

Why Do Investors Hold Socially Responsible Mutual Funds?

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ABSTRACT

To understand why investors hold socially responsible (SRI) mutual funds, we use administrative data and link them to survey responses and behavior in incentivized experiments. We find that both social preferences and social signaling are important factors for SRI decisions. Financial motives also play a role but appear to be of limited importance. Socially responsible investors in our sample expect to earn lower returns on SRI than on conventional funds and pay higher management fees. This suggests that investors are willing to forgo financial performance in order to invest in accordance with their social preferences.

Keywords: experimental finance, social preferences, socially responsible investments, mutual funds

JEL Classification: G11, D64, C90

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Socially responsible investments (SRI) are increasing in economic and financial importance, as testified by their growing volume in Europe and the United States (EUROSIF (2014), SIF (2014)). In the United States already one in nine dollars of professionally managed assets are involved in socially responsible investments. These investments are, however, a conundrum in finance because they deviate from the market by excluding potentially high-return ‘sin’ companies from their portfolio, or by focusing on companies with potentially good environmental policies, respect of human rights, employee relations, and so forth (Social Investment Forum (2014)).

Why do investors hold socially responsible mutual funds? While it is tempting to jump to the conclusion that this is because investors have strong pro-social preferences, other motives are also possible. Perhaps most importantly, investors may have financial motives triggered by optimistic risk-return expectations for SRI or the desire to diversify their portfolio risk. Another possible motive could be that investors hold SRI in order to create a positive social image of themselves.

The theoretical and empirical evidence regarding these questions is inconclusive. Some theoretical models assume that investors may be willing to pay a premium to invest in socially responsible companies (e.g., Heinkel, Kraus and Zechner (2001), Gollier and Pouget (2014)). Other recent theoretical contributions imply that holdings of SRI mutual funds are not necessarily the reflection of social preferences (Dufwenberg et al. (2011), Sobel (2015)). Direct empirical evidence on the role of social preferences in SRI is missing.

There are a few empirical studies that show that SRI equity may sometimes perform financially better or not worse than conventional investments.¹ Other studies, however, find that investing in a socially responsible manner is financially costly.² From this literature it is thus impossible to deduce whether or not investors hold SRI equity funds because they expect these funds to financially outperform conventional equity funds. There exists little direct empirical evidence on whether or not investors expect

1 See for instance Bauer, Otten and Koedijk (2005), Derwall, et al. (2005), Kempf and Osthoff (2007), Edmans (2011). Moreover, Karpoff, Lott and Wehrly (2005) find that the losses of firms that violate environmental regulations are equal to the legislation costs and that firms face no additional costs due to reputation loss.

2 For instance, Fabozzi, Ma and Oliphant (2008) and Hong and Kacperczyk (2009) find that divesting from ‘sin’ industries that involve weapons, tobacco, alcohol or gambling is costly because these companies tend to perform better than ‘non-sin’ companies. Moreover, Krüger (2015) finds that stock prices sometimes react negatively to positive news of a company’s corporate social responsibility (CSR).

SRI funds to perform better than conventional funds (Nilsson (2008), Bauer and Smeets (2015)).

Lastly, several theoretical and experimental papers emphasize the importance of a good social reputation, that is, the creation of a positive social image via social signaling.³ Investors could achieve such reputation, for instance, through talking to others about their socially responsible investments. As far as we know there is no study exploring social reputation as a possible motive for socially responsible investments.

In this paper we contribute to understanding why investors hold socially responsible mutual funds, by combining administrative investor data, behavior in incentivized experiments and survey data. Specifically, we utilize administrative data of a large mutual fund provider that offers a wide variety of socially responsible and conventional mutual funds. Individual investors buy and sell their funds directly online without the interference of an intermediary. In addition, we collected data from a survey and incentivized experiments that were conducted with a large group of individual investors. In that way we created a unique data set that links the administrative data of conventional and socially responsible investors to their behavior in controlled experiments and to answers in a comprehensive survey.

To investigate potential effects of social preferences on portfolio choice in a clean way, it is necessary to have an independent measure of such preferences. To explore the pure role of intrinsic social preferences, this measure should ideally be unaffected by social reputation considerations and strategic fairness (Kreps et al. (1982)) or social image concerns (Ellingsen and Johannesson (2008)). To get such a measure we let investors participate in a controlled and anonymous one-shot trust game experiment (Berg, Dickhaut, and McCabe (1995)). The trust game is a two player sequential move game where the first-mover can transfer money to the second-mover. The transferred amount is tripled by the experimenter. The second-mover can send back to the first mover, nothing, parts, or all of the received money. The behavior of the first mover mainly captures trust, which is why the game is called the ‘trust game’. Yet, we want to measure social preferences rather than trust and, therefore, use behavior of investors in the role of second-movers as our measure of intrinsic social preferences (Karlan (2005),

3 Theoretical contributions include Glazer and Konrad (1996), Bénabou and Tirole (2006), and Ellingsen and Johannesson (2008). Empirical evidence is provided by Ariely, Bracha and Meier (2009), Fehrler and Przepiorka (2013), Cappelen et al. (forthcoming).

Falk, Meier and Zehnder (2013)). When the second-mover behaves like the prototypical homo economicus s/he should not send back any money. The more an investor in the role of second-mover returns, the stronger are his/her intrinsic social preferences.

We find that intrinsic social preferences play an important role in determining socially responsible investments. An investor who equally shares the amount of money in the experiment is 14 percentage points more likely to hold an SRI equity fund compared to a selfish investor who keeps all the money. This effect size is economically substantial as only 16% of our total sample holds an SRI equity fund. We find also that social signaling is a motive for investors to hold SRI equity funds. Investors who talk more often about their investments are also more likely to invest in a socially responsible way. Moreover, socially responsible investors donate about 41% more to charity than conventional investors, implying that SRI is not a substitute for charity donations.

Financial reasons also play a role in whether or not investors hold SRI. On the one hand, investors are willing to pay significantly higher management fees on SRI funds than on conventional funds and a majority of investors expect SRI funds to underperform relative to conventional funds. On the other hand, we also find that investors who expect that SRI equity funds underperform relative to conventional equity funds are less likely to invest in a socially responsible manner. Hence, our evidence indicates that some investors are willing to forgo financial performance in order to invest in mutual funds that are in concordance with their social preferences, but that at the margin pessimistic performance expectations reduce the likelihood to invest in a socially responsible way. Investors who expect SRI equity funds to perform financially better than conventional equity funds are not more likely to hold such funds.

Risk perceptions are unrelated to holdings of SRI funds. However, investors who generally hold funds for a longer time are more likely to invest in SRI equity funds, which indicates that socially responsible investors have a longer investment horizon. We also find that investors with larger portfolios are more likely to hold SRI, perhaps for risk diversification reasons.⁴ Individual socio-economic characteristics only play a marginal role in determining whether or not investors hold SRI equity funds.

⁴ An anonymous referee pointed out that wealthy investors might hold SRI for social capital reasons. We cannot exclude this possibility as our data does not lend themselves to investigate this hypothesis.

Overall, we identify a number of reasons why individuals decide to invest in a socially responsible manner. Our most robust and strongest result is that intrinsic social preferences play a dominant role, even when controlling for other possible explanatory variables such as risk preferences, trading activity, realized Sharpe ratios and other investor characteristics.

Interestingly, when looking only at investors who hold an SRI equity fund in their portfolio, we do not find a significant relation between social preferences and the percentage invested in SRI equity funds. This suggests that strong social preferences are needed to take the hurdle to buy an SRI fund in the first place, but social preferences are less important for deciding on the fraction of the portfolio held in SRI funds, once this first hurdle has been taken. Interestingly, however, and in line with the social signaling hypothesis, we find that investors with weak social preferences who strongly signal their investment behavior hold significantly smaller shares in SRI. This suggests that relatively selfish investors who hold SRI for signaling reasons minimize the percentage of SRI they hold. In addition, we find that financial motives affect the fraction invested in SRI funds. For example, investors with a larger portfolio invest a smaller fraction in SRI funds, most likely to diversify their portfolio.

Our empirical results are related to several theoretical models. In their seminal work, Heinkel, Kraus and Zechner (2001) develop a model in which some investors refrain from investing in non-responsible companies. Consequently, they drive up the price of socially responsible companies and lower the expected returns of these company stocks, because the risk of non-responsible firms is borne by fewer investors. Similarly, Fama and French (2007) show in their model that taste for assets can influence stock prices. Gollier and Pouget (2014) develop a model in which investors can improve social responsibility of firms by excluding non-responsible companies from their portfolio or by activism against non-responsible firms.⁵ Our paper provides empirical support for a key assumption of these models: social preferences are indeed an important determinant of investment decisions.

5 De Bettignies and Robinson (2013) develop a model that addresses the question whether corporate social responsibility is actually beneficial for society. Baron (2007) models socially responsible firm behavior as donations. He shows that the cost of social responsibility is borne by the social entrepreneur when going public rather than by the shareholder as long as corporate social responsibility is anticipated by shareholders.

Some previous empirical studies show that socially responsible investors may behave differently from conventional investors. Bollen (2007) and Renneboog, Ter Horst and Zhang (2011) find that, ex-post, investors are more likely to hold on to bad performing SRI funds than to bad performing conventional funds. Hong and Kostovetsky (2012) report that in comparison to Republican fund managers, Democratic fund managers select stocks that score higher on social responsibility.⁶ Importantly, these studies do not distinguish between whether socially responsible investors hold different beliefs regarding the performance of SRI funds or are motivated by social image concerns and/or their intrinsic social preferences. Another important difference with Hong and Kostovetsky is that investors in our study make decisions for their own account, instead of on behalf of others. This is important, as Anderson et al. (2013) show that decisions for others can differ vastly from decisions for oneself.

Understanding the motives of investors to hold SRI funds is important because, as Fama and French (2007) show, taste for assets can have long run effects on asset prices, whereas differences in beliefs will only generate short run effects (e.g., Bénabou and Tirole (2010), Borgers et al. 2013). We find little evidence for the beliefs hypothesis. Rather, social preferences and – to some extent – social signaling are important in socially responsible investment decisions. Especially the effect of social preferences is likely to be long lasting, because SRI has been steadily growing in the last years. If SRI continues to grow,⁷ socially responsible investors might have an increasing effect on asset prices by driving up prices of socially responsible companies and driving down prices of sin companies.

The remainder of the paper is organized as follows. Section I introduces the data sources, Section II describes the variables, and Section III presents individual and portfolio characteristics of investors. Section IV contains our main analysis investigating investors' motives of holding SRI equity funds. Section V discusses investors' characteristics that are related to their social preferences and social signaling and Section VI explores the relationship between SRI and charitable donations. Section

6 Di Giuli and Kostovetsky (2014) also demonstrate that companies ran by a Democrats leaning CEO are more likely to go green than firms ran by a Republican leaning CEO. Other papers investigating socially responsible investment decisions include Statman (2004), Nilsson (2008), Hood, Nofsinger and Varma (2014), Bauer and Smeets (2015).

7 Previous studies show that mutual funds advertising results in larger inflows of money into these funds (e.g. Jain and Wu (2000) and Cronqvist (2006)). The growing interest in SRI could make it more attractive for mutual funds to advertise these funds in the near future, further increasing the market share of SRI.

VII presents a brief summary of the results, discusses questions left open by our study and suggests some avenues of future research on SRI.

I. Data

In this section, we first describe the administrative investor data, followed by a description of the survey and details on the experiments. Thereafter, we describe our main variables.

A. Administrative Investor Data

We use administrative individual investor data from one of the largest mutual fund providers in the Netherlands, covering the period June 2006 to June 2012. The mutual fund provider offers a wide range of investment funds, including equity funds, bond funds and mixed funds. Within these categories the funds can be global, sector-specific, SRI funds, and more.⁸ The administrative data contain for each investor all monthly fund holdings, including SRI funds.⁹ We define an investor as socially responsible when s/he holds at least one SRI equity fund in his/her portfolio.

B. Survey Data

The administrative data provide information on 3,382 socially responsible investors, all of whom were invited to participate in the survey. Next to the socially responsible investors, we randomly selected 35,000 investors of the approximately 145,000 remaining accounts in the database.¹⁰ All selected investors received an email containing a link to the online survey. The response rate was 8% for conventional investors and 12% for socially responsible investors. We deliberately invited disproportionately more socially responsible investors, in order to increase the statistical power when comparing them to conventional investors. Relative to the invited sample,

8 Figure D1 in the Internet Appendix shows a screenshot of the product selector of the mutual fund provider. The product selector shows for each fund to which category it belongs and whether the provider classifies the fund as sustainable, emerging markets, global, etc. On the same screen, investors can read about the details of the fund including the details regarding stock selections based on social responsibility criteria. In addition, the product selector gives information such as past performance, Morningstar ratings and fees.

9 Our survey (see below) indicates that 83% of all investors (including those who do not hold SRI funds) respond positive or neutral to the statement that socially responsible investments have a positive influence on society. Only 26% of the investors indicate in another statement that they believe that SRI funds are a marketing trick to sell more funds. We are therefore confident that funds defined as SRI funds are also perceived as such by most investors.

10 We excluded investors that were no longer holding the account at the time we conducted the survey. We also did not invite investors who never placed a single trade or were younger than 18 years.

respondents are slightly more likely to be male, older and hold larger portfolios (see Table AI in the appendix for a comparison of the survey respondents and the overall sample regarding gender, age, total portfolio value, and the percentage of SRI equity holdings). We control for these and other demographic variables in our analyses.

In the online survey, investors answered questions and took part in experiments with monetary incentives (for details see below). At the beginning of the survey respondents received some general information. In addition, they were also informed that they would take part in several experiments, but were not informed about the content of the experiments until they actually took place. In the introduction to the survey also the general procedure regarding possible money earnings in the experiments was explained. In the first part of the survey, we asked about general investment issues like the assets held, the number of investment accounts and investment goals. In this part, investors also participated in a risk preferences elicitation experiment. Thereafter, more questions on investment behavior followed. Somewhere in the middle of the survey investors participated in an experiment eliciting their intrinsic social preferences. We asked all survey questions regarding SRI and other behavior that could be interpreted as related to social goals after the experiments.

Survey questions have many advantages but also some known limitations. For instance, respondents might differ from non-respondents and the answers of respondents may depend upon the framing of the questions. We discuss a potential response bias in our results below and conclude that if a response bias is present, it likely weakens the effects we identify and that we err on the conservative side. Regarding framing effects, it is important to note that all investors received the same questions. We are primarily interested in potential differences in beliefs and attitudes of socially responsible and conventional investors and any framing effects should be similar for these groups. Surveys also have major benefits. Specifically important for our research question is that it allows us to gather information about return expectations on and risk perceptions of SRI in comparison to conventional equity investment, which would otherwise remain unobserved. Moreover, we can collect information on additional important control variables, like self-rated investment knowledge, income levels, education, etc. (see also Guiso, Sapienza and Zingales (2013) for a discussion of the pros and cons of surveys for studying financial decisions).

*C. Incentivized Experiments*¹¹

Investors participated in a risk preferences elicitation experiment and in an interactive experiment with other investors where we elicited their social preferences. All experiments were for real money and investors were informed that their earnings depended on their own decisions and (in some cases) on the decisions of other investors. They were also informed that at the end of the survey it would be determined randomly (with a chance of one in ten) whether they will receive the earnings from the experiment or not.¹² Those who were selected for payment got one of the experiments paid out at random. Investors received their earnings via bank transfer at the first working day after they completed the survey and payments were guaranteed by the authors' university. We used a unique identification number to link the choices in the experiments and survey answers to our administrative data. In order to ensure anonymity of investors we hired an external company specialized in conducting online research to handle the payments. This company does not have access to the trading records or other information of the investors. Survey participants were informed about this at the beginning of the survey.

C.1 Risk Preferences

We elicited risk preferences with incentivized multiple price list lotteries, similar Dohmen et al. (2011) (see also to Holt and Laury (2002)). Investors faced 20 different decision situations where they had to choose between a specific sure amount and a lottery with a 50% chance of winning 300 euro and a 50% chance of not winning anything. The sure amount was minimally 0 euro and maximally 190 euro and increased in steps of 10 euro from one to the next decision situation. The presented choice options can be found in Table AII in the appendix. Participants made decisions in all 20 decision situations. For incentive compatibility reasons, and in accordance with the literature on risk elicitation experiments, only one of these 20 situations was randomly determined to be actually paid out.

The decision situation where a participant switches between the lottery and the certain outcome informs us about his/her risk preferences. We therefore use this switching point as a measure of an individual's risk attitude. As the sure amount is

11 The experimental instructions can be found in Section B in the Internet Appendix.

12 For a recent validation of this procedure, see Dohmen et al. (2011).

ordered from low to high, a higher switching point from the lottery to the sure amount indicates a more risk tolerant participant.

C.2 Social Preferences

To measure intrinsic social preferences, we use a variant of the trust game experiment introduced by Berg, Dickhaut and McCabe (1995). The trust game is a two-player sequential game. Both the first-mover and the second-mover are endowed with 50 euro.¹³ The first-mover decides on the amount s/he wants to send to the second-mover, which can be any multiple of 5 euro, including zero and 50. The amount sent is tripled by the experimenter and the second-mover decides how much of the received money to return to the first-mover. Hence, the earnings of the first-mover are 50 euro minus the amount sent plus the amount returned by the second-mover. The earnings of the second-mover are 50 euro plus triple the amount sent by the first-mover minus the money sent back.¹⁴

We use second-mover behavior to measure intrinsic social preferences.¹⁵ In order to obtain a comprehensive measure of intrinsic social preferences as well as for practical implementation reasons, we used for second-movers the so-called strategy method (Selten (1967)). Each second-mover decided how much to send back, for each of the 10 possible non-zero amounts sent by the first-mover – ranging from 5 euro to 50 euro – before knowing the actually sent amount. Specifically, the experiment instructions informed second-movers that “[f]or technical reasons you should make your decision without knowing how much money the person to whom you have been linked has actually sent you. Therefore, for each possible amount that the other person could send you, we would like to ask you to indicate, how much you would like to return. However, only the decision that is relevant for the amount that has actually been sent is decisive for your income and the income of the person to whom you have been linked.”

13 Since its introduction (Berg, Dickhaut and McCabe (1995)) it is standard practice in the literature using trust game experiments to endow both participants with the same initial amount (e.g., Fehr and List (2004), Falk, Meier and Zehnder (2013), Falk and Zehnder (2013)). The main reason is to avoid experimenter induced unequal positions *ex ante*.

14 The money sent by the first-mover and tripling of this amount by the experimenters is 'free lunch' for the second-mover and one may argue that second-movers could act differently would they need to earn these rights. Unfortunately, there is no evidence available on if and how second-mover behavior in trust games would change when first-mover transfers and tripling of the transfer were not for free. We therefore adapted the standard procedure.

15 We also have data on the behavior of first-movers in the trust game, but do not report on them here for brevity and because it intermingles trust and social preferences (Cox (2004)).

Next to generating a comprehensive measure of intrinsic social preferences another important advantage of the strategy method is that it simulates sequential moves for each possible choice of the first-mover without deceiving subjects and without the necessity that players' choices are indeed sequential in time. Similar versions of the strategy method have recently been successfully used in trust game experiments (see e.g., Baran, Sapienza and Zingales (2010), Falk, Meier and Zehnder (2013), Falk and Zehnder (2013)).

Each investor was either a first- or a second-mover. Every working day, we randomly matched first-movers to second-movers. After choices were made, we implemented the one choice out of the 10 possible choices of the second-mover that corresponded to the actual choice of the first-mover, in case s/he made a non-zero transfer. For example, if the first-mover transferred 30 euro to the second-mover, we used the amount that the second-mover wanted to return for that transfer to calculate earnings. In the example, the second-mover would receive $3 \times 30 = 90$ euro from the first mover. If the second-mover, for instance, decided to return 45 euro, the earnings of the second-mover would be $90 - 45 + 50$ (endowment) is 95 euro and the earnings of the first mover would be $-30 + 45 + 50$ (endowment) is 65 euro. In case the actual choice of the first-mover was to send zero, both earned their initial endowment of 50 euro.

Second-movers in the trust game are randomly assigned to one of two conditions. Under one condition, they are matched to a first-mover who is a randomly chosen investor participating in the survey and the experiment. In the other condition, a second-mover is randomly matched to a first-mover who is a socially responsible investor participating in the survey and the experiment. We inform subjects in the introduction to the experiment in which condition they are, without telling them that there are two different conditions.¹⁶ Investors received instructions of the experiment online and had to answer a couple of comprehension questions about the rules of the game and how the payment is calculated before the experiment started. These questions were correctly answered by 89.5% of the investors.¹⁷ The trust game was played only once. The investors were informed about this and also about the fact that they and the other

¹⁶ We do not find differences in behavior between conditions and therefore use the pooled data in our analysis below.

¹⁷ We conduct our main analysis with all investors and confirm in robustness analyses in the appendix that the results remain qualitatively unchanged when excluding investors who answered incorrectly at least one question after three trials (see Table AVI).

participants in the experiment would remain anonymous during and after the experiment.

The fact that the trust game is played only once rules out repeated game effects. Moreover, second-movers know that their behavior will never be revealed to anybody and is only anonymously known to the experimenters, which minimizes prosocial behavior in the trust game that is due to reputation and social image effects. We are therefore confident that we can interpret second-mover behavior as an independent measure of intrinsic social preferences. In Section II, C.2, we explain in detail how we quantify this measure.

Before we move on, we want to make a note regarding the stakes size in the experiment, as it may seem small relative to investors' assets and incomes. We are confident that the stakes size does not jeopardize our results for the following reasons. First, as the most important effect of no or low stakes is an increase of noise in the data (Camerer and Hoghart (1999)), too low stakes would most likely reduce the chance to detect a relation between social preferences measured in our experiment and socially responsible investments in the field. Therefore, if anything, we are likely to err on the conservative side. Second, the payoffs in our experiment can be considered as reasonable given the time investors actually spent on the experiment. On average it took participants 45 minutes to complete the whole survey and all experiments. Therefore, the potential payment probably was not too far off participants' opportunity costs, especially when taking into account that they most likely participated in their leisure time. Third, although there have been some moderate quantitative stakes size effects reported in experiments similar to ours, qualitatively these effects do not differ much for low and high stakes (Oosterbeek, Sloof and Van De Kuilen (2004)).¹⁸

II. Variables

All variables discussed here are summarized in Table AIII in the appendix. Table AIV in the appendix shows summary statistics for all variables and results of statistical tests comparing socially responsible and conventional investors. We discuss in sequence the variables from (A) the administrative transaction data, (B) the survey questions, and (C) the experiments.

¹⁸ For a relatively recent discussion of stake size effects, see Falk and Heckman (2009).

A. Administrative Variables

A.1. SRI Equity Fund Holdings

As mentioned already, we classify an investor as a socially responsible investor if s/he owns at least one SRI equity fund at the time of the experiment. We construct a measure for the *Percentage in SRI equity funds*, which is equal to the average amount invested in SRI equity funds in the year after the experiment, as percentage of the total amount invested in equity funds in that period.

A.2. Other Portfolio Characteristics

The variable *Log total portfolio value* is defined as the logarithm of the average euro amount invested in bonds and equity at the provider in the year before the survey and experiment. The variable *Log number of transactions* reports the logarithm of the number of trades an investor made in the 12 months prior to the experiment. The *Average holding period* specifies the average number of months an investor has held on to a mutual fund in the time period June 2006 to June 2011, in which the survey and experiment were conducted.

Mean portfolio returns is defined as the average portfolio return in the year before the investor participated in the survey and experiment. *Volatility portfolio returns* is the monthly portfolio volatility in that period and the *Sharpe ratio* is defined as the *Mean portfolio returns* divided by the *Volatility portfolio returns* in the year before the experiment.

B. Survey Variables

B.1. Return Expectations and Risk Perceptions

In order to explore the importance of financial motives we elicit return expectations and risk perceptions regarding SRI equity funds compared to conventional equity funds. To measure the returns investors expect, we use responses to the statement: “I expect that the returns of socially responsible equity funds compared to conventional equity funds are: “Much lower, A bit lower, The same, A bit higher, Much higher, I do not know.” Only 2.5% of the socially responsible and 10.2% of the conventional investors chose “I do not know.” For our regression models, to be introduced below, we create

several dummy variables. The dummy variable *Lower expected returns on SRI* takes value 1 if the investor expects the returns on SRI funds either to be much lower or a bit lower than the returns on conventional equity funds; 0 otherwise. The dummy variable *Higher expected returns on SRI* takes value 1 if the investor expects much or a bit higher returns on SRI funds compared to conventional equity funds; 0 otherwise. Equal return expectations form the base category.

To measure risk perceptions of SRI equity funds compared to conventional equity funds, we asked investors to rate their agreement to the following statement: “Socially responsible equity funds are more risky than conventional equity funds.” The agreement with each of these statements had to be rated on a 7-point Likert scale, from 1 “Disagree completely” to 7 “Agree completely.” We create the dummy variable *Lower perceived risk on SRI*, which takes value 1 if the investor perceives the risk of SRI equity funds to be lower than the risk of conventional equity funds (Likert scale 1 to 3); 0 otherwise. The dummy variable *Higher perceived risk on SRI* takes value 1 if the investor perceives the risk of SRI equity funds to be higher than the risk of conventional equity funds (Likert scale 5 to 7); 0 otherwise. Equally perceived risk perceptions (Likert scale 4) form the base category.

B.2. Signaling

At the mutual fund provider, investors buy and sell funds directly online, without the interference of an intermediary. Therefore, in principle, nobody else observes an investor’s portfolio. Consequently, an investor who wants to signal to others that s/he invests in SRI funds has to talk about his investments to others. To measure the extent to which investors may use SRI funds for reasons of signaling pro-social inclinations, called social *Signaling*, investors had to rate their agreement with the statement “I often talk about investments with others.” on a 7-point Likert scale. The question is phrased in neutral terms to avoid experimenter demand effects as well as socially desirable responses. The variable *Strong signaling* is a dummy variable taking on value 1 for investors who score equal to or higher than the median on *Signaling*; 0 otherwise.

B.3. Investment Knowledge, SRI Perception, Education Level and Other Investor Characteristics

Similar to other studies (Dorn and Huberman (2005), Graham, Harvey and Huang (2009), Van Rooij, Lusardi and Alessie (2011)) we measured self-assessed *Investment knowledge* with the statement: “My investment knowledge is good.” Investors rated their agreement on a 7-point Likert scale from “fully disagree” (scale = 1) to “fully agree” (scale = 7). We also elicited how investors perceive the societal impact of SRI by asking them to report on a 7-point Likert scale their agreement with the statement “Socially responsible investment funds have a positive influence on society” (1 = “fully disagree”, ..., 7 = “fully agree”). The dummy variable *Perceived social impact* is constructed from the answers to this question and is equal to 1 for investors who gave an answer equal to or above the median answer; 0 otherwise. We also asked for the highest achieved education level and define a dummy variable *University degree* taking value 1 in case the investor indicated to have a university degree; 0 otherwise. Further, we gathered information on investors' gender and define *Female* with a dummy variable taking value 1 when the investor is a woman and value 0 when the investor is a man. The variable *Age* is measured in years and reflects an investor's self reported age in years. Investors also self reported their annual gross family income. For our subsequent analysis we created the dummy variables *Low income* (below 60,000 euro), *Median income* (between 60,000 euro and 100,000 euro) and *High income* (above 100.000 euro) such that each category comprises about one third of the sample. The variable *Untold income* is equal to 1 for investors who were unwilling to report there income; 0 otherwise.

B.4. Donations

Charitable donations could serve as a substitute for or complement to SRI. To test this we asked investors how much they on average donate to charity per year. The variable *Log donations* specifies the logarithm of this average.

C. Experiment Variables

C.1 Risk Preferences

The variable *Risk preferences* indicates the sure money amount at which the investor switches from choosing the risky lottery to choosing this risk-free option in the risk preference elicitation experiment. A higher amount indicates more risk tolerance.

C.2 Intrinsic Social Preferences

We use second-mover behavior in our one-shot anonymous trust game experiment to elicit intrinsic social preferences. Through the use of the strategy method, we have 10 monetary return decisions for each investor in the role of second-mover. In order to arrive at a measure of intrinsic social preferences we aggregate these return decisions and construct the natural measure ‘mean intrinsic social preferences’. Specifically, for each possible non-zero first-mover transfer (i.e., 5 euro, 10 euro, ..., 50 euro) we calculate the ratio of the back-transfer and take the average. In the remainder of the paper, we will call this measure *Intrinsic social preferences* or just *Social preferences*, for brevity.

III. Individual and Portfolio Characteristics of Socially Responsible and Conventional Investors

Table I shows that 16.2% of the investors in the sample can be classified as socially responsible investors, because they hold at least one SRI equity fund. These investors, on average, hold 4,574 euro in SRI equity funds, which corresponds to 23.0% of their total equity investments. Socially responsible investors invest overwhelmingly in SRI equity funds (94.2%), as compared to SRI bond funds (5.8%).

< TABLE I ABOUT HERE >

Regarding individual characteristics, we find that in comparison to conventional investors socially responsible investors are more likely to hold a university degree (59.0% vs 46.7%; *Chi-square test*,¹⁹ $p=0.009$), rate their investment knowledge higher (4.3 vs. 4.1; *t-test*, $p=0.029$), and are marginally less likely to be female (12.3% vs

¹⁹ All tests are two-sided.

18.7%; *Chi-square* test, $p=0.064$). With respect to portfolio characteristics, the only substantial difference between the two sets of investors is that socially responsible investors hold larger portfolios than conventional investors (*Log total portfolio value*: 10.7 vs 10.3; *t-test*, $p=0.002$).²⁰

IV. Why Do Investors Hold SRI Equity Funds?

Our foremost interest is to understand the role of financial and social motives in holding SRI funds. In Sections A and B below, we therefore first look at the realized portfolio performance of socially responsible and conventional investors and at investors' expectations regarding return and risk of SRI funds.

In Section C we use regression analyses to explore the role of the above mentioned financial reasons as well as social motives, while controlling for a battery of individual background variables. In regard to social motives, we distinguish between intrinsic social preferences and social signaling. Intrinsic social preferences refer to prosocial motives that take into account the welfare of others without providing any future (material) benefit to the individual. Social signaling refers to the idea that investors may individually benefit from showing others that they invest in a responsible manner because it improves their social image and reputation.²¹

A. Portfolio Performance

Panel A of Table II reports on the realized portfolio performance of the equity part of socially responsible investors (column 1) and conventional investors (column 2) for three different time horizons: one, three, and five years prior to the survey and experiment. Note that these numbers refer to the returns individual investors obtained on the funds they selected in their portfolio, and not to the aggregate performance of funds.

<TABLE II ABOUT HERE>

20 The interested reader can find the full set of comparisons of individual and portfolios characteristics in Table AIV in the appendix.

21 Several theories in finance and economics introduce social preferences in their models (e.g., Andreoni (1990), Rabin (1993), Fehr and Schmidt (1999), Bolton and Ockenfels (2000), Heinkel, Kraus and Zechner (2001), Charness and Rabin (2002), Sobel (2005), Gollier and Pouget (2014)). For contributions on signaling theory, see Glazer and Konrad (1996), Bénabou and Tirole (2006), and Ellingsen and Johannesson (2008).

The figures in Panel A show that overall socially responsible investors' equity performance is similar to that of conventional investors. In the one year before the experiment, socially responsible investors obtained marginally significantly higher *Mean returns* on their overall equity investments than conventional investors, but also obtained a significantly worse *Sharpe ratio* ($p=0.0414$). Over the three years before the experiment, socially responsible investors obtained significantly lower *Mean returns* than conventional investors ($p=0.0206$) but did not differ regarding the *Sharpe ratio*. No difference exists in the performance of socially responsible and conventional investors for the five years preceding the experiment.

Panel B focuses on socially responsible investors only and compares the performance of the 'SRI equity' part of their portfolio to the performance of the 'Non-SRI equity' part. The figures show that socially responsible investors obtained significantly lower *Mean returns* and worse *Sharpe ratios* on their SRI equity part over all three considered time periods ($p<0.002$).

Finally, Panel C of the table reports that the average yearly total expense ratio (TER) of socially responsible equity funds is with 2.2% significantly higher than the 1.5% fees paid on conventional equity funds ($p=0.023$). These extra fees are used to screen portfolios on environmental and social criteria.

Together these observations indicate that financial motives are unlikely the main driver of SRI. However, subjective performance expectations of investors regarding SRI funds could be biased and if the bias is sufficiently large investors might still invest into SRI funds for purely financial reasons. We explore this possibility next.

B. Expected Returns and Risk Perceptions about SRI Funds

Figures 1 and 2 display the forward looking return expectations and risk perceptions on SRI equity funds compared to conventional equity funds, separately for socially responsible and conventional investors (see also Table AIV in the appendix). Figure 1 depicts the distribution of expected returns on SRI equity funds in comparison to conventional equity funds. The figure shows that both investor types are overall relatively pessimistic regarding the performance of socially responsible investment funds. Only 16.5% and 14.5% of socially responsible and conventional investors, respectively, expect higher returns on SRI than on conventional funds. Socially responsible investors are slightly less pessimistic about the returns of SRI funds than are

conventional investors. For instance, 48.7% of the socially responsible investors and 56.1% of the conventional investors expect to earn much or a bit lower returns on SRI funds than on conventional funds. The difference between socially responsible and conventional investors is marginally significant (*Kolmogorov-Smirnov* test, $p=0.054$).

<FIGURE 1 SOMEWHERE HERE>

Figure 2 shows the distribution of the perceived risk on SRI equity funds relative to conventional equity funds for socially responsible and conventional investors. Socially responsible and conventional investors appear to have similar risk perceptions regarding SRI equity funds. The difference of the distributions of risk perceptions between socially responsible and conventional investors is not significant (*Kolmogorov-Smirnov* test, $p=0.186$).

<FIGURE 2 SOMEWHERE HERE>

Together, the results on return expectations and risk perception show that socially responsible investors have a slightly more positive view on the performance of SRI equity funds than conventional investors. Although the differences are small, performance expectations could still play some role in explaining why investors hold SRI funds. Another financial motive to hold SRI funds could be risk diversification. Although an investor might perceive the risk of an SRI fund in isolation to be equally risky to a conventional equity fund, the investor might hold an SRI fund to diversify the overall portfolio. The survey data show that this motive is virtually absent. Only 5.4% of all socially responsible investors indicate to hold SRI funds because of diversification benefits.

C. Regression Results - Social and Financial Motives of Socially Responsible Investors

Table III studies simultaneously the different possible motives of investors to hold socially responsible mutual funds. The first specification presents marginal effects of a probit regression in which the dependent variable is a dummy that takes value 1 if an investor holds an SRI equity fund and 0 otherwise. We control for portfolio characteristics as well as individual characteristics. To control for variables related to investors' portfolios we use the variables *Average holding period*, *Log total portfolio value*, and *Log number of transactions*.

Regarding individual characteristics we control for *Investment knowledge* and use the dummy variable *University degree* to control for higher education. We also control for investors' risk preferences independently measured by the switch amount in our experimental risk preference elicitation task (*Risk preferences*). As further control variables we include gender (*Female*) and *Age* of investors. We also control for income by using the dummy variables *Low income*, *High income* and *Untold income*, with medium income being the omitted reference category. In the following we first discuss social motives, then financial motives and finally other characteristics.

<TABLE III SOMEWHERE HERE>

When investigating the role of social motives, we distinguish between intrinsic *Social preferences* and *Signaling*. The results for Specification (1) in Table III show that stronger intrinsic social preferences have a highly significant positive effect on the likelihood to invest in a socially responsible manner ($p=0.003$). To illustrate the economic effect: an investor who equally splits the earnings among him- or herself and the other participant in the trust game is $2 * 0.0694 = 14$ percentage points more likely to hold an SRI fund than a completely selfish investor who returns zero to the first mover. These 14 percentage points represent a large economic effect compared to the 16% of our sample that holds SRI equity funds.

Also signaling is significantly positively related to the likelihood to invest in SRI equity funds. An investor who scores one point higher on the signaling variable is 2.3 percentage points more likely to invest in an SRI equity fund ($p=0.035$).

Specification (1) further shows that the variable *Lower expected returns on SRI* is negative and marginally statistically significant ($p=0.071$). An investor who expects SRI equity funds to underperform relative to conventional equity funds is 5.8 percentage points less likely to hold an SRI equity fund. However, investors who expect SRI equity funds to perform better than conventional equity funds are not significantly more likely to hold such a fund ($p=0.239$). This suggests that investors do not hold SRI equity funds because they expect these funds to financially outperform conventional funds, but rather that investors who are pessimistic about the performance of SRI avoid such funds. The risk perception dummies are not significant, which indicates that investors do not hold SRI equity funds because they perceive their risk to be lower. These results show that perceived performance of SRI equity funds do play some role in SRI investment

decisions, but also that financial motives alone do not explain the decision to invest in SRI funds.

Specification (1) of Table III also documents that investors who hold funds for a longer time (*Average holding period*) are more likely to invest in SRI equity funds. This indicates that socially responsible investors have a longer investment horizon. An investor who holds his/her funds for one year longer is $0.0023 * 12 = 2.76$ percentage points more likely to hold an SRI equity fund.

The value of the portfolio (*Log total portfolio value*) is positively related to the likelihood to invest in SRI. A doubling of the portfolio size is associated with being about 3.9 percentage points more likely to invest in a socially responsible manner ($p=0.002$). This relatively strong effect is intuitive as investors with larger portfolios likely spread their larger wealth over various funds, including SRI funds. We also see a slightly positive significant effect of the number of transactions (*Log number of transactions*), which indicates that more active investors tend to be more likely to invest in SRI funds.

Of the individual characteristics only the educational level and age exhibit robust statistically (marginally) significant effects: having a university degree tends to increase the likelihood to hold SRI funds whereas being older decreases it.

Specification (2) shows coefficients of an OLS regression for investors who hold at least one SRI fund. We see that, conditional upon holding an SRI equity fund, neither social preferences nor signaling explain the percentage invested in SRI equity funds. These results suggest that while social motives are key for taking the hurdle to invest in a socially responsible manner at all, they seem not important in determining the percentage invested in SRI, once this hurdle is taken. Rather, it appears that financial motives determine the percentage invested in SRI funds. Investors with a larger portfolio invest a significantly smaller fraction of their portfolio in SRI funds ($p=0.004$). This is consistent with the interpretation that these investors want to diversify their portfolio over non-SRI funds more than investors with smaller portfolios.

Of the explored individual characteristics only *Investment knowledge* and *Risk preferences* exhibit (marginally) significant effects on the share of SRI held. Better investment knowledge has a marginally significant negative effect, whereas higher risk tolerance has a significant positive effect.

Table IV explores the role of social preferences and social signaling in more detail, using dummy variables. In specifications (1) and (3), the table presents marginal effects from a probit regression in which the dependent variable is a dummy that takes value 1 if an investor holds an SRI equity fund and 0 otherwise. Specifications (2) and (4) present coefficients of an OLS regression where the dependent variable is the percentage invested in SRI equity funds for those investors who hold an SRI equity fund. The variable *Strong social preferences* takes value 1 if an investor at least equally shares the money in the experiment and 0 if the investor shares less than half of the money. The variable *Strong signaling* takes value 1 if an investor scores at or above the median for signaling and 0 otherwise.

The results in specification (1) show that the relation between social preferences and the likelihood to hold an SRI fund is robust to this non-linear specification of the social preference variable. An investor who gives at least half of the money in the experiment away is significantly more likely to invest in SRI funds than a more selfish investor ($p=0.033$). Consistent with the linear specification for social preferences reported in Table III, strong social preferences explain the likelihood to invest in SRI funds, but not the percentage invested in SRI funds conditional upon holding an SRI fund (specification (2)). This again indicates that social preferences are most important for taking the first hurdle to buy an SRI fund, but are less important for the decision on the fraction of all equity investments held in SRI equity funds.

Consistent with the results of the linear specification, the variable *Strong signaling* is neither significant for explaining the choice to hold an SRI fund, nor for explaining the percentage in SRI funds. Yet, we expect social signaling to matter most for investors with weak social preferences, because these investors should be willing to hold SRI funds only if it benefits their social image. We test this hypothesis in specifications (3) and (4).

To this end, we decompose the whole set of investors into sub-groups according to the strength of their social preferences and the strength of their social signaling. The first sub-group consists of investors with strong social preferences, irrespective of their strength of signaling.²² As above, these investors are represented by the dummy variable

²² For investors with strong social preferences we do not discriminate between weak and strong signaling because in unreported analysis we find that the relation between strong social preferences and holding SRI is independent of the strength of signaling. We therefore merge these sub-groups into the sub-group *Strong social preferences* to increase statistical power.

Strong social preferences. Investors with weak social preferences are further divided into a sub-group with strong signaling and a sub-group with weak signaling. The investors with weak social preferences and strong signaling are represented by the dummy variable *Weak social preferences & strong signaling*, which takes value 1 if the the average return ratio of the investor gives the other player less than half of the money in the experiment and scores at or above median for signaling; it takes value 0 otherwise. The remaining sub-group of investors with weak social preferences and weak signaling forms the base group. Thus, the coefficients of both dummy variables, *Strong social preferences* and *Weak social preferences & strong signaling*, should be interpreted relative to this base group.

<TABLE IV SOMEWHERE HERE>

The results, reported in Table IV, specification (3), suggest that investors with *Weak social preferences & strong signaling* are more likely to invest in SRI funds than investors with weak social preferences and weak signaling, but the statistical significance is not strong ($p=0.103$). The results confirm that investors with *Strong social preferences* are significantly more likely to invest in SRI funds ($p=0.009$).

Importantly, Table IV, specification (4) shows that investors who hold SRI funds and have *Weak social preferences & strong signaling* indeed invest a significantly smaller fraction of their portfolio in SRI funds ($p=0.042$). This result is consistent with the hypothesis that selfish investors who do invest in SRI and are strongly motivated by social image concerns, invest a rather small fraction in SRI funds for bragging rights. The smaller fraction in SRI funds allows them, on the one hand, to signal that they invest in SRI funds and, on the other hand, to keep low the potential financial disadvantages of holding SRI. The effects of all other investigated variables are similar to those reported in Table III.

Next, we investigate whether beliefs about the societal impact of SRI drives investment in SRI and whether the results reported so far are robust to controlling for such beliefs. Table V reports regression analysis, exploring whether investors who hold more positive views about the societal impact of SRI funds are also more likely to hold such funds. The results reported in column (1) show that this is indeed the case ($p=0.016$). Yet, consistent with the result for social preferences, investors who hold more positive views on the societal impact of SRI are not holding a larger fraction of

their portfolio in SRI funds (column (2), $p=0.987$). Equivalent to specifications (3) and (4) of Table IV, in specifications (3) and (4) of Table V we use the variables *Strong social preferences* and *Weak social preferences & strong signaling*. Importantly, the reported results show that the previously documented effects of social preferences and signaling are robust to the inclusion of the perceived social impact variable. The effects of all other investigated variables are similar to those reported for the original specification (cf. Table IV).

In addition to the analyses presented here in the main text we have also conducted a number of additional regressions checking the robustness of the relation between social motives and socially responsible investments. These can be found in Tables AV–AIX in the appendix and Table EVI in the Internet Appendix. Regressions reported in Table AV exclude all investors who believe that socially responsible investments are a marketing trick (10.6% of the sample). Table AVI excludes all investors who incorrectly answered at least one question from the comprehension questions of the experiment (11.3% of the sample). Table AVII excludes all investors who expected both higher returns on SRI and perceive lower risk on SRI, but still do not invest in these funds (6.5% of the sample). Table AVIII includes the full set of signaling dummies. Finally, Table EVI also includes investors who held an SRI equity fund at least once in the period between 2006 and the time the survey was taken. The results reported in these tables show that our main results regarding the effects of social motives on SRI are robust to these variations.

<TABLE V SOMEWHERE HERE>

V. Characteristics Related to Intrinsic Social Preferences and Social Signaling

We next investigate which investor characteristics are related to social preferences and social signaling. Table VI reports the results of OLS regressions with *Social preferences* (Specification (1)) and *Signaling* (Specifications (2) and (3)), respectively, as dependent variable and portfolio characteristics as well as individual characteristics as explanatory variables. Specification (1) shows that for social preferences only *Risk preferences* are marginally significant with a small effect size. Interestingly, male and female investors behave equally prosocial in the experiment and there is also no difference between young and old investors.

Specification (2) looks at the determinants of social signaling and shows that *Investment knowledge* is positively related to signaling ($p < 0.001$) and that women (*Female*) and older investors (*Age*) signal less about investments than respectively men and younger investors ($p < 0.001$ and $p = 0.046$, respectively). In addition, investors with a *University degree* care less about signaling than less educated ones.

These results show that intrinsic social preferences are not confined to investors with specific demographic or portfolio related characteristics. None of these characteristics are a good proxy for exhibiting such preferences, implying that it is important to measure these preferences independently. Social signaling, on the other hand, is stronger for young male investors with good investment knowledge. This highlights that the two types of social motivations for investing in a socially responsible manner are related to different types of investors.

Specification (3) shows that *Strong social preferences* are significantly negatively related to signaling ($p < 0.001$). This finding is consistent with the interpretation that for investors with a strong intrinsic motivation it is less important to signal their prosocial behavior to others than it is for investors whose intrinsic motivation is weak. It is also consistent with the effect documented in Table IV, that investors with weak social preferences but strong signaling who hold SRI funds hold a relatively small fraction of such funds.²³

<TABLE VI SOMEWHERE HERE>

VII. Are Socially Responsible Investments Related to Charitable Donations?

In this section we explore if SRI are substitutes for other expressions of social concern, like charity giving. Graff Zivin and Small (2005) theorize that individuals may perceive SRI as a more efficient way of reaching their social goals than direct donations to charity. In their model, donations and corporate philanthropy are perfect substitutes.

If SRI is a substitute for donations, *ceteris paribus* we would expect a negative relation between the likelihood to hold an SRI fund and the amount donated to charity.

²³ In line with existing research on gender in finance, we find that self-reported investment knowledge is lower for women than for men (average rating on 7-point Likert scale: men = 4.03, women = 3.29; $p < 0.001$, two-sided *t*-test). To check the robustness of our regression results in regard to this correlation, we have run additional regressions for *Signaling* (specifications (2) and (3) in Table 6), without the *Female* dummy and without the *Investment knowledge* variable, respectively. The results are robust to these variations. The results of the additional regressions are reported in Table EI of the Internet Appendix.

We test this in Table VII using OLS regressions. Although we cannot address causal effects with our data, our results can provide interesting first evidence on the correlation between charity donations and SRI.

The dependent variable *Log donations* is the logarithm of the self-reported average euro amount that the investor donates to charity per year and the independent variable of main interest is *SRI equity*, which takes on value 1 when an investor holds at least one SRI equity fund and zero otherwise. An eventual positive correlation between SRI and donations could be due to income and wealth effects. We control for this by including investors' portfolio value and self-reported income as explanatory variables. We control also for a number of other portfolio and individual characteristics.

The results reported in Table VII show that donations are significantly positively related to holding an *SRI equity* fund ($p=0.021$). Specifically, an investor who holds an SRI equity fund donates 41 percent more to charity. We thus reject the hypothesis that SRI and charity donation are substitutes.

<TABLE VII SOMEWHERE HERE>

VIII. Discussion and conclusion

In this paper we investigate why individuals hold socially responsible equity funds. We find that investors' intrinsic social preferences are a major factor determining the likelihood to hold SRI equity funds. In addition, we find evidence for social signaling also being important in socially responsible investment decisions. Financial reasons also play a role in the decision to invest in a socially responsible manner. Investors who expect that SRI equity funds underperform relative to conventional equity funds are less likely to invest in a socially responsible manner. We also find that most socially responsible investors expect the returns on SRI funds to be lower than on conventional funds, achieve worse Sharpe ratios and pay higher fees on SRI funds. The latter suggests that on average investors with a strong social motivation are willing to forgo financial returns in order to invest in accordance to their social preferences.

Over the last decade, socially responsible investments have been fast growing in volume (EUROSIF (2014), SIF (2014)). Together with our results of the effect of social preferences on SRI, this indicates that stock prices of socially responsible companies are likely affected in the long run. Consequently, social preferences as well as social

reputation motives may influence asset prices, especially when the proportion of socially responsible investors in the market continues to grow.

Naturally a number of questions remain open. For instance, our sample is based on Dutch investors, which raises the question to what extent our findings may generalize to other countries. According to EUROSIF (2014) and SIF (2014), respectively, the total assets under management involved in SRI are about 1.2 trillion euros in the Netherlands and 4.9 trillion euros in the United States. Thus, the amount invested in SRI is relatively large for a country of the size of the Netherlands. To examine if this is because the Dutch are more pro-environmental or pro-social than U.S. citizens or other nationalities, we looked at several measures available in the literature.

According to data from the World Values Survey (WVSA 2016), attitudes towards the environment are not particularly standing out in the Netherlands. For instance, 45.2% of the Dutch agree that protecting the environment should have priority, even if this means slower economic growth, which is pretty close to the 38.2% for the U.S. and lower than the 55.0% for Germany. A similar result is found when people are asked to indicate how strongly they identify with the statement: “Looking after the environment is important to me; to care for nature and save life resources?” In the Netherlands 62% of the respondents agreed that this is “(Somewhat) Like me”, compared to 66% in the U.S. and 65% in Germany. Behavioral data draw a similar picture. According to ERNOP (2013), in 2013 the per capita charity donations of households have been 116 euros in the Netherlands, which is higher than the 78 euros in Germany but lower than the 256 euros in the United Kingdom.²⁴

These figures suggest that our results are not due to largely different attitudes of the Dutch towards the environment and donations and that they may thus generalize to other countries. Whether or not our results indeed are robust across different nationalities is ultimately an empirical question. Future research could investigate if and how the relation between social preferences and socially responsible investment is affected by variations in culture, economic development, religion and other socio-economic aspects that may impact social preferences themselves as well as their effect on economic behavior in the field.

²⁴ Comparisons to other other countries show a similar picture. For details we refer the reader to Tables EII–EV in the Internet Appendix.

We find that financial motives play a relatively small role in the decision to hold SRI equity. A caveat is in order here because we measured some important financial motives, like risk perception and expected return of SRI, with the help of survey questions. As a result, these measures are likely more noisy than the measures of social preferences and risk preferences, which were incentivized in an experiment. Future research could develop incentive-compatible mechanisms to elicit risk and return perceptions of SRI and conventional equity and explore the robustness of our results.

Also our measure of social signaling comes from survey data and is thus also prone to larger measurement error than our incentivized measures. Moreover, we use the proxy “talking about investment,” which is likely not a pure measure of social signaling. It is difficult to elicit social signaling in an incentive-compatible way and in the field it is also difficult to control the signaling possibilities investors have. This may call for laboratory experiments on social responsible investments where both social preferences and social signaling could be more easily measured and signaling possibilities and content tightly controlled.

We focus on preferences for investments in SRI equity funds. Recently, SRI has expanded its focus also to other asset classes such as hedge funds, impact investment and fixed income. It would be interesting to explore the relative importance of social preferences, social signaling and financial motives for these classes of socially responsible investments.

We deliberately use a broad definition of social preferences as a first approach to the question whether social preferences influence portfolio choice. Future research could test how specific models of other-regarding preferences are related to socially responsible investments. For instance, are socially responsible investors more altruistic (Fehr and Fischbacher (2003)) than conventional investors or do they receive more warm-glow from doing good (Andreoni (1990))?

In our study, we experimentally elicited social preferences using a trust game and related it to field behavior regarding investment choices. Therefore, our paper also contributes to the discussion about the stability of social preferences across different decision domains and the external relevance of lab experiments (Karlan (2005), List (2006), Levitt and List (2007), Benz and Meier (2008), Falk and Heckman (2009), Baran, Sapienza and Zingales (2010), Fehr and Leibbrandt (2011), Stoop, Noussair and

Van Soest (2012), Stoop (2014), Galizzi and Navarro-Martínez (2015)). Investors in our study were unaware that we matched their survey responses and experimental behavior to their (anonymized) trading records. This mitigates the potential problem that socially responsible investors want to behave consistently pro-socially in the experiment (for evidence on consistency, see for instance Gneezy et al. (2012)) and minimizes experimenter demand effects. We find that social preferences measured in an experiment with relatively small stakes are strongly related to field behavior in the form of socially responsible investments worth thousands of euros. This indicates that lab experiments on social preferences do have external relevance.

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Table I

Portfolios of Socially Responsible Investors

This table shows the fund holdings of conventional investors and of socially responsible investors, i.e., investors holding SRI equity funds. *Total portfolio value* refers to the total portfolio value, comprising of SRI and conventional investments. *Amount invested in SRI equity* is the average amount investors hold in SRI equity. *% of equity invested in SRI equity* is the amount invested in SRI equity divided by the total amount invested in equity. *% of SRI investments in SRI equity* is the fraction of all socially responsible funds invested in SRI equity funds rather than SRI bond funds.

	% of investors	Total portfolio value (€)	Amount invested in SRI equity (€)	% of equity invested in SRI equity	% of SRI investments in SRI equity
Conventional investors	83.8%	70,235	-	-	-
Socially responsible investors	16.2%	104,332	4,574	23.0%	94.2%
Overall	100%	75,778	-	-	-

Table II**Investment Performance of Socially Responsible and Conventional Investors**

Panel A presents the realized portfolio performance of the equity part of investors in our sample, split by “Socially responsible investors” and “Conventional investors”. Panel B focuses on socially responsible investors only and compares the performance of the “SRI equity” part to the performance of the “Non-SRI equity” part of their portfolio. Panel C reports the average yearly total expense ratio (TER) of SRI equity funds and of conventional equity funds. *P*-values refer to two-sided t-tests.

Panel A (all investors)	Socially responsible investors	Conventional investors	p-value
1 year portfolio performance			
Mean return	7.45%	7.02%	0.0678
Volatility	16.05%	15.29%	0.3494
Sharpe ratio	0.95	1.15	0.0414
Average 3 year portfolio performance			
Mean return	0.16%	0.63%	0.0206
Volatility	23.51%	22.79%	0.2757
Sharpe ratio	0.01	0.06	0.1781
Average 5 year portfolio performance			
Mean return	-1.29%	-1.18%	0.5003
Volatility	20.19%	19.69%	0.3394
Sharpe ratio	-0.07	-0.06	0.4811
Panel B (socially responsible investors only)	SRI equity	Non-SRI equity	p-value
1 year portfolio performance			
Mean return	2.71%	7.88%	0.0000
Volatility	30.60%	14.00%	0.0000
Sharpe ratio	0.45	1.07	0.0000
Average 3 year portfolio performance			
Mean return	-0.82%	0.53%	0.0000
Volatility	30.76%	22.57%	0.0000
Sharpe ratio	-0.02	0.04	0.0019
Average 5 year portfolio performance			
Mean return	-4.06%	-0.98%	0.0000
Volatility	17.46%	18.72%	0.2568
Sharpe ratio	-0.19	-0.06	0.0000
Panel C	SRI equity funds	Conventional equity funds	
Average yearly fees paid (TER)	2.20%	1.50%	0.0230

Table III

Why Do Investors Hold Socially Responsible Equity Funds?

Column (1) presents marginal effects of a probit regression. The dependent variable is *SRI equity* and takes the value 1 if an investor holds an SRI equity fund in the month investors participated in the experiment and survey; 0 otherwise. Column (2) presents coefficients of an OLS regression. The dependent variable is *% in SRI equity* funds and represents the investor's holdings in SRI equity funds as a share of the total investments in equity. In specification (2) only investors who at least hold one SRI equity fund are considered. *Social preferences*: ratio of money sent back by investors as second-mover in trust game; *Signaling*: investor's strength of agreement with statement "I often talk about investment with others"; *Sharpe ratio*: Sharpe ratio of investor's portfolio performance; *Lower expected returns on SRI*: dummy equal to 1 if investor believes that the returns on SRI equity funds are a bit or much lower than on conventional equity funds; *Higher expected returns on SRI*: dummy equal to 1 if investor believes that the returns on SRI equity funds are a bit or much higher than on conventional equity funds; *Lower perceived risk on SRI*: dummy equal to 1 if an investor disagrees with the statement that the risk on SRI equity funds is higher than the risk on conventional equity funds; *Higher perceived risk on SRI*: dummy equal to 1 if an investor agrees with the statement that the risk on SRI equity funds is higher than the risk on conventional equity funds; *Average holding period*: average number of months the investor has held on to a mutual fund in the five years before the experiment; *Log total portfolio value*: Logarithm of the investor's average euro amount invested at the provider; *Log number of transactions*: logarithm of the number of transactions the investor made in the 12 months before the experiment; *Investment knowledge*: investor's strength of agreement with statement "My investment knowledge is good"; *University degree*: dummy equal to 1 if the investor reports to have a university degree; *Risk preferences*: experimental measure of investor's risk tolerance; *Female*: dummy equal to 1 if investor reports to be a woman; *Age*: investor's age; *Low Income*: dummy equal to 1 if investor's reported annual gross family income is below 60,000 euro; *High Income*: dummy equal to 1 if investor's reported annual gross family income is above 100,000 euro; *Untold income*: dummy equal to 1 if investor does not disclose income. Robust standard errors in parentheses. * is 10% ** is 5% and *** is 1% significance.

	Probit	OLS
	has SRI	% in SRI
	equity	equity
	(1)	(2)
SOCIAL MOTIVES		
Social preferences	0.0694*** (0.0233)	-0.0204 (0.0479)
Signaling	0.0228** (0.0108)	-0.0181 (0.0169)
FINANCIAL MOTIVES		
Sharpe ratio	0.0025 (0.0205)	0.0580 (0.0537)
Lower expected returns on SRI	-0.0581* (0.0322)	-0.0730 (0.0492)
Higher expected returns on SRI	-0.0433 (0.0368)	-0.0358 (0.0677)
Lower perceived risk on SRI	-0.0422 (0.0302)	-0.0141 (0.0503)
Higher perceived risk on SRI	0.0065 (0.0441)	0.0639 (0.0720)
PORTFOLIO CHARACTERISTICS		
Average holding period	0.0023** (0.0010)	-0.0015 (0.0019)
Log total portfolio value	0.0390*** (0.0126)	-0.0572*** (0.0197)
Log number of transactions	0.0252** (0.0114)	0.0162 (0.0266)
INDIVIDUAL CHARACTERISTICS		
Investment knowledge	0.0022 (0.0119)	-0.0315* (0.0188)
University degree	0.0553* (0.0314)	0.0505 (0.0547)
Risk preferences	-0.0001 (0.0004)	0.0015** (0.0006)
Female	0.0074 (0.0424)	-0.0241 (0.0584)
Age	-0.0025* (0.0014)	0.0009 (0.0022)
Low income	0.0243 (0.0387)	0.0196 (0.0608)
High income	-0.0255 (0.0383)	0.0176 (0.0645)
Untold income	-0.0062 (0.0417)	-0.0121 (0.0666)
Constant		0.8089*** (0.2892)
Observations	625	121
R-squared		0.1820

Table IV

The Effect of Strong and Weak Social Preferences and Signaling

Columns (1) and (3) present marginal effects of probit regressions. The dependent variable is *SRI equity* and takes the value 1 if an investor holds an SRI equity fund in the month investors participated in the experiment and survey; 0 otherwise. Columns (2) and (4) present coefficients of OLS regressions. The dependent variable is *% in SRI equity* funds and represents the investor's holdings in SRI equity funds as a share of the total investments in equity. In specifications (2) and (4) only investors who at least hold one SRI equity fund are considered. *Strong social preferences*: dummy equal to 1 if investor's average return ratio in the trust game gives other player at least half of the amount of money in the experiment; *Strong signaling*: dummy equal to 1 if investor's strength of signaling is equal to or higher than median signaling; *Weak social preferences & strong signaling*: dummy equal to 1 if investor's average return ratio in the trust game gives other player less than half of the money in the experiment and investor exhibits strong signaling; for definitions of the other variables see Table III. Robust standard errors in parentheses. * is 10% ** is 5% and *** is 1% significance.

	Probit	OLS	Probit	OLS
	has SRI	% in SRI	has SRI	% in SRI
	equity	equity	equity	equity
	(1)	(2)	(3)	(4)
SOCIAL MOTIVES				
Strong social preferences	0.0644** (0.0313)	-0.0138 (0.0485)	0.1084** (0.0441)	-0.1155 (0.0812)
Strong signaling	0.0386 (0.0317)	-0.0684 (0.0511)		
Weak social preferences & strong signaling			0.0686 (0.0435)	-0.1604** (0.0780)
FINANCIAL MOTIVES				
Sharpe Ratio	0.0037 (0.0211)	0.0510 (0.0519)	0.0041 (0.0212)	0.0494 (0.0552)
Lower expected returns on SRI	-0.0561* (0.0325)	-0.0700 (0.0475)	-0.0557* (0.0324)	-0.0702 (0.0459)
Higher expected returns on SRI	-0.0441 (0.0372)	-0.0369 (0.0670)	-0.0432 (0.0371)	-0.0369 (0.0651)
Lower perceived risk on SRI	-0.0375 (0.0303)	-0.0194 (0.0514)	-0.0371 (0.0303)	-0.0218 (0.0499)
Higher perceived risk on SRI	0.0028 (0.0441)	0.0606 (0.0696)	0.0042 (0.0443)	0.0586 (0.0654)
PORTFOLIO CHARACTERISTICS				
Average holding period	0.0022** (0.0010)	-0.0016 (0.0019)	0.0023** (0.0010)	-0.0021 (0.0019)
Log total portfolio value	0.0375*** (0.0127)	-0.0590*** (0.0199)	0.0371*** (0.0127)	-0.0566*** (0.0191)
Log number of transactions	0.0255** (0.0113)	0.0150 (0.0257)	0.0256** (0.0112)	0.0088 (0.0250)
INDIVIDUAL CHARACTERISTICS				
Investment knowledge	0.0068 (0.0117)	-0.0339* (0.0186)	0.0063 (0.0114)	-0.0340* (0.0181)
University degree	0.0503 (0.0316)	0.0576 (0.0544)	0.0504 (0.0316)	0.0456 (0.0539)
Risk preferences	-0.0001 (0.0004)	0.0015** (0.0006)	-0.0001 (0.0004)	0.0013** (0.0006)
Female	0.0024 (0.0419)	-0.0234 (0.0587)	-0.0014 (0.0410)	-0.0261 (0.0538)
Age	-0.0026* (0.0014)	0.0009 (0.0023)	-0.0027* (0.0014)	0.0008 (0.0023)
Low income	0.0230 (0.0390)	0.0177 (0.0609)	0.0224 (0.0389)	0.0125 (0.0599)
High income	-0.0275 (0.0385)	0.0278 (0.0655)	-0.0285 (0.0382)	0.0239 (0.0642)
Untold income	-0.0090 (0.0416)	-0.0075 (0.0678)	-0.0088 (0.0413)	-0.0040 (0.0632)
Constant		0.8047*** (0.2549)		0.9032*** (0.2599)
Observations	625	121	625	121
R-squared		0.1887		0.2211

Table V

Perceived Social Impact of SRI

Columns (1) and (3) present marginal effects of probit regressions. The dependent variable is *SRI equity* and takes the value 1 if an investor holds an SRI equity fund in the month investors participated in the experiment and survey; 0 otherwise. Columns (2) and (4) present coefficients of OLS regressions. The dependent variable is *% in SRI equity* funds and represents the investor's holdings in SRI equity funds as a share of the total investments in equity. In specifications (2) and (4) only investors who at least hold one SRI equity fund are considered. *Perceived social impact*: dummy equal to 1 if investor's agreement with the statement "Socially responsible investment funds have a positive influence on society" is equal to or higher than median agreement; for definitions of the other variables see Tables III and IV. Robust standard errors in parentheses. * is 10% ** is 5% and *** is 1% significance.

	Probit	OLS	Probit	OLS
	has SRI	% in SRI	has SRI	% in SRI
	equity	equity	equity	equity
	(1)	(2)	(3)	(4)
SOCIAL MOTIVES				
Perceived social impact	0.0470** (0.0194)	-0.0005 (0.0275)	0.0755** (0.0330)	0.0191 (0.0497)
Strong social preferences			0.1033** (0.0437)	-0.1167 (0.0810)
Weak social preferences & strong signaling			0.0688 (0.0434)	-0.1620** (0.0781)
FINANCIAL MOTIVES				
Sharpe Ratio	-0.0018 (0.0079)	0.0142 (0.0189)	0.0033 (0.0221)	0.0493 (0.0547)
Lower expected returns on SRI	-0.0701*** (0.0202)	-0.0598* (0.0324)	-0.0534* (0.0320)	-0.0682 (0.0457)
Higher expected returns on SRI	-0.0096 (0.0259)	-0.0473 (0.0396)	-0.0486 (0.0362)	-0.0380 (0.0650)
Lower perceived risk on SRI	-0.0199 (0.0187)	-0.0355 (0.0265)	-0.0542* (0.0306)	-0.0264 (0.0534)
Higher perceived risk on SRI	0.0019 (0.0246)	0.0120 (0.0397)	-0.0066 (0.0421)	0.0526 (0.0707)
PORTFOLIO CHARACTERISTICS				
Average holding period	0.0006 (0.0007)	-0.0026** (0.0012)	0.0022** (0.0010)	-0.0020 (0.0019)
Log total portfolio value	0.0276*** (0.0074)	-0.0542*** (0.0124)	0.0373*** (0.0128)	-0.0564*** (0.0190)
Log number of transactions	0.0048 (0.0069)	-0.0146 (0.0121)	0.0265** (0.0111)	0.0093 (0.0249)
INDIVIDUAL CHARACTERISTICS				
Investment knowledge	0.0114* (0.0063)	-0.0489*** (0.0122)	0.0058 (0.0113)	-0.0340* (0.0183)
University degree	0.0311* (0.0182)	0.0540** (0.0262)	0.0535* (0.0315)	0.0460 (0.0540)
Risk preferences	-0.0001 (0.0002)	0.0004 (0.0003)	-0.0000 (0.0004)	0.0014** (0.0006)
Female	-0.0057 (0.0229)	0.0261 (0.0358)	-0.0130 (0.0399)	-0.0273 (0.0544)
Age	-0.0037*** (0.0009)	-0.0019 (0.0013)	-0.0029** (0.0014)	0.0006 (0.0024)
Low income	0.0231 (0.0228)	0.0107 (0.0353)	0.0280 (0.0390)	0.0157 (0.0638)
High income	-0.0090 (0.0234)	0.0230 (0.0339)	-0.0226 (0.0387)	0.0276 (0.0675)
Untold income	-0.0201 (0.0253)	-0.0354 (0.0325)	0.0037 (0.0430)	0.0019 (0.0687)
Constant		1.1609*** (0.1849)		0.8796*** (0.2705)
Observations	1,803	346	625	121
R-squared		0.2186		0.2223

Table VI**Covariates of Intrinsic Social Preferences and Social Signaling**

Specification (1) reports coefficients of an OLS regression with *Social preferences* as dependent variable. Specifications (2) and (3) report OLS regressions in which the dependent variable is *Signaling*. *Social preferences*: ratio of money sent back by investors as second-mover in trust game; *Signaling*: investor's strength of agreement with statement "I often talk about investment with others"; for definitions of the other variables see Tables III and IV. Robust standard errors in parentheses. * is 10% ** is 5% and *** is 1% significance.

	Social preferences (1)	Signaling (2)	Signaling (3)
Strong social preferences			-0.3907*** (0.1037)
PORTFOLIO CHARACTERISTICS			
Average holding period	0.0001 (0.0019)	-0.0020 (0.0024)	-0.0034 (0.0037)
Log total portfolio value	-0.0045 (0.0218)	-0.0356 (0.0244)	-0.0229 (0.0399)
Log number of transactions	-0.0076 (0.0227)	0.0103 (0.0248)	-0.0482 (0.0437)
INDIVIDUAL CHARACTERISTICS			
Investment knowledge	-0.0061 (0.0213)	0.4712*** (0.0228)	0.4956*** (0.0378)
University degree	-0.0125 (0.0543)	-0.1367** (0.0616)	-0.0129 (0.1045)
Risk preferences	0.0012* (0.0007)	-0.0011 (0.0008)	0.0002 (0.0013)
Female	-0.0583 (0.0712)	-0.3191*** (0.0749)	-0.2895** (0.1377)
Age	-0.0006 (0.0027)	-0.0060** (0.0030)	-0.0029 (0.0050)
Low income	-0.0406 (0.0676)	0.0218 (0.0763)	-0.1095 (0.1344)
High income	0.0021 (0.0703)	0.0693 (0.0824)	-0.1217 (0.1354)
Untold income	-0.0804 (0.0765)	0.0422 (0.0902)	-0.1211 (0.1444)
Constant	1.5046*** (0.2738)	2.0682*** (0.2868)	1.8998*** (0.5004)
Observations	679	1,991	679
Adjusted R-squared	-0.0066	0.2110	0.2234

Table VII**Relation between Socially Responsible Investments and Donations to Charity**

The table presents an OLS regression in which the dependent variable *Log donations* is the logarithm of the self-reported average yearly donations by the investor; for definitions of the other variables see Table III. Robust standard errors in parentheses. * is 10% ** is 5% and *** is 1% significance.

	Log donations
SRI equity	0.4100** (0.1765)
PORTFOLIO CHARACTERISTICS	
Average holding period	-0.0006 (0.0046)
Log total portfolio value	0.0604 (0.0473)
Log number of transactions	-0.0148 (0.0498)
INDIVIDUAL CHARACTERISTICS	
Investment knowledge	0.0271 (0.0502)
University degree	0.0692 (0.1354)
Risk preferences	-0.0016 (0.0017)
Female	0.0757 (0.1748)
Age	0.0305*** (0.0068)
Low income	-0.2878* (0.1602)
High income	0.1670 (0.1675)
Untold income	-0.3072 (0.2454)
Constant	3.6367*** (0.6045)
Observations	519
R-squared	0.0809

Figure 1. Return expectations of SRI equity funds. Distributions of return expectations of SRI equity funds separately for investors with and without an SRI equity fund ('SRI equity' and 'No SRI equity', respectively). The bars depict the response to the statement 'I expect that the returns of socially responsible equity funds compared to conventional equity funds are': 1 = much lower, 2 = a bit lower, 3 = the same, 4 = a bit higher, 5 = much higher. The category 'I don't know' is excluded from the figure; it was chosen by 0.9% of the socially responsible and 6.3% of the conventional investors.

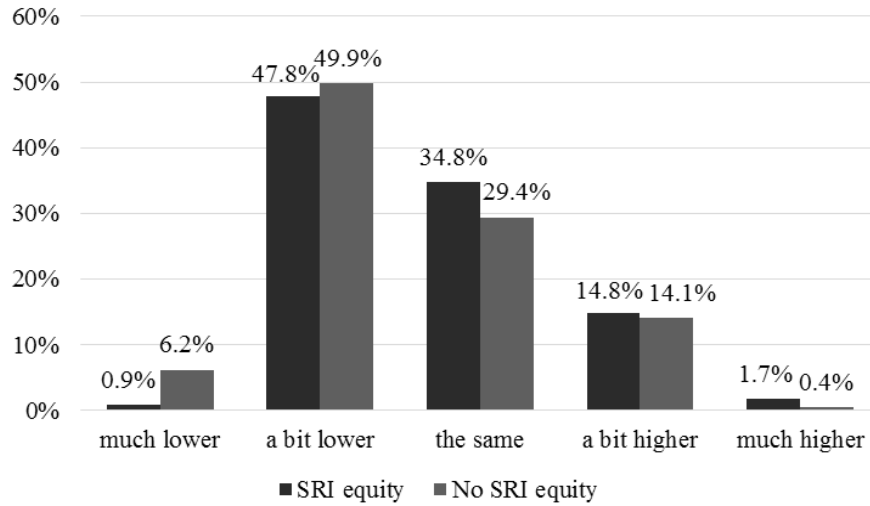
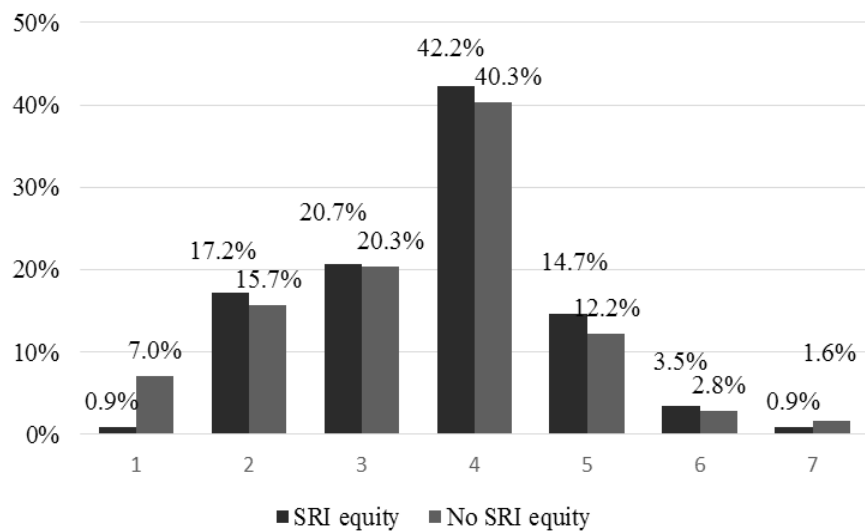


Figure 2. Risk perceptions of SRI equity funds. Distributions of risk perceptions of SRI funds separately for investors with and without an SRI equity fund ('SRI equity' and 'No SRI equity', respectively). The bars depict the response of investors on a 7-point Likert scale to the statement: "Socially responsible equity funds are more risky than conventional equity funds" where 1 corresponds to 'fully disagree' and 7 to 'fully agree'.



Appendix A. Supplementary Tables and Figures

Table AI

Survey Respondents and Overall Sample Characteristics

This table compares the mean characteristics of all invited investors to those for the respondents to the survey and experiments. A summary of variable definitions can be found in Table AIII. Note that we purposefully oversampled socially responsible investors in the survey to increase the power of our analyses in which we compare socially responsible investors to conventional investors. The response rate for socially responsible investors is 12% and that for conventional investors is 8%.

	Invited sample (n = 38,382)	Respondents (n = 3,254)
Female	24.7%	20.6%
Age	55.5	57.9
Total portfolio value (euro)	61,509	74,259
% holding an SRI equity fund	8.4%	11.0%

Table AII

Choice list in risk preferences elicitation experiment

	Safe Payment		Lottery
1)	€0 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
2)	€10 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
3)	€20 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
4)	€30 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
5)	€40 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
6)	€50 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
7)	€60 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
8)	€70 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
9)	€80 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
10)	€90 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
11)	€100 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
12)	€110 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
13)	€120 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
14)	€130 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
15)	€140 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
16)	€150 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
17)	€160 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
18)	€170 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
19)	€180 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0
20)	€190 for sure	or	50 percent chance of winning €300 and 50 percent chance of winning €0

Table AIII
Variable Definition

Type	Variable	Measure
Administrative	SRI equity fund	Dummy variable equal to 1 if an investor holds a socially responsible (SRI) equity fund in his / her portfolio in the month that s\he participated in the experiment.
	Socially responsible investor	An investor who holds at least one SRI equity fund.
	Percentage in SRI equity funds	Investor's average amount invested in SRI equity funds in the year after the experiment, as a percentage of the total amount invested in equity funds.
	Log total portfolio value	Logarithm of the investor's average euro amount invested at the provider in the year before the experiment.
	Log number of transactions	Logarithm of the number of transactions the investor made in the 12 months before s\he participated in the experiment. To account for extremes, this measure is trimmed by excluding the 1 th and the 99 th percentile.
	Average holding period	Average number of months the investor has held on to a mutual fund in the five years before the experiment.
	Mean portfolio returns	Average portfolio returns in the year before the investor participated in the experiment (in percent). To account for extremes, this measure is trimmed by excluding the 1 th and the 99 th percentile.
	Volatility portfolio returns	Standard deviation of the yearly portfolio returns in the year before the investor participated in the experiment (in percent) using monthly return data.
	Sharpe Ratio	Sharpe ratio of the portfolio performance in the year before the investor participated in the experiment.
Survey	Expected returns on SRI	Investor's response to statement "I expect that the returns of socially responsible equity funds compared to conventional equity funds are: much lower a bit lower the same a bit higher much higher I do not know" (much lower 1, ..., 5 much higher)
	Perceived risk on SRI	Investor's response to statement "Socially responsible equity funds are more risky than conventional equity funds" (fully disagree 1, ..., 7 fully agree)
	Lower expected returns on SRI	Dummy equal to 1 if an investor believes that the returns on SRI equity funds are a bit or much lower than on conventional equity funds.

Higher expected returns on SRI	Dummy equal to 1 if an investor believes that the returns on SRI equity funds are a bit or much higher than on conventional equity funds.
Lower perceived risk on SRI	Dummy equal to 1 if an investor disagrees with the statement that the risk on SRI equity funds is higher than the risk on conventional equity funds.
Higher perceived risk on SRI	Dummy equal to 1 if an investor agrees with the statement that the risk on SRI equity funds is higher than the risk on conventional equity funds.
Signaling	Investor's response to statement "I often talk about investment with others" (fully disagree 1, ..., 7 fully agree)
Strong signaling	Dummy equal to 1 if an investor's response to statement "I often talk about investment with others" (fully disagree 1, ..., 7 fully agree) is equal to the median or higher.
Investment knowledge	Investor's response to statement "My investment knowledge is good" (fully disagree 1-7 fully agree)
Perceived social impact	Dummy equal to 1 if an investor's response to statement "Socially responsible investment funds have a positive influence on society" (fully disagree 1, ..., 7 fully agree) is equal to the median or higher.
University degree	Dummy equal to 1 if the investor reports to have a university degree.
Female	Dummy equal to 1 if investor reports to be a woman.
Age	Investor's reported age.
Low income	Dummy equal to 1 if investor's reported annual gross family income is below 60,000 euro
Medium income	Dummy equal to 1 if investor's reported annual gross family income is between 60,000 euro and 100,000 euro
High income	Dummy equal to 1 if investor's reported annual gross family income is above 100,000 euro
Untold income	Dummy equal to 1 if investor does not disclose his/her income.
Log donations	Logarithm of the average yearly amount that the investor reports to donate to charity.
Risk preferences	Risk-free money amount at which the investor switches from choosing the risky lottery to choosing the risk-free option in the risk preferences elicitation task. A higher amount indicates that the investor is more risk tolerant.

Incentivized experiment	Intrinsic social preferences	Social preferences are measured by the second-mover behavior in the trust game. The second-mover indicates how much s\he wants to send back for each possible amount that the first mover could send. The variable is constructed as follows. First, the return ratio for each possible first-mover transfer in the trust game is calculated. That is, if the first mover sends 5 euro, the amount the second mover returns is divided by 5, if the first mover sends 10 euro the amount the second mover returns is divided by 10, and so on. Second, the average of these ratios across the range of 5 to 50 euro first-mover transfers is calculated. The measure varies from 0 to 3.
	Strong social preferences	Dummy that takes the value 1 if an investor has an average return ratio in the trust game of 2 or higher. This means at least equally splitting the amount of money in the experiment. The variable takes value 0 otherwise.
	Weak social preferences	Dummy that takes the value 1 if an investor has an average return ratio in the trust game of less than 2. This means giving other player less than half of the money in the experiment. The variable takes value 0 otherwise.
	Weak social preferences & strong signaling	Dummy equal to 1 if investor has weak social preferences <u>and</u> strong signaling; 0 otherwise.

Table AIV

Summary Statistics Comparison of Investors With and Without SRI Equity Funds

This table presents summary statistics for investors with and without SRI equity funds. A summary of the definitions of the used variables can be found in Table AIII. If not otherwise indicated in Table AIII, the statistics represent the portfolios of investors in the month in which they participated in the experiment and the survey. Standard deviations are in parentheses and p -values are from two-sided t -tests ^(a) or *Chi-square* tests ^(b). For highly skewed variables we only report p -values of their logarithmic transformations. Differences in the number of observations stem from the fact that not all participants in the experiments did answer all survey questions.

	Socially responsible investors (16.2%)			Conventional investors (83.8%)			Δ
	Mean	Median	N	Mean	Median	N	
Percentage in SRI equity funds	23.03%	9.82%	146	-	-	-	-
SOCIAL MOTIVES							
Mean intrinsic social preferences	1.53 (0.66)	1.79	146	1.41 (0.68)	1.51	756	0.052 ^a
Signaling	3.41 (1.48)	3	146	3.06 (1.49)	3	756	0.009 ^a
FINANCIAL MOTIVES							
Lower expected returns on SRI	48.89%		135	56.17%		673	0.121 ^b
Higher expected returns on SRI	17.04%		135	14.41%		673	0.434 ^b
Lower perceived risk on SRI	39.86%		138	43.02%		716	0.491 ^b
Higher perceived risk on SRI	18.84%		138	16.62%		716	0.525 ^b
PORTFOLIO CHARACTERISTICS							
Average holding period	32.3 (14.2)	29.5	146	32.1 (17.0)	28	752	0.890 ^a
Total portfolio value	104,332 (262,880)	53,005	146	70,235 (146,468)	35,845	752	-
Log total portfolio value	10.70 (1.38)	10.86	146	10.25 (1.57)	10.49	752	0.002 ^a
Number of transactions	15.5 (18.0)	8	138	17.2 (22.0)	8	605	-
Log number of transactions	2.14 (1.14)	2.08	138	2.04 (1.34)	2.08	605	0.438 ^a
Donations							
Donations (in euro)	1,074 (1,300)	500	106	845 (1,355)	300	525	-
Log donations	6.2 (1.4)	6.2	106	5.8 (1.4)	5.7	525	0.008 ^a
Individual Characteristics							
Investment knowledge	4.34 (91.13)	4	146	4.08 (1.38)	4	756	0.029 ^a
University degree	58.96%		134	46.67%		705	0.009 ^b
Risk preferences	115.8 (39.4)	110	146	112.2 (40.8)	110	756	0.340 ^a
Female	12.33%		146	18.73%		753	0.064 ^b
Age	55.45 (11.39)	55	144	56.83 (10.83)	56	751	0.166 ^a
Low income	28.36%		134	30.47%		699	0.625 ^b
High income	20.90%		134	20.46%		699	0.909 ^b
Untold income	17.16%		134	17.31%		699	0.967 ^b

Table AV

Exclusion of Investors Who Believe SRI Is a Marketing Trick

This table reports results of regressions equivalent to those in Table III and Table IV (columns (3) and (4)), respectively, in the main text. Here, all subjects are excluded who rate the statement “I think that socially responsible investment funds are a marketing trick with the goal to sell more funds.” (fully disagree 1, ..., 7 fully agree) with a 4 or higher (10.6%). Columns (1) and (3) present marginal effects of probit regressions. The dependent variable is *SRI equity* and takes the value 1 if an investor holds an SRI equity fund in the month investors participated in the experiment and survey; 0 otherwise. Columns (2) and (4) present coefficients of OLS regressions. The dependent variable is *% in SRI equity* funds and represents the investor’s holdings in SRI equity funds as a share of the total investments in equity. In specifications (2) and (4) only investors with a share greater zero are considered. For definitions of the other variables see Tables III and IV in the main text. Robust standard errors in parentheses. * is 10% ** is 5% and *** is 1% significance.

	Probit	OLS	Probit	OLS
	has SRI	% in SRI	has SRI	% in SRI
	equity	equity	equity	equity
	(1)	(2)	(3)	(4)
SOCIAL MOTIVES				
Social preferences	0.0802*** (0.0252)	-0.0314 (0.0492)		
Signaling	0.0269** (0.0112)	-0.0168 (0.0159)		
Strong social preferences			0.1027** (0.0459)	-0.0881 (0.0720)
Weak social preferences & strong signaling			0.0578 (0.0442)	-0.1290** (0.0637)
FINANCIAL MOTIVES				
Sharpe Ratio	0.0108 (0.0213)	0.0637 (0.0546)	0.0137 (0.0209)	0.0574 (0.0559)
Lower expected returns on SRI	-0.0561* (0.0335)	-0.0353 (0.0411)	-0.0545 (0.0340)	-0.0445 (0.0412)
Higher expected returns on SRI	-0.0419 (0.0375)	-0.0103 (0.0633)	-0.0426 (0.0381)	-0.0215 (0.0618)
Lower perceived risk on SRI	-0.0558* (0.0307)	-0.0207 (0.0451)	-0.0488 (0.0310)	-0.0213 (0.0472)
Higher perceived risk on SRI	0.0180 (0.0473)	0.0653 (0.0711)	0.0147 (0.0478)	0.0565 (0.0670)
PORTFOLIO CHARACTERISTICS				
Average holding period	0.0024** (0.0011)	-0.0007 (0.0019)	0.0023** (0.0011)	-0.0012 (0.0018)
Log total portfolio value	0.0425*** (0.0137)	-0.0559*** (0.0202)	0.0407*** (0.0139)	-0.0542*** (0.0194)
Log number of transactions	0.0227* (0.0119)	0.0317 (0.0241)	0.0225* (0.0117)	0.0230 (0.0225)
INDIVIDUAL CHARACTERISTICS				
Investment knowledge	0.0027 (0.0119)	-0.0428** (0.0210)	0.0089 (0.0114)	-0.0433** (0.0205)

University degree	0.0742** (0.0327)	0.0625 (0.0495)	0.0699** (0.0331)	0.0523 (0.0502)
Risk preferences	-0.0003 (0.0004)	0.0013** (0.0006)	-0.0002 (0.0004)	0.0011** (0.0006)
Female	0.0082 (0.0430)	0.0039 (0.0575)	-0.0036 (0.0414)	-0.0004 (0.0524)
Age	-0.0024 (0.0015)	0.0001 (0.0022)	-0.0026* (0.0015)	-0.0002 (0.0023)
Low income	0.0080 (0.0379)	0.0357 (0.0617)	0.0069 (0.0384)	0.0302 (0.0617)
High income	-0.0466 (0.0360)	0.0448 (0.0711)	-0.0494 (0.0364)	0.0468 (0.0711)
Untold income	-0.0180 (0.0422)	-0.0583 (0.0482)	-0.0199 (0.0423)	-0.0507 (0.0452)
Constant		0.8324*** (0.2977)		0.8866*** (0.2456)
Observations	566	109	566	109
R-squared		0.2308		0.2512

Table AVI

Exclusion of Investors Who Failed at Least One Practice Question in Experiment

This table reports results of regressions equivalent to those in Table III and Table IV (columns (3) and (4)), respectively, in the main text. Here, all subjects are excluded who wrongly answered at least one of the four practice questions for three consecutive times (11.3%). Columns (1) and (3) present marginal effects of probit regressions. The dependent variable is *SRI equity* and takes the value 1 if an investor holds an SRI equity fund in the month investors participated in the experiment and survey; 0 otherwise. Columns (2) and (4) present coefficients of OLS regressions. The dependent variable is *% in SRI equity* funds and represents the investor's holdings in SRI equity funds as a share of the total investments in equity. In specifications (2) and (4) only investors with a share greater zero are considered. For definitions of the other variables see Tables III and IV in the main text. Robust standard errors in parentheses. * is 10% ** is 5% and *** is 1% significance.

	Probit	OLS	Probit	OLS
	has SRI	% in SRI	has SRI	% in SRI
	equity	equity	equity	equity
	(1)	(2)	(3)	(4)
SOCIAL MOTIVES				
Social preferences	0.0789*** (0.0258)	-0.0018 (0.0459)		
Signaling	0.0235** (0.0118)	-0.0234 (0.0180)		
Strong social preferences			0.1151** (0.0465)	-0.1236 (0.0819)
Weak social preferences & strong signaling			0.0670 (0.0478)	-0.2116*** (0.0792)
FINANCIAL MOTIVES				
Sharpe Ratio	0.0097 (0.0224)	0.0680 (0.0536)	0.0138 (0.0217)	0.0550 (0.0550)
Lower expected returns on SRI	-0.0504 (0.0342)	-0.0634 (0.0516)	-0.0471 (0.0345)	-0.0595 (0.0458)
Higher expected returns on SRI	-0.0305 (0.0414)	-0.0170 (0.0701)	-0.0299 (0.0420)	-0.0141 (0.0669)
Lower perceived risk on SRI	-0.0621* (0.0322)	-0.0157 (0.0526)	-0.0574* (0.0325)	-0.0247 (0.0513)
Higher perceived risk on SRI	-0.0016 (0.0471)	0.0857 (0.0773)	-0.0079 (0.0467)	0.0864 (0.0699)
PORTFOLIO CHARACTERISTICS				
Average holding period	0.0025** (0.0011)	-0.0004 (0.0020)	0.0025** (0.0011)	-0.0012 (0.0019)
Log total portfolio value	0.0401*** (0.0138)	-0.0560*** (0.0208)	0.0380*** (0.0139)	-0.0567*** (0.0199)
Log number of transactions	0.0340*** (0.0123)	0.0211 (0.0289)	0.0342*** (0.0121)	0.0098 (0.0264)
INDIVIDUAL CHARACTERISTICS				
Investment knowledge	0.0005 (0.0127)	-0.0414** (0.0201)	0.0050 (0.0121)	-0.0479** (0.0186)
University degree	0.0676** (0.0340)	0.0588 (0.0593)	0.0623* (0.0344)	0.0449 (0.0564)
Risk preferences	-0.0001 (0.0004)	0.0018*** (0.0007)	-0.0001 (0.0004)	0.0017*** (0.0006)
Female	0.0142 (0.0459)	-0.0087 (0.0622)	0.0034 (0.0443)	-0.0189 (0.0558)
Age	-0.0021 (0.0015)	0.0020 (0.0022)	-0.0024 (0.0016)	0.0021 (0.0023)
Low income	0.0422 (0.0431)	0.0346 (0.0626)	0.0410 (0.0435)	0.0210 (0.0624)
High income	-0.0287 (0.0410)	0.0043 (0.0652)	-0.0301 (0.0413)	0.0097 (0.0635)
Untold income	-0.0029 (0.0461)	0.0112 (0.0674)	-0.0049 (0.0454)	0.0304 (0.0622)
Constant		0.6463** (0.2956)		0.8127*** (0.2632)
Observations	555	112	555	112
R-squared		0.2250		0.2950

Table AVII

Exclusion of Investors Who Expect Higher Returns on SRI, Perceive Lower Risk, But Do Not Hold SRI Funds

This table reports results of regressions equivalent to those in Table III and Table IV (columns (3) and (4)), respectively, in the main text. Here, all subjects are excluded who do not invest in SRI equity funds but expect these to yield higher returns at a lower risk compared to normal equity funds (6.5%). Columns (1) and (3) present marginal effects of probit regressions. The dependent variable is *SRI equity* and takes the value 1 if an investor holds an SRI equity fund in the month investors participated in the experiment and survey; 0 otherwise. Columns (2) and (4) present coefficients of OLS regressions. The dependent variable is *% in SRI equity* funds and represents the investor's holdings in SRI equity funds as a share of the total investments in equity. In specifications (2) and (4) only investors with a share greater zero are considered. For definitions of the other variables see Tables III and IV in the main text. Robust standard errors in parentheses. * is 10% ** is 5% and *** is 1% significance.

	Probit	OLS	Probit	OLS
	has SRI	% in SRI	has SRI	% in SRI
	equity	equity	equity	equity
	(1)	(2)	(3)	(4)
SOCIAL MOTIVES				
Social preferences	0.0755*** (0.0253)	-0.0151 (0.0486)		
Signaling	0.0272** (0.0116)	-0.0158 (0.0172)		
Strong social preferences			0.1192** (0.0469)	-0.1061 (0.0824)
Weak social preferences & strong signaling			0.0747 (0.0457)	-0.1575** (0.0788)
FINANCIAL MOTIVES				
Sharpe Ratio	-0.0002 (0.0223)	0.0598 (0.0536)	0.0026 (0.0233)	0.0522 (0.0550)
Lower expected returns on SRI	-0.0619* (0.0342)	-0.0776 (0.0488)	-0.0589* (0.0345)	-0.0748 (0.0456)
Higher expected returns on SRI	0.0687 (0.0638)	-0.0079 (0.0699)	0.0648 (0.0632)	-0.0082 (0.0678)
Lower perceived risk on SRI	-0.0089 (0.0333)	-0.0039 (0.0513)	-0.0042 (0.0335)	-0.0102 (0.0512)
Higher perceived risk on SRI	0.0043 (0.0462)	0.0630 (0.0727)	0.0009 (0.0465)	0.0584 (0.0657)
PORTFOLIO CHARACTERISTICS				
Average holding period	0.0024** (0.0011)	-0.0016 (0.0019)	0.0025** (0.0011)	-0.0022 (0.0019)
Log total portfolio value	0.0430*** (0.0136)	-0.0566*** (0.0196)	0.0407*** (0.0137)	-0.0560*** (0.0190)
Log number of transactions	0.0262** (0.0124)	0.0175 (0.0267)	0.0268** (0.0122)	0.0101 (0.0250)
INDIVIDUAL CHARACTERISTICS				
Investment knowledge	0.0022 (0.0130)	-0.0303 (0.0190)	0.0081 (0.0125)	-0.0323* (0.0183)
University degree	0.0546 (0.0333)	0.0503 (0.0545)	0.0499 (0.0336)	0.0440 (0.0537)
Risk preferences	-0.0001 (0.0004)	0.0016** (0.0006)	-0.0001 (0.0004)	0.0015** (0.0006)
Female	0.0078 (0.0447)	-0.0247 (0.0591)	-0.0018 (0.0434)	-0.0270 (0.0540)
Age	-0.0021 (0.0015)	0.0016 (0.0023)	-0.0024 (0.0015)	0.0015 (0.0023)
Low income	0.0168 (0.0401)	0.0183 (0.0607)	0.0150 (0.0403)	0.0111 (0.0597)
High income	-0.0200 (0.0423)	0.0388 (0.0650)	-0.0261 (0.0418)	0.0440 (0.0647)
Untold income	-0.0100 (0.0442)	-0.0091 (0.0667)	-0.0136 (0.0436)	-0.0014 (0.0635)
Constant		0.7253** (0.2927)		0.8225*** (0.2574)
Observations	582	119	582	119
R-squared		0.1910		0.2317

Table AVIII

Inclusion of the full set of signaling dummies

This table reports results of regressions similar to those in Table III but with the signaling variable fully dummied out. Column (1) presents marginal effects of a probit regression. The dependent variable is *SRI equity* and takes the value 1 if an investor holds an SRI equity fund in the month investors participated in the experiment and survey; 0 otherwise. Column (2) presents coefficients of an OLS regression. The dependent variable is *% in SRI equity* funds and represents the investor's holdings in SRI equity funds as a share of the total investments in equity. In specification (2) only investors with a share greater zero are considered. *Social signaling dummies*: dummies for investor's strength of agreement with statement "I often talk about investment with others" (1=fully disagree (base category), 2=disagree, ..., 7=fully agree); all other variables are the same as in Tables III in the main text. . Robust standard errors in parentheses. * is 10% ** is 5% and *** is 1% significance.

	Probit	OLS
	has SRI equity	% in SRI equity
	(1)	(2)
SOCIAL MOTIVES		
Social preferences	0.0708*** (0.0234)	-0.0290 (0.0467)
Social signaling dummy = 2	0.1608** (0.0681)	0.0617 (0.1160)
Social signaling dummy = 3	0.1630** (0.0796)	-0.0627 (0.1185)
Social signaling dummy = 4	0.1575** (0.0791)	0.0587 (0.1158)
Social signaling dummy = 5	0.2011** (0.0912)	-0.0323 (0.1287)
Social signaling dummy = 6	0.2435* (0.1337)	-0.0613 (0.1376)
Social signaling dummy = 7	0.5851** (0.2538)	-0.0890 (0.1352)
FINANCIAL MOTIVES		
Sharpe Ratio	-0.0028 (0.0217)	0.0546 (0.0567)
Lower expected returns on SRI	-0.0588* (0.0318)	-0.0871* (0.0493)
Higher expected returns on SRI	-0.0459 (0.0357)	-0.0378 (0.0656)
Lower perceived risk on SRI	-0.0427 (0.0299)	-0.0146 (0.0527)
Higher perceived risk on SRI	0.0116 (0.0440)	0.0758 (0.0737)
PORTFOLIO CHARACTERISTICS		
Average holding period	0.0023** (0.0010)	-0.0021 (0.0020)
Log total portfolio value	0.0374*** (0.0123)	-0.0643*** (0.0197)
Log number of transactions	0.0258**	0.0165

	(0.0114)	(0.0258)
INDIVIDUAL CHARACTERISTICS		
Investment knowledge	-0.0036 (0.0119)	-0.0363* (0.0201)
University degree	0.0585* (0.0312)	0.0538 (0.0536)
Risk preferences	-0.0001 (0.0004)	0.0015** (0.0006)
Female	0.0031 (0.0412)	-0.0267 (0.0578)
Age	-0.0025* (0.0014)	0.0011 (0.0021)
Low income	0.0285 (0.0388)	0.0205 (0.0658)
High income	-0.0213 (0.0383)	0.0339 (0.0654)
Untold income	-0.0032 (0.0413)	-0.0014 (0.0702)
Constant		0.8598*** (0.3210)
Observations	625	121
R-squared		0.2236
