Social Values and Mutual Fund Clienteles*

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Abstract

We study socially responsible investor (SRI) clienteles by using a large and unique individual-investor data set. Our purpose is to relax the implicit assumption of many previous studies that socially responsible investors are a homogeneous group. We conduct a comprehensive segmentation analysis based on the proportion of SRI mutual funds in the portfolio of investors and the utility function of investors. The first segmentation shows that investors who are male, wealthy, risk tolerant, have extensive financial knowledge and have a professional financial advisor, invest significantly less in SRI mutual funds. We use a conjoint analysis to estimate the multi-attribute utility function of investors, which includes pecuniary and non-pecuniary utility. Segmenting individuals on their utility function yields different groups of socially responsible investors. The segments differ significantly in their loyalty towards SRI mutual funds and the attention they pay to past performance and fees. First, we identify a very loyal segment that obtains many non-pecuniary benefits by investing in SRI mutual funds and which largely ignores past performance and fees. Remarkably, instead of focusing on non-pecuniary benefits from SRI, the largest subset of the SRI clientele predominantly chases past returns. Another segment focuses primarily on fees, again suggesting a financial mindset among many of the socially responsible investors. Our finding on the heterogeneity among responsible investors offers new insights into the way mutual fund families can enhance product differentiation, advertising, and the selection of distribution channels.

Key words: socially responsible investing, mutual funds, behavioral finance, investor heterogeneity, individual investors

JEL Classifications: G11, G23

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1. INTRODUCTION

When a full analysis of heterogeneity in responses was made, a variety of candidate averages emerged to describe the "average" person, and the long-standing edifice of the representative consumer was shown to lack empirical support."
James J. Heckman (2001), Nobel Prize Speech

It is important for mutual fund families to know the preferences and characteristics of the different clienteles they serve. Examples of investor clienteles are dividend clienteles (Graham and Kumar, 2006), tax clienteles (Sialm and Starks, 2009) and socially responsible clienteles (Bollen, 2007). In this paper, we focus on socially responsible mutual fund clienteles. This clientele makes investment decisions that are not entirely based on financial attributes, but also involve social values.

There is growing evidence that values influence investment decisions. For instance, Hong and Kostovetsky (2009) find that mutual fund managers who support the Democratic Party select stocks that score higher on environmental and social performance than Republican fund managers do. In addition, Bollen (2007) documents that socially responsible mutual fund investors behave differently from conventional investors. He finds they are more loyal to their funds and hold on to them even after negative returns. This loyalty of socially responsible investors can stabilize assets under management of mutual funds.

The increasing influence of values on investing is stressed by the exponential growth in the SRI market, both in the U.S, where one out of nine dollars of professional assets under management is involved in SRI (Social Investment Forum, 2007), and in Europe (EUROSIF, 2008). There is even some evidence indicating that this significant number of values driven investors impacts asset prices (e.g. Hong and Kacperczyk, 2009).

Most studies on the impact of social values on investment behavior and asset prices implicitly assume that socially responsible investors are a homogenous group (e.g. Bollen (2007), Hong and Kacperczyk (2009) and Hong and Kostovetsky (2009)). This is due to the fact that these studies use aggregate level data. To our knowledge, we are the first study to conduct a large-scale research on socially responsible investor clienteles at the individual level. The purpose is to relax the homogeneity assumption and apply a detailed segmentation analysis by

using a unique individual investor data set of investors who invest in socially responsible investment vehicles.

Understanding how social values influence investment decisions at the individual level is important. It not only provides new evidence in the field of behavioral finance, but also offers insights into strategic decisions of mutual fund families. We relax the assumption of homogeneity among socially responsible investors, because it is unlikely that social values influence all investors in the same way. Rather, we expect that some socially responsible investors are mainly values driven, whereas others only hold a small proportion of SRI funds and are predominantly financially driven.

This paper contributes to the behavioral finance literature in several ways. First, the paper shows that socially responsible investors care about not only than risk and return, but also the non-pecuniary benefits of investing. Their social values provide positive affect (emotions) from holding SRI mutual funds (Statman (2004) and Anginer, Fisher and Statman (2008)). By focusing on non-pecuniary benefits, socially responsible investors do not display the behavior of the homo economicus, who is fully rational, emotionless and a self-interested maximizer of expected utility.

A second contribution is that we study the impact of both observable characteristics and latent psychological constructs on the investment behavior of socially responsible investors. Many observable characteristics like gender, age, income and education have been used to explain investment behavior of conventional investors (e.g. Barber and Odean (2001), Graham and Kumar (2006) and Bailey, Kumar and Ng (2009)). In addition, we measure psychological attitudes like self-reported risk tolerance (cf. Dorn and Huberman, 2005) and investment knowledge (cf. Graham, Harvey and Huang, 2009). We also analyze beliefs regarding the performance of SRI mutual funds and measure the level of non-pecuniary benefits that SRI funds provide to investors.

Next to studying the impact of these investor characteristics on investment behavior, we measure two behavioral biases that are found to influence investing in mutual funds. These biases are chasing past returns (e.g. Sirri and Tufano (1998), Wilcox (2003), Bollen (2007) and Bailey, Kumar and Ng (2009)) and ignoring fees (Elton, Gruber and Busse (2004) and Barber,

Odean and Zheng (2005)). We relate these biases to the investor characteristics described above.

Our findings also have implications for mutual fund families. First, the loyalty of socially responsible investors, documented by Bollen (2007) at the aggregate level, is unlikely to be exhibited by every individual. Identifying loyal investors creates significant benefits for mutual fund families, because it will stabilize their assets under management.

Second, investors with a strong social mindset will have different characteristics than investors with a predominantly financial mindset. They will also differ in the attention they pay to financial mutual fund attributes like fees and past performance. This heterogeneity has implications for product development and advertising by fund families.

Third, by getting a more precise idea of the heterogeneity in the beliefs and behaviors of socially responsible investors, we get a clearer picture of the way social values influence asset prices. Even though a detailed analysis of the way values impact asset prices is beyond the scope of this paper, we shortly discuss possible implications of our findings for asset pricing.

Our unique data set is comprised of more than 3,000 individual investors, who represent the entire clientele of two explicitly socially responsible banks. These two banks are the two pure socially responsible banks of the Netherlands, covering almost the entirety of the Dutch SRI market. The banks offer the most comprehensive range of socially responsible investment vehicles in Europe, such as mutual funds with a social focus, environmental focus, or a combination of both. Their products include globally diversified equity funds, bond funds, balanced funds, real estate funds and microfinance. The Financial Times awarded one of these banks as the most sustainable bank worldwide in 2009 and the bank grew by about 30% in 2009. The other socially responsible bank participating in our study is the market leader of SRI in the Netherlands.

We have information on the individual holdings of investors at both socially responsible banks and we document that about 30% of the investors in our data are clients at both socially responsible banks. We complement this data with a survey asking investors about their holdings at conventional banks or brokers. This is important, because we want to get a complete picture of the overall portfolio of investors. The survey shows that even though all investors in our data are clients at a socially responsible bank, 63% also hold conventional mutual funds at a conventional

bank or broker. Remarkably, the remaining 37% of investors hold a pure SRI portfolio. This offers preliminary evidence of heterogeneity among socially responsible investors.

We define a socially responsible investor as an individual that holds at least one SRI mutual fund. This might be a mutual fund with a social focus, an environmental focus, or a combination of both. All types of SRI funds (social and environmental) share a common component, which is that they focus on benefits to the broader society. Note that our definition of a socially responsible investor also classifies individuals with only a small fraction of SRI funds in their portfolio as a socially responsible investor. Yet, we still believe that this is an appropriate definition, because all investors in our data set make an explicit decision to be an investor at a socially responsible bank and they "put their money where their mouth is."

We apply a novel and powerful methodology that combines holdings data, a survey and a conjoint analysis (cf. Wilcox, 2003). We use the conjoint analysis to estimate the utility functions of investors who rate mutual funds on their attractiveness. The funds vary on the levels of four financial mutual fund attributes and one non-pecuniary attribute. We validate the findings from the conjoint analysis by using the estimated utility functions to predict the share of SRI funds in the portfolio of the investor. We conduct a comprehensive segmentation analysis (cf. Capon, Fitzsimons and Prince, 1996) based on two indicators. First, we segment investors on the proportion of SRI mutual funds they hold in their portfolio. Second, we segment investors on their utility functions. Both segmentations yield consistent results.

The first segmentation, based on the proportion of SRI mutual funds in the portfolio of the investors, provides evidence that there is heterogeneity among socially responsible investors. We find that investors who are male, wealthy, risk tolerant, have extensive financial knowledge and have a professional advisor, invest a significantly smaller proportion of their portfolio in SRI mutual funds. For instance, an investor with a professional financial advisor invests about 13% less in SRI mutual funds than an investor without a professional financial advisor.

Second, we segment investors based on their multi-attribute utility function. We find that there are four segments of socially responsible investors: a values driven segment (21% of our sample), past return chasers (28%), cost sensitive investors (13%) and a mixed segment (38%). These segments differ significantly in their loyalty towards SRI mutual funds and the attention

they pay to past performance and fees. The values driven segment obtains many non-pecuniary benefits by investing in SRI mutual funds, is very loyal and largely ignores past performance and fees. Remarkably, instead of focusing on non-pecuniary benefits from SRI, the largest subset of the SRI clientele predominantly chases past returns. Cost sensitive investors focus primarily on fees, suggesting again the presence of a financial mindset among many socially responsible investors. The mixed segment focuses on a combination of past returns, fees and non-pecuniary benefits.

The investor characteristics of the four segments differ significantly. The values driven segment has the lowest investment knowledge, holds the smallest number of mutual funds and single stocks and has the highest proportion of females. In contrast, the cost sensitive segment has the highest investment knowledge, holds the largest number of mutual funds and single stocks and has the lowest proportion of females.

Overall, our findings show that many investor characteristics that explain investment behavior for conventional investing, also play an important role in the relation between social values and investing. Our results also offer new insights into the way mutual fund families can enhance product differentiation, advertising and the selection of distribution channels. Anecdotal evidence from the advertising used by the two socially responsible banks of our study shows that they focus on financial performance in some ads, while stressing the benefits for society in others. In this way, they target both the clients with a strong social mindset and those with a more pronounced financial mindset. An example of a return-focused advertisement uses "investing green with a good return", whereas in newsletters sent out to investors, the banks stress for example the positive impact of microfinance in Africa. Given the large number of mutual funds in the market, these tools are important in light of the competition that fund managers face (Massa, 2003).

The remainder of this paper is organized as follows. In section 2, we provide the theoretical framework of our paper. We derive the multi-attribute utility function of investors and develop our main hypotheses. Section 3 describes the holdings data, survey and experimental design. Section 4 documents the empirical results on investor heterogeneity. Finally, we offer a conclusion in section 5.

2. INVESTOR CLIENTELES BASED ON SOCIAL VALUES

The socially responsible investor clientele is growing worldwide and also the number of SRI mutual funds offered in the market is increasing rapidly (SIF (2007) and EURSIF (2008)). There is even evidence that SRI impacts asset prices (Hong and Kostovetsky, 2009). Therefore, it is important to understand the behavior of socially responsible investors. However, research in this area is very limited.

Traditional finance states that investors only care about risk and return (e.g. Sharpe (1964) and Lintner (1965)). However, socially responsible investors also obtain non-pecuniary benefits from investing in SRI mutual funds. Their social mindset provides them positive affect (emotions) from holding SRI funds (Statman (2004) and Anginer, Fisher and Statman (2008)). Next to SRI, there are many other examples of non-pecuniary benefits from investments. For instance, Cooper, Gulen and Rau (2005) document that investors like to follow 'hot' styles. Fund families can generate additional inflows just by changing the fund name into a style that is in heavy demand, without changing the stock holdings of the fund.

Individuals that obtain non-pecuniary benefits from their investments are characterized as having a multi-attribute utility function. Following Bollen (2007) and many other studies in the product choice literature (e.g. Massa, 2003), we assume that investors have an additive utility function. This is allowed if the attributes are utility independent, as in the utility of one attribute does not depend on the level of another. Bollen (2007) specifies this multi-attribute utility function for socially responsible investors as follows:

$$(1) \qquad U = w(\mu - \theta\sigma^2) + (1 - w)S$$

where μ and σ^2 are the expected return and variance of an investor's portfolio of mutual funds and $0 \leq w \leq 1$. Furthermore, S is an indicator function that equals one if the fund satisfies the social responsibility attribute for the investor and zero otherwise. This part of the multi-attribute utility function captures non-pecuniary benefits of SRI. Investors with a strong financial mindset attribute a large weight (w) to the mean return and variance of a portfolio, whereas investors with a strong social mindset, attribute a large weight to the social responsibility

attribute (1-w).

As investors with a multi-attribute utility function obtain both financial utility and utility from the social responsibility attribute, they have to make a trade-off between their financial and social mindset. There is much research in the field of behavioral economics studying the trade-off that individuals make between these two mindsets. For instance, Vohs et al. (2006) conduct experiments in which they prime the financial mindset of subjects by showing them posters or screen savers with money. This treatment decreases subjects' willingness to help others significantly.

Every individual makes the trade-off between the financial mindset and the social mindset in a different way. Spreckelmeyer et al. (2009) document that women value social rewards more than men. The trade-off between the two mindsets can even be seen directly in the brain. Sanfey et al. (2003) study the trade-off between someone's financial and social mindset with fMRI scans. The authors document that the cognitive part of the brain (DLPFC) is linked to financial rewards, while the emotional part (insula) deals with fairness. Interestingly, the level of activation of the insula correlates significantly with whether an individual makes a self-interested choice and maximizes monetary pay or whether he sacrifices some money to behave socially.

This paper moves beyond a laboratory setting and studies the heterogeneity in the trade-offs that investors make between their financial and social mindset. Specifically, we test the following hypothesis:

Hypothesis 1: *Socially responsible investors are heterogeneous in the trade-off between their financial and social mindset.*

To study this heterogeneity, we segment socially responsible investors in two ways. First, we segment on the proportion of SRI mutual funds they hold in their portfolio and second on their multi-attribute utility function (equation 1). We focus on many investor characteristics that are found to influence investment behavior of conventional investors (e.g. Barber and Odean (2001), Dorn and Huberman (2005), Bailey, Kumar and Ng (2009) and Graham, Harvey and Huang (2009)). We include variables like gender, age, wealth, education, risk tolerance, investment knowledge and investment goals.

The heterogeneity in the strength of the financial and social mindset among socially responsible investors will impact the attention they pay to past performance and fees. We hypothesize that:

Hypothesis 2a: *The clientele with the strongest social mindset pays the least attention to fees and past performance of mutual funds*

We also extend the research of Bollen (2007) by studying the heterogeneity in the level of loyalty that investors exhibit towards their SRI mutual funds. We expect that investors with a strong social mindset more often hold on to an underperforming fund than investors with a strong social mindset. We hypothesize:

Hypothesis 2b: *The clientele with the strongest social mindset is most loyal to their SRI mutual funds*

If hypotheses 2a and 2b are supported, this has important consequences for the strategic decisions of mutual fund families. They could direct their product differentiation and advertising toward attracting a mutual fund clientele with a strong social mindset. In this way, they face less competition on past performance and fees and can stabilize their assets under management due to the loyalty of their socially responsible investors.

3. DATA AND RESEARCH DESIGN

We use a unique individual investor data set that covers the entire clientele of two explicitly socially responsible banks. These two banks are the two pure socially responsible banks in the Netherlands, covering almost the entirety of the Dutch SRI market.

We have information on the individual holdings of investors at both socially responsible banks and we document that about 30% of the investors in our data are a client at both socially responsible banks. We complement this data with a survey asking investors about the holdings at conventional banks or brokers. This is important, because we want to get a complete picture of the overall portfolio of investors. Our data confirms the importance of the survey, because it shows that even though investors are clients at a socially responsible bank, 63% also hold

conventional mutual funds at a conventional bank or broker. Remarkably, the remaining 37% of investors hold a pure SRI portfolio. This offers preliminary evidence of heterogeneity among socially responsible investors that we investigate further.

Our novel methodology combines investors' fund holdings with a survey and a conjoint experiment (cf. Wilcox, 2003), described in detail below. The data collection started with gathering the holdings data of 18,500 randomly selected investors who hold at least one SRI mutual fund at either one of the two socially responsible banks. In total, the two socially responsible banks had about 650,000 clients in 2009 on the Dutch population of 16.5 million inhabitants. The selected investors received an email with an invitation to participate in a study on investment decisions. In the email, they could find a link to an on-line survey, where they were assigned a randomly generated identification number. In this way, we could anonymously link the survey and experimental data to the holdings data.

The survey consists of three stages. First, we ask about general investment issues, such as their financial risk tolerance and their investment horizon. Second, we conduct a conjoint experiment, described in detail below. Once participants have completed the conjoint experiment, they can no longer return to this stage. With this mechanism we prevent biasing investors towards paying more attention to social and environmental factors in the conjoint experiment, due to the measurement of investors' beliefs and attitudes regarding SRI in a later part of the survey. Third, we examine beliefs and attitudes, demographics and socio-economic variables.

The survey, comprising of the questionnaire items and conjoint experiment, took participants around 20-25 minutes to fill out. It was sent out in July 2009 and completed by 3,187 individuals, equating to a response rate of 17%, comparable to the rate obtained by Capon, Fitzsimons and Prince (1996). We carefully tested the validity and reliability of the questionnaire items and conjoint design with a successful pre-test among individual investors (Hair et al. 2006).

As our research is conducted among Dutch investors, it is useful to briefly explain the investment market in the Netherlands. Though we acknowledge the limitation of restricting our analysis to one country, the Netherlands offers several advantages to study the clientele of

socially responsible investors. Besides the presence of the two pure socially responsible banks, SRI is gaining momentum in the Netherlands. Even though the market share of SRI was only 4.3% in 2009, this is the second largest market share in Europe (VBDO, 2009). Moreover, one out of six (16%) Dutch investors own at least one SRI mutual fund. As a comparison, only 7% of Dutch investors own index funds (Millward Brown, 2009).

The two socially responsible banks participating in our research offer two types of SRI funds: regular SRI mutual funds and thematic SRI mutual funds. Table 1 gives an overview of the mutual funds offered by the two socially responsible banks. The two banks predominantly offer regular SRI mutual funds that apply environmental and social screens to their investments. These types of funds exist worldwide (Social Investment Forum (2007) and EUROSIF (2008)). The two banks also offer a few thematic SRI mutual funds that offer tax benefits, which can reach up to 2.5% depending on the income of the investor. For these thematic SRI mutual funds, the Dutch government set specific standards that the funds should meet in order to be eligible for tax benefits. In general, the thematic SRI funds invest their money in companies or projects that are less profitable than the companies in which conventional mutual funds invest. With the tax benefits, the Dutch government wants to stimulate investments in these companies or projects that include organic farmers and cultural projects. We investigate the impact of these tax benefits on investment decisions.

--- Insert Table 1 about here ---

3.1 Questionnaire

The questionnaire is a useful complement to the holdings data provided to us by the two socially responsible banks. First, investors indicate their holdings outside of the two socially responsible banks, which shows their holdings of mutual funds and single stocks at conventional brokers. Second, the questionnaire directly measures unobservable psychological characteristics, like beliefs and attitudes.

Table 2 gives an overview of the most important variables that are measured with questionnaire items. In many cases, similar items are available in the U.S. Survey of Consumer

Finances (SCF) [1] and we stay close to these. If an item is not in the SCF, we use valid and reliable constructs used in studies related to ours.

We are aware of the fact that there are several limitations to using variables measured with a questionnaire. First, there is a potential problem of non-response bias in which individuals who respond to the survey have different characteristics than non-respondents. In unreported analyses, we checked whether the observable characteristics of respondents to the survey, like age and gender, differ from characteristics of the complete clientele at the two socially responsible banks. We find that there is no significant difference and hence our results do not suffer from non-response bias.

A second potential problem with surveys is that respondents might not understand a question or their 'talk and action' do not correspond. However, there are several studies showing that the use of questionnaire constructs is a useful complement to holdings data. For instance, Dorn and Huberman (2005) show that self-reported risk aversion is able to explain actual risk taking behavior of German individual investors. In addition they find a strong correlation between subjective self-reported investment knowledge and an objective investment quiz. Dorn and Sengmueller (2009) use survey constructs measuring the degree to which individuals invest for entertainment or gambling motives, to explain excess portfolio turnover. Graham, Harvey and Huang (2009) document that investors with higher self-reported investment knowledge are less prone to local bias and trade less. As documented below, when there is an overlap, we are able to replicate the existing results in the literature with our survey measures.

We believe that the questionnaire is useful in many ways. We are able to get information on the holdings of investors outside of the two socially responsible banks, their investment goals, risk attitude, investment knowledge and beliefs about the performance of SRI mutual funds. All these variables are unobservable and cannot be inferred from holdings. Dorn and Huberman (2005), Dorn and Sengmueller (2009) and Graham, Harvey and Huang (2009) show that the psychological constructs measured by their survey significantly reduce the explanatory power of demographics like gender and age used in studies purely relying on holdings data (e.g. Barber and Odean (2001) and Graham and Kumar (2006)).

[1] The Survey of Consumer Finances (SCF) is a comprehensive survey that collects information on household finance in the United States. It is carried out ounce every three years and can be found at http://www.federalreserve.gov/PUBS/oss/oss2/scfindex.html

--- Insert Table 2 about here ---

3.2 Conjoint Analysis

Conjoint analysis has been extensively used in marketing and public policy research to show the implicit preferences of individuals for several product attributes (Hair et al. 2006). Recently, conjoint analysis has also been applied in finance research. For instance, Wilcox (2003) uses a conjoint analysis to study investor preferences for various mutual fund attributes. We use a full profile conjoint analysis, in which participants rate 22 randomly designed fictional mutual funds on a 0-10 scale, according to the attractiveness of the fund. Of these 22 mutual funds, 16 are used to estimate the multi-attribute utility functions of the individuals and the remaining 6 stimuli are used for out-of-sample validity tests.

The introduction to the conjoint experiment states that all mutual funds that appear in the experiment are global equity mutual funds that hold stocks of companies in developed countries. Following Wilcox (2003), we assume that investors already made their asset allocation and only have to rate equity mutual fund on their attractiveness. Respondents are instructed that they have to imagine that they would invest for themselves and that they should respond in line with their own preferences. The order of the profiles presented to subjects is randomized in order to limit order and learning effects (Hair et al. 2006).

We use four pecuniary mutual fund attributes similar to those of Wilcox (2003). He uses the following five attributes: (1) returns of the fund over the last year, (2) average yearly returns of the fund over the last 10 years, (3) risk of the fund, (4) costs of the fund, (5) name of the fund family. In our design, we use the first four financial attributes of Wilcox (2003) and contribute to his study by replacing the 'name of the fund family' by a social responsibility attribute. This attribute indicates whether a fund is a SRI mutual fund or a conventional mutual fund. Panel A of Table 3 presents a complete overview of the attributes and levels that are used in our conjoint analysis. Note that the number of attributes is restricted to five in order to prevent information overload (Hair et al. (2006) and Wilcox (2003)).

--- Insert Table 3 about here ---

We follow Wilcox (2003) and use attribute levels that correspond closely to the real-life

levels at the time we conducted the experiment (July 2009). Therefore, the returns over the last year and the average yearly return over the last 10 years are all negative, due to the financial crisis. The attribute 'Risk' is represented by the levels 'low risk' or 'high risk'. These labels are nearly identical to real-life risk categorizations on websites like Morningstar. In general, this categorization of risk levels is more comprehensible for retail investors than beta ratings or standard deviations (Capon, Fitzsimons and Prince, 1996). In addition, investors can also click on an info-button that shows how the risk categories are constructed to aid their understanding. Costs are measured by the yearly total expense ratio. Just like in the United States, Dutch regulations require mutual funds to show the total expense ratio in a transparent manner. Since most Dutch mutual funds do not have loads, the costs only include the total expense ratio.

The fifth attribute represents non-pecuniary benefits (cf. Statman (2004, 2008) and Bollen (2007)) of investing in SRI and indicates whether the mutual fund is a SRI mutual fund or a conventional fund. The social responsibility attribute has four levels that are in line with SRI funds offered in the market: (1) the fund uses only social screens, (2) only environmental screens, (3) both social and environmental screens, (4) no screens (conventional mutual fund). We explain the screens to participants in the introduction to the conjoint experiment. Panel B of Table 3 shows an example of a stimulus that was presented to subjects.

The conjoint analysis estimates the parameters (w) of the following multi-attribute utility function:

$$(2) \quad U = w_1 * \text{Return}_{\text{last year}} + w_2 * \text{Return}_{\text{last 10 years}} + \text{w}_3 * \text{Risk} + \text{w}_4 * \text{Fees} + \text{w}_5 * \text{Social Responsibility}$$

where $\sum_{i=1} w_i = 1$ and represent the weight of a certain attribute in the utility function of the investor

Wilcox (2003) estimates the same utility function for the first four financial mutual fund attributes, which we extend by the social responsibility attribute. We expect that investors with a strong social mindset have a large value for w_5, whereas investors with a strong financial mindset have a small w_5 coefficient.

To estimate the importance of each mutual fund attribute for every individual, we

calculate the relative importance weight (w_i) of each attribute. This is done by dividing the range in utility of one attribute by the sum of the ranges in utility for all attributes for the same individual (Wilcox p. 649). For example, if $\overline{U}_{ij}$ were the estimated utility for the most desired level of attribute j for i and $\underline{U}_{ij}$ is the least desired level for the same attribute and person, than the importance weight of attribute j relative to that of all other attribute k ∈ K for person i can be calculated as:

$$(3)\ M_{ij} = \frac{\overline{U}_{ij} - \underline{U}_{ij}}{\sum_{k \in K} \overline{U}_{ik} - \underline{U}_{ik}}$$

A limitation of a full profile conjoint analysis is that the rating of mutual funds on a 0-10 scale can be perceived as rather abstract by the subjects (Wilcox (2003) and Hair et al. 2006)). To address this potential problem, we successfully pre-tested the conjoint design and we conduct both internal and external validity tests. Below we show with an out-of-sample test that the conjoint analysis is internally valid. In addition, the estimated utility functions have predictive power for the mutual fund holdings of individual investors, demonstrating the external validity of the conjoint analysis.

4. EMPIRICAL RESULTS

In this section, we first report the investor characteristics, demographics and socio-economic variables for the socially responsible investors in our sample and compare them to those of conventional investors. Then, we conduct two segmentation analyses. First, we segment investors on the proportion of SRI mutual funds they hold in their portfolio. Second, we segment investors on their utility function. We show that both segmentation methods yield consistent results.

4.1 Summary Statistics

An important question on the behavior of socially responsible investors is whether they invest a significant part of their wealth in SRI vehicles or only invest a marginal fraction in SRI and predominantly hold conventional investments. Figure 1a depicts the proportion of SRI mutual funds in the portfolio of investors in our sample. The figure reports that most investors

hold a significant share of their portfolio in SRI mutual funds. It also shows that there is considerable heterogeneity in the share of SRI funds in the portfolio of investors. Whereas 63% of investors hold both SRI mutual funds and conventional mutual funds, 37% own only SRI funds.

Figure 1b reports the number of investment accounts held by investors at different brokers or banks. The figure shows that 66% of investors have multiple investment accounts at different banks. These investment accounts comprise the two socially responsible banks participating in the study, but also conventional banks and brokers. The fact that most investors have multiple investment accounts stresses the importance of conducting a survey that complements the holding data of the two socially responsible banks.

--- Insert Figures 1a and 1b about here ---

Figure 2 depicts the SRI mutual funds held by investors in our sample, documenting the proportion to which investors in our sample hold certain SRI funds. The figure shows that the most popular SRI mutual funds comprise different kinds of funds. In the top five, there is one thematic fund with tax benefits (Triodos Green Fund) and four regular SRI funds. Furthermore, popular SRI funds comprise funds with environmental screens, social screens and a combination of both.

--- Insert Figure 2 about here ---

Table 4 presents a comparison of the investor characteristics of individuals in our sample to those of conventional investors in the Netherlands and investors in the data set of Barber and Odean (2001). The data for conventional Dutch investors in 2009 is made available to us by Millward Brown. Millward Brown is known for conducting yearly surveys among a large and representative sample of individual investors in the Netherlands, comparable to the U.S. Survey of Consumer Finances (SCF). We report the characteristics of investors in the brokerage data set by Barber and Odean (2001) for the year 1996, the latest year for which they have data available. Note that their data covers a specific clientele of on-line discount brokerage investors, limiting the comparison to investors in our data. Nonetheless, we believe the inclusion of the characteristics of the Barber and Odean data is useful to put our results into perspective.

--- Insert Table 4 about here ---

Table 4 documents that the socially responsible clientele has several investor characteristics that differ from those of conventional investors. Interestingly, only 15% of socially responsible investors have a professional financial advisor, compared to 30% of conventional investors. We address this issue below.

The risk tolerance of socially responsible investors is lower than that of conventional investors. Socially responsible investors save 55% of their wealth in a savings account, compared to 33% for conventional investors. Consequently, those who are socially responsible hold less equity than conventional investors. In addition, the average socially responsible investor is older (56 years) and wealthier (26% has 100k-500k) than their conventional counterparts. This high wealth could explain why 22% of socially responsible investors hold index funds compare to only 7% for conventional investors. Responsible investors are also highly educated, with 48% having a university degree.

Next, we use the survey results to investigate the expectations of investors regarding the returns and risk of SRI mutual funds compared to conventional funds. Figure 3 gives an overview of these beliefs, providing us with three important results. First, in general investors expect lower returns on SRI funds in the short run, but higher returns in the long run. Second, individuals perceive the risk of SRI funds to be lower, both in the short and in the long run. The combination of these results shows that investors believe they can obtain pecuniary benefits from investing in SRI mutual funds in the long run.

There are two alternative explanations for the finding that overall investors expect SRI funds to outperform conventional funds in the long run. First, it might be that investors expect a mispricing of companies with strong social or environmental track records. If the market would not price the potential positive impact of for instance employee satisfaction (e.g. Edmans, 2009), then investors could obtain pecuniary benefits from buying SRI funds. To put these expectations into perspective, evidence shows that the actual performance of SRI mutual funds is comparable to the performance of conventional mutual funds (e.g. Bauer, Otten and Koedijk (2005) and Statman and Glushkov (2009)). Alternatively, investors might form these positive beliefs about the performance of SRI funds because of affect. Anginer, Fisher and Statman (2008) document

that investors who display positive affect towards admired stocks, estimate lower subjective risk on these stocks compared to despised stocks.

A third finding of Figure 3 is that there is considerable heterogeneity in the beliefs of investors regarding the risk and return of SRI mutual funds. This disagreement is in line with the actual performance of SRI mutual funds. Whereas some funds have performed relatively well, others significantly underperform their benchmark (e.g. Bauer, Otten and Koedijk (2005) and Statman and Glushkov (2009)). Thus, even within the socially responsible investor clientele there is significant heterogeneity in beliefs and investors disagree with each other. Hong and Stein (2007) write on the implications this can have on stock markets, showing that disagreement among investors impacts trading volume and asset prices.

4.2 Segmenting Investors on the Proportion of SRI Mutual Funds in their Portfolio

Table 5 reports the results of a segmentation on the percentage of the wealth held in mutual funds that is invested in SRI mutual funds, as defined in table 1. We form three segments: (1) 0-20%, (2) 21-90% and (3) 91-100%. We choose for this categorization, because we are particularly interested in the extremes of the distribution that cover many investors in our sample. For example, Figure 1a shows that 37% of investors appear in the category 91-100% SRI, of which we expect they are to a large extent values driven. In contrast, we expect the segment with 0-20% SRI to be predominantly financially driven. Unreported results with different categorizations yield consistent results.

Table 5 shows that investors in the three segments have significantly different characteristics, indicated by bold numbers and stars next to the variable names. Several findings deserve special attention. First, investors with a larger absolute portfolio size and wealth hold a significantly smaller share of this portfolio in SRI mutual funds. Apparently, wealthier individuals want to diversify their portfolio across both SRI funds and conventional mutual funds to a larger extent than less wealthy investors.

Second, it is striking that only 8% of investors with a pure SRI portfolio have a professional financial advisor, whereas 22% of individuals with a small proportion of SRI funds have a professional advisor. There can be several explanations for this finding. First, it might be that investors who consult a professional financial advisor have different investor characteristics

than those who do not seek professional advice. Below we run multivariate regression, controlling for these other investor characteristics. Second, the financial advisor might expect SRI mutual funds to underperform and is reluctant to recommend these funds to his clients. Third, the incentives of the financial advisor might favor recommending conventional mutual funds.

A third finding is that values driven investors, who hold a large proportion of SRI funds, rate their investment knowledge substantially lower than investors with a small proportion of SRI funds. This lack of investment knowledge might be responsible for these individuals having fewer holdings in index trackers (only 7%) and single stocks (17%) than the other segments. Instead, these values driven investors hold a large proportion of their wealth in savings accounts. The effect of self-reported investment knowledge has also been investigated by Dorn and Humberman (2005). They find that investors who rate their investment knowledge higher hold better diversified portfolios. Our results seem to be consistent with theirs, indicating that investors with higher knowledge hold a smaller proportion in SRI funds and diversify more across different asset classes.

Fourth is our finding with respect to the effect of gender on investment decisions. Table 5 shows that females are significantly more often values driven than males. In the values driven segment (91-100% SRI), 40% is female, whereas in the financial driven segment, only 20% is female. Spreckelmeyer et al. (2009) provide evidence that females value social rewards more than do males, which might explain our finding.

Fifth, Table 5 shows that investors with a large proportion of SRI funds report being more loyal to SRI mutual funds than investors with a small share of SRI funds. Even though this might seem to be an obvious finding, it has important implications. Bollen (2007) documents based on aggregate level fund flow data that socially responsible investors are more loyal to their funds than conventional investors. Our results indicate that there is considerable heterogeneity in the levels of loyalty, which has implications for mutual fund families.

--- Insert Table 5 about here ---

The sorting results above show that investors with a large share of SRI mutual funds in their portfolio have significantly different characteristics than investors with a small share of SRI

mutual funds. Yet, the boundaries for the segmentation are rather arbitrary and this analysis was univariate. In this section, we use multivariate regressions to deal with these issues. The dependent variable is the proportion of SRI mutual funds in the portfolio of the investor. This is a variable that has eight categories, as described in Table 2, with a higher value indicating a larger proportion of SRI mutual funds in the portfolio.

Table 6 reports the results of three regression specifications. Specification (1) uses a wide range of investor characteristics, specification (2) additionally controls for demographics and specification (3) includes pecuniary and non-pecuniary benefits of investing in SRI mutual funds. The table reports both unstandardized and standardized coefficients, with a mean of zero and a standard deviation of one. The standardized coefficients facilitate the comparison of the magnitudes of the effects of the various variables.

--- Insert Table 6 about here ---

The regression results show that many investor characteristics that were found to impact the proportion of SRI funds in the portfolio in the univariate analysis, also have a significant impact in a multivariate setting.

We hypothesized that investors with characteristics related to a stronger financial mindset, invest a smaller share of their portfolio in SRI funds. The results are in line with this hypothesis. The three variables related to a stronger financial mindset are all statistically significant and have negative, economically significant effects. For instance, in specification (1), investors who searched for information on index trackers hold 13% less in SRI mutual funds compared to individuals who did not search for information on index trackers. Recall that Table 2 shows that moving up one category in the dependent variable corresponds to an increase of about 15% in the share of SRI funds in the portfolio. Economic significance is calculated by multiplying the coefficient by 15%, yielding for index funds: 0.85 x 15% = 13%. Similarly, an investor who scores one point higher on the five-point investment knowledge scale invests 6% less in SRI funds.

The reasoning behind the effect of the index tracker variable is rather easy. Index funds are passively managed and generally have lower fees (e.g. Elton, Gruber and Busse, 2004). In contrast, all SRI funds offered by the two socially responsible banks participating in this study

are actively managed funds. Thus, financially oriented investors who are interested in index funds, will hold a smaller proportion of their portfolio in actively managed SRI funds.

The negative effect of self-reported investment knowledge on investing in SRI funds is interesting. We provide two explanations for this effect. First, it could be that individuals with a stronger financial mindset gather more investment knowledge compared to investors with a pronounced social mindset. Second, investors with less investment knowledge might buy SRI funds because it simplifies their investment decision. As picking a mutual fund is a complex task for many investors (Capon, Fitzsimons and Prince, 1996), less knowledgeable investors might like to simplify this decision by focusing on a style like SRI that they understand (cf. Massa, 2003). Third, investors with more investment knowledge might like to diversify their portfolio more towards other asset classes than SRI. Graham, Harvey and Huang (2009) find that investors who report more investment knowledge, diversify their portfolio more with international stocks than investors who report less investment knowledge.

Investors that indicate that one of their investment goals is to complement their state pension, invest less in SRI mutual funds. The reason for this could be that this salient investment goal lets them focus more on financial issues rather than non-pecuniary benefits. Anecdotal evidence from interviews we conducted with investors supports this view. Many individual investors who invested for their pension, indicated that guaranteeing a stable pension income takes priority, with social and environmental issues taking a lesser priority in comparison.

Consider again specification (1) and let us focus on the impact of a professional advisor on the proportion of SRI funds in the portfolio. In the univariate analysis we discussed that investors might self-select themselves into getting a professional advisor. For instance, a wealthy investor might more often get professional advice and simultaneously invest less in SRI funds for diversification arguments. However, even after controlling for many investor characteristics in the multivariate regressions, the effect of a professional advisor remains strong. Individuals with a professional financial advisor invest 13% less in SRI funds than investors without a professional advisor. Thus, apparently professional advisors influence the decisions of investors regarding how much to invest in SRI funds.

Statman (2008) interviewed professional financial advisors about socially responsible

investing, documenting that many advisors blindly cite Milton Friedman: "The social responsibility of companies is to make profits." It could also be that professional advisors more often recommend conventional funds because of risk concerns. John Maynard Keynes already pointed this out in 1936: "Worldly wisdom teaches that it is better for the reputation to fail conventionally than to succeed unconventionally." Alternatively, the incentives of advisors might favor conventional funds, in the sense that they may receive more compensation when they recommend a longer established conventional mutual fund.

Consider next the self-reported risk tolerance of investors. The regressions show that investors who are more risk tolerant invest a smaller proportion of their portfolio in SRI funds. The reasoning behind this could be that investors perceive SRI mutual funds to be less risky, with risk averse investors preferring these low risk SRI funds to higher risk conventional funds. This reasoning is consistent with the evidence from Figure 3. This graph reports that investors expect the risk of SRI funds to be lower than the risk of conventional funds, both in the long run and the short run. So, ex ante, a risk averse investor is better off buying a SRI fund than buying a conventional fund.

The socio-economic characteristics also show some important results. Table 4 shows that, in general, socially responsible investors are wealthier than conventional investors. Yet, the effect of wealth on the proportion of SRI funds is in opposition to this, with wealthy investors holding a significant smaller proportion of their portfolio in SRI mutual funds. It is possible that wealthy investors seek more diversification among different asset classes than only SRI.

An interesting question is whether investors buy SRI mutual funds for their pecuniary or non-pecuniary benefits. This has implications for the way mutual funds should advertise SRI funds by stressing either the performance and fees or by mainly focusing on the social or environmental benefits of the SRI funds.

Specification (3) in Table 6 tests whether investors buy SRI funds for their pecuniary or non-pecuniary benefits. There are two pecuniary benefits of SRI mutual funds. First, as described above some thematic SRI funds offer tax advantages. Second, some investors might expect an outperformance on SRI funds compared to conventional mutual funds, in the case they disagree with other investors (see e.g. Hong and Stein, 2007). If an investor expects an outperformance on

SRI funds, these funds provide pecuniary benefits. SRI funds also offer non-pecuniary benefits (cf. Statman, 2004), which we measure by asking investors whether they believe that investing in SRI funds really has a positive impact on society (the world). We expect that an investor who believes that SRI funds indeed have a positive impact obtain more non-pecuniary benefits from SRI funds, and invest a larger proportion of their portfolio in SRI.

The regression in column 3 of Table 6 shows that both pecuniary and non-pecuniary benefits influence the extent to which investors hold SRI funds. Both the coefficient on 'expected returns on SRI funds compared to conventional funds' and on 'improving the world' are statistically and economically significant. Next to insights into the advertisements of mutual fund families, this finding has implications for understanding the effects of socially responsible investors on asset prices (e.g. Edman (2009) and Hong and Kacperczyk (2009)). Disagreement in the form of higher expected returns on SRI funds is likely to disappear as investors learn over time (Edmans, 2009). However, the behavior of values-driven investors who obtain non-pecuniary benefits, is likely to be more stable over time and have long lasting effects on asset prices (e.g. Hong and Kacperczyk, 2009). Given that investors are both motivated by disagreement and are values-driven, it is likely that part of the effect of socially responsible investing on asset prices is temporary and part is permanent.

Tax benefits on thematic SRI mutual funds do not have a significant effect on the proportion of SRI funds in the portfolio. However, this does not imply that tax benefits have no effect at all. Even though we cannot directly test this, tax benefits might convince investors to enter the asset class of SRI funds. Figure 2 documents that the most widely held SRI fund by investors in our sample is a thematic fund with tax benefits. Yet, Figure 2 also shows that the other funds in the top five are regular SRI funds without tax benefits. The decision to enter the SRI asset class and the proportion of SRI funds to hold in the portfolio is possibly distinct. Investors with a pronounced financial mindset might enter the SRI asset class for tax benefits but hold only a small proportion of SRI, whereas someone with a strong social mindset holds a large proportion in SRI funds regardless of tax benefits.

To check the robustness of our findings, we run additional regressions. Figure 1a shows that 37% of socially responsible investors hold pure SRI portfolios. We test whether this special segment behaves differently than other socially responsible investors. In Table 7, we rerun the

regressions of Table 6, but exclude the segment with a 91-100% SRI portfolio, leaving us with 63% of the sample for this analysis.

Consider specification (3) in Table 7, which depicts the most complete model with the largest number of variables. The sign and significance of most variables remain the same. For instance, the significant effects of the index tracker, financial advisor, risk tolerance and wealth variables are unchanged. In addition, this is the case for the variables related to pecuniary benefits (expected returns) and non-pecuniary benefits (improving the world). The significance of some other variables changes, even though the sign remains the same. For example, the variables 'investment knowledge' and 'pension' still have the same sign, but are no longer statistically significant, whereas 'decide alone' and 'married' became significant.

The fact that the significance of a few variables changes in the robustness test is not surprising. The pure socially responsible investors are those that have the strongest social mindset. The univariate sorts in Table 5 show, for instance, that investors with a pure SRI portfolio are most loyal to SRI funds. Arguably, pure socially responsible investors make different trade-offs between their financial and social mindset than investors with a smaller share of SRI funds in their portfolio. Alternatively, it might be that the variables that are no longer significant play an important role in separating a pure socially responsible investor from a non-pure socially responsible investor. Yet, they are less important in distinguishing between an investor with 20% SRI in the portfolio from someone with 50% SRI mutual funds.

In conclusion, the robustness test shows that excluding investors who hold pure SRI portfolios from the analysis has some impact, but leaves the main results unchanged.

--- Insert Table 7 about here ---

4.3 Segmenting Investors on their Utility Function

In the previous section, we segmented investors on the proportion of SRI funds in their portfolio. In this section, we segment investors on their utility function to get a more detailed picture of the heterogeneity within the socially responsible investor clientele and to check for robustness of our findings. We show that the results of the two segmentation methods are

consistent.

To estimate the utility function of investors we use a conjoint analysis as explained in section 3.2. The conjoint analysis estimates the parameters (w) of equation (2) for each individual investor. Panel A of Table 8 presents the utility function of the average investor in our sample. The panel shows that socially responsible investors attach a lot of importance to the social responsibility attribute (43%). Yet even for socially responsible investors, financial attributes still play the largest role when buying mutual funds (57%).

Panel A of Table 8 shows that similar to conventional investors, the average socially responsible investor chases past returns (cf. Sirri and Tufano (1998), Wilcox (2003) and Bollen (2007)) and pays only limited attention to the fees charged by a mutual fund (cf. Elton, Gruber and Busse (2004) and Barber, Odean and Zheng (2005)). The risk relative to other mutual funds in the same investment category is not an important attribute, which is in line with Wilcox (2003). Note that this does not imply that investors in our study do not care about risk; they might only care about risk at the level of the asset allocation. For instance, risk averse individuals might save more and hold less equity than more risk tolerant investors (see Table 4). Yet, recall that we assume that investors already made their asset allocation and hence only have to rate equity mutual funds based on their attractiveness.

--- Insert Table 8 about here ---

We test the internal and external validity of the conjoint analysis. To check for internal validity, we conduct an out-of-sample test (see Hair et al. 2006). Recall that in total, subjects have to rate 22 mutual funds in the conjoint task. However, of these 22 funds, only 16 are used to estimate the utility functions of the individuals; the remaining 6 profiles are used as hold-outs. To check for internal validity, we use the estimates for the 16 profiles to predict the rankings of the 6 hold-out profiles. We apply Kendall's tau (Hair et al. 2006) as a test statistic, with the result showing significance at the 1% significance level, implying internal validity.

To test the external validity of the conjoint analysis, we use the estimated utility functions to predict the proportion of SRI mutual funds in the portfolio of investors. We expect that investors who pay more attention to the social responsibility of a mutual fund in the conjoint analysis hold a larger share of SRI mutual funds. Panel B of Table 8 shows that this is indeed the

case.

The conjoint analysis yields a unique multi-attribute utility function for each individual that we use to segment investors into different groups. This segmentation is based on a K-means cluster analysis (Capon, Fitzsimons and Prince (1996) and Hair et al 2006)), resulting in investors with the most identical utility functions being grouped into one segment. K-means cluster analysis has some similarities with ANOVA, as it maximizes the variance between segments and minimizes the variances within segments.

The cluster analysis on the utility functions yields four segments of socially responsible investors: (1) values driven investors (21% of our sample), (2) past return chasers (28%), (3) cost sensitive investors (13%) and (4) a mixed segment (38%). Panel C of Table 8 reports the utility functions of these four segments. The values driven segment obtains many non-pecuniary benefits from the social responsibility attribute and largely ignores past performance and fees. In contrast, past return chasers and cost sensitive investors are predominantly financially driven. The mixed segment focuses on a combination of past returns, fees and social responsibility.

Before discussing the four segments in more detail, let us focus on some more general points regarding the segmentation on the utility function of investors. Panel C of Table 8 shows that each segment represents a significant group of investors, with even the smallest segment still covering 13% of our sample. Second, each segment obtains non-pecuniary benefits from the social responsibility attribute. We can therefore rule out the possibility that investors pick a SRI mutual fund at random. Yet, there is considerable heterogeneity between the segments in the importance of non-pecuniary benefits of SRI mutual funds. Third, none of the clusters attaches much importance to the risk categorization of a mutual fund within the investment category.

Table 9 reports the mean investor characteristics of the four investor segments. Significant differences (ANOVA) between the segments are indicated by bold coefficients and stars next to the variable names, showing that the segments vary on many investor characteristics. Next, we discuss each segment in more depth.

--- Insert Table 9 about here ---

(1) **Values Driven Investors** (21% of our sample)

Non-pecuniary benefits constitute 75% of the utility function of these investors (Panel C of Table 8), far in excess of that of the other segments. As a result of the strong social mindset of these individuals, 59% hold a pure SRI portfolio and they invest the largest absolute amount in SRI mutual funds. (Table 9). This segment also has the highest proportion of females (39%), consistent with evidence from neuroscience showing that women value social rewards more than men (Spreckelmeyer et al., 2009). Further, values driven investors have the lowest wealth, income and overall portfolio value.

In addtion, they rate their investment knowledge worse than other segements. This lack of investment knowledge could explain why only 28% own single stocks and they hold the smallest number of mutual funds. This is consistent with the findings of Graham, Harvey and Huang (2009) who show that investors who rate their investment knowledge worse, diversify their portfolio less with international stocks.

This segment has attractive characteristics for mutual fund families. First, it pays the least attention to past returns and fees (Panel C of Table 8). The lack of a focus on fees is strenghtened by the fact that only 2% of the values driven investors searched for information on index trackers. Second, the strong social mindset of values driven investors results in the fact that they report the highest level of loyalty to SRI funds of the four segments.

(2) **Past Return Chasers** (28% of our sample)

The two past return attributes make up almost half (48%) of the importance for this segment (Panel C of Table 8). Therefore, these investors mainly buy mutual funds that showed good performance in the past years (cf. Sirri and Tufano (1998), Wilcox (2003), Bollen (2007) and Bailey, Kumar and Ng (2009)).

Past return chasing is generally seen as a behavioral bias, because there is evidence that it hurts the performance of investors (e.g. Bailey, Kumar and Ng, 2009). It is surprising that past return chasers rate their investment knowledge relatively well compared to some other segments. Yet, this finding is consistent with Wilcox (2003), who finds that investors who score higher on a finance quiz are more likely to chase past returns. The segment is dominated by wealthy and male investors, who predominantly use the internet as a source for investment information

(73%).

(3) **Cost Sensitive Investors** (13% of our sample)

It is remarkable to find a cost sensitive segment within the socially responsible investor clientele, given the evidence that at the aggregate level, investors largely ignore fees (e.g. Elton, Gruber and Busse (2004) and Barber, Odean and Zheng (2005)). Panel C of Table 8 shows that costs are the most important mutual fund attribute for this segment. The fact that these investors care about fees, can explain that 20% searched for information on index trackers, which is the highest percentage of all segments. They receive the smallest amount of non-pecuniary benefits and as a consequence, only 18% of the cost sensitive investors hold a pure SRI portfolio and they invest the smallest absolute amount in SRI.

There is evidence that individual investors who pay attention to fees of mutual funds, earn hgiher net returns than individuals who neglect them (e.g. Elton, Gruber and Busse (2004) and Bailey, Kumar and Ng (2009)), In this context, our findings provide interesting results. First, the cost senstive segment has the lowest proportion of females (17%). This finding contradicts with evidence that women make better investment decisions than men. For instance, Barber and Odean (2001) find that women trade less and obtain better net returns. Second, cost senstive investors rate their investment knowledge the highest of all segments, which is in line with them not being prone to the bias of neglecting fees.

The segment has the largest wealth, income and overall portfolio value. In addition, they hold the largest number of mutual funds and 51% owns single stocks, which is much more than the average. Importantly, cost sensitive investors are least loyal to their SRI mutual funds.

(4) **Mixed Segment** (38% of the sample)

Investors in this segment base their investment decisions on a combination of the five mutual fund attributes of the conjoint analysis (Panel C of Table 8). It is remarkable to see that 33% of these investors have a professional financial advisor, which is more than double that of the average socially responsible investor (15%). In addition, individuals in the mixed segment hold 57% of their portfolio in savings accounts, which is the largest proportion of the four segments.

4.4 Consistency between the two Segmentation Analyses

It is important to test the robustness of our segmentation analyses. Specifically, we investigate the consistency between the segmentation on the proportion of SRI funds in the portfolio of investors and the segmentation on the utility functions. Panel B of Table 8 tests this consistency formally, as was already discussed above. The panel indeed provides evidence of consistency. Figure 4 presents the consistency between the two segmentation methods in a visual way. The figure depicts the proportion of SRI funds in the portfolio of investors for each of the four segments. We expect that investors who obtain many non-pecuniary benefits from the social responsibility attribute of SRI funds invest a larger proportion of their portfolio in SRI. Figure 4 confirms this expectation and shows that the values driven segment holds a much larger proportion in SRI than the cost sensitive and past return segment. We conclude that the two segmentation methods yield consistent results.

--- Insert Figure 4 about here ---

5. CONCLUSION

We study the behavior of socially responsible investors by using a unique individual investor data set. We conduct two comprehensive segmentation analyses and show that there is much heterogeneity among the clientele of socially responsible investors. The two segmentations yield consistent results.

First, we segment investors on the proportion of SRI funds they hold in their portfolio. We find that investors who are male, wealthy, risk tolerant, have extensive financial knowledge and have a professional financial advisor, invest significantly less in SRI mutual funds. These findings contribute to the literature in behavioral finance that study the impact of many of these investor characteristics in other contexts (e.g. Barber and Odean (2001), Graham, Harvey and Huang (2009) and Bailey, Kumar and Ng (2009)).

The segmentation on the utility function of investors identifies various segments that differ in the extent to which they are financially driven and values driven. They vary significantly in their loyalty towards SRI mutual funds and the attention they pay to past performance and fees. Even though we find a segment that is largely values driven and very

loyal to SRI funds, it is striking that the largest group of socially responsible investors predominantly chases past returns. In addition, we find a segment that pays much attention to fees, which further points to a financial mindset among socially responsible investors.

Our findings extend previous research on the impact of social values on investment decisions and asset prices. Most of these studies assume that socially responsible investors form a homogenous group. We contribute to the literature on investment decisions by showing that even within investor clienteles, there can be substantial heterogeneity. This offers new insights in the way mutual fund families can enhance product differentiation, advertising and the selection of distribution channels.

There is much potential for future studies to investigate the heterogeneity among other investor clienteles (e.g. pension fund beneficiaries). The evidence that socially responsible investors are heterogeneous also has implications for understanding the effects of social values on asset prices. Given the large growth in the SRI movement, it becomes more important to better understand this process. Future researchers can extend work in this direction.

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Table 1: Menu of SRI mutual funds available to investors

This table presents an overview of the most important Dutch SRI mutual funds for March 2010. It reports among others, the past performance, total expense ratio (TER) and asset class. In addition, it shows the type of social and/or environmental screens used by the funds. Most funds are regular SRI mutual funds without tax benefits. Yet, some thematic SRI funds offer tax benefits up to 2.5% depending on the income of the investor. The Dutch government sets standards that should be met by funds to be eligible for tax benefits. The performance reported in the table excludes these tax benefits. As one can see, the performance of thematic SRI funds with tax benefits is generally below the performance of regular SRI funds. This has to do with the nature of the companies that underlie these thematic SRI funds. The Dutch government uses tax benefits to stimulate the investment into these funds, which include for example microfinance.

	1 Yr Return	5 Yr Return	TER	Asset Class	Launch Date	AuM (mln €)	Screens	Tax Bene-fits	Natio-nal
FUNDS									
Triodos Green Fund	3.50%	2.30%	1.23%	Fixed Income	Jun-98	572	Green projects (renewables, environment and forestry)	Yes	Natio-nal
ASN Equity Fund	49.3%	1.8%	1.29%	Equity	Jan-93	270	• Large and growth stocks • Social and environmental screens	No	Inter-national
ASN Environment and Waterfund	52.3%	6.68%	1.56%	Equity	Jul-01	177	Water, renewables and recycling	No	Inter-national
Triodos Equity Fund	30%	-0.44%	1.29%	Equity	Oct-00	134	Environmental and social screens	No	Inter-national
Triodos Bank Certificate	3.80%	2.80%	0%	Equity	Jul-03	117	Invest directly into Triodos	No	Natio-nal
ASN Green Project Fund	3.4%	1.87%	1.04%	Fixed Income	Nov-95	354	>70% in green projects	Yes	Natio-nal
Triodos Fair Share Fund	11%	6.90%	3.33%	Micro-finance	Oct-02	81	Microfinance in developing countries	Yes	Inter-national
ASN Novib Fund	3.4%	3.61%	3.2%	Micro-finance	Jun-96	123	Microfinance	Yes	Natio-nal

(Table 1 continued)

	1 Yr Return	5 Yr Return	TER	Asset Class	Launch Date	AuM (mln €)	Screens	Tax Bene-fits	Natio-nal
ASN Small and Midcap Fund	84.8%	-4.78%	1.6%	Equity	May-06	131	European small and midcap sustainable businesses	No	Europe
Triodos Culture Fund	9.10%	N/A	1.69%	Fixed Income	Feb-06	139	Loans for cultural preservation of arts and culture	Yes	Natio-nal
Triodos Real Estate Fund	-9.50%	2.1%	4.46%	Real Estate	Apr-04	39	Renewable energy, sustainable-based buildings and monuments	No	Natio-nal
ASN Mix Fund	23.60%	2.8%	1.10%	Bal-anced fund	Oct-90	124	60% Europe, 30% US, 10% Asia	No	Inter-national
ASN Bond Fund	5.60%	3.1%	0.95%	Fixed Income	Oct-90	108	Sustainable debt securities	No	OECD
Triodos Renewables Europe Fund	2.90%	N/A	3.52%	Commo-dities	Jun-06	N/A	Wind, biomass, solar	No	Europe
Triodos Values Pioneer Fund	30.90%	N/A	1.96%	Equity	Feb-07	35	Small-midcap environmental stocks	No	Inter-national

Table 2: Description of the most important variables measured by the questionnaire used in this study

Variable	Description	Questionnaire Item	Type of Variable
1. % of SRI mutual funds in the portfolio of the investor	This variable reports whether investors hold only a marginal or a significant proportion of their portfolio in SRI mutual funds, by using eight categories. Moving from one category to the next corresponds to an increase in this proportion by either 10% or 20%. On average, a one unit increase in the variable thus corresponds to an increase of about 15% of SRI mutual funds in the portfolio of the investor.	What percentage of the money you invest in mutual funds is invested in socially responsible mutual funds? "100%" means that all your mutual funds are socially responsible mutual funds. (1) 0 % (2) 1-10 % (3) 11-20 % (4) 21-40% (5) 41-60 % (6) 61-80 % (7) 81-90 % (8) 91-100 % • Do not know	Dependent variable
2. Information on index trackers	Dummy variable that has a value of one if the investor searched for information on index trackers and zero otherwise. Index trackers are passively managed and generally have lower fees than actively managed funds (Elton, Gruber and Busse, 2004). Therefore, it is expected that investors who searched for information on index trackers either dislike active management, are cost sensitive or a combination of both.	For which of the following investment products did you search information? E.g. Index trackers, hedge funds, commodities (multiple answers possible).	Independent variable

(Table 2 continued)

3. Investment knowledge	Investors rate their own investment knowledge from very limited to very much. This questionnaire item is nearly identical to an item in the U.S. Survey of Consumer Finances (SCF). This measure is also used by Dorn and Huberman (2005) and by Graham, Harvey and Huang (2009).	How would you rate your investment knowledge? 1 (very limited) - 5 (very much)	Independent variable
4. Investment for pension	Investors can indicate multiple goals they pursue with their investments. This dummy variable has a value of one if the investor indicates that one of his investment goals is to complement his pension and zero otherwise. This questionnaire item is nearly identical to an item in the U.S. SCF.	What are your investment goals? E.g. pension, emergency, inheritance (multiple answers possible).	Independent variable
5. Professional financial advisor	This dummy variable has a value of one if the investor has a professional financial advisor and zero otherwise. It is expected that the attitude towards SRI by the financial advisor affects the investment decisions of his clients (Statman, 2008). This item is nearly identical to an item in the U.S. SCF.	Do you have a professional financial advisor? Yes / No	Independent variable
6. Financial risk tolerance	Respondents rate their tolerance of risk in the investment domain from being very risk averse to being very risk tolerant. This questionnaire item is nearly identical to an item in the U.S. SCF. However, we use a 1-7 scale instead of a 1-4 scale to enable investors to give a more detailed description of their risk tolerance. This measure is also used by Dorn and Huberman (2005).	How would you describe your attitude towards investing? 1 (very risk averse) - 7 (very risk tolerant)	Independent variable

(Table 2 continued)

7. Expected returns on SRI funds compared to conventional funds over the long run	This item captures one of the potential pecuniary benefits of investing in SRI mutual funds. Investors who believe that SRI funds will outperform conventional mutual funds receive pecuniary benefits from buying SRI funds.	I believe that over the long run, the returns of SRI mutual funds compared to conventional funds are: 1 (much higher) – 5 (much lower) or 'I don't know'.	Independent variable
8. Tax motive	This dummy variable has a value of one if the investor indicates he bought a SRI mutual fund because of the tax benefits it provides, and zero otherwise. It is the second pecuniary benefit of SRI mutual funds.	Why did you decide to buy a SRI mutual fund?	Independent variable
9. Improving the world	This construct measures the extent to which investing in SRI funds helps to improve the world, according to the investor. It provides non-pecuniary benefits of investing in SRI mutual funds. Respondents have to indicate their agreement with three statements on a 1-7 scale. The scores are averaged over the three questionnaire items. To ensure that we measure these beliefs in a valid and reliable way, we adapted a construct that has been validated in related studies (Brown and Dacin, 1997)*.	1. Socially Responsible mutual funds have a positive influence on a sustainable development of society. 2. Socially Responsible mutual funds are better for our society than conventional mutual funds. 3. Socially Responsible investing adds something useful to society.	Independent variable
10. Loyalty	Investors indicate their loyalty towards SRI mutual funds on a 1-7 scale. The scores are averaged over the two questionnaire items. To ensure that we measure loyalty in a valid and reliable way, we adapted a construct that has been validated in related studies **(**Algesheimer, Dholakia and Hermann, 2005**)**.**	1. I would actively search for socially responsible mutual funds, if I were planning to buy a mutual fund. 2. I am very loyal to socially responsible mutual funds.	Independent variable

(Table 2 continued)

11. Investment horizon	This item is nearly identical to an item in the U.S. SCF.	What is your planned investment horizon? • Shorter than 1 Year • 1-2 Years • 3-5 Years • 6-10 Years • 11-20 Years • Longer than 20 Years	Independent variable
12. Decide alone in the household	This dummy variable has a value of one if the individual is solely responsible for investment decisions within his/her household. In contrast, if the individual decides together with his or her spouse, the dummy has a value of zero. Barber and Odean (2001) show that the presence of a partner in the household affects individual investment decisions.	Do you make your own investment decisions within your household (yes/no)?	Independent variable
13. Control variables	We control for several demographic and socio-economic characteristics of investors.	Gender, age, income, wealth, marital status, education, number of kids at home	Independent variable

*Brown, Tom J., and Peter A. Dacin (1997) "The Company and the Product: Corporate Associations and Consumer Product Responses." *Journal of Marketing*, 61, 68-84

**Algesheimer, René, Uptal M. Dholakia and Andreas Hermann (2005) "The Social Influence of Brand Communities: Evidence from European Car Clubs." *Journal of Marketing*, 69, 19-34

Table 3: Mutual fund attributes and levels used in the conjoint experiment

Panel A shows the five mutual fund attributes presented to investors in the conjoint experiment. The five mutual fund attributes are: (1) the return of the mutual fund over the last year, (2) the average yearly return of the fund over the last 10 years, (3) the risk level compared to mutual funds in the same investment category, (4) a social responsibility attribute that represents non-pecuniary benefits of buying a SRI mutual fund, (5) the costs of a fund, measured by the total expense ratio. The levels that appear in the conjoint design are in line with levels for real mutual funds at the time we conducted the study (July 2009). Note that both past return attributes have negative return levels due to the financial crisis. In total, investors rate 22 mutual funds on a 0-10 scale, based on the attraction of investing in the fund. The funds that shows up in the experiment are a random combination of the levels shown in this table. Panel B shows an example of a stimulus that appeared in the experiment.

Panel A

Mutual Funds Attributes	Levels			
1 Year Return	-21.00%	-28.00%	-35.00%	-
10 Year Return	-4.20%	-3.50%	-2.80%	-
Risk	Low	High	-	-
Responsibility	No Filters	Only Social	Only Environmental	Social and Environmental
Costs	1.00%	1.50%	2.00%	-

Panel B

Mutual Funds Attributes	Levels
1 Year Return	-35.00%
10 Year Return	-4.20%
Risk	High
Responsibility	Social and Environmental
Costs	1.50%

Table 4: Characteristics of investors in our sample

This table compares the characteristics of socially responsible investors in our sample to the characteristics of conventional investors in the Netherlands in 2009. The data on conventional investors is made available to us by Millward Brown, which has been conducting investor surveys in the Netherlands for several years, similar to the U.S. Surveys of Consumer Finances (SCF). Moreover, we also compare the investor characteristics of our sample to those of Barder and Odean (2001). We report the characteristics of the Barber and Odean data for the year 1996, the last year for which data is available.

(1) Portfolio value comprises savings accounts as well as investments in single stocks, bonds, mutual funds, derivatives and other investment vehicles. At the time of the study, the US Dollar/Euro exchange rate was around 1.45 $/€.
(2) Number of mutual funds is a measure for the number of different mutual funds that are held by the individual.
(3) Owning index trackers is a dichotomous variable that measures whether the individual owns at least one index fund.
(4) Owning single stocks is a dichotomous variable that reports whether the individual owns at least one single stock.
(5) Asset allocation describes the individual's portfolio allocation into various assets.
(6) Source of information (internet) is a dichotomous variable that reports whether the individual uses the internet as a source for investment information.
(7) Euros invested in SRI mutual funds reports the absolute amount invested in SRI mutual funds by the individual.
(8) Hold a pure SRI portfolio is a dichotomous variable that reports whether 91%-100% of the investor's mutual fund holdings consist of SRI mutual funds.
(9) The remaining variables are described in detail in Table 2.

Table 4: Characteristics of investors in our sample

	N Valid	Mean	Std. Deviation	25th Percentile	Median	75th Percentile	Overall Dutch Inv.	Barber & Odean (1996)
GENERAL INVESTOR CHARACTERISTICS								
Portfolio Value	2368	€74k	€109k	€13k	€31k	€85k	NA	$65k
# of Mutual Funds	2932	3.58	1.80	2.00	3.00	6.00	NA	4.36
Owning Index Trackers	1820	22%					7%	14%
Owning Single Stocks	3187	38%					45%	NA
Asset Allocation								NA
% Savings	2987	55%	26.12	33	60	80	33%	
% Equity	2666	29%	21.79	15	30	50	43%	
% Bonds	1380	10%	17.38	10	20	30	17%	
% Others	713	6%	22.97	10	20	40	5%	
I don't know	3187	5%	0.22	0	0	0		
Decide Alone in Household	3187	73%					NA	NA
Source of Information (Internet)	3187	61%					62%	NA
Professional Advisor	2871	15%					30%	NA
Investment Horizon > 10 Years	2320	39%					39%	NA
Financial Risk Tolerance (1-7)	3187	3.58	1.37	2	4	5	NA	NA
SOCIALLY RESPONSIBLE INVESTING								
Euros invested in SRI Mutual Funds	2026	€35k	€59k	€6k	€16k	€39k		
Hold a pure SRI Portfolio	2975	37%						
Loyalty towards SRI Mutual Funds (1-7)	2929	5.38	1.49	4.50	5.50	6.50		

(Table 4 continued)

	N Valid	Mean	Std. Deviation	25th Percentile	Median	75th Percentile	Overall Dutch Inv.	Barber & Odean (1996)
VARIABLES RELATED TO A PRONOUNCED FINANCIAL MINDSET								
Information on Index Trackers	3187	8%						
Investment Knowledge (1-5)	3187	2.66	0.79	2.00	3.00	3.00		
Invest for Pension	3187	60%						
DEMOGRAPHICS								
Gender (Male)	3163	68%					68%	79%
Age	3076	56.10	11.83	48	57	64	49.00	50.60
Education	3159						NA	NA
Lower	485	15%						
University of Applied Science	1166	37%						
University	1508	48%						
Married	3137	57%					NA	40%
# of Kids at Home	3187	0.50					NA	NA
Income (€ / Yr)							NA	$72k
<50k	1161	41%						
50k-130k	1487	52%						
>130k	185	7%						
Wealth (in €)**								NA
<50k	1090	38%					62%	
50k-100k	907	32%					10%	
100k-500k	718	26%					11%	
>500k	101	4%					3%	

Table 5: Univariate sorting results for a segmentation on the proportion of SRI mutual funds in the portfolio of investors.

This table reports the means of investor characteristics for the three segments. All variables are specified in Table 2. Investors with a large proportion of SRI mutual funds in their portfolio have significantly different characteristics than investors with a small share of SRI mutual funds. Significant differences (ANOVA) are indicated by bold numbers and by stars next to the variable names.

	Segment 1 *Less than 20% SRI*	**Segment 2** *21-90% SRI*	**Segment 3** *91%-100% SRI*
GENERAL INVESTOR CHARACTERISTICS			
Portfolio Value***	**€116k**	**€82k**	**€48k**
# of Mutual Funds***	**4.45**	**4.15**	**2.51**
Owning Index Trackers***	**30%**	**25%**	**7%**
Owning Single Stocks***	**60%**	**45%**	**17%**
Asset Allocation			
% Savings***	**50%**	**51%**	**62%**
% Equity***	**35%**	**35%**	**31%**
% Bonds	21%	22%	22%
% Others**	**21%**	**25%**	**28%**
I don't know	3%	3%	4%
Decide Alone in Household	76%	72%	73%
Source of Information (Internet)***	**66%**	**64%**	**64%**
Professional Advisor***	**22%**	**16%**	**8%**
Investment Horizon > 10 Years	38%	39%	43%
Financial Risk Tolerance (1-7)***	**4.04**	**3.78**	**3.26**
SOCIALLY RESPONSIBLE INVESTING			
Euros invested in SRI Mutual Funds***	**€8k**	**€38k**	**€45k**
Loyalty towards SRI Mutual Funds (1-7)***	**4.75**	**5.48**	**5.98**
VARIABLES RELATED TO A PRONOUNCED FINANCIAL MINDSET			
Information on Index Trackers***	**15%**	**10%**	**3%**
Investment Knowledge (1-5)***	**2.94**	**2.77**	**2.47**
Invest for Pension***	**70%**	**63%**	**60%**

(Table 5 continued)

	Segment 1 *Less than 20% SRI*	**Segment 2** *21-90% SRI*	**Segment 3** *91%-100% SRI*
DEMOGRAPHICS			
Gender (Male)***	**80%**	**71%**	**60%**
Age***	**57.18**	**56.73**	**53.46**
Education	6.06	6.15	6.11
Married***	**65%**	**60%**	**51%**
# of Kids at Home	0.51	0.50	0.55
Income (€ / Yr)			
<50k***	**31%**	**37%**	**46%**
50k-130k***	**60%**	**55%**	**50%**
>130k***	**8%**	**8%**	**4%**
Wealth (€)			
<50k***	**23%**	**31%**	**51%**
50k-100k	33%	35%	31%
100k-500k***	**36%**	**31%**	**16%**
>500k***	**8%**	**3%**	**2%**
N	520	1276	1053
% of total Sample	18%	45%	37%

Note: Significance Level 1%(***), 5%(**) and 10%(*)

Table 6: Multivariate regressions – Segmenting investors on the proportion of SRI mutual funds in their portfolios.

We run three regressions for which the variables are defined in Table 2. In all three specifications, the dependent variable is the proportion of SRI mutual funds in the portfolio of investors. The dependent variable has eight categories, as described in Table 2 and a larger value corresponds to a larger proportion of SRI funds in the portfolio. For each specification, we report the unstandardized coefficient, the standardized coefficient and the t-statistic (in parentheses). Standardized coefficients have a mean of zero and a standard deviation of one and they facilitate the comparison of the magnitudes of the coefficients. In specification (1), the independent variables comprise a variety of investor characteristics. In specification (2), we control for demographic variables. In specification (3), we add variables that capture pecuniary and non-pecuniary benefits of investing in SRI mutual funds.

	(1)		(2)		(3)	
	Coefficient	Stnd. Coefficient	Coefficient	Stnd. Coefficient	Coefficient	Stnd. Coefficient
(Constant)	**7.63*** **		**9.31*** **		**4.99*** **	
	(29.40)		(18.92)		(8.37)	
FINANCIAL MINDSET						
Index Trackers	**-0.85*** **		**-0.78*** **		**-0.73*** **	
	(-5.52)	-0.12	(-4.70)	-0.11	(-4.66)	-0.10
Investment Knowledge	**-0.39*** **		**-0.18*** **		**-0.23*** **	
	(-6.19)	-0.14	(-2.64)	-0.06	(-3.43)	-0.07
Pension	**-0.29*** **		**-0.26*** **		**-0.28*** **	
	(-3.14)	-0.07	(-2.64)	-0.06	(-2.92)	0.10
OTHER INVESTOR CHARACTERISTICS						
Professional Advisor	**-0.85*** **		**-0.56*** **		**-0.58*** **	
	(-7.10)	-0.15	(-4.31)	-0.10	(-4.67)	0.12
Risk Tolerance	**-0.21*** **		**-0.24*** **		**-0.21*** **	
	(-6.15)	-0.13	(-6.45)	-0.15	(-5.92)	0.04
Decide Alone	-0.06		-0.21*		-0.19*	
	(-0.60)	-0.01	(-1.89)	-0.04	(-1.80)	0.10
Investment Horizon	0.08*		-0.03		-0.07	
	(1.88)	0.04	(-0.56)	-0.01	(-1.62)	0.05

(Table 6 Continued)

	(1)		(2)		(3)	
	Coefficient	Stnd. Coefficient	Coefficient	Stnd. Coefficient	Coefficient	Stnd. Coefficient
PECUNIARY VS NON-PECUNIARY BENEFITS						
E. Return Long Run					**0.22*** **	
					(4.77)	0.05
Improving World					**0.60*** **	
					(11.47)	0.05
Tax Motive					-0.12	
					(-0.56)	0.21
DEMOGRAPHICS						
Gender (Male)			0.22*	0.04	0.10	0.11
			(1.93)		(0.87)	
Age			**-0.02*** **	-0.09	**-0.02*** **	0.00
			(-3.51)		(-3.88)	
Education			**0.10*** **	0.05	0.07*	0.04
			(2.45)		(1.94)	
Married			-0.13	-0.03	-0.12	0.10
			(-1.22)		(-1.17)	
Kids			0.05	0.02	0.03	0.05
			(0.94)		(0.53)	
Income			-0.07*	-0.05	-0.03	0.03
			(-1.93)		(-0.76)	
Wealth			**-0.25*** **	-0.13	**-0.19*** **	0.05
			(-5.17)		(-3.90)	
Adjusted R-Squared	0.10		0.14		0.22	
N	2164		1865		1767	

Note: Significance Level 1%(***), 5%(**) and 10%(*)

Table 7: Multivariate regressions – Excluding investors holding a portfolio that consists of 91%-100% of SRI mutual funds.

These multivariate regressions are similar to those in Table 6 and all variables are specified in Table 2. The only difference is that investors who hold more than 90% of their mutual funds in SRI funds are excluded from the analysis to test robustness. In all three specifications, the dependent variable has eight categories based on the proportion of SRI funds in the portfolio of the investor. In these regressions, we are left with 63% of the sample and we can test the impact of the pure SRI segment on the results we obtained in Table 6.

	(1)		(2)		(3)	
	Coefficient	Stnd. Coefficient	Coefficient	Stnd. Coefficient	Coefficient	Stnd. Coefficient
(Constant)	**5.85*** **		**5.97*** **		**3.16*** **	
	(22.21)		(10.93)		(5.04)	
FINANCIAL MINDSET						
Index Trackers	**-0.33*** **	-0.07	**-0.35** **	-0.07	**-0.30** **	-0.06
	(-2.57)		(-2.47)		(-2.14)	
Investment Knowledge	**-0.19*** **	-0.08	-0.06	-0.03	-0.10	-0.05
	(-2.96)		(-0.80)		(-1.48)	
Pension	-0.06	-0.02	-0.02	-0.01	-0.08	
	(-0.70)		(-0.16)		(-0.83)	-0.02
OTHER INVESTOR CHARACTERISTICS						
Professional Advisor	**-0.51*** **	-0.12	**-0.33*** **	-0.08	**-0.37*** **	-0.09
	(-4.80)		(-2.81)		(-3.19)	
Risk Tolerance	**-0.11*** **	-0.09	**-0.12*** **	-0.10	**-0.11*** **	-0.09
	(-3.17)		(-3.31)		(-3.03)	
Decide Alone	**-0.22** **	-0.06	**-0.33*** **	-0.09	**-0.34*** **	-0.09
	(-2.28)		(-3.06)		(-3.27)	
Investment Horizon	-0.01	-0.01	-0.03	-0.02	-0.04	-0.03
	(-0.22)		(-0.62)		(-0.87)	

(Table 7 Continued)

	(1)		(2)		(3)	
	Coefficient	Stnd. Coefficient	Coefficient	Stnd. Coefficient	Coefficient	Stnd. Coefficient
PECUNIARY VS NON-PECUNIARY BENEFITS						
E. Return Long Run					**-0.22*** **	0.13
					(4.69)	
Improving World					**0.33*** **	0.19
					(6.71)	
Tax Motive					0.08	0.02
					(0.74)	
DEMOGRAPHICS						
Gender (Male)			**-0.30*** **	-0.08	**-0.23** **	-0.06
			(-2.61)		(-2.06)	
Age			0.00	0.02	0.00	0.03
			(0.49)		(0.79)	
Education			0.06	0.04	0.05	0.04
			(1.51)		(1.35)	
Married			**-0.29*** **	-0.09	**-0.29*** **	-0.09
			(-2.70)		(-2.74)	
Kids			0.05	0.03	0.05	0.03
			(0.82)		(0.98)	
Income			0.01	0.01	0.02	0.02
			(0.22)		(0.69)	
Wealth			**-0.15*** **	-0.10	**-0.11** **	-0.07
			(-3.00)		(-2.18)	
Adjusted R-Squared	0.05		0.07		0.13	
N	1430		1206		1173	

Note: Significance Level 1%(***), 5%(**) and 10%(*)

Table 8: Utility function of socially responsible investors, estimated by the conjoint analysis.

This table reports the utility function of investors in our sample. It shows the importance of four financial mutual fund attributes and one non-pecuniary attribute. These importance weights are estimated by a conjoint analysis. The five mutual fund attributes are: (1) The return of the mutual fund over the last year, (2) the average yearly return of the fund over the last 10 years, (3) the risk category compared to mutual funds in the same investment category, (4) a social responsibility attribute that represents non-pecuniary benefits of buying a SRI mutual fund, (5) the costs of a fund, measured by the total expense ratio.

Panel A depicts the utility function for the average investor in our sample. This panel shows that the average socially responsible investor receives 43% of his utility from buying mutual funds in the form of non-pecuniary benefits. Even for the average socially responsible investor, financial attributes are most important and make up 57% of the utility derived from buying mutual funds. Similar to conventional investors, socially responsible investors chase past returns.

Panel B segments investors on the proportion of SRI mutual funds they hold in their portfolio. This panel tests the external validity of the conjoint analysis. We investigate whether the utility functions have predictive power for the proportion of SRI funds held by investors. Panel B reports the p-values of an ANOVA for each mutual fund attribute.

Panel C segments investors on their utility function by using a cluster analysis. We identify four segments of socially responsible investors: (1) Values driven investors, (2) past return chasers, (3) cost sensitive investors and (4) a mixed segment.

Panel A: Average Socially Responsible Investor

	1 Yr Return	10 Yr Return	Risk	Social Responsibility	Costs
	15%	15%	8%	43%	19%

(Table 8 continued)

Panel B: Segmentation on the % of SRI in the Portfolio

	1 Yr Return	10 Yr Return	Risk	Social Responsibility	Costs
Less than 20% SRI mutual funds (18% of the sample)	17%	18%	8%	32%	25%
21%-90% SRI mutual funds (45% of the sample)	15%	16%	8%	41%	20%
91%-100% SRI mutual funds (37% of sample)	13%	13%	7%	52%	15%
ANOVA (p-values)	0.000	0.000	0.000	0.000	0.000

Panel C: Segmentation on the Utility Function of Investors

	1 Yr Return	10 Yr Return	Risk	Social Responsibility	Costs
Values Driven (21% of sample)	7%	7%	4%	75%	7%
Past Return Chasers (28% of sample)	24%	24%	10%	24%	18%
Cost Sensitive (13% of sample)	14%	14%	7%	23%	42%
Mixed (38% of sample)	14%	13%	7%	48%	18%
ANOVA (p-values)	0.000	0.000	0.000	0.000	0.000

Table 9: Investor characteristics of the four segments identified with a cluster analysis based on the utility function of investors.

Clustering socially responsible investors on their utility function yields four different segments: (1) values driven investors, (2) past return chasers, (3) cost sensitive investors and (4) a mixed segment.

We report the mean of investor characteristics for each of the four segments. All variables are specified in Table 2. Significant differences (ANOVA) are displayed in bold and indicated by the stars next to the variable names. The table shows that the four segments have many significantly different investor characteristics.

	Segment 1 *Values Driven*	**Segment 2** *Past Return Chasers*	**Segment 4** *Cost Sensitive*	**Segment 4** *Mixed*
GENERAL INVESTOR CHARACTERISTICS				
Portfolio Value**	**€70k**	**€84k**	**€98k**	**€76k**
# of Mutual Funds***	**3.35**	**3.88**	**4.22**	**3.54**
Owning Index Trackers**	**13%**	**23%**	**31%**	**20%**
Owning Single Stocks***	**28%**	**47%**	**51%**	**38%**
Asset Allocation				
% Savings***	**54%**	**53%**	**50%**	**57%**
% Equity**	**36%**	**35%**	**37%**	**32%**
% Bonds	22%	21%	23%	20%
% Others*	**29%**	**24%**	**18%**	**23%**
I don't know	2%	3%	3%	3%
Decide Alone in Household	71%	76%	80%	74%
Source of Information (Internet)***	**55%**	**73%**	**66%**	**63%**
Professional Advisor***	11%	14%	17%	33%
Investment Horizon > 10 Years*	46%	38%	43%	40%
Financial Risk Tolerance (1-7)	3.50	3.88	4.05	3.71

(Table 9 continued)

	Segment 1 *Values Driven*	**Segment 2** *Past Return Chasers*	**Segment 3** *Cost Sensitive*	**Segment 4** *Mixed*
SOCIALLY RESPONSIBLE INVESTING				
Euros invested in SRI Mutual Funds***	**€49k**	**€31k**	**€25k**	**€39k**
Hold a pure SRI Portfolio***	**59%**	**26%**	**18%**	**38%**
Loyalty towards SRI Mutual Funds (1-7)***	**6.00**	**4.93**	**4.91**	**5.57**
VARIABLES RELATED TO A PRONOUNCED FINANCIAL MINDSET				
Information on Index Trackers***	**2%**	**12%**	**20%**	**8%**
Investment Knowledge (1-5)***	**2.55**	**2.88**	**3.00**	**2.69**
Invest for Pension*	**55%**	**62%**	**66%**	**60%**
DEMOGRAPHICS				
Gender (Male)***	**61%**	**76%**	**83%**	**70%**
Age	53.86	54.66	55.30	54.76
Education	6.22	6.12	6.08	6.22
Married	53%	60%	61%	56%
# of Kids at Home	0.50	0.55	0.54	0.59
Income				
<50k	43%	37%	30%	39%
50k-130k	50%	55%	62%	55%
>130k	7%	8%	7%	6%
Wealth				
<50k	48%	34%	32%	40%
50k-100k	30%	30%	34%	31%
100k-500k**	**19%**	**33%**	**29%**	**25%**
>500k	2%	4%	4%	4%
N	404	528	259	727
% of total Sample	21%	28%	13%	38%

Note: Significance Level 1%(***), 5%(**) and 10%(*)

Figure 1a: Distribution of the proportion of SRI mutual funds as a percentage of all mutual funds held by the investors.

Even though all investors in our sample hold at least one SRI mutual fund, there is considerable heterogeneity in the proportion of SRI funds in the portfolio of investors. 37% of investors hold a portfolio that consists almost entirely of SRI funds. Yet, there is also a large group of socially responsible investors that hold a significant proportion of conventional mutual funds at conventional banks/brokers.

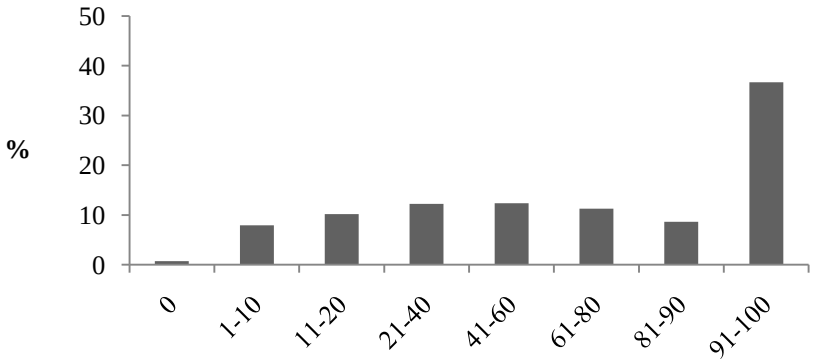

Figure 1b: Number of investment accounts held at different banks/brokers by investors in our sample.

Investors report in the survey at how many different banks/brokers they hold an investment account. These comprise accounts held at the two socially responsible banks participating in the study and at conventional banks/brokers. The figure shows that the majority (66%) of individuals hold more than one investment account. This fact stresses the importance of conducting a survey that complements the holdings data we obtained from the two socially responsible banks. With the questionnaire, we collect information on the holdings outside of the two socially responsible banks.

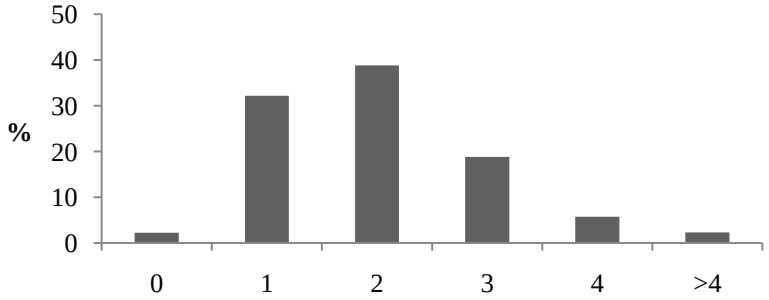

Figure 2 – SRI mutual fund holdings of investors in our sample

The figure presents the different SRI mutual funds that are offered by the two socially responsible banks participating in this study. For each fund, we show the percentage of investors in our sample that hold the respective fund. The grey bars represent regular SRI mutual funds. In contrast, the black bars depict thematic SRI mutual funds. Investors who hold these thematic funds are eligible for tax benefits of up to 2.5% depending on their income. The Dutch government set specific standards that funds need to follow to be eligible for tax benefits. The figure shows that most SRI funds offered by the two socially responsible banks are regular SRI funds without tax benefits.

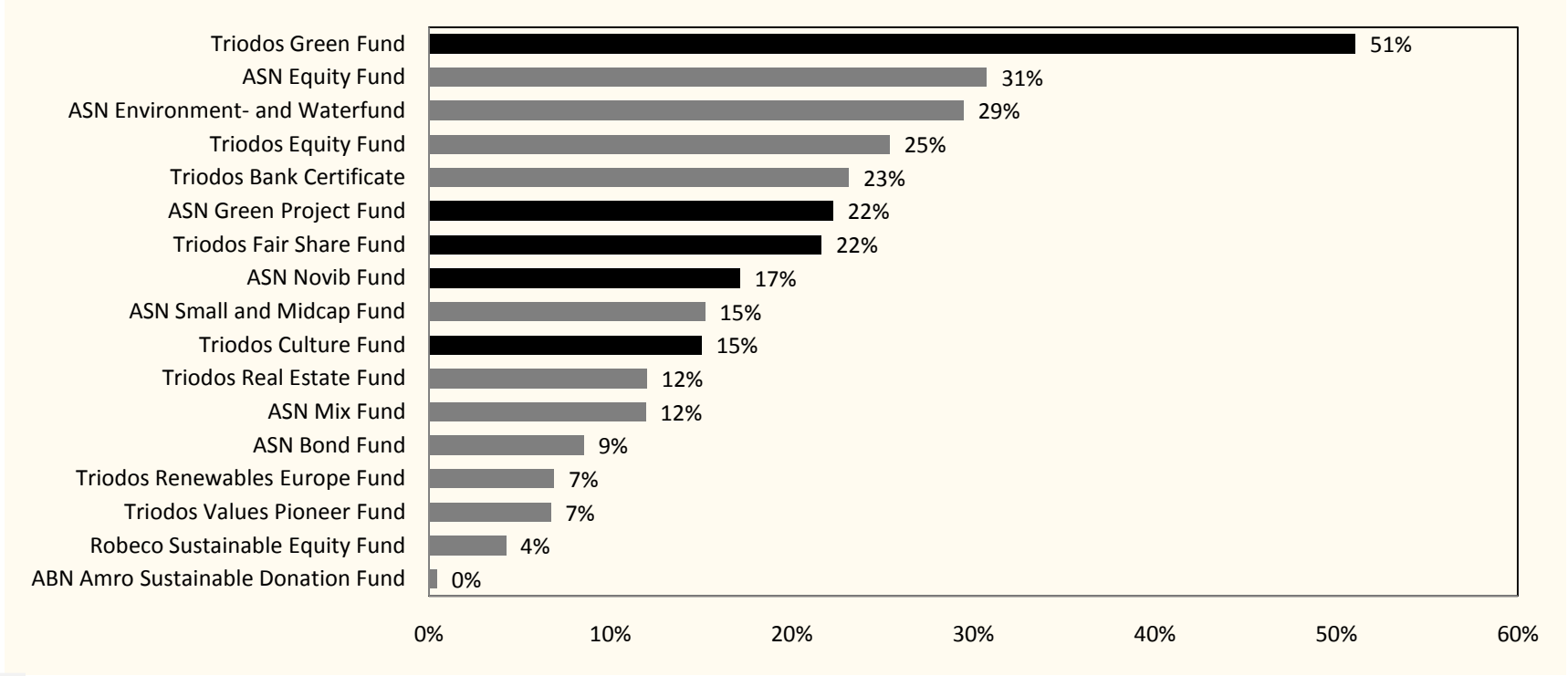

Figure 3: Investors' beliefs about the expected return and risk of SRI mutual funds compared to conventional mutual funds.

The figures show that, in general, investors expect SRI mutual funds to underperform in the short run with respect to return, but expect positive excess returns in the long run. Moreover, they expect a lower risk of SRI mutual funds compared to conventional funds, both in the short and the long run. Nonetheless, socially responsible investors disagree among each other about expected returns and risk.

Figure 3a: I believe that over the short run, the returns of SRI mutual funds compared to conventional funds are:

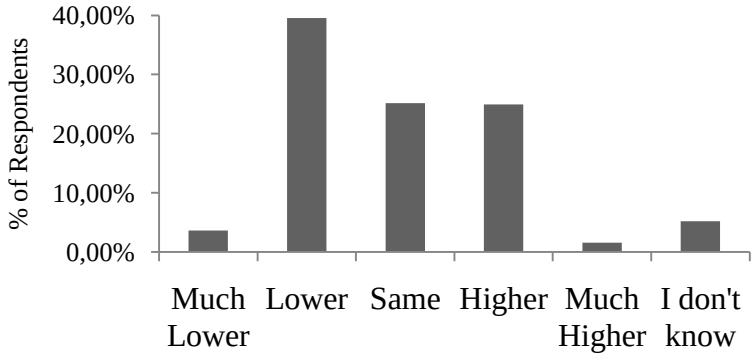

Figure 3b: I believe that over the long run, the returns of SRI mutual funds compared to conventional funds are:

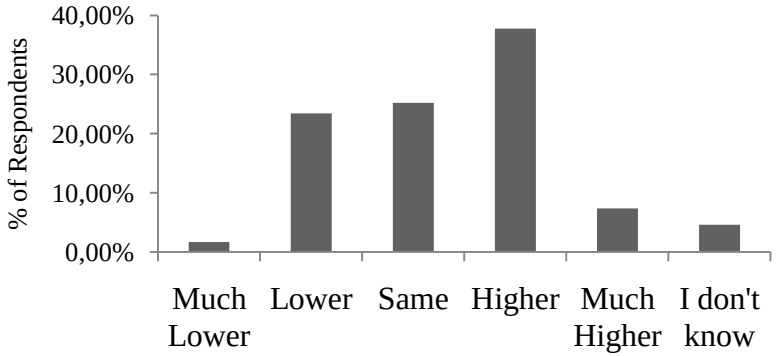

Figure 3c: I believe that over the short run, the risk of SRI mutual funds compared to conventional funds is:

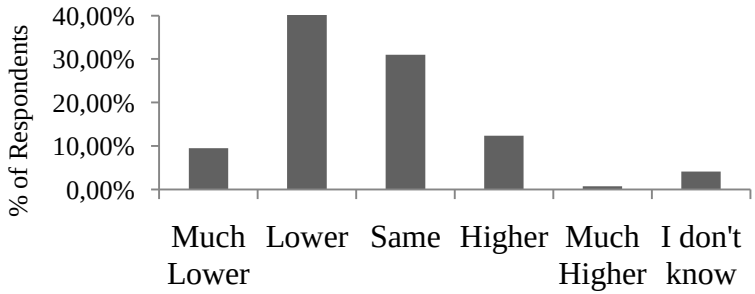

Figure 3d: I believe that over the long run, the risk of SRI mutual funds compared to conventional funds is:

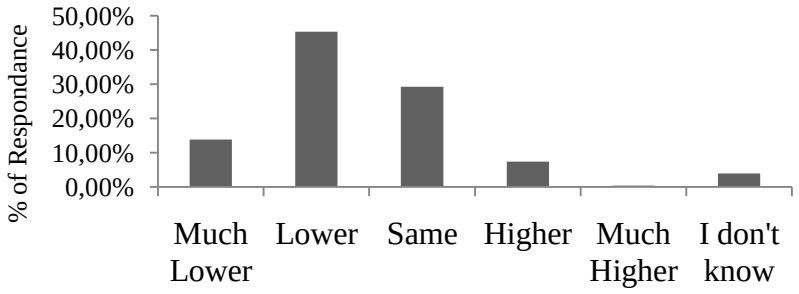

Figure 4: Percentage of SRI mutual funds in the portfolio of the four segments created by a cluster analysis on the utility functions of investors.

These figures show the consistency of the two segmentation methods used in the paper. In the paper, we segment investors both on the proportion of SRI mutual funds they hold in their portfolio and on the investors' utility functions. In these graphs we segment investors on their utility functions, by using a cluster analysis. The utility functions are estimated by a conjoint analysis. If the two segmentations were consistent, then investors who obtain many non-pecuniary utility from investing in SRI will hold a larger proportion of SRI funds in their portfolio. The figures show that indeed 'values driven' investors hold the largest proportion of SRI mutual funds, whereas cost sensitive investors and past return chasers hold the smallest proportion of SRI mutual funds.

Figure 4a: Values Driven

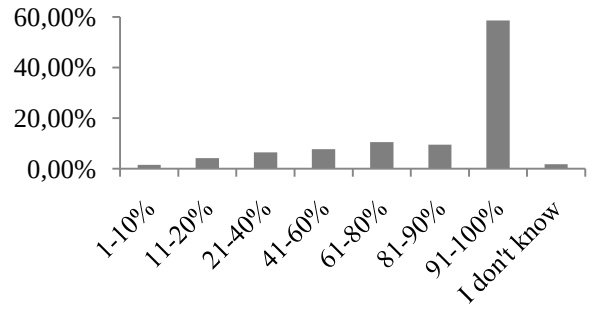

Figure 4b: Past Return Chasers

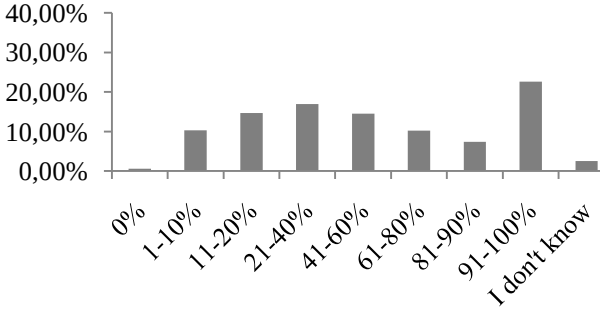

Figure 4c: Cost Sensitive

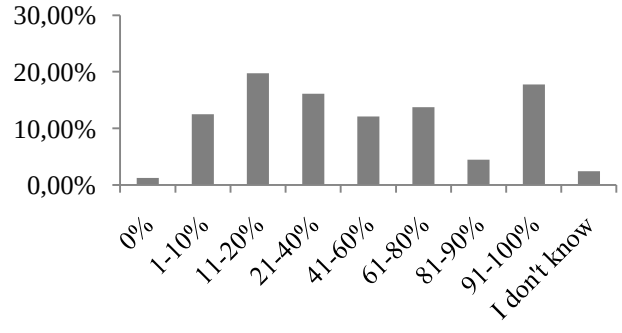

Figure 4d: Mixed