Social Norms in Pension Funds

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Abstract

Institutional investors invest billions of dollars on behalf of investors whilst knowing little about investors' social values. Motivated by risk adjusted returns and coupled with evidence of financial illiteracy on a large scale, pension funds currently do not provide differentiated funds to meet the values based investment style which investors desire. Using data from a separate wave of the Dutch CentERdata panel for citizens who are required to participate in a pension plan, we find significant variation in preferences towards proposed social investment screens. Subsequently we show that although individuals are able to express their values towards social investment criteria they are not able to translate these values into investment decisions consistently. This is partially driven by the low financial sophistication of households. Finally we show that the individuals who are higher educated, female, more able to pay, and have stronger preferences towards social screens are more willing to sacrifice a drop in the size of their pension to ensure that their own self-reported preferences towards socially responsible investments are met.

Keywords: Social values; Fiduciary duty; Financial literacy; Pension funds.

JEL Classification: G23; H4; I22

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1. Introduction

There has been an increasing interest in understanding the role of social values in investment decisions. In this paper we test whether the utility obtained from investing in socially responsible pension investments is significantly positive. We investigate the null hypothesis that when considering peoples' pension portfolios individuals are not systematically affected by social values when making their investment decisions against the alternative hypothesis that investment decisions are dependent on individuals' social values. It is important to investigate if and to what extent individuals value social responsibility in their pension investments because beneficiaries do not have full information on and control over their pensions. At the same time the Dutch pension funds alone have a balance total of approximately 700 billion which represents significant market power.

We observe that increasing awareness of the consequences of beneficiaries' financial behavior can lead to more ethical investing. E.g. after great pressure of the Dutch pension participants, most Dutch pension funds now exclude firms that engage in direct production of cluster bombs from their investment portfolios. In some cases the pension fund goes further in excluding stocks from the portfolios that violate human rights amendment acts (for instance ABP and PME). The exclusions are limited, whilst the funds advertise to be very socially responsible. The largest pension fund in the Netherlands excluded less than twenty firms from their investments in 2010.[1]

On the other hand when two Dutch pension funds (PGGM and ABP) donated 1.5 million euro to IFKO (an international fund for vulnerable elderly) after the tsunami of 2004, complaints were made by their beneficiaries in different types of media. They did not want the pension fund to decide *how* their money should be donated.

Such anecdotes show that individuals do take their social and moral values into account when evaluating pension investments. If individuals obtain positive utility from investing in socially responsible investments they may be willing to trade off utility obtained from consumption against utility obtained from investing in accordance to their social values (Bollen, 2007).

[1] We do want to stress that the investment choices made by Dutch pension funds have recently become more socially responsible. So pension funds are likely aware of the importance of integrating social responsibility into their investments.

However, in the conventional pension fund setting, participants do not invest themselves. Pension funds fulfill a fiduciary role in that they invest on behalf of their participants. Because the participants have very limited power to influence the investment decisions of fund managers and the fund managers' incentive schemes focus on risk return tradeoffs there is an inherent agency problem. The first aim of this paper is to understand if there is significant variation in individuals' values towards social responsibility in their pension investments and if they believe their pension fund to invest in accordance to their values.

Taking values into account makes the investment strategies of fund managers extremely difficult because preferences are heterogeneous. A straightforward solution would be to give beneficiaries greater freedom of choice or even full investor autonomy. This is only possible if investors are financially responsible and capable of making sound financial decisions. Our second aim is to understand to what degree beneficiaries are able to translate their values into a sound financial decision.

For this research we use unique field data on Dutch households from CentERdata that was gathered in the first quarter of 2011. We investigate the extent to which individuals claim to value several social and environmental characteristics of companies and test if they are able to translate these preferences into financial decisions consistently. Subsequently we translate the values into a willingness to give up a small part of their pension. Our contributions are fourfold.

First, we show what social responsibility practices are valued mostly by Dutch household members. In contrary to the conventional practice in the US it would not be optimal to exclude the sin companies (alcohol, tobacco, and gambling) from pension investments. On average, the Dutch favor the exclusion of companies that violate human rights and companies operating in the weapons industry. Although there are some commonalities, there is significant variation in the preferences of the beneficiaries.

Second we show that the respondents were able to express their values towards social responsibility as their self assessed preference levels correspond with their daily behavior.

Third, we report that the respondents do experience difficulties in translating these preferences into financial decisions consistently. Specifically, over one third of the respondents reported inconsistencies in the way they take their values into account when

making financial decisions. These inconsistencies are partially explained by low levels of financial understanding.

Fourth, we translate the values into a willingness to pay for socially responsible pension products and find that around a quarter of the respondents are willing to give up pension income to get their investments more in line with their values. The likelihood to be willing to pay rises in awareness, ability to pay, and values towards social responsibility as the most significant effects were found in education, income, and importance of social screening.

Our research suggests a number of important points for policymakers who want to maximize the utility of their citizens. It is also important for pension funds that have a public responsibility to act in the best interest of their participants. Finally, the paper can help ethical investment funds to identify potential customers.

The organization of the paper is as follows. In the following section, we a show that despite the lack of economic rationale for the effect of social values on markets, the literature finds that people do not only wish to maximize wealth but are likely to value social aspects in their pension investments. And that the effects differ amongst groups with varying social norms and values. The section continues by arguing that respondents might even *want* to give up income for the socially responsible dimension in their pension, so fund managers can apply responsible investment strategies even if they yield a lower financial return. The final part of this section explains that the low financial literacy of household members imposes restrictions on the degree of pension portfolio customization. Section 3 presents and describes the data used. The fourth section presents tests on values and financial decision making. Section 5 provides a discussion of the paper. Section 6 concludes.

2. Theory

2.1 Social values and markets

The rationale behind the introduction of more socially responsible pension products initiates in the observation that people are increasingly buying socially responsible products. The market share of green energy in the Netherlands has risen from below 2% in 1990 to over 11% in 2008[2]. The UK Fair-trade foundation[3] claims to have labeled over 3000 products as

[2] http://www.eia.gov

Fair trade in 2011. From 2009 onwards more than 100 million pounds of Fair Trade certified coffee was imported into the US alone of which 62% was organic[4]. In sum, individuals seem to value socially responsible consumer product features.

However, the current literature on pensions focuses on risk and return. Utility from non-pecuniary aspects is left out of consideration while the pension fund managers should maximize the utility of their beneficiaries. If individuals on average derive positive utility from more socially responsible pension investments, pension fund managers should incorporate these values of their beneficiaries into their investment schemes (if possible). However, Barber (2007) points out: "Once considerations other than wealth maximization are relevant for investors, aligning the interests of portfolios managers and investors becomes extremely difficult". Nevertheless, this cannot be an argument to refrain from taking social values into account. Particularly since a growing body of literature shows that social values matter to financial markets.

Two types of values seemingly unrelated to financial markets at first glance are religion and political affiliation. Renneboog and Spaenjers (2011) look into the relation between religion and household financing decisions. Their results suggest that Catholics have a higher propensity to save and participate less on the stock market. Kumar et al. (2010) show that financial markets in the US are tilted towards more gambling alike products (like small institutions holding stocks with lottery like characteristics, or option based compensation schemes for employees) in areas with relatively more Catholics than Protestants. Hong and Kostovetsky (2011) find that political values have an effect on the holdings of mutual fund managers. Managers who are net democrat donors invest less in socially irresponsible industries compared to republican or non-donors. Whilst these findings all suggest that social values play an important part in investment decisions, little is known empirically of how social responsibility and environmental values translate into investment decisions of beneficiaries.

In the investment literature, a few studies show that investors gain non-pecuniary benefits from investing in socially responsible investments. From ownership studies we know that investors are less focused on past return performance (e.g. Bollen 2007, Renneboog et al. 2011). In addition, recent survey studies find different investor segments that range from pure

[3] http://www.fairtrade.org.uk
[4] http://www.transfairusa.org/sites/default/files/Almanac%202010_0.pdf

wealth maximizing investors to investors who are primarily concerned with their social values (e.g. Nilsson 2009, Bauer and Smeets 2010).[5]

In sum, research showed that values influence financial decisions in multiple ways. This implies that, if utility is defined over social values, we expect to see significant variation in values towards more socially responsible pension investments. This leads to our first hypothesis.

H1: Beneficiaries have heterogeneous preferences towards socially responsible pension investments.

2.2 Willingness to give up pension income

For social choices to be reflected into investments, fund managers need to collect information on the firms' activities and the values of the individuals and try to take the values into account in the best possible way. Given the values of the beneficiaries the manager can either screen companies and/or engage with companies to change their corporate behavior. For simplicity we will focus on screening throughout the paper.

Screening is selecting companies to invest in based on social or environmental performance measures. The screening process itself is costly and limiting the investment space might also harm returns (Hong & Kacperczyk 2009, and Statman & Glushkov 2009). Some recent papers do show that companies that engage in different forms of social responsibility beat their benchmarks in the stock market but only for specific screens: Environmental responsibility (Derwall et al. 2005), Community relations (Kempf & Osthoff 2007), and Employee relations (Kempf & Osthoff 2007, Statman & Glushkov 2009, Edmans 2010). Besides pure equity investments, Renneboog et al. (2008, 2011) find that socially responsible investment (SRI) funds on average do not perform differently from comparable conventional funds.

We assume that pension fund managers (try to) maximize returns within the freedom of their mandates. The mandates make sure that the investments comply with pre specified demands of governments and other stakeholders. This means that if the pension investments are further screened on social issues the investment performance will at best be the same as in the

[5] See Derwall et al. 2011 for a more elaborate summary of market segmentation among socially responsible investors.

current situation since screening will limit the investment space[6]. Therefore it is important to know if participants are willing to give up part of their pension income to align the pension investments with their social values. Though, investigating willingness to pay for socially responsible pension products will reflect a worst case scenario since the screening costs are likely to be negligible for individual pension beneficiaries.

Below we characterize the relationship in a general utility framework in which we are agnostic about the exact form of the utility function. Expected utility (EU) is a function of wealth (W) and values (V).

(1) $$EU_i = f[E(W_i), V_i]$$

In case of full investor autonomy beneficiary i will choose portfolio j if he derives the largest expected utility from this portfolio.

(2) $$EU_{i,j} > EU_{i,J-j}$$

If portfolio j deviates from the current portfolio of the beneficiary, he accepts a lower expected wealth level since the pension fund manager maximizes $E(W_i)$ within the freedom of the mandates.

What we want to test in this paper is a theory of warm-glow investment decisions. Andreoni & Miller (2002) show in an experiment that altruism can be captured in preference orderings and argue that for that reason it is rational. In their experiment only a quarter of the population is identified as a money-maximizer which implies that three quarters did give up income for non-pecuniary utility. Taking this theory outside an experimental setting, it is reported that significant segments of consumers are readily willing to pay for non-product environmental (Laroche et al., 2001) or ethical (Auger et al., 2003) features. Because the purchasing content differs and the amounts invested are enormous it is relevant to investigate if beneficiaries get (positive) utility from incorporating their values into their pension investments. This leads to our second hypothesis.

H2: Considerable segments of beneficiaries are willing to give up pension income to make their pension investments more aligned with their social values.

[6] The same reasoning can be applied for engagement strategies. If engagement adds to the risk return performance of the pension investments, the manager should already be doing this. If not this means that the engagement will be costly and results in no or a negative change in financial performance (assuming that the manager maximizes returns).

2.3 Are individuals able to make sound financial choices?

Before investigating the willingness to pay for these socially responsible pension investments we investigate if beneficiaries are actually able to translate their values into financial decisions themselves. Currently the Dutch pension system works with defined benefits. Therefore, the problem of heterogeneous preferences of individual pension fund participants might be solved by giving the beneficiaries full investor autonomy.

In defined benefit (DB) pension systems participants cannot directly interfere with the investment process. A setting in which the participants do have greater influence in their pension investments is in defined contribution plans (DC). On the one hand Lusardi and Mitchell (2007b) report a trend in countries shifting from defined benefit to defined contribution systems. On the other hand Benartzi & Thaler (2005) find that many defined contribution pension funds doubt the quality of investment strategies of their beneficiaries. Van Rooij et al. (2007) show that people are on average not able to make consistent choices in a risk-return tradeoff universe. This effect is even stronger for beneficiaries with limited financial knowledge.

It is important to take financial literacy into account as more financially literate individuals are more involved with their financial decisions and make more sophisticated financial choices. They are more prone to plan for their retirement (Gustman and Steinmeier 2004, Van Els et al. 2004, Lusardi and Mitchell 2007ab, Van Rooij et al. 2011a), they hold more diversified portfolios (Calvet et al. 2009ab), have higher levels of savings (Bernheim et al. 2001, Bernheim and Garrett 2003), and they are more likely to participate in the stock market (Van Rooij et al. 2011b).

As we use a sample of Dutch households, we know from Van Rooij et al. (2011a,b) that the respondents do understand basic financial and economic concepts, though, when the financial products become more complex there is very little knowledge at hand. Therefore, we expect that the average respondent will not be able to make financial choices consistent with their values. A consequence would be that giving respondents more freedom of choice is not the optimal way to implement their values in their pension investments. This reasoning is in line with our third and fourth hypotheses.

H3: Considerable segments of beneficiaries are not able to translate their values into sound financial decisions consistently.

H4: The beneficiaries with low levels of financial literacy are less capable of incorporating their values into their investment decisions.

3. Data description and discussion

3.1.1 Basic data

To test our hypotheses we use a unique dataset on Dutch households. The data are derived from a customized questionnaire, matched to a wide range of demographic characteristics from the CentERdata Databank at Tilburg University. Respondents are members of the CentERpanel[7] who participate in weekly surveys over the internet using a computer. When a computer is not available, the members are provided with a television set up box which makes the sample selection exogenous from the availability of an internet connection. The members of the CentERpanel also participate in the DNB household survey that is run by CentERdata as well. This survey gathers information on the financial situation and choices of the households. The sample is updated semi-annually with new panel members to keep the sample representative of the Dutch population.

A whole stream of financial literature shows that the majority of the individuals are not financially sophisticated (e.g. Lusardi and Mitchell 2007, Van Rooij et al. 2011a,b). This led us to setting up the questionnaire as simply as possible.

3.1.2 The questionnaire[8]

The Dutch pension system[9] provides us with an opportunity to investigate to what extent values drive financial decision making. Since the Dutch pension system up to date is a defined benefit culture the individuals do not have to take riskiness into account, only the final payments matter. We define a framework in which we ask respondents how much they value typically applied socially responsible investment screens. In the next step we ask the respondents if they are willing to give up a small part of their pension for the application of these screens. We state explicitly that it will cost them money, reflecting the direct costs of screening and the sacrificed return from reducing the investable universe (Hong & Kacperczyk 2009). Because we assume pension fund managers to maximize returns within

[7] Our survey is sent out once so we cannot benefit from the panel structure of the data.
[8] See appendix I for more detailed information on the set up of the questionnaire.
[9] For an elaborate description of the Dutch pension system see Van Rooij et al. (2007).

the boundaries of their mandates screening can never lead to an increase of financial returns. By asking these subjective questions we can investigate if people are willing to give up some of their wealth in order to partially align the pension investments with their values. We focus on values people have regarding social screening. Since we investigate the willingness to pay for a financial product we avoid the difficulties that a lot of willingness to pay studies have regarding longer travel distance and availability of the products (e.g. Laroche et al. 2001, Becchetti and Rosati 2007).

The entire questionnaire focused on sustainable behavior of households, and was sent to a representative sample of the Dutch society by CentERdata at the fourth of March 2011. The respondents were given until eight March 2011 to answer the questions. While the response rate concerning the entire survey was 63% (1843 out of 2878 members) we focus in this study on those household members of at least 20 years of age[10] (1766 members). The average participant is a little over 55 years of age, the average household has a total household net income that is €2837 per month, and 54% is male. We also obtain information on drinking and smoking behavior. 18% is a smoker, and 27% never drinks alcoholic beverages.

Furthermore, we asked the respondents to self asses their risk tolerance when it comes to decision making in the pension domain. In addition to self assessed risk tolerance we use another measure introduced by Barsky et al. (1997). This measure uses forced choices between gambles over a lifetime income to measure risk tolerance. The correlation between the two risk tolerance measures is only slightly above 20% therefore we follow Van Rooij et al. (2007) and use both measures as control variables in our analyses since they apparently measure different dimensions of risk tolerance.

Besides risk tolerance, the household members asses their own level of financial sophistication. Around 6% of the respondents claim to be in the two highest categories of financial expertise. However, self assessed financial literacy might not be optimal so we match our original data to a questionnaire that covered financial literacy sent out by CentERdata in May 2011. We are able to match roughly 77% of all (1766) observations. The variables we use include the three basic questions on financial literacy originally designed by Lusardi & Mitchell (2008) expanded with two additional questions on mortgage rents and the

[10] We also repeat all our analyses on sample of individuals who have at least 20 years of age and cannot be older than 65, which is the legal retirement age. As a result, this sample consists out of 926 participants. All reported results are robust to using this sample.

relation between interest rates and bond prices[11]. Only 15.4% of the respondents were able to answer all financial literacy questions correctly. Again, this supports our view in keeping the questionnaire simple.

3.2.1 Measuring social responsibility; Exclusionary strategies

We use several approaches in order to measure the extent to which people value social responsibility in their pension investments. For the groundwork we use typically applied exclusionary strategies from socially responsible investment practices. The companies excluded operate in the so-called "sin" industries, i.e., alcohol, tobacco, and gambling. Companies operating in these industries are often excluded from the investment portfolios of large institutions that are subject to social norms in the US (Hong and Kacperczyk, 2009). The other exclusions are companies that (in)-directly violate human rights or operate in the nuclear energy, weapons manufacturing[12], or pornography industries, since these issues have been increasingly receiving attention in the European institutional investment environment in recent years. This concept of excluding assets from the investable universe is referred to as exclusionary screening. We let the respondents rate the exclusionary screens on a seven point Likert scale from "very unimportant" to "very important".

[Insert table 1 around here]

What we can see from panel A in table 1 is that, on average, respondents rate human rights issues and the exclusion of the weapon industry more importantly than the other types of exclusionary screens. On average the households seem to care the least about investments in the alcohol industry. Interesting, the lowest ranked screens show the highest standard deviation, which means that respondents' values tend to be more consistent concerning exclusionary screens which were more highly ranked. Applying these investment screens would thus capture the values of a larger part of society. This implies that there is variation in the values that beneficiaries express towards different social screens which confirms our first hypothesis. However, we also want to check if the reported values make sense. We do this by comparing the reported values to behavior of the respondents.

We expect smokers and drinkers to have different values towards the exclusion of the respective industries from their pension investments. Panel C of table 1 displays the results of

[11] For exact specification of the financial literacy questions see Appendix II.
[12] Not cluster bombs and nuclear weapons since they are already excluded by the Dutch pension funds.

differences in mean values with the accompanying test statistics for the tobacco industry screen between smokers and non smokers. The difference is negative and highly statistically significant with a t-statistic of -7.44. It is also a natural step to compare how the alcohol exclusionary screen is valued by drinkers (people who consume at least one glass of alcohol a week) and non-drinkers. Again, the difference in importance is statistically significant with a t-statistic of -5.21 (see panel D of table 1). More specifically, for drinkers we observe that the mean values people attribute to the alcohol industry exclusionary screen gradually decrease in the amount of alcoholic beverages consumed per week (see table 2 panel E). We interpret this as evidence that peoples' reported values correspond with their day-to-day behavior. In addition we also report significant gender differences, women value all exclusion criteria significantly lower than do men (see panel B of table 1).

3.2.2 Measuring social responsibility; Best practices

In the same manner as for the exclusionary screens we ask the respondents to value certain best practices as selection criteria for stocks. We do not explain the details of the criteria as these are rather subjective, and difficult for respondents to interpret. We only provide the basic idea of the screening process explaining that the companies that are selected perform above average on that practice. This gives us the opportunity to refrain from the numerous possibilities to apply best practices screening. We argue that this is an issue on the implication of the screens which suits investors who are willing to use these types of investment screens to maximize returns while we investigate if individuals are driven by their values and not by profit motives.

[Insert table 2 around here]

Table 2 panel A shows that from the possible best practices criteria, participants rate employee relations (e.g. pension, health and safety, schooling, anti-discrimination, and work atmosphere) as most important and with the lowest deviation in answers. On the other hand selecting firms based on their charity policy is rated least important. This is striking since the Dutch gave around €4.3 billion to charities in 2007 which is 0.8% of the GDP (Schuyt et al. 2009). This might have several reasons. Some charities have suffered from bad press due to the high salaries paid to their directors. Another reason is that people prefer to choose themselves which charities to support. The other characteristics which received a rating higher than 5 on the importance scale on average, were the two environmental selection

criteria (recycling and CO2 emission reductions) showing a slightly higher mean than community and profit.

For completeness we compare the average values towards these screens over different groups (see panels B to D of table 2). Most striking is that again women value all screening criteria significantly lower than do men, except for the profit screen. This is in line with female beneficiaries having a fixed positive effect towards *social* screening.

4. Are pension investment decisions influenced by norms and values?

Our survey results show conclusive evidence of variation in the valuation of several social investment strategies. We now focus on financial decisions people make and specifically question if those decisions change when offered a more socially responsible alternative. It is also important to make sure the respondents are able to make financial decisions consistent with their values.

4.1.1 Positions in stocks vs. bonds

At the start of the survey the respondents fill out what part of their pension allowance they would like to invest in stocks given that currently the average pension fund invests 40% of the investment in stocks and 60% in bonds. For the sake of simplicity we refrained from considering other types of investments following Van Rooij at al. (2007). To overcome confusion about stocks and bonds we state that bonds are characterized as low risk, low expected return investments and stocks as high risk, high expected return investments[13].

In a next step we introduce a stock portfolio that has exactly the same characteristics as the current portfolio the pension fund holds for the participant. It offers the same payment and is exposed to the same amount of risk, but applies all the described exclusionary screens to the investment portfolio. We ask if they would like to invest more, the same, or less if the basket of stocks they are offered is socially screened.

In panel A of table 3 we show that 17.5% of our respondents answers this question with "less". This result suggests that if all respondents were rational agents, at least this 17.5% derives *positive* utility from investing in the controversial industries because the screens are

[13] Van Rooij et al. (2011b) reports that around 40% of household members do not know the difference between the risk-return characteristics of stocks and bonds.

applied with ceteris paribus conditions.[14] However, the sum of exclusionary screens importance levels for this group is higher than for the beneficiaries who want to invest an equal amount given the screened portfolio. Therefore, it is plausible that on average these beneficiaries experience problems in making financial decisions. In addition, unreported tests suggest that this group has significantly lower financial expertise and a lower level of education than other respondents making this choice.

The difference in importance of the sum of exclusionary screens between people who do want to invest more in stocks given the portfolio is screened based is statistically significant (table 3 panel A). Put differently, they assess higher values of importance to the exclusionary screens than all other respondents. In unreported analyses we verify that this group consists out of individuals who are more risk tolerant therefore they are more eager to shift their portfolio to more stockholdings.

The most noticeable result from panel A in table 3 is that almost all participants answer "the same amount of stocks" meaning that they are indifferent between their current holdings and the holdings of the screened portfolio. Another interpretation of this result is that they have such high levels of risk aversion that the gain in utility is not large enough for them to switch to a slightly riskier portfolio (more stock holdings).

Summarizing, these findings suggest that financial illiteracy is at work as a large group of the respondents report questionable preferences. We can see this from the reluctance of respondents to change hypothetical stock holdings and from difference tests in assessed values.

[Insert table 3 around here]

4.1.2 Preference between stock baskets

Analyzing preferred percentages invested in stocks seems not to be the optimal way to investigate values in financial decisions. Therefore we also included a more simple measure in which we ask the respondents directly for their preferences between stock baskets. A basket that is equal to the current portfolio of their pension fund and one that applies the exclusionary screens holding all characteristics like risk and return equal. Almost 55% of the respondents prefer the screened basket of stocks given equal characteristics. In panel B of

[14] At least 17.5% since risk aversion might withhold beneficiaries from switching their holdings.

table 3 we show that these respondents account a higher importance level to the sum of all exclusionary screens than all other participants on average.

Other respondents prefer their conventional portfolio or do not have a preference. The difference in importance levels between those two groups points into the opposite direction from what we would expect (the group that is indifferent reports lower values than the group that prefers the conventional portfolio). In an unreported test we verify that this difference is significant at the 1% level. Again these results hint towards an explanation in which groups of participants are not able to make these kinds of simplistic financial decisions. We do take from this question that the majority of the respondents value social responsibility in their pension decisions.

4.1.3 Willingness to pay

We also measure if the values of the beneficiaries towards the screening criteria translate into a willingness to pay (WTP) for these values. Put differently, is the net gain in utility (if any) enough to lead to the participants accepting a lower pension income? In defined benefit pension plans the pension funds have the duty to invest the allowances for participants. This makes it possible to extract values from the answers the respondents give because they do not have to take riskiness into account. We explicitly explain to the respondents that only their monthly pension entitlements will vary.

The respondents rate their willingness to pay on a seven point Likert scale that ranges from "No, certainly not" to "Yes, certainly", the results can be seen in panel C of table 3. These results are in line with what we expected. Beneficiaries who are willing to give up pension income benefit the most from the proposed screens compared to the other groups. The differences between the beneficiaries who want to pay and the ones who do not are statistically significant with t-statistics higher than 10 for both the conventional WTP(a) and the more conservative WTP(b).

4.1.2 Financial literacy and translating values into sound financial decisions[15]

From the section above it is clear that the financial choices made do not always reflect the values of the participants. On the one hand this is to be expected since previous research reports low levels of financial literacy among household members (e.g. Van Rooij et al.

[15] All multivariate results reported in the remainder of this paper are robust to using category dummies instead of ordered variables for education, age, and income.

2011a,b). On the other hand we posed the questions in such a way that only very limited financial knowledge is needed to answer them. Therefore this section takes a deeper look into the relationship between consistent financial decision making and financial literacy. Put otherwise, are the respondents who have relatively low levels of financial literacy less capable of incorporating their values into financial decisions?

A first glance at the answers already shows that it is difficult to explain the answers to the different questions using economic logic. For instance, to relate the answers of the *percentage invested in stocks* question to the self reported values of the social screens, individuals should have extremely high levels of risk aversion on average. Since almost all respondents did not want to change the percentage of their pension holdings invested in stocks while there is significant variation in the reported importance levels of the applied screens.[16] Another more plausible explanation is that beneficiaries are simply not able to translate their values into a utility maximizing financial choice. Note that the other two financial choice measures (*preferred basket* and *WTP*) are not influenced by risk aversion.

To measure if the respondents make consistent financial choices we create four different dummy variables that measure if the financial choices are consistent or not[17]. We define:

- ERROR1 to be 1 if the answers to the *percentage invested in stocks* and the *WTP(b)* question are not consistent (e.g. if the answers are: I want to invest less in stocks and yes, I am willing to pay for screening).[18]
- ERROR2 to be 1 if the answers to the *percentage invested in stocks* and the *preferred basket* question are not consistent (e.g. if the answers are: I want to invest less in stocks and I prefer the socially screened basket).
- ERROR3 to be 1 if the answers to the *WTP(b)* and the *preferred basket* question are not consistent (e.g. if the answers are: I have no preference between baskets and yes, I am willing to pay for screening).
- ERROR4 to be 1 if any of the three answers is not consistent with another.

This results in four different variables that measure the consistency of financial decisions in four different ways. The correlation is highest among the first and the second ERROR (0.58), and lowest between the second and the third ERROR (0.01). This implies that we are not

[16] Making the assumption that the importance levels are accurately measured.
[17] See appendix VI for the exact description of the how the ERROR variables are defined.
[18] All our results are robust to using the less conservative WTP(a) to create the ERROR variables.

measuring the same thing in three different ways. 11% of the respondents make the first ERROR, compared to 15%, 26% and 37% making the second, third and the fourth ERROR respectively. These results show that a considerable part of our sample is not able to consistently incorporate their values into their financial decisions in different situations, confirming our third hypothesis.

To measure if the financial choices are related to financial literacy we use the expanded literacy questions from Lusardi & Mitchell (2008). Using the answers to five questions we create two different literacy indexes. The first one is simply the sum of all correct answers to the five literacy questions. The second index is created using a principal component factoring analysis retaining only the components with an eigenvalue greater than one (the first two factors)[19].

To test our hypothesis that less financially sophisticated individuals are less capable of incorporating their values into their financial decisions we estimate a probit model using the ERROR variables as dependent and the financial literacy variables as independent variables. In table 4 we report marginal effects estimated at mean values. For all specifications reported in table 4 we find negative coefficients on the financial literacy variables. These results strongly support our fourth hypothesis. The model specifications that include control variables have lower loadings on the literacy variables. This is not surprising as education is among the most important drivers of financial literacy (Van Rooij et al. 2011).

As expected, the coefficients on education load significantly negative indicating that on average people who enjoyed a higher level of education are less likely to make contradictory financial choices. In addition income has a negative effect while age has a strong positive effect on all four ERROR dummies. In addition we find that being male and having a higher self assessed risk tolerance increases the likelihood of making the third and fourth ERROR.

[Insert table 4 around here]

Summarizing, we have shown that on average beneficiaries are not capable of incorporating their values into their financial decisions and that a lack of financial sophistication can explain this partially. These findings have important consequences, if the fiduciaries want to take values into account they have to be very careful in designing a solution to both the problems of heterogeneous preferences and the low financial abilities of the households. In

[19] See appendix III for more information on the creation of the financial literacy variables.

addition, governments that want to give their population more financial responsibilities should also take great care to make sure that individuals are well prepared.

4.2 Willingness to pay for personalized pension investments

In this section we take a closer look at which type of person obtains positive utility from socially responsible pension investment decisions. We examine a new personalized WTP(p) variable, for which we select the screens that were ranked higher than 4 out of the 7 on importance by the individual respondents, making sure the screens are positively valued by the respondents. When no screen was ranked higher than 4 we select all criteria. The next step is to mention that it is costly to apply these investment screens. This gives us the possibility to test our second hypothesis by investigating willingness to pay. We do this for both the exclusionary and the best practices screens.

4.2.1 Are beneficiaries willing to pay?

In two steps the respondents had to fill out if they would accept a monthly pension entitlement that is lower than their expected entitlement they receive with the current investment policy. Panel A of table 5 shows that 25.72% does not want to give up anything or a negligible part of their pension for the exclusionary (best practices) screens. Almost 45% of the respondents agree to give up 5% of their pension income after retirement according to the data. The numbers for the best practices screens are very much alike with 28.71% willing to pay. Since it is well known that framing can influence the outcome of the results with this type of questions we refrain from interpreting these percentages directly. These numbers do tell us that we can confirm the second hypothesis since over 25% of our respondents wants to give up a considerable part of their pension income to get their values more aligned with their pension investments. In the next section we will investigate determinants of WTP(p).

[Insert table 5 around here]

4.2.2 Determinants of willingness to pay

To analyze willingness to pay we generate a dummy variable that takes on the value of 1 if the respondent is willing to give up part of his pension income for this socially responsible pension investment. First we verify that the beneficiaries who rate the socially responsible screens as more important are also more likely to be willing to pay for the implication of these screens (table 5 panel B). The sum of importance levels for all exclusionary screens is

significantly higher (t-statistic of 10.49) among the respondents who want to give up part of their pension income. Also the number of screens rated higher than 4 is significantly higher as we expected. In panel C of table 5 we verify these results for the best practices screens. Moreover, the correlation between the dummy on willingness to pay for exclusionary screens and the dummy for best practices criteria is 85% implying that the respondents that do want to pay for screening want to do so for different types of social screening.

In table 6 we want to make explicit for whom the surplus utility of screening is high enough to overcome pecuniary motives. Therefore we use the WTP(p) dummy in a probit regression framework with the log of net monthly household income, gender, and some other controls used often in household finance studies (e.g. Van Rooij et al 2007, Van Rooij et al 2011ab, Renneboog and Spaenjers 2011). In addition we add a dummy that takes on the value of one if the respondent does not value at least one screen higher than four out of seven (Dnot_important). In every even column we add risk tolerance and financial expertise variables. The first two columns in Panel A of table 6 show the marginal effects predicted at the mean value. Individuals who are higher educated and individuals from higher income categories are significantly more likely to be willing to pay for personalized social screening. The most significant result is that individuals who do not express positive values towards at least one of the social screens are forty percent less likely agree on a lower pension. These results are robust to including measures of financial expertise and risk tolerance as well as excluding respondents who make inconsistent financial choices.

The effects are almost identical for the best practices screens (see panel B in table 6). However, drinker and male are significant. This gender effect is in line with Andreoni and Vesterlund (2001) in which they find that females are more willing to engage in altruism than do men when altruism is expensive[20]. And with Laroche et al. (2001) who find that especially women have a higher willingness to pay for environmentally friendly products. Still, the most important determinant is that the beneficiary cares about social screening.

[Insert table 6 around here]

[20] We argue that the amounts of willingness to pay we demand from the individuals are definitely expensive.

5. Discussion

A natural problem in the design of our survey lies in that we do not observe the original pension investments of the pension funds and even if we would be able to get this information we are almost certain that the average individual does not possess this information. Therefore our results can also be interpreted as a lack of transparency of the pension funds' investments. Since the beneficiaries who are willing to accept a lower pension for the application of these screens *consider* their pension fund holdings to be less socially responsible than what they would ideally like them to be. This does not necessarily mean that the holdings do in fact not meet the demands of the pension participants to a large degree.

We also asked the respondents if they missed certain screens next to the ones we proposed. The ones most often mentioned were companies with an excessive bonus culture, companies that engage in animal testing or other business practices that violate animal wellbeing, and using the environmental dimension as an exclusionary screen (worst polluting) rather than a selection screening method. Therefore the percentage of people willing to pay for somewhat customized responsible pension investments might be even larger than what we report.

Less of a concern is the fact that the questions reflect simplified versions of reality which is done to partially overcome the low financial literacy of the average household member. A socially responsible investment strategy does not necessarily exclude all assets that do not pass a certain form of screening. Pension funds often interfere with managerial decisions by corporate engagement. These other types of SRI are ignored in this paper.[21]

6. Conclusion

This paper reports on frictions between pension fund participants' social values and the allocation of their pension assets. To our knowledge it is the first empirical study to directly study social values together when making investment decisions. We provide consistent evidence that beneficiaries do value social responsibility in their pension investments. Companies that operate in the weapons industry and companies that violate human rights amendments are deemed most important to be excluded from the investment portfolio relative to our proposed screens. While excluding the "sin" industries (alcohol, tobacco, and

[21] Though, our results are not influenced by this, since social engagement is also costly for beneficiaries (Barber, 2007).

gambling) is of a much lower importance to our respondents. It seems to be important for the respondents that companies treat other humans well as the highest valued exclusionary as well as selection screens are related to human wellbeing. Less important is giving to charities.

We continued to investigate if respondents were able to translate these values into financial decisions and found that over one third reported at least one inconsistent choice. Especially respondents who do not possess the required level of financial literacy to make investment choices were not able to consistently match their reported values themselves.

Regarding willingness to pay, we found that, higher educated and participants from a higher income household and females show a higher willingness to exchange pension income for investments that better match their norms and values. Taking these effects into account the most important determinant of willingness to pay is whether the beneficiaries care about taking social values into account.

Summarizing we find that a significant tranche of pension participants do derive positive utility from social screens in their pension investments. If pension funds try to take into account the values of their clientele they either fail to communicate their social responsibility practices effectively or their social responsibility practices do not meet the needs of the participants. Because we observe variation in values it might not be optimal to provide the pension fund participants with just one alternative pension investment scheme. Our findings have important implications on how socially responsible investment filters into the public domain through a market based system. It is important to reflect upon the influence of financial responsibility in society, whilst reconciling this with the observed level of limited financial literacy, which may stand in the way of providing tailor-made pension investment schemes for all. We leave it to future research how to best to tackle these issues.

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Table 1 Importance of exclusionary screens

This table summarizes the self reported importance level of several exclusionary screens often applied in practice by (social) investment funds. The answers range from 1=very unimportant to 7=very important. Panel A contains basic summary statistics. Panel B until D compare the answers over different groups of respondents testing the uncontrolled mean differences based on gender, smoking, and drinking behavior. Panel reports on the importance of the alcohol exclusionary screen and drinking behavior. *, **, *** represent significance at the 10%, 5%, and 1% respectively.

Summary statistics for the Exclusionary screens

Panel A

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
weapons	1766	5.58	1.93	1	7
alcohol	1766	4.11	1.90	1	7
tobacco	1766	4.54	1.94	1	7
gambling	1766	4.95	1.97	1	7
sexind	1766	5.10	2.02	1	7
nuclear_en	1766	4.52	2.12	1	7
human	1766	5.89	1.77	1	7

Panel B

	Female (815 obs.)		Male (951 obs.)		Difference		Tests
Variable	Mean	Std. Dev.	Mean	Std. Dev.			t-stat
weapons	5.88	1.76	5.32	2.03	0.56	***	6.14
alcohol	4.44	1.86	3.83	1.89	0.62	***	6.88
tobacco	4.77	1.89	4.35	1.97	0.42	***	4.57
gambling	5.25	1.88	4.70	2.01	0.56	***	5.98
sexind	5.53	1.88	4.73	2.07	0.80	***	8.50
nuclear_en	5.08	1.97	4.04	2.12	1.04	***	10.63
human	6.08	1.66	5.74	1.85	0.34	***	4.01

Panel C

	Smoker (316 obs.)		Non-smoker (1450 obs.)		Difference		Tests
Variable	Mean	Std. Dev.	Mean	Std. Dev.			t-stat
weapons	5.47	1.96	5.60	1.92	-0.14		-1.14
alcohol	3.71	1.82	4.20	1.91	-0.48	***	-4.13
tobacco	3.82	1.77	4.70	1.95	-0.88	***	-7.44
gambling	4.75	1.97	5.00	1.97	-0.24	**	-1.98
sexind	4.97	2.01	5.13	2.03	-0.16		-1.26
nuclear_en	4.37	2.11	4.55	2.12	-0.18		-1.37
human	5.82	1.77	5.91	1.77	-0.09		-0.86

Panel D

	Drinker (1285 obs.)		Non-drinker (481 obs.)		Difference		Tests
Variable	Mean	Std. Dev.	Mean	Std. Dev.			t-stat
weapons	5.62	1.90	5.48	2.01	0.14		1.35
alcohol	3.97	1.86	4.49	1.95	-0.53	***	-5.21
tobacco	4.50	1.94	4.65	1.96	-0.15		-1.46
gambling	4.97	1.95	4.90	2.03	0.07		0.73
sexind	5.09	1.99	5.12	2.12	-0.04		-0.37
nuclear_en	4.42	2.11	4.79	2.11	-0.37	***	-3.30
human	5.93	1.74	5.80	1.85	0.13		1.36

Panel E

Units of alcohol per week	Obs	Percent	Mean	Std. Dev.	Min	Max
none	481	27%	4.49	1.95	1	7
1 to 5	705	40%	4.12	1.88	1	7
6 to 10	353	20%	3.94	1.86	1	7
11 to 20	189	11%	3.68	1.81	1	7
>20	38	2%	2.92	1.40	1	5

Table 2 Importance of best practices screens

This table summarizes the self reported importance level of several best practices screens often applied in practice by (social) investment funds. The answers range from 1=very unimportant to 7=very important. Panel A contains basic summary statistics. Panel B until D compare the answers over different groups of respondents testing the uncontrolled mean differences based on gender, smoking, and drinking behavior. *, **, *** represent significance at the 10%, 5%, and 1% respectively.

Summary statistics for the Positive screens

Panel A

Variable	Obs.	Mean	Std. Dev.	Min.	Max.
recycling	1766	5.53	1.43	1	7
CO2	1766	5.44	1.49	1	7
employees	1766	5.76	1.37	1	7
community	1766	5.33	1.46	1	7
charity	1766	4.82	1.62	1	7
profit	1766	5.15	1.44	1	7

Panel B

	Female (815 obs.)		Male (951 obs.)		Difference		Tests
Variable	Mean	Std. Dev.	Mean	Std. Dev.			t-stat
recycling	5.66	1.37	5.43	1.48	0.22	***	3.29
CO2	5.63	1.41	5.28	1.54	0.35	***	4.99
employees	5.94	1.28	5.61	1.42	0.33	***	5.11
community	5.47	1.41	5.20	1.49	0.27	***	3.93
charity	4.99	1.56	4.67	1.67	0.32	***	4.14
profit	5.21	1.42	5.11	1.45	0.10		1.44

Panel C

	Smoker (316 obs.)		Non-smoker (1450 obs.)		Difference		Tests
Variable	Mean	Std. Dev.	Mean	Std. Dev.			t-stat
recycling	5.30	1.48	5.59	1.42	-0.29	***	-3.25
CO2	5.26	1.51	5.48	1.48	-0.22	**	-2.38
employees	5.62	1.43	5.79	1.35	-0.17	**	-2.02
community	5.15	1.56	5.37	1.43	-0.21	**	-2.35
charity	4.65	1.72	4.85	1.60	-0.20	**	-2.02
profit	5.12	1.49	5.16	1.43	-0.05		-0.52

Panel D

	Drinker (1285 obs.)		Non-drinker (481 obs.)		Difference		Tests
Variable	Mean	Std. Dev.	Mean	Std. Dev.			t-stat
recycling	5.58	1.40	5.41	1.53	0.16	**	2.15
CO2	5.45	1.49	5.41	1.49	0.04		0.50
employees	5.75	1.36	5.79	1.39	-0.04		-0.54
community	5.30	1.45	5.39	1.47	-0.09		-1.14
charity	4.79	1.62	4.89	1.65	-0.10		-1.19
profit	5.18	1.43	5.10	1.48	0.08		0.98

Table 3 Financial choices and screening valuation, three candidates.

This table summarizes the sums of self reported importance level of screens (often applied in practice by social investment funds) sorted by three financial choice variables. The answers range from 1=very unimportant to 7=very important per screen. Panel A compares the answers between the groups that want to invest less, the same, or more in stocks if the portfolio applies the exclusionary screens. Panel B does the same for portfolio preferences "screened", "indifferent", and "conventional". Panel C reports the differences of the self reported important levels between the group willing to pay for screening and the group that is not as well as summary statistics on the willingness to pay variable. This is done using two different definitions of the WTP variable. In each panel we test difference between the outer categories and report the two tailed t-statistics. Standard deviations are reported in parentheses. *, **, *** represent significance at the 10%, 5%, and 1% respectively.

Panel A: % of stock invested

	More	The same	Less	More-Less	Tests (t-stat)
Sum excl. screens	38.20	34.13	35.19	3.01 ***	2.62
Std. Dev.	9.26	10.69	12.57		
Observations	153	1304	309		
Percentage	8.66%	73.84%	17.50%		

Panel B: Preferred portfolio

	Screened	Indifferent	Conventional	Screen-Conv.	Tests (t-stat)
Sum excl. screens	36.91	30.47	33.91	3.00 ***	4.85
Std. Dev.	9.31	12.59	11.35		
Observations	964	451	351		
Percentage	54.59%	25.54%	19.88%		

Panel C: Willingness to pay (WTP)

WTP(a)	Yes = 5-7	Neutral = 4	No = 1-3	Yes-No	Tests (t-stat)
Sum excl. screens	37.57	34.6	30.96	6.61 ***	11.49
Std. Dev.	9.13	9.68	12.60		
Observations	805	336	625		
Percentage	45.58%	19.03%	35.39%		

WTP(b)	Yes = 6-7	Neutral = 3-5	No = 1-2	Yes-No	Tests (t-stat)
Sum excl. screens	38.44	34.59	30.89	7.55 ***	10.38
Std. Dev.	8.94	9.70	13.36		
Observations	494	795	477		
Percentage	27.97%	45.02%	27.01%		

Table 4 Financial literacy and making consistent financial choices

This table presents marginal effects measured at mean values after a probit estimation on four different ERROR dummies that take on a value of one if the respondent makes a choice that is not consistent with the previously made financial choice. ERROR1 measures the consistency of answers between the ""% of stock invested" and "WTP(b)", ERROR2 between "% of stock invested" and "preferred portfolio", ERROR3 between "WTP(b)", and "preferred portfolio", ERROR4 measures is only 0 for those who make consistent choices for all three variables. See appendix IV for the exact specification of the ERROR measures. Panel A and B use the sum of the correct answers to the financial literacy questions as independent variables. Panel C and D include a factoring method explained in detail in Appendix III. In the first step of the two-step regression model the standard errors are clustered by household. We report the R-squared of the first stage. Z-statistics are in parentheses. *, **, *** represent significance at the 10%, 5%, and 1% respectively.

	ERROR1 11%	ERROR2 15%	ERROR3 26%	ERROR4 37%
Panel A: Without controls				
finlitsum	-0.019	-0.042	-0.008	-0.048
	(-2.158)**	(-4.110)***	(-0.621)	(-3.366)***
pseudo-R2	0.005	0.015	0.000	0.007
Test Fin. Literacy=0	4.654	16.920	0.385	11.330
P-value	0.031	0.000	0.535	0.001
Panel B: With controls				
finlitsum	-0.012	-0.029	-0.008	-0.037
	(-1.377)	(-2.702)***	(-0.598)	(-2.389)**
l_hhnetincome	0.003	-0.009	-0.016	-0.024
	(0.406)	(-1.160)	(-1.704)*	(-2.277)**
education	-0.015	-0.019	-0.022	-0.034
	(-2.548)**	(-2.831)***	(-2.498)**	(-3.577)***
age	0.002	0.002	0.002	0.004
	(3.153)***	(2.351)**	(1.878)*	(3.382)***
rural	0.005	0.006	0.010	0.008
	(0.772)	(0.742)	(1.033)	(0.751)
hhsize	-0.014	0.005	0.012	0.009
	(-1.535)	(0.460)	(0.987)	(0.704)
male	0.008	0.002	0.059	0.065
	(0.459)	(0.083)	(2.388)**	(2.353)**
Dsmoker	-0.011	-0.025	-0.003	-0.014
	(-0.513)	(-1.002)	(-0.086)	(-0.370)
drinker	-0.002	-0.006	0.013	-0.005
	(-0.218)	(-0.603)	(1.101)	(-0.381)
Finexpert_self	-0.003	-0.011	0.003	-0.005
	(-0.565)	(-1.608)	(0.355)	(-0.544)
risktol_Barsky	0.001	0.004	0.005	0.006
	(0.160)	(0.573)	(0.530)	(0.558)
risktol_self	0.007	0.006	0.030	0.028
	(0.994)	(0.694)	(2.904)***	(2.412)**
l_time	0.010	0.011	0.009	0.016
	(0.840)	(0.856)	(0.513)	(0.787)
pseudo-R2	0.047	0.044	0.026	0.038
Test Fin. Literacy=0	1.903	7.360	0.358	5.703
P-value	0.168	0.007	0.550	0.017

	ERROR1	ERROR2	ERROR3	ERROR4
Panel C: Factor variables without other controls				
factor1	-0.013	-0.019	-0.011	-0.033
	(-1.705)*	(-2.137)**	(-0.957)	(-2.454)**
factor2	-0.011	-0.035	-0.001	-0.032
	(-1.279)	(-3.501)***	(-0.077)	(-2.399)**
pseudo-R2	0.005	0.015	0.001	0.007
Test Fin. Literacy=0	4.727	16.790	0.920	11.750
P-value	0.094	0.000	0.631	0.003
Panel D: Factor variables with other controls				
factor1	-0.007	-0.009	-0.004	-0.017
	(-0.885)	(-0.996)	(-0.309)	(-1.244)
factor2	-0.008	-0.028	-0.006	-0.031
	(-1.018)	(-2.750)***	(-0.496)	(-2.197)**
l_hhnetincome	0.003	-0.009	-0.016	-0.024
	(0.404)	(-1.134)	(-1.702)*	(-2.275)**
education	-0.015	-0.020	-0.022	-0.035
	(-2.540)**	(-2.969)***	(-2.499)**	(-3.613)***
age	0.002	0.002	0.002	0.004
	(3.152)***	(2.398)**	(1.876)*	(3.391)***
rural	0.005	0.005	0.010	0.008
	(0.753)	(0.650)	(1.020)	(0.706)
hhsize	-0.014	0.005	0.012	0.009
	(-1.537)	(0.482)	(0.986)	(0.704)
male	0.008	0.004	0.060	0.067
	(0.458)	(0.192)	(2.385)**	(2.390)**
Dsmoker	-0.011	-0.025	-0.003	-0.014
	(-0.512)	(-1.011)	(-0.084)	(-0.373)
drinker	-0.002	-0.006	0.013	-0.005
	(-0.219)	(-0.631)	(1.099)	(-0.382)
Finexpert_self	-0.004	-0.012	0.003	-0.006
	(-0.596)	(-1.654)*	(0.342)	(-0.587)
risktol_Barsky	0.001	0.005	0.005	0.006
	(0.167)	(0.669)	(0.535)	(0.592)
risktol_self	0.007	0.006	0.030	0.028
	(0.991)	(0.698)	(2.908)***	(2.414)**
l_time	0.010	0.010	0.009	0.016
	(0.840)	(0.773)	(0.504)	(0.758)
pseudo-R2	0.046	0.045	0.026	0.038
Test Fin. Literacy=0	1.781	8.281	0.330	6.097
P-value	0.410	0.016	0.848	0.047

Observations 1368 (1363 with controls)

Table 5 Willingness to pay for personalized social pension investments

This table reports the willingness to pay for personalized social pension investment screening. We personalize the investments by selecting only those screens valued higher than four on a seven point Likert scale. If none of the screens is valued higher than four we select all screens. Panel A reports the fractions of the sample and the accompanying answers. Panel B and C report the average sum of values sorted by willingness to pay and the number of screens valued higher than 4. The differences and two tailed t-statistics are reported in the most right columns. *, **, *** represent significance at the 10%, 5%, and 1% respectively.

Panel A: WTP(p) variable

	Exclusionary screens		Best practices screens		
WTP	Obs.	Percent	Obs.	Percent	WTP(p)
<1%	456	25.72%	509	28.71%	No
1%	84	4.74%	113	6.37%	Yes
2%	446	25.16%	460	25.94%	Yes
≥ 5%	787	44.39%	691	38.97%	Yes

Panel B: Assessed values and WTP(p)for Exclusionary screens

WTP(p)	Yes (1317 obs.)		No (456 obs.)		Difference	Tests (t-stat)
	Mean	Std. Dev.	Mean	Std. Dev.		
Sum excl. screens	36.26	(9.60)	30.18	(13.25)	6.08 ***	10.49
#screens >4	4.69	(2.18)	3.11	(2.80)	1.58 ***	10.80

Panel C: Assessed values and WTP(p)for Best practices screens

WTP(p)	Yes (1264 obs.)		No (509 obs.)		Difference	Tests (t-stat)
Sum B.P. screens	33.08	(6.14)	29.42	(8.63)	3.66 ***	10.04
#screens >4	4.84	(1.54)	3.70	(2.36)	1.14 ***	10.45

Table 6 Determinants of WTP for personalized pension investments

This table reports the marginal effects after estimating probit models. The dependent variable is a dummy that is 1 for individuals who are willing to pay for socially screened pension investment portfolios. The individuals are offered a customized choice that selects only those screens rated >4 out of 7. Panel A presents the results for exclusionary screens on the full sample (columns 1 and 2) and a subset which excludes all respondents who make an inconsistent choice (columns 3 and 4). In panel B we do the same for the best practices screens. In addition columns 5 and 6 exclude respondents who only value the "profit" screen higher than 4 out of 7. In the first step of the two-step regression model the standard errors are clustered by household. We report the R-squared of the first stage. Z-statistics are in parentheses. *, **, *** represent significance at the 10%, 5%, and 1% respectively.

Panel A: Exclusionary screens

	Full sample		Conditional ERROR4=0	
l_hhnetincome	0.023	0.025	0.031	0.031
	(2.738)***	(2.916)***	(2.761)***	(2.828)***
education	0.031	0.029	0.041	0.038
	(4.071)***	(3.724)***	(4.233)***	(3.940)***
age	0.001	0.002	0.001	0.002
	(1.141)	(1.586)	(0.907)	(1.260)
rural	-0.000	0.000	-0.004	-0.003
	(-0.033)	(0.030)	(-0.327)	(-0.271)
hhsize	0.010	0.009	0.014	0.013
	(0.890)	(0.826)	(1.058)	(1.024)
male	-0.026	-0.035	-0.033	-0.037
	(-1.296)	(-1.636)	(-1.285)	(-1.365)
Dsmoker	-0.070	-0.068	-0.033	-0.030
	(-2.338)**	(-2.290)**	(-0.897)	(-0.811)
drinker	0.021	0.018	0.028	0.026
	(1.784)*	(1.560)	(1.989)**	(1.852)*
Dnot_importantNS	-0.396	-0.399	-0.446	-0.447
	(-11.106)***	(-11.139)***	(-9.225)***	(-9.188)***
Finexp_self		0.001		0.004
		(0.120)		(0.387)
risktol_Barsky		0.025		0.025
		(3.055)***		(2.329)**
risktol_self		0.005		-0.002
		(0.474)		(-0.120)
Observations	1,764	1,764	1,098	1,098
pseudo-R2	0.104	0.110	0.131	0.137

Panel B: Best practices screens						
	Full sample		Conditional ERROR4=0		Excl. only profit>4	
l_hhnetincome	0.026	0.027	0.030	0.030	0.025	0.026
	(2.823)***	(2.986)***	(2.413)**	(2.457)**	(2.681)***	(2.819)***
education	0.039	0.035	0.050	0.048	0.040	0.035
	(4.920)***	(4.437)***	(5.075)***	(4.776)***	(5.042)***	(4.463)***
age	0.001	0.001	0.000	0.001	0.000	0.001
	(0.758)	(1.225)	(0.359)	(0.682)	(0.451)	(0.907)
rural	0.004	0.004	-0.008	-0.008	0.006	0.006
	(0.384)	(0.372)	(-0.704)	(-0.713)	(0.603)	(0.586)
hhsize	0.009	0.009	0.020	0.020	0.007	0.006
	(0.816)	(0.782)	(1.464)	(1.464)	(0.574)	(0.542)
male	-0.060	-0.072	-0.069	-0.074	-0.049	-0.061
	(-2.816)***	(-3.145)***	(-2.560)**	(-2.593)***	(-2.243)**	(-2.668)***
Dsmoker	-0.057	-0.056	-0.034	-0.032	-0.057	-0.055
	(-1.863)*	(-1.845)*	(-0.888)	(-0.828)	(-1.841)*	(-1.806)*
drinker	0.028	0.025	0.041	0.039	0.028	0.025
	(2.325)**	(2.082)**	(2.810)***	(2.680)***	(2.332)**	(2.061)**
Dnot_importantPS	-0.426	-0.431	-0.471	-0.476	-0.434	-0.440
	(-10.179)***	(-10.393)***	(-8.371)***	(-8.554)***	(-10.381)***	(-10.629)***
Finexp_self		0.004		0.002		0.007
		(0.485)		(0.147)		(0.800)
risktol_Barsky		0.025		0.018		0.025
		(2.816)***		(1.590)		(2.856)***
risktol_self		0.008		0.008		0.007
		(0.751)		(0.611)		(0.662)
Observations	1,764	1,764	1,098	1,098	1,736	1,736
pseudo-R2	0.090	0.096	0.115	0.119	0.094	0.100

Appendix

Appendix I The questionnaire

The questions on the importance levels of different exclusionary screens

For each of the exclusionary screens we ask:

What level of importance do you attribute to the following exclusions of you pensioninvestments?

1 = very unimportant

7 = very important

The questions on the importance levels of different best practices screens

For each of the best practices screens we ask:

The previous was about **not** investing in certain companies, you also have the opportunity to choose in what companies/industries you certainly **do** want to invest in. Think about companies that have a good environmental program, companies that help people in third world countries and companies that take good care of their employees.

What level of importance do you attribute to your pensionfund investing in the following companies?

a. The company recycles a lot
   …
f. The company makes sure the profit margins are high (for continuity)

1 = very unimportant

7 = very important

The questions % of stocks invested

Step 1.

What if your pension payments are put on an individual account by your employer and then this money is being invested in stocks and bonds by your pensionfund. You have to decide yourself what amount is invested in stocks and what amount in bonds. Stocks have a higher expected return and a higher risk. Bonds have a lower expected return and a very low risk. All Dutch pensionfunds together held around 40% in stocks and 60% in bonds on average at the end of 2010.

What percentage would you have invested in stocks?

0..100

Step 2.

Intro: Almost all Dutch pensiondunds invest a part of the/your money in the weapons-*, alcohol-, tobacco-, gambling-,pornography industry, nuclear energy, and companies that (in)direcly violate human rights (like child labor).

*most big pension funds exclude especially direct production of nuclear weapons and clusterbombs, however, this industry entails a lot more of course.

Question: What if your current pensionfund decides no longer to invest in previously mentioned industries, keeping all other characteristics like risk and expected return (of the pension funds' investments) equal to the current situation.

Would you like to invest more or less in stocks in this situation?

1 less

2 the same

3 more

The question on the preferred basket of stocks

What if your pensionfund offers you the choice to invest your pension in different stock-portfolios:

Package 1 = your current pensionfund and stockportfolio

Package 2 = does not invest in previously mentioned industries* but everything else is exactly the same.

*These industries are the weapons-, alcohol-, tobacco-, gambling-,pornography industry, nuclear energy, and companies that (in)direcly violate human rights (like child labor).

How is your preference between both packages?

1 Package 1

2 Package 2

3 No preference

The questions on willingness to pay

Imagine that the return on the current pension investments is higher than in the case of the screened investments while the risk is the same. Are you prepared to give up a (very) small part of your pension income for such socially responsible pension composition?

1 = No, certainly not

7 = Yes, certainly

The questions on willingness to pay for a personalized investment

Intro: Imagine that the government decides to switch to a system in which you can choose yourself how much of your pension investments you want to invest in stocks and how much in bonds. Now consider this fund which does not invest in {all the screens the respondent rated higher than 4, if no screen was rated higher than 4 than all screens are applied} has a lower expected payoff but the same risk as your current holdings. We name this portfolio the reponsible choice.

Question: If you get the opportunity to invest in the reponsible choice. Do you accept a monthly expected pension entitlement that is 2% lower than you current expected pension entitlement? This means that when your current expected pension (including state pension) would be 1100 euros a month that you will agree on a pension that is 1078 euros.

1. Yes
2. No

If the answer is yes we replace the 2% by 5% and ask the question again. Also the example numbers are changed accordingly.

If the answer is no we replace the 2% by 1% and ask the question again. Also the example numbers are changed accordingly.

We repeat this methodology for the best practices screens as well.

Appendix II Financial literacy questions

1. *Do you think that the following statement is true or false? A 15-year mortgage requires higher monthly payments on average than a 30-year mortgage (with equal amount borrowed), but the total rents payed over the whole period are lower for the 15-year mortgage.*
2. *Imagine that the overall interest rate goes up tomorrow, what will happen to the value of outstanding bonds? (1) They will increase in value (2) They will decrease in value (3) They will have the same value (4) There is no relationship between interest rates and the values of bonds.*

Appendix III Generate financial literacy factors

This table reports the results of a principal component factor analysis on five variables that measure different aspects of financial literacy. The data is suited for this method since the Bartlett sphericity test returned a p-value of 0.00, and the Kaiser-Meyer-Olkin measure is 0.611.

Panel A

Component	Eigenvalue	Proportion	Cumulative
Factor1	1.49	0.30	0.30
Factor2	1.00	0.20	0.50
Factor3	0.96	0.19	0.69
Factor4	0.79	0.16	0.85
Factor5	0.76	0.15	1.00

Panel B

Variable	Factor1	Factor2	Unexplained
finlitir	0.65	-0.22	0.53
finlitinfl	0.69	-0.01	0.53
finlitbonds	0.30	0.46	0.70
finlitrisk	0.66	-0.33	0.46
finlitmort	0.28	0.80	0.28

Appendix IV Creation of the ERROR variables

Preferred basket is the answer to the question in which we ask the respondents the preference between the exclusionary screened and the conventional portfolio. WTP represent whether or not the respondent was willing to pay for screening in his or her portfolio (see Table 3). % in stocks is the answer to the question in which we asked the respondents if they would prefer to invest a different percentage in stocks given the basket of stocks is screened using exclusionary screens compared to their ideal percentage invested in stocks. ERROR1 to 3 are the variables we created using the answers those questions. ERROR4 takes on the value of one if the respondent makes one of the inconsistent financial choices.

We distinguish three types of beneficiaries, one whose utility function is not influenced by social values, one who gets positive utility from the exclusionary screens proposed, and one who gets negative utility from the proposed screens. In panel A we take risk aversion into account, panel B follows from panel A.

Panel A: Answers consistent with three types of rational agents

Utility from social values	Preffered portfolio	WTP	% invested in stocks
No relation	No preference	No	The same
Positive	Screened	No/Neutral/Yes	More/The same
Negative	Conventional	No	Less/The same

Panel B: Definition of ERROR variables

% stocks	WTP	**ERROR1**	% stocks	Preference	**ERROR2**
	Yes	1		Conventional	0
Less	No	0	Less	Screened	1
	Neutral	1		No preference	1
	Yes	0		Conventional	0
Same	No	0	Same	Screened	0
	Neutral	0		No preference	0
	Yes	0		Conventional	1
More	No	0	More	Screened	0
	Neutral	0		No preference	1

WTP	Preference	**ERROR3**	**ERROR4**
	Conventional	1	
Yes	Screened	0	1 if $\sum$ERRORi > 0
	No preference	1	
	Conventional	0	
No	Screened	0	
	No preference	0	
	Conventional	1	
Neutral	Screened	0	
	No preference	1	