Information barriers and individual participation in the sustainable and responsible investment market– Can sustainability and transparency labels help?

Gunnar Gutsche and Bernhard Zwergel

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Gunnar Gutsche (corresponding author)
University of Kassel, Department of Economics
Nora-Platiel-Str. 5, 34109 Kassel, Germany
E-Mail: gunnar.gutsche@uni-kassel.de
Phone: +49/561/804-7505, Fax: +49/561/804-2501

Bernhard Zwergel
University of Kassel, Department of Economics
Henschelstr. 4, 34109 Kassel, Germany
E-Mail: b.zwergel@uni-kassel.de
Phone: +49/561/804-7566

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Abstract

This study empirically analyzes barriers preventing private investors from participating in the market of sustainable and responsible investment (SRI) by linking the participation costs framework to SRI market participation. The empirical analysis is based on an online representative survey of financial decision makers also containing a stated preferences discrete choice experiment. Contrary to previous studies, we differentiate between four different investor groups and find that they face different barriers regarding SRI market participation. Particularly too high (perceived) information costs regarding SRI prevent investors from investing (more) in SRI. Receiving no offer by their bank is a big market entry hurdle especially for interested investors. Distrusting providers of SRI is a main issue discouraging skeptical and conventional investors. The experiment reveals that investors of all groups have positive preferences for funds with transparency or sustainability labels. Hence, labels are an opportunity to decrease information costs thereby enhancing individual demand for SRI.

1. Introduction

During the last years, sustainable and responsible investment (SRI), i.e. investment products combining financial, environmental, social, and governance (ESG) issues, has become increasingly recognized in financial research and practice. According to the roof organization for sustainable investments in Germany the Forum Nachhaltige Geldanlagen (FNG), today almost every conventional investment product has its socially responsible counterpart (FNG, 2016). This gives private investors the opportunity to consider financial as well as non-financial aspects according to their individual preferences with respect to ecological, social, and/or ethical issues in their investment decisions. Current figures suggest that these investment opportunities are very well accepted by investors: Across Europe the SRI market grew strongly by 22.6 % (measured in total investment volume) in the time period from 2011 to 2013 (Eurosif, 2014). However, it also should be noted that this development is mainly driven by institutional investors, since the retail investors' share in total SRI volume in Europe even decreased from 8.0 % in 2009 to 3.4 % in 2013 (Eurosif, 2014). In Germany the share of retail investors also decreased from 25 % to 17 % between 2013 and 2014, but is still larger than the European average (FNG, 2015b). This development gives reason to raise the question whether these investment products may not only be an opportunity but also a challenge, particularly for private investors. Investors are confronted with a large variety of investment products employing many different sustainable investment strategies. The FNG (2015b), for example, distinguishes between eight different sustainable investment strategies. Sandberg et al. (2009) point out that there is even a broad discussion on how to define and entitle investment strategies including ESG issues.

Indeed, Nilsson et al. (2012) argue that, particularly less sophisticated, private investors are overwhelmed by information or the complexity of (socially responsible) financial products. In the

context of conventional investment products, previous studies find that private investors can be prone to a vast variety of factors that prevent them from stock market participation (see e.g., van Rooij et al. (2011) on financial literacy; Kaustia and Torstila (2011) on political ideology; Guiso et al. (2008) on (dis-) trust and on socio-demographics). In case of SRI, empirical studies argue or empirically find that distrust in SRI providers (e.g., Nilsson, 2008; Wins and Zwergel, 2016), the perception of financial performance of SRI compared to conventional products (e.g., Bauer and Smeets, 2015; Eurosif, 2012b; Nilsson, 2008; Riedl and Smeets, 2014; Paetzold and Busch, 2014; Wins and Zwergel, 2015), information related issues, such as information asymmetries (Rhodes, 2010), too much or complex information (Nilsson et al., 2012), too less information (Hummels and Timmer, 2004), search costs (Benson and Humphrey, 2008), but also poor knowledge or low financial literacy (e.g., Riedl and Smeets, 2014; Nilsson et al., 2012; Borgers and Pownall, 2014) as well as a bad performance of advisors (Schrader, 2006) might be crucial barriers that hinder private investors from investing in SRI or to invest more, i.e. to participate in the SRI market. Similar problems are (well-) known in consumption research and can lead to the attitude-behavior gap (e.g., Young et al., 2010), which seems also to be a problem related to SRI (e.g., Nilsson, 2008; Wins and Zwergel, 2016).

In this context, we follow Vissing-Jorgensen's (2004) view that participation costs consist of information and transaction costs. This leads to our main hypothesis that limited SRI market participation is a result of too high participation costs related to sustainable financial products. Since transaction costs to participate in the SRI market can be expected to be similar than for the stock market, particularly information costs, for example due to information asymmetries (Rhodes, 2010) or the higher level of complexity, can be an important hurdle for investors preventing them from investing in SRI. It is virtually impossible for a private investor to assess whether or not the stocks included in the fund portfolio really are sustainable (e.g., Entine, 2003, Nilsson et al., 2012).

Market failures arising from asymmetric information or high search costs are often addressed by increased information disclosure (e.g., Campbell et al., 2011). This can either be supported by means of regulatory measures or introducing (voluntary) third-party eco-labeling schemes that can be sponsored by the government itself or NGOs (Cason and Gangadharan, 2002).

In the field of SRI currently both governmental labels as well as those published by independent organizations already exist. There has been growing interest in the recent years to establish transparency guidelines, transparency labels, or sustainability labels to facilitate private investors' search for sustainable mutual funds and also to increase the transparency of socially responsible mutual funds. In the context of SRI funds a sustainability label imposes quality requirements with respect to the funds sustainability attributes, whereas a transparency label only seeks to "enable stakeholders, in particular retail investors, to understand the policies and practices of a given SRI fund" (Eurosif, 2014). In Europe the existence of transparency logos by Eurosif, the Austrian Ecolabel, the French Novethic SRI Label, the French Novethic Green Fund Label, or the new German sustainability label published by the FNG show how relevant this topic is (FNG, 2015a). Besides the questions of how to construct such labels, it is an empirical question whether and how private investors consider them in their investment decisions.

Against this background, the purpose of this paper is twofold. First, it empirically analyzes which barriers prevent private investors from investing in SRI and second, whether sustainability and/or transparency labels, as means of information disclosure, can help to overcome at least some these barriers. In order to empirically examine these questions this study uses a unique dataset from a representative survey among financial decision makers in German households. For answering the first research question, the questionnaire contains questions about potential barriers that might prevent private investors from investing in SRI, such as the respondents' perception of distrust,

their level of information, and their investment knowledge with respect to SRI, but also information on sociodemographic and –economic variables as well as whether the investors are currently invested in SRI or plan to invest in SRI. This allows us to compare different investor groups, namely sustainable and responsible (SR), skeptical (SK), interested (INT), and conventional (CONV) investors and empirically analyze whether they face different barriers. Although several empirical studies examine which factors might prevent individual investors from stock market participation in general (e.g., van Rooij et al., 2011; Guiso et al., 2008), only a very few studies examine why people do not invest in SRI (e.g., Wins and Zwergel, 2016; Paetzold and Busch, 2014). Hence, our empirical analysis on the basis of a unique and broad dataset extends the existing literature about individual investment decisions regarding SRI, because it considers heterogeneity across investors as well as investment barriers, i.e. an aspect that is mainly neglected in previous studies.

A stated preferences discrete choice experiment (DCE) was included for answering the second research question. We use this method as it provides several advantages compared to other (simpler) approaches. For example, directly asking investors about the attributes they prefer most when they make investment decisions or which attributes they considered in their last investment decision are often prone to conscious or unconscious errors, such as social desirability, retrospection, or recall biases (e.g., Mason and Stark, 2004; Boyle et al., 2015). It also enables us to implement attributes, which have not been implemented in the market or are probably yet unknown to the investor (e.g. Hensher et al., 2010). The DCE comprises eight successive hypothetical investment situations for each respondent in which they had to select one out of four mutual funds. The funds differ from each other with respect to financial attributes as well as non-financial attributes, like sustainability certificates, and transparency logos. Thereby, we contribute to the literature about (eco-) labels. This is interesting for at least three reasons. First, as far as we

know no previous study investigates whether labels are taken into account by private investors related to SRI. Second, several (theoretical) papers argue that labels can overcome asymmetric information problems or mistrust, or decrease search costs, previous empirical studies usually focus on examining whether consumers are willing to pay a price premium for labeled products (see e.g., Loureiro and Lotade, 2005) and if different groups can be identified according to socio-demographic variables, or how to create an efficient labeling scheme (e.g., Ibanez and Grolleau, 2008; Heinzle and Wüstenhagen, 2012). However, to the best of our knowledge there is no study at all trying to identify whether consumer or investor groups with, for example, lower knowledge levels or higher levels of distrust towards a product react differently towards labels. Finally, we examine two types of labels that focus on different aspects, namely sustainability and transparency. Hence, our results can help policy makers as well as third-party certification authorities when creating label schemes in the field of SRI.

Our empirical analysis shows that it is important to account for investor heterogeneity by distinguishing between (several) different investors groups in the context of SRI instead of only distinguishing between two investor groups (investors who are currently invested in SRI and those who are not) as most studies do (e.g., Junkus and Berry, 2010, McLachlan and Gardner, 2004). The four different groups we consider face different barriers in their investment decision processes in the context of SRI. A lack of knowledge of SRI and the perception of feeling poorly informed about SRI, i.e. (perceived) high information costs, are important issues why private investors in general do not invest (more) in SRI. Particularly having not received an offer by their bank yet is a big hurdle for INT investors. Distrusting providers of SRI is an additional issue that especially hinders SK and CONV investors to invest (more) in SRI and seems to be an important factor for discriminating future potential investors (SR and INT) and those who are not planning to invest in SRI in the future (SK and CONV). Further, we find that sustainability and/or transparency labels

could present a measure to decrease information costs in context of SRI as all kinds of investors positively react to these labels. However, SR and INT investors have significantly higher positive stated preferences for both kinds of labels than SK or CONV investors. Hence, labels could be particularly useful to guide INT investors who tend to feel poorly informed about SRI.

The remainder of this paper is structured as follows. The next section reviews the literature on (potential) barriers for private investors that might prevent them from participating in the SRI market. Further, we review how labels might help to overcome certain market failures which might arise due to the aforementioned barriers and give an overview of existing labels regarding SRI. We also derive hypotheses to be tested in the empirical analysis. Section 3 describes the survey, the experimental approach, related data and variables, and the microeconometric methodologies that we use to analyze the data. The empirical results are presented and interpreted in section 4, and section 5 concludes.

2. Literature review and hypotheses

2.1 Potential barriers for private investors

According to the idea of participation costs, individuals only join a market or actively shift their portfolio, i.e. invest in a certain financial product, if their costs for participation do not exceed a given threshold (e.g., Guiso et al., 2008). Vissing-Jorgensen (2004) describes these costs as information and transaction costs that occur in form of initial or entry costs, which are faced by new investors, and recurring periodical costs that have to be borne by all participants of the market (see also Haliassos and Bertaut, 1995; Favilukis, 2013). This concept is often used for explaining limited stock market participation or inertia (e.g., Haliassos and Bertaut, 1995; Vissing-Jorgensen, 2004; Guiso et al., 2008; Bonaparte and Kumar, 2013) and we apply it to the case of investment decision related to SRI. Information costs are naturally higher in case of new and/or more complex

financial products, such as SRI, and thus should play an important role regarding individuals' SRI market participation.

Following Vissing-Jorgensen (2004) information costs arise as investors need to search and understand information on an asset (class), the related market, the whole economy, etc. to feel comfortable enough to invest in a certain asset and/or to make good investment decisions, i.e. avoid investment mistakes (see also Campbell, 2006; Graham et al., 2009; García, 2013). Costs for these processes are often interpreted as lump sum costs, fixed entry costs, or opportunity costs valuing the time spent by investors (e.g., Haliassos and Bertaut, 1995; Vissing-Jorgensen; 2004, Allen and Santomero, 2001). Costs could also be directly understood as an individual's psychological state that makes them not feel sufficiently comfortable to invest in a product (Campbell, 2006). Transaction costs are particularly important in case of indirect stockholding and comprise, for example, brokerage fees, costs for setting up accounts, annual costs for funds managers, or costs linked to trading volume (e.g., Vissing-Jorgensen, 2004, Haliassos and Bertaut, 1995). Both types of costs can exist in terms of initial one-time or entry costs faced by new investors, for example time spent for searching, learning, and understanding initial information about a certain financial product, and periodical costs, such as total expense ratios in case of mutual funds, or costs for time spent for managing one's own portfolio and finding new investment opportunities (e.g., Favilukis, 2013, Vissing-Jorgensen, 2004). For simplification, we assume information costs to be measured in (perceived) time spent for gathering and processing information on SRI. On this basis, we generally hypothesize (perceived) information costs have a negative effect on SRI market participation. To sum up, we formulate our first and main hypothesis:

H1a: Private investors who are (or feel) poorly informed on (sustainable) financial products are less likely to attend the SRI market.

Starting from this broad hypothesis, we try to disentangle the determinants regarding information and transaction costs related to SRI, and hence to identify related (information) barriers preventing private investors from SRI market participation.

Previous studies on barriers of stock market participation find that little (economical or financial) knowledge (for example, measured as self-assessed knowledge or financial literacy scores) and education[1] are important determinants of individual investment behavior. For example, less sophisticated private investors make severe mistakes in financial decisions, i.e. decisions inconsistent to financial theory, and are less likely invested in stocks (e.g., Campbell, 2006; Calvet et al., 2009; García, 2013; van Rooij et al., 2011). Financial knowledge and education also affect other areas of financial decision making or economic behavior or lead to normative controversy investment behavior, such as underdiversification of portfolios or worse financial performance (see e.g., Guiso and Jappelli, 2008; von Gaudecker, 2015). In context of financial innovations Campbell (2006) states that retail markets are often inert and it takes time until private investors, particularly financially less sophisticated ones, adopt and accept new financial products. These results can be linked to the participation costs framework by assuming that investors with a lack of knowledge face higher information costs, in terms of money spent but also time, which they have to spent for gathering and understanding information.

In context of investment decisions related to SRI, Bauer and Smeets (2015) and Borgers and Pownall (2014) examine the effect of financial literacy or self-assessed financial knowledge on SRI investment behavior. Borgers and Pownall (2014) conduct a survey among private investors from the Netherlands. Their empirical results show that financially literate people are less likely to make inconsistent decisions and argue that investors with low financial literacy scores are not able

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[1] And also related issues, such as cognitive abilities and IQ (e.g., Grinblatt et al. (2011)).

to consider financial and non-financial attitudes at the same time. Bauer and Smeets (2015) analyze the behavior of customers from two Dutch banks which are specialized on SRI. They use self-rated investment knowledge as one of their control variables. They find no significant effect of self-rated financial knowledge on the portfolio share (in percent) nor the amount invested at the SR bank. However, they find a significant positive effect on the number of conventional investment accounts or number of savings accounts. Since empirical results are limited, it is still an empirical question whether (self-assessed financial) knowledge of SRI has an impact on being invested in SRI. According to the aforementioned reasons and most empirical studies regarding stock market participation, we state the following hypothesis:

H1b: Private investors with only little knowledge of SRI are less likely to invest in SRI.

Closely related to this issue, we also examine whether education has an impact on the probability of being invested in SRI. Previous studies on stock market participation argue that education has a positive effect on being invested in stocks as more highly educated people face lower information costs compared to people with a lower education (e.g., Campbell, 2006). Further, it is important to distinguish between knowledge of SRI and education, as education turned out to be a bad proxy for financial literacy (van Rooij et al., 2011). In line with this rationale, several empirical studies show that education positively affects the propensity of stockholding, as, for example, shown in Christelis et al. (2010), Georgarakos and Pasini (2011), Guiso et al. (2008), van Rooij et al. (2011), Campbell (2006). In context of SRI, Bauer and Smeets (2015) find that investors with a university degree invest (weakly) significantly more at banks specialized on SRI and hold fewer conventional savings accounts. Nilsson (2008) shows that better educated investors are more willing to invest higher proportions of their portfolio in SRI funds. Borgers and Pownall (2014) find that more highly educated investors are more likely to pay for socially screened investment portfolios. In

their surveys Rosen et al. (1991), Tippet and Leung (2001) and Cheah et al. (2011) all find a positive link between the educational level of their respondents and in turn their involvement in SR investing. In sum and in line with previous studies we state the following hypothesis:

H1c: Private investors with low levels of education are less likely to invest in SRI.

Another important (potential) barrier related to information costs is mentioned by Allen and Santomero (2001) who argue that participation costs can be lowered by intermediaries, such as banks. They state that the size of participation costs refers not only to the time spent for making financial decisions but particularly to issues related to acquiring and processing information. In their view, intermediaries play an important role as they can lower participation costs and information barriers by helping to solve complex problems investors might have, especially in areas where asymmetric information problems might be present. Finally, they argue that if intermediaries do not help to lower participation costs this might "prevent investors from reaping the benefits of new markets, and the markets themselves might not survive". Although they do not directly refer to SRI markets, we adopt their argumentation to the case of SRI market participation. This makes sense as Schrader (2006) and also Paetzold and Busch (2014) already argue that banks perform badly when it comes to advisements or providing information on SRI products. We assume that a lack of intermediation and advisements by banks prevents investors from SRI market participation as the investors' information costs (and thus also participation costs) are too high. This argumentation leads us to stating the following hypothesis:

H1d: Investors stating that banks did not offer them any sustainable investments are less likely to attend the SRI market.

Another important factor naturally influencing individual decision making with respect to credence goods, but also economic behavior or financial transactions in general, and thus a potential

determinant of SRI investment behavior, is trust (e.g., Taufique et al., 2014; Christelis et al., 2010; Nilsson, 2008). As mentioned above, consumers or investors cannot directly assess whether the information, for example the degree of sustainability of a financial product, published by sellers or providers is true. Thus, in case that no further external information are available, they can only rely on information published by the sellers or providers and hence have to trust them. As a consequence, distrust can lead consumers to rejecting these products (Campbell et al., 2011).

More generally, empirical evidence, as reported in Biehl et al. (2012), shows that trust is positively related to many economic activities, such as the performance of large organizations, stock market capitalization, or household decisions (e.g., La Porta et al., 1996; Calderon et al., 2002; Guiso et al., 2008). In context of financial decisions, previous empirical studies show that (dis-) trust affects stock market participation (Guiso et al., 2008; Georgarakos and Pasini, 2011) and investment decisions related to risky assets (Georgarakos and Pasini, 2011).

Guiso et al. (2008) examine the effect of trust on stock market participation across individual investors. They distinguish between individuals' general trusting attitudes towards other people and individuals' trust in institutions, i.e. in banks or brokers. They find that trusting investors are more likely to invest in stocks, and further that if they are invested, they buy more stocks than their counterparts. Nilsson (2008) examines the influence on individual trust related to SRI. For identifying the effects of trust on the share of the investors' total portfolio invested in SRI he drew a sample of Swedish fund investors. Hypothesizing that trust in pro-social claims has a positive influence on investment decisions in favor of SRI compared to conventional investments, the estimation results show only a weak significant positive effect of trust (p-value = 0.08). Thus trusting investors are more likely to invest a larger share of their portfolio in SRI. Wins and Zwergel (2016) also examine the influence on individual trust related to SRI. They conclude that trust has

a positive effect on individual investment behavior regarding SR funds. Hence, based on the aforementioned empirical findings we expect distrust to constitute an important barrier for investors:

H2: Distrusting private investors are less likely to invest in SRI.

One important and often examined question in the field of SRI is whether SR investment products perform equally or differently (better or worse) compared to their conventional counterparts. Dorfleitner and Utz (2014) report that less financial return conscious investors invest larger amounts of their portfolio in SRI. This is in line with other studies, which empirically find that SR investors are willing to sacrifice return when investing in SRI funds (e.g., Wins and Zwergel, 2016; Lewis and Mackenzie, 2000). Therefore, the (expected) relative performance of SRI compared to conventional investments could be an important barrier for investor groups especially those that are currently not invested in SRI.

Several studies (e.g., Bauer et al., 2005) and reviews (e.g., von Wallis and Klein, 2015, Kiymaz, 2012) as well as meta analyses (e.g. Friede et al., 2015, Rathner, 2013) on empirical studies on relative SRI performance summarize that in most cases sustainable funds perform better or equal to conventional funds. These reviews list several potential reasons that can influence the results of performance analyses. Differences can be explained by different sample periods, sample size, data sources, etc. (e.g., Chegut et al., 2011, Rathner, 2013, von Wallis and Klein, 2015). Because research cannot fully resolve the question whether or not SRI and conventional investments perform differently, this could be an important barrier for private investors.

Nilsson (2008) argues that individual investors are not guided by the objective but perceived performance of investment products, and that even investors who do not care about social responsibility might invest in SRI due to financial reasons. The former issue is supported by

findings made by De Bondt (1998) revealing that individuals' perception, for example with respect to variability of stock returns, often differ from what objective measures tell. Thus, Nilsson (2008) finds that investors are significantly more likely to invest a larger share of their portfolio in SRI, when expecting the same or above average returns. However, perception of risk has no significant influence. Riedl and Smeets (2014) analyze administrative data of individual investors of one large mutual fund provider in the Netherlands. They consider the investment behavior of both conventional and SR investors over a period from 2002 to 2012 and find no significant effects of expectation on return nor risk perception on the probability to invest in SRI funds. Renneboog et al. (2011) show that fund flows in and out of SR funds are less sensitive to past negative returns than conventional fund flows. Bauer and Smeets (2015) investigate the role of social identification by using data from an online survey among 3187 private investors of two specialized, socially responsible banks in the Netherlands. In their sample, SR investors perceive the risk of SRI funds to be higher compared to conventional funds, while approximately 45% expect the return of SRI to be higher. For example, they find that investors expecting lower returns invest significantly less at the specialized, socially responsible banks. According to Wins and Zwergel (2015) the percentage of ethical investors (from the US, the UK, Sweden, and Germany) who believe that ethical funds have a lower return than conventional funds is always higher than the percentage of those who think that ethical funds offer a higher return than conventional funds. Regarding risk Wins and Zwergel (2015) conclude that most ethical investors (from the UK, Sweden, and Germany) share the opinion that SR funds' risk is similar to or less than that of conventional funds. With respect to HNWIs Paetzold and Busch (2014) find in their qualitative analysis of ten individuals that those who perceive SRI as highly volatile were less likely to engage in SRI. This is supported by findings of Eurosif (2012a) revealing that performance concerns is the main barrier of HNWIs. Thus, in line with the previous findings we formulate the following hypotheses:

H3a: Individual investors are less likely to invest in SRI if they expect lower returns for SRI compared to conventional investments.

H3b: Individual investors are less likely to invest in SRI if they perceive SRI to be riskier than conventional investments.

Finally, Vissing-Jorgensen (2004) argues that transaction costs are a potential barrier for stock market participation. However, to the best of our knowledge, no previous study included the individuals' perception of fees regarding SRI compared to conventional investments. There are only surveys that ask SR investors whether or not fees are important in the investment decision (e.g., Wins and Zwergel, 2016 and Pérez-Gladish et al., 2012), but there are no surveys that have asked respondents about their perception of fees of SR funds compared to conventional funds. Since one could argue that intensive screening processes lead to higher costs, investors might expect that they have to pay higher fees for SRI. Thus, in context of financial barriers we finally hypothesize:

H3c: Individual investors perceiving fees for SRI to be higher compared to fees of conventional investments are less likely to invest in SRI.

2.2 Labeling schemes as measures to decrease information costs

A potential measure to decrease information and search costs are (eco-) labeling schemes as they make information visible to consumers, and thus can simplify purchase decisions (see e.g., Teisl et al., 2002, Cason and Gangadharan, 2002). Furthermore, (eco-) labels can be part of a firm's marketing strategy aimed at capturing a premium that consumers are willing to pay, increasing market shares, and increasing the reputation of the firm (see e.g., Cason and Gangadharan, 2002, Brécard et al., 2009, Loureiro and Lotade, 2005). Finally, politics might use (eco-) labels in order

to change market behavior building on the argument of Sandberg et al. (2009) that standardization may facilitate the mainstreaming of SRI. On the one hand, they can increase consumers' awareness about product- and/or production-related environmental issues and thus inform and educate them about (potential) impacts of products on the environment (see e.g., Brécard et al., 2009, Teisl et al., 2002). On the other hand, they might drive firms towards environmentally friendlier production techniques, and thus increase environmental quality (e.g., Bleda and Valente, 2009, Amacher et al., 2004, Ibanez and Grolleau, 2008, Brécard et al., 2009).

In addition to initiatives for asset owners, investment managers and service providers, like the United Nations-supported Principles for Responsible Investment (UNPRI) there is a growing number of sustainable investment labels to help retail investors in their search for a personally suitable investment fund. The most basic and most widely employed label is the European transparency logo, which is based on the European SRI Transparency code. It does not impose any quality requirements for a fund to call itself as 'sustainable' it only seeks to "enable stakeholders, in particular retail investors, to understand the policies and practices of a given SRI fund" (Eurosif, 2014). Until December 2013 more than half of the approximately 900 SRI funds in Europe have already committed themselves to this code (Eurosif, 2014). Several other institutions use the European SRI Transparency code as a mandatory requirement for their own labels.

The Austrian Ecolabel, which is awarded by the Austrian Ministry of Environment, is the oldest label for SRI funds in Europe. It was established in 2004. With its requirements it goes beyond those of the European SRI Transparency code because it does not only demand transparency of the funds but also certain quality standards. (see Kornherr, 2012 for details). Likewise, the Novethic SRI Label and the Novethic Green Fund Label are also designed as quality standards (Novethic, 2015). Apart from these bigger labels, there are labels from Luxflag, Forum Ethibel and the

Responsible Investment Association Australasia.[2] In addition, the FNG in corporation with France based Novethic, launched a new label for SRI funds in Germany in November 2015.

Because there are no surveys or experiments regarding labels in the SRI market we primarily ground our hypotheses in the literature on eco- and fair trade labels. These two kinds of labels are especially suited to be connected to the SRI context since they often consider social, ecological and ethical aspects in their labeling schemes. In the SRI literature, these three characteristics are often referred to as SEE issues. According to Nilsson (2008) the "trend that has influenced the growth of the SRI industry is that the recent years have been marked by an increase in consumer concern for social, ethical, and environmental (SEE) issues." This is in line with Owen and Qian (2008) who report that "people who purchase environmentally friendly products as a consumer also seem to carry over their societal concerns to investment decisions".

Despite this positive trend consumer skepticism and confusion about social and environmental assertions of products have become a serious problem (e.g. Crane, 2000, Chen and Chang, 2013). According to Caswell and Padberg (1992) and Caswell and Mojduszka (1996) a credible ethical product label can help to overcome these problems through the conversion of a credence attribute (e.g. sustainability) into a search attribute. In the SRI context, Wins and Zwergel (2016) show that conventional investors on average do not trust in SRI funds whereas interested and sustainable investors on average do. However, when it comes to deciding which stock companies are sustainable and which are not, even sustainable and interested investors distrust the fund management to perform this task. They either want the fund management to be aided by an independent advisory committee or an external agency when evaluating a stocks' sustainability. This is in line with results presented by Haigh (2008), who suggests that investors' reluctance to

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[2] For details see Zwergel (2016).

purchase SRI funds is linked to investors' concerns with respect to the information integrity of SRI funds. Therefore, we state the following hypotheses:

H4a: An investor is more likely to invest in a sustainable fund with a credible sustainability certificate than without one.

According to Egels-Zandén et al. (2015) transparency is not consistently defined. Two main dimensions are presented in the literature. Egels-Zandén and Hansson (2015) state that for some transparency is traceability (i.e. the possibility to track a product´s flow from the sources of the raw materials to the end of the production process) and for others it is mainly disclosing sustainability conditions at suppliers. Consequently, Egels-Zandén and Hansson (2015) conclude that a company is fully transparent if both dimensions are fulfilled: Disclosing all its supplier names and the sustainability conditions at each of them. In the context of an equity fund this would mean that the investment company would have to disclose all the holdings of the fund (raw materials), the investment strategy (production process), and the (degree of) sustainability of the holdings in order to be fully transparent. Transparency (e.g. of supply chains) is often seen as a means to enable stakeholders (e.g. consumers) to hold firms accountable for their actions (e.g., Dingwerth and Eichinger, 2010 and Hess, 2007) or as a corporate tool for increasing revenues through improved credibility, legitimacy, and trust (Egels-Zandén and Hansson, 2015). Based on interviews Bhaduri and Ha-Brookshire (2011) support the assertion that transparency has the potential to influence purchasing intentions of consumers. Using an experiment in an artificial online laboratory environment Bradu et al. (2014) show that a transparency label significantly increases a consumer's willingness to buy chocolate. Additionally, they demonstrate that consumers process the transparency label heuristically rather than systematically, i.e. they see the label as cue or signal independent of its content. Therefore, we state the following hypothesis:

H4b: An investor is more likely to invest in a fund with a transparency label than without one.

Finally, MacLean and Rebernak (2007) state that trust among stakeholders can be build best through transparency. Consequently, a sustainability label should be conceived to be more trustworthy when it is accompanied by a transparency label. Thus, we hypothesize:

H4c: An investor is more likely to invest a sustainable fund that has a transparency and a sustainability label.

3. Data, variables, and experimental design

The data stem from a survey, which was conducted in December 2013 and January 2014 in cooperation with the German market research institute GfK (Gesellschaft für Konsumforschung). The initial (online) representative sample contains 1.001 randomly drawn respondents in German households. The respondents are persons who are at least 18 years old and mainly or equally responsible for the household's investment decisions. Additionally, we required the respondents to not only have a checking account, but at least (also) a savings account. Besides questions on socio-demographic factors, attitudes towards and perceptions of sustainable investments, the survey contains a DCE related to investment decisions on mutual funds. As the DCE refers to investment decisions between several mutual funds, we required a certain level of financial knowledge as prerequisite for attending the experiment (see section 3.2 on a detailed description). Only 801 of all 1.001 survey participants fulfilled these requirements. For identifying (information) barriers preventing private investors from SRI market participation we only refer to the questionnaire part (see section 3.1). In order to examine whether labels could help to decrease information and participation costs we combine the questionnaire and experimental data in the econometric analysis. The experimental design and the construction of resulting variables are introduced in section 3.2.

3.1 Description of variables for analyzing SRI market entry barriers

In order to identify investors that own sustainable investment products (and those who do not) while explicitly considering investors' heterogeneity, we used a filter question similar to Wins and Zwergel (2016). By asking the respondents to select one of the following statements, we are able to divide the respondents into four groups (investor group abbreviations in parentheses):

- I currently own sustainable investments and I will still invest in sustainable investments in the next three years. (sustainable and responsible investors, SR)

- I currently own sustainable investments, but I will not invest in sustainable investments any more in the next three years. (skeptical investors, SK)

- I currently do not own sustainable investments, but I will invest in sustainable investments in the next three years. (interested investors, INT)

- I currently do not own sustainable investments and I will not invest in sustainable investments in the next three years. (conventional investors, CONV)

109 of the 801 participants of the DCE are SR investors (13.61 %), 83 respondents are SK investors (10.36 %), and 248 respondents are INT investors (30.96 %). The group of CONV investors is the biggest group containing 361 respondents, which corresponds to a share of 45.07 %. Based on this classification, we construct three variables, which are used as dependent variables in the econometric analysis. The first variable 'Investor type' directly refers to the four different investor types and takes the value one if the respondent is a SR investor, two in case of SK investors, three for INT investors, and four if the respondent is a CONV investor. Besides this multinomial variable, we construct two dummy variables, namely 'Current SRI investor' and 'Potential SRI investor'. The first variable takes the value one if the respondent either belongs to the group of SR or SK investors and zero otherwise. 'Potential SRI investor' takes the value one if the respondent is either a SR or INT investor. A share of 23.97 % of all respondents are current SRI investors and 44.57 % are potential SRI investors for the future.

As we do not have observed bank account data of the respondents, we are not able to observe their real investment decisions, individual SRI market participation and related participation or information costs. Therefore, we try to identify and disentangle the individuals' perceived participation, information, and transaction costs for SRI market participation and related impact factors by asking the respondents to value certain statements. On this basis, we construct all explanatory variables.

In order to measure the individuals' knowledge of SRI we asked the respondents to state on a five point Likert scale (ranging from "I totally disagree" to "I totally agree" [3]) how strongly they agree to the statement "I know too little about sustainable investments.". On this basis, we construct the dummy variable 'Too little knowledge' that takes the value one if the respondent strongly agrees to the statement, i.e. selected either "I rather strongly agree" or "I totally agree". As reported in Table 1, 49.67 % of the respondents self-assess their knowledge of SRI as too little.[4] As (additional) variable for measuring the individuals' degree of information on financial products in general, and thus their degree of financial sophistication, we ask the respondents about the information sources they use when they (actively) inform themselves before investing in a financial product. The respondents could make a multiple selection out of eight different information sources (conversations with a bank advisor, with family members or friends, newspapers, etc.), an "Open answer" option, and a "No answer" option. Based on these answers, we construct the count variable 'Number of information sources' reflecting the number of selected information sources. As reported in Table 1, the respondents use 2.53 information sources on average. As this measure relates to information on financial products in general and also captures the involvement of

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[3] The respondents could additionally select a "No answer"-option. Respondents that chose the "No answer"-option are excluded from the econometric analysis. We used this scale also for all other statements when we asked for the respondents' degree of agreement.

[4] See section 4.1.1 for an in-depth analysis.

individuals in their investment decisions as they actively search for information, we further capture the respondents' degree of perceived information on SRI by asking them to state how strongly they agree to the statement "I feel poorly informed about sustainable investments", which is rather a passive measure.[5] The resulting dummy variable 'Poorly informed' takes the value one if the respondent strongly agrees to this statement, and zero otherwise. Here, 61.33 % of the investors feel poorly informed about sustainable investments. The investors' perception of banks as intermediaries in context of SRI is captured with the statement "My bank has not offered me sustainable investments yet.". As before, the resulting dummy variable, 'No offer by bank', takes the value one if the person strongly agrees to this statement (and zero otherwise), which occurs in 62.11 % of all cases.

In order to examine whether distrust related to SRI is an important barrier for private investors, we connect with the questions used in Guiso et al. (2008) and Nilsson (2008) that captured personalized trust with respect to a bank, broker, or fund provider. Since we are interested in whether private investors trust SRI providers, and not banks in general, we asked the respondents how strongly they agree towards the statement "I do not trust that providers of sustainable investments follow the sustainability guidelines they publish in their investment information. ". The resulting dummy variable 'Distrust' takes the value one if the investors strongly agree to this statement and zero otherwise. It seems that the presence of distrust is not as severe as perceived lacks of information, as only 37.87 % strongly agree to this statement.

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[5] Since we asked investors who were currently invested as well as investors with no current sustainable investments in their portfolio, we used two slightly different formulations for this question and also in case of the not yet introduced variables 'No offer by bank' and 'Distrust'. For instance, the groups of SR, SK and INT make their statements in the context "to which degree are the statements reasons why you decide not to invest more in sustainable investment products now or in the next three years". On the other hand, the CONV investors indicate their agreement to the same statements in the context "to which degree are the statements reasons why you do not invest in sustainable investments now or in the next three years".

For capturing the investors' expectations and perceptions with respect to SRI's return, risk, and fees compared to conventional investments we used similar questions as previous studies, for example Nilsson (2008) or Bauer and Smeets (2015). The respondents were asked to state on a five points scale whether they think that the average return (risk, or fees) of sustainable investments is much lower, rather lower, neither lower nor higher, rather higher, or much higher compared to conventional investment products. On this basis, we constructed three dummy variables: The variable 'Lower return' refers to the individuals' perceptions of rates or returns of sustainable compared to conventional investments and takes the value one if the respondents value the rate or return of sustainable investments as "much lower" or "rather lower" than the return of conventional investment products. Further, we construct the variables 'Higher risk' and 'Higher fees' each taking the value one if the respondent chose "rather higher" or "much higher" with respect to the corresponding perception of risk or fees of sustainable compared to conventional investment products. 58.98 % of the respondents expect lower relative returns of sustainable investments, while 33.08 % (35.59 %) perceive the risk (fees) of sustainable investments to be higher than for conventional investments. Finally, and in line with most previous studies on similar issues, we also consider the respondents' age, gender, income, and wealth for the purpose of including them as sociodemographic and –economic control variables in the microeconometric analysis. The variable 'Age' captures the individuals' age measured in years, the dummy variable 'Female' takes the value one if the respondent is a woman (and zero otherwise), the dummy variable 'Income' takes the value one if the monthly household's income exceeds 3,000 euros (and zero otherwise), and the dummy variable 'Wealth' takes the value one if the monetary wealth of the households is larger than 50,000 euros. The average age of the investors is 44.71 years, 43.95 % of the investors are female, 49.92 % of the households earn more than 3000 euros, and 29.93 % of the households possess a monetary wealth of more than 50,000 euros.

3.2 Experimental design

The DCE was set up to analyze investment decisions of private investors in context of sustainable and conventional investment products. The final experimental design was generated with Sawtooth software. To keep both the statistical efficiency as well as the precision of estimates of interaction terms in an acceptable level, a "Balanced Overlap" design approach was applied (e.g., Chrzan, 2000). In total 50 different versions of randomized choice sets are created and are assigned to the respondents. Since investing in mutual funds requires a certain amount of knowledge of investments with variable returns, not all of the respondents were allowed to participate in the DCE. By using filter questions we ensured that only persons who have (or had) already invested in, or are sufficiently informed about mutual funds and stocks are included in the DCE. Thus, only 801 respondents took part in this experiment. At the beginning of the experiment every person got a detailed written description of the experimental setting. It was explained that each respondent faces eight consecutive decision tasks (choice sets) with four different mutual funds in each choice set. For each choice set the respondents had the task to choose the mutual fund they prefer most. The description informed the participant that all mutual funds can be considered as totally identical except for the following attributes: The net return of the last year, the average annual net return of the last five years, the subscription fee, the sustainability criteria, and the transparency criteria. The first three attributes are financial criteria, whereas the attributes sustainability and transparency are non-financial. The attributes and their corresponding levels are given in Table 2, while Table 3 shows an exemplary choice set. In this context the attribute sustainability marks mutual funds that are constructed employing ecological, social, and/or ethical criteria. Mutual funds with a sustainability label would additionally be awarded with a certificate assigned by an independent organization. Indicating whether a transparency label was provided by state or NGO states that the fund provider published sufficient information on the fund, such as a detailed investment strategy

and holdings. The attributes that describe the respective funds profiles were carefully chosen based on existing studies (see e.g., Wilcox, 2003, Vyvyan et al., 2007) and substantial reviews of praxis. We conducted pretests among graduate students and the first 50 respondents of the survey thereby ensuring that the DCE's description and the decision tasks are easily comprehensible. Additionally, in order to mitigate hypothetical bias, every respondent was asked after the experiment whether they understood all aspects mentioned in the description or the experiment itself: 128 of all 801 respondents that took part in the DCE indicated that they had comprehension problems. Thus, we excluded them from the empirical analysis.

In order to examine the individual preferences regarding sustainability and transparency labels, we construct the variable 'Investment choice' that captures the individuals' investment decisions. Further, we create explanatory variables on basis of the attributes (and the corresponding levels): The variable 'Return last year' comprises the alternative's short-term return in the last year, the variable 'Return last five years' the average annual return in the last five years, and 'Subscription fee' captures the subscription fees of each fund. Further, we construct the dummy variable 'Transparency label' that takes the value one if the fund was labeled by a transparency logo (either by the state or an NGO) and zero otherwise. Finally, we construct the dummy variables 'Conventional fund', 'Sustainable fund', and 'Certified sustainable fund': The first variable takes the value one if no sustainability criteria are considered in the fund's investment strategy, 'Sustainable fund' takes the value one if sustainability criteria are considered in the fund's investment strategy, but no third independent organization verified this strategy with a certificate (and zero otherwise), and 'Certified sustainable fund' takes the value of one if sustainability criteria are considered in the fund's investments strategy and a third independent organization verified this.

3.3 Econometric approaches

In order to identify investment barriers for private investors, we analyze the corresponding descriptive statistics (see section 4.1.1), but additionally apply more sophisticated approaches: First, for analyzing the determinants of being currently invested in SRI ('Current SRI investor') and being a potential future SRI investor ('Potential SRI'), we take the binary nature of these variables into account and thus conduct the Maximum Likelihood (ML) method to estimate the parameters in binary probit models. Second, as the third dependent variable 'Investor type' can take four different values on a nominal scale, we apply multinomial logit models in this case. Again, the parameters are estimated by using the ML method (see e.g., Winkelmann and Boes, 2009, Greene, 2012, for a comprehensible explanation of both approaches).

To analyze the experimental investment decisions of the investors econometrically we make use of McFadden's (1974) conditional logit (CL) model. This particularly allows the analysis of the effects of the alternative-specific attributes (as shown in Table 2) on the individuals' choices between the different four alternatives in each choice set. Referring to Winkelmann and Boes (2009), we assume the following individual linear utility function:

$$U(z_{ij}) = z'_{ij}\gamma + \varepsilon_{ij} \quad \text{for i} = 1, ..., \text{n; j} = 1, ..., 4 \tag{1}$$

where z_{ij} stand for the attributes of the jth alternative for observation i. The stochastic component of the utility function refers to the error term ε_{ij} that is assumed to be independently and identically standard extreme value distributed over all alternatives j and comprises all unobservable factors. Assuming (random) utility maximization, in every of the eight choice sets the investor chooses the mutual fund that offers the highest utility among all four alternatives. Given these assumptions, the probability that individual i chooses alternative j is given by

$$\pi_{ij}(z_i; \gamma) = P(y_i = j | z_i; \gamma) = \frac{\exp(z'_{ij}\gamma)}{\sum_{r=1}^{J} \exp(z'_{ir}\gamma)} \quad \text{for } i = 1, \ldots, n; \, j = 1, \ldots, 4 \tag{2}$$

with $z_i = (z_{i1}, z_{i2}, z_{i3}, z_{i4})$. The probabilities can be estimated by estimating $\hat{\gamma}$ using the ML method.

Details of the explanatory variables entering the model are described above in section 3.2.

4. Empirical results

4.1 Analysis of SRI market participation barriers

4.1.1 Descriptive analysis

As mentioned in section 3.1, the dataset comprises 801 respondents: 109 of them are SR investors, 83 are SK investors, 248 are INT investors, and 361 are CONV investors. Since not all participants answered all questions, the dataset comprises certain missing values (the number of respondents is given by N).

Table 4 links the explanatory variables defined in section 3.1 to the four investor groups and hence respondents that selected the 'No answer' option have been dropped. By showing the results of one-sided t-tests of the proportions for all information and financial performance related explanatory variables mentioned in Table 1, pairwise comparisons between the four investor groups are conducted.

[Insert Table 4 here]

According to the results of the chi-squared tests of independence shown in Table 4, there is empirical evidence for stochastic dependency between the investor groups and each dummy variable capturing the different statements. When looking at the statement 'I feel poorly informed about sustainable investments' ('Poorly informed'), SR investors show the lowest percentage of

respondents who agree with the statement. The corresponding t-tests further reveal that the share of SR investors feeling poorly informed is significantly smaller than the corresponding share of any other group. Indeed, more than half of all SK investors and considerably more than 60 % of the INT or CONV investors agree that feeling poorly informed about sustainable investments is a reason why they do not invest (more) in SRI in the future. The results regarding 'Too little knowledge' about SRI products are quite similar to those of 'Poorly informed'. However, the share of investors agreeing to the related statement is smaller for every group and there is an even clear increasing trend from SR to CONV investors, i.e. the share of investors that self-assess their knowledge as too low is largest among CONV investors. The results for 'No offer by bank' reveal that almost 43 % of the SR but also SK investors state that not having received an offer about sustainable investments by their bank yet is a reason for not investing (more) in SRI in the future. Contrary to the variables before, the proportions among SR and SK investors, i.e. respondents that are currently invested in SRI, are not significantly different from each other. Further, the proportion of INT investors is significantly larger than the corresponding share of CONV investors. However, there seems to be a large discrepancy between already invested and not (yet) invested investors. The results regarding 'Distrust' are different. Again two groups emerge, but the percentages, for those who agree to the statement that the information of SRI products from investment companies cannot be trusted, is similar (i.e. the difference is not significant) for SR and INT and for SK and CONV investors. Hence, distrust seems to be an important factor for discriminating future potential investors (SR and INT) and those who are not planning to invest in SRI in the future (SK and CONV).

Regarding the three financial aspects, over 50 % of the SK (INT, or CONV) investors perceive the return of sustainable investments to be lower compared to conventional products. In case of SR investors, the shares are almost equal. Concerning the dummy variable 'Higher risk' it becomes

evident that the percentage of SR investors (19.6%) is significantly lower than the respective percentages of the other three investor groups. With respect to 'Higher fees' it can be seen that about a quarter of those who are currently invested in SRI (SR and SK investors) think that fees of SR investments are higher than that of conventional investments, whereas around 40 % of those who are currently not invested in SRI agree to the aforementioned statement.

In summary, compared to the other three investor groups SR investors have the highest levels of knowledge and information, and lowest levels of distrust. Furthermore, they exhibit the lowest level regarding 'Higher risk' and have the second lowest level of 'Higher fees'. The other end of the spectrum is marked by the CONV investors. Compared to the other three investor groups CONV investors have the lowest level of knowledge, second highest level of distrust, and have the second lowest level after INT investors with respect to 'Poorly informed'. Furthermore, they exhibit the highest level regarding 'Higher risk' and 'Higher fees'. SK investors are a kind of hybrid of the other investor groups. They are similar to SR investors regarding 'No offer by bank' and 'Higher Fees' but more like INT investors regarding 'Too little knowledge', 'Lower return' and 'Higher risk' and more like CONV investors with respect to 'Distrust' and 'Poorly informed'. INT investors most strongly differ from SR and SK investors with respect to 'Poorly informed' and 'No offer by bank'. They are less knowledgeable, especially compared to SR investors and more poorly informed than SR and SK investors.

4.1.2 Estimation results

Table 5 reports the ML parameter estimates for the two binary probit models described in section 3.3 as well as the corresponding estimated average marginal and discrete probability effects. The first column in Table 5 considers the determinants (described in section 3) of the probability that an investor invests in SRI, i.e. we first follow most previous studies by only distinguishing between

investors who are currently invested and those who are not invested in SRI. In line with hypothesis H1b, we find a significant negative correlation between the self-assessed knowledge of SRI ('Too little knowledge') and investing in SRI. The corresponding estimated discrete probability effect shown in the second column means that people with little self-assessed knowledge are on average 13.4 percentage points less likely to be a SRI investor than persons valuing their knowledge of SRI higher. This supports our explanation that investors with only little knowledge of SRI face higher information costs in terms of, for example, time spent for processing information on SRI than more sophisticated investors, and hence are less likely to invest in SRI. Thinking of too high information costs as a barrier for private investors is also supported by the highly significant negative effect of 'No offer by bank' thus supporting H1d: the estimated probability of being a SRI investor is significantly lower (even 20.7 percentage points on average) for persons stating that their bank did not offer them sustainable investment products. As these investors received no offer for sustainable investment products by their bank they are confronted with higher searching and processing costs, because they have to search sustainable products and process related information on their own. Besides, there is no statistical hint that 'Poorly informed' or 'Number of information sources' are related to being currently invested in SRI and hence no empirical support for hypothesis H1a. We also find no robust support for hypothesis H1c: Though the estimated parameter of 'University degree' is positive and significant at the 10 % significance level, the corresponding average discrete probability effect is not significant. When it comes to the interpretation of the effect of individuals perceived distrust towards SRI providers on SRI market participation, we find counterintuitive effects as this variable is significantly positively related to being an SRI investor. We argue that this effect could stem from the aforementioned problem that it could be misleading to think of SRI investors as one homogenous group, because the group of SRI investors contains both, SR and also SK investors. We address this 'problem' by using multinomial logit models at the end of this

section. With respect to perceived financial performance of SRI compared to conventional financial products the estimates reveal that the individuals' relative valuation of risk and fees plays an important role. As expected, both variables are significantly negatively correlated with being a SRI investor, which means support for the hypotheses H3b and H3c. However, we find no significant effect of 'Lower return' (H3a). In sum, we find empirical support for the rationale that too high (perceived) transaction costs are a barrier for SRI market participation. Finally, we find no robust significant effects of any of the included socio-demographic variables on investing in SRI.

When considering the barriers of a potential (or future) sustainable investor, i.e. by combining the two investor groups that plan to invest in SRI (SR and INT investors), we see partly large differences compared to the analysis regarding being currently invested in SRI with two exceptions. First, having too little knowledge of SRI is still a strong barrier. Second, perceiving the risk of sustainable investments higher compared to conventional investments is still highly significant and negative. However, now we find no empirical hint that the perception of fees has an effect on being a potential sustainable investor. Instead, perceiving the return of sustainable investments to be lower than those of conventional investments is now significant at a 10 % significance level and negative, which supports hypothesis H3a. However, additional factors seem to determine the probability of being a potential investor: Particularly distrust in SRI providers seems to be an important issue as the estimated parameters and the corresponding discrete average effect is highly significantly negative. Hence, we find strong support for H2 in case of potential investors. Additionally, the estimated parameters and related discrete and marginal average probability effects for 'No offer by bank' and 'Number of information sources' are significant at significance levels of 10 % and 1 %, respectively, and positive. This shows that well informed investors, i.e. investors that use more information sources, tend to be more interested in future sustainable investments supporting H1a. However, this also shows that again banks as intermediaries play an

important role. As 'No offer by bank' is now significantly positively correlated to the dependent variable shows at least two things: First, the sign changed compared to the first model, indicating that the latter result is mainly driven by INT investors. Hence and second, interested investors could be involved in sustainable investment if banks would offer them sustainable investment products. Finally, again sociodemographic control variables do not or only weakly, namely 'Age', affect future SRI market participation.

However, as explained before in the context of the first model, it might be problematic to think of SRI investors as one homogenous group. This issue might be even more severe in case of potential investors as we combine currently invested and a subclass of conventional investors. Consequently, we expand previous studies by additionally differentiating between the four investor groups described above and analyze each group on its own. As the interpretation of parameter estimates in multinomial logit models is more complex than in case of binary response models, we directly consider the estimated marginal and discrete probability effects based on the parameters estimates in the multinomial logit model. The results are presented in Table 6. In the case of SR investors, the estimation results reveal a significant negative relationship between too little knowledge of sustainable investments and being a SR investor, and thus provide empirical evidence for hypothesis H1b. The estimated average discrete probability effect amounts to -13.6 percentage points and has thus the largest impact on being a SR investor in terms of percentage points. We also find a significant negative probability effect for 'No offer by bank'. This again underlines the important role banks play as intermediary and for the development of the SRI market. Further, the estimation results reveal that the degree of information about financial issues in general ('Number of information sources') and individuals' education are positively correlated with being a SR investor supporting H1a and H1c. Hence, SR investors tend to be more financially sophisticated and better informed than the other investor groups. With respect to the perception of financial

performance, only the perception of risk affects the probability of being a SR investor negatively and significantly, thus supporting H3b. Focusing on the estimated average discrete and marginal probability effects for SK investors shed some light on the previously discussed counterintuitive positive effect of 'Distrust' on being currently invested in SRI. Now it becomes clear that this effect is driven by SK investors, which seem to distrust SRI providers. Hence, distrust is not only a reason for CONV investors not to invest in SRI but also an explanation why some private investors might divest from SRI. Further, the significant negative coefficient for 'No offer by bank' seems to be a robust pattern among investors who are currently invested in SRI. However, in contrast to SR investors, 'Number of information sources' is significantly negatively related to being a SK investor. Thus, relatively better informed investors are less likely in the group of SK investors. Finally, regarding financial performance only the perception of fees has a significant negative impact, and there is a weak statistical hint at a 10 % significance level that women tend to be SK investors. Considering the estimates for INT and CONV investors underlines that it is important to divide the group of investors that are yet not invested in SRI into (at least) two groups. It becomes clear that INT investors (similar to SR investors) tend to be well informed about financial products in general. This is indicated by the estimated marginal probability effect for 'Number of information sources', which amounts to 3.2 percentage points. Beyond that, 'Distrust' in SRI providers is an important issue, and distrusting investors are less likely to be interested in SRI. However, the estimated discrete probability effects of 'Poorly informed' and 'No offer by bank' express the important barriers for interested investors. These investors, while being interested in SRI, seem not to have reached a state of information that makes them feel comfortable enough to invest in SRI. Obviously, banks could bridge this gap by making offers to this group of investors. In contrast, 'Number of information sources' is significantly negatively and 'Too little knowledge' positively related to being a CONV investor, indicating that these investors tend to be less

sophisticated, hence supporting H1a and H1b. Further, the estimated discrete probability effect is significant at a significance level of 10 % indicating that distrusting investors are more likely in the group of CONV investors, which supports H2. Finally, and in line with H3b, the perception that SRI are riskier than conventional investments significantly increases the probability of being a CONV investor.

To sum up, SR investors tend to be more sophisticated and better informed about SRI but also about financial products in general. Hence, they face lower information costs than other investor groups. Especially INT investors are less likely invested in SRI if they feel poorly informed about SRI and if they received no offer by their bank. Therefore, the barriers for INT investors could potentially be pulled down by targeted information disclosure about SRI and direct offers by banks. Further, SK and CONV investors seem to distrust SRI providers preventing them from future investments in SRI. However, both also generally seem to be worse informed about financial investment products, which leads to the idea that also trustworthy information disclosure about SRI might enhance their willingness to invest in SRI.

4.2 The impact of labels on investment decisions

We now examine whether the inclusion of transparency and sustainability labels influence the (stated) preferences of the different investor groups. Table 7 reports the ML parameter estimates for the dummy variables referring to the different attributes (as explained in section 3.2) for five different (sub-) samples. Model 1 contains the estimation results on the basis of all observations, while in case of Model 2 to Model 5 the parameters are estimated based on the observations of individuals of each investor group. Almost all estimated parameters in both Panels of the table have a significant effect at a 1 % significance level and all attributes affect the investors' preferences in reasonable and intuitively comprehensible directions: The estimated parameters for the short- and

middle-term returns are positive and reveal that investors are more likely to choose a mutual fund if the return increases, ceteris paribus. However, the results also show that the respondents are more focusing on the average return in the past five years than on the return of the last year meaning that they more strongly consider the mid-term financial performance of mutual funds. Secondly, the attribute 'Subscriptions fee' has a significantly negative effect on the choice of the investors. With respect to the effect of certification schemes for sustainable funds, we find highly significant negative parameters for 'Sustainable fund' as well as 'Conventional fund' in all models reported in Panel A. In this Panel the base group comprises certified sustainable funds. In line with H4a this means that investors prefer to invest in certified sustainable funds. The inclusion of a transparency label has a highly significant and positive effect on the individuals' fund choice across all investor groups, thus supporting H4b. Accordingly, investors are more likely to select a mutual fund with a transparency label than a fund without one.

In order to check hypothesis H4c, we include an interaction term between the dummy variables 'Transparency label' and 'Certified sustainable fund' in Panel B of Table 7. Therefore, we exclude the dummy variables 'Conventional fund' and 'Sustainable fund', which now serve as base category. The highly significant and positive estimated parameters for 'Transparency label' and 'Certified sustainable fund' again express the positive stated preferences of all investors for transparency labels and certified sustainable funds. Additionally, we find for the sample containing all investors as well as for the subsample of SR investors a significant interaction term ($\alpha = 10$ %) indicating even stronger positive stated preferences if a fund has both kinds of labels supporting hypothesis H4c.

However, the size of the parameters in Table 7 cannot be compared directly across the different models and in order to test whether the preferences for the different kinds of labels differ between

the four investor groups, we include interaction terms between the corresponding variables ('Transparency label', 'Sustainable fund', and 'Conventional fund'*)* and a dummy variable for each of the investor groups.[6] Further, for being able to compare all investor groups with each other, we use four different model specifications, each with a different investor type as base group. The ML estimates of the corresponding parameters are presented in Table 8. As the variables 'Return last year', 'Return last five years', and 'Subscription fee' are not interacted with the different group variables, the estimated parameters are identical in all four models. As before, we first see that all types of investors have positive preferences for funds with a transparency label compared to funds with no transparency label. However, now differences in the stated preferences between investor groups become visible. SR investors have significantly higher preferences for transparency labels than SK or CONV investors, as the interaction terms between 'Transparency label' and the dummy variables for SK or CONV investors in the first model are significantly negative. The estimation results in model 3 reveal a similar pattern in case of INT investors. The results reveal no significant differences between the preferences of SR and INT (SK and CONV) investors regarding transparency labels. Hence, while on average all investors have significant positive preferences for funds with a transparency label, we find that SR and INT investors are the groups most valuing these labels. With respect to the sustainability certificate, the results reveal that all investor groups prefer certified sustainable funds over both other fund types. Further, we find only weak statistical hints that the investor groups' preferences between sustainable funds without certificate and certified sustainable funds differ. Model 1 and 3 reveal that SR and INT investor are relatively more likely to choose a certified sustainable fund, rather than a conventional fund (or a sustainable fund without certificate) compared to SK or CONV investors. Generally, and as we have already seen in the analysis referring to the descriptive statistics or multinomial logit models, we again find

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[6] The construction of interaction terms and their interpretations are similar to those used by De Valck et al. (2014).

similar patterns of behavior for SK and CONV investors on the one hand and SR and INT investors on the other hand. Indeed, the results reveal no significant differences between the stated preferences of SR and INT investors. Further, we only find a significant difference in the preferences between SK and CONV investor in case of certified sustainable funds. Here SK investors are relatively more likely to select a certified sustainable fund, rather than a conventional fund compared to CONV investors.

In summary, we find that both kinds of labels positively influence the investors' investment decisions. Although this result generally holds for all groups, there is obviously heterogeneity across investor groups and we find the highest positive stated preferences for transparency labels as well as for sustainability certificates among SR and INT investors. Hence, particularly investors who plan to invest in SRI in the future show interest in related labels. This finding is in line with the previous result that these two groups tend use more information sources when it comes to investment decisions in general. Hence, it seems to be natural that these groups are also more interested in information provided via labels or certificates which in turn decrease participation costs and therefore increase the likelihood of SRI market participation. Additionally, labels could also provide an opportunity to win SK and CONV investors for future SRI investments as they prefer these funds over sustainable and even conventional investments.

4.3 Robustness checks

In this section we briefly report several additional models and sample specifications that were conducted in order to check the above empirical results for robustness. For sake of brevity, the results are not presented in tables, but are available on request. In case of the analysis of SRI market participation barriers we additionally controlled for further socioeconomic variables, namely household's monthly net income and wealth. When considering net income (or wealth), the number

of observations drops to 439 (390) individuals due to a huge number of missing values. However, the general patterns, particularly with respect to 'Too little knowledge', 'No offer by bank', 'Number of information sources', and perceived financial performance issues in Table 5 and Table 6 remain robust. Further, we find no empirical hint that income has an impact on investor group membership, whereas we find weak empirical hints that wealth has an estimated positive effect on being a SR investor ($\alpha = 10\%$) and a negative effect on being a SK investor ($\alpha = 10\%$). When including wealth as explanatory variable, the significance of 'Distrust' for SK and CONV investors disappears, while 'No offer by bank' becomes highly significant and positive in case of CONV investors. When considering income as explanatory variable 'No offer by bank' also becomes positive and significant ($\alpha = 10\%$) in case of CONV investors, while 'Poorly informed' is negative and significant ($\alpha = 10\%$) for CONV investors. All other effects remain stable.

First, in order to mitigate the possible hypothetical bias in choice experiments, which means that people behave inconsistently and differently compared to real life decisions, and possibly overstate their true preferences, we included a certainty question after every choice set as for example discussed by Fifer et al. (2014). They find that there is a strong relation between hypothetical bias and respondents' uncertainty. Thus, we formulated the question "Please, indicate the degree of certainty that you would choose the selected investment in a real investment situation", followed by a five point scale ranging from "Very uncertain" to "Very certain". We incorporate these results in the econometric analysis by excluding all individuals that answered "Very uncertain" or "Rather uncertain" to the certainty question (remember that we already excluded persons stating that they did not understand the experimental task). Further, we also checked whether the results change if we do not include all eight choice sets for each individual, but exclude the first and the last two decisions. In all cases the results are qualitatively similar and stable.

5. Conclusion

This empirical study examines potential barriers that might prevent private investors to invest in sustainable and responsible investment (SRI) products. It further investigates whether information related barriers, and hence information costs, can be decreased by transparency and/or sustainability labels. Our analysis is based on the data from a unique representative online survey of financial decisions makers in German households. Thus, our dataset has many advantages over previous empirical studies in this research field, which often suffer from problems as self-selection bias (see e.g., Nilsson, 2008, Wins and Zwergel, 2016). We make use of a stated preferences discrete choice experiment giving us the opportunity to observe and analyze the (hypothetical) investment behavior of private investors with respect to transparency and sustainability labels in case of investment decisions related to mutual funds.

The empirical analysis shows that it is important to account for investor heterogeneity by distinguishing between (several) different investors groups in the context of SRI instead of only distinguishing between two investor groups (investors who are currently invested in SRI and those who are not) as most studies do (see e.g., Junkus and Berry, 2010, McLachlan and Gardner, 2004). The four different groups we consider, namely socially responsible (SR), skeptical (SK), interested (INT), and conventional (CONV) investors, face different barriers, in their investment decision processes in the context of SRI, though too high (perceived) information costs regarding SRI are a reason for all four investors groups not to invest (more) in SRI. SR investors tend to be more sophisticated and better informed about SRI, which supports findings by Wins and Zwergel (2016), but also about financial products in general and hence face lower information costs than the other three investor groups. Especially banks play an important role and investors are less likely invested in SRI if they received no offer by their bank. Indeed, this seems to be an important hurdle for INT

investors, who feel poorly informed about SRI, although they seem to be well informed in financial matters in general. Therefore, the barriers for INT investors could potentially be reduced by targeted information disclosure about SRI and direct offers by banks. Further, SK and CONV investors seem to distrust information published by SRI providers (see e.g., Nilsson 2008 regarding CONV investors) preventing them from future investments in SRI. However, both also generally seem to be worse informed about financial investment products in general, which leads to the idea that also trustworthy information disclosure about SRI, such as sustainability or transparency labels, might enhance their willingness to invest in SRI.

Regarding (perceived) transaction costs we find that the relative valuation of risk plays the most important role since it is significantly negatively correlated with being a SR investor and a potential (or future) sustainable investor. With respect to perceived financial performance of SRI compared to conventional financial products the estimates show that the individuals' relative valuation of fees plays an important role only for SR investors, particularly SK investors, but not for potential (or future) sustainable investors. Whereas perceiving the return of sustainable investments to be lower than those of conventional investments is only marginally significant and negative for potential (or future) sustainable investors but not for SR investors.

As suggested by Caswell and Mojduszka (1996) a credible ethical product label can help to overcome problems of consumer skepticism about social and environmental assertions of products through the conversion of a credence attribute (e.g. sustainability) into a search attribute. We find support for that claim because all four investor groups have positive stated preferences for transparency labels as well as certified sustainable funds. However, there is obviously heterogeneity across investor groups. The highest positive stated preferences for transparency labels as well as for sustainability certificates are among SR and INT investors. Hence, particularly

investors who plan to invest in SRI in the future show interest in related labels. This finding is in line with the previous result that these two groups tend to use more information sources when it comes to investment decisions. Hence, it seems to be natural that these groups are also more interested in information provided via labels or certificates. The results further suggest that INT investors might invest in sustainable funds or SRI in general if they are guided by transparency or sustainability certificates as this would decrease their information costs and thus in turn their participation costs. Although, SR and INT investors have significantly higher positive stated preferences for both kinds of labels than SK or CONV investors. Labels, nevertheless, could also provide an opportunity to win SK and CONV investors for future SRI investments as they prefer these funds over sustainable and even conventional investments.

The conclusions presented above are quite robust. In case of the analysis of SRI market participation barriers, we additionally controlled for further socioeconomic variables which do not change the results much. Regarding the analysis of the choice data all robustness checks lead to qualitatively similar results.

The above shows that theory of participation costs by Vissing-Jorgensen (2004) and other authors is not only relevant regarding stock market participation but also quite suited to describe SRI market entry barriers. Yet, regarding our results some limitations remain. Although we took several countermeasures to reduce hypothetical bias we were probably not able to eliminate it completely as can be seen by the circumstance that SK and CONV investors prefer certified sustainable funds over sustainable and even conventional investments. Hence, it remains subject for further research to analyze the effect of labels on real investment behavior and investment decisions in context of SRI, for example in a field experiment. It would be particularly interesting whether investors behave differently before and after including a certain label scheme.

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Table 1: Descriptive statistics of all variables

Variables	# of observations	Mean	Variance	Minimum	Maximum
Dependent variables					
Investor type	801	-	-	1	4
Current SRI investor	801	0.2397	0.42	0	1
Potential SRI investor	801	0.4457	0.50	0	1
Explanatory variables					
Perceived information costs					
Too little knowledge	765	0.4967	0.50	0	1
Poorly informed	781	0.6133	0.49	0	1
No offer by bank	739	0.6211	0.49	0	1
Number of information sources	768	2.5273	1.29	1	8
Distrust	734	0.3787	0.49	0	1
Perceived (relative) financial performance					
Lower return	646	0.5898	0.49	0	1
Higher risk	665	0.3308	0.47	0	1
Higher fees	635	0.3559	0.48	0	1
Sociodemographic and socioeconomic variables					
Age	801	44.7116	12.70	19	78
Female	801	0.4395	0.50	0	1
University degree	799	0.3717	0.48	0	1
Income	645	0.4992	0.50	0	1
Wealth	560	0.2893	0.45	0	1

Table 2: Attributes used to describe the different alternative funds and their corresponding levels

Attributes	Levels: conventional mutual fund	Levels: sustainable mutual fund
Return last year	4.00 %, 5.00 %, 6.00 %, 7.00 %, 8.00 %	4.00 %, 5.00 %, 6.00 %, 7.00 %, 8.00 %
Average return p.a. in the last five years	3.00 %, 5.00 %, 6.00 %, 7.00 %, 9.00 %	3.00 %, 5.00 %, 6.00 %, 7.00 %, 9.00 %
Subscription fee	3.00 %, 4.00 %, 5.00 %	3.00 %, 4.00 %, 5.00 %
Sustainability criteria	No consideration	Consideration without sustainability certificate
		Consideration with sustainability certificate
Transparency logo	No transparency logo	No transparency logo
	Transparency logo by NGO	Transparency logo by NGO
	Transparency logo by state	Transparency logo by state

Table 3: Exemplary choice set

Attribute	Fund A	Fund B	Fund C	Fund D
Return last year	4.00 %	8.00 %	7.00 %	5.00 %
Average return p.a. in the last five years	3.00 %	7.00 %	5.00 %	9.00 %
Subscription fee	3.00 %	5.00 %	5.00 %	4.00 %
Transparency logo	Transparency logo by state	No transparency logo	Transparency logo by NGO	Transparency logo by NGO
Sustainability criteria	Consideration without certificate	No consideration	Consideration with certificate	No consideration
I choose	☐	☐	☐	☐

Table 4: Descriptive analysis of the different statements

Variables		SR [%]	N	SK [%]	N	INT [%]	N	CONV [%]	N	χ² test p values	SR vs. SK	SR vs. INT	SR vs. CONV	SK vs. INT	SK vs. CONV	INT vs. CONV
Too little	0	81.7	104	58.8	80	48.3	244	40.1	337	0.000***	(<)***	(<)***	(<)***	(<)*	(<)***	(<)**
knowledge	1	18.3		41.2		51.7		59.9			0.00	0.00	0.00	0.05	0.00	0.02
Poorly	0	63.2	106	46.3	82	30.2	245	35.3	348	0.000***	(<)**	(<)***	(<)***	(<)***	(<)**	(<)
informed	1	36.8		53.6		69.8		64.7			0.01	0.00	0.00	0.00	0.03	0.90
No offer	0	57.3	103	57.1	77	27.2	239	35.0	320	0.000***	(<)	(<)***	(<)***	(<)***	(<)***	(<)
by bank	1	42.7		42.9		72.8		65.0			0.49	0.00	0.00	0.00	0.00	0.98
Distrust	0	71.8	103	55.8	77	68.2	239	55.9	315	0.002***	(<)**	(<)	(<)***	(<)	(<)	(<)***
	1	28.2		44.2		31.8		44.1			0.01	0.25	0.00	0.98	0.50	0.00
Lower	0	51.0	100	36.5	74	43.8	226	35.8	246	0.041**	(<) **	(<)	(<)***	(<)	(<)	(<)**
return	1	49.0		63.5		56.2		64.2			0.03	0.11	0.00	0.87	0.46	0.04
Higher	0	80.4	102	68.4	76	71.1	228	57.5	259	0.000***	(<)**	(<)**	(<)***	(<)	(<)**	(<)***
risk	1	19.6		31.6		29.0		42.5			0.03	0.04	0.00	0.67	0.04	0.00
Higher	0	72.0	100	75.00	72	64.5	217	58.1	246	0.016**	(<)	(<)*	(<)***	(<)*	(<)***	(<)*
fees	1	28.0		25.00		35.5		41.9			0.67	0.09	0.01	0.05	0.00	0.08

This table reports the descriptive analysis of the different statements across all investors that took part in the DCE and answered the respective questions. Direction of the alternative hypothesis: > "greater"; ≠ "two-sided"; < "less"; *, **, *** indicate significance at the ten percent, five percent, and one percent level, respectively.

Table 5: ML estimates of parameters and estimates of average marginal and discrete probability effects

Explanatory variables	(1) ML estimates of parameters	(2) Estimated average marginal and discrete probability effects	(3) ML estimates of parameters	(4) Estimated average marginal and discrete probability effects
Perceived information costs				
Too little knowledge	-0.447***	-0.134***	-0.498***	-0.179***
	(0.146)	(0.044)	(0.137)	(0.048)
Poorly informed	-0.176	-0.053	0.190	0.066
	(0.144)	(0.044)	(0.135)	(0.047)
No offer by bank	-0.648***	-0.207***	0.217*	0.076*
	(0.137)	(0.045)	(0.130)	(0.045)
Number of information sources	0.032	0.009	0.183***	0.064***
	(0.047)	(0.014)	(0.047)	(0.016)
Distrust	0.289**	0.086**	-0.459***	-0.166***
	(0.138)	(0.041)	(0.125)	(0.045)
Perceived (relative) financial performance				
Lower return	0.038	0.011	-0.213*	-0.076*
	(0.131)	(0.038)	(0.121)	(0.043)
Higher risk	-0.394***	-0.113***	-0.363***	-0.130***
	(0.139)	(0.038)	(0.126)	(0.045)
Higher fees	-0.317**	-0.092**	0.047	0.017
	(0.141)	(0.040)	(0.129)	(0.045)
Sociodemographic variables				
Age	-0.001	-0.000	-0.008*	-0.003*
	(0.005)	(0.001)	(0.004)	(0.002)
Female	0.195	0.058	-0.149	-0.053
	(0.131)	(0.039)	(0.122)	(0.044)
University degree	0.209*	0.063	0.183	0.065
	(0.126)	(0.038)	(0.118)	(0.042)
Constant	-0.038		0.320	
	(0.285)		(0.276)	

This table reports ML estimates of parameters and estimates of average marginal and discrete probability effects in two binary probit models, dependent variables: Being a current investor in SRI (column 1 and 2) and being a potential future investor in SRI (column 3 and 4), number of observations = 530. *** (**, *) means that the corresponding parameter estimates are significantly different from zero on a 1% (5%, 10%) significance level.

Table 6: Estimates of average marginal and discrete probability effects in a multinomial logit model

Explanatory variables	(1) SR	(2) SK	(3) INT	(4) CONV
Perceived information costs				
Too little knowledge	-0.136***	0.005	-0.049	0.180***
	(0.035)	(0.034)	(0.048)	(0.047)
Poorly informed	-0.050	0.000	0.117**	-0.067
	(0.035)	(0.033)	(0.046)	(0.046)
No offer by bank	-0.079**	-0.132***	0.157***	0.053
	(0.034)	(0.036)	(0.044)	(0.045)
Number of information sources	0.032***	-0.025**	0.032**	-0.039**
	(0.011)	(0.012)	(0.015)	(0.016)
Distrust	0.009	0.080**	-0.173***	0.084*
	(0.036)	(0.033)	(0.042)	(0.044)
Perceived (relative) financial performance				
Lower return	-0.015	0.028	-0.060	0.047
	(0.032)	(0.029)	(0.043)	(0.041)
Higher risk	-0.084***	-0.026	-0.048	0.158***
	(0.031)	(0.030)	(0.044)	(0.044)
Higher fees	-0.034	-0.053*	0.050	0.036
	(0.034)	(0.029)	(0.045)	(0.043)
Sociodemographic variables				
Age	0.001	-0.001	-0.003**	0.003**
	(0.001)	(0.001)	(0.002)	(0.002)
Female	0.013	0.047*	-0.067	0.007
	(0.034)	(0.029)	(0.043)	(0.041)
University degree	0.075**	-0.018	-0.011	-0.047
	(0.032)	(0.027)	(0.042)	(0.040)

This table reports estimates of average marginal and discrete probability effects in a multinomial logit model, dependent variable: 'Investor type' that takes the value 1 (= "SR", sustainable and responsible) for respondents that are currently invested SRI and plan to invest in SRI in the future, 2 (= "SK", skeptical) for respondents that are currently invested in SRI and do not plan to invest in SRI in the future, 3 (= "INT", interested) for respondents that are currently not invested in SRI and plan to invest in SRI in the future, and 4 (= "CONV", conventional) for respondents that are currently not invested in SRI and do not plan to invest in SRI in the future, number of observations = 530. *** (**, *) means that the corresponding parameter estimates are significantly different from zero on a 1% (5%, 10%) significance level.

Table 7: ML estimates of parameters in conditional logit models

Explanatory variables	(1) All	(2) SR	(3) SK	(4) INT	(5) CONV
Panel A					
Return last year	0.189***	0.171***	0.156***	0.178***	0.217***
	(0.012)	(0.032)	(0.034)	(0.021)	(0.018)
Return last five years	0.326***	0.258***	0.226***	0.299***	0.399***
	(0.009)	(0.025)	(0.026)	(0.016)	(0.015)
Subscription fee	-0.208***	-0.155***	-0.090	-0.214***	-0.257***
	(0.020)	(0.054)	(0.059)	(0.036)	(0.031)
Transparency label	0.650***	0.785***	0.311***	0.893***	0.563***
	(0.038)	(0.108)	(0.105)	(0.072)	(0.055)
Sustainable fund	-0.436***	-0.545***	-0.398***	-0.489***	-0.376***
	(0.040)	(0.106)	(0.120)	(0.069)	(0.064)
Conventional fund	-0.976***	-1.297***	-0.840***	-1.330***	-0.666***
	(0.038)	(0.108)	(0.114)	(0.071)	(0.058)
Panel B					
Return last year	0.188***	0.167***	0.150***	0.180***	0.217***
	(0.012)	(0.032)	(0.034)	(0.021)	(0.018)
Return last five years	0.323***	0.251***	0.220***	0.293***	0.399***
	(0.009)	(0.024)	(0.026)	(0.016)	(0.014)
Subscription fee	-0.208***	-0.151***	-0.092	-0.209***	-0.259***
	(0.020)	(0.053)	(0.059)	(0.035)	(0.031)
Transparency label	0.611***	0.635***	0.229*	0.836***	0.592***
	(0.046)	(0.133)	(0.132)	(0.088)	(0.068)
Certified sustainable fund	0.664***	0.671***	0.496**	0.846***	0.606***
	(0.070)	(0.192)	(0.201)	(0.130)	(0.104)
Transparency label * Certified sustainable fund	0.141*	0.431*	0.246	0.174	-0.063
	(0.084)	(0.231)	(0.258)	(0.153)	(0.128)
No. of observations	21,536	2,880	2,144	6,880	9,632

This table reports ML estimates of parameters in CL models, dependent variable: 'Investor choice'. Panel A comprises the estimated parameters for 'Sustainable fund' and 'Conventional fund' and hence 'Certified sustainable fund' serves as base category for the corresponding attribute (Sustainability criteria). Panel B reports the estimation results needed to check hypothesis H4c and thus includes the estimates of an interaction term between 'Transparency label' and 'Certified sustainable fund'. Consequently, the estimated parameter of 'Certified sustainable fund' has to be interpreted relatively to both 'Sustainable fund' and 'Conventional fund'. All eight choice sets of the participants who stated that they understood the experimental task are considered, number of individuals = 673. *** (**, *) means that the corresponding parameter estimates are significantly different from zero on a 1% (5%, 10%) significance level.

Table 8: ML estimates of parameters in conditional logit models

Explanatory variables	(1) Base: SR	(2) Base: SK	(3) Base: INT	(4) Base: CONV
Return last year	0.191***	0.191***	0.191***	0.191***
	(0.012)	(0.012)	(0.012)	(0.012)
Return last five years	0.330***	0.330***	0.330***	0.330***
	(0.009)	(0.009)	(0.009)	(0.009)
Subscription fee	-0.211***	-0.211***	-0.211***	-0.211***
	(0.020)	(0.020)	(0.020)	(0.020)
Transparency label	0.816***	0.347***	0.912***	0.523***
	(0.114)	(0.113)	(0.073)	(0.052)
Transparency label * SR	-	0.470***	-0.096	0.293**
	-	(0.160)	(0.135)	(0.125)
Transparency label * SK	-0.470***	-	-0.565***	-0.176
	(0.160)	-	(0.134)	(0.124)
Transparency label * INT	0.096	0.565***	-	0.389***
	(0.135)	(0.134)	-	(0.090)
Transparency label * CONV	-0.293**	0.176	-0.389***	-
	(0.125)	(0.124)	(0.090)	-
Sustainable fund	-0.590***	-0.430***	-0.506***	-0.349***
	(0.111)	(0.130)	(0.070)	(0.060)
Sustainable fund * SR	-	-0.159	-0.084	-0.241*
	-	(0.171)	(0.131)	(0.127)
Sustainable fund * SK	0.159	-	0.076	-0.082
	(0.171)	-	(0.148)	(0.144)
Sustainable fund * INT	0.084	-0.076	-	-0.157*
	(0.131)	(0.148)	-	(0.093)
Sustainable fund * CONV	0.241*	0.082	0.157*	-
	(0.127)	(0.144)	(0.093)	-
Conventional fund	-1.379***	-0.924***	-1.360***	-0.629***
	(0.111)	(0.124)	(0.071)	(0.054)
Conventional fund * SR	-	-0.455***	-0.019	-0.750***
	-	(0.165)	(0.131)	(0.123)
Conventional fund * SK	0.455***	-	0.436***	-0.295**
	(0.165)	-	(0.142)	(0.135)
Conventional fund * INT	0.019	-0.436***	-	-0.731***
	(0.131)	(0.142)	-	(0.089)
Conventional fund * CONV	0.750***	0.295**	0.731***	-
	(0.123)	(0.135)	(0.089)	-

This table reports ML estimates of parameters in CL models, dependent variable: 'Investor choice'. The dummy variables 'Transparency label', 'Sustainability fund', and 'Conventional fund' are interacted with dummy variables for the different investor groups. Only investors stating that they understood the experimental task and all eight choice sets are considered, number of individuals = 673. *** (**, *) means that the corresponding parameter estimates are significantly different from zero on a 1% (5%, 10%) significance level.