' individual political identification by the four dummy variables 'conservative political identification', 'liberal political identification', 'social political identification', and 'ecological political identification'. For example, the variable 'conservative political identification' takes the value one if the respondent rather or totally agreed to the statement "I identify myself with conservatively oriented politics.".[21] The other three variables are constructed accordingly. In contrast to simpler measures for political orientation (e.g. right-/left-wing indicators), which are usually based on stated preferences for different political parties (e.g. Gutsche and Ziegler, 2019), this operationalization allows to draw a more differentiated picture of the impact of political orientation (e.g. Ziegler, 2017). As our experimental design is similar to the setting applied by Gutsche and Ziegler (2019), we rather expect that persons with socially-oriented as well as ecologically-oriented political identification invest more money in socially responsible equity funds. As reported in Table 3, we find that the majority of respondents indicated a socially- or ecologically-oriented political orientation (63% and 56%, respectively), and only 29% and 35% stated to be conservatively- and liberally-oriented, respectively.

2.3.8. Socio-demographic variables

Though, some previous studies show that socio-economic factors are less important for individual SRI (e.g. Gutsche et al., 2019), they are very likely related to other explanatory variables, such as economic preferences (e.g. Falk et al., 2018) or personality traits (e.g. Almlund et al., 2011). Thus, in order to mitigate potential hypothetical bias, we control for six socio-demographic variables. The variable 'age' denotes the respondents' age in years. The other five variables are dummy variables that take the value one if the respondent is a woman ('female'), has at least an advanced technical college certificate or a high school graduation ('high education'), is married or lives together with their partner ('living together or married'), lives in a household with a net income that is above the median class, and thus above 3,000€,[22] ('HH net income above class median'), and lives in one of the West German federal states excluding Berlin

[21] The respondents were asked to indicate to what extent they agree with corresponding statement on a symmetric scale with the five ordered response categories "totally disagree", "rather disagree", "undecided", "rather agree", and "totally agree".

[22] We asked the respondents to indicate their household's net income by selecting one out of eleven income intervals (see Appendix B). The median interval is the class ranging from 2,500€ to below 3,000€.

('Western Germany'), respectively. Compared to the general German population in 2018, Table 3 shows that the respondents in our sample on average are older (49.61 years vs 44.40 years[23]), rather male (61% vs 49%[24]), and have higher levels of education (64% vs 32%[25]). This is in line with our expectations (see footnote 1), since our sample consists of rather experienced financial decision makers in German households and not of "normal" citizens.

3. Econometric analysis

3.1. Main results

3.1.1. Comparison of revealed preferences for socially responsible and conventional funds

Table 4 reports how much money the respondents allocated to socially responsible equity funds on average. On average, respondents invested 286.87€, and thus about 57% of their initial endowment into equity funds with a high Morningstar sustainability rating. If they just followed the 1/n strategy, and thus allocated their endowment equally across all alternatives, they would have invested 234.81€ into socially responsible funds on average. Thus, respondents on average invested 52.05€ (i.e. 26.57%) more in socially responsible funds than under a naïve diversification investment strategy. This indicates that respondents actively select socially responsible funds and thus on average prefer socially responsible funds over conventional funds.

However, this simple comparison neglects the observed differences in financial attributes between socially responsible and conventional funds, as discussed before (see Table 2). Therefore, we additionally regress the 'amount invested in socially responsible funds' (and also 'difference to 1/n strategy' as well as 'relative difference to 1/n strategy') on our financial control variables defined in Section 2.3.2. Table 5 reports the corresponding OLS parameter estimates and robust z-statistics for the three model specifications. At a first glance, one might be surprised that none of the parameters for the financial control variables is significantly different from zero. However, this can be explained by the high correlation between the different attributes and possibly too little variation as we only considered eight different equity funds. Nonetheless, the corre-

[23] See https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bevoelkerung/Bevoelkerungsstand/Tabellen/liste-zensus-geschlecht-staatsangehoerigkeit.html, accessed on January 23th, 2020.
[24] See https://de.statista.com/statistik/daten/studie/723069/umfrage/durchschnittsalter-der-bevoelkerung-in-deutschland-nach-staatsangehoerigkeit/, accessed on January 23th, 2020.
[25] See https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Bildung-Forschung-Kultur/Bildungsstand/Tabellen/bildungsabschluss.html, accessed on January 23th, 2020.

sponding F tests confirm that the financial control variables have a highly significant joint impact on the dependent variables in all three specifications. Moreover, almost all estimated parameters have the expected signs, i.e. positive for the three past performance variables and negative for the two fee variables.[26] Nevertheless, we will address this issue in our robustness checks again.

More importantly, the estimated intercepts in the three models are all highly significantly different from zero and support our previous descriptive findings. That is, after controlling for financial differences, respondents allocate 278.49€ to socially responsible funds, and thus 48.40€ (i.e. 23.46%) more than under a naïve diversification strategy.[27] This first main result of our study is in line with the findings by Gutsche and Ziegler (2019) who report strong stated preferences and a high willingness to pay for sustainable investment products, and particularly socially responsible equity funds.

3.1.2. Determinants of investments in socially responsible funds

We now turn to the question of which are the main (non-pecuniary) drivers for investments in socially responsible funds. To this end, Table 6 reports the OLS parameter estimates for seven model specifications, which all consider the 'amount invested in socially responsible funds' as dependent variable.

Model 1 includes all explanatory variables introduced above, except 'good knowledge', 'talking social environment', as well as 'HH net income above median class'. While the former two variables are only considered as alternative measures for 'financial literacy' and 'talk about investments' in our robustness checks (see Section 3.2), we initially exclude 'HH net income above median class' because of its missing values (see Table 3). Interestingly, neither economic preferences nor personality traits are significantly related to the amount invested in socially responsible funds. This result applies to all single variables (i.e. none of the corresponding robust z-statistics is larger than 1.645), but also to the two groups of variables (i.e. the two corresponding F tests on joint significance show very high p-values). Thus, our first results are not in line with previous studies reporting evidence that risk preferences (e.g. Bauer and Smeets, 2015; Riedl and Smeets, 2017; Bassen et al., 2019), altruism (e.g. Riedl and Smeets, 2017;

[26] Only the estimated parameter for 'difference in average annual management fees' in the second model specification is unexpectedly positive.

[27] Including the actual differences in average financial attributes between socially responsible and conventional funds into the sample regression function of the first model just gives us the average amount invested in socially responsible funds without controlling for financial differences: $0.438 \cdot 0.06 + 5.077 \cdot 1.51 + 11.157 \cdot (-0.16) + (-7.825) \cdot (-0.51) + (-7.750) \cdot 0.20 + 278.488 = 286.84 \approx 286.87$.

Brodback et al., 2019), or trust (e.g. Nilsson, 2008; Gutsche and Zwergel, 2016) are related to individual SRI. In the same vein, we thus find no support for the idea that personality traits affect financial decisions, as reported in several previous studies (e.g. Brown and Taylor, 2014; Cobb-Clark et al., 2016; Bucciol and Zarri, 2017; Gerhard et al., 2018). As one might argue that these insignificant results are a consequence of multicollinearity issues, we will address this point below again. Referring to the question raised in the title of our paper, we thus reveal that both economic preferences and personality traits are only of minor importance for investments in socially responsible investment funds.

Instead, we rather see that a variety of other factors, i.e. financial literacy, feelings of warm glow and particularly social norms, seems to be more important. Concretely, the estimation results reveal that 'financial literacy' is significantly positively related to the amount invested in socially responsible funds. On average and holding everything else fixed,[28] one correct answer more in the corresponding test leads to an increase of the amount invested into socially responsible funds by about 22.05€. Thus, respondents that answer all questions of this test correctly invest 22.05€ • 3 = 66.15€ more into socially responsible funds than persons with no correct answers. We also find that respondents indicating a strong feeling of warm glow from sustainable behavior invest 30.77€ more in socially responsible investments than their counterparts. In contrast, the other two variables aimed to capture perceived benefits and costs, i.e. 'perceived higher returns SRI' and 'perceived higher risk SRI', are not significantly related to investments in socially responsible funds. However, this finding is not surprising given the rather ambiguous results in previous studies (e.g. Riedl and Smeets, 2017; Gutsche et al., 2019). Further, we see that persons stating that their social environment expects them to behave in a sustainable manner, invest 27.48€ more into funds with a high Morningstar sustainability rating than those who do not feel this pressure. This result is, like our finding on 'warm glow', in line with evidence based on survey data reported by Gutsche et al. (2019). However, in contrast to their findings (and also not in line with Riedl and Smeets, 2017), we find a statistically and economically significant negative effect for 'talk about investments'. Thus, against our expectations, we see that persons stating that they often talk about investments with their peers invest 30.61€ less into socially responsible funds. This implies that persons rather do not talk about their pro-social investment activities for social signaling reasons. However, as shown by Riedl and Smeets (2017), social signaling seems to related to social preferences, which might drive this effect. We will analyze this point in the upcoming in-depth analysis as discussed in our

[28] For reasons of brevity, we neglect this phrase in the interpretation of the further estimated parameters.

outlook for this study in Section 4. Also not in line with Gutsche et al. (2019), we find that persons who are engaged in volunteering invest significantly less (i.e. 47.09€) in socially responsible funds. This might indicate a potential moral licensing effect, i.e. people invest less in socially responsible funds because they are already engaged in other pro-social activities. Interestingly, we find no significant correlation for any of our indicators for environmental values and political identification. As we will see in the further discussion, this is mainly driven by multicollinearity between these indicators. Finally, 'age' is the only socio-demographic characteristic in this model specification that is significantly related to investments in socially responsible funds. We find a strongly significant and negative correlation implying that the amount invested in socially responsible funds decreases by 1.48€ with every further year of age.

In model 2, we additionally include 'HH net income above median class'. While all previous results remain stable, we find that this newly added variable is significantly and positively related to the amount invested in socially responsible funds. It implies that persons with a household net income of more than 3,000€ invest 27.19€ more in socially responsible funds. This finding is very interesting in the light of the discussion that private investors need to be mobilized in order to finance and achieve international and national climate policy goals as well as the related transition process.

Based on this model specification, we then subsequently drop (groups of) of statistically irrelevant variables or those which might overlap too strongly with other variables. The corresponding results are reported in models 3 to 7. We first drop 'perceived higher returns SRI', 'perceived higher risk SRI', and all four measures for individual political identification, as the two corresponding F tests on joint significance of these two groups, respectively, reveal very high p-values. While most results are very stable, we find that the estimated parameter for 'warm glow' slightly increases from 31.78 to 35.14, and even more importantly, that one of the two remaining measures for environmental values (i.e. NEP) gains statistical and economic significance. That is, an increase of the NEP score by one leads to an increase of the amount invested in socially responsible funds by 9.32€. Since the parameter for 'membership environmental organization' is still not statistically different from zero, we also drop this variable in a next step. This leads to model 4, for which we find very similar estimation results compared to model 3. In a further step, we additionally test whether the exclusion of the full set of economic preferences as well as personality traits affect the estimation results. The results for model specifications 5 to 7 reveal that neither the exclusion of personality traits, the exclusion of economic

preferences, nor the exclusion of both substantially affect the very stable results with respect to the other variables.

In order to address the potential concerns of multicollinearity and to understand the how estimates change if different sets of explanatory variables are considered, Table 7 reports eight further model specifications. The only explanatory variables that are included in all eight specifications are the five financial control variables and the six socio-demographic characteristics.

Model 1 to model 4 in Table 7 again address the main research question of the paper. In order to see whether potential effects of economic preferences or personality traits might be covered by other variables, we (i) only include economic preferences, (ii) only include personality traits, and (iii) include both sets of variables referring to their potential interdependence highlighted by Becker et al. (2012). Finally, we additionally include 'financial literacy' given potential interdependencies between cognitive (i.e. financial literacy) and non-cognitive skills (i.e. personality traits) as discussed by Almlund et al. (2011). However, as before, we do not find any substantial effects for both set of variables. Solely, 'extraversion' is weakly significantly and negatively related to the amount of investments in socially responsible funds, which might resemble the previously revealed effect for 'talk about investments'.

We additionally see no different results for the variables capturing perceived benefits and costs (model 5) or the variables for personal values and contextual factors (model 6). However, model 7, which considers the indicators for individual political identification without any further controls for environmental values, reveals our initially expected results. That is, persons with a conservatively-oriented political identification invest significantly less (i.e. 25.87€), and ecologically-oriented persons invest 29.53€ more in socially responsible funds than their corresponding counterparts. Thus, we see that these correlations, which are in line with previous results (e.g. Gutsche and Ziegler, 2019), have been muted by the other explanatory variables before. This is again supported by the results in model 8, which additionally includes our variables for personal values and contextual factors.

3.2. Robustness checks and alternative measures

We consider a variety of robustness checks. First, we address the issue that our financial control variables, though jointly significant at all common significance levels, are not individually significant in the previous models. Consequently, Table 8 reports the OLS estimation results of five linear regression models that include all aforementioned explanatory variables (see e.g. model 2 in Table 6), but each model includes just one of the five different financial control

variables. This approach leads to highly significant parameters for all five variables and all estimated parameters have expected signs. That is, all past performance measures are positively related to investments in socially responsible funds indicating that respondents chase past returns. We additionally see that the estimated parameter for 'difference in average returns in the last five years' exceeds the parameters for the other two past performance variables. This indicates that particularly focus on long-term past performance, which is line with the results reported by Gutsche and Ziegler (2019). Moreover, both types of fees are negatively related to the amount invested in socially responsible funds. At the same time, the results for all further explanatory variables remain stable. Only the statistical significance of 'NEP' varies moderately across the models. In sum, all previously discussed results remain stable.

Secondly, we study alternative dependent variables. To this end, we mimic the seven model specifications shown in Table 6, but consider 'difference to 1/n rule' and 'relative to 1/n rule' instead of 'amount invested in socially responsible funds', respectively. The corresponding OLS estimates are reported in Table 9 and Table 10. In general, the core results remain very stable. With respect to Table 9, 'financial literacy', 'warm glow', and 'NEP' are significantly positively related to the amount invested in socially responsible funds compared to a naïve diversification strategy. Further, we again find significant correlates for 'talk about investments', 'volunteering', and 'age'. However, we find no significant relationship between 'HH net income above median' and 'difference to 1/n strategy'. Instead, in some models, we find weak statistical evidence for a negative correlation for 'risk taking', and a positive correlation for 'trust' as well as 'female' with the dependent variable, respectively. Interestingly, the results with regard to 'relative difference to 1/n strategy' even reveal some further significant relationships. This particularly applies to 'trust' and 'ecological political orientation'. Thus, in line with previous studies (e.g. Nilsson, 2008; Gutsche and Zwergel, 2016), this indicates that persons with high levels of trust allocate more money to socially responsible funds and highlights its importance in the case of credence goods (e.g. Gutsche and Zwergel, 2016). Similarly, the results for 'ecological political orientation' imply that persons with an ecologically-oriented political identification on average invest about 13 percentage points more into socially responsible funds than under the 1/n strategy. This again confirms the results by Gutsche and Ziegler (2019) based on a stated choice experiment. In sum, some of our results seem to be sensitive to the choice of the dependent variable. We will address this point in the future steps of our analysis.

Finally, we consider alternative measures for single explanatory variables. Thus, we include self-assessed financial knowledge (i.e. 'good knowledge') instead of our objective measure ('financial literacy'), which was constructed based on the quiz questions by Lusardi and Mitchell (2008). For brevity, we do not report these results. Though the estimated parameters for 'good knowledge' are always positive, we find no significant relationship between this alternative measure and our dependent variables in any of our model specifications. Thus, similar to Rossi et al. (2019), we find that results on the relationship between financial literacy and SRI seem to severely depend on the measures used to capture financial literacy. Given that almost all previous studies in this field have applied self-assessed measures for SRI, this raises the question on the robustness of these results to alternative measures. Finally, we also include 'talking social environment' instead of 'talk about investments'. Again, like in the case before, we find negatively estimated parameters (and thus the same sign as for the estimated parameters for 'talk about investments'), but none of them is significantly different from zero. This again reveals that both measures obviously measure slightly different things, which highlights the importance of using the same measures and scales across studies in order to ensure their comparability.

4. Conclusion

This paper investigates revealed preferences for socially responsible and conventional equity funds among financial decision makers in German households. This group of citizens is particularly interesting in the light of the necessity to mobilize private investors for the achievement of (inter-) national climate goals and to actively involve society in this transformation process. In contrast to most previous empirical studies in the field of individual SRI, our empirical analysis is based on revealed preferences data, which were collected based on an incentivized framed field experiment. This enables us to overcome well-known limitations of stated preferences approaches as discussed by Gutsche and Ziegler (2019). We additionally contribute to the literature by analyzing the role of economic preferences and psychological personality traits, measured by the Big Five, for individual SRI.

Our analysis reveals that respondents actively allocate money to socially responsible funds and thus on average prefer socially responsible funds over their conventional counterparts. Notably, both economic preferences and psychological personality traits are only of minor relevance for the amount allocated to socially responsible funds. In contrast, the funds' financial performance, and especially individual financial literacy, environmental values, social norms, and age are the most important explanatory variables.

Our findings have important implications for the development and marketing of SRI. The strong estimated positive impact of individual financial literacy suggests that financial education campaigns could foster the development of SRI. The spreading of information on SRI, particularly about its environmental impacts, seems to be another key to mobilize private investors, as environmental values, but also word-to-mouth learning as well as the behavior of peers seem to be a very important factors and thus could have multiplier effects.

At this stage of our empirical analysis some open questions remain and we will be addressed in the next steps. As several studies have shown that the effects of personality traits may vary across different socio-economic groups, for instance between couples and single households (e.g. Nyhus and Webley, 2001; Brown and Taylor, 2014) or established and non-established persons (e.g. Gerhard et al., 2018), our further in-depth analysis will consider interaction effects between single personality traits and socio-demographic variables. However, there might be also interdependencies between single facets of economic preferences and personality traits (e.g. conscientiousness and time preferences, or agreeableness and altruism). Therefore, we will also address these issues. Finally, so far our analysis is mainly based on simple linear regression models, whereas multiple discrete-continuous extreme value choice models might be more adequate for our type of data (e.g. Bhat, 2018). We will thus test to what extend this type of model might lead to different results.

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Tables

Table 1: Overview of all equity funds included in the experiment's investment universe

Attribute	High Morningstar sustainability rating				Low Morningstar sustainability rating			
	A	B	C	D	E	F	G	H
Risk and return profile	5	5	5	6	5	5	6	5
Maximum front-up fees	4.00%	5.00%	5.00%	6.00%	4.50%	4.50%	4.00%	6.10%
Annual management fees	0.75%	2.28%	1.41%	1.89%	2.15%	1.70%	1.72%	2.92%
Degree of sustainability	Very high	High	High	Very high	Very low	Low	Low	Very low
Returns in the last year	-7.90%	-3.40%	-9.38%	-5.90%	-9.20%	-1.66%	-6.87%	-9.50%
Average returns in the last three years	2.60%	0.75%	3.37%	3.59%	1.80%	2.91%	3.24%	-3.31%
Average returns in the last five years	6.11%	7.20%	4.62%	6.93%	8.22%	7.69%	7.50%	2.24%

Note: The original names of the selected equity funds are as follows: (A) "Löwen-Aktienfonds", (B) "BNY Mellon Global Funds PLC - BNY Mellon Global Opportunities Fund EUR A Acc", (C) "Global Advantage Funds - Major Markets High Value A Acc", (D) "MFS Meridian Funds - Global Equity Fund A1 EUR", (E) "KEPLER Growth Aktienfonds (T)", (F) "Amundi Funds - Global Equity Conservative A EUR (C)", (G) "Raiffeisen-MegaTrends-Aktien R T", and (H) "ALL-IN-ONE".

Table 2: Comparison of average financial attributes for equity funds with high and low Morningstar sustainability ratings

	Equity funds with high sustainability ratings		Equity funds with low sustainability ratings		Differences	
	Expected	Average	Expected	Average	Expected	Average
Returns in the last year	-6.65%	-6.75%	-6.81%	-6.81%	0.16 pp	0.06 pp
Average returns in the last three years	2.58%	2.59%	1.16%	1.09%	1.49 pp	1.51 pp
Average returns in the last five year	6.21%	6.16%	6.41%	6.31%	-0.10 pp	-0.16 pp
Annual management fees	1.58%	1.58%	2.12%	2.09%	-0.54 pp	-0.51 pp
Front-up fees	5.00%	5.00%	4.78%	4.80%	0.20 pp	0.20 pp

Note: 'Expected' indicates the mean value for the corresponding financial attributes calculated as arithmetic mean for all four equity funds with a high Morningstar sustainability ratings and for all four equity funds with a low Morningstar sustainability rating, respectively, based on the values reported in Table 1 (before the conduction of the experiment). 'Average' indicates the corresponding mean values based on the actually observed values in all choice sets.

Table 3: Descriptive statistics of individual characteristics

Explanatory Variable	Number of observations	Mean	Standard deviation	Min	Max
Economic preferences					
Risk taking	749	0.32	0.47	0	1
Patience	749	0.67	0.47	0	1
Altruism	749	0.65	0.48	0	1
Trust	749	0.82	0.96	0	3
Positive reciprocity	749	2.62	0.74	0	3
Negative reciprocity	749	0.53	0.91	0	3
Personality traits					
Openness to experiences	749	3.77	0.69	1.5	5
Conscientiousness	749	4.28	0.64	1.5	5
Extraversion	749	2.77	0.88	1	5
Agreeableness	749	3.83	0.72	1	5
Emotional stability	749	3.76	0.79	1	5
Financial literacy					
Financial literacy	749	2.46	0.76	0	3
Good knowledge	749	0.39	0.49	0	1
Perceived benefits and costs					
Warm glow	749	0.77	0.42	0	1
Perceived higher returns SRI	749	0.20	0.40	0	1
Perceived higher risk SRI	749	0.21	0.41	0	1
Attitudinal variables, personal values, and contextual factors					
Membership environmental organization	749	0.11	0.31	0	1
NEP	749	4.56	1.55	0	6
Talk about investments	749	0.29	0.46	0	1
Talking social environment	749	0.38	0.49	0	1
Expectations social environment	749	0.39	0.49	0	1
Volunteering	749	0.35	0.48	0	1
Conservative political identification	749	0.29	0.45	0	1
Liberal political identification	749	0.35	0.48	0	1
Social political identification	749	0.63	0.48	0	1

(Table 3 continued)

Green political identification	749	0.56	0.50	0	1
Socio-demographic variables					
Age	749	49.61	17.44	18	84
Female	749	0.39	0.49	0	1
High education	749	0.64	0.48	0	1
Married or living together	749	0.64	0.48	0	1
HH net income above median class	685	0.48	0.50	0	1
Western Germany	749	0.82	0.38	0	1

Table 4: Investments in equity funds with high Morningstar sustainability rating

Variables	Mean	Standard deviation	Min	Max
Amount invested in socially responsible funds (in €)	286.87	164.47	0	500
Amount invested in socially responsible under 1/n rule (in €)	234.81	87.67	125	375
Difference to 1/n strategy (in €)	52.05	142.62	-375	375
Relative difference to 1/n strategy (in %)	26.57	80.22	-100	300

Table 5: Investments in equity funds with a high Morningstar sustainability rating after controlling for financial differences between socially responsible and conventional funds

Explanatory variables	Amount invested in socially responsible funds	Difference to 1/n strategy	Relative difference to 1/n strategy
Difference in average returns in the last year	0.438 (0.135)	1.872 (0.721)	0.395 (0.300)
Difference in average returns in the last three years	5.077 (0.633)	10.209 (1.471)	2.508 (0.576)
Difference in average returns in the last five years	11.157 (1.234)	0.509 (0.067)	0.410 (0.087)
Difference in average annual management fees	-7.825 (-0.233)	12.360 (0.428)	-2.736 (-0.151)
Difference in average front-up fees	-7.750 (-0.349)	-27.130 (-1.423)	-10.148 (-0.847)
Constant	278.488*** (18.835)	48.399*** (3.964)	23.461*** (3.086)
Number of observations	749	749	749
R-squared	0.041	0.046	0.025

Note: This table reports OLS estimates of parameters in linear regression models, dependent variables 'Amount invested in socially responsible funds', 'Difference to 1/n strategy', and 'Relative difference to 1/n strategy'. The z-statistics are robust against heteroscedasticity. $*$ ($**$, $***$) means that the corresponding parameter is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 6: Non-financial determinants of investments in equity funds with a high Morningstar sustainability rating

Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Difference in average returns in the last year	0.278 (0.087)	1.179 (0.357)	1.085 (0.331)	1.102 (0.336)	1.048 (0.322)	1.023 (0.314)	0.946 (0.291)
Difference in average returns in the last three years	4.942 (0.615)	4.822 (0.579)	4.528 (0.548)	4.626 (0.561)	4.971 (0.605)	4.060 (0.498)	4.352 (0.535)
Difference in average returns in the last five years	12.647 (1.392)	13.013 (1.399)	12.902 (1.397)	12.757 (1.383)	11.913 (1.299)	13.419 (1.466)	12.688 (1.393)
Difference in average annual management fees	-9.776 (-0.290)	-7.162 (-0.205)	-6.998 (-0.203)	-6.737 (-0.196)	-1.509 (-0.044)	-8.934 (-0.264)	-4.135 (-0.123)
Difference in average front-up fees	-0.348 (-0.016)	-4.514 (-0.198)	-4.541 (-0.201)	-4.817 (-0.213)	-7.599 (-0.339)	-3.902 (-0.175)	-6.343 (-0.286)
Risk taking	-12.135 (-0.893)	-8.692 (-0.619)	-7.549 (-0.537)	-8.146 (-0.583)	-8.820 (-0.649)	--	--
Patience	4.061 (0.292)	3.127 (0.215)	3.981 (0.275)	3.875 (0.268)	3.111 (0.215)	--	--
Altruism	14.305 (0.994)	13.041 (0.865)	15.245 (1.043)	16.669 (1.146)	18.087 (1.263)	--	--
Trust	3.506 (0.486)	3.672 (0.492)	3.943 (0.534)	4.023 (0.545)	5.193 (0.729)	--	--
Positive reciprocity	-2.821 (-0.343)	-1.149 (-0.131)	-1.493 (-0.171)	-1.680 (-0.192)	-1.524 (-0.179)	--	--
Negative reciprocity	-0.595 (-0.089)	-1.021 (-0.145)	-2.285 (-0.328)	-2.176 (-0.312)	-2.288 (-0.335)	--	--
Extraversion	-8.944 (-1.223)	-9.709 (-1.258)	-9.678 (-1.266)	-9.528 (-1.246)	--	-9.164 (-1.201)	--
Agreeableness	3.376 (0.353)	7.019 (0.708)	7.772 (0.789)	7.397 (0.750)	--	10.384 (1.094)	--
Conscientiousness	-10.545 (-0.995)	-10.523 (-0.940)	-12.958 (-1.174)	-13.264 (-1.203)	--	-13.788 (-1.286)	--
Emotional stability	-1.909 (-0.217)	0.706 (0.075)	0.445 (0.048)	0.719 (0.078)	--	0.811 (0.089)	--
Openness to experiences	10.436 (1.030)	9.995 (0.932)	11.542 (1.086)	11.809 (1.112)	--	13.022 (1.253)	--
Financial literacy	22.047*** (2.746)	22.385*** (2.653)	21.432** (2.579)	21.331** (2.574)	20.481** (2.513)	21.217*** (2.624)	20.128** (2.534)
Perceived higher returns SRI	-0.679 (-0.047)	4.974 (0.327)	--	--	--	--	--
Perceived higher risk SRI	4.965 (0.360)	8.696 (0.598)	--	--	--	--	--
Warm glow	30.769* (1.872)	31.781* (1.855)	35.138** (2.127)	35.106** (2.132)	35.964** (2.205)	38.756** (2.457)	41.072*** (2.641)

Membership environmental organization	25.753 (1.445)	15.087 (0.810)	17.385 (0.934)	--	--	--	--
NEP	6.874 (1.501)	7.361 (1.560)	9.324** (2.063)	9.586** (2.119)	10.174** (2.330)	10.118** (2.285)	10.920** (2.579)
Talk about investments	-30.612** (-2.227)	-30.877** (-2.143)	-30.953** (-2.198)	-30.568** (-2.177)	-31.029** (-2.238)	-32.517** (-2.351)	-33.258** (-2.457)
Expectations social environment	27.480** (2.180)	25.240* (1.918)	26.101** (2.003)	25.978** (1.991)	27.242** (2.100)	26.884** (2.083)	28.897** (2.256)
Volunteering	-47.092*** (-3.632)	-51.678*** (-3.798)	-51.311*** (-3.854)	-49.175*** (-3.761)	-49.226*** (-3.748)	-44.557*** (-3.531)	-43.398*** (-3.438)
Conservative political identification	-18.544 (-1.350)	-18.273 (-1.289)	--	--	--	--	--
Liberal political identification	-6.028 (-0.463)	-10.121 (-0.742)	--	--	--	--	--
Social political identification	4.751 (0.322)	1.062 (0.070)	--	--	--	--	--
Ecological political identification	11.234 (0.771)	10.299 (0.679)	--	--	--	--	--
Female	5.431 (0.420)	13.166 (0.966)	13.900 (1.028)	14.075 (1.040)	13.798 (1.039)	16.027 (1.199)	16.636 (1.274)
Age	-1.475*** (-3.997)	-1.437*** (-3.679)	-1.491*** (-3.877)	-1.493*** (-3.885)	-1.484*** (-3.964)	-1.398*** (-3.748)	-1.354*** (-3.738)
High education	15.279 (1.201)	15.462 (1.155)	16.487 (1.238)	16.572 (1.243)	18.739 (1.422)	16.366 (1.238)	18.596 (1.426)
Married or living together	19.053 (1.535)	9.247 (0.647)	8.332 (0.589)	8.377 (0.592)	5.864 (0.417)	7.738 (0.546)	4.947 (0.351)
HH net income above median class	--	27.192** (1.978)	25.962* (1.913)	27.002** (1.997)	26.885** (1.995)	27.835** (2.073)	28.147** (2.103)
West	-3.138 (-0.214)	-2.007 (-0.131)	-3.848 (-0.254)	-2.911 (-0.193)	-2.857 (-0.190)	-1.368 (-0.092)	-1.111 (-0.075)
Constant	249.710*** (4.027)	218.898*** (3.396)	215.850*** (3.411)	214.779*** (3.399)	206.513*** (5.009)	194.954*** (3.287)	198.666*** (5.262)
Number of observations	749	685	685	685	685	685	685
R-squared	0.134	0.152	0.148	0.147	0.142	0.143	0.137

Note: This table reports OLS estimates of parameters in linear regression models, dependent variables 'Amount invested in socially responsible funds'. The z-statistics are robust against heteroscedasticity. ∗ (∗∗, ∗∗∗) means that the corresponding parameter is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 7: Separate analysis of non-financial determinants of investments in equity funds with a high Morningstar sustainability rating

Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Difference in average returns in the last year	1.241 (0.369)	1.328 (0.394)	1.279 (0.379)	1.394 (0.416)	0.552 (0.165)	1.214 (0.370)	1.181 (0.356)	1.295 (0.397)
Difference in average returns in the last three years	6.058 (0.719)	5.518 (0.664)	5.607 (0.667)	6.007 (0.711)	5.371 (0.648)	4.234 (0.520)	6.219 (0.748)	4.510 (0.553)
Difference in average returns in the last five years	11.307 (1.218)	12.361 (1.339)	12.326 (1.326)	11.423 (1.222)	13.037 (1.415)	12.448 (1.368)	12.283 (1.335)	12.983 (1.429)
Difference in average annual management fees	-3.083 (-0.087)	-8.235 (-0.236)	-8.913 (-0.251)	-9.014 (-0.255)	-3.710 (-0.107)	-3.991 (-0.117)	-5.620 (-0.162)	-6.201 (-0.182)
Difference in average front-up fees	-9.127 (-0.397)	-7.406 (-0.324)	-6.242 (-0.269)	-6.529 (-0.281)	-7.506 (-0.330)	-7.807 (-0.350)	-8.459 (-0.375)	-6.541 (-0.294)
Risk taking	-13.636 (-1.012)	--	-11.600 (-0.832)	-11.390 (-0.822)	--	--	--	--
Patience	12.301 (0.845)	--	12.212 (0.839)	11.816 (0.816)	--	--	--	--
Altruism	16.297 (1.155)	--	14.034 (0.969)	17.500 (1.206)	--	--	--	--
Trust	5.485 (0.770)	--	4.470 (0.601)	2.690 (0.360)	--	--	--	--
Positive reciprocity	9.474 (1.111)	--	8.046 (0.907)	6.190 (0.700)	--	--	--	--
Negative reciprocity	-4.181 (-0.609)	--	-3.674 (-0.529)	-1.967 (-0.283)	--	--	--	--
Extraversion	--	-13.283* (-1.706)	-12.796 (-1.636)	-11.963 (-1.533)	--	--	--	--
Agreeableness	--	14.769 (1.528)	9.674 (0.958)	12.084 (1.197)	--	--	--	--
Conscientiousness	--	-9.478 (-0.870)	-12.127 (-1.073)	-13.333 (-1.190)	--	--	--	--
Emotional stability	--	0.450 (0.050)	0.387 (0.042)	-0.809 (-0.088)	--	--	--	--
Openness to experi-ences	--	16.384 (1.617)	12.524 (1.193)	13.892 (1.321)	--	--	--	--
Financial literacy	--	--	--	19.935** (2.313)	--	--	--	--
Perceived higher re-turns SRI	--	--	--	--	-1.784 (-0.120)	--	--	--
Perceived higher risk SRI	--	--	--	--	1.026 (0.071)	--	--	--
Warm glow	--	--	--	--	56.122*** (3.843)	--	--	--
Membership environ-mental organization	--	--	--	--	--	20.160 (1.067)	--	14.434 (0.762)

NEP	--	--	--	--	--	14.468*** (3.567)	--	10.917** (2.510)
Talk about investment	--	--	--	--	--	-31.575** (-2.322)	--	-30.827** (-2.245)
Expectations social environment	--	--	--	--	--	36.818*** (2.981)	--	31.098** (2.450)
Volunteering	--	--	--	--	--	-43.823*** (-3.353)	--	-43.996*** (-3.342)
Conservative political identification	--	--	--	--	--	--	-25.871* (-1.915)	-19.301 (-1.388)
Liberal political identification	--	--	--	--	--	--	-9.320 (-0.710)	-7.574 (-0.571)
Social political identification	--	--	--	--	--	--	15.987 (1.084)	10.105 (0.686)
Ecological political identification	--	--	--	--	--	--	29.531** (2.040)	19.551 (1.345)
Female	15.237 (1.147)	17.421 (1.303)	14.578 (1.071)	19.362 (1.419)	13.336 (1.035)	13.394 (1.027)	14.605 (1.121)	11.082 (0.842)
Age	-1.238*** (-3.299)	-1.147*** (-3.021)	-1.268*** (-3.274)	-1.368*** (-3.537)	-0.956*** (-2.620)	-1.320*** (-3.638)	-1.111*** (-3.032)	-1.319*** (-3.580)
High education	18.145 (1.344)	16.711 (1.226)	16.083 (1.170)	13.961 (1.024)	19.286 (1.455)	20.888 (1.592)	14.356 (1.075)	17.878 (1.360)
Married or living together	6.092 (0.425)	7.524 (0.515)	8.634 (0.596)	11.318 (0.784)	3.505 (0.243)	1.992 (0.141)	8.028 (0.552)	4.816 (0.336)
HH net income above median class	22.587* (1.658)	23.500* (1.729)	23.253* (1.699)	20.373 (1.488)	23.826* (1.757)	29.717** (2.203)	23.830* (1.754)	29.887** (2.197)
West	7.139 (0.458)	9.325 (0.606)	6.461 (0.415)	4.813 (0.309)	4.164 (0.273)	2.319 (0.155)	8.640 (0.560)	3.480 (0.230)
Constant	262.882*** (7.154)	252.321*** (4.448)	268.636*** (4.505)	220.481*** (3.464)	251.524*** (7.709)	255.197*** (7.582)	280.027*** (8.806)	262.974*** (7.628)
Observations	685	685	685	685	685	685	685	685
R-squared	0.089	0.088	0.095	0.103	0.097	0.123	0.099	0.131

Note: This table reports OLS estimates of parameters in linear regression models, dependent variables 'Amount invested in socially responsible funds'. The z-statistics are robust against heteroscedasticity. ∗ (∗∗, ∗∗∗) means that the corresponding parameter is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 8: Investments in equity funds with a high Morningstar sustainability rating after controlling for financial differences between socially responsible and conventional funds separately

Explanatory variables	(1)	(2)	(3)	(4)	(5)
Difference in average returns in the last year	6.751*** (2.680)	--	--	--	--
Difference in average returns in the last three years	--	15.753*** (5.295)	--	--	--
Difference in average returns in the last five years	--	--	19.635*** (5.954)	--	--
Difference in average annual management fees	--	--	--	-41.431*** (-3.574)	--
Difference in average front-up fees	--	--	--	--	-35.153*** (-4.078)
Risk taking	-10.705 (-0.754)	-7.721 (-0.551)	-9.458 (-0.682)	-6.083 (-0.425)	-5.874 (-0.410)
Patience	3.486 (0.234)	3.502 (0.237)	3.088 (0.213)	3.244 (0.218)	3.046 (0.206)
Altruistic	15.780 (1.032)	16.563 (1.101)	11.399 (0.758)	18.404 (1.210)	15.985 (1.053)
Trust	3.311 (0.436)	2.723 (0.369)	4.780 (0.646)	2.019 (0.270)	3.884 (0.522)
Positive reciprocity	0.394 (0.044)	-1.629 (-0.187)	-0.560 (-0.065)	-1.561 (-0.177)	-2.761 (-0.312)
Negative reciprocity	-1.266 (-0.179)	-1.408 (-0.199)	-0.940 (-0.134)	-0.867 (-0.120)	-0.650 (-0.090)
Extraversion	-6.543 (-0.853)	-8.813 (-1.145)	-9.210 (-1.192)	-7.482 (-0.975)	-7.083 (-0.922)
Agreeableness	6.201 (0.614)	7.566 (0.753)	6.253 (0.633)	8.411 (0.827)	8.583 (0.853)
Conscientiousness	-8.516 (-0.746)	-11.389 (-1.026)	-9.634 (-0.865)	-10.705 (-0.949)	-9.695 (-0.865)
Emotional stability average	2.067 (0.218)	0.378 (0.040)	1.138 (0.122)	0.255 (0.027)	0.688 (0.074)
Openness to experiences average	8.048 (0.753)	8.933 (0.833)	9.346 (0.882)	7.973 (0.746)	6.600 (0.624)
Financial literacy	23.824*** (2.732)	23.846*** (2.843)	21.787*** (2.599)	24.528*** (2.827)	23.692*** (2.753)
Perceived higher returns SRI	10.144 (0.650)	6.735 (0.445)	5.881 (0.386)	8.601 (0.558)	7.455 (0.481)
Perceived higher risk SRI	9.067 (0.614)	8.067 (0.555)	11.274 (0.782)	5.971 (0.401)	8.581 (0.578)
Warm glow	30.842* (1.775)	31.303* (1.824)	32.973* (1.932)	30.363* (1.760)	30.306* (1.758)
Membership environmental organization	16.406 (0.849)	14.542 (0.770)	15.939 (0.855)	14.950 (0.778)	14.926 (0.778)

NEP	7.637 (1.626)	7.811* (1.656)	7.223 (1.538)	8.698* (1.841)	8.834* (1.859)
Talk about investment	-33.175** (-2.244)	-31.592** (-2.176)	-30.238** (-2.100)	-34.625** (-2.367)	-33.390** (-2.294)
Expectations social environment	28.835** (2.158)	24.346* (1.844)	26.205** (2.007)	25.210* (1.875)	25.888* (1.941)
Volunteering	-58.565*** (-4.242)	-50.327*** (-3.712)	-55.198*** (-4.120)	-49.437*** (-3.575)	-50.431*** (-3.700)
Conservative political identification	-15.779 (-1.085)	-16.752 (-1.175)	-17.221 (-1.215)	-17.119 (-1.189)	-16.534 (-1.156)
Liberal political identification	-7.888 (-0.569)	-11.037 (-0.804)	-8.897 (-0.655)	-9.653 (-0.699)	-9.117 (-0.663)
Social political identification	1.492 (0.096)	1.183 (0.077)	1.445 (0.095)	2.674 (0.175)	1.023 (0.067)
Ecological political identification	4.620 (0.299)	9.228 (0.611)	9.592 (0.629)	4.104 (0.271)	5.972 (0.392)
Female	14.358 (1.045)	13.454 (0.980)	14.063 (1.032)	11.244 (0.816)	10.965 (0.797)
Age	-1.497*** (-3.825)	-1.437*** (-3.693)	-1.438*** (-3.705)	-1.448*** (-3.691)	-1.467*** (-3.726)
High education	15.441 (1.137)	15.569 (1.163)	16.568 (1.241)	16.070 (1.193)	16.027 (1.192)
Married or living together	8.947 (0.625)	9.896 (0.688)	9.195 (0.646)	10.140 (0.707)	10.250 (0.720)
HH net income above median class	29.820** (2.147)	27.364** (1.970)	27.369** (2.000)	25.970* (1.854)	25.750* (1.851)
West	-4.704 (-0.303)	-1.162 (-0.076)	-3.812 (-0.250)	-3.168 (-0.204)	-5.849 (-0.379)
Constant	211.157*** (3.319)	200.776*** (3.209)	228.285*** (3.615)	196.369*** (3.106)	228.972*** (3.620)
Observations	685	685	685	685	685
R-squared	0.118	0.140	0.148	0.125	0.130

Note: This table reports OLS estimates of parameters in linear regression models, dependent variables 'Amount invested in socially responsible funds'. The z-statistics are robust against heteroscedasticity. ∗ (∗∗, ∗∗∗) means that the corresponding parameter is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 9: Non-financial determinants of investments in equity funds with a high Morningstar sustainability rating, dependent variable: 'difference to 1/n strategy'

Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Difference in average returns in the last year	1.713 (0.682)	2.513 (0.958)	2.501 (0.952)	2.521 (0.960)	2.488 (0.954)	2.563 (0.973)	2.490 (0.951)
Difference in average returns in the last three years	11.271 (1.644)	11.759 (1.642)	10.890 (1.534)	11.012 (1.555)	11.105 (1.573)	10.743 (1.519)	10.803 (1.531)
Difference in average returns in the last five years	0.956 (0.127)	0.542 (0.070)	0.560 (0.072)	0.381 (0.049)	0.286 (0.037)	0.330 (0.042)	0.316 (0.041)
Difference in average annual management fees	16.422 (0.579)	20.180 (0.690)	17.274 (0.595)	17.596 (0.606)	18.866 (0.654)	14.085 (0.490)	15.229 (0.532)
Difference in average front-up fees	-23.512 (-1.266)	-25.504 (-1.334)	-24.273 (-1.273)	-24.614 (-1.289)	-24.935 (-1.321)	-23.535 (-1.245)	-23.736 (-1.266)
Risk taking	-19.502* (-1.654)	-13.889 (-1.138)	-12.104 (-0.991)	-12.840 (-1.054)	-13.271 (-1.117)	--	--
Patience	6.327 (0.531)	4.220 (0.337)	5.950 (0.477)	5.819 (0.467)	5.563 (0.450)	--	--
Altruism	8.920 (0.745)	0.812 (0.065)	3.269 (0.269)	5.024 (0.416)	6.586 (0.559)	--	--
Trust	8.804 (1.468)	9.187 (1.497)	9.888 (1.617)	9.986 (1.633)	10.744* (1.790)	--	--
Positive reciprocity	0.545 (0.075)	3.331 (0.461)	3.107 (0.431)	2.876 (0.399)	3.651 (0.520)	--	--
Negative reciprocity	2.326 (0.416)	3.588 (0.610)	2.602 (0.449)	2.737 (0.471)	1.915 (0.335)	--	--
Extraversion	-0.113 (-0.018)	-1.713 (-0.259)	-2.163 (-0.331)	-1.979 (-0.302)	--	-2.080 (-0.316)	--
Agreeableness	5.191 (0.638)	7.036 (0.832)	8.164 (0.973)	7.701 (0.915)	--	10.345 (1.291)	--
Conscientiousness	-0.980 (-0.110)	-0.022 (-0.002)	-2.169 (-0.239)	-2.547 (-0.280)	--	-3.335 (-0.375)	--
Emotional stability	-3.570 (-0.497)	-0.705 (-0.093)	-1.635 (-0.215)	-1.297 (-0.171)	--	-0.696 (-0.092)	--
Openness to experiences	1.792 (0.214)	2.367 (0.270)	3.480 (0.400)	3.810 (0.439)	--	5.009 (0.591)	--
Financial literacy	18.711*** (2.738)	17.963** (2.543)	17.702** (2.507)	17.577** (2.494)	16.731** (2.378)	18.619*** (2.697)	17.672** (2.558)
Perceived higher returns SRI	-1.180 (-0.092)	-0.979 (-0.073)	--	--	--	--	--
Perceived higher risk	7.397 (0.632)	12.598 (1.027)	--	--	--	--	--
Warm glow	30.164** (2.180)	29.210** (2.066)	34.607** (2.544)	34.568** (2.551)	35.706*** (2.653)	39.027*** (2.982)	41.702*** (3.229)
Membership environmental organization	21.117 (1.451)	17.988 (1.178)	21.439 (1.407)	--	--	--	--

NEP	7.319* (1.830)	7.610* (1.844)	9.616** (2.443)	9.938** (2.519)	10.290*** (2.683)	10.636*** (2.748)	11.322*** (3.045)
Talk about investment	-27.341** (-2.379)	-24.753** (-2.041)	-26.164** (-2.210)	-25.690** (-2.171)	-25.930** (-2.211)	-26.991** (-2.321)	-27.612** (-2.410)
Expectations social environment	15.043 (1.393)	14.272 (1.266)	16.633 (1.493)	16.481 (1.478)	17.441 (1.574)	18.735* (1.691)	20.377* (1.846)
Volunteering	-36.597*** (-3.338)	-38.429*** (-3.318)	-37.484*** (-3.319)	- 34.849*** (-3.128)	- 34.604*** (-3.100)	- 30.695*** (-2.818)	- 29.187*** (-2.681)
Conservative political identification	-14.369 (-1.298)	-10.397 (-0.899)	--	--	--	--	--
Liberal political identification	-9.687 (-0.881)	-11.362 (-0.982)	--	--	--	--	--
Social political identification	4.843 (0.387)	3.684 (0.282)	--	--	--	--	--
Ecological political identification	18.401 (1.498)	18.974 (1.487)	--	--	--	--	--
Female	12.246 (1.110)	21.113* (1.823)	20.960* (1.809)	21.175* (1.821)	22.548* (1.955)	22.431* (1.953)	24.430** (2.151)
Age	-1.295*** (-3.924)	-1.210*** (-3.518)	-1.236*** (-3.617)	-1.239*** (-3.625)	-1.228*** (-3.736)	-1.131*** (-3.373)	-1.082*** (-3.352)
High education	6.807 (0.620)	4.594 (0.403)	6.946 (0.609)	7.050 (0.617)	7.234 (0.641)	7.745 (0.685)	8.087 (0.724)
Married or living together	6.486 (0.620)	-0.292 (-0.025)	-1.324 (-0.113)	-1.269 (-0.108)	-2.009 (-0.172)	-2.191 (-0.185)	-3.284 (-0.279)
HH net income above median class	--	18.470 (1.594)	16.447 (1.442)	17.730 (1.555)	17.842 (1.569)	18.422 (1.623)	18.887* (1.668)
West	3.621 (0.274)	7.250 (0.533)	6.523 (0.487)	7.679 (0.575)	7.508 (0.560)	10.029 (0.765)	9.937 (0.757)
Constant	-23.223 (-0.429)	-59.124 (-1.092)	-60.195 (-1.130)	-61.517 (-1.154)	-42.781 (-1.189)	-75.171 (-1.454)	-45.561 (-1.380)
Observations	749	685	685	685	685	685	685
R-squared	0.157	0.163	0.156	0.154	0.152	0.147	0.145

Note: This table reports OLS estimates of parameters in linear regression models, dependent variables ‘difference to 1/n strategy’. The z-statistics are robust against heteroscedasticity. ∗ (∗∗, ∗∗∗) means that the corresponding parameter is different from zero at the 10% (5%, 1%) significance level, respectively.

Table 10: Non-financial determinants of investments in equity funds with a high Morningstar sustainability rating, dependent variable: 'relative difference to 1/n strategy'

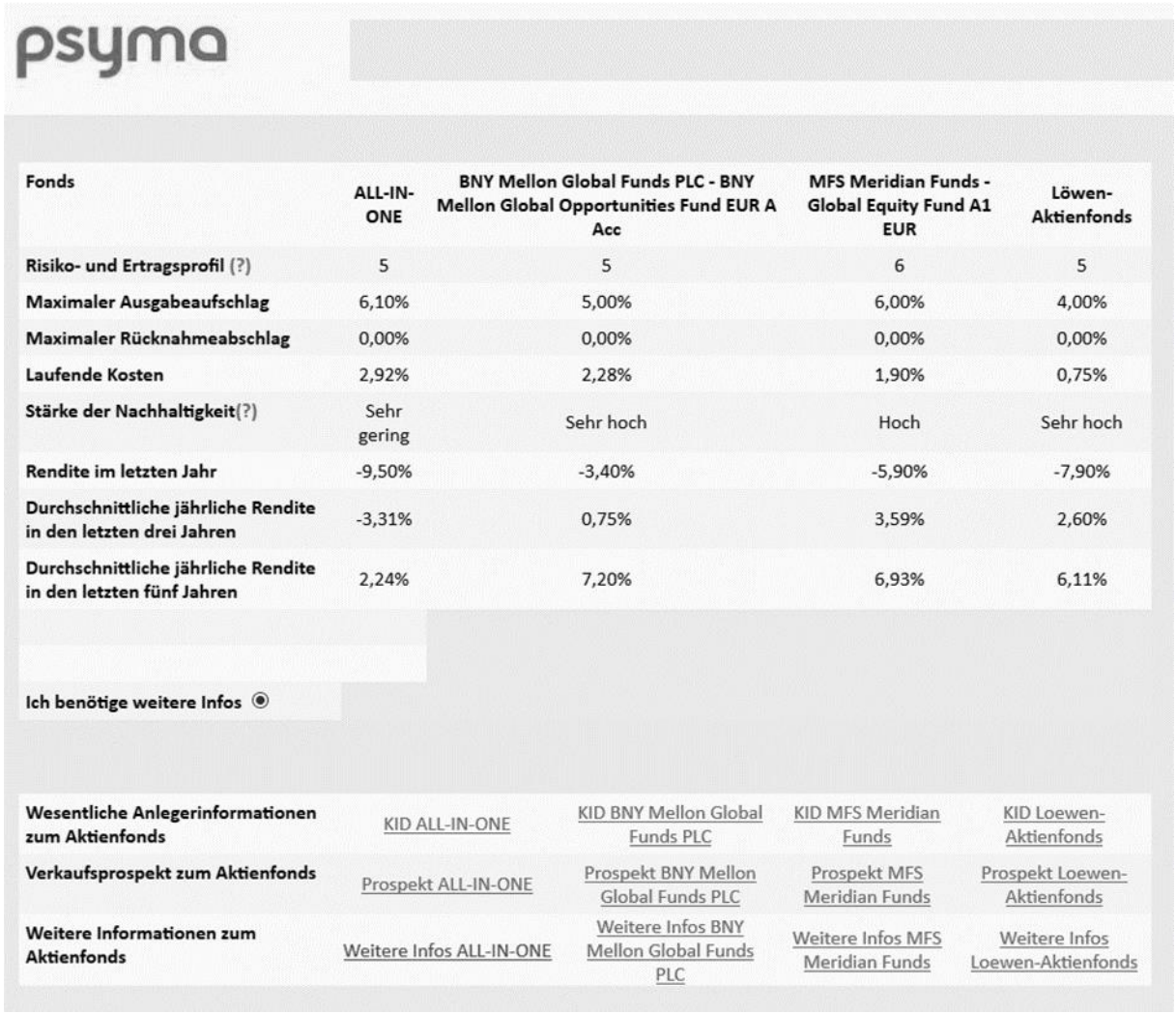
Explanatory variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Difference in average returns in the last year	0.376 (0.295)	0.851 (0.659)	0.821 (0.631)	0.829 (0.637)	0.811 (0.630)	0.926 (0.717)	0.872 (0.679)
Difference in average returns in the last three years	3.710 (0.882)	4.133 (0.950)	3.410 (0.783)	3.456 (0.796)	3.462 (0.794)	3.252 (0.747)	3.241 (0.740)
Difference in average returns in the last five years	-0.272 (-0.060)	-1.081 (-0.233)	-0.937 (-0.202)	-1.004 (-0.217)	-0.858 (-0.185)	-1.032 (-0.221)	-0.817 (-0.174)
Difference in average annual management fees	3.084 (0.179)	5.647 (0.325)	2.908 (0.168)	3.028 (0.175)	2.896 (0.165)	0.311 (0.018)	0.154 (0.009)
Difference in average front-up fees	-11.098 (-0.982)	-12.854 (-1.127)	-11.562 (-1.013)	-11.690 (-1.024)	-11.217 (-0.983)	-10.615 (-0.931)	-10.120 (-0.884)
Risk taking	-8.744 (-1.334)	-4.926 (-0.734)	-3.755 (-0.555)	-4.031 (-0.599)	-4.313 (-0.646)	--	--
Patience	3.215 (0.496)	1.863 (0.281)	2.907 (0.439)	2.858 (0.432)	2.800 (0.428)	--	--
Altruism	6.740 (0.996)	0.561 (0.082)	1.838 (0.282)	2.496 (0.385)	3.858 (0.606)	--	--
Trust	6.631* (1.935)	6.857** (2.046)	7.227** (2.170)	7.264** (2.182)	7.731** (2.297)	--	--
Positive reciprocity	-1.254 (-0.299)	1.252 (0.345)	1.105 (0.305)	1.019 (0.281)	1.870 (0.530)	--	--
Negative reciprocity	1.450 (0.435)	2.055 (0.576)	1.571 (0.445)	1.622 (0.459)	0.716 (0.205)	--	--
Extraversion	1.998 (0.526)	1.099 (0.286)	0.738 (0.194)	0.807 (0.212)	--	1.085 (0.281)	--
Agreeableness	4.707 (1.078)	5.928 (1.342)	6.602 (1.506)	6.429 (1.461)	--	8.064* (1.912)	--
Conscientiousness	1.469 (0.300)	2.752 (0.559)	1.630 (0.334)	1.488 (0.305)	--	0.691 (0.144)	--
Emotional stability	-2.794 (-0.678)	-1.728 (-0.409)	-2.281 (-0.539)	-2.154 (-0.511)	--	-1.503 (-0.359)	--
Openness to experiences	-0.143 (-0.030)	0.054 (0.011)	0.659 (0.137)	0.782 (0.163)	--	1.890 (0.403)	--
Financial literacy	8.371** (2.107)	8.016** (1.993)	7.809* (1.946)	7.762* (1.935)	7.037* (1.751)	8.534** (2.141)	7.746* (1.937)
Perceived higher returns SRI	-1.211 (-0.173)	-2.205 (-0.314)	--	--	--	--	--
Perceived higher risk	5.764 (0.850)	8.452 (1.178)	--	--	--	--	--
Warm glow	12.221 (1.552)	11.862 (1.551)	15.305** (2.069)	15.290** (2.072)	16.337** (2.211)	17.906** (2.539)	20.270*** (2.911)
Membership environmental organization	5.859 (0.705)	5.869 (0.683)	8.042 (0.939)	--	--	--	--

NEP	3.809* (1.757)	3.797* (1.731)	4.966** (2.352)	5.087** (2.403)	5.314** (2.581)	5.371** (2.579)	5.866*** (2.945)
Talk about investment	- 17.983*** (-2.785)	-16.314** (-2.396)	- 17.375*** (-2.592)	-17.197** (-2.567)	- 17.304*** (-2.595)	- 17.444*** (-2.686)	- 17.725*** (-2.736)
Expectations social environment	7.305 (1.173)	7.470 (1.174)	8.860 (1.407)	8.803 (1.398)	9.488 (1.513)	10.263* (1.649)	11.472* (1.831)
Volunteering	- 18.038*** (-2.984)	- 19.101*** (-3.076)	- 18.428*** (-3.056)	- 17.440*** (-2.915)	- 17.134*** (-2.862)	-15.068** (-2.571)	-13.702** (-2.334)
Conservative political identification	-7.793 (-1.284)	-5.965 (-0.955)	--	--	--	--	--
Liberal political identification	-6.203 (-1.021)	-6.630 (-1.050)	--	--	--	--	--
Social political identification	0.984 (0.145)	-0.500 (-0.072)	--	--	--	--	--
Ecological political identification	13.423** (2.053)	13.797** (2.075)	--	--	--	--	--
Female	6.144 (0.961)	12.510* (1.889)	12.398* (1.882)	12.478* (1.889)	14.282** (2.174)	12.798* (1.960)	15.033** (2.313)
Age	-0.778*** (-4.122)	-0.713*** (-3.746)	-0.734*** (-3.890)	-0.736*** (-3.903)	-0.728*** (-3.994)	-0.676*** (-3.700)	-0.640*** (-3.614)
High education	-3.307 (-0.509)	-4.985 (-0.755)	-3.342 (-0.504)	-3.303 (-0.497)	-3.768 (-0.577)	-2.917 (-0.444)	-3.202 (-0.496)
Married or living together	1.521 (0.256)	-0.971 (-0.144)	-1.617 (-0.242)	-1.596 (-0.239)	-1.644 (-0.247)	-2.308 (-0.343)	-2.609 (-0.390)
HH net income above median class	--	9.160 (1.369)	7.953 (1.209)	8.434 (1.274)	8.597 (1.306)	9.132 (1.385)	9.609 (1.464)
West	-4.565 (-0.593)	-1.227 (-0.161)	-1.220 (-0.161)	-0.786 (-0.105)	-1.036 (-0.138)	0.896 (0.121)	0.621 (0.084)
Constant	-3.615 (-0.122)	-28.788 (-1.035)	-30.267 (-1.083)	-30.763 (-1.102)	-6.810 (-0.357)	-41.568 (-1.457)	-8.747 (-0.498)
Observations	749	685	685	685	685	685	685
R-squared	0.129	0.137	0.128	0.127	0.123	0.119	0.113

Note: This table reports OLS estimates of parameters in linear regression models, dependent variables 'relative difference to 1/n strategy'. The z-statistics are robust against heteroscedasticity. ∗ (∗∗, ∗∗∗) means that the corresponding parameter is different from zero at the 10% (5%, 1%) significance level, respectively.

Figures

Figure 1: Screenshot of an exemplary choice set (in German)



Appendix A: Description of the experiment (translated into English)

[First part of the text:]

Please read through the following text in peace, after 30 seconds you can click on proceed.

We would now like to return once again to the subject of financial investments. In the following you have the opportunity to participate in an experiment. You may make an investment decision with a freely available amount of 500€. After the survey, 20 people will be randomly selected among all participants. For these 20 persons, the corresponding investment decision is going to be realized by us after completing the survey in October 2019.

The investment is conducted for exactly one year. After that, i.e. in October 2020, the equity fund units are returned and the selected persons receive the current value of their portfolio.

Examples:

If you are one of the 20 selected persons, your investment decision will be realized in October 2019.

If the value of your portfolio rises to 550€ by October 2020, you will be paid 550€.

However, if the value of your portfolio decreases to 450€ by October 2020, you will receive 450€.

At the end of the selection process, everyone is going to be informed whether they have been selected or not. We guarantee that all this information is true and correct. Please also note that you are completely free in this decision. Since the selection of the twenty winners is random, you should make your decision below as if you were sure to be drawn.

[Second part of the text:]

Please read through the following text in peace, after 30 seconds you can click on proceed.

In the following, four equity funds (i.e. funds with more than 50% of the fund assets in equities) are available now. All four funds are globally-oriented equity funds, reinvest the returns in the fund, and are traded in euros. Information on the similarities of or differences between the funds, for instance, with regard to past performance, risk, or cost structures, can be found in the following tables and additional materials.

Please allocate 500€ among these four funds to create your own portfolio. You can invest the entire 500€ into one fund, or distribute the amount evenly or unevenly between the different

funds. To do this, please enter the desired investment amounts in euros in the corresponding columns. If you wish to invest in a fund, you must invest at least 50€.

By clicking on 'Next' you receive more information on the characteristics of the equity funds available. After reviewing the fund profiles, please distribute the 500€ between the four equity funds.

Appendix B: Survey questions for variables in the econometric analysis (translated into English)

Question / item for variable 'age' and for guaranteeing the representativeness of our sample:
Please indicate your age in years.
_____ years

Question for variable 'female' and for guaranteeing the representativeness of our sample:
Are you ... ?

□ Male

□ Female

□ Divers

Question for variable "Western Germany" and for guaranteeing the representativeness of our sample:
Please indicate the federal state in which you have your primary residence.

□ Baden-Wurttemberg

□ Bavaria

□ Berlin

□ Brandenburg

□ Bremen

□ Hamburg

□ Hesse

□ Mecklenburg-Western Pomerania

□ Lower Saxony

□ North Rhine-Westphalia

□ Rhineland-Palatinate

□ Saarland

□ Saxony

□ Saxony-Anhalt

□ Schleswig-Holstein

□ Thuringia

The following two questions are relevant for constructing the variable "rural" and for guaranteeing the representativeness of our sample:

Please indicate in which city or in which municipality your (main) residence is located.

Name of the city/municipality:_____

Please indicate in which city or in which municipality your (main) residence is located.

Zip code: _____

Screening question to identify financial decision makers in German households:

Please indicate which of the following statements applies to you personally when it comes to financial matters, e.g. investments.

□ I decide in my household alone.

□ I decide together with my partner.

□ I do not decide but someone else.

The following three questions are screening questions to identify financial decision makers in German households who have made some experience with financial products already:

Please indicate in which of the following investment forms you have currently invested your money.
Please select all applicable answers.

□ Savings book

□ Call money account

□ Stocks

□ Equity funds (including ETFs or index funds)

□ Bonds

□ Bond funds

□ Cooperative shares

□ Other fixed-interest forms of investment (e.g. mortgage bonds, treasury bonds, savings agreement, time deposit, subordinated loan)

□ Other non-fixed-income forms of investment (e.g. warrants, certificates, open-ended real estate funds, closed-end funds, mixed funds)

□ In none of the listed forms of investment

Please indicate in which of the following investment forms you have invested your money in the past.

Please select all applicable answers.

□ Stocks

□ Equity funds (including ETFs or index funds)

□ Bonds

□ Bond funds

□ Other non-fixed-income forms of investment (e.g. warrants, certificates, open-ended real estate funds, closed-end funds, mixed funds)

□ In none of the listed forms of investment

Please indicate which of the following plant types you have already been informed about in detail.

Please select all applicable answers.

□ Stocks

□ Equity funds (including ETFs or index funds)

□ Bonds

□ Bond funds

□ Other non-fixed-income forms of investment (e.g. warrants, certificates, open-ended real estate funds, closed-end funds, mixed funds)

□ In none of the listed forms of investment

Question for variable "talk about investments":

Please indicate to what extent you agree with the following statements:

	Totally disagree	Rather disagree	Undecided	Rather agree	Totally agree

I often talk to others about investments.	□	□	□	□	□

In the following we ask you some questions about your personality and individual attitudes.

The first question is about your attitudes towards sustainable development. By this we mean a development that satisfies the needs of the present generation without compromising the ability of future generations to meet their own needs. Usually, ecological, social and economic aspects are taken into account. Personal sustainable behavior thus contributes to sustainable development.

The following three items are relevant to construct the variables "expectations social environment", "act as example", and "warm glow"

	Totally disagree	Rather disagree	Undecided	Rather agree	Totally agree
My social environment (e.g. family, friends, colleagues) expects me to behave sustainably.	□	□	□	□	□
I act sustainably to set an example for others.	□	□	□	□	□
It makes me feel good to act sustainably.	□	□	□	□	□

The following six items are relevant to construct the index variable NEP:

	Totally disagree	Rather disagree	Undecided	Rather agree	Totally agree
Humans have the right to modify the natural environment to suit their needs.	□	□	□	□	□
Humans are severely abusing the planet.	□	□	□	□	□
Plants and animals have the same right to exist as humans.	□	□	□	□	□
Nature is strong enough to cope with the impacts of modern industrial nations.	□	□	□	□	□
Humans were meant to rule over the rest of nature.	□	□	□	□	□

The balance of nature is very delicate and easily upset.	□	□	□	□	□

Question for variable "risk taking":

How willing are you to take risks in general?

Completely unwilling to take risks	Rather unwilling to take risks	Undecided	Rather willing to take risks	Very willing to take risks
□	□	□	□	□

Question for variable "patience":

How willing are you to give up something that is beneficial for you today in order to benefit more from that in the future?

Completely unwilling	Rather unwilling	Undecided	Rather willing	Very willing
□	□	□	□	□

Question for variable "altruism":

How willing are you to give to good causes without expecting anything in return?

Completely unwilling	Rather unwilling	Undecided	Rather willing	Very willing
□	□	□	□	□

The following three items are relevant to construct the variable "trust":

Now we are interested in your view of other people. Please indicate to what extent you agree with the following statements:

	Totally disagree	Rather disagree	Undecided	Rather agree	Totally agree
In general, one can trust people.	□	□	□	□	□
These days you cannot rely on anybody else.	□	□	□	□	□
When dealing with strangers, it is better to be careful before you trust them.	□	□	□	□	□

The following six items are relevant to construct the variables "positive reciprocity" and "negative reciprocity"

In the following we will once again discuss your personal settings for dealing with other people. Please indicate again to what extent you agree with the following statements:

	Totally disagree	Rather disagree	Undecided	Rather agree	Totally agree
If someone does me a favor, I am willing to return it.	□	□	□	□	□
I am particularly trying to help someone who has helped me before.	□	□	□	□	□
I am willing to pay costs to help someone who has helped me before.	□	□	□	□	□
If I am faced with a great injustice, I will avenge myself at the next opportunity.	□	□	□	□	□
If someone puts me in a difficult position, I'll do the same with him.	□	□	□	□	□
If someone insults me, I will also be offensive to him.	□	□	□	□	□

The variables "openness to experiences", "conscientiousness", 'extraversion', 'agreeableness', and 'emotional stability' are based on the following question which is based on the Ten Item Personality Inventory according to Gosling et al. (2003):

Please indicate to what extent you agree with the following character traits for yourself.

(For each pair of traits, look at the one that applies most to you, and also indicate if one of the traits applies more than the other.)

	Totally disagree	Rather disagree	Undecided	Rather agree	Totally agree
Extroverted, enthusiastic	□	□	□	□	□
Critical, quarrelsome	□	□	□	□	□
Dependable, self-disciplined	□	□	□	□	□

Anxious, easily upset	□	□	□	□	□
Open to new experiences, complex	□	□	□	□	□
Reserved, quiet	□	□	□	□	□
Sympathetic, warm	□	□	□	□	□
Disorganized, careless	□	□	□	□	□
Calm, emotionally stable	□	□	□	□	□
Conventional, uncreative	□	□	□	□	□

The following four items are relevant for the variables "conservative", "liberal", "social", and "green":

Please indicate to what extent you agree with the following statements on your political views.

	Totally disagree	Rather disagree	Undecided	Rather agree	Totally agree
I identify myself with conservatively oriented policy.	□	□	□	□	□
I identify myself with liberally oriented policy.	□	□	□	□	□
I identify myself with socially oriented policy.	□	□	□	□	□
I identify myself with ecologically oriented policy.	□	□	□	□	□

The following two questions are relevant for the variables "perceived higher return SRI" and "perceived higher risk SRI":

How high do you rate the return of sustainable equity funds compared to conventional equity funds?

Much lower	Rather lower	Neither lower or higher	Rather higher	Much higher
□	□	□	□	□

Please indicate to what extent you agree with the following statements:

	Totally dis-agree	Rather dis-agree	Undecided	Rather agree	Totally agree
Sustainable equity funds are riskier than conventional equity funds.	□	□	□	□	□

The variable 'financial literacy' is based on the following statements following Lusardi and Mitchell (2014):

Imagine you have €100 on a savings account and the interest rate is 2% per year. Please give your estimate of how much money you would have on the savings book after five years if you never withdraw money or interest payments during this time.

Less than 102€	Exactly 102€	More than 102€	Don't know
□	□	□	□

Imagine that the interest rate on your savings book is 1% per year and inflation is 2% per year. Please give your estimate of how much you could buy with the money in your savings account after one year.

Less than today	Exactly the same	More than today	Don't know
□	□	□	□

Please state your opinion as to whether the following statement is true or false: "The purchase of an individual share usually has a more secure return than an equity fund".

Right	Wrong	Don't know
□	□	□

The variable 'high education' derived on the basis of the following question:

Please indicate your highest school or university degree.

□ No educational level.

□ I'm currently going to school.

□ I'm currently studying.

□ German "Hauptschulabschluss"

□ Secondary school certificate (German “Mittlere Reife”)

□ Graduation from Polytechnic Secondary School (8th/10th grade)

□ Admission to a university of applied sciences (Fachhochschulreife) (degree of a Fachoberschule)

□ High school graduation (German “Abitur”)

□ Advanced technical college certificate

□ Doctorate / habilitation

□ Other educational level: _____

The variable ‘net income HH above median class’ derived on the basis of the following question:

Please indicate the monthly net household income of all persons currently living permanently in your household:

(The household income is the sum of the incomes of all persons living together in a household and can be composed of different sources of income. Please refer to the current monthly net amount, i.e. after deduction of taxes and social security contributions, and add regular payments such as pensions, unemployment benefit, housing benefit, child benefit, BAföG, alimony payments, etc. If you are not sure, please estimate the monthly amount.)

□ Less than 500€

□ 500€ to less than 1000€

□ 1000€ to less than 1500€

□ 1500€ to less than 2000€

□ 2000€ to less than 2500€

□ 2500€ to less than 3000€

□ 3000€ to less than 3500€

□ 3500€ to less than 4000€

□ 4000€ to less than 4500€

□ 4500€ to less than 5000€

□ 5000€ or more

□ Don’t know

The following variable is relevant for the variable ‘membership environmental organization’:

Are you a member of a group or organization that is committed to preserving and protecting the environment and nature?

□ Yes

□ No

The following question is relevant for the variable "volunteering":

Do you engage in volunteer work?

□ Yes

□ No

Appendix C: Additional tables

Table C1: Summary of results of selected financial studies on the relevance of personality traits

Paper	Dependent variable	Significant personality traits
Nyhus and Webley (2001)	Log of liquid savings	Extraversion (-) Agreeableness (-) Emotional stability (+)
	Total savings	Emotional stability (+)
	Engaged in investment saving	Openness to experiences (-) Extraversion (-)
Brown and Taylor (2014)	Households' total financial assets	Openness to experiences (+) Extraversion (-)
	Shares	Openness to experiences (+) Extraversion (-)
Gherzi et al. (2014)	Weekday logins in financial account	Emotional stability (+)
Kausel et al. (2016)	Pension savings	Conscientiousness (+) Agreeableness (-)
	Banking savings	Agreeableness (-)
Bucciol and Zarri (2017)	Stock holding	Agreeableness (-)
	Stock share	Conscientiousness (-)
	Expectation of upward trend for the next 12 months	Openness to experiences (+) Extraversion (-)
Gerhard et al. (2018)	Log total household savings	Agreeableness (-) Extraversion (-)

References for Appendix C:

Brown, S. and K. Taylor (2014), Household finance and the 'Big Five' personality traits, *Journal of Economic Psychology* 197-212.

Bucciol, A. and L. Zarri (2017), Do personality traits influence investors' portfolio?, *Journal of Behavioral and Experimental Economics* 68, 1-12.

Gerhard, P., J. J. Gladstone, and A. O. I. Hoffmann (2018), Psychological characteristics and household savings behavior: The importance of accounting for latent heterogeneity, *Journal of Economic Behavior and Organization* 148, 66-82.

Gherzi, S., D. Egan, N. Stewart, E. Haisley, and P. Ayton (2014), The meerkat effect: Personality and market returns affect investors' portfolio monitoring behavior, *Journal of Economic Behavior and Organization* 107, 512-526.

Nyhus, E. K. and P. Webley (2001), The role of personality in household and borrowing behaviour, *European Journal of Personality* 15, 85-103.

Kausel, E. E., E. Hansen, and P. Tapia (2016), Responsible personal finance: The role of conscientiousness in bank and pension savings in Chile, *International Review of Finance* 16 (1), 161-167.