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Household Preferences for Socially Responsible Investments

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Abstract

We analyze revealed and stated household preferences for socially responsible investments (SRI). Using a questionnaire specifically designed for this purpose and administered to a Dutch representative household panel, we investigate the actual and latent demand for SRI products. Respondents reported whether they owned SRI products, the reason behind this decision, but also answered stated choice questions on traditional investments and hypothetical SR products with an explicit return penalty and/or an in-kind compensation. Our results show that social investors are willing to pay a price to be socially responsible rather than needing a little nudge, such as a gift (a book or a voucher). Highly educated individuals have a substantial latent demand that is currently unexploited. Keeping education constant, individuals who consider themselves financially literate are less interested in SR products than others. Particularly at the intensive margin, the stated demand for SRI funds is sensitive to the return penalty.

Keywords: Ethical mutual funds; Personal finance, Investor behavior

JEL: D14; G11; M30

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1. Introduction

Financial products, albeit sophisticated, tend to be standardized in their features. Investors shape their portfolio by choosing the ideal mix of risk and expected return over a given time horizon. Many investors, however, are also driven by less traditional factors in deciding where and how much to invest. Bauer and Smets (2015), for example, highlight that investors' gains can go beyond the simple financial utility when they invest in bonds of firms that share their own values.

Socially Responsible Investments (SRI) represent one example. SRI mutual funds select their products not only based on the risk-return trade-off, but also on "social acceptability," giving, for example, the reassurance that investments exclude companies in the tobacco, weapons or gambling industries. A substantial group of investors values this type of guarantee and is therefore willing to invest in SRI products. Furthermore, in a world characterized by low (if not negative) interest rates and high volatility, risk-averse retail investors may be less willing to participate in financial markets. Thus, adding the social dimension to a financial product can be a way to attract some investors and to increase financial market participation. As a consequence, SRI represents a venue to be better explored and exploited by the financial industry.¹

The SRI market is gaining momentum: investments in sustainable and responsible market stocks have increased at a fast pace over the past years (Busch et al., 2016; Eurosif, 2014) with a market value at \$6.57 trillion in the US only. This trend shows an increasing attention for attributes of the assets other than risk and expected return, and specifically for the social characteristics of the product. The Netherlands is a particularly interesting country in this context since it represents one of the largest

¹ Note that compliance with increasing disclosure requirements on corporate social responsibility issues (e.g., EU, 2014) is encouraging financial and non-financial institutions to engage in socially responsible activities, thereby including the issue of socially responsible bonds (e.g. green bonds).

markets for SRI in Europe. Furthermore, the size of this market is growing in every aspect (Eurosif, 2016, Fig. 60).

In this paper, we investigate the actual and potential demand among private households for socially responsible investments in bonds or mutual funds: products that have a clear SRI component as specified in the product description (for example stating that part of the foregone interest will be devoted to some charity). Given the increasing size of Socially Responsible Investments, the room for financial products with a specific devolution, i.e. going into a well-specified program, is of special interest for the financial industry.

Our analyses aim to answer two main research questions. First, while most studies on the consumers' interest in SRI focus on financial market participants, we aim to analyze the potential demand for specific SRI products in the complete adult population. To this purpose, we use a survey covering the Dutch adult population with questions on actual SRI investing and on hypothetical choices between specific SRI and non-SRI products. Using a representative sample is a clear advantage as it does not limit the size of the market and is also informative on the preferences of individuals who indirectly invest in financial assets, e.g. through their mandatory occupational pension.

Second, we want to investigate whether potential investors accept a higher cost associated to ethical products (i.e. lower return or higher risk) or are just driven by the possibility of a higher return and see SRI as a good investment “niche” in the market. To this end, in the stated choice questions, two possible products are proposed: the first offers a lower monetary return due to the donation component, the second compensates more for the social choice, albeit with a non-monetary (in-kind) compensation. Our hypothetical investment opportunities thus make the (expected) return penalty very explicit, making it possible to disentangle preferences from individuals' return expectations.

Our results are important for a large and diversified set of investors. Indeed consumer preferences for SRI are not only relevant for households who directly invest in financial markets. In the Netherlands and

other countries with fully funded pensions, most individuals and households save through mandatory participation in an occupational pension fund. This makes the Netherlands one of the biggest countries in Europe in terms of pension fund assets (OECD, 2015). Most of these pensions are of a defined benefit nature, where the pension fund decides how participants' retirement savings are invested. Recent reform plans, however, tend towards increasing choice opportunities for participants, and one of the issues that has come up in this context is to give participants a say in the extent to which their pension savings will be invested in socially responsible products (De Beer et al., 2014). This raises the question how private households, including those who do not hold any discretionary financial savings, would prefer to invest their mandatory pension savings. An even further reaching freedom of choice option considered in the reform plans is that individuals can choose their own pension fund. In this case also, consumer preferences for SRI are relevant, since investing in SRI may attract or alienate certain groups of participants. Even if pension fund participants cannot make any individual choices, pension funds are concerned about how they are evaluated and trusted by their participants (Van Dalen and Henkens, 2017), and their investment strategy may be one of the determinants of this. Accordingly, many Dutch pension funds already have a sustainable investment strategy, and the importance of sustainability is growing over time (DNB, 2016).

Furthermore, if socially responsible investors accept to sacrifice returns, the result can be interesting for mutual funds and corporations in terms of lowering the cost of capital. At the same time, the profiling of a socially responsible investor can be used to expand the participation in financial markets of certain types of households.

To our knowledge, this research constitutes the first such analysis carried out on a representative sample of private households. Our results show that social investors are willing to pay a price to be socially responsible rather than needing a little nudge, such as an in-kind compensation. The appeal of SRI is lower if there is an in-kind benefit associated to the product that comes with a small reduction in the financial return. Moreover, SRI investors show little sensitivity to the magnitude of the return penalty

(measured as lower interest rate), suggesting that SR investment decisions are mainly driven by non-monetary factors. Our analysis consistently identifies highly educated individuals as a group with a substantial latent demand that is currently unexploited. This is not related to financial literacy: keeping education constant, individuals who consider themselves financially literate are less interested in SR products than others, both at the extensive and at the intensive margin. When asked how much to invest in an SR product rather than in a traditional fund, about 45 percent of the investors would split their allocations and 12 percent would invest in SR funds only. In contrast with the decision at the extensive margin, this decision at the intensive margin is sensitive to the return penalty on the (hypothetical) SRI fund. Moreover, we find that individuals who already have SR investments are more interested in the proposed new SR investments than others, thus representing a “warm list” (Landry et al., 2006).

The remainder of this paper is organized as follows. Section 2 reviews the relevant literature on SRI. Section 3 illustrates the data and the set-up of the experimental module, while Section 4 provides descriptive analyses of actual and stated preferences. Section 5 presents the empirical results of regression models explaining actual and stated choice behaviors. Section 6 draws conclusions and indicates potential topics for further research.

2. Conceptual Background and Literature Review

The literature on SRI has been growing at a very quick pace since the early 2000s. Focusing on the personal finance perspective, the academic literature addresses a few related questions: why do households invest in SRI? How do SRI assets perform in comparison to conventional ones? What is the typical profile of an SR investor?²

² Other studies take the firms’ viewpoint and look at advantages/disadvantages of adopting corporate social responsibility in terms of cost of capital (El Ghoul et al., 2011), cost of debt (Goss and Roberts, 2011), shareholders’ wealth (Krüger, 2015). Bénabou and Tirole (2010) provide instead a first attempt to give an economic framework on individual and corporate social responsibility.

Several studies aim to answer the question “why to invest socially” and look at motivations for SR investments. The answers rest on a theoretical framework where the individual’s utility function depends on both wealth and non-wealth returns, the latter capturing the socially responsible dimensions of the decision. For example, Bollen (2007) tests whether differences in behavior exist between investors in SR mutual funds and investors in conventional funds. Results on the dynamics of cash flows in SR mutual funds are consistent with a multi-attribute utility function, with investors not only looking at the risk-return trade-off, but also getting direct utility from the socially responsible attributes of the funds, the so-called intrinsic motivation, the value of giving *per se* (Ariely et al., 2009).

Similarly, Beal et al. (2005) provide three non-exhaustive and non-exclusive motivations for ethical investments: superior financial returns (consistently with traditional finance theory), non-wealth returns, and social change. Glac (2009) uses lab experiments to underscore that the decision frame influences the likelihood of engagement in SRI. In the same spirit, Døskeland and Pedersen (2016), based upon the theoretical model of utility of wealth and morality by Levitt and List (2007), use a natural field experiment to show that wealth framing is more effective than moral framing in inducing investors to engage in SRI. Pasewark and Riley (2010) utilize an experimental approach to determine the effects of values on an investment decision: they ask individuals to choose between bonds issued by a tobacco company or by a firm outside the tobacco industry. They conclude that personal values of the investor affect investment decisions.

A related question concerns the historical performance of SRI compared to conventional funds, and hence the potential existence of an “ethical penalty”. In fact, in the real market some policymakers and academics argue that there is no trade-off between doing well and doing good whereas others have previously found that social responsibility does have implications for the expected returns (e.g. Hong and Kacperczyk, 2009). For example, Renneboog et al. (2008) find that SRI funds in European, North-American and Asia-Pacific countries underperform compared to conventional ones and conclude from

this that the SRI investors pay a price for their socially responsible choice. In contrast, Bauer et al. (2005), using a database of German, UK and US ethical mutual funds, do not find significant differences in risk-adjusted returns between ethical and conventional funds. Gil-Bazo et al. (2010) even find that US SRI funds outperformed conventional ones in the period 1997-2005.

Renneboog et al. (2008) review the literature on SRI and emphasize that existing studies hint at but do not univocally prove the willingness of agents to accept a lower return in exchange for social or ethical goals. Benson and Humphrey (2008) analyze the investors' behavior and find that SRI fund flows are less sensitive to returns than conventional funds, and more persistent, thus pointing out the difficulty faced by SRI investors in finding alternative investments that meet their non-financial goals. Riedl and Smeets (2017) highlight social preferences as the main driver of investing in SRI, despite expecting a lower return, suggesting that there is a long run effect on asset prices.

A third strand of the literature aims to identify the SRI investor's profile empirically. Bauer and Smeets (2015) use survey data from retail clients of the only two banks in the Netherlands that exclusively offer SRI and find high levels of social identification among young, highly-educated and low-wealth investors, thus supporting the profiling of socially responsible investors by Junkus and Berry (2010). The roles of gender and education are also highlighted in Nilsson (2008), who further shows that social investors are not only driven by altruistic motives, but also by the idea that ethical mutual funds have an average or better than average performance. Hood et al. (2014) have recently looked at heterogeneities among socially conscious investors, emphasizing the different preferences for social investments across gender, age, religion and groups with different political affiliation.³

Our paper adds to the empirical literature on SRI by investigating whether SRI investors are indeed willing to pay for their social financial product with a lower interest rate or expected return, or whether they want to be compensated, somehow, for the monetary loss they incur compared to the traditional

³ For less recent papers on the issue, see, among others, Rosen et al. (1991), McLachlan and Gardner (2004), Williams (2007).

investment. In this way, we identify whether the traditional drivers for SRI are the same for “pure” social investors versus SRI investors with compensation.

3. Data and Set up of the Experimental Module

Our data have been collected through an Internet survey among participants of the CentERpanel, run by CentERdata at Tilburg University. CentERdata is a survey research institute that is specialized in data collection and internet surveys. The CentERpanel consists of about 2,000 households. It is based upon a random probability sample representative of the Dutch population; households without Internet access are provided with the necessary equipment so that they can still participate. Participating household members aged 16 or more are invited to complete short questionnaires on a weekly basis, although some questionnaires focus only on certain individuals such as the household head or the financially most knowledgeable household member.⁴ The response rate at the individual level is usually above 70%.

Annually, panel members provide detailed information for the DNB Household Survey (DHS), supplying researchers with a rich set of background information on many domains of the respondents' lives. These data contain information on individual characteristics, employment, pensions, living conditions, household financial and housing wealth, mortgages, income, assets, loans, health, and economic and psychological concepts. Although the panel is based upon a random sample, unit nonresponse and selective attrition imply that some groups are somewhat better represented than others. In particular, participation is positively associated with higher socio-economic status. CentERdata provides weights based upon education, income, gender and age that can be used to correct for this in the analysis. Additional information about the dataset can be found in Teppa and Vis (2012) and CentERdata (2015). Teppa and Vis (2012) also discuss the pros and cons of self-administered surveys.

Our survey on SRI was conducted in May 2016. All members of the CentERpanel aged 18 or more received the questionnaire. In total, 2,888 individuals were invited for the survey. An initial question singled out respondents without any financial accounts or involvement in their household's finances (7.2% of the sample), who did not get any further questions on their actual financial assets, but did

⁴ Participants receive a small monetary compensation for filling in the questionnaires.

receive the stated preference questions. The others got all questions about actual and hypothetical socially responsible investments and crowdfunding.⁵ To keep the analysis coherent, we focus on the subsample who also answered the actual SRI ownership questions. Moreover, we control for household financial wealth which is taken from the DNB Household Survey module administered at a different point in time. We drop 255 respondents for whom the information on financial wealth was not available. Using the sample weights for selection into the CentERpanel and, for actual SR investing, combining these with the inverse probability weights for selection into the actual ownership question, we constructed weights to make our descriptive statistics population representative. More details on the experimental module and the original questionnaire are provided in Appendix A.

The first part of the survey contained questions about actual financial behavior, while in the second part individuals were asked to express their preferred choices among different investment possibilities for a hypothetical inheritance that needs to be invested for the fixed time horizon of one year. The first of these questions (Q5 in the questionnaire), asks individuals whether they would allocate the inheritance to a savings account at a traditional bank, at an SR bank offering a lower return, or at an SR bank giving a *deluxe* edition of a book as a gift to new clients, but offering a lower return. In the second question (Q6), respondents could choose among three options: (i) a savings accounts at a traditional bank; (ii) an account at an SR bank offering a lower return but specifically investing part of the return on children vaccination in Africa or in microcredit to women in developing countries, or (iii) an account at an SR bank giving new customers a voucher allowing them to participate in cultural activities, but also offering a lower return.⁶

In the third question (Q7), individuals were explicitly asked what percentages of the inheritance they would allocate to saving accounts at a traditional bank and at an SR bank offering a lower return but investing part of the return in children vaccination in Africa or microcredit to women in developing

⁵ Questions Q4, Q9 and Q10 in our survey referred to crowdfunding and are not analyzed in the current paper.

⁶ Option (ii) is in line with Berry and Junkus (2013), who claimed that investors prefer to reward positive social behavior rather than exclude firms based on their products or activities.

countries. Finally, in the fourth question (Q8) the choice was between a mutual fund linked to the AEX (Amsterdam Stock Exchange) Index, an SR mutual fund offering a lower expected return, and an SR mutual fund giving a book to new clients, but offering an even lower expected return.

Several randomizations are incorporated in the questionnaire to investigate the willingness to pay for certain features of the socially responsible choice options. In particular, for half of the sample the hypothetical inheritance amounted to €5,000, while for the other half the level was €10,000. Moreover, the expected return and other specifics of the available financial investments were randomized.

The experimental design of the stated preference questions rules out the non-investment option, reflecting the mandatory pension savings features. Indeed, we are also interested in the SRI preferences of individuals who do not directly want to participate in financial markets or do not even have any discretionary financial wealth since, as explained in the introduction, we are also interested in indirect SRI investments through, for example, mandatory occupational pensions.

4. Actual and Stated Behavior: Descriptive Analysis

As a starting point for our analysis we look at actual behavior (questions Q1-Q2). Only 8.5% of the respondents in the estimation sample have investments in socially responsible funds. Accounting for the underrepresentation of high socioeconomic status individuals, this leads to an estimated participation rate among all Dutch individuals of age 16 and older of 8.1%.

The most frequently reported reason for participating (question Q2), is to contribute to improving society (more than 60% of SRI investors). The other reasons are less common. Still, for 37.5% of SR investors (one of) the motivation(s) is that they have more confidence in SR banks than in traditional banks. Moreover, 27.8% of SR investors mention the tax-favored nature of these products. Indeed, up to a maximum amount of approximately €57,000 per person, a small set of specific SR mutual funds are exempt from the tax that applies to other financial assets above a threshold of €21,330 per person (in 2015), and in addition even lead to a tax reduction, implying an advantage in the after tax return of

between 0.7 and 1.9 percentage points. For some households, this can make investing in these assets attractive from a purely financial view if the expected difference in gross returns between traditional investments and these specific SRI products is small enough. In addition, 24% report that they expect better returns than for traditional products, possibly already taking account of the tax advantage. Finally, only 3.4% (7 respondents) say they responded to some special offer. Among non-SR-investors, the most frequently reported reason for not investing in SR assets is that these mutual funds are not liquid (47.5%), or that respondents lack money to save or invest (34.8%). Fewer respondents are discouraged by the low returns or high costs (11.1%) or want to invest only in traditional banks with an investment strategy that considers expected return and risk only (14.5%). Furthermore, almost 10% of the respondents who does not have any SR assets says that they should make this kind of investment but has not yet gotten to actually doing this. This is a form of procrastination. It suggests that there is a latent demand for more SRI investments, something that we will also find when analyzing the stated preferences.⁷

Table 1 presents some descriptive statistics on background variables that will also be included in multivariate regressions below. We use a number of basic demographic and socio-economic characteristics, including dummy variables for different levels and types of the respondent's education (general or vocational).⁸ Moreover, to investigate how preferences for SRI relate to financial literacy, we merged our data with another module administered to the same panel to construct dummies for different levels of self-assessed financial literacy ("How knowledgeable do you consider yourself with respect to financial matters?"), on a scale 1 (not knowledgeable), 2 (more or less knowledgeable), 3 (knowledgeable) or 4 (very knowledgeable).⁹ The omitted category dummy is for the answer "more or less knowledgeable", given by more than half of the respondents.

⁷ Intentions are the best predictors of actual choices, albeit not the only ones (Sheeran 2002).

⁸ We also used dummies for lower and intermediate vocational levels, but these were never significant in any of the regressions. We therefore merged these levels with the basic education level.

⁹ For approximately 75% of the sample, we also have an objective measure of financial literacy, based upon the three financial literacy questions of Lusardi and Mitchell (2011). Because of the loss of observations and precision, we present the results using the subjective measure. Results using the objective measure of financial literacy are presented in the Appendix.

Table 1. Summary statistics of the independent variables; estimation sample

The table shows weighted summary statistics for the whole sample (column 1), unweighted summary statistics for the whole sample (column 2) and for sub-samples of SRI owners (column 3) and non-SRI owners (column 4), and differences in means between the latter two cases. Children in the household is a dummy for the presence of children; Urban is a dummy for living in an urbanized area. Financial wealth is based upon detailed questions on 16 different financial assets at the household level, taken from the DNB Household Survey. Log(Individual Income) and Log(Financial Wealth) are set to zero if individual income / financial wealth is non-positive. The first column uses sample weights, correcting for inclusion the sample, other columns are not weighted. The final column gives the p-values for two-tailed t-tests on equal means among SRI owners and non-owners.

Variable	Weighted		Unweighted			Two-tailed p-value	
	All		All	SRI owners	Non- SRI- owners		Difference in means
	(1)	(2)	(3)	(4)	(3) - (4)		
	N=1807	N=1807	N=153	N=1654	N=1807		
	Mean	SD	Mean	Mean	Mean		
Female	0.485	0.500	0.455	0.418	0.459	0.335	
Age	54.26	16.44	55.04	61.28	54.47	0.000	
Educ.intermediate general	0.108	0.311	0.107	0.092	0.108	0.522	
Edu.higher vocational	0.243	0.429	0.261	0.340	0.254	0.021	
Educ.university level	0.147	0.354	0.148	0.248	0.138	0.000	
Subj.financial literacy: level 1	0.141	0.349	0.119	0.078	0.123	0.106	
Subj.financial literacy: level 3	0.259	0.438	0.273	0.359	0.265	0.013	
Subj.financial literacy: level 4	0.041	0.189	0.045	0.033	0.046	0.448	
Working	0.496	0.500	0.495	0.431	0.501	0.110	
Married/living together	0.726	0.446	0.729	0.719	0.730	0.762	
Children in the household	0.323	0.468	0.314	0.235	0.321	0.029	
Urban	0.428	0.495	0.401	0.438	0.398	0.333	
Log(Individual Income)	6.825	1.978	6.962	7.316	6.930	0.011	
Log(Financial Wealth)	8.308	3.314	8.717	10.085	8.591	0.000	

Columns 1 and 2 compare weighted and unweighted sample means,¹⁰ showing that non-participation in the survey results in an under-representation of households with low income or low financial wealth. For the other variables, weighting hardly affects the means. The other columns compare (unweighted) means among SRI owners and non-owners, with the final column presenting the p-values for the tests of equal means. There are several significant differences. SRI-owners are older, higher educated, and consider themselves more financially literate than non-owners. They less often have children living in their household and have higher income and higher financial wealth. Turning to stated preferences, the answers to question Q6 show that 33% of the respondents would opt for a saving account at a bank investing in SR companies instead of a more traditional bank.¹¹ More than 43% of the respondents (46% among females) would prefer an ethical mutual fund over a traditional one linked to the AEX Index (question Q8).¹²

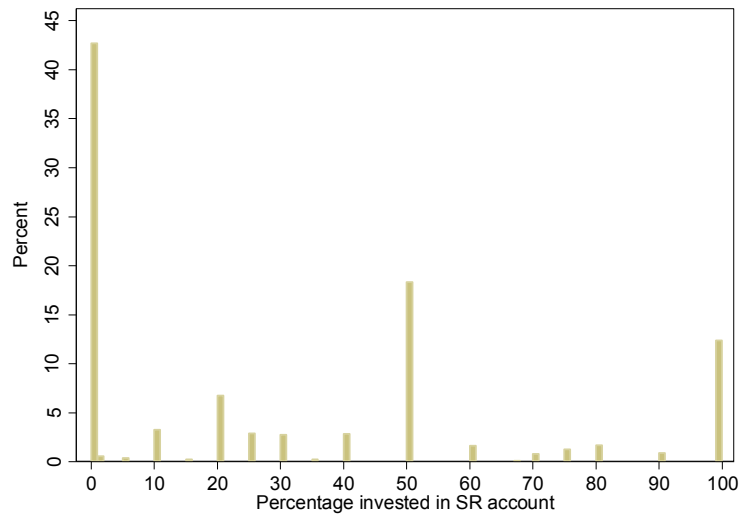
Question Q7 considers the intensity of the potential investment in an SR savings account. People are asked to allocate the hypothetical inheritance between savings accounts in a traditional bank and an SR one. As shown in Figure 1, which is based on sample weights to make the distribution representative of the population, we can see different peaks. The relative majority of the Dutch adult population (42.7%) would choose to put everything in the traditional bank and 12.2% would assign the whole amount to an SRI bank. The remaining 45.1% would diversify between the two assets. It is remarkable that 19% would allocate more than 50% to the SR account, particularly if we consider that the question explicitly states that the savings account at the SR bank offers a lower return. Last but not least, there is a peak at 50 (18.3%), which may (partly) be due to the well-known $1/n$ heuristic in behavioral finance (Benartzi and Thaler, 2007).

¹⁰ As discussed in Section 3, the weights used to obtain the descriptive statistics in Table 1 combine the weights provided by the survey agency that make the panel representative for the Dutch adult population in terms of income, age, gender and education, with inverse probability weights for participation in this specific module.

¹¹ Here we have combined the second option, SR investments for vaccinations/ microcredit, and the third one, SR investments plus voucher.

¹² The second option, SR mutual fund, and the third one, SR plus book, have been combined here.

Figure 1. Distribution of percentage that individuals want to invest in the SRI option (question Q7).



Source: CentERpanel, estimation sample. Distribution based on sample weights.

Table 2 shows the association between the actual decision to invest in SRI (question Q1 in Appendix A) and the stated preference question on the choice between traditional and SR mutual funds (question Q8). As might be expected, actual SRI investors also exhibit higher stated preferences for SRI. Indeed, 41% of the respondents who actually do not hold any SR assets choose one of the SRI investments in the SP question, compared to 66% of the respondents who do own SR assets. This confirms that stated preferences have some value for predicting differences in actual behavior, in line with earlier studies in many domains (see, e.g., Whitehead et al. 2008). Understandably, the correlation is far from perfect. For example, actual SRI investors may find the specific products offered in the SP questions unattractive, and respondents who choose an SR product in the SP question may not be interested in private investment at all.

Table 2. Proportions investing in traditional, SRI, or SRI with in-kind compensation by actual SRI ownership; estimation sample

Each cell of the table presents the sample fraction of those who made the given choice in the SP question Q8. “Low” and “High” refer to the randomized expected return of the SR options, which were always the same for the two SR options.

Source: CentERpanel, estimation sample.

Actual SRI ownership	Choice in SP question on mutual funds (Q8)	Expected return SRI products (randomized)		
		Low	High	Total
Not owning SRI	Traditional	0.59	0.59	0.59
	Pure SRI	0.31	0.30	0.31
	SRI & In-kind	0.10	0.11	0.10
Owning SRI	Traditional	0.39	0.30	0.35
	Pure SRI	0.55	0.54	0.55
	SRI & In-kind	0.05	0.16	0.11
Total	Traditional	0.57	0.56	0.57
	Pure SRI	0.33	0.32	0.33
	SRI & In-kind	0.09	0.11	0.10

In question Q8 we randomly varied the (negative) difference in expected return between the SR options and the traditional mutual fund. Table 2 shows that a higher expected return (or a smaller difference compared to the traditional investment) increases the tendency to choose the SRI options. The effect is rather small, except in one case: actual SRI investors choose much more often the product with an in-kind gift in case of the higher expected return (16% versus 5%).

Finally, it is clear from Table 2 that interest in the in-kind gift was limited. Indeed, only 10% of all respondents selected the last option (SRI and in-kind), with little difference between SRI owners and non-owners. Similar results are found for the choice between a traditional bank and an SR bank (question Q6).

This is in line with the low interest found by Levin et al. (2016) when they tried to increase donations to a university by giving away signed copies of *Superfreakonomics*.

5. Multivariate analysis

5.1 SRI versus Traditional Investments

The results of the previous section suggest that more people have a potential interest in SR investing than actual ownership rates suggest. The aim of this section is to analyze how actual and stated preferences for SRI are associated with characteristics of the respondents and their households.¹³ Variable explanations and summary statistics of these explanatory variables were already presented in Table 1. Moreover, since we are particularly interested in differences between actual and stated ownership of SRI assets, we control for actual ownership in the stated choice models.¹⁴

Table 3 presents the results from models for actual and stated SRI choices. In order to compare the socially responsible vs. the traditional investor, we always combine the two SRI options in the SP questions (the second and the third option in each question) and use binary choice probit models, with outcome $y=1$ for an SR choice and $y=0$ otherwise.¹⁵

¹³ It might be interesting to also consider the correlations with other variables that refer to social preferences, such as those used in Whitehead et al. (2008). They also use data from the CentERpanel, but due to the time difference, the overlap between the two samples will be very small.

¹⁴ Not controlling for actual SRI ownership qualitatively gives similar results for all the other explanatory variables; results are available upon request.

¹⁵ We dropped several variables in Table 1 from the regressions since they were never significant. In particular, we found no significant differences between the two lower education levels or the two lower financial literacy levels, and found no significant effects of employment status or family composition.

Table 3: Participation in social investments. Probit models.

The table shows average marginal effects with standard errors in parentheses clustered at the household level. See Appendix A for the exact wording of the questions Q1, Q5, Q6 and Q8. Column 1 reports results for respondents reporting they had SRI (y=1) or not (y=0); Columns 2 – 4 report results for respondents choosing SRI option (y=1) or not (y=0). The marginal effect on age combines the linear and the quadratic effect.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: CentERpanel.

	(1) Actual (Q1)	(2) Stated Banks (Q5)	(3) Stated Banks (Q6)	(4) Stated Stocks (Q8)
Female	0.022 [*] (0.013)	-0.011 (0.021)	0.013 (0.022)	0.046 [*] (0.024)
Age	0.002 ^{***} (0.000)	0.001 ^{**} (0.001)	-0.000 (0.001)	0.003 ^{***} (0.001)
Educ. higher vocational	0.048 ^{***} (0.016)	0.138 ^{***} (0.023)	0.177 ^{***} (0.025)	0.145 ^{***} (0.027)
Educ. university level	0.083 ^{***} (0.019)	0.221 ^{***} (0.027)	0.236 ^{***} (0.030)	0.187 ^{***} (0.035)
Subj. financial literacy: level 3	0.022 (0.015)	-0.064 ^{***} (0.022)	-0.023 (0.024)	-0.090 ^{***} (0.026)
Subj. financial literacy: level 4	-0.013 (0.034)	-0.109 ^{**} (0.053)	-0.098 [*] (0.056)	-0.190 ^{***} (0.060)
Urban	0.018 (0.014)	0.059 ^{***} (0.020)	0.038 [*] (0.022)	0.084 ^{***} (0.024)
Log(Individual Income)	0.005 (0.005)	-0.007 (0.006)	0.002 (0.006)	-0.005 (0.007)
Log(Househ. Fin. wealth)	0.010 ^{***} (0.004)	-0.003 (0.003)	0.000 (0.004)	0.002 (0.004)
Inheritance 10K		0.007 (0.019)	0.023 (0.021)	0.016 (0.023)
High int. rate SR acc. option 2		-0.005 (0.019)	0.057 ^{***} (0.021)	
High int. rate SR acc. option 3		0.056 ^{***} (0.019)	0.008 (0.021)	
High value of Wildlife book		-0.024 (0.019)		
Investment in micro-credits			-0.019 (0.021)	
High voucher value			0.002 (0.021)	
Higher expected return SR funds				0.020 (0.023)
Has SR investments		0.220 ^{***} (0.031)	0.260 ^{***} (0.037)	0.190 ^{***} (0.044)
Observations	1807	1796	1795	1778

The first column in Table 3 explains actual behavior, i.e., whether someone has SR investments ($y=1$) or not ($y=0$; question Q1). The other columns all focus on the stated preferences. In particular, for the second column the choice was between savings accounts in a traditional bank ($y=0$) or an SR bank ($y=1$; question Q5). The same has been done in the third column (question Q6), where it was clearly specified in which projects the SR bank would invest part of the return (vaccinations in Africa or microcredit). The final column (column 4) looks at risky investments: here the choice was between a mutual fund linked to the AEX ($y=0$) and an ethical mutual fund ($y=1$; question Q8). The table presents average marginal effects on the probability to hold SR assets or choose the SR option.

The most persistent result concerns education: individuals with university education are 8.3 percentage points more likely to invest in SR assets than low educated respondents with the same other characteristics. Moreover, in the SP questions, they have an about 22-24 percentage points higher chance of selecting an SR bank (Q5 and Q6), and they are almost 19 percentage points more likely to allocate the hypothetical inheritance to an ethical rather than a traditional mutual fund (Q8). Individuals with higher vocational training also show significantly more interest in SR products than the lower educated, but not as much as respondents who went to university. These results particularly point at a higher potential demand for SR products among the higher educated.

The gender difference in the actual SR ownership rate is insignificant at the 5% level, and there is no significant gender difference in the stated interest in socially responsible saving accounts either. Nevertheless, women are substantially (4.6 percentage points) more likely to choose one of the ethical mutual funds rather than the AEX fund. This is consistent with Dellavigna et al. (2013), who found that women may give more under some circumstances, but not in other situations.

Keeping education and other individual characteristics constant, actual SR ownership is not significantly related to our subjective measure of financial literacy. On the other hand, stated interest in the

hypothetical SR products is negatively associated with self-assessed financial literacy. The pattern is monotonic and the financial literacy dummies are always jointly significant. One interpretation is that the hypothetical products in our questionnaire make the return penalty very explicit and financially literate individuals have a better understanding of the economic consequences of this lower return. On the other hand, self-assessed financial literacy may not only reflect literacy but also (too much) self-confidence in terms of financial matters (Anderson et al., 2017) and over-confidence may lead to too much emphasis on the salient return penalty.

To disentangle these two explanations, we ran the same regressions with an objective measure of financial literacy, based upon the three financial literacy questions of Lusardi and Mitchell (2011). These questions were not administered at a different point in time to a large subsample of our estimation sample (1464 out of the 1807 observations). The results are presented in Appendix Table B1. They show that the negative association between stated SRI interest and financial literacy disappears when the objective measure is used. Instead, the pattern becomes non-monotonic and varies with which SP question is considered. This all suggests that the second explanation is relevant, with self-assessed financial literacy possibly reflecting self-confidence in financial matters. An alternative explanation could be that the three questions used to assess objective financial literacy (referring to inflation, compound interest and risk diversification) do not capture the full set of skills needed for investing in SRI products. This could imply that knowledge of what would represent a good SRI product may not be correlated with the indicator used for financial literacy. Moreover, the association between actual ownership and objective financial literacy is positive, which may mean that more sophisticated investors hold a more blended portfolio, incorporating a social return, and benefit from potential tax advantages.¹⁶

Respondents in urban areas show a larger stated interest in some of the SRI products than others, while they do not actually hold SRI assets more often. Income is not significant for either actual or stated

¹⁶ Although (objective and subjective) financial literacy and education are strongly positively related, additional results show that they have their own effects: dropping financial literacy does not substantially change the estimated education effects and vice versa. Moreover, an interaction term of higher education with higher financial literacy was never significant. Details are available upon request.

interest in SRI products. Actual SRI ownership is positively associated with household financial wealth, in line with tax incentives and the notion that more financial wealth incentivizes diversification. Stated interest in SRI, however, is not significantly related to financial wealth, perhaps because the SP questions force respondents to invest a given amount for a given fixed term.¹⁷

The stated preference questions were designed with specific randomizations. Our results show that doubling the amount of the hypothetical inheritance from €5000 to €10,000 (the dummy “inheritance 10K”) does not significantly influence the stated choice. On the other hand, the interest rates of the SR options (“higher SR interest rate”) are significantly positive in two cases. This is remarkable, since in terms of annual interest amounts, the differences are modest (e.g., 50 versus 75 euros in option 3 for question Q5 in case of the €10,000 inheritance). In case of Q6 (column 3), this means that respondents were more likely to select the SR bank when this bank invested only 20% rather than 40% of the returns in social projects. This result is important to understand how much investors are willing to sacrifice for social responsibility and is in line with Barreda-Tarrazona et al. (2011). On the other hand, the expected return differential between the two SR mutual funds and the traditional mutual fund in the SP question on risky assets has the expected sign but is not significant (“Higher expected return on SR fund”). Similarly, we find no significant effect of the value of the in-kind gift (question Q5) or the nature of the investment project for which the SR investment is used (microloans or vaccinations; question Q6).¹⁸

In the models for the SP choices, we also include a dummy variable indicating whether the respondent’s household had actually invested in SR activities. The coefficient of this variable is positive and very

¹⁷ All these results remain essentially the same if we do not control for actual SRI ownership in the stated choice regressions (and/or use a larger estimation sample); details are available upon request.

¹⁸ We also estimated specifications where the (expected) return differentials were allowed to be different for high and low financial literacy respondents, based upon the notion that higher financial literacy implies better understanding of the consequences of a higher return and a larger response to the higher return. We found, however, no clear pattern and insignificant differences.

significant for all SP questions, showing that stated preferences are broadly consistent with the actual household decisions (revealed preferences).¹⁹

5.2 Heterogeneity in SR products

The analysis above did not distinguish between the two SR options offered in each of the questions. In question Q8 for example, choice option 2 just focused on the ethical nature of the SR investment, to be traded off against a (0.5 or 1.0%-points) lower expected return than the traditional investment. The other SR option (choice option 3) came with an in-kind gift, and an even lower expected return (0.6%-points or 1.2%-points lower than for the traditional investment). These two choice options could attract two different types of investors: the former would appeal to the purely social investor, while the latter might be a nudge for investors who do not only consider risk and return, but do not necessarily have a high social responsibility driver. In order to analyze the differences between the drivers of choosing the two SR options, we ran a multinomial probit on the choice among the three types of investments: traditional investment, “pure” SR investment (with expected return loss compared to the traditional investment) and SRI with in-kind gift (a book with value €40 or €60). The results are presented in Table 4.

The first question we want to answer using Table 4 is how sensitive SR investing is to the expected return. The choice for the pure SRI option is not significantly influenced by the (difference of its) expected return (compared to that of the traditional investment). On the other hand, the in-kind compensation option is chosen more often if its expected return is higher and this effect is marginally significant. We interpret this result as an indication that there are two different types of social investors, with different drivers. The purely SR investors consciously accept giving up some expected return and this does not diminish their interest in the SR product. These investors have a higher social interest

¹⁹ Not including the actual ownership decision (and/or also using observations for which actual ownership is not available) does not change the other qualitative results, though it leads to somewhat larger estimates of the effects of education. Details are available upon request.

overall. The fact that option 2 is chosen much more often than option 3 suggests that they constitute the majority of the investors with an interest in SR products. Another group of SR investors is, on the other hand, more similar to traditional investors. They choose for the SR option if they get an in-kind compensation, in this case a book. The latter group is responsive to the expected return, like traditional investors (column 3).

Table 4: Mutual fund choice (Q8) and Intensity of social investments (Q7).

The table reports in the first three columns the average marginal effects in a Multinomial probit model, where outcomes are the probability of a traditional investment (column 1), of a “pure” SR investment (column 2), and of a SR investment with in-kind gift (column 3). Column 4 reports average marginal effects of a Tobit model where the dependent variable is the stated percentage invested in SRI in Q7. Standard errors in parentheses, clustered at the household level. The marginal effect on age combines the linear and the quadratic effect.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: CentERpanel.

	Multinomial Probit			Tobit
	(1) Tradition al	(2) SR	(3) SR & In-kind	(4) Marginal effects
Female	-0.046* (0.024)	0.039* (0.023)	0.008 (0.015)	3.756** (1.650)
Age	-0.003*** (0.001)	0.002** (0.001)	0.001** (0.000)	0.143*** (0.054)
Educ. higher vocational	-0.145*** (0.027)	0.120*** (0.025)	0.025 (0.017)	9.371*** (1.957)
Educ. university level	-0.180*** (0.035)	0.187*** (0.032)	-0.007 (0.024)	17.043*** (2.669)
Subj. financial literacy: level 3	0.092*** (0.026)	-0.053** (0.025)	-0.039** (0.017)	-3.502* (1.876)
Subj. financial literacy: level 4	0.199*** (0.060)	-0.218*** (0.061)	0.019 (0.035)	-14.569*** (4.247)
Urban	-0.084*** (0.024)	0.087*** (0.022)	-0.002 (0.015)	3.479** (1.737)
Log(Individual Income)	0.003 (0.007)	0.006 (0.006)	-0.009** (0.004)	-0.035 (0.445)
Log(Househ. Fin. wealth)	-0.002 (0.004)	0.006 (0.004)	-0.004 (0.002)	0.060 (0.252)
Inheritance 10K	-0.016 (0.023)	0.031 (0.022)	-0.015 (0.014)	1.945 (1.607)
Higher expected return SR funds	-0.020 (0.023)	-0.004 (0.022)	0.024 (0.015)	5.711*** (1.615)

Has SR investments	-0.185*** (0.044)	0.170*** (0.040)	0.016 (0.027)	19.541*** (2.777)
Investment in micro-credits				-0.543 (1.636)
Observations		1778		1786

The other results are in line with Table 3 and show that gender, education, subjective financial literacy, and actual ownership of SR assets are all associated with the choice between the traditional mutual fund and the pure SR fund, but not with choosing the SR fund combined with the in-kind gift.²⁰ It suggests that there is another personal trait, unrelated to these observed individual characteristics, that drives whether individuals can be nudged by such a gift.

5.3 SR Investing at the intensive margin

Following Dorfleitner and Nguyen (2016), we not only consider whether individuals are interested in SR investments, but also how much they are willing to allocate to these. This is addressed using stated preference question Q7, asking for the percentage of the inheritance that respondents would deposit in a savings account at a SR bank rather than at a traditional bank (providing a higher interest rate). See Figure 1 in the previous section for the distribution of the share of the total inheritance that respondents chose to invest in the SR option. The average share was 30%, while the median was 20%. To account for the censored nature of this share, we use a Tobit model. Results are presented in the latter column of Table 4 reporting the average marginal effects on the censored variable (the actual share).

As in the previous section, the pivotal regressor is education: individuals who completed university education were willing to allocate approximately 17 percent of their inheritance more to the SR bank than respondents with low educational achievement, keeping other background variables and actual

²⁰ Replacing subjective by objective financial literacy weakens the estimated relation between SRI choice and financial literacy, but it remains negative and marginally significant, in line with Table B1. See Table B2 (columns 1-3).

participation in SRI constant. Individuals with higher vocational training also invest significantly more in the SR account than their lower educated counterparts, but less than those with university education.

Self-assessed financial literacy is negatively associated with the fraction in the SR account, in line with the results in the choice questions. In particular, respondent who consider themselves very knowledgeable in financial matters tend to allocate much lower amounts to the SR account than the other groups. Appendix Table B2, however, shows that this pattern is no longer significant (and non-monotonic) if an objective measure of financial literacy is used instead, suggesting that the relation with subjective financial literacy mainly reflects a negative association between stated interest in SRI and self-confidence in financial matters. This is the same conclusion that was drawn from Tables 3 and B1.²¹

In line with the results in Table 3, older people and those living in urban areas are inclined to invest more in the SR account than others, while income and household financial wealth are not significant. Gender did not play a role in the choice question, but it matters more at the intensive margin: females tend to allocate almost 4 pp more to the SR option than males, *ceteris paribus*.

As we can see from the coefficient of “Inheritance 10K”, the amount to be invested (that is, the size of the inheritance) does not have a significant effect on the share invested in the SR account. Similarly to the findings in Aretz and Kube (2013), respondents also appear to be insensitive to the nature of the project in which the bank invests their money: whether this is vaccination for children in Africa or microloans for women in developing countries does not matter significantly.

Respondents are willing to accept a lower interest rate for SR investments, but they do respond to the size of the difference: On average, they invest between almost 6% more of their total inheritance in the SR account if they receive an annual interest rate of 0.8% instead of 0.6%. (The traditional bank offers an interest rate of 1% per year.)

²¹ We ran additional regressions including both subjective and objective literacy. The results (available upon request) for objective financial literacy hardly change; those for subjective financial literacy change somewhat more, but the conclusion remains the same: stated interest in SRI is negatively associated with subjective financial literacy, but not with objective financial literacy.

In line with the earlier results, actual ownership of SR assets adds substantial predictive power for the stated allocation. Keeping all the other covariates constant, the predicted fraction of the inheritance allocated to the SR account is 19.5 pp higher for an actual SR assets owner than for a non-owner. This confirms, as for the choice questions, that stated preferences for SR are strongly positively associated with revealed preferences.²²

To analyze further what drives whether respondents invest in the traditional account only, in both accounts, or in the SR account only, we also estimated a multinomial probit model for the three outcomes 0, 1-99, and 100. In the multinomial probit model, diversified portfolios are treated as a separate outcome, with potentially other determinants than the 0 or 100 choice. The marginal effects for the three outcomes are presented in Table 5.

These results lead to some new insights. Table 4 already showed that women invest more in the SR fund than men, *ceteris paribus*. Table 5 shows that this is because women diversify rather than invest everything in the traditional account. They are not more likely than men to invest the complete inheritance in the SR fund. On the other hand, the result for the education variables is different: education does not affect the tendency to diversify, but university education (or, to a lesser extent, higher vocational training) increases the chances to invest everything in the SR fund at the cost of the chances to invest everything in the traditional fund. High subjective financial literacy is associated with a larger probability to invest everything traditionally, at the cost of both a diversified portfolio and investing in the SR fund only. A higher interest rate on the SR account does not affect the probability of a diversified choice, but it does increase 100% SR investments at the cost of 0% SR investments. Interestingly, if the amount to be

²² Not including actual ownership (and using more observations) hardly changes the other estimates. Details are available upon request.

invested is €10,000 rather than €5,000, this increases the chances of diversifying at the cost of investing everything in the traditional fund.²³

²³ To investigate whether 50-50 allocations are really different, reflecting use of the 1/n rule or another behavioral feature, we also estimated a multinomial probit with 50-50 as a separate category (results available upon request). This shows that women and older respondents have a larger chance to choose 50-50, *ceteris paribus*. It does not change the conclusion that women have a larger tendency to diversify and choose a percentage between 1 and 99 other than 50. Some other marginal effects on the probability of diversification lose significance and none of the marginal effects on the probability of a 50-50 answer are insignificant.

Table 5: Multinomial Probit Intensive Margin (Q7)

The table reports in the first three columns the average marginal effects in a Multinomial probit model. Dependent variable is a categorical outcome based upon the percentage invested in SRI in Q7. Average marginal effects on the probabilities of the three outcomes. 1: 0% invested in SR funds (column 1); 2: 1-99% invested in SR funds (column 2); 3: 100% invested in SR funds (column 3). The marginal effect on age combines the linear and the quadratic effect.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: CentERpanel.

	(1) 0% SR	(2) 1% SR - 99% SR	(3) 100% SR
Female	-0.092*** (0.023)	0.102*** (0.024)	-0.010 (0.016)
Age	-0.002** (0.001)	0.002** (0.001)	0.000 (0.000)
Educ. higher vocational	-0.104*** (0.028)	0.051* (0.028)	0.053*** (0.018)
Educ. university level	-0.128*** (0.036)	-0.009 (0.036)	0.137*** (0.021)
Subj. financial literacy: level 3	0.046* (0.026)	-0.031 (0.027)	-0.015 (0.017)
Subj. financial literacy: level 4	0.167*** (0.057)	-0.059 (0.059)	-0.109** (0.049)
Urban	-0.025 (0.024)	-0.011 (0.025)	0.036** (0.015)
Log(Individual Income)	0.003 (0.007)	-0.008 (0.007)	0.004 (0.005)
Log(Househ. fin. wealth)	0.003 (0.004)	-0.007* (0.004)	0.004 (0.003)
Inheritance 10K	-0.050** (0.023)	0.054** (0.023)	-0.004 (0.015)
Higher interest rate SR account	-0.058** (0.023)	0.008 (0.023)	0.051*** (0.015)
Investment in micro-credits	-0.023 (0.023)	0.050** (0.023)	-0.027* (0.015)
Has SR investments	-0.224*** (0.045)	0.129*** (0.044)	0.095*** (0.022)
Observations		1786	

6. Conclusions

We analyze the potential market for a financial product with a social component for the entire Dutch population of adults, using a survey administered to a representative sample of the Dutch population. We aim to assess whether social investors are willing to pay a price in order to have a social investment in terms of lower interest or lower expected return, or whether they can be (partially) compensated with, for example, an in-kind gift. We investigate whether there is additional room for the development of the market in socially responsible financial products and identify the population segments more oriented to this market. Women, for example, could represent a potential market for risky SR investments, which has not been fully exploited yet. In line with Prast et al. (2015), alternative investment possibilities may increase women's participation in risky financial market products.

Our results show that social investors are willing to pay a price to be socially responsible rather than needing a little nudge, such as an in-kind compensation. Indeed, we detect two types of social investors: the pure social investors (the majority) do not look at the entity of the penalty and they invest socially tout court; these investors are willing to pay a penalty irrespective on its entity. A second group chooses social bonds or social stocks if associated with in-kind benefits. This group differs from pure social investors as they are sensitive to the return loss. We suggest that they are oriented to social products but only with a nudge, such as an in-kind benefit. The appeal of SRI is lower if there is an in-kind benefit associated to the product that comes with a small reduction of the financial return. Moreover, SRI investors show little sensitivity to the magnitude of the return penalty (measured as lower interest rate), suggesting that SR investment decisions are driven by non-monetary factors.

Our analysis consistently identifies highly educated individuals as a group with a substantial latent demand that has not yet been fully exploited. To give a sense of the amplitude of this potential market, we can start from the marginal effect of education computed in the Tobit estimates (Table 4, Column 2): respondents with tertiary education allocated 18.7 percentage points more to the SR saving account than low educated respondents.

In addition to this, we have also shown that individuals who already have SR investments are more interested in the proposed new SR investments. Therefore, as also stressed in Landry et al. (2006), these individuals represent a “warm list”, i.e. a large pool of active SR investors who can be contacted by SR financial institutions.

In line with Levin et al. (2016), we hope that this paper has also highlighted the benefits of partnering with academics in the analysis of potential new financial products and markets. Rigorous quantitative methods and innovative survey designs could help financial institutions targeting potential customers more efficiently and identifying which tools may (or may not) be used to attract these individuals.

Finally, our findings have implications for institutional investors like the Dutch occupational pension funds. They have an interest in investing the retirement savings of their participants in accordance with their participants’ preferences. Our results suggest that SRI investing should be seriously considered, particularly by pension funds with many highly educated participants.

References

- Anderson A, Baker F, Robinson D (2017) Precautionary savings, retirement planning and misperceptions of financial literacy, *Journal of Financial Economics*, 126(2), 383-398.
- Aretz B, Kube S (2013) Choosing your object of benevolence: A field experiment on donation options. *Scandinavian Journal of Economics*, 115(1): 62–73.
- Ariely D, Bracha A, Meier S (2009) Doing good or doing well? Image motivation and monetary incentives in behaving prosocially. *American Economic Review*, 99: 544–555.
- Barreda-Tarrazona I, Matallín-Sáez JC, Balaguer-Franch MR (2011) Measuring investors' socially responsible preferences in mutual funds. *Journal of Business Ethics*, 103(2): 305–330.
- Bauer R, Koedijk K, Otten R (2005) International evidence on ethical mutual fund performance and investment style. *Journal of Banking and Finance*, 29(7): 1751–1767.
- Bauer R, Smeets P (2015) Social identification and investment decisions. *Journal of Economic Behavior and Organization*, 117: 121–134.
- Beal DJ, Goyen M, Philips P (2005) Why do we invest ethically? *Journal of Investing*, 14(3): 66–78.
- Bénabou R, Tirole J (2010) Individual and corporate social responsibility. *Economica* 77(305): 1–19.
- Benartzi S, Thaler R (2007) Heuristics and biases in retirement savings behavior. *Journal of Economic Perspectives*, 21(3): 81–104.
- Benson KL, Humphrey JE (2008) Socially responsible investment funds: Investor reaction to current and past returns. *Journal of Banking and Finance*, 32(9): 1850–1859.
- Berry TC, Junkus JC (2013) Socially responsible investing: An investor perspective. *Journal of Business Ethics*, 112(4): 707–720.
- Bollen NPB (2007) Mutual fund attributes and investor behavior. *Journal of Financial and Quantitative Analysis*, 42(3): 683–708.
- Busch T, Bauer R, Orlitzky M (2016) Sustainable development and financial markets: Old paths and new avenues. *Business & Society*, 55(3), 303-309.
- CentERdata (2015) *DNB Household Survey 2015 - Codebook*, CentERdata, Tilburg

- De Beer P, De Deken J, Hollanders D, Kuiper S, Salverda W, Van der Zwan N (2014), Keuzevrijheid pensioen is risicovol, *Me Judice*, 18 December.
- Dellavigna S, List JA, Malmendier U, Rao G (2013) The importance of being marginal: Gender differences in generosity. *American Economic Review (Papers & Proceedings)*, 103(3): 586–590.
- DNB (2016), Duurzaam beleggen in de Nederlandse pensioensector, De Nederlandsche Bank, Amsterdam.
- Dorfleitner G, Nguyen M (2016) Which proportion of SR investments is enough? A survey-based approach. *Business Research*, 9(1):1–25.
- Døskeland T, Pedersen LJT (2016) Investing with brain or heart? A field experiment on responsible investment. *Management Science*, 62(6): 1632–1644.
- El Ghouli S, Guedhami O, Kwok CCY, Mishra DR (2011) Does corporate social responsibility affect the cost of capital? *Journal of Banking and Finance*, 35(9): 2388–2406.
- EU (2014), Directive 2014/95/EU, Directive of the European Parliament and of the Council of 22 October 2014 amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups, European Union, Brussels.
- Eurosif (2014) European SRI study, Eurosif, Brussels.
- Eurosif (2016) European SRI study, Eurosif, Brussels.
- Gil-Bazo J, Ruiz-Verdú P, Santos AAP (2010) The performance of socially responsible mutual funds: The role of fees and management companies. *Journal of Business Ethics*, 94(2): 243–263.
- Glac K (2009) Understanding socially responsible investing: The effect of decision frames and trade-off options. *Journal of Business Ethics*, 87(SUPPL. 1): 41–55.
- Goss A, Roberts GS (2011) The impact of corporate social responsibility on the cost of bank loans. *Journal of Banking and Finance*, 35(7): 1794–1810.
- Hong H, Kacperczyk M (2009) The price of sin: The effects of social norms on markets. *Journal of Financial Economics*, 93(1): 15–36.
- Hood M, Nofsinger JR, Varma A (2014) Conservation, discrimination, and salvation: Investors' social

- concerns in the stock market. *Journal of Financial Services Research*, 45(1): 5–37.
- Junkus JC, Berry TC (2010) The demographic profile of socially responsible investors. *Managerial Finance*, 36(6): 474–481.
- Krüger P (2015) Corporate goodness and shareholder wealth. *Journal of Financial Economics* 115(2): 304–329.
- Landry CE, Lange A, List JA, Price MK, Rupp NG (2006) Toward an understanding of the economics of charity: Evidence from a field experiment. *Quarterly Journal of Economics*, 121(2): 747–782.
- Levin T, Levitt SD, List JA (2016) A glimpse into the world of high capacity givers: Experimental evidence from a university capital campaign. *NBER Working Paper Series* No. 22099, NBER, Cambridge (MA).
- Levitt SD, List JA (2007) What do laboratory experiments measuring social preferences reveal about the real world? *Journal of Economic Perspectives*, 21(2): 153–174.
- Lusardi A, Mitchell O (2011). Financial literacy around the world: An overview, *Journal of Pension Economics and Finance*, 10: 497-508.
- McLachlan J, Gardner J (2004). A comparison of socially responsible and conventional investors. *Journal of Business Ethics*, 52(1): 11-25
- Nilsson J (2008) Investment with a conscience: Examining the impact of pro-social attitudes and perceived financial performance on socially responsible investment behavior. *Journal of Business Ethics*, 83(2): 307–325.
- OECD (2015), Pensions at a Glance 2015, OECD, Paris
- Pasewark WR, Riley ME (2010) It's a matter of principle: The role of personal values in investment decisions. *Journal of Business Ethics*, 93(2): 237–253.
- Prast H, Rossi M, Torricelli C, Sansone D (2015) Do women prefer pink? The effect of a gender stereotypical stock portfolio on investing decisions. *Politica Economica*, 3(December): 377–420.
- Renneboog L, Ter Horst J, Zhang C (2008) Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of Banking and Finance*, 32(9): 1723–1742.

- Riedl A, Smeets P (2017) Why do investors hold socially responsible mutual funds? *Journal of Finance*, 72(6): 2505-2550.
- Rosen, B N, Sandler, DM, Shani, D (1991) Social issues and socially responsible investment behavior: A preliminary empirical investigation. *Journal of Consumer Affairs*, 25(2): 221–234.
- Sheeran P (2002) Intention—Behavior relations: A conceptual and empirical review. *European Review of Social Psychology*, 12:1–36.
- Teppa F, Vis C (2012) The CentERpanel and the DNB Household Survey: Methodological aspects. *DNB Occasional Studies*, 10(4): 1–53.
- Van Dalen H, Henkens K (2017) The making and breaking of trust in pension providers, Netspar discussion paper 09/2017-015, Netspar, Tilburg
- Whitehead JC, Pattanayak SK, Van Houtven GL, Gelso BR (2008) Combining revealed and stated preference data to estimate the nonmarket value of ecological services: An assessment of the state of the science. *Journal of Economic Surveys*, 22(5): 872–908.
- Williams, G (2007) Some determinants of the socially responsible investment decision: A cross-country study. *Journal of Behavioral Finance*, 8(1): 43–57.

Appendix A – Details on the Survey and Questionnaire

The first round of data collection occurred between May 6th and May 10th 2016. Individuals who had not filled in the survey the first time received the questionnaire for the second time between May 13th and May 17th. The nonresponse rate was around 20%, which is in line with the usual response rate in these surveys. In particular, 574 (19.9%) individuals did not answer the questions. On the other hand, 2,250 (77.9%) individuals completed the task, while 64 (2.2%) individuals answered only some questions.

Turning to the feedback of respondents to the question, results show that individuals usually took around 5 minutes to complete the survey. In particular, among those who completed the survey, the median duration was around 4.7 minutes. Some individuals (around 5% of the relevant sample) took more than one hour to complete the task. In fact, it was possible to answer the questionnaire in more than one day. At the end of the questionnaire, as usual in the CentERpanel surveys, respondents are asked to give feedback. In particular, it is worth noticing that around 34% of the respondents found the topic interesting: on a scale from 1 (definitely not) to 5 (definitely yes), 21% reported 4, 13% reported 5. The percentages were higher among men than women (23% and 16% respectively). Around 35% of the respondent reported difficulties in answering the questions (20.3% reported 4, 14.8% reported 5). This percentage is higher among female individuals (42%) than among males (29%). Finally, it is reassuring that almost all of the respondents found the questions clear (Almost 90% reported 3, 4 or 5).

The following questions are part of the questionnaire designed for this paper (the whole survey is available upon request). Note that, in the Stated preferences section, several randomizations were included in the questionnaire. In particular, the *ARandom* dummy serve to assign to half of the sample the hypothetical inheritance amounted to €5,000, to the other half the level was €10,000 so as to asses the role of the amount of wealth to invest in the decision to go social. Dummies *BRandom*, *CRandom*, *ERandom*, *HRandom*, *JRandom* serve to randomize the reduction in the socially responsible opportunity. Dummies *DRandom* and *IRandom* serve to randomize the compensation (by means of a book or a voucher) to such a reduction, while dummy *GRandom* serves to specify the social project. These latter 8 types of

randomizations allow investigate the willingness to pay for certain features of the socially responsible choice options.

Below we reproduce the exact wordings of all questions used in the analysis, with, for discrete (continuous) variables, the (unweighted) sample proportions (sample means) of the answers in bold [].

account

Are you the person in the household managing most financial matters (the financial respondent)?

0. No [**31.3%**] 1. Yes [**68.7%**]

introduction

Sustainability and corporate social responsibility are receiving a lot of attention. One way in which the citizens themselves can contribute to it is by saving their money in some particular way, for example in a special account or in a special investment fund at a regular bank, or at a special bank that only invests in socially responsible projects. Often this is also made more attractive by receiving a gift when you open a new account or, for example, by receiving a discount on transaction costs.

This questionnaire is actually talking about your behavior and your preferences for socially responsible ways to save your money. For example, do you only look to return and risk, or do you also consider other things?

If account=1

The following four questions are about you and your financial household. If an account or investment is owned by someone with whom you keep a financial family budget together (your partner or child, for example), add it. You don't need to count an account or investment of someone who owns financial household forms (for example, an adult son or daughter who still lives at home).

If account≠1

selection

The following four questions are about you and your financial household. If an account or investment is owned by someone with whom you keep a financial family budget together (your partner or child, for example), add it. You don't need to count an account or investment of someone who owns financial household forms (for example, an adult son or daughter who still lives at home).

Do you not want or are you unable to answer any question? Check the following option:

1. I don't own accounts or investments and I am not aware of the finances of my family [27.1%]

Actual behavior

If account=1 or selection≠1 [91.5%]

Q1

Do you (or your household) have any investments in socially responsible mutual funds or in other accounts that invest in environmentally friendly companies or in cultural or other activities that are beneficial to society?

1. Yes [8.5%]
2. No [91.5%]

Q2

If Q1=1

Why did you invest in these? (more than one answer can be given)

- a. Because I/we want to contribute in this way to improve society [60.4%]
- b. Because I/we have more confidence in the banks and people managing this kind of funds than in the rest of the financial sector [37.5%]
- c. Because of the (monetary) returns that I/we think these investments will have [24%]
- d. Because these accounts are or were (at the time I started this) tax favored [27.8%]
- e. Because I/we responded to a special promotion action promising me a (monetary or nonmonetary) gift for opening such an account or starting to invest in such a fund [3.4%]

If Q1=2

Why did you not invest in these? (more than one answer can be given)

- a. I/we should do this, but I do not get to it (yet) **[9.5%]**
- b. I/we have no money to invest or save **[34.8%]**
- c. I/we want to be able to withdraw my savings immediately if necessary **[47.5%]**
- d. Because of the high costs or low expected returns **[11.1%]**
- e. Because I/we only want to invest my money in the traditional banks who only look at expected return and risk **[14.5%]**

If account=1 or selection≠1

Stated preferences

Q5

The following questions are not about facts but about how you would allocate money in a hypothetical situation.

Suppose you receive an inheritance of *[if ARandom=0: €5000 / if ARandom=1: €10,000]* but the condition is that you cannot spend the money now but only one year from now at the earliest. You can invest it in some account or mutual fund and receive the money plus net return one year from now.

We ask you how you would invest the money. Please note that all the possible investment strategies are hypothetical; they do not reflect the returns you can currently get with real investments.

What would you choose you if you had the following possibilities?

- a. Put the money in a saving account at a traditional bank and receive an interest rate of 1%. **[75.4%]**
- b. Put the money in a saving account at a bank that only invests in socially responsible companies and receive an interest rate of *[if BRandom=0: 0.6% / if BRandom=1: 0.8%]*. **[15.3%]**

- c. Put the money in a saving account at a bank that only invests in socially responsible companies and receive an interest rate of *[if CRandom=0: 0.5% / if CRandom=1: 0.75%]*. In addition, if you open the account you get a Deluxe Edition of the book “Wildlife in Europe” with a value of *[if DRandom=0: 40/ if DRandom=1: 60]* if you would buy it in a store. **[9.3%]**

Q6

Suppose you receive an inheritance of *[if ARandom=0: €5000 / if ARandom=1: €10,000]* but the condition is that you cannot spend the money now but only one year from now at the earliest.

What would you choose you if you had the following possibilities?

- a. Put the money in a saving account at a traditional bank and receive an interest rate of 1%. **[69.3%]**
- b. Put the money in a saving account at a bank that only invests in socially responsible companies and receive an interest rate of *[if ERandom=0: 0.6% / if ERandom=1: 0.8%]*. The bank guarantees that the remaining *[if ERandom=0: 0.4% / if ERandom=1: 0.2%]* will be used for *[if GRandom=0: vaccinations of children in Africa / if GRandom=1: loans to help women in developing countries to set up their own business]*. **[23.1%]**
- c. Put the money in a saving account at a bank that only invests in socially responsible companies and receive an interest rate of *[if HRandom=0: 0.5% / if HRandom=1: 0.75%]*. In addition, when you open the account, the bank gives you a voucher worth *[if IRandom=0: 40/ if IRandom=1: 60]* that you can spend on theatre visits, cinema tickets, sports events, or concerts in the next twelve months. **[8.6%]**

Q7

Suppose you receive an inheritance of *[if ARandom=0: €5000 / if ARandom=1: €10,000]* but the condition is that you cannot spend the money now but only one year from now at the earliest.

For example, you can split the amount in two, put part of it in a savings account at a traditional bank with 1% interest rate, and the remaining part in a saving account at a bank that only invests in socially responsible companies, with an interest rate of *[if ERandom=0: 0.6% / if ERandom=1: 0.8%]*. The bank

guarantees that the remaining *[if ERandom=0:0.4% /if ERandom=1: 0.2%]* will be used for *[if GRandom=0: vaccinations of children in Africa / if GRandom=1: loans to help women in developing countries to set up their own business]*.

How would you choose to allocate the total amount?

0 ... 100% in the traditional savings account [**sample mean: 69.7%**]

0 ... 100% in the socially responsible savings account [**sample mean: 30.3%**]

Q8

Suppose you receive an inheritance of *[if ARandom=0: €5000 / if ARandom=1: €10,000]* but the condition is that you cannot spend the money now but only one year from now at the earliest.

What would you choose you if you had the following possibilities?

- a. Put the money in a mutual fund with a return linked to the AEX (Amsterdam Stock Exchange) Index. (The AEX invests in the stocks of the 500 largest companies in the Netherlands) [**56.9%**]
- b. Put the money in a mutual fund investing only in a careful selection of socially responsible companies. Compared to the AEX, this mutual fund has a *[if JRandom=0: 1.0 percentage point / if JRandom=1: 0.5 percentage point]* lower return per year on average, and the same risk. [**32.8%**]
- c. Put the money in a mutual fund investing only in a carefully selected group of socially responsible companies. Compared to the AEX, this mutual fund has a *[if JRandom=0: 1.2 percentage point / if JRandom=1: 0.6 percentage point]* lower return per year on average, and the same risk. In addition, you get a Deluxe Edition of the book “Wildlife in Europe” (with a value of 50 euros if you would buy it in a store). [**10.4%**]

Appendix B: Additional Results

Table B1: Participation in social investments. Probit models using an objective measure of financial literacy (cf. Table 3)

Average marginal effects with standard errors in parentheses. See Table 3 for other details.

	(1) Actual (Q1)	(2) Stated Banks (Q5)	(3) Stated Banks (Q6)	(4) Stated Stocks (Q8)
Female	0.034 ^{**} (0.016)	0.007 (0.023)	0.033 (0.025)	0.050 [*] (0.027)
Age	0.002 ^{***} (0.001)	0.001 [*] (0.001)	-0.001 (0.001)	0.003 ^{***} (0.001)
Educ. higher vocational	0.048 ^{***} (0.018)	0.136 ^{***} (0.026)	0.169 ^{***} (0.027)	0.168 ^{***} (0.030)
Educ. university level	0.081 ^{***} (0.022)	0.244 ^{***} (0.032)	0.236 ^{***} (0.036)	0.208 ^{***} (0.041)
Obj. fin. literacy: two correct	0.035 (0.040)	0.074 ^{**} (0.037)	0.089 ^{**} (0.040)	-0.015 (0.042)
Obj. fin. literacy: three correct	0.096 ^{**} (0.040)	0.057 (0.036)	0.075 [*] (0.039)	-0.106 ^{***} (0.041)
Urban	0.019 (0.016)	0.069 ^{***} (0.022)	0.053 ^{**} (0.025)	0.090 ^{***} (0.027)
Log(Individual Income)	0.004 (0.005)	-0.010 (0.006)	0.000 (0.007)	-0.002 (0.008)
Log(Househ. Fin. wealth)	0.010 ^{**} (0.004)	-0.003 (0.004)	0.000 (0.004)	0.001 (0.004)
Inheritance 10K		-0.011 (0.021)	0.009 (0.023)	0.007 (0.025)
High int. rate SR acc. option 2		-0.020 (0.021)	0.045 [*] (0.023)	
High int. rate SR acc. option 3		0.051 ^{**} (0.021)	-0.015 (0.023)	
High book value		-0.031 (0.021)		
Investment in micro-credits			-0.019 (0.023)	
High voucher value			0.018 (0.023)	
Higher expected return SR funds				0.019 (0.026)
Has SR investments		0.218 ^{***} (0.033)	0.260 ^{***} (0.038)	0.197 ^{***} (0.046)
Observations	1464	1456	1455	1443

Table B2: Wildlife Gift Stock (Q8). Multinomial probit model (columns 1-3) and Tobit model (column 4) using objective measure of financial literacy (cf. Table 4)

Average marginal effects with standard errors in parentheses. See Table 4 for other details.

	Multinomial probit			Tobit
	(1) Traditional	(2) SR	(3) SR & In-kind	(4) Marginal effects
Female	-0.051 [*] (0.027)	0.062 ^{**} (0.026)	-0.012 (0.018)	4.012 ^{**} (1.841)
Age	-0.003 ^{***} (0.001)	0.002 ^{**} (0.001)	0.001 [*] (0.001)	0.163 ^{**} (0.065)
Educ. higher vocational	-0.169 ^{***} (0.030)	0.139 ^{***} (0.028)	0.030 (0.020)	9.167 ^{***} (2.188)
Educ. university level	-0.204 ^{***} (0.041)	0.184 ^{***} (0.038)	0.020 (0.028)	17.884 ^{***} (3.137)
Obj. financial literacy: 2 correct	0.012 (0.042)	0.017 (0.039)	-0.029 (0.026)	1.126 (2.761)
Obj. financial literacy: 3 correct	0.103 ^{**} (0.041)	-0.043 (0.039)	-0.060 [*] (0.025)	-0.730 (2.765)
Urban	-0.089 ^{***} (0.027)	0.080 ^{***} (0.025)	0.009 (0.017)	4.673 ^{**} (1.957)
Log(Individual Income)	0.001 (0.008)	0.007 (0.007)	-0.008 [*] (0.005)	-0.257 (0.486)
Log(Househ. Fin. wealth)	-0.001 (0.004)	0.005 (0.004)	-0.004 (0.003)	0.157 (0.276)
Inheritance 10K	-0.007 (0.025)	0.025 (0.024)	-0.017 (0.016)	0.981 (1.798)
Higher expected return SR funds	-0.020 (0.026)	-0.006 (0.024)	0.026 (0.017)	4.594 ^{**} (1.815)
Has SR investments	-0.192 ^{***} (0.046)	0.179 ^{***} (0.042)	0.012 (0.030)	20.332 ^{***} (2.850)
Investment in micro-credits				-0.263 (1.808)
Observations		1443		1448