

Socially Responsible Investments: Return Expectations or Social Preferences?

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Abstract

This paper explores why retail investors deviate from holding the market portfolio by investigating the role of *ex ante* return expectations and investors' social preferences. We use administrative investor trading records which we link to decisions of the same investors in experiments with real money at stake. We show that social preferences rather than return expectations or risk perceptions are the main driver of investments in socially responsible (SRI) mutual funds. In fact, most investors who hold SRI funds expect to earn lower financial returns on these funds than on other funds. Social preferences are only associated with investments in SRI funds without tax benefits, but are unrelated to investments in SRI funds with tax incentives. Assuming stable social preferences, our results suggest that preferences for SRI funds can generate long run effects on asset prices and that tax incentives change the clientele of funds. Our results also show that prosocial behavior in one domain (experiment) is correlated with prosocial behavior in another domain (investments), which adds to the literature on the external validity of experiments.

Key words: socially responsible investments (SRI), trust game, mutual funds

JEL Classification: G11, D64, H41

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1. Introduction

Investors often choose portfolios that deviate from the world market portfolio. Prominent examples are the home and the local bias (Coval and Moskowitz (2002), Ivković and Weisbenner (2005)), large investments in employer stocks (Cohen, 2009) and in the investor's car manufacturer (Keloharju, Knüpfer and Linnainmaa, 2012). This literature suggests that investors deviate from holding the market portfolio because of their preferences and sometimes achieve lower financial returns *ex post* (Cohen (2009), Hong and Kacperczyk (2009)). For example, Cohen (2009) finds that investors who hold a large proportion of employer stock achieve lower Sharpe ratios than investors with a lower proportion of employer stock. Yet, these studies do not elicit beliefs or measure preferences. In other words, evidence is still missing in order to be able to explain whether these portfolio distortions are caused by differences in *ex ante* beliefs (Hong and Stein, 2007) or by investors' preferences. In our study, we therefore elicit investors *ex ante* beliefs and measure social preferences with a controlled incentivized experiment. We study investor decisions in the context of investments in socially responsible (SRI) mutual funds that can be motivated by social preferences or by financial considerations such as tax incentives and higher expected returns.

Socially responsible investors deviate from the market by excluding certain 'sin' companies from their portfolio or by focusing on companies with good environmental policies, employee relations, etc. According to current estimates, approximately one in nine dollars of professional assets under management in the United States are involved in SRI (SIF, 2010) and the share of SRI has as well been increasing in Europe (EUROSIF, 2010). Moreover, there is recent evidence that social values influence investment decisions (Barber (2007), Bollen (2007), Hong and Kacperczyk (2009), Hong and Kostovetsky (2012), Kaustia and Torstila (2011)). However, little is known about the motives of socially responsible investors. For instance, Hong and Kostovetsky (2012) write: *"For the most part, we are agnostic about how values influence investments,..., either pecuniary or non-pecuniary reasons (or both) could be at play"* (p. 2).

It is important to understand whether portfolio distortions are caused by beliefs or by preferences. Assuming stable preferences, socially responsible investors can influence stock prices in the long run if they are mainly driven by social preferences (Hong and Kacperczyk, 2009). In contrast, differences in opinions would

probably only generate short run effects on asset prices. The reason is that a potential mispricing of socially responsible companies will most likely disappear as investors learn over time (Derwall, Koedijk and Ter Horst, 2011). The distinction between investor social preferences and beliefs about returns on SRI is also important for mutual fund managers and pension funds. If investors solely care about risk and return, fund managers should only restrict their investment universe to socially responsible funds if they expect higher risk-adjusted returns on socially responsible companies than on other companies. Yet, fund managers could focus on the broader societal impact of their investments if individuals have strong social preferences.

A belief-based explanation for SRI would be in line with classical portfolio theory, which postulates that investors would only hold SRI mutual funds if they at least provide the same risk-return profile as conventional mutual funds. There is some evidence that SRI mutual funds might perform better than conventional funds. One aspect of companies that many SRI funds take into account is employee relationships. Edmans (2011) finds that companies with good employee relationships achieve higher risk-adjusted returns than companies with worse employee relationships. Derwall et al. (2005) find that firms which score high on eco-efficiency outperform lower scoring firms. However, there is also evidence to the contrary. 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. Overall, the evidence on the past performance of SRI funds is mixed. In addition, investors' beliefs about the future performance of SRI funds may differ from what is suggested by their past performance.

Our administrative data are from a large mutual fund provider in the Netherlands and show the monthly portfolio holdings of each retail investor, their returns and basic demographics. The mutual fund provider offers both a large variety of socially responsible and conventional mutual funds. Investors are personally responsible for their decisions by buying funds directly online without the interference of an intermediary. The data also provide us with the total amount and proportion of the portfolio invested in SRI funds with and without tax incentives. We also observe all investments in other (non-SRI) mutual funds. We link the administrative data to behavior in a trust game and to survey responses.

It is difficult to separate the different motives of socially responsible investors with field data alone. We therefore combine survey responses to elicit beliefs and use administrative data, where we can also control for tax advantages. If investors hold SRI funds because of prosociality, one has to distinguish between intrinsic social preferences and prosocial behavior induced by reputation concerns. We aim to isolate intrinsic social preferences from other motivations by using an anonymous one-shot experiment. Specifically, we measure the behavior of the second mover in a standard trust game (Fehr and List (2004), Karlan (2005), Baran, Sapienza and Zingales (2010)). In the experiment, investors can either be generous to another investor or act selfishly while there is real money at stake. Our experimental design excludes effects due to investor's reputation, because investors are anonymous and the game is only played once. In addition, second-mover behavior in a trust game has been shown to have predictive power for prosocial field behavior (Karlan (2005), Baran, Sapienza and Zingales (2010)).

Socially responsible investors potentially give up diversification benefits, because they restrict their set of investment opportunities to those companies that meet certain social responsibility standards. One might therefore be concerned that socially responsible investors lack investment knowledge when compared to conventional investors. In that case, the relation between intrinsic social preferences and socially responsible investments could be driven by investment knowledge. We address this potential confound in two ways. First, we control for investment knowledge using three different proxies. Second, we observe that 89.5% of the investors correctly answered all the comprehension questions for the trust game, which suggests that investors understood the experimental instructions well. In addition, we control for basic demographics, portfolio returns, portfolio variance and risk preferences.

The data show that 52.9% of socially responsible investors expect a lower return on SRI equity funds compared to conventional equity funds. In spite of these expectations, socially responsible investors hold on average 14.9% of their portfolio in SRI funds. Since the risk perceived on SRI funds is about the same for conventional investors and SRI investors, this does not seem to drive the decision to invest in socially responsible funds either.

We find that investors with stronger intrinsic social preferences are more likely to hold SRI funds without tax incentives but not with tax incentives. In contrast

to social preferences, expectations about the returns and risk perceptions on SRI funds are unrelated to investments in SRI funds. This evidence supports a preference-based explanation for portfolio distortions rather than a belief-based explanation. The finding that intrinsic social preferences are unrelated to investments in SRI funds with tax incentives is important in light of the literature on intrinsic and extrinsic motivation (Gneezy and Rustichini (2000 a,b), Benabou and Tirole (2006), Ariely, Bracha and Meier (2009)). Our findings show that the SRI funds with extrinsic incentives attract different investors than SRI funds without extrinsic incentives. We additionally provide suggestive evidence that investors with stronger intrinsic social preferences are less likely to use socially responsible investments as a signaling tool to improve their reputation.

More broadly, our paper shows that individuals who behave prosocially in one domain (the trust game) also behave more prosocially in another domain (socially responsible investments). Previous evidence on the stability of social preferences over various domains is mixed (Karlan (2005), List (2006), Benz and Meier (2008), Falk and Heckman (2009), Baran, Sapienza and Zingales (2010), Stoop, Noussair and Van Soest (2012)) For instance, List (2006) finds that sports cards traders behave substantially different in gift exchange in the lab and in the field. Stoop, Noussair and Van Soest (2012) find that fishermen cooperate in a standard monetary voluntary contribution mechanism, but fish more than the social optimum in a field setting. In contrast, Karlan (2005) finds that Peruvian microfinance borrowers are more likely to repay their loans if they give back more in a trust game. Benz and Meier (2008) find that students who donate more in a lab also donate more outside of the lab. The relation we find between behavior in the experiment and in the field is rather conservative, because 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 prosocially in the experiment (for evidence on consistency see for instance Gneezy et al. 2012). Our evidence shows that introducing extrinsic rewards such as tax benefits in the field eliminates the relation between prosocial field behavior and prosocial behavior in an experiment that has no extrinsic rewards to prosocial behavior. Our results also show that the relation between behavior in an experiment and in the field depends on the type of experiment used. Prosocial behavior in the trust game is related to field behavior, but behavior in a public goods game is not.

2. Transaction data, experimental design and the survey

In this section, we describe the administrative investor data, the design of the experiments, and the survey.

We have access to administrative individual investor data from one of the largest mutual fund providers in the Netherlands, covering the period January 1992 – August 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, socially responsible funds, etc. The administrative data show for each investor whether or not he holds a socially responsible mutual fund on a monthly basis. We also observe the shares invested in SRI funds and in all other funds on a monthly level. We can distinguish between money invested in SRI funds that offer tax benefits and SRI funds without tax benefits.

In contrast to conventional mutual funds, which only have a private earnings component (financial returns), SR mutual funds can be perceived as also having a public good component. SR funds focus on broader societal issues by, for example, investing in companies that take care of human rights, employee relations, environmental protection, etc. (Social Investment Forum, 2010). In the Netherlands, SR investing is a widespread phenomenon as 18% of all private investors hold a socially responsible mutual fund (Millward Brown, 2011). Also in the rest of Europe and the United States, assets invested socially responsible are growing in volume (Social Investment Forum (2010), EUROSIF (2010)).

The provider offers two kinds of socially responsible mutual funds. The first type is a SRI equity fund without tax benefits. These funds are comparable to SRI equity funds offered in the United States (SIF, 2010) and the rest of Europe (EUROSIF, 2010). The second type is a SRI bond fund that offers tax benefits. The Dutch government gives a tax incentive that could reach a maximum of 2.2% of the amount invested in June 2011 when we conducted the experiment and survey. The reason that these funds get tax benefits and the others do not is that the money is invested in specific companies or projects that the Dutch government wants to subsidize. Examples would be producers of windmills and organic farmers. Fund managers of SRI funds with tax benefits are thus restricted in their investment choices. In contrast, managers of SRI funds without tax benefits are free in the selection of companies in which they invest.

One cannot directly compare the performance and risk of SRI equity funds without tax benefits to SRI bond funds with tax benefits, because they belong to a different asset class. Investors might therefore also choose for one of the two types of SRI funds for reasons unrelated to the tax incentive. For instance, risk averse investors might want to invest a larger share of their portfolio in SRI bond funds than in SRI equity funds. We address this issue in two ways. First, we control for risk preferences to address the issue that risk tolerance might impact the decision between a SRI equity fund (without tax benefits) and a SRI bond fund (with tax benefits). In addition, it is important to note that 99.9% of the investors only invest part of their portfolio in SRI funds. Their overall portfolio can therefore combine conventional equity and bond funds with SRI equity and SRI bond funds to achieve the desired level of portfolio risk, because the conventional funds offered include risk-free funds and high risk emerging market funds. Second, we run a robustness test in which we control for mean monthly portfolio returns and the average monthly standard deviation of portfolio returns and the main results remain the same.

2.1 Administrative Transaction Data

In the administrative data, there are 3,382 socially responsible investors, which were all invited to participate in the survey and the experiment. To define SRI funds, we use the classification of the mutual fund provider of socially responsible and sustainable funds. Some readers are worried that investors might not perceive these funds as ‘truly’ socially responsible¹. If anything, this classification of SRI funds could result in conservative estimates of the relation between intrinsic social preferences and investments in SRI funds, because investors with strong social preferences might not perceive SRI funds as socially responsible. Figure A1 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

¹ The survey indicates that 83% of all investors (also those who do not hold a SRI fund) 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 also show that most investors expect that SRI funds give lower returns than conventional funds, which suggests that investors perceive a clear difference between SRI and conventional funds.

sustainable, emerging markets, global, etc. At 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.

Next to the socially responsible investors, we randomly selected about 35,000 investors from the approximately 145,000 remaining accounts in our database.² All selected investors received an email that contained a link to the online survey in spring 2011. The response rate is 8% for conventional investors and 12% for socially responsible investors. Table 2 shows that 14% of the investors in our sample hold a SRI mutual fund in the month in which they participate in the experiments and in the survey. This percentage is not too far off the 18% for Dutch investors in general (Millward Brown, 2011). Table 2 further shows that socially responsible investors on average hold 14.9% of their portfolio in SRI funds and hold the remaining 85.1% in conventional funds. Of the socially responsible investors, 19.5% only have SRI funds with tax incentives, 68.4% only have SRI funds without tax incentives and 12.1% hold both types of SRI funds.

In the survey investors answered questions and took part in experiments. Investor participated in a risk preferences elicitation experiment and in an interactive experiment with other investors. We informed investors that it would be determined randomly (with a chance of one out of ten) whether they got paid the earnings from the experiment or not.³ Investors were also informed that this would be revealed at the end of the survey. 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 responses to the survey to our administrative data. We hired an external company specialized in conducting online research to

² We excluded investors that were no longer holding the account at the time we conducted the experiments. We also did not invite investors that never placed a single trade and that were younger than 18 years.

³ One could be concerned with the fact that only one in every ten participants gets the earnings of the experiments paid out. For instance, this might affect the level of risk aversion in the risk preference lottery. However, we are not so much interested in the level of preferences, but rather in the cross-sectional differences between individuals. Moreover, Dohmen et al. (2011) validate the risk preference lottery used in this paper, by using a dataset in which also only a fraction of the participants got the earnings paid out.

handle the payments. This company does not have access to the trading records or other information of the investors. This procedure ensures the anonymity of investors and we informed participants about the procedure at the beginning of the survey.

The introduction to the online survey explained the general procedure, including an explanation of the earnings. 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 first part, investors also participated in the risk and time preferences elicitation experiment. The interactive experiment was conducted afterwards and appeared somewhere in the middle part of the survey. We asked all survey questions regarding socially responsible investing and social behavior after the experiments. We told the participants that they would take part in three experiments in total, but they would not know the content of the experiments until their actual participation.

The main analyses in this paper are based on the second mover behavior in the trust game. 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 is rather a measure of trust and not of prosocial behavior per se. Therefore, the total number of subjects in the regressions might be lower than the total number of survey respondents.

2.2 Experimental design – the trust game

To measure intrinsic prosocial behavior, we use a variant of the trust game introduced by Berg, Dickhaut and McCabe (1995). Both the first mover and the second mover are endowed with 50 euro. The first mover decides on the amount he or she wants to send to the second mover, which can be any multiple of 5 euro, including zero and 50. The amount sent is tripled 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. After the instruction and before the experiment started, we asked investors a couple of comprehension questions about the instructions of the experiment. These were correctly answered by 89.5%

of the investors.⁴ To exclude reputation effects, the trust game was played only once, and investors were informed that they and the other participants in the experiment would remain anonymous during and after the experiment.

We use the strategy method (Selten, 1967) for second movers, which means that the second mover decides how much to send back, for each of the 11 possible amounts sent by the first mover – ranging from 0 euro to 50 euro. We randomly match each second mover to a first mover and only the amount actually sent by the first mover determines the earnings. We use the strategy method because of practical reasons and in order to get a more comprehensive measure of the behavior. This method has successfully been used by, e.g. Falk and Zehnder (2007), Baran, Sapienza and Zingales (2010) and Falk, Meier and Zehnder (2012).

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 who participates 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 who participates in the survey and the experiment. We inform subjects in the introduction to the experiment whether they are matched to a randomly chosen individual investor or to a randomly chosen socially responsible investor without making them aware that there are two different conditions. The amount that investors return in the trust game is not significantly different for the two conditions: an average return ratio of 1.44 compared to 1.40 (F-test, $p = 0.216$) Observations in both conditions are therefore pooled in the remaining analyses. Table A1 in the appendix shows the average return ratio for each possible transfer by the first mover. The average return ratio across the full strategy method is 1.43, which means that a second mover sends back 43% more money than he received from the first mover.

⁴ We run our main analysis with all investors and confirm in unreported regressions that the results stay the same when excluding investors who answered incorrectly to at least one question after three trials.

2.3 Eliciting risk preferences

We elicit risk preferences with incentivized multiple price list lotteries, similar to Holt and Laury (2002) and Dohmen et al. (2011). Investors faced 20 different decision situations and for each situation they decided between receiving a specific sure amount and a lottery with a 50% chance of winning 300 euro and a 50% chance of winning nothing. The choices presented to investors in the experiment are identical to Dohmen et al. (2011) and can be found in Table A2 in the appendix. 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. It is determined randomly which of the 20 decisions is relevant for the earnings.

The choices made by individuals in each of the 20 decision situations, allow us to estimate their risk preferences. We use the point at which individuals switch between the gamble and the certain outcome as a measure of risk aversion. A risk neutral individual will switch at a sure amount of 150 euro, which is the expected value of the gamble. Therefore, a risk averse individual will switch at an amount below and a risk seeking individual at an amount above 150 euro.

2.4 Survey questions

In the first part of the survey, we asked investors about general investment issues. This part included questions about their investment portfolio and risk tolerance. We asked all questions regarding socially responsible investing and prosocial behavior after the trust game experiment to avoid priming. All survey questions used in this paper can be found in Table 1.⁵ We measure return expectations on SRI equity funds compared to conventional equity funds by the following 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*

⁵ The original questions in Dutch are available upon request.

We elicit risk perceptions by the statement⁶:

Socially responsible equity funds are more risky than conventional equity funds (fully disagree 1-7 fully agree)

2.5 Respondents and invited sample characteristics

Table A3 in the appendix shows how respondents and non-respondents differ in several important variables observed in the administrative data. Because socially responsible investors are more likely to participate in the experiments and the survey (12% compared to 8%), they are overrepresented in our sample. Notice that in our study design we on purpose invited disproportionately more SR investors to increase the power of the analyses that compare SR investors to conventional investors. Relative to the invited sample, there are slightly more men among the respondents. Respondents are also a little older and have a larger portfolio. We control for these and other demographics.

3. Results

3.1 Investments in SRI funds

Table 3 (Panel A) depicts the return expectations of investors for SRI equity compared to conventional equity funds. We distinguish between socially responsible and conventional investors based on the administrative data. If not stated otherwise, the administrative data refer to the month in which investors participated in the experiments and survey.⁷ Panel A shows that 52.9% of the socially responsible investors expect to earn lower returns on SRI funds than on conventional funds. In comparison, 59.2% of the conventional investors expect lower returns on SRI funds compared to conventional funds. The difference is statistically significant ($p = 0.001$)

⁶ For robustness, we also asked the statement phrased as “Socially responsible equity funds provide a more stable return than conventional equity funds” Including this statement in the upcoming analyses leave the results qualitatively similar.

⁷ It would be possible that investors only hold SRI funds for a very short period and then sell the funds. For robustness we therefore re-do all the analyses also for investments into SRI funds exactly one year prior to the survey and experiment in 2010. The results are qualitatively similar.

but the absolute difference is rather small. Panel B of Table 3 shows that socially responsible investors and conventional investors have a similar perception of the riskiness of SRI equity funds relative to conventional equity funds ($p = 0.547$). Both investor groups think that both fund categories carry similar risk.

Hence, SRI investors and conventional investors have similarly pessimistic return expectations regarding SRI funds and perceive their riskiness as similar to conventional funds. This already suggests that other motives than return expectations or risk perceptions are behind the SRI investment decision. One possibility would be risk diversification. Even if investors perceive the risk on SRI equity funds in isolation about the same as the risk on other equity funds, they might believe that they can reduce the overall portfolio risk by including a SRI fund into their portfolio. The survey outcomes show that only 5.1% of the SR investors indicate to hold SRI funds because of diversification benefits.

To investigate the effect of social preferences on investment decisions, we use the behavior of second-movers in the trust game. Due to the fact that the trust game is fully anonymous and played only once, it rules out reputation benefits by design. We use the behavior of second-movers in the trust game as a measure for intrinsic social preferences, because several studies show that it relates more to field behavior than for instance the public goods game (Karlan (2005), Baran, Sapienza and Zingales (2010)).⁸ Recall that we used the strategy method and second movers had to make 11 return decisions. In Tables 4 and 5 we use two different specifications for intrinsic social preferences in the trust game. In the first specification, we calculate the average return ratio for all possible first mover transfers. In other words, we calculate the ratio of the back transfer for a first mover transfer of 5 euro, 10 euro, up until 50 euro and take the average. As a second specification we take the absolute amount that a second mover returns for the largest possible transfer of 50 euro made by the first mover. Baran, Sapienza and Zingales (2010) show that this correlates most strongly with prosocial behavior in another domain (donations).

To address financial motivations of investors to hold SRI funds, we investigate whether differences in beliefs about future performance can explain investments in SRI funds. Specifically, we include return expectations and risk perceptions of SRI

⁸ In unreported regressions we find that the behavior of investors in a public goods experiment has little power in explaining their investment choices.

equity funds (without tax benefits) compared to conventional equity funds into the regressions. These are the return and risk expectations as presented in Table 3. We create a dummy that has a value of 1 if an investor believes that the expected return of an SRI fund is lower than the expected return of a conventional fund, and zero if he believes the returns are equal or higher⁹. We create a similar dummy for risk perceptions. As proxies for investment knowledge we employ the following three measures. First, we take the log of the total portfolio size (Calvet, Campbell and Sodini (2009), Keloharju, Knüpfer and Linnainmaa (2012)). Second, we use investors answers to a financial knowledge question where they had to rate themselves on a 1-7 Likert-scale from very poor to very good. This measure has been validated by Van Rooij, Lusardi and Alessie (2011) and is also used by Dorn and Huberman (2005) and Graham, Harvey and Huang (2009). Third, we include a dummy indicating whether an investor has a university degree. We control for risk preferences by the switch amount in the risk preference task. Finally, we include various demographic variables in the regressions, like gender, age and income.

Table 4 presents marginal effects of probit regressions in which the dependent variable is a dummy that has a value of 1 if an investor holds a SRI mutual fund and 0 otherwise. The table shows that investors who behave more prosocially in the anonymous trust game are more likely to invest in a SRI mutual fund. The first specification demonstrates that an investor with a 1 point higher average return ratio is 4.05 percentage points more likely to invest socially responsible ($p = 0.049$). This effect is relatively large compared to the 14% of our sample that holds a SRI fund. The second specification shows that an individual who sends back 10 euro more in the trust game is 0.80% more likely to hold a SRI fund ($p = 0.044$). An investor who equalizes pay-offs of both participants by sending back 100 euro is thus 8.3% more likely to invest socially responsible than a completely selfish investor who returns zero euro.

Expectations about the returns on SRI funds compared to conventional funds are unrelated to the probability to invest socially responsible ($p = 0.277$). Similarly, risk perceptions about SRI funds do not drive investments into socially responsible

⁹ We also created other sets of dummies for return expectations and risk perceptions on SRI funds and find throughout all specifications that beliefs are generally insignificantly related to investments in SRI funds.

funds ($p = 0.336$). Taken together, these results support a preference-based explanation for investments in SRI funds rather than a belief-based explanation.

Table 4 further documents that investors with a larger portfolio and with a high rating of their investment knowledge are more likely to invest socially responsible. In the first specification, an investor with a 1% larger portfolio is 0.43% more likely to invest socially responsible ($p = 0.000$). The effect of portfolio size is strong throughout all our analyses. This is not surprising, because investors with a large portfolio might spread their larger wealth over various funds including SRI funds. Importantly, the coefficient of social preferences remains both statistically and economically significant after controlling for this potential mechanical effect of portfolio size on holdings of SRI funds.¹⁰ An investor who rates his investment knowledge one point higher on a 1-5 scale is 1.89% more likely to invest socially responsible ($p = 0.076$). None of the other characteristics significantly affects the probability to invest socially responsible. For instance, gender is insignificant, which is in line with previous evidence on gender effects showing mixed results regarding prosocial behavior (for a review see Croson and Gneezy (2009)).

In Table 5 we take a different measure for investing socially responsible. Rather than using a binary dummy for holding a SRI fund, we use a continuous measure of the percentage of the portfolio that is invested socially responsible. The table presents the marginal effects of a tobit regression that accounts for the censoring in the SRI share at 0% and 100%. The results show that investors who behave more prosocially in the trust game invest a larger share of their portfolio in SRI funds, which corroborates the results for the binary measure. In the first specification, a one point higher return ratio is associated with an increased investment into SRI funds of 5.47% of the portfolio ($p = 0.051$). An investor who sends back 10 euro more in the trust game holds an additional 1.05% of his portfolio in socially responsible funds ($p = 0.054$).

The other variables also show the same pattern as for the binary measure. Specifically, return expectations and risk perceptions are unrelated to the percentage of the portfolio that is invested socially responsible. In specification (1), an investor

¹⁰ In unreported analyses we find that an increase in the portfolio size only increases the probability to own a SRI fund for investors who behave prosocially in the experiment. For investors with weak social preferences, an increase in the portfolio size does not result in a larger probability to hold an SRI fund.

with a 1% larger total portfolio size invests an extra 3.30% in SRI funds ($p = 0.012$) and having a university degree increases the SRI share by 7.26% ($p = 0.055$).

3.2 The decision to buy SRI funds with or without tax benefits

As explained in section 2, investors can choose for SRI mutual funds with tax benefits and for SRI funds without tax benefits. So far, we have ignored this distinction in the analyses. Table 6 reports relative-risk ratios of a multinomial logit regression in which the dependent variable takes on four different values. The base group that is not reported consists of conventional investors. The other groups are investors who (1) only hold a SRI fund with tax benefits, (2) only hold a SRI fund without tax benefits, (3) hold both types of SRI funds. Because the results for the two measures of intrinsic social preferences are almost identical in the previous analyses, for brevity we only report the results for the average return ratio here. In unreported analyses we find that the results remain robust when using the maximum transfer of 50 euro.

We find that an investor with stronger intrinsic social preferences is more likely to hold a SRI fund without tax benefits. The relative-risk ratio on intrinsic social preferences in column (2) shows that an investor with a one point higher return ratio is 47.9% more likely to only hold a SRI fund without tax benefits than to be a conventional investor ($p = 0.027$). An investor with stronger social preferences is insignificantly more likely to hold both SRI funds with and without tax incentives. Intrinsic social preferences are unrelated to the probability of only holding a SRI fund with tax benefits ($p = 0.528$).

The fact that intrinsic social preferences are correlated with a higher likelihood to own SRI funds without tax benefits but not SRI funds with benefits points toward different motives to hold SRI funds among SR investors. It suggests that some SR investors hold SRI funds for other than preference reasons. One reason could be that some investors expect higher returns when taking the tax benefits into account. Another reason maybe that some investors hold SRI funds for reputational reasons and that those tend to hold tax beneficial SRI funds, because these funds have lower financial costs (in terms of expected return) than non-tax beneficial SRI funds. We further discuss reputation as a possible incentive to hold SRI in section 3.3.

Like in the previous regressions, return expectations and risk perceptions appear insignificant in the analysis. Yet, investors with a larger total portfolio size are in general more likely to hold any type of SRI fund or both types. The coefficient is significant in all three columns. For example, an investor with a 100% larger portfolio is compared to the base group 66.9% more likely to only hold a SRI fund with tax benefits, 29.5% more likely to only hold a SRI fund without tax benefits and 128.1% more likely to hold both types of funds. Investors who rate their investment knowledge one point higher on a 1-7 scale are 83.9% more likely to only hold a SRI fund with tax benefits than to be a conventional investor that owns no SRI fund (base group).

We explained in section 2 that SRI funds with tax benefits are bond funds and SRI funds without tax benefits are equity funds. Therefore, risk averse investors might select SRI bond funds with tax benefits instead of SRI equity funds without tax benefits. We partly addressed this issue by controlling for risk preferences in the regressions reported above. In Table 7, we add two extra control variables: the average monthly portfolio returns of the investor and the standard deviation of these returns. Importantly, the main result remains the same. Investors with stronger social preferences are substantially more likely to invest in SRI funds without tax incentives, but there is no effect on the likelihood to have a SRI fund with tax benefits. In fact the coefficients on intrinsic social preferences are almost identical to the results in Table 6 without controls for returns and standard deviation of returns.

3.3 Intrinsic social preferences and reputation

So far, we have shown that investors with stronger intrinsic social preferences are more likely to invest in socially responsible funds without tax benefits. They also invest a larger share of their portfolio in SRI funds. In this section, we take a closer look at the reputation motive to buy socially responsible mutual funds. Investors can use socially responsible investments as a signal of their prosocial personality. We hypothesize that investors with stronger intrinsic social preferences (trust game) are less likely to use socially responsible investments as a signaling tool than are investors with weaker intrinsic social preferences.

Individuals in our dataset buy funds directly online without the interference of an intermediary person. If investors want to benefit from SRI funds as a signal, they

somehow have to communicate to others that they invest socially responsible. We ask investors to rate their agreement to the following statement on a 1-7 scale: "I often talk about investments to others." This measure is inspired by Hong, Kubik and Stein (2004) who use church attendance and interaction with neighbors as proxy for social interaction. There can be other reasons why individuals talk about investments. For example, they might want to gather information from others or convince peers to also buy SRI funds. We therefore see this evidence on reputation as only suggestive.

Table 8 presents OLS regressions in which the dependent variable represents the ratings of the extent to which socially responsible investors agree to the statement above. The results show that a one point higher return ratio in the trust game is associated with a 0.278 point decrease in the agreement to the statement above ($p = 0.000$). This means that investors with stronger social preferences talk less about investments and probably benefit less from signaling benefits. It could be that investors with stronger intrinsic social preferences are less likely to agree that they use SRI funds as a signaling tool. We therefore asked the question of how much investors talk about investments at the start of the survey before any question on prosocial behavior. At that stage of the survey, no reference to socially responsible investments was made yet.

4. Conclusion

This paper shows that investors with stronger social preferences are more likely to hold SRI mutual funds without tax incentives. The majority of socially responsible investors accepts to receive lower expected returns on these SRI funds compared to conventional funds. We use an anonymous experiment that rules out reputation concerns as an explanation for prosocial behavior. This evidence indicates that investors' social preferences have significant effects on portfolio decisions. The finding that investments in SRI funds are largely driven by social preferences rather than beliefs suggests that socially responsible investments can have long run effects on stock prices. These intrinsic social preferences can come for instance from investors caring about others because of inequality aversion (Fehr and Schmidt (1999), Bolton and Ockenfels (2000) or because they get a warm glow from socially responsible investments (Andreoni, 1990).

Our findings also have important practical consequences. First, banks and mutual fund providers can benefit from distinguishing between selfish and prosocial investors concerning their marketing strategies. The strong intrinsic motivation of many socially responsible investors might be undermined by advertisements that are focused too much on returns (Gneezy and Rustichini (2000 a,b), Benabou and Tirole (2006)). In contrast, more selfish investors who hold SRI funds for reputation reasons might benefit from some signaling tools. Second, the Dutch government provides tax incentives on some types of SRI funds. Our findings suggest that intrinsic social preferences are unrelated to investments in these types of funds. In other words, these funds also attract selfish investors, which might reduce the amount invested socially responsible if the tax incentives decrease. In particular, because investors in SRI funds with tax benefits report good investment knowledge and might be well aware of outside investment opportunities.

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Tables

Table 1 – Variable definitions

| Variable | Measure | Type of data |
|--|--|-------------------------|
| Socially responsible investor | Dummy variable equal to 1 if an investor holds a socially responsible (SRI) mutual fund in his portfolio at the provider in the month that he participated in the experiments. | Administrative |
| Total Portfolio Value | Total euro amount invested at the provider in the month that the investor participated in the experiments. | Administrative |
| Percentage SRI | Total amount invested in SRI funds at the provider as a percentage of the total portfolio at the provider, in the month in which the investor participated in the experiments. | Administrative |
| Own SRI fund with tax benefits | Dummy variable equal to 1 if an investor holds a SRI fund with tax benefits in the month he participated in the experiment and the experiments. | Administrative |
| Own SRI fund without tax benefits | Dummy variable equal to 1 if an investor holds a SRI fund without tax benefits in the month he participated in the experiment and the experiments. | Administrative |
| Mean portfolio returns | Average monthly portfolio returns since the investor opened her account | Administrative |
| St. Dev. monthly portfolio returns | Standard deviation of the monthly portfolio returns since the investor opened her account | Administrative |
| Intrinsic social preferences (avg. Return ratio) | We calculate the return ratio for each possible first mover transfer in the strategy method. For a 5 euro transfer, it is the ratio between the amount returned and the amount sent when the first mover sends 5 euro. For 10 euro it is the ratio between the amount returned and the amount sent when the first mover sends 10 euro. We then take the average return ratio across the range of 5-50 euro first mover transfers. See Table A1 in the appendix for the full distribution of return ratios. | Incentivized experiment |
| Intrinsic social preferences (max. transfer of 50 euro) | Amount that the investor sends back as a second mover in the trust game for a first mover transfer of 50 euro. | Incentivized experiment |

| | | |
|------------------------------------|---|-------------------------|
| Expected return SRI | I expect that the returns of socially responsible equity funds compared to conventional equity funds are: <ul style="list-style-type: none"> • Much lower • A bit lower • The same • A bit higher • Much higher • I do not know | Survey |
| Lower expected return SRI | Dummy equal to 1 if an investor believes that the returns on SRI equity funds are lower than on conventional equity funds. | Survey |
| Perceived risk SRI | Socially responsible equity funds are more risky than conventional equity funds (fully disagree 1-7 fully agree) | Survey |
| Lower perceived risk on SRI | Dummy equal to 1 if an investor perceives the risk on SRI equity funds to be lower than the risk of conventional equity funds. | |
| Risk preferences | Amount at which the investor switches from choosing the risky lottery to choosing the risk-free option in the risk preference task. | Incentivized experiment |
| Low income | Gross family income is below 60,000 euro per year | Survey |
| Medium income | Gross family income is between 60,000 euro and 100,000 euro per year | Survey |
| High income | Gross income is above 100,000 euro per year | Survey |
| Untold income | The investor does not disclose his income | Survey |
| Investment knowledge | My investment knowledge is good (fully disagree 1-7 fully agree) | Survey |
| Talk about investments | I often talk about investment with others (fully disagree 1-7 fully agree) | Survey |

Table 2 – Summary statistics of the investment portfolios

This table presents background information from the transaction data on the portfolios of socially responsible and conventional investors. 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.

| | Socially responsible investors | Conventional investors |
|--|---|-------------------------------|
| | 14% | 86% |
| Median portfolio value | 57,666 | 36,496 |
| Mean portfolio value | 106,678 | 73,250 |
| S.D. portfolio value | 190,033 | 127,344 |
| | | |
| % female | 18.1% | 20.9% |
| Age (median) | 57 | 59 |
| % university degree | 49.9% | 46.2% |
| | | |
| | Conditional on owning a SRI fund | |
| Percentage SRI in total portfolio | 14.9% | - |
| | | |
| Only hold SRI with tax benefits | 19.5% | - |
| Only hold SRI without tax benefits | 68.4% | - |
| Hold both SRI with and without tax benefits | 12.1% | - |
| | | |
| Percentage of SR investments in funds with tax benefits | 24.6% | - |
| Percentage of SR investments in funds without tax benefits | 75.4% | - |

Table 3 – Return expectations and risk perception of socially responsible and conventional investors

Panel A – Return expectations

This panel shows the answers of socially responsible and conventional investors to the question “I expect that the returns of socially responsible equity funds compared to conventional equity funds are.....” The panel only presents return expectations for those investors who give an expectation and this panel excludes investors who answer ‘I do not know’. The categories much lower and lower are merged, as well as the categories higher and much higher.

| | Socially responsible investors (n = 504) | Conventional investors (n = 2,750) |
|----------|---|---|
| Lower | 52.9 | 59.2 |
| The same | 30.7 | 28.8 |
| Higher | 16.3 | 12.0 |

Panel B – Risk perception

Investors rate their agreement to the following statement: “Socially responsible equity funds are more risky than conventional equity funds” (fully disagree 1-7 fully agree).

| | Socially responsible investors (n = 504) | Conventional investors (n = 2,750) |
|-------------------|---|---|
| Expected risk SRI | 3.55 | 3.57 |

Table 4 – Likelihood to own a SRI fund

This table presents marginal effects of probit regressions in which the dependent variable takes on the value of 1 if an investor holds a SRI mutual fund in the month that he participated in the experiment and survey. In the first specification ‘Intrinsic social preferences’ is the average return ratio across all possible first mover transfers from 5 euro through 50 euro. In the second specification ‘Intrinsic social preferences’ is the amount returned by the second mover in the strategy method trust game in units of 10 euro for a maximum transfer of the first mover of 50 euro. All other variables are defined in Table 1. Standard errors are in parentheses. * is 10% ** is 5% and *** is 1% significance.

| | Avg. Return Ratio (1) | Max. Transfer of 50 Euro (2) |
|-------------------------------|----------------------------------|---|
| PREFERENCES | | |
| Intrinsic social preferences | 0.0405** (0.0205) | 0.0080** (0.0040) |
| BELIEFS | | |
| Lower expected returns on SRI | -0.0295 (0.0271) | -0.0295 (0.0271) |
| Lower perceived risk on SRI | -0.0257 (0.0267) | -0.0253 (0.0267) |
| CONTROLS | | |
| Log total portfolio value | 0.0431*** (0.0098) | 0.0427*** (0.0098) |
| Investment knowledge | 0.0189* (0.0107) | 0.0186* (0.0107) |
| University degree | 0.0390 (0.0281) | 0.0383 (0.0281) |
| Risk preferences | -0.0003 (0.0003) | -0.0003 (0.0003) |
| Female | -0.0447 (0.0336) | -0.0446 (0.0337) |
| Age | -0.0021 (0.0013) | -0.0021 (0.0013) |
| Low income | 0.0299 (0.0361) | 0.0296 (0.0361) |
| High income | -0.0411 (0.0347) | -0.0412 (0.0347) |
| Untold income | 0.0157 (0.0416) | 0.0154 (0.0416) |
| N | 764 | |
| Pseudo R2 | 0.0522 | 0.0525 |

Table 5 – Percentage invested in SRI funds

This table presents marginal effects of tobit regressions in which the dependent variable is the percentage of the portfolio that is held in SRI mutual fund in the month that he participated in the experiment and survey. The regressions account for left-censoring at 0% and right-censoring at 100%. In the first specification ‘Intrinsic social preferences’ is the average return ratio across all possible first mover transfers from 5 euro through 50 euro. In the second specification ‘Intrinsic social preferences’ is the amount returned by the second mover in the strategy method trust game in units of 10 euro for a maximum transfer of the first mover of 50 euro. All other variables are defined in Table 1. Standard errors are in parentheses. * is 10% ** is 5% and *** is 1% significance.

| | Avg. Return Ratio (1) | Max. Transfer of 50 Euro (2) |
|-------------------------------|----------------------------------|---|
| PREFERENCES | | |
| Intrinsic social preferences | 5.4702* (2.8058) | 1.0537* (0.5457) |
| BELIEFS | | |
| Lower expected returns on SRI | -3.7611 (3.6141) | -3.7700 (3.6167) |
| Lower perceived risk on SRI | -2.7315 (3.6567) | -2.6571 (3.6573) |
| CONTROLS | | |
| Log total portfolio value | 3.3022** (1.3089) | 3.2438** (1.3044) |
| Investment knowledge | 1.2730 (1.4460) | 1.2208 (1.4462) |
| University degree | 7.2647* (3.7926) | 7.1795* (3.7957) |
| Risk preferences | -0.0251 (0.0459) | -0.0257 (0.0459) |
| Female | -6.6990 (5.2547) | -6.7225 (5.2625) |
| Age | -0.2787 (0.1785) | -0.2795 (0.1786) |
| Low income | 6.6228 (4.6470) | 6.5796 (4.6497) |
| High income | -4.6530 (5.2908) | -4.6597 (5.2907) |
| Untold income | 4.8875 (5.3374) | 4.8665 (5.3398) |
| N | 764 | |
| Pseudo R2 | 0.0137 | 0.0137 |

Table 6 – Probability to invest in a SRI fund with tax benefits and without tax benefits

This table presents relative-risk ratios of a multinomial logit regression in which the dependent variable can take on four different values. The baseline group (not reported) is conventional investors, the second group is investors who only hold a SRI fund with tax benefits, the third only holds SRI fund without tax benefits and the fourth holds both types of SRI funds. ‘Intrinsic social preferences’ is the average return ratio across all possible first mover transfers from 5 euro through 50 euro. All other variables are defined in Table 1. Standard errors are in parentheses. * is 10% ** is 5% and *** is 1% significance.

| | Only SRI funds with tax benefits (1) | Only SRI funds without tax benefits (2) | Both SRI funds with and without tax benefits (3) |
|-------------------------------|--------------------------------------|---|--|
| PREFERENCES | | | |
| Intrinsic social preferences | 0.8089 (0.2717) | 1.4791** (0.2626) | 1.9400 (1.0638) |
| BELIEFS | | | |
| Lower expected returns on SRI | 1.4309 (0.7585) | 0.7319 (0.1612) | 0.5519 (0.3549) |
| Lower perceived risk on SRI | 1.5537 (0.7548) | 0.6964 (0.1571) | 1.2696 (0.8042) |
| CONTROLS | | | |
| Log total portfolio value | 1.6691** (0.3661) | 1.2953*** (0.1078) | 2.2811*** (0.7337) |
| Investment knowledge | 1.8387*** (0.4252) | 1.0812 (0.0942) | 1.1280 (0.2629) |
| University degree | 0.4103 (0.2275) | 1.4316 (0.3346) | 4.6472* (3.8557) |
| Risk preferences | 0.9954 (0.0058) | 0.9986 (0.0028) | 0.9964 (0.0087) |
| Female | 0.6815 (0.5361) | 0.5262* (0.1891) | 2.9819 (2.0591) |
| Age | 1.0287 (0.0247) | 0.9792* (0.0108) | 0.9556 (0.0321) |
| Low income | 1.0665 (0.6420) | 1.2132 (0.3502) | 1.9843 (1.5460) |
| High income | 0.0000 (0.0004) | 0.9170 (0.2833) | 0.2401 (0.2763) |
| Untold income | 1.1449 (0.7617) | 1.0630 (0.3528) | 0.8343 (0.7622) |
| N | 764 | | |
| Pseudo R2 | 0.0916 | | |

Table 7 – Controlling for portfolio returns and standard deviations

This table presents relative-risk ratios of a multinomial logit regression in which the dependent variable can take on four different values. The baseline group (not reported) is conventional investors, the second group is investors who only hold a SRI fund with tax benefits, the third only holds SRI fund without tax benefits and the fourth holds both types of SRI funds. 'Intrinsic social preferences' is the average return ratio across all possible first mover transfers from 5 euro through 50 euro. All other variables are defined in Table 1. Standard errors are in parentheses. * is 10% ** is 5% and *** is 1% significance.

| | Only SRI funds with tax benefits (1) | Only SRI funds without tax benefits (2) | Both SRI funds with and without tax benefits (3) |
|------------------------------------|--|---|--|
| PREFERENCES | | | |
| Intrinsic social preferences | 0.7985 (0.2734) | 1.4759** (0.2621) | 1.9164 (1.0580) |
| BELIEFS | | | |
| Lower expected returns on SRI | 1.6320 (0.8816) | 0.7302 (0.1612) | 0.5236 (0.3408) |
| Lower perceived risk on SRI | 1.7162 (0.8639) | 0.6911 (0.1563) | 1.2474 (0.7912) |
| CONTROLS | | | |
| Monthly portfolio returns | 0.3140*** (0.1370) | 1.0587 (0.2120) | 2.0373 (1.3918) |
| St. Dev. monthly portfolio returns | 0.8721 (0.1158) | 1.0395 (0.0486) | 1.0707 (0.1370) |
| Log total portfolio value | 1.6762** (0.3805) | 1.2961*** (0.1077) | 2.2590** (0.7240) |
| Investment knowledge | 2.0136*** (0.4868) | 1.0618 (0.0955) | 1.0753 (0.2591) |
| University degree | 0.3647* (0.2064) | 1.4335 (0.3363) | 4.9624* (4.1440) |
| Risk preferences | 0.9958 (0.0058) | 0.9986 (0.0028) | 0.9964 (0.0087) |
| Female | 0.6195 (0.4908) | 0.5404* (0.1950) | 3.4751* (2.4993) |
| Age | 1.0343 (0.0251) | 0.9789* (0.01085) | 0.9555 (0.0322) |
| Low income | 1.0484 (0.6286) | 1.2316 (0.3567) | 1.9153 (1.5119) |
| High income | 0.0000 (0.0003) | 0.9113 (0.2834) | 0.2284 (0.2641) |
| Untold income | 1.1603 (0.7825) | 1.0708 (0.3555) | 0.7215 (0.6865) |
| N | 764 | | |
| Pseudo R2 | 0.1010 | | |

Table 8 – Intrinsic social preferences and reputation

This table presents OLS regressions in which the dependent variable is the ratings of the agreement of investors on a 1-7 scale to the statement ‘I often talk about investments to others.’ Socially responsible investors who talk more about their investments with others can potentially gain more reputation benefits than socially responsible investors who cannot signal to others that they invest socially responsible. ‘Intrinsic social preferences’ is the average return ratio across all possible first mover transfers from 5 euro through 50 euro. All other variables are defined in Table 1. Standard errors are in parentheses. * is 10% ** is 5% and *** is 1% significance.

| PREFERENCES | |
|-------------------------------|------------------------|
| Intrinsic social preferences | -0.2779*** (0.0715) |
| BELIEFS | |
| Lower expected returns on SRI | -0.1026 (0.0955) |
| Lower perceived risk on SRI | 0.0332 (0.0954) |
| CONTROLS | |
| Log total portfolio value | -0.0552** (0.0281) |
| Investment knowledge | 0.4792*** (0.0362) |
| University degree | -0.0328 (0.0997) |
| Risk preferences | -0.0003 (0.0012) |
| Female | -0.3530* (0.1293) |
| Age | -0.0011 (0.0047) |
| Low income | -0.0922 (0.1229) |
| High income | -0.0987 (0.1350) |
| Untold income | -0.0480 (0.1440) |
| N | 764 |
| R squared | 0.2410 |

Appendix

Table A1 – Return ratios in the strategy method trust game

This table shows the return ratio for each possible first mover transfer in the strategy method. For a 5 euro transfer, it is the ratio between the amount returned and the amount sent when the first mover sends 5 euro. For 10 euro it is the ratio between the amount returned and the amount sent when the first mover sends 10 euro. The average return ratio is taken over the 5-50 euro range of first mover transfers.

| | Mean | Standard dev. |
|---|-------------|----------------------|
| Return ratio if 1st mover sends 5 euro | 1.40 | 0.81 |
| Return ratio if 1st mover sends 10 euro | 1.43 | 0.74 |
| Return ratio if 1st mover sends 15 euro | 1.42 | 0.71 |
| Return ratio if 1st mover sends 20 euro | 1.44 | 0.70 |
| Return ratio if 1st mover sends 25 euro | 1.44 | 0.69 |
| Return ratio if 1st mover sends 30 euro | 1.44 | 0.68 |
| Return ratio if 1st mover sends 35 euro | 1.44 | 0.68 |
| Return ratio if 1st mover sends 40 euro | 1.44 | 0.68 |
| Return ratio if 1st mover sends 45 euro | 1.44 | 0.69 |
| Return ratio if 1st mover sends 50 euro | 1.45 | 0.70 |
| Average return ratio | 1.43 | 0.67 |

Table A2 – Design of the risk preference 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 |

Source: Dohmen et al (2011)

Table A3 – 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. The variables are defined in Table 1. Note that for our research design, we on purpose oversampled socially responsible investors in the survey to increase the power of our analyses in which we compare SR to conventional investors. The response rate for SR investors is 12% and that for conventional investors is 8%

| | Invited sample (n = 39,379) | Respondents (n = 3,254) |
|---|--|------------------------------------|
| Female | 24.7% | 20.6% |
| Age | 55.5 | 57.9 |
| Total portfolio value (euro) | 61,509 | 74,259 |
| % Holds at least one SRI fund without tax benefits | 7.6% | 10.2% |
| % Holds at least one SRI fund with tax benefits | 1.8% | 2.9% |

Figure A1 – Website of the mutual fund provider

Investors buy funds via the product selector on the website of the provider. The product selector presents the investment category and information regarding the performance, fees, investment policies etc.

The screenshot shows the Robeco website's product selector interface. The browser address bar displays www.robeco.com/professionals/products/index.jsp. The page features a navigation menu with tabs for Overview, Performance, Index numbers, Product facts, Costs, Ratings, and Annu. A dropdown menu for the period is set to 'december 2012'. There are links for 'Edit columns' and 'Reset columns', and a 'Download as XLS' option. The main content is a table of mutual funds with the following columns: Name, Category, Performance 3y, and Risk. The table lists various funds such as 'Quant Emerging Debt Local Currency I USD', 'Robeco', 'Rolinco N.V.', 'Rorento N.V.', 'Safe Mix', 'Sage Equity Opportunities Bonds Nov05/15 (EUR)', and several 'SAM Smart Energy Fund' variants. The right sidebar shows a 'Product Selector' with '254 of 254 products' and filters for Name, Code, Category, Registered in, Performance, and Risk. A 'Cookies enabled' notification is visible at the bottom right.

| Name | Category | Performance 3y | Risk |
|--|--------------------|----------------|-------|
| Quant Emerging Debt Local Currency I USD | Bonds | - | ●●●●● |
| Quant Emerging Markets Equities I USD | Equity-worldwide | - | ●●●●● |
| Robeco | Equity-worldwide | 8,24 | ●●●●● |
| Rolinco N.V. | Equity-worldwide | 5,47 | ●●●●● |
| Rorento N.V. | Bonds | 6,69 | ●●● |
| Safe Mix | Balanced funds | 3,84 | ●●● |
| Sage Equity Opportunities Bonds Nov05/15 (EUR) | Hedge funds | - | |
| SAM Biofuel Certificate | Sustainable equity | - | |
| SAM Smart Energy Fund B CHF | Sustainable equity | - | ●●●●● |
| SAM Smart Energy Fund B EUR | Sustainable equity | - | ●●●●● |
| SAM Smart Energy Fund B USD | Sustainable equity | - | ●●●●● |
| SAM Smart Energy Fund C CHF | Sustainable equity | - | |
| SAM Smart Energy Fund C EUR | Sustainable equity | - | |
| SAM Smart Energy Fund C USD | Sustainable equity | - | |

Past performance is not an indicator for the future and does not guarantee the future performance. The performance does not take account of the commissions and costs incurred on the issue and redemption of units.

Cookies enabled

Acknowledgements

We are grateful to Robeco for providing us with the data for this paper and we in particular thank Peter Jurriaans, Catrien Kleinheerenbrink, Manon Middelinck and Jorg Sunderman. This paper benefited from the comments and suggestions of Dennis Bams, Rob Bauer, John Beshears, Thomas Dohmen, Piet Eichholtz, Uri Gneezy, Arvid Hoffmann, Stephan Meier, Thomas Post (Netspar discussant), Leonard Wolk and in particular Nicolas Salamanca. We thank seminar participants at UC San Diego Rady School of Management, UC San Diego Applied Microeconomics, Sorbonne University (MISTRA workshop), Maastricht University, the EEA 2012 in Malaga, the ESA 2012 in New York, the Netspar annual conference 2012 in Amsterdam, the MBEES 2012 annual conference in Maastricht. We thank Oana Floroiu, Mohammedreza Maghroor, Tobias Ruof, Simone Vermeend and Thorsten Voss for their help as research assistants. We received financial support from MISTRA and the European Centre for Corporate Engagement (ECCE). Part of this paper was written when Paul Smeets was visiting the Rady School of Management (UC San Diego).