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On the relevance of psychological motives, values, and norms for socially responsible investments: An econometric analysis

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for socially responsible investments: An econometric analysis**

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November 2016

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Abstract

Based on unique data from a representative computer-based survey among financial decision makers in Germany, this paper empirically examines the determinants of socially responsible investments (SRI). Our econometric analysis implies that the perceived financial performance of SRI matters for the shares of investments in SRI among all investments. However, our main result is that psychological motives, values, and norms like warm glow motives and expectations of the social environment are even more relevant and thus have strong significant effects on SRI. This suggests that SRI investors gain strong non-financial utility from sustainable investments. While the membership in Christian churches and the strength of Christian religiosity also seem to be positively correlated with SRI, these correlations become insignificant if other psychological motives, values, and norms are included in the econometric analysis. Furthermore, a left-wing political orientation rather has significant negative effects on SRI. An explanation for this surprising result is the general aversion of a left-wing identification to the participation in stock markets, which is dominant in SRI.

Keywords: Socially responsible investments; psychological motives; values; social norms; econometric analysis

JEL: G02, G11, M14, A13, Q56, Z12

1. Introduction

The market for sustainable or socially responsible investments (SRI) (i.e. an investment strategy based on environmental, social, and/or ethical screens, e.g. Renneboog et al., 2008a) is still rather small, but has grown dynamically worldwide during the last decades (e.g. Mollet and Ziegler, 2014). For example, according to US SIF (2014), US assets under management using SRI strategies incorporating environmental, social, and governance (ESG) criteria increased from 166 billion US dollar in 1995 to over 3314 billion US dollar in 2012 and up to 6200 billion US dollar in 2014 so that these assets now account for more than one out of every six dollars under professional management in the USA. Similarly, Eurosif (2012, 2014) reports that the volume of European assets that integrate ESG factors in the financial analysis grew from 639 billion Euro in 2005 to 5200 billion Euro in 2013. While these data for the USA and Europe should not be compared directly due to different SRI categorization schemes, they reveal the increasing popularity of SRI for institutional and private investors. Against this background, academic interest in SRI has strongly increased.

One direction of empirical research examines the performance of SRI or conversely the performance of socially controversial investments such as investments in so-called sin stocks (especially alcohol, tobacco, weapons, gambling), which are excluded in many SRI funds. The corresponding results are mixed. While some studies report positive abnormal returns for specific SRI stocks (e.g. Edmans, 2011; Eccles et al., 2014), which, however, have often become insignificant in recent years (e.g. Bebchuk et al., 2013; Borgers et al., 2013), other studies find either that there is a financial price to be paid for SRI (e.g. Renneboog et al., 2008b; Belghitar et al., 2014) or higher abnormal returns for sin stocks (e.g. Hong and Kacperczyk, 2009; Derwall et al., 2011; Salaber, 2013). The latter results in combination with the increasing SRI market contradict traditional finance models that imply that investments are exclusively based on performance and risk considerations (e.g. Bauer and Smeets, 2015). Therefore, a second direction of empirical research directly examines the motives of SRI investors and especially asks whether SRI investors are really profit-seeking investors (e.g. Derwall et al., 2011) or whether they gain non-financial utility from such investments.

Several studies in fact find that not only risk-return aspects (e.g. reported in Nofsinger and Varma, 2014), but also psychological motives, values, and norms matter for SRI investors. For example, Riedl and Smeets (2016) show that many investors hold SRI mutual funds, although they expect an unfavorable risk-return relation compared to conventional investments. Bauer and Smeets (2015) reveal that social identification and thus the perception of belonging

to a social group is an important factor for several SRI decisions. Their indicator for social identification with SRI comprises several items including a warm glow motive (e.g. Andreoni, 1989, 1990). Other important values and norms refer to religiosity and political values. Religiosity or religious affiliations are strongly correlated with general financial decisions and also specifically with SRI and socially controversial investing, although the empirical results are not completely consistent (e.g. Hood et al., 2014; Borgers et al., 2015). Political preferences (i.e. preferences for left-wing or right-wing parties) are also of high relevance for general financial behavior (e.g. Kaustia and Torstila, 2011) and specifically for SRI and socially controversial investing (e.g. Hong and Kostovetsky, 2012; Hood et al., 2014; Borgers et al., 2015).

This paper examines the determinants of the share of SRI among all investments at the individual level. The empirical analysis is based on unique data from a (online) representative (with respect to age, gender, and place of origin) web based survey among financial decision makers in Germany. Our study therefore refers to the country with the third largest European stock market in terms of market capitalization and the largest national economy in Europe. The econometric analysis examines the effects of performance and risk considerations as well as socio-demographic and regional control variables. However, it focuses on the relevance of psychological motives, values, and norms. Our main result is that several motives like environmental values, feelings of warm glow, or social norms of the direct social environment are highly relevant for SRI investors and especially more important than performance and risk considerations. While the effect of religious affiliation is rather negligible, a left-wing political orientation has surprisingly an additional negative effect on SRI.

Our study contributes to three research directions. First, we contribute to the literature on SRI by analyzing the determinants of such investment strategies. While several studies suggest that psychological motives, values, and norms play an important role, many of them only indirectly consider such motives by examining the shunned stock hypothesis, which assumes that SRI investors are value-driven so that sin stocks that are shunned by SRI investors should have higher expected returns (e.g. Renneboog et al., 2008b; Hong and Kacperczyk, 2009; Derwall et al., 2011) or try to draw some conclusions from money flows into and out of SRI for the role of non-financial utility of the corresponding investors (e.g. Bollen, 2007; Benson and Humphrey, 2008; Renneboog et al., 2011). In line with, for example, Nilsson (2008), Hood et al. (2014), Bauer and Smeets (2015), Wins and Zwergel (2016), and Riedl and Smeets (2016), we directly consider several motives for private SRI investors. We extend

these five studies since our empirical analysis is based on data from a representative survey among financial decision makers and not only on data for investors from specific banks or fund providers.

Second, we contribute to the literature on the relationship between psychological motives, values, and norms and general sustainable behavior (e.g. Bénabou and Tirole, 2010). Several studies examine the relevance of motives like feelings of warm glow, social pressure, signaling aspects, or environmental values for the general contribution to public goods or specific contributions to charities (e.g. Harbaugh 1998; Ariely et al., 2009) or pro-environmental behavior like climate protection activities (e.g. Ziegler, 2015; Schwirplies and Ziegler, 2016). However, only a few studies analyze the relationship between such motives and general financial behavior or specifically SRI (or socially controversial investing). Four exceptions are Riedl and Smeets (2016), who use an indicator for social preferences on the basis of a trust game experiment, as well as Nilsson (2008), Bauer and Smeets (2015), and Wins and Zwergel (2016) who use aggregated indicators for pro-social attitudes and social identification. We extend these studies by using data from a representative survey as aforementioned, by disentangling the effects of several single motives, and by additionally analyzing the effects of environmental, religious, and political values.

Third, we contribute to the literature on the relationship between religious and political values and financial decisions. With respect to religious values, previous studies analyze, for example, the effect on risk behavior on financial markets (e.g. Hilary and Hui, 2009; Kumar, 2009; Kumar et al., 2011; Renneboog and Spaenjers, 2012; Shu et al., 2012; Kumar and Page, 2014) or on stock market participation (e.g. Hong et al., 2004; Renneboog and Spaenjers, 2012). Furthermore, a few studies specifically examine the relationship between religiosity and SRI or socially controversial investing (e.g. Salaber, 2013; Hood et al., 2014; Borgers et al., 2015). With respect to political values, a few studies analyze their relationship to general financial behavior such as stock market participation (e.g. Kaustia and Torstila, 2011) or specifically SRI or socially controversial investing (e.g. Hong and Kostovetsky, 2012; Hood et al., 2014; Borgers et al., 2015). Many of these studies only consider local indicators as proxies for individual religious and political values. Instead, we directly use individual indicators for religious affiliation and party affinity, which is in line with Hong et al. (2004) or Renneboog and Spaenjers, (2012), who consider individual religiosity, or Kaustia and Torstila (2011) and Hong and Kostovetsky (2012), who consider individual political preferences, although none

of these studies examines further psychological motives, values, and norms as discussed above.

The remainder of the paper is organized as follows: Section 2 reviews the related literature and discusses several hypotheses for our empirical analysis. Section 3 describes the data and the variables in our econometric analysis. Section 4 discusses the estimation results and the final Section 5 draws some conclusions.

2. Literature review and hypotheses

2.1. Psychological motives, values, and norms

So far, the literature on the relationship between psychological motives, values, or norms and SRI or socially controversial investments is scarce. Exceptions are the studies of Nilsson (2008) and Wins and Zwergel (2016), which are based on unrepresentative survey data from Swedish customers of a European mutual fund provider and German investors, respectively. Besides trust in and perceived effectiveness of SRI, the studies examine stated pro-social attitudes in purchasing decisions with respect to, for example, human rights, environmental effects of products and production, or unethical business practices. It is found that these pro-social attitudes have a positive effect on the share of SRI funds among all investments. Bauer and Smeets (2015) analyze the relevance of social identification for SRI and especially consider feelings of warm glow besides other items for social identification with SRI. Their empirical analysis is based on unrepresentative survey data for customers from two banks in the Netherlands that are specialized in SRI. They find that the indicator for social identification has a positive effect on investments in these two SRI banks. Furthermore, Riedl and Smeets (2016) analyze unrepresentative administrative and survey data for investors from a mutual fund provider in the Netherlands. They specifically construct an indicator for social preferences on the basis of a trust game experiment and show that this indicator has a positive effect on the probability that a SRI fund without tax benefits is held in the portfolio.

However, it should be noted that these four studies only use one aggregated indicator, respectively, and thus cannot disentangle specific effects, for example, of warm glow motives.¹ Instead, the literature on the determinants of general sustainable behavior (e.g. Bénabou and Tirole, 2010) and specifically of the contribution to public goods such as contributions to

¹ Riedl and Smeets (2016) recognize this and mention that they cannot distinguish between altruism and warm glow motives.

charities or pro-environmental behavior like climate protection activities discusses several psychological motives. For example, Schwirplies and Ziegler (2016) show in their empirical analysis for citizens in Germany and the USA that warm glow motives matter for climate protection activities (i.e. offsetting carbon emissions from conventional consumption or paying higher prices for climate-friendly products). Warm glow (e.g. Andreoni, 1989, 1990; Harbaugh, 1998) can be described as a good feeling, which is experienced through the act of giving and can be considered as a private component of an impure public good. With such feelings of warm glow individuals derive psychological benefits and thus higher utility levels from contributing to public goods or from general sustainable behavior such as SRI. Also in line with the results of Bauer and Smeets (2015), this leads to the following hypothesis that is examined in our econometric analysis:

Hypothesis 1: Feelings of warm glow from SRI are positively correlated with the share of SRI among all investments.

Another dimension of psychological motives for sustainable behavior refers to social pressure or social norms, for example, based on local political or religious values (e.g. Borgers et al., 2015), as discussed below. According to Rege (2004), social norms are behavior rules which indicate what activities are considered as proper or correct or as improper or incorrect by a group of persons (e.g. family, friends, but also the society). Social norms are enforced by social sanctions, i.e. the social environment can punish negative deviations from normative expectations, which leads to psychological losses and thus lower utility levels. In order to avoid such sanctions, individuals adjust their behavior and seek to get social approval and avoid disapproval by complying with the social norms of the group members (e.g. Holländer, 1990; Akerlof and Kranton, 2000; Nyborg and Rege, 2003). Against this background, individuals who generally behave sustainably or specifically invest in SRI may suffer psychological losses and thus lower utility levels if they perceive that the social environment does not behave sustainably and thus does not invest in SRI. In contrast, individuals derive psychological gains and thus higher utility levels from general sustainable behavior such as SRI if they believe that this behavior is expected by the social environment or the society. Also in line with the results of Schwirplies and Ziegler (2016), who show the relevance of such social norms for specific pro-environmental behaviors (i.e. climate protection activities), this leads to the following hypotheses that are examined in our econometric analysis:

Hypothesis 2a: The perception that the social environment does not invest in SRI is negatively correlated with the share of SRI among all investments.

Hypothesis 2b: The perception that the social environment expects to invest in SRI is positively correlated with the share of SRI among all investments.

Hypothesis 2c: The perception that the society expects to invest in SRI is positively correlated with the share of SRI among all investments.

As discussed above, SRI captures very different categorization schemes and especially refers to social and ethical screens. However, an important subgroup of SRI is only based on ecological criteria. Ecological financial investments such as mutual funds in renewable energies, but also money investments in ecological banks (e.g. the Umweltbank AG) play an important role in the universe of SRI in Germany. Ecological financial investments are one dimension of individual pro-environmental behavior, which is generally strongly affected by environmental values. For example, Martin and Bateman (2014) show strong positive effects on different practices such as switching products due to environmental issues or recycling glass bottles, jars, or aluminum cans in the USA. Based on another US data set, Attari et al. (2009) reveal positive effects on climate protection activities, i.e. the (stated) purchase of low emission vehicles and the (stated) purchase of green energy from the energy supplier. Furthermore, Kotchen and Moore (2007) find that stronger environmental values increase the participation in several green-electricity programs in Michigan, USA, and Delmas and Lessem (2014) show on the basis of data from a field experiment at the University of California, Los Angeles, USA, some negative effects on electricity use.

Environmental values can obviously be revealed by the individual support of environmental organizations. In fact, Dastrup et al. (2012) find that contributions to environmental organizations are positively correlated with the probability to live in solar homes in San Diego, USA. According to Kotchen and Moore (2008), individuals who belong to an environmental organization are aware of environmental problems and are also willing to take personal responsibility for addressing the problems. Therefore, they feel guilt from shirking their responsibility. In other words, they could suffer psychological losses and thus lower utility levels if they would not comply with the social norms of the environmental organization. As a consequence, it can be expected that they adjust their behavior toward pro-environmental activities. In fact, Kotchen and Moore (2008) show on the basis of data from Traverse City, Michigan, USA, that the membership in an environmental organization has a positive effect on pro-environmental behavior, i.e. individuals who belong to an environmental organization more often pay a price premium for their electricity to finance a wind turbine and also consume less electricity than non-members. Also in line with the results of Andorfer (2013), who shows on

the basis of representative individual data from Germany that environmental values positively affect pro-social or pro-ethical behavior, measured by (stated) fair trade consumption, this leads to the following hypothesis that is examined in our econometric analysis:

Hypothesis 3: The membership in an environmental organization is positively correlated with the share of SRI among all investments.

2.2. Religious values

The empirical literature on the relationship between religious values and general economic and social behavior as well as on the macroeconomic relevance of religious values is extensive (see e.g. the overviews in Hilary and Hui, 2009; Renneboog and Spaenjers, 2012; Shu et al., 2012). Several studies specifically analyze the relationship between religious values and behavior on financial markets. For example, Hilary and Hui (2009) find that firms that are located in very religious US counties show lower risk exposure. Hong et al. (2004) show on the basis of US household data that individual religiosity is positively correlated with stock market participation. Based on representative Dutch household data, Renneboog and Spaenjers (2012) reveal that both Catholic and Protestant affiliations have a positive effect on money savings and that Catholics are more risk averse and less likely to invest in stocks. Several US studies show that investors in counties with a high proportion of Catholics or a low proportion of Protestants are less risk averse (e.g. Shu et al., 2012) or more often invest in lottery-type stocks (e.g. Kumar, 2009). Furthermore, Kumar et al. (2011) and Kumar and Page (2014) show with data from institutional portfolios in the USA that the weights of lottery-type stocks in these portfolios are higher in the aforementioned regions.

Several studies also examine the relationship between religious values and sustainable behavior, although the results are very ambiguous. Cui et al. (2015) discuss two contradicting hypotheses about the relationship between Christian religiosity and pro-environmental behavior, namely the stewardship hypothesis that implies a positive correlation on the basis of the teachings of the Christian religions and the dominion hypothesis that implies a negative correlation on the basis of the early work of White (1967) who suggests an anthropocentric worldview (e.g. Martin and Bateman, 2014) of Christianity. The empirical analysis of Cui et al. (2015) rather confirms the dominion hypothesis since firms that are located in US counties with high regional shares of Christians and especially Protestants show less environmental practices. In contrast, Martin and Bateman (2014) find that Judeo-Christian religious values

have no significant effects on individual pro-environmental behavior in the USA, at least if several control variables are included in the econometric analysis. According to Doran and Natale (2011), the development of pro-social and pro-ethical behavior like the fair trade movement is also strongly supported by religious groups. Nevertheless, their empirical analysis on the basis of individual US data rather implies that religious values are negatively correlated with the consumption of fair trade products. In contrast, Andorfer (2013) shows that individual religiosity has strong positive effects on fair trade consumption in Germany.

With respect to SRI or socially controversial investments, Kumar and Page (2014) additionally show that the weights of socially controversial stocks (i.e. sin stocks) are higher in the institutional portfolios for US counties with a high ratio of Catholics to Protestants. The result that the aversion to sin stocks is smaller in regions with higher proportions of Catholics is confirmed in the US studies of Hood et al. (2014) and Borgers et al. (2015). The empirical analysis of Hood et al. (2014) considers whether an individual investor owns at least a sin stock among S&P 500 stocks. They also reveal that high regional shares of Christians are negatively correlated with investments in stocks with progressive policies towards homosexual employees. The study of Borgers et al. (2015) is based on mutual funds and considers the weight of sin stocks in these funds. They also find that not only funds in more Catholic states, but also funds in more Protestant states as well as funds in generally more religious states are more exposed to sin stocks. This latter result is rather surprising since it is widely believed that avoiding investments in sin stocks has its origins in religion. In addition, Salaber (2013) examines stock returns in a sample of 12 European countries. She shows that sin stocks earn a risk-adjusted premium in Protestant countries (i.e. Scandinavian countries and the UK), but not in Catholic countries (e.g. France, Italy, Spain), which is explained by the higher sin aversion of Protestants. To the best of our knowledge, however, no previous empirical analysis has considered the relationship between religious values and investments that are based on broader concepts of SRI so far.

In fact, it is widely accepted that SRI and especially ethical investing has its roots in religion (e.g. Statman, 2005), i.e. in Jewish, Islamic, and particularly Christian traditions (e.g. Renneboog et al., 2008a). For example, the Religious Society of Friends and Methodists refused to invest in slavery and weapons already in the 18th century (e.g. Louche et al., 2012). Today religious institutions and charities are important SRI investors. In Germany, for example, almost one third of institutional SRI investors (being dominant in the SRI market) are church institutions and charities (e.g. Forum Nachhaltige Geldanlagen, 2015). Against this

background, the two dominant German Christian churches have developed guidelines for investments in church organizations (e.g. Evangelische Kirche in Deutschland, 2013; Deutsche Bischofskonferenz und Zentralkomitee der deutschen Katholiken, 2015), which emphasize the relevance of environmental, social, and ethical criteria. While these guidelines are primarily targeted at church investments, it can be assumed that they also affect investment decisions of religious private investors in Germany since they generally define theologically justified principles for investments. In other words, Catholics or Protestants and especially very religious Christians could suffer psychological losses and thus lower utility levels if they would not comply with the social norms of the Christian churches. In this respect, it should be noted that individual religiosity (as e.g. considered in Hong et al., 2004; Doran and Natale, 2011; Renneboog and Spaenjers, 2012; Andorfer, 2013) can certainly better capture social norms from churches than only regional religiosity, which is often considered in previous studies, as discussed above. This leads to the following hypotheses that are examined in our econometric analysis:

Hypothesis 4a: The membership in Christian churches is positively correlated with the share of SRI among all investments.

Hypothesis 4b: The strength of Christian religiosity is positively correlated with the share of SRI among all investments.

2.3. Political values

Previous empirical studies show that not only religious, but also political values matter for general economic and especially for sustainable behavior. For example, Di Giuli and Kostovetsky (2014) find that US firms are socially more responsible if the CEO, board members, and founders are more affiliated with Democrats and if the headquarters of the firms are in Democratic dominated states. Other studies show that individual and local political orientation has strong effects on individual pro-environmental behavior. For example, Kahn (2007) finds in his analysis that Californian households who live in areas with high shares of Green Party registered voters consume less gasoline, less often own an SUV, and more often use public transit. On the basis of household data in San Diego, USA, Dastrup et al. (2012) find that voters of the Democratic, Peace and Freedom, and Green Parties live much more often in a solar home. Furthermore, Costa and Kahn (2013) reveal that Democratic and Green Party registered voters as well as households in regions with a high proportion of liberal registered

voters consume strongly less electricity. Their empirical analysis is based on data from home owners in a Western Region electric utility area of the USA. In sum, most previous studies show that a left-wing political orientation has positive effects on pro-environmental behavior and especially climate protection activities (see also e.g. Ziegler, 2015; Schwirplies and Ziegler, 2016).

So far, only a few studies specifically analyze the relationship between political preferences and financial behavior. For example, Kaustia and Torstila (2011) show that left-wing voters and politicians have lower stock market participations than right-wing voters and politicians. Their empirical analysis is based on several datasets in Finland at the aggregated regional and at the individual level. The relationship between political values and SRI or socially controversial investing is recently examined in Hong and Kostovetsky (2012), Hood et al. (2014), and Borgers et al. (2015). On the basis of data from private US investors, Hood et al. (2014) show that high election results for Democrat candidates in a county are positively correlated with investments in stocks with progressive policies towards homosexual employees. Similarly, Borgers et al. (2015) find that mutual funds in US states with a strong political preference for the Democrats have larger portfolio shares in sin stocks. In addition, Hong and Kostovetsky (2012) reveal with data from US mutual funds that are run by one single money manager that those managers who donate for Democrats (compared to managers who donate for Republicans or do not donate at all) underweight socially controversial stocks and overweight socially responsible stocks.

However, Hong and Kostovetsky (2012) state that they are not sure about the exact mechanism for the relationship between political values and investment decisions in general and thus also for SRI. Furthermore, to the best of our knowledge, no previous empirical analysis has considered the relationship between political values and investments that are based on broader concepts of SRI so far, especially for European countries. Nevertheless, based on the few previous empirical analyses on the relationship between individual political values and SRI or socially controversial investing in the USA and particularly on the relationship between political values and sustainable behavior in the USA and other countries, we formulate the following hypothesis that is examined in our econometric analysis:

Hypothesis 5: A left-wing political orientation is positively correlated with the share of SRI among all investments.

3. Data and variables

The data for our empirical analysis were collected from a computer-based survey among financial decision makers in Germany. The survey was carried out between December 2013 and January 2014 by the German market research company GfK SE. The sample was drawn from a representative GfK Online Panel (in terms of age, gender, and place of origin). On this basis, financial decision makers were identified. They are defined as persons who are at least 18 years old, hold at least a savings account, and are mainly or equally responsible for financial decisions in the household. Overall, 1001 respondents are the basis of our empirical analysis. The questions of the questionnaire referred to general investment decisions, specifically to SRI, to other pro-environmental and pro-social attitudes and behaviors, to several norms and values, as well as to socio-demographic and socio-economic variables. The survey also comprised two stated choice experiments with respect to the preferences for several (sustainable) equity funds and (sustainable) fixed interest investment products, which are, however, not considered in this paper.² The median for the completion time of the survey was about 18 minutes.

In order to examine SRI, the participants were asked whether they currently hold sustainable investments and/or plan to hold sustainable investments within the next three years. Our empirical analysis only refers to existing investments. In a second step, those financial decision makers who currently hold sustainable investments were asked for the percentage share of SRI among all their investments. The participants had to select one class among six intervals, i.e. “more than 0% to 20%”, “more than 20% to 40%”, “more than 40% to 60%”, “more than 60% to 80%”, “more than 80% to less than 100%”, and “100%”. Table 1 reports the frequencies for these SRI shares. In line with the existing dominance of investments that are not based on environmental, social, and/or ethical screens, almost 80% of the respondents do not hold sustainable investments. For more than 11% of the financial decision makers the SRI shares range between 0% and 40%, while only 4.5% of the respondents indicate SRI shares between 60% and 100%, and not a single respondent holds nothing else than sustainable investments. For our econometric analysis we summarize the two intervals “more than 60% to 80%” and “more than 80% to less than 100%” to one class and construct an ordinal variable with the resulting five categories that takes the lowest value one if a respondent does not hold sustainable investments and the highest value five if a respondent indicates SRI shares of

² The choice experiment on sustainable equity funds is analyzed in the complementary paper of Gutsche and Zwegel (2016), while the choice experiment on fixed interest investment products is especially examined in the complementary paper of Gutsche and Ziegler (2016).

more than 60%. Furthermore, we consider a dummy variable that takes the value one if a respondent holds SRI among all investments.

With respect to perceived financial performance of SRI, we consider three indicators. The respondents were asked for their perception of the average level of interest rates or returns, the average level of fees, and the average level of risk for sustainable investments compared to conventional investments including five ordered response categories, i.e. “much lower”, “rather lower”, “neither lower nor higher”, “rather higher”, or “much higher”, respectively. We construct the three dummy variables “higher perceived returns SRI”, “higher perceived fees SRI”, and “higher perceived risk SRI” that take the value one if a respondent indicated the two highest categories (i.e. “rather higher” or “much higher”), respectively. In addition to these three variables, we include several socio-demographic control variables in our econometric analysis. The dummy variable “female” takes the value one if a respondent is a woman, while “age” is the age of a respondent in years. Furthermore, the dummy variable “high education” takes the value one if the highest level of education is at least secondary (i.e. high school graduation) and the dummy variable “living together or married” takes the value one for these two marital statuses. We additionally control for regional heterogeneity and thus consider the dummy variable “Western Germany” that takes the value one if a respondent lives in one of the West German federal states.

The first group of our main explanatory variables refers to several psychological motives, values, and norms. The respondents were asked how strongly they agree with several statements on a symmetric scale with five ordered response categories, i.e. “very weakly”, “rather weakly”, “neither weakly nor strongly”, “rather strongly”, and “very strongly”. The dummy variable “warm glow” takes the value one if a respondent agreed rather strongly or very strongly to the statement “it makes me feel good to hold sustainable investments” or to the statement “I feel responsible for a sustainable development and want to contribute by sustainable investments”. Furthermore, the dummy variables “no contribution social environment” and “expectation social environment” take the value one if a respondent agreed rather strongly or very strongly to the statements “in my social environment (e.g. family, friends, colleagues) no one holds sustainable investments” and “my social environment (e.g. family, friends, colleagues) expects me to hold sustainable investments”, respectively. In addition, the dummy variable “expectation society” takes the value one if a respondent agreed rather strongly or very strongly to the statement “the society expects me to hold sustainable investments” and the dummy variable “membership environmental organization” takes the value one if a re-

spondent is a member of a group or organization engaged in the conservation and protection of the environment and nature.

With respect to religious values, the respondents were asked whether they belong to nine specific religious communities, to other religious communities, or whether they are without religious affiliation. We construct the dummy variables “Catholic affiliation” and “Protestant affiliation” that take the values one if a respondent belongs to the Roman Catholic Church and to Protestant Churches, respectively. Due to the dominance of these Christian churches in Germany, only very few financial decision makers in our sample belong to other religious communities. Therefore, we construct the dummy variable “affiliation other religious groups” that takes the value one if a respondent belongs to another specific religious community, i.e. to the Islam, Orthodox Churches, New Apostolic Churches, Buddhism, Judaism, Jehovah's Witnesses, Hinduism, or other religious communities. While the numbers of members of these religious communities are too low to analyze them specifically, the inclusion of these three dummy variables in the econometric analysis allows us to examine the relevance of the membership in the two dominating Christian churches compared to the base group of respondents without religious affiliation. Furthermore, all respondents who belong to a religious community were asked for the number of days per week they actively pursue their denomination (e.g. praying) on average. In order to analyze the strength of Christian religiosity, we construct the dummy variable “Christian religiosity” that takes the value one if a respondent that belongs to the Roman Catholic Church or to Protestant Churches pursues her denomination at least at one day per week on average.

In order to analyze political orientation, the respondents were asked with which political party they are most likely affiliated, even when they occasionally vote for another party. The questionnaire comprised the seven dominating political parties in Germany, namely the Christian Democrats (CDU/CSU), the Social Democrats (SPD), the Liberals (FDP), the Green Party (Bündnis 90 / Die Grünen), the Left Party (Die Linke), the main right-wing party (AfD), the Pirate Party (Piratenpartei), and “another party”. In order to analyze the relevance of a left-wing political identification, we construct the dummy variable “affinity left-wing parties” that takes the value one if a respondent is mainly affiliated with the Social Democrats, the Green Party, or the Left Party. Table 2 reports the numbers of observations and the means for the explanatory variables in our econometric analysis.

4. Econometric analysis

4.1 Basic estimation results

While Table 3 reports the results of Maximum Likelihood (ML) estimations of ordered probit models for the determinants of the five categories of SRI shares among all investments, Table 4 reports the corresponding ML estimations of binary probit models for the determinants of SRI shares among all investments that are greater than zero.³ The estimation results in both tables are based on the same structure of seven different model specifications. We consider different models to disentangle effects of psychological motives, values, and norms as well as specific religious and political values which can be correlated.⁴ The base models include only the three indicators for the perceived financial performance of SRI and several control variables. The second model specifications additionally incorporate the five variables for psychological motives, values, and norms. In addition to the explanatory variables in the base models, the third models include the three variables for the membership to religious communities, while the fourth models include the indicator for the strength of Christian religiosity besides the variable for the affiliation to other religious groups. The fifth model specifications incorporate the explanatory variables in the base model plus the indicator for the affinity to left-wing parties. The final two full model specifications incorporate all variables for psychological motives, values, and norms as well as specific religious and political values, where the sixth models refer to the inclusion of the three indicators for the membership to religious communities and the seventh models refer to the inclusion of the indicator for the strength of Christian religiosity besides the variable for the affiliation to other religious groups.

The first columns of Table 3 and Table 4 reveal that perceptions of the financial performance of SRI obviously matter. In line with the economic self-interest of profit-seeking investors, the perception of higher SRI returns has significantly positive and higher perceived fees and risk of SRI have significantly negative effects on the share of SRI among all investments.⁵

³ All estimations (and also all descriptive statistics as discussed above) were conducted with the statistical software package Stata. We consider heteroscedasticity-robust estimates of the standard deviations of the estimated parameters according to White (1982) and thus heteroscedasticity-robust z-statistics.

⁴ For example, the correlation coefficient between “Christian religiosity” and “membership environmental organization” is 0.11 and the corresponding correlation coefficient between “Christian religiosity” and “warm glow” is 0.15.

⁵ With respect to the interpretation of the estimation results in ordered probit models, we use such simpler phrases for brevity in the following. We thus abstain from the specific interpretation in the case of a significantly positive parameter estimate that the corresponding variable is significantly positively correlated with increasing values of the ordinal dependent variable (i.e. with an increasing share of SRI among all investment). Furthermore, we do not point in this case to the significantly positive correlation with the highest category of the dependent variable (a share of SRI among all investments of more than 60%) and the significantly negative correla-

According to the third and fourth columns of both tables, these effects remain significant if religious values are included as additional explanatory variables. These effects become weaker or even insignificant if the other main explanatory variables are incorporated. According to the fifth column of Table 4, the parameter of “higher perceived returns SRI” is not significantly different from zero if “affinity left-wing parties” is included as additional explanatory variable. However, the five variables for psychological motives, values, and norms have even stronger effects. In the case of their inclusion, higher perceived returns of sustainable investments never have significant effects. If all variables for psychological motives, values, and norms as well as specific religious and political values are incorporated in the seventh model specification, only the parameter of “higher perceived fees SRI” is weakly significantly different from zero in the ordered probit model, whereas no variable for the perceived financial performance of SRI has a significant effect in the binary probit model.

The insignificant effect of higher perceived risk of SRI is in line with the results of Nilsson (2008), Wins and Zwergel (2016), and Riedl and Smeets (2016). Our estimation results for higher perceived returns and risk of SRI are also widely in line with Bauer and Smeets (2015), who find that these two indicators have strong significant effects on sustainable investments if only one of them is included in the econometric analysis. Furthermore, the effect of higher perceived risk of SRI also becomes insignificant if further explanatory variables and especially their indicator for social identification are incorporated. In line with Bauer and Smeets (2015), this suggests that while higher perceived risk of SRI does matter for sustainable investments, the relevance of psychological motives, values, and norms is obviously stronger. With respect to higher perceived returns of SRI, however, Bauer and Smeets (2015) as well as Nilson (2008) report significant effects in their full econometric models, whereas our estimation results reveal insignificant effects, which is in line with Wins and Zwergel (2016) and Riedl and Smeets (2016). In addition, it seems that higher perceived fees of SRI, which are not considered in the four studies, are obviously the most robust indicator for the perceived financial performance of SRI for the explanation of sustainable investments.

The main results refer to the estimated effects of the five variables for psychological motives, values, and norms. According to Table 3, warm glow motives, the perception that the social environment expects to invest in SRI, the perception that the society expects to invest in SRI, as well as the membership in an environmental organization are significantly positively corre-

tion with the lowest category of the dependent variable (no SRI among all investments). Specific effects on different categories of the ordinal dependent variable are discussed in section 4.3.

lated with the share of SRI among all investments. Furthermore, the perception that the social environment does not invest in SRI is significantly negatively correlated with the share of sustainable investments. These effects do not only hold in the model specification that only includes these five variables besides the three indicators for the perceived financial performance of SRI and the control variables (see the second column), but also in the models that additionally incorporate the indicators for religious and political values (see the sixth and seventh column). This means that these estimated effects are clearly more robust than the estimated effects of the three variables for the perceived financial performance of SRI, as discussed above. Table 4 reveals that these estimation results are widely confirmed in our binary probit models. The only exception refers to the effect of “expectation society” which is insignificant in two of the three model specifications (see the second and seventh column).

According to these estimation results, Hypotheses 1, 2a, 2b, and 3 can be strongly confirmed, whereas Hypothesis 2c can only be partly confirmed. Our estimation results are thus widely in line with Nilsson (2008) and Wins and Zwergel (2016), who reveal that pro-social attitudes have a positive effect, with Bauer and Smeets (2015), who show that social identification has a positive effect, and with Riedl and Smeets (2016), who find that social preferences have a positive effect on SRI, as discussed above. However, in contrast to these previous studies, our econometric analysis reveals that not only single aggregated indicators, but also several disaggregated motives separately strongly matter, at least for financial decision makers in Germany. Our estimated effects for the compliance with social norms of the direct social environment and especially of warm glow motives are in line with the literature on the determinants of sustainable behavior or the general contribution to public goods such as contributions to charities or pro-environmental behavior (e.g. Schwirplies and Ziegler, 2016) and thus suggest that SRI are based on similar stimuli. Furthermore, our estimated effects of the membership in an environmental organization are in line with its specific relevance (e.g. Kotchen and Moore, 2008; Dastrup et al., 2012) or the relevance of general environmental values (e.g. Kotchen and Moore, 2007; Attari et al., 2009; Delmas and Lessem, 2014; Martin and Bateman, 2014) for pro-environmental behavior and thus suggest the important role of the ecological dimension of SRI in Germany.

The third columns of Table 3 and Table 4 show that while a Protestant affiliation is not significantly correlated with the share of SRI among all investments, a Catholic affiliation has a significantly positive effect. Furthermore, the fourth columns reveal a significantly positive effect of our indicator for the strength of Christian religiosity. These estimation results would

clearly confirm Hypotheses 4a and 4b. However, the sixth and seventh columns reveal that all parameters of religious values become insignificantly different from zero if the indicator for the affinity to left-wing parties and especially the five variables for psychological motives, values, and norms are included. These estimation results suggest that while religious values do matter for sustainable investments, the relevance of further psychological motives, values, and norms is obviously stronger. As a consequence, Hypotheses 4a and 4b cannot unequivocally be confirmed. Therefore, our results are not completely in line with previous studies that find several significant correlations between religious values and SRI or socially controversial investments (e.g. Salaber, 2013; Hood et al., 2014; Kumar and Page, 2014; Borgers et al., 2015). One possible reason for these different results is the use of different concepts of dependent and explanatory variables since we consider individual instead of regional indicators for religious values and broader concepts of SRI instead of narrower dimensions such as sin stocks. Another possible explanation for the different results is that previous econometric analyses might be biased due to the omission of important explanatory variables, i.e. further psychological motives, values, and norms.

The fifth columns of Table 3 and Table 4 show that the affinity with left-wing parties is not significantly correlated with the share of SRI among all investments. Therefore, Hypothesis 5 cannot be confirmed. In contrast to our expectations, the sixth columns even reveal a significantly negative effect of the corresponding variable, which actually suggests a rejection of Hypothesis 5. We have also analyzed model specifications that include separate dummy variables for an affinity with Social Democrats, the Green Party, and the Left Party instead of the aggregated indicator for the affinity with these three left-wing parties. The corresponding estimation results show that this effect is mainly triggered by significantly negative effects of a Left Party affinity, weakly supported by some significantly negative effects of a Green Party affinity, but obviously not strongly triggered by an affinity with Social Democrats.⁶ Therefore, our estimation results contradict previous empirical analyses on the relationship between individual political values and SRI in the USA (e.g. Hong and Kostovetsky, 2012; Hood et al., 2014; Borgers et al.; 2015) and particularly on the relationship between political values and sustainable behavior in the USA and other countries (e.g. Kahn, 2007; Dastrup et al., 2012; Costa and Kahn, 2013; Di Giuli and Kostovetsky, 2014; Ziegler, 2015; Schwirplies and Ziegler, 2016).

⁶ The estimation results are not reported due to brevity, but are available upon request.

One explanation for these contradictory results (besides the differences in the construction of the dependent and explanatory variables in the econometric analyses) might be the strong stock market aversion of left-wing oriented individuals in Europe and especially in Germany. This aversion is shown in the study of Kaustia and Tortila (2011) for Finland, as discussed above, and also partly confirmed on the basis of our German dataset.⁷ A general skepticism toward financial markets can also be found in the election programs of the Social Democrats, the Green Party, and the Left Party for the German federal elections 2013. If sustainable investments are mainly combined with equity funds or other risky investments, but left-wing oriented financial decision makers rather prefer riskless investments like savings accounts (“Sparbücher”) or time deposits and are more skeptical toward general equity investments than toward sustainable investments, negative effects of a left-wing orientation are possible. Another explanation for our rather surprising estimation results is that left-wing oriented individuals in Germany generally might not consider SRI as an appropriate direction for sustainable behavior in contrast to other pro-social or pro-environmental behaviors like climate protection activities, as shown in previous studies (e.g. Ziegler, 2015; Schwirplies and Ziegler, 2016).

Finally, Table 3 and Table 4 reveal that no control variable has robust significant effects on the share of SRI among all investments. Only sporadically the positively estimated parameters for “living together or married” and for the regional variable “Western Germany” are significantly different from zero.

4.2 Robustness checks

In order to test the robustness of our estimation results, we examine alternative ordinal dependent variables for the shares of SRI among all investments. In contrast to the aggregated two intervals “more than 60% to 80%” and “more than 80% to less than 100%” in the ordered probit models so far, we now disaggregate this summarized class and construct an ordinal dependent variable with all six categories for which the frequencies are greater than zero (see Table 1). The first two columns of Table 5 report the results of the ML estimations in these ordered probit models. The underlying model specifications are in line with the corresponding full model specifications that are the basis for the estimation results in the sixth and seventh columns of Table 3. These two columns of Table 5 reveal qualitatively almost identical estimation results as the two last columns of Table 3, which especially supports the strong rele-

⁷ The corresponding estimation results are not reported due to brevity, but are available upon request.

vance of psychological motives, values, and norms. By aggregating the intervals “more than 0% to 20%”, “more than 20% to 40%”, and “more than 40% to 60%” to one class and the intervals “more than 60% to 80%” and “more than 80% to less than 100%” to another class, we have also constructed an additional ordinal dependent variable with only three categories. The corresponding results of ML estimations are qualitatively extremely similar to the estimation results in the last two columns of Table 3, the first two columns of Table 5, and also the last two columns of Table 4.⁸

With respect to the estimation results in the last two columns of Table 3 and Table 4, it might be argued that the lower numbers of observations, which are due to several missing values for some variables, are problematic. However, the comparison of the descriptive statistics for these smaller estimation samples with the descriptive statistics in Table 1 and Table 2 mostly shows very small differences in the frequencies of SRI shares among all investments and the means of the explanatory variables. The share of respondents with no SRI only slightly decreases from about 79% (see Table 1) to about 74% in the estimation samples. Two exceptions for the explanatory variables are the decreasing proportion of women (by about ten percentage points) and the increasing mean for the variable “warm glow” (by up to ten percentage points) in the estimation samples.⁹ However, due to the consequent inclusion of these control variables in our econometric analysis, systematic selection biases cannot be expected. Moreover, we have also analyzed further socio-demographic and socio-economic variables, which refer to the household structure (i.e. household size, number of children in the household), alternative education and marital status variables, and especially household income. However, none of these variables have robust effects on the share of SRI among all investments. In particular, the inclusion of these control variables does not change our main estimation results, i.e. the strong relevance of psychological motives, values, and norms.¹⁰

In line with Bauer and Smeets (2015), we additionally examine model specifications that include missing values for the perceptions about the financial performance of SRI. Therefore, we construct the three dummy variables “missing values perceived returns SRI”, “missing values perceived fees SRI”, and “missing values perceived risk SRI” that take the value one if a respondent did not indicate a perception for the returns, fees, and risk of SRI, respectively, and include these variables besides the dummy variables “higher perceived returns SRI with

⁸ These estimation results are not reported due to brevity, but are available upon request. The similarity to the estimation results in the binary probit models is not very surprising due to the similarity of this ordinal dependent variable with three categories to the binary dependent variable with two categories.

⁹ These descriptive statistics are not reported due to brevity, but are available upon request

¹⁰ These estimation results are not reported due to brevity, but are available upon request.

missing values”, “higher perceived fees SRI with missing values”, and “higher perceived risk SRI with missing values”. In order to increase the estimation sample, we additionally carry out the same procedure for the left-wing political identification, which leads to the two dummy variables “affinity left-wing parties with missing values” and “missing values party affinity”. The third and fourth columns of Table 5 report the corresponding ML estimations in the ordered probit models with five categories of SRI shares among all investments which are in line with the model specifications that are the basis for the estimation results in the sixth and seventh columns of Table 3. Furthermore, the last two columns of Table 5 report the corresponding ML estimations in the binary probit models which are in line with the models that are the basis for the estimation results in the sixth and seventh columns of Table 4.

The last four columns of Table 5 strengthen our main estimation results for the high relevance of psychological motives, values, and norms. In line with the estimation results in Table 3 and Table 4, warm glow motives, the perception that the social environment expects to invest in SRI, and the membership in an environmental organization are significantly positively correlated, while the perception that the social environment does not invest in SRI is significantly negatively correlated with sustainable investments. The last two columns of Table 5 furthermore reveal that the perception that the society expects to invest in SRI has no significant effect on sustainable investments in these binary probit models that include missing values, which is also completely in line with the estimation results in the last column of Table 4. In addition, the insignificant effects of religious values are confirmed, while the estimation results in the last four columns of Table 5 suggest a stronger evidence for the negative effect of an affinity with left-wing parties on sustainable investments, which strengthens the rejection of Hypothesis 5. Similarly, the significance of the effects of perceptions of the financial performance of SRI is slightly higher in the models that include missing values (especially with respect to higher perceived returns of SRI in the ordered probit models) compared to the models that exclude missing values. However, these slight differences do not alter the main result that psychological motives, values, and norms are more relevant for sustainable investments than perceptions of the financial performance of SRI.

As a final robustness check, we have analyzed alternative econometric models and estimation procedures. In line with Bauer and Smeets (2015), we have calculated the midpoints for each of the five intervals for the shares of SRI among all investments (i.e. 10%, 30%, 50%, 70%, 90%). Together with the value 0% for financial decision makers who do not hold SRI among all their investments, the values have been treated as continuous dependent variables and in-

cluded in linear regression models and also Tobit models. While this procedure is not unproblematic due to the use of these interval midpoints which can more or less deviate from the true shares of SRI among all investments, the corresponding ordinary least squares (OLS) estimations in the case of linear regression models and ML estimations in the case of Tobit models provide very similar results and especially confirm the strong relevance of psychological motives, values, and norms for sustainable investments.¹¹

4.3 Economic significance

While our main estimation results are extremely robust, they do not clarify whether the effects of psychological motives, values, and norms on sustainable investments are only statistically significant or also economically relevant. Against this background, we examine the estimated average marginal (in the case of the variable “age”) and especially discrete probability effects of the explanatory variables in several specifications of ordered and binary probit models. The results in Table 6 refer to the ordered and binary probit models that include only the three variables for the perceived financial performance of SRI and the control variables and thus to the estimation results in the first columns of Table 3 and Table 4, respectively. The results in Table 7 refer to the full specifications of ordered and binary probit models without missing values and thus to the estimation results in the last two columns of Table 3 and Table 4, respectively. Finally, the results in Table 8 refer to the full specifications of ordered and binary probit models including missing values and thus to the estimation results in the last four columns of Table 5, respectively. All three tables only report significant probability effects (considering at least the 10% significance level).

As discussed in section 4.1, the sign of the estimated parameters in ordered probit models allows only conclusions for the direction of estimated effects for the lowest and highest categories of the dependent variables, but not for the categories in between. We consider the estimated effects for the second category of the dependent variables (i.e. a share of SRI among all investments of more than 0% to 20%) besides the estimated effects for the first and fifth categories (i.e. no SRI among all investments and a share of SRI among all investments of more than 60%). The three tables reveal that all significant probability effects switch the direction between the first and second categories. This suggests that our explanatory variables are mainly relevant for the choice between any SRI or no SRI among their investments, whereas

¹¹ These estimation results are not reported due to brevity, but are available upon request.

they seem to be less relevant for the choice of the size of SRI shares. Furthermore, these results strengthen the additional analysis of binary probit models which only distinguish between these two main alternatives.

With respect to the strongest effects of the perceived financial performance of SRI, Table 6 reveals that the estimated average probability for no SRI among all investments is 18 percentage points (in the ordered probit model, see the first column) and 15 percentage points (in the binary probit model, see the fourth column) lower if respondents perceive higher SRI returns. This corresponds to an estimated average probability for no SRI that is more than 31% (in the ordered probit model) and almost 25% (in the binary probit model) higher for respondents who do not perceive higher returns for sustainable investments. While these estimated probability effects are certainly not negligible, they are based on the restricted model specifications that do not include our variables for psychological motives, values, and norms as well as specific religious and political values. On the basis of the full model specifications, Table 7 and Table 8 report smaller estimated average probability effects. According to Table 7, the largest value is nine percentage points for the estimated positive effect of “higher perceived fees SRI” on the choice of the first category in the ordered probit model that includes the three indicators for the membership to religious communities (see the first column). Table 8 reveals that the largest value is 12 percentage points for the estimated negative effect of higher perceived SRI returns on the choice of the first category in the ordered probit model that also includes the three indicators for the membership to religious communities (see the first column).

We now compare these results with the estimated probability effects for the other variables. While no variable for Christian religious values has any significant effect, Table 7 and Table 8 show that the strength of the estimated effects of an affinity with left-wing parties is similar to the strongest estimated effects of the perceived financial performance of SRI. According to Table 7, the estimated average probability for no SRI among all investments is eight percentage points (in the ordered probit model, see the first column) and nine percentage points (in the binary probit model, see the seventh column) lower for a left-wing orientation. Table 8 even reveals values of ten percentage points (see the first column) and eleven percentage points (see the seventh column) if missing values are included in the ordered and binary probit models. This suggests that the effect of political values is obviously at least as relevant as the effect of the perceived financial performance of SRI on the share of SRI among all investments.

However, the estimated probability effects of our five variables for psychological motives, values, and norms, and especially feelings of warm glow and the expectation of the social environment are even more relevant. The estimated negative average probability effects of “warm glow” on no SRI among all investments vary between 15 percentage points in several ordered and binary probit models (see Table 7, fourth and eighth columns, Table 8, fourth and eighth columns) and 17 percentage points in the ordered probit model without missing values that includes the three indicators for the membership to religious communities (see Table 7, first column). The corresponding estimated negative average probability effects of “expectation social environment” vary between 17 percentage points in the ordered probit model with missing values that includes the indicator for the strength of Christian religiosity (see Table 8, fourth column) and even 24 percentage points in the two binary probit models without missing values (see Table 7, last two columns). The latter values imply that the estimated average probability for any SRI is about 110% higher for respondents who perceive that the social environment expects to invest in SRI. In sum, our results therefore suggest a very strong economic relevance of psychological motives, values, and norms on sustainable investments, which is clearly more important than the perceived financial performance of SRI.

The dimension of these estimated average probability effects also becomes clear by considering the second and fifth categories in the ordered probit models, which seem to be rather small, but are in fact also immense if the underlying small estimated probabilities are considered. For example, the value of nine percentage points for the estimated average probability effect of “expectation social environment” in the ordered probit model without missing values that includes the three indicators for the membership to religious communities (see Table 7, third column) corresponds to an estimated average probability for a share of SRI among all investments of more than 60% that is 206% higher for respondents who perceive that the social environment expects to invest in SRI. A final striking illustration of the strong relevance of our non-financial variables is based on the comparison of the estimated average probabilities for the case that none of the psychological motives, values, and norms play a role¹² and the case that all these psychological motives, values, and norms indeed play a role.¹³ For example, the corresponding estimated average probabilities in the ordered probit model without missing values that includes the three indicators for the membership to religious communities are 0.1835 and 0.9187, which means that the estimated average probability for no SRI is more

¹² This means that “warm glow” = “expectation social environment” = “expectation society” = “membership environmental organization” = 0 and “no contribution social environment” = 1.

¹³ This means that “warm glow” = “expectation social environment” = “expectation society” = “membership environmental organization” = 1 and “no contribution social environment” = 0.

than 73 percentage points and thus more than 400% higher for respondents for whom none of the psychological motives, values, and norms play a role.

5. Discussion and conclusions

This paper empirically examines the determinants of SRI. The study is based on data from a computer-based survey among financial decision makers in Germany. In line with the economic self-interest of profit-seeking investors, our econometric analysis implies that the perceived financial performance of SRI matter, i.e. the perception of higher SRI returns has significantly positive and higher perceived fees and risk of SRI have significantly negative effects on the share of SRI among all investments. However, these estimation results are mainly based on model specifications that only include a restricted number of explanatory variables. Econometric analyses that additionally include psychological motives, values, and norms reveal that the effects of these non-financial variables are economically more relevant and more robust, i.e. warm glow motives, the perception that the social environment expects to invest in SRI, and the membership in an environmental organization are strongly positively correlated, while the perception that the social environment does not invest in SRI is strongly negatively correlated with sustainable investments. This suggests that SRI investors gain strong non-financial utility from sustainable investments.

The different estimation results on the basis of more or less restrictive econometric models point to a general problem of previous empirical studies on the determinants of SRI, namely the exclusion of relevant explanatory variables. To the best of our knowledge, our econometric analysis is based on the inclusion of the widest range of explanatory variables so far. While Nilsson (2008) and Wins and Zwergel (2016) and especially Bauer and Smeets (2015) and Riedl and Smeets (2016) analyze several motives besides perceived financial performance of SRI, they only use a small number of aggregated indicators. Therefore (as already recognized by Riedl and Smeets, 2016), they cannot disentangle specific effects, for example, of warm glow motives or social norms by the social environment. In addition, this can obviously also lead to omitted variable biases. Our econometric results especially reveal this problem for the effects of religious values. While a Catholic affiliation and the strength of Christian religiosity has significantly positive effects in restricted econometric models, they become insignificant in models that additionally include the aforementioned psychological motives, values, and norms. This suggests that the effects of motives like feelings of warm glow or the percep-

tion that the social environment expects to invest in SRI are not only more robust than the perceived financial performance of SRI, but also than religious values.

In contrast, a left-wing political orientation, i.e. an affinity with Social Democrats, the Green Party, or the Left Party, has relatively robust significantly negative effects on SRI. These estimation results contradict previous empirical analyses on the relationship between political values and SRI or socially controversial investing (e.g. Borgers et al., 2015) and on the relationship between political values and sustainable behavior (e.g. Costa and Kahn, 2013; Schwirplies and Ziegler, 2016). Therefore, it can be speculated that left-wing oriented individuals in Germany generally do not consider SRI as an appropriate direction for sustainable behavior, which is in contrast to other pro-social or pro-environmental behaviors. Another explanation for our surprising estimation results is the general aversion of a left-wing identification to the participation in stock markets (e.g. Kaustia and Torstila, 2011). If sustainable investments are mainly combined with risky investments, but left-wing oriented financial decision makers rather prefer riskless investments and are more skeptical toward general equity investments than toward sustainable investments, negative effects of a left-wing orientation are possible. A deeper analysis of the relationship between political values and SRI in Germany and other countries is certainly an interesting direction for further research (see also the complementary analysis of Gutsche and Ziegler, 2016). As also mentioned in Riedl and Smeets (2016), another direction for future studies is the additional inclusion of further motives, values, and norms such as altruism, general risk aversion, reciprocity, or inequality aversion. On this basis, it can be examined whether our main estimation results remain stable or are possibly distorted by omitted variable biases.

Our estimation results have important implications for banks and other providers of financial investments in order to attract SRI investors. Due to the higher relevance of psychological motives, values, and norms, marketing strategies that are too much focused on the financial performance of SRI can possibly be less successful than advertisements that target feelings of warm glow, social norms by the social environment, or also environmental values. It would certainly be very interesting to test the success of such specific marketing strategies in field experiments, where the investment behavior of a randomly selected group of financial decision makers that is manipulated by such specific marketing strategies is compared with the investment behavior of another unmanipulated group. A first field experiment can be found in Døskeland and Pedersen (2016), who, however, only examine the effect of wealth or morality framings on SRI. Therefore, field experiments on the relevance of psychological motives,

values, and norms in cooperation with banks or other providers of financial investments or also as incentivized approaches in representative surveys are left for future research.

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Tables

Table 1: Frequencies of SRI shares among all investments for the 1001 respondents

| SRI shares | 0% | More than 0% to 20% | More than 20% to 40% | More than 40% to 60% | More than 60% to 80% | More than 80% to less than 100% | 100% | Total |
|-------------|-----------------|---------------------|----------------------|----------------------|----------------------|---------------------------------|-----------|----------------|
| Frequencies | 794 (79.32%) | 55 (5.49%) | 59 (5.89%) | 48 (4.80%) | 29 (2.90%) | 16 (1.60%) | 0 (0%) | 1001 (100%) |

Table 2: Descriptive statistics of explanatory variables

| Variables | Number of observations | Mean |
|---------------------------------------|------------------------|-------|
| Higher perceived returns SRI | 752 | 0.06 |
| Higher perceived fees SRI | 743 | 0.36 |
| Higher perceived risk SRI | 782 | 0.35 |
| Female | 1001 | 0.49 |
| Age | 1001 | 43.91 |
| High education | 997 | 0.62 |
| Living together or married | 995 | 0.67 |
| Western Germany | 1001 | 0.82 |
| Warm glow | 938 | 0.46 |
| No contribution social environment | 836 | 0.41 |
| Expectation social environment | 955 | 0.10 |
| Expectation society | 952 | 0.14 |
| Membership environmental organization | 942 | 0.10 |
| Catholic affiliation | 901 | 0.26 |
| Protestant affiliation | 901 | 0.30 |
| Affiliation other religious groups | 901 | 0.04 |
| Christian religiosity | 729 | 0.23 |
| Affinity left-wing parties | 778 | 0.49 |

Table 3: Maximum Likelihood estimates (robust z-statistics) in ordered probit models, dependent variables: share of SRI among all investments

| Explanatory variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---------------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|--------------------|--------------------|
| Higher perceived returns SRI | 0.52** (2.34) | 0.40 (1.64) | 0.57** (2.51) | 0.58** (2.34) | 0.46* (1.68) | 0.38 (1.32) | 0.32 (1.12) |
| Higher perceived fees SRI | -0.36*** (-3.29) | -0.31** (-2.52) | -0.35*** (-2.92) | -0.39*** (-2.97) | -0.41*** (-3.39) | -0.37** (-2.53) | -0.29* (-1.84) |
| Higher perceived risk SRI | -0.39*** (-3.47) | -0.27** (-2.07) | -0.42*** (-3.42) | -0.30** (-2.25) | -0.38*** (-3.05) | -0.29* (-1.93) | -0.16 (-0.99) |
| Female | -0.02 (-0.16) | -0.02 (-0.21) | -0.06 (-0.52) | -0.01 (-0.08) | -0.03 (-0.26) | -0.08 (-0.62) | -0.15 (-1.03) |
| Age | -0.00 (-0.62) | 0.00 (0.02) | -0.00 (-0.60) | -0.00 (-0.81) | -0.01 (-1.51) | -0.00 (-0.33) | -0.00 (-0.57) |
| High education | 0.05 (0.40) | 0.03 (0.24) | 0.02 (0.20) | 0.15 (1.04) | 0.06 (0.45) | 0.02 (0.12) | 0.19 (1.09) |
| Living together or married | 0.15 (1.33) | 0.22* (1.71) | 0.13 (1.06) | 0.07 (0.54) | 0.13 (1.08) | 0.28** (1.97) | 0.18 (1.20) |
| Western Germany | 0.14 (1.02) | 0.19 (1.14) | 0.13 (0.82) | 0.13 (0.77) | 0.20 (1.29) | 0.35* (1.74) | 0.42** (2.12) |
| Warm glow | -- | 0.59*** (4.77) | -- | -- | -- | 0.64*** (4.51) | 0.58*** (3.66) |
| No contribution social environment | -- | -0.30*** (-2.60) | -- | -- | -- | -0.28** (-2.12) | -0.32** (-2.20) |
| Expectation social environment | -- | 0.72*** (4.40) | -- | -- | -- | 0.71*** (4.06) | 0.64*** (3.36) |
| Expectation society | -- | 0.29* (1.92) | -- | -- | -- | 0.40** (2.41) | 0.33* (1.73) |
| Membership environmental organization | -- | 0.41*** (2.64) | -- | -- | -- | 0.44** (2.47) | 0.55*** (2.84) |
| Catholic affiliation | -- | -- | 0.34** (2.54) | -- | -- | 0.20 (1.22) | -- |
| Protestant affiliation | -- | -- | 0.10 (0.73) | -- | -- | -0.01 (-0.04) | -- |
| Affiliation other religious groups | -- | -- | 0.56* (1.65) | 0.59* (1.80) | -- | 0.50 (1.42) | 0.50 (1.49) |
| Christian religiosity | -- | -- | -- | 0.46*** (3.53) | -- | -- | 0.16 (0.97) |
| Affinity left-wing parties | -- | -- | -- | -- | -0.14 (-1.22) | -0.30** (-2.12) | -0.18 (-1.15) |
| Number of observations | 697 | 582 | 631 | 510 | 573 | 474 | 390 |

Note: * (**, ***) means that the appropriate parameter is different from zero at the 10% (5%, 1%) significance level, respectively

Table 4: Maximum Likelihood estimates (robust z-statistics) in binary probit models, dependent variables: shares of SRI among all investments greater than zero

| Explanatory variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---------------------------------------|---------------------|---------------------|---------------------|--------------------|---------------------|---------------------|---------------------|
| Higher perceived returns SRI | 0.44** (1.98) | 0.25 (1.04) | 0.51** (2.25) | 0.51** (2.07) | 0.31 (1.17) | 0.21 (0.75) | 0.20 (0.66) |
| Higher perceived fees SRI | -0.31*** (-2.65) | -0.25* (-1.92) | -0.29** (-2.31) | -0.32** (-2.29) | -0.35*** (-2.69) | -0.29* (-1.85) | -0.21 (-1.21) |
| Higher perceived risk SRI | -0.37*** (-3.10) | -0.26* (-1.88) | -0.43*** (-3.26) | -0.32** (-2.21) | -0.36*** (-2.72) | -0.31* (-1.92) | -0.19 (-1.08) |
| Female | -0.04 (-0.35) | -0.02 (-0.16) | -0.04 (-0.38) | -0.01 (-0.11) | -0.04 (-0.33) | -0.01 (-0.07) | -0.08 (-0.51) |
| Age | -0.00 (-0.36) | 0.00 (0.32) | -0.00 (-0.37) | -0.00 (-0.72) | -0.00 (-1.06) | 0.00 (0.17) | -0.00 (-0.13) |
| High education | 0.07 (0.61) | 0.09 (0.66) | 0.04 (0.32) | 0.19 (1.31) | 0.10 (0.79) | 0.08 (0.54) | 0.27 (1.56) |
| Living together or married | 0.13 (1.15) | 0.20 (1.45) | 0.14 (1.12) | 0.08 (0.60) | 0.08 (0.60) | 0.26 (1.64) | 0.17 (0.98) |
| Western Germany | 0.14 (0.97) | 0.20 (1.18) | 0.13 (0.77) | 0.13 (0.75) | 0.20 (1.25) | 0.31 (1.45) | 0.42** (2.03) |
| Warm glow | -- | 0.55*** (4.12) | -- | -- | -- | 0.58*** (3.84) | 0.55*** (3.22) |
| No contribution social environment | -- | -0.32** (-2.58) | -- | -- | -- | -0.29** (-2.07) | -0.30** (-1.97) |
| Expectation social environment | -- | 0.75*** (4.07) | -- | -- | -- | 0.79*** (3.93) | 0.78*** (3.60) |
| Expectation society | -- | 0.20 (1.20) | -- | -- | -- | 0.33* (1.76) | 0.31 (1.47) |
| Membership environmental organization | -- | 0.43** (2.49) | -- | -- | -- | 0.47** (2.34) | 0.57*** (2.58) |
| Catholic affiliation | -- | -- | 0.32** (2.20) | -- | -- | 0.18 (0.99) | -- |
| Protestant affiliation | -- | -- | 0.02 (0.13) | -- | -- | -0.11 (-0.62) | -- |
| Affiliation other religious groups | -- | -- | 0.27 (0.86) | 0.30 (1.01) | -- | 0.16 (0.47) | 0.15 (0.46) |
| Christian religiosity | -- | -- | -- | 0.41*** (2.91) | -- | -- | 0.08 (0.44) |
| Affinity left-wing parties | -- | -- | -- | -- | -0.19 (-1.63) | -0.35** (-2.33) | -0.25 (-1.52) |
| Constant | -0.65** (-2.43) | -1.32*** (-3.85) | -0.76*** (-2.58) | -0.79** (-2.47) | -0.42 (-1.41) | -1.39*** (-3.49) | -1.52*** (-3.53) |
| Number of observations | 697 | 582 | 631 | 510 | 573 | 474 | 390 |

Note: * (**, ***) means that the appropriate parameter is different from zero at the 10% (5%, 1%) significance level, respectively

Table 5: Maximum Likelihood estimates (robust z-statistics) in ordered and binary probit models, dependent variables: share of SRI among all investments or shares of SRI among all investments greater than zero, robustness checks

| Explanatory variables | Ordered probit models | | | | Binary probit models | |
|--|--------------------------------|--------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | Alternative dependent variable | Alternative dependent variable | Inclusion of missing values | Inclusion of missing values | Inclusion of missing values | Inclusion of missing values |
| Higher perceived returns SRI | 0.40 (1.38) | 0.32 (1.14) | -- | -- | -- | -- |
| Higher perceived returns SRI with missing values | -- | -- | 0.51** (2.18) | 0.44* (1.77) | 0.36 (1.53) | 0.30 (1.16) |
| Missing values perceived returns SRI | -- | -- | -0.09 (-0.37) | -0.32 (-1.06) | -0.10 (-0.41) | -0.38 (-1.21) |
| Higher perceived fees SRI | -0.38*** (-2.73) | -0.30* (-1.93) | -- | -- | -- | -- |
| Higher perceived fees SRI with missing values | -- | -- | -0.34** (-2.57) | -0.29** (-1.96) | -0.28** (-1.98) | -0.22 (-1.39) |
| Missing values perceived fees SRI | -- | -- | -0.54** (-2.12) | -0.29 (-1.16) | -0.49* (-1.79) | -0.21 (-0.79) |
| Higher perceived risk SRI | -0.29** (-1.98) | -0.16 (-1.02) | -- | -- | -- | -- |
| Higher perceived risk SRI with missing values | -- | -- | -0.32** (-2.39) | -0.24 (-1.64) | -0.33** (-2.29) | -0.26 (-1.63) |
| Missing values perceived risk SRI | -- | -- | 0.07 (0.22) | 0.21 (0.56) | 0.07 (0.21) | 0.26 (0.73) |
| Female | -0.09 (-0.71) | -0.16 (-1.13) | -0.04 (-0.62) | -0.07 (-0.57) | 0.00 (0.01) | -0.04 (-0.30) |
| Age | -0.00 (-0.36) | -0.00 (-0.59) | -0.00 (-0.39) | -0.00 (-0.04) | 0.00 (0.84) | 0.00 (0.19) |
| High education | 0.02 (0.16) | 0.19 (1.12) | -0.08 (-0.69) | 0.04 (0.30) | -0.05 (-0.39) | 0.10 (0.70) |
| Living together or married | 0.32** (2.34) | 0.22 (1.48) | 0.16 (1.31) | 0.08 (0.64) | 0.17 (1.29) | 0.09 (0.62) |
| Western Germany | 0.33 (1.62) | 0.39* (1.93) | 0.17 (1.00) | 0.19 (1.12) | 0.15 (0.82) | 0.19 (1.08) |
| Warm glow | 0.65*** (4.63) | 0.59*** (3.76) | 0.66*** (5.47) | 0.61*** (4.54) | 0.63*** (4.88) | 0.61*** (4.21) |
| No contribution social environment | -0.28** (-2.14) | -0.33** (-2.33) | -0.34** (-2.98) | -0.37*** (-2.95) | -0.36*** (-3.08) | -0.38*** (-2.96) |
| Expectation social environment | 0.64*** (3.86) | 0.58*** (3.15) | 0.72*** (4.55) | 0.62*** (4.54) | 0.75*** (4.25) | 0.70*** (3.62) |
| Expectation society | 0.39** (2.45) | 0.32* (1.74) | 0.33** (2.19) | 0.28* (1.69) | 0.21 (1.29) | 0.20 (1.14) |
| Membership environmental organization | 0.41** (2.37) | 0.54*** (2.80) | 0.37** (2.40) | 0.47*** (2.75) | 0.39** (2.25) | 0.46** (2.42) |
| Catholic affiliation | 0.22 (1.31) | -- | 0.13 (0.90) | -- | 0.13 (0.84) | -- |
| Protestant affiliation | 0.01 (0.05) | -- | 0.08 (0.54) | -- | 0.02 (0.10) | -- |
| Affiliation other religious groups | 0.37 (1.19) | 0.39 (1.29) | 0.53* (1.89) | 0.50* (1.86) | 0.26 (0.94) | 0.22 (0.83) |
| Christian religiosity | -- | 0.16 (0.98) | -- | 0.13 (0.97) | -- | 0.09 (0.63) |
| Affinity left-wing parties | -0.26* (-1.83) | -0.13 (-0.87) | -- | -- | -- | -- |
| Affinity left-wing parties with missing values | -- | -- | -0.41*** (-3.13) | -0.27* (-1.94) | -0.46*** (-3.38) | -0.33** (-2.27) |
| Missing values party affinity | -- | -- | -0.20 (-1.14) | -0.16 (-0.78) | -0.20 (-1.09) | -0.22 (-1.06) |
| Number of observations | 474 | 390 | 720 | 588 | 720 | 588 |

Note: * (**, ***) means that the appropriate parameter is different from zero at the 10% (5%, 1%) significance level, respectively

Table 6: Estimates (robust z-statistics) of average discrete and marginal (for “age”) probability effects in ordered and binary probit models, only inclusion of variables for perceived financial performance of SRI and control variables

| Explanatory variables | Ordered probit model | | | Binary probit model |
|------------------------------|----------------------|---------------------|---------------------|---------------------|
| | Category 1 | Category 2 | Category 5 | |
| Higher perceived returns SRI | -0.18** (-2.17) | 0.02*** (3.12) | 0.08* (1.74) | 0.15* (1.85) |
| Higher perceived fees SRI | 0.11*** (3.42) | -0.02*** (-3.00) | -0.04*** (-3.32) | -0.09*** (-2.75) |
| Higher perceived risk SRI | 0.11*** (3.65) | -0.02*** (-3.01) | -0.04*** (-3.48) | -0.11*** (-3.27) |
| Female | n.s. | n.s. | n.s. | n.s. |
| Age | n.s. | n.s. | n.s. | n.s. |
| High education | n.s. | n.s. | n.s. | n.s. |
| Living together or married | n.s. | n.s. | n.s. | n.s. |
| Western Germany | n.s. | n.s. | n.s. | n.s. |
| Number of observations | 697 | | | 697 |

Notes: * (**, ***) means that the appropriate effect is different from zero at the 10% (5%, 1%) significance level, respectively; n.s. means that the appropriate effect is not significant

Table 7: Estimates (robust z-statistics) of average discrete and marginal (for “age”) probability effects in ordered and binary probit models, full model specifications without missing values

| Explanatory variables | Ordered probit models | | | | | | Binary probit models | |
|---------------------------------------|-----------------------|--------------------|---------------------|---------------------|--------------------|--------------------|----------------------|--------------------|
| | Category 1 | Category 2 | Category 5 | Category 1 | Category 2 | Category 5 | | |
| Higher perceived returns SRI | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Higher perceived fees SRI | 0.09*** (2.60) | -0.01** (-2.31) | -0.03*** (-2.60) | 0.07* (1.88) | -0.01* (-1.74) | -0.02* (-1.91) | -0.07* (-1.90) | n.s. |
| Higher perceived risk SRI | 0.07** (1.97) | -0.01* (-1.73) | -0.03** (-2.03) | n.s. | n.s. | n.s. | -0.08** (-1.97) | n.s. |
| Female | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Age | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| High education | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Living together or married | -0.07** (-2.02) | 0.01* (1.87) | 0.02** (2.00) | n.s. | n.s. | n.s. | 0.07* (1.69) | n.s. |
| Western Germany | -0.08* (-1.87) | n.s. | 0.03** (1.99) | -0.10** (-2.30) | 0.02* (1.93) | 0.03** (2.40) | n.s. | 0.10** (2.21) |
| Warm glow | -0.17*** (-4.58) | 0.03*** (3.49) | 0.05*** (4.09) | -0.15*** (-3.73) | 0.03*** (2.99) | 0.05*** (3.47) | 0.15*** (3.90) | 0.15*** (3.27) |
| No contribution social environment | 0.07** (2.14) | -0.01** (-1.97) | -0.03** (-2.18) | 0.08** (2.24) | -0.01** (-2.01) | -0.03** (-2.25) | -0.07** (-2.09) | -0.08** (-1.98) |
| Expectation social environment | -0.21*** (-3.65) | 0.02*** (3.47) | 0.09*** (3.05) | -0.19*** (-3.04) | 0.02*** (2.99) | 0.08*** (2.60) | 0.24*** (3.55) | 0.24*** (3.27) |
| Expectation society | -0.11** (-2.25) | 0.01** (2.37) | 0.04** (2.12) | n.s. | 0.01* (1.74) | n.s. | 0.09* (1.65) | n.s. |
| Membership environmental organization | -0.12** (-2.32) | 0.01** (2.51) | 0.05** (2.09) | -0.16*** (-2.63) | 0.02*** (2.82) | 0.06** (2.26) | 0.13** (2.18) | 0.17** (2.37) |
| Catholic affiliation | n.s. | n.s. | n.s. | -- | -- | -- | n.s. | -- |
| Protestant affiliation | n.s. | n.s. | n.s. | -- | -- | -- | n.s. | -- |
| Affiliation other religious groups | n.s. | 0.01* (1.77) | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Christian religiosity | -- | -- | -- | n.s. | n.s. | n.s. | -- | n.s. |
| Affinity left-wing parties | 0.08** (2.15) | -0.01* (-1.95) | -0.03** (-2.11) | n.s. | n.s. | n.s. | -0.09** (-2.36) | n.s. |
| Number of observations | 474 | | | 390 | | | 474 | 390 |

Notes: * (**, ***) means that the appropriate effect is different from zero at the 10% (5%, 1%) significance level, respectively; n.s. means that the appropriate effect is not significant

Table 8: Estimates (robust z-statistics) of average discrete and marginal (for “age”) probability effects in ordered and binary probit models, full model specifications including missing values

| Explanatory variables | Ordered probit models | | | | | | Binary probit models | |
|--|-----------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|---------------------|
| | Category 1 | Category 2 | Category 5 | Category 1 | Category 2 | Category 5 | | |
| Higher perceived returns SRI with missing values | -0.12** (-2.19) | 0.02** (2.12) | 0.04** (2.03) | -0.10* (-1.77) | 0.02* (1.74) | 0.04* (1.66) | n.s. | n.s. |
| Missing values perceived returns SRI | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Higher perceived fees SRI with missing values | 0.08*** (2.59) | -0.01** (-2.48) | -0.03** (-2.42) | 0.07** (1.98) | -0.01* (-1.95) | -0.02* (-1.90) | -0.07** (-1.99) | n.s. |
| Missing values perceived fees SRI | 0.12** (2.14) | -0.02** (-2.10) | -0.04** (-2.03) | n.s. | n.s. | n.s. | -0.11* (-1.81) | n.s. |
| Higher perceived risk SRI with missing values | 0.07** (2.38) | -0.01** (-2.26) | -0.03** (-2.28) | n.s. | n.s. | n.s. | -0.08** (-2.28) | n.s. |
| Missing values perceived fees SRI | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Female | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Age | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| High education | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Living together or married | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Western Germany | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Warm glow | -0.16*** (-5.36) | 0.03*** (4.21) | 0.05*** (4.61) | -0.15*** (-4.46) | 0.03*** (3.57) | 0.04*** (3.94) | 0.16*** (4.78) | 0.15*** (4.12) |
| No contribution social environment | 0.08** (3.03) | -0.01*** (-2.67) | -0.03*** (-3.04) | 0.08** (3.00) | -0.02*** (-2.59) | -0.03*** (-2.94) | -0.08*** (-3.13) | -0.09*** (-3.00) |
| Expectation social environment | -0.20*** (-3.96) | 0.03** (3.91) | 0.08*** (3.37) | -0.17*** (-3.15) | 0.03*** (3.14) | 0.07*** (2.77) | 0.22*** (3.72) | 0.20*** (3.17) |
| Expectation society | -0.08* (-2.03) | 0.01** (2.12) | 0.03* (1.92) | n.s. | 0.01* (1.66) | n.s. | n.s. | n.s. |
| Membership environmental organization | -0.09** (-2.22) | 0.01** (2.36) | 0.04** (2.02) | -0.13** (-2.50) | 0.02*** (2.65) | 0.05** (2.21) | 0.10** (2.07) | 0.12** (2.20) |
| Catholic affiliation | n.s. | n.s. | n.s. | -- | -- | -- | n.s. | -- |
| Protestant affiliation | n.s. | n.s. | n.s. | -- | -- | -- | n.s. | -- |
| Affiliation other religious groups | -0.14* (-1.71) | 0.02** (2.16) | n.s. | -0.12* (-1.88) | 0.02* (1.87) | 0.04* (1.82) | n.s. | n.s. |
| Christian religiosity | -- | -- | -- | n.s. | n.s. | n.s. | -- | n.s. |
| Affinity left-wing parties with missing values | 0.10*** (3.21) | -0.02*** (-2.81) | -0.03*** (-3.03) | 0.06** (1.96) | -0.01* (-1.83) | -0.02* (-1.89) | -0.11*** (-3.44) | -0.08** (-2.30) |
| Missing values party affinity | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. |
| Number of observations | 720 | | | 588 | | | 720 | 588 |

Notes: * (**, ***) means that the appropriate effect is different from zero at the 10% (5%, 1%) significance level, respectively; n.s. means that the appropriate effect is not significant