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May 2016

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Abstract

This study empirically analyzes barriers preventing private investors from participating in the market of sustainable and responsible investments (SRI). Thereby, we link the strand of literature regarding participation costs of stockholding, i.e. information and transaction costs, to SRI market participation. The empirical analysis is based on a large online representative dataset for German financial decision makers containing data from a survey and a stated preferences discrete choice experiment, which refers to investment decisions between mutual funds. Contrary to most previous studies, we do not only differentiate between investors who are currently invested in SRI and those who are not invested. Instead we differentiate between four different investor groups, namely socially responsible, skeptical, interested, and conventional investors. We find that these groups face different barriers regarding SRI market participation. Particularly too high (perceived) information costs regarding SRI are a reason for private investors not to invest (more) in SRI. Having not received an offer by their bank seems to be a big hurdle especially for interested investors who seem to have problems overcoming the market entry barrier. Distrusting providers of SRI is an additional issue that especially hinders skeptical and conventional investors to invest (more) in SRI. Based on the experimental results, we see that information related barriers can be decreased by means of sustainability and/or transparency labels. Investor of all four groups have positive stated preferences for funds with transparency or sustainability labels. Hence, labels are an opportunity to decrease information costs of private investors and thus enhance individual demand for SRI.

Keywords: Sustainable and responsible investments, microeconometric analysis, stated preferences, discrete choice experiment, sustainability label, transparency, distrust, participation costs, market participation

JEL: Q56, G11, M14, C25

1. Introduction

During the last years, sustainable and responsible investment (SRI) has become increasingly recognized in financial research and practice. Following the definition of Eurosif (2014), the term SRI includes "any type of investment process that combines investors' financial objectives with their concerns about Environmental, Social and Governance (ESG) issues" (Eurosif 2014, p. 8). 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). The same applies for Germany, Austria, and Switzerland where the volume of sustainable investments increased by 12 % between 2012 and 2013 (FNG 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, since SRI providers, e.g., fund companies, can apply diverse investment strategies for constructing their products. In a recently published market overview for Germany, Austria, and Switzerland, the FNG (2015b) lists eight different sustainable investment strategies: Exclusion of holdings from investment universe, best-in-class investment selection, engagement and voting on sustainability matters, impact investment, integration of ESG factors in financial analysis, sustainability themed investment, norm-based screening, and using the right to vote.[1] Additionally, Sandberg et al. (2009) point out that there is even a broad discussion on how to define investment strategies including ESG issues and even how to entitle these kinds of strategies, i.e. responsible investment, socially responsible investment, or ethical investment.

[1] For a definition see Glossary in FNG (2015b).

Indeed, Nilsson, Siegl, and Korling (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 or financial behavior in general, previous studies find that private investors can be prone to a vast variety of factors leading them to financial mistakes (see e.g., Calvet, Campbell, and Sodini 2009), for example underdiversified portfolios (e.g., Guiso and Jappelli 2008), or that prevent them from stock market participation (see e.g., van Rooij, Lusardi, and Alessie (2011) on financial literacy, Kaustia and Torstila (2011) on political ideology, Guiso, Sapienza, and Zingales (2008) on (dis-) trust and on socio-demographics). Especially, low levels of financial literacy and education seem to strengthen these biases or factors (see e.g., Guiso and Jappelli 2008). In case of SRI, empirical studies argue or empirically find that distrust in SRI providers (see e.g., Nilsson 2008, Wins and Zwergel 2016), the perception of financial performance of SRI compared to conventional products (see 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, Siegl, and Korling 2012), too less information (Hummels and Timmer 2004), search costs (Benson and Humphrey 2008), but also poor knowledge or low financial literacy (see e.g., Riedl and Smeets 2014, Nilsson, Siegl, and Korling 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 too invest more. Further, interested investors might not be able to find SRI products that match their preferences regarding to environmental, social and/or ethical issues, or translate these preferences into financial decisions (e.g., Benson and Humphrey 2008, Borgers and Pownall 2014, Eurosif 2012b, Nilsson, Siegl, and Korling 2012). All these barriers might prevent investors from participating in the market for SRI, although they actually might want to invest (more). The latter problem is also a well-known problem in consumption research, called attitude-behavior gap or values-action gap (see e.g., Young et al. 2010) and seems also to be a problem related to SRI (see 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. Since transaction costs to participate in the SRI market can be expected to be similar than for the stock market, particularly information asymmetries can be an important hurdle for investors preventing them from investing in SRI (Rhodes 2010). In general,

information asymmetries describe a situation in which providers and investors, or sellers and buyers, have different knowledge levels about search, experience, and credence characteristics of a certain product (Sammer and Wüstenhagen 2006). Credence goods can be characterized by the fact that consumers are not able to verify (neither prior to nor after a purchase) a certain environmentally related product property (e.g. organic, not genetically engineered, etc., see e.g., Hamilton and Zilberman 2006, Delmas and Grant 2013, Sammer and Wüstenhagen 2006). This also holds for SRI funds since it is virtually impossible for a private investor to assess whether or not the stocks included in the fund portfolio really are sustainable (see e.g., Entine 2003, Nilsson, Siegl, and Korling 2012), or only when paying high search costs. Market failures arising from asymmetric information or high search costs are often addressed by increased information disclosure (see e.g., Campbell et al. 2011) and can be an effective alternative e.g. to typical environmental regulation policies, such as permits or environmental taxes (Bjørner, Hansen, and Russell 2004), as the latter can also cause higher transaction costs or lead to crowding out of pro-environmental motivation (see e.g., Cason and Gangadharan 2002, Frey and Oberholzer-Gee 1997). Information disclosure 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). Hence, eco-labeling schemes are a popular measure to decrease information asymmetries, since they can lead to several desirable effects, e.g. for consumers, producers, and politics (Brouhle and Khanna 2012).

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 transparency logo by Eurosif, the Austrian Ecolabel, the French Novethic SRI Label, and the French Novethic Green Fund Label have gained a certain degree of awareness. Current developments in the market, like the ambitions of the FNG to publish a German sustainability label, 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 analyses 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. The survey was conducted in cooperation with the market research institute GfK and comprised a questionnaire part as well as a stated preferences discrete choice experiment (DCE). For answering the first research question, the questionnaire contains questions about potential barriers that might prevent private investors from investing in SRI. Amongst other topics the questionnaire captures the respondent's perceptions of distrust, their level of information and their investment knowledge with respect to SRI. Additionally, the dataset contains 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 socially responsible (SR), skeptical (SK), interested (INT), and conventional (CONV) investors and empirically analyze whether they face different barriers. The DCE was included for answering the second research question. It comprises eight successive hypothetical investment situations for each respondent in which they had to select one out of four mutual funds. The funds differed from each other with respect to financial attributes, namely short- and midterm past performance, and subscription fees, as well as non-financial attributes, like the degree of sustainability (no consideration of sustainability, consideration of sustainability, certified consideration of sustainability, i.e. sustainability label), and the degree of transparency (no transparency, transparency label provided by the state, and transparency label provided by an NGO). By using conditional logit models, we combine data from the DCE and the questionnaire and empirically analyze whether these factors influence the stated preferences of the respondents referring to sustainability or transparency labels.

Our paper contributes to two main research directions. First, we contribute to the literature on investment behavior of private investors related to SRI in various ways. Although several empirical studies examine which factors might prevent individual investors from stock market participation in general (see e.g., van Rooij, Lusardi, and Alessie 2011, Guiso, Sapienza, and Zingales 2008), only a very few studies examine why people do not invest in SRI (see e.g., Wins and Zwergel 2016,

Paetzold and Busch 2014). Most, but still only a few, studies in this field concentrate on individual motives and attitudes (see e.g., Nilsson 2008, Bauer and Smeets 2015). Paetzold and Busch (2014) already mention this research gap. However, their sample consists of only ten high net worth individuals (HNWIs) and thus cannot be used for a thorough empirical analysis and further it is not possible to derive implications for common private investors. Our paper addresses these limitations by analyzing a broad (online) representative dataset, while including several different (potential) barriers in the empirical analysis. Further, we are able to distinguish between four distinct investor groups, in order to examine whether they face different barriers or weigh them differently. Hence, we also provide further evidence on differences between socially responsible and conventional investors (see e.g., Junkus and Berry 2010, McLachlan and Gardner 2004).

Secondly, 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, although 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 (see e.g., Ibanez and Grolleau 2008, Heinzle and Wüstenhagen). However, to the best of our knowledge there is no study at all trying to identify whether consumer or investor groups (SR, SK, INT, and CONV) 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. The four different groups we consider face different problems, i.e. 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 are important issues why private investors in general do not invest (more) in SRI. Perceived high information costs in terms of high searching

costs and time spent to process information also seem to prevent investors from participating in the SRI market. Furthermore, perceived relative financial performance of SRI compared to conventional investment products and the perception of risk of SRI compared to conventional investments are important reasons why investor do not invest 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 particularly be an opportunity 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

In this section, we review the literature on limited (stock) market participation, investment decisions in context of SRI, and individuals' financial decision making in general in order to develop hypotheses regarding barriers potentially preventing private investors from investing in SRI. Reviewing these strands of literature leads to our main hypothesis that limited SRI market participation is a result of too high information and transaction costs related to sustainable financial products. We further argue that these costs are severely influenced by limited access to information, low individual knowledge, or information asymmetries, which are central hurdles for private investors. Subsequently we discuss measures that could appropriately address these barriers, i.e. decrease information costs effectively. In this context, we especially examine the role of labels as they are well known means of increasing transparency, individuals' awareness, and information levels, while decreasing information costs.

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 (see e.g. Guiso, Sapienza, and Zingales 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 (see e.g. Haliassos and Bertaut 1995, Vissing-Jorgensen 2004, Guiso, Sapienza, and Zingales 2008, Bonaparte and Kumar 2013) and we apply it to the case of investment decision related to SRI. From our perspective, this seems very appropriate as 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. Hence, we first illustrate our understanding of participation costs, as there are many definitions or views, which are very similar with respect to the core idea, but differ in terms of the exact components adding up to total participation costs. Secondly, we introduce and discuss factors that could influence the different costs components and thus individuals' SRI investment behavior.

As aforementioned, we follow Vissing-Jorgensen's (2004) view that participation costs consist of information and transaction costs. 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 (e.g. Campbell 2006, Graham, Harvey, and Huang 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 (see 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 him/her not feel sufficiently comfortable to invest in a product (Campbell 2006). Additionally, 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 (see e.g., Vissing-Jorgensen 2004, Haliassos and Bertaut 1995). Further, both types of costs, i.e. information as well as transaction 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 (see 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 that investors' probability to participate in the SRI market decrease in terms of (perceived) time spent for searching and understanding information on SRI (or financial products in general), i.e. (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.

In the following 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[2] are important determinants of individual investment behavior. For example, less

[2] And also related issues, such as cognitive abilities and IQ (see e.g., Grinblatt, Keloharju, and Linnainmaa 2011).

sophisticated private investors make severe mistakes in financial decisions, i.e. decisions inconsistent to financial theory, and are less likely invested in stocks (see e.g., Campbell 2006, Calvet, Campbell, and Sodini 2009, García 2013, van Rooij, Lusardi, and Alessie 2011). Financial knowledge and education also affect other areas of financial decision making or economic behavior, such as retirement planning (see e.g., van Rooij, Lusardi, and Alessie 2012, Lusardi and Mitchell 2007), wealth accumulation (e.g., van Rooij, Lusardi, and Alessie 2012) 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, only 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. They expect investors with higher investment scores to be more involved in their investment decisions and hence make more sophisticated and rationale choices. 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 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) invested at the SR bank nor the amount invested at the bank. However, they find a significant positive effect on the number of conventional investment accounts or number of savings accounts. However, since there are only two empirical results for Dutch investors, 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 as well as the majority of the 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 (see 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, Lusardi, and Alessie 2011). In line with this rationale several empirical studies show that education positively affects the propensity of stockholding, as, for example, shown in Christelis, Jappelli, and Padula (2010), Georgarakos and Pasini (2011), Guiso, Sapienza, and Zingales (2008), van Rooij, Lusardi, and Alessie (2011), Campbell (2006). In context of SRI, Bauer and Smeets (2015) find that investors with a university degree invest (weakly) significantly more at SR banks 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, Sandler, and Shani (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 also, and particularly, 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. Schrader (2006) finds that large retail banks in Germany were in 2006 not prepared to

adequately inform and advice private investors about ethical funds. In their case study, Paetzold and Busch (2014) find the respondents perceive that investment advisors withhold information about sustainable investments as well as related information about firms. Accordingly, 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 (see e.g., Taufique et al. 2014, Christelis, Jappelli, and Padula 2010, Nilsson 2008). As mentioned above, consumers or investors cannot directly assess whether the information, for example on the environmental impact of a consumption product or the degree of sustainability of a financial product, published by sellers or providers is true. Thus, in case that no further information, for example offered by independent rating organizations, NGOs or the state 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, Hoepner, and Liu (2012), shows that trust is positively related to many economic activities, such as the performance of large organizations, stock market capitalization, or household decisions (see e.g., La Porta et al. 1996, Calderon, Chong, and Galindo 2002, Guiso, Sapienza, and Zingales). In a negative sense, distrust can arise due to financial crisis (Knell and Stix 2015) or environmental disasters, such as Deep Water Horizon or Fukushima, and could lead to severe destabilizing effects on markets calling for regulation for increasing investors' trust (Campbell et al. 2011). In context of financial decisions, previous empirical studies show that (dis-) trust effects stock market participation (Guiso, Sapienza, and Zingales 2008, Georgarakos and Pasini 2011) and investment decisions related to risky assets (Georgarakos and Pasini 2011).

Guiso, Sapienza, and Zingales (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. Interestingly, education seems to influence the effect of trust: It has a significant positive effect on stock market participation particularly for less educated investors, while trust has no significant effect among highly educated investors. In order to capture the effect of trust in institutions such as banks or brokers, so called personalized trust, they asked customers of a large Italian bank the following question: "How much do you trust your bank official or broker as financial advisor for your investment decision?". The corresponding empirical analysis shows that customers with high personalized trust are more likely to invest in risky assets compared to their counterparts. On average, investors highly trusting their bank are even 16 percentage points more likely to invest in risky assets compared to investors with low personalized trust. However, there seems to be no significant difference between investors with medium trust compared to investors with low trust. 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 of the parameters in ordered probit models (where the share of SRI on the total portfolio is the dependent variable) show only a weak significant positive effect of trust (p-value = 0,08). Thus, only at the significance level of 10%, one could state that 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. On average trust is significantly stronger for SR investors than for investors currently investing conventionally. However, they cannot show that trusting investors are more likely to invest a larger share of their portfolio in SRI 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 at least some investor groups especially those that are currently not invested in SRI.

Typically, empirical studies either examine the performance of SRI directly, i.e. by comparing existing SRI mutual funds or indexes with their conventional counterparts (see e.g., Renneboog, Ter Horst, and Zhang 2008, Bauer, Koedijk, and Otten 2005), or by building hypothetical portfolios containing firms with a high sustainability performance (based on a variety of measures) versus firms with low sustainability scores (see e.g., Kempf and Osthoff 2007) or other benchmarks, such as the corresponding industry (see e.g., Edmans 2011), or indirectly, by examining the performance of socially controversial stocks, so-called sin stocks (see e.g., Hong and Kacperczyk 2009, Salaber 2013). Several reviews (see e.g., von Wallis and Klein 2015, Kiymaz 2012) as well as meta analyses (see e.g. Friede, Busch, and Bassen 2015, Rathner 2013) on empirical studies on relative SRI performance summarize that in most cases SR 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, benchmarks, performance measures, regions, number of matching criteria and/or whether the survivorship bias was considered (see e.g., Chegut, Schenk, and Scholtens 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 socially responsibility might invest in SRI due to financial reasons. This 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) directly askes 528 Swedish SR and conventional individual fund investors whether they perceive SRI to be more or less risky and whether these SRI funds generate higher or lower returns compared to conventional funds. He 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. However, their descriptive analysis reveals that SR investors are slightly more optimistic about returns of SRI than conventional investors, while they find no significant differences regarding to the perception of risk between the two investor groups. 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) are of 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, Benson, and Faff 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, Roe, and Hicks 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, Roe, and Hicks 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, Koskela, and Ollikainen 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) where signatories voluntarily pledge to incorporate responsible investment practices when investing, 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. It is based on the European SRI Transparency code that has been established in 2008 and revised several times since then. The purpose of these guidelines is to increase the "accountability and clarity of SRI practices for European investors" (Eurosif 2014). Thus the code 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). In addition, the code demands that the full list of securities in the portfolio of the fund must be published at least twice a year. Until December 2013 more than 500 SRI funds have already committed themselves to this code. This is more than half of the approximately 900 SRI funds in Europe (Eurosif 2014). Several other institutions use the European SRI Transparency code as a mandatory requirement for their own labels. Specifically, the Austrian Ecolabel, the Novethic SRI Label and the Novethic Green Fund Label require the investment managers to publish an answer to the Eurosif Transparency Code.

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. For example, the funds must have assessed each company with respect to the main environmental, social, and governance (ESG) issues and negative screens regarding e.g. nuclear power and arms industry must be applied to the funds' portfolios (see Kornherr 2012). The Novethic SRI Label and the Novethic Green Fund Label are also designed as quality standards. The first "guarantees systematic integration of ESG criteria into fund management" (Novethic 2015b) and the second aims to "provide investors with a benchmark by guaranteeing the environmental characteristics described by the fund management company." (Novethic 2015a). Apart from the bigger labels above, there are labels from Luxflag, Forum Ethibel and the Responsible Investment Association Australasia (see Table 1 for details). 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 purchase SRI funds is linked to investors' concerns with respect to the information integrity of SRI funds. Following the reasoning of the hypothesis above we think that a credible product label can help to overcome this distrust. 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, Hulthén, and Wulff (2015) transparency especially supply chain transparency is not consistently defined. Two main dimensions are presented in the scholarly 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 about 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 translate to the following: In order to be fully transparent 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. 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 (see 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, Orquin, and Thøgersen (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 defined as 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. They must at least have 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 and thus we had to exclude 200 respondents from the DCE and hence also from the empirical analysis. 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. (SR)
- I currently own sustainable investments, but I will not invest in sustainable investments any more in the next three years. (SK)
- I currently do not own sustainable investments, but I will invest in sustainable investments in the next three years. (INT)
- I currently do not own sustainable investments and I will not invest in sustainable investments in the next three years. (CONV)

We label the first group as socially responsible (SR), the second group as skeptical (SK), the third group as interested (INT), and the fourth group as conventional (CONV) investors. The number of observations for each type of investor are reported in Table 5. Accordingly, 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, i.e. is currently invested in SRI. 'Potential SRI investor' takes the value one if the respondent is either a SR or INT investor, i.e. a potential future SRI investor.

Accordingly, 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, and thus cannot directly observe 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 2, 49.67 % of the respondents state that they know too little about SRI.[4] In other words, approximately half of all respondents self-assess their knowledge of SRI as low. 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, conversations with an advisor who does not work for a bank, conversations at a consumer advice center, conversations with family members or friends, the magazine published by Stiftung Warentest[5], relevant financial magazines, relevant websites, or newspapers), 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 2, the respondents use 2.53 information sources on average, while the number of sources range from a minimum of one source to a maximum of eight sources. As this measure relates to information on financial products in general and also captures

[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.
[5] Stiftung Warentest is a well-known consumer advice service center in Germany.

the involvement of 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.[6] The resulting dummy variable 'Poorly informed' takes the value one if the respondent strongly agrees to this statement, and zero otherwise. The descriptive statistics shown in Table 2 reveal that 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, Sapienza, and Zingales (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 whether they trust 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. However, this is still over one third of all respondents perceiving distrust towards SRI providers.

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 used by 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

[6] 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".

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. Table 2 shows that about 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 in case of 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 main microeconometric analysis as well as in the robustness checks. 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. As shown in Table 2 , 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 by 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 he or she prefers 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. Obviously 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 3, while Table 4 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 provided by the state or a 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, Ng, and Brimble 2007) and substantial reviews of praxis. Before the final field work 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 2010, 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 3) on the individuals' choices between the different four alternatives in each choice set. Referring to Winkelmann and Boes (2010), we assume the following individual linear utility function:

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

where z_{ij} stand for the attributes of the *j*th 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

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

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 5 shows the relative frequency distributions for the four investor groups (SR, SK, INT, and CONV) regarding the statements mentioned above. It is obvious that the CONV investors are the respondents with the highest share of people that chose the 'No answer' option in all statements.

[Insert Table 5 here]

Table 6 refers to the same statements as Table 5. However, it is condensed in the respect that it 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. Additionally, Table 6 extends Table 5 by showing the results of one-sided t-tests of the proportions for all information and financial performance related explanatory variables mentioned in Table 2 making pairwise comparisons between the four investor groups.

[Insert Table 6 here]

According to the results of the chi-squared tests of independence shown in Table 6, 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 followed by SK, CONV, and INT investors. 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.[7] The results regarding 'Too little knowledge' about SRI products are also 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 a somewhat 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 the following can be said. 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.

[7] Remember that SR, SK, and INT investors make their statements regarding 'Poorly informed', 'No offer by bank', and Distrust' 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".

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 7 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 7 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 at all common significance levels. 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'. 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. Further, the estimated average discrete probability amounts to -16.6

percentage points and is thus the second largest effect of all variables considered. 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 8. 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 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 correlation between 'No offer by bank' meaning that private investors are less likely in the group of SR investors if they have not received an offer by their bank. This again supports our expectations stated in H1d and 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. Banks indeed decrease information costs, and hence investors are more likely to be invested in SRI as they received offers by their bank. 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, we find empirical support for the hypotheses 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 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 interested 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 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

After analyzing the estimated effects of certain potential investment barriers in the last section, we now examine whether the inclusion of transparency and sustainability labels influence the (stated) preferences of the different investor groups regarding sustainable and conventional funds. Table 9 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 (except the estimated parameter for 'Subscription fees' in Model 3) 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, which is also reasonable. 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. This means that investors prefer to invest in certified sustainable funds, instead of sustainable funds

without certificate or conventional funds. Hence, we find empirical support for hypothesis H4a. The inclusion of a transparency label has a highly significant and positive effect on the individuals' fund choice. Thus, investors are significantly more likely to select a mutual fund with a transparency label than a fund without one. This result holds across all different investor groups and thus we also find strong empirical support for hypothesis H4b.

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 9. 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 at the 10 % significance level indicating even stronger positive stated preferences if a fund has both kinds of labels supporting hypothesis H4c. The results seem to be particularly driven by SR investors and the estimated coefficients of the interaction term in all other models are not significant, i.e. there is no further support for this hypothesis.

However, the size of the parameters 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.[8] 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 10. 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 investor 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

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

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, i.e. INT investors have significantly higher (stated) preferences for transparency labels than SK or CONV 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 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. The results further suggest that INT investors, who tend to feel poorly informed and received no offer of SRI by their bank, might invest in sustainable funds or SRI in general if they are guided by transparency or sustainability certificates as their information and thus participation costs decrease. 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, 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 7 and Table 8 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 (significant at the 10 % level) and a negative effect on being a SK investor (also significant at 10 %). In the last case, i.e. 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 in case of CONV investors, but only at the 10 % significance level, while 'Poorly informed' is negatively estimated for CONV investors at the 10 % significance level. However, as aforementioned all other effects remain stable.

Regarding the analysis of the choice data all robustness checks lead to similar results as reported in Table 9 and Table 10. 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, Rose, and Greaves (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). However, as mentioned before, the results remained stable. 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. Again, 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, which was conducted in cooperation with the market research institute GfK. 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 problems, i.e. 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, as already suggested by the non-representative survey of Wins and Zwergel (2016), 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 SRI 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 SRI 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 SRI investors.

As suggested by Caswell and Padberg (1992) and Caswell and Mojduszka (1996) a credible ethical product label can help to overcome problems of consumer skepticism and confusion 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. Although this result generally holds for all groups, 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 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. The results further suggest that INT investors, who tend to feel poorly informed and have not received an offer of SRI by their bank yet, might invest in sustainable funds or SRI in general if they are guided by transparency or sustainability certificates as this would decrease their information 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 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, namely household's monthly net income and wealth, which do not change the results much. Regarding the analysis of the choice data all robustness checks lead to qualitatively similar results. First, in order to mitigate the possible hypothetical bias in choice experiments, we formulated a certainty question that we incorporated in the econometric analysis by excluding all individuals that answered "Very uncertain" or "Rather uncertain" to the certainty question. 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. Again, the results are qualitatively similar and stable.

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. Particularly, it would be interesting whether investors behave differently before and after including a certain label scheme.

References

Allen, Franklin, and Anthony M. Santomero, 2001, What do financial intermediaries do?, *Journal of Banking & Finance* 25, 271–294.

Amacher, Gregory S., Erkki Koskela, and Markku Ollikainen, 2004, Environmental quality competition and eco-labeling, *Journal of Environmental Economics and Management* 47, 284–306.

Bauer, Rob, Kees Koedijk, and Rogér Otten, 2005, International evidence on ethical mutual fund performance and investment style, *Journal of Banking & Finance* 29, 1751–1767.

Bauer, Rob, and Paul Smeets, 2015, Social identification and investment decisions, *Journal of Economic Behavior & Organization* 117, 121–134.

Benson, Karen L., and Jacquelyn E. Humphrey, 2008, Socially responsible investment funds. Investor reaction to current and past returns, *Journal of Banking & Finance* 32, 1850–1859.

Bhaduri, Gargi, and Jung E. Ha-Brookshire, 2011, Do Transparent Business Practices Pay? Exploration of Transparency and Consumer Purchase Intention, *Clothing and Textiles Research Journal* 29, 135–149.

Biehl, Christoph F., Andreas G. F. Hoepner, and Jianghong Liu, 2012, Social, Environmental, and Trust Issues in Business and Finance, in Harold Kent Baker, and John R. Nofsinger, eds.: *Socially responsible finance and investing. Financial institutions, corporations, investors, and activists* (Wiley, Hoboken, NJ).

Bjørner, Thomas B., Lars G. Hansen, and Clifford S. Russell, 2004, Environmental labeling and consumers' choice—an empirical analysis of the effect of the Nordic Swan, *Journal of Environmental Economics and Management* 47, 411–434.

Bleda, Mercedes, and Marco Valente, 2009, Graded eco-labels. A demand-oriented approach to reduce pollution, *Technological Forecasting and Social Change* 76, 512–524.

Bonaparte, Yosef, and Alok Kumar, 2013, Political activism, information costs, and stock market participation, *Journal of Financial Economics* 107, 760–786.

Borgers, Arian C., and Rachel A. Pownall, 2014, Attitudes towards socially and environmentally responsible investment, *Journal of Behavioral and Experimental Finance* 1, 27–44.

Bradu, Cosmina, Jacob L. Orquin, and John Thøgersen, 2014, The Mediated Influence of a Traceability Label on Consumer's Willingness to Buy the Labelled Product, *Journal of Business Ethics* 124, 283–295.

Brécard, Dorothée, Boubaker Hlaimi, Sterenn Lucas, Yves Perraudeau, and Frédéric Salladarré, 2009, Determinants of demand for green products. An application to eco-label demand for fish in Europe, *Ecological Economics* 69, 115–125.

Brouhle, Keith, and Madhu Khanna, 2012, Determinants of participation versus consumption in the Nordic Swan eco-labeled market, *Ecological Economics* 73, 142–151.

Calderon, Cesar, Alberto Chong, and Arturo Galindo, 2002, Development and Efficiency of the Financial Sector and Links with Trust. Cross-Country Evidence, *Economic Development and Cultural Change* 51, 189–204.

Calvet, Laurent, John Campbell, and Paolo Sodini, 2009, Measuring the Financial Sophistication of Households, *American Economic Review: Papers & Proceedings* 99, 393–398.

Campbell, John Y., 2006, Household Finance, *The Journal of Finance* 61, 1553–1604.

Campbell, John Y., Howell E. Jackson, Brigitte C. Madrian, and Peter Tufano, 2011, Consumer Financial Protection, *The journal of economic perspectives: a journal of the American Economic Association* 25, 91–114.

Cason, Timothy N., and Lata Gangadharan, 2002, Environmental Labeling and Incomplete Consumer Information in Laboratory Markets, *Journal of Environmental Economics and Management* 43, 113–134.

Caswell, Julie A., and Eliza M. Mojduszka, 1996, Using Informational Labling to Influence the Market for Quality in Food Products, *American Journal of Agricultural Economics* 78, 1248–1253.

Caswell, Julie A., and Daniel I. Padberg, 1992, Toward a More Comprehensive Theory of Food Labels, *American Journal of Agricultural Economics* 74, 460–468.

Cheah, Eng-Tuck, Dima Jamali, Johnnie E. Johnson, and Ming-Chien Sung, 2011, Drivers of Corporate Social Responsibility Attitudes: The Demography of Socially Responsible Investors, *British Journal of Management* 22, 305–323.

Chegut, Andrea, Hans Schenk, and Bert Scholtens, 2011, Assessing SRI fund performance research: Best practices in empirical analysis, *Sustainable Development* 19, 77–94.

Chen, Yu-Shan, and Ching-Hsun Chang, 2013, Greenwash and Green Trust. The Mediation Effects of Green Consumer Confusion and Green Perceived Risk, *Journal of Business Ethics* 114, 489–500.

Christelis, Dimitris, Tullio Jappelli, and Mario Padula, 2010, Cognitive abilities and portfolio choice, *European Economic Review* 54, 18–38.

Chrzan, Keith, 2000, An Overview and Comparison of Design Strategies for Choice-Based Conjoint Analysis, in Sawtooth Software, ed.: *Proceedings of the Sawtooth Software Conference* (Sawtooth Software Conference Proceedings, Seqium).

Crane, Andrew, 2000, Facing the backlash: green marketing and strategic reorientation in the 1990s, *Journal of Strategic Marketing* 8, 277–296.

De Bondt, Werner F., 1998, A portrait of the individual investor, *European Economic Review* 42, 831–844.

De Valck, Jeremy, Pieter Vlaeminck, Steven Broekx, Inge Liekens, Joris Aertsens, Wendy Chen, and Liesbet Vranken, 2014, Benefits of clearing forest plantations to restore nature? Evidence from a discrete choice experiment in Flanders, Belgium, *Landscape and Urban Planning* 125, 65–75.

Delmas, M. A., and L. E. Grant, 2013, Eco-Labeling Strategies and Price-Premium. The Wine Industry Puzzle, *Business & Society* 53, 6–44.

Dingwerth, Klaus, and Margot Eichinger, 2010, Tamed Transparency. How Information Disclosure under the Global Reporting Initiative Fails to Empower, *Global Environmental Politics* 10, 74–96.

Dorfleitner, Gregor, and Sebastian Utz, 2014, Profiling German-speaking socially responsible investors, *Qualitative Research in Financial Markets* 6, 118–156.

Edmans, Alex, 2011, Does the stock market fully value intangibles? Employee satisfaction and equity prices, *Journal of Financial Economics* 101, 621–640.

Egels-Zandén, Niklas, and Niklas Hansson, 2015, Supply Chain Transparency as a Consumer or Corporate Tool: The Case of Nudie Jeans Co, *Journal of Consumer Policy*, 1–19.

Egels-Zandén, Niklas, Kajsa Hulthén, and Gabriella Wulff, 2015, Trade-offs in supply chain transparency. The case of Nudie Jeans Co, *Journal of Cleaner Production* 107, 95–104.

Entine, Jon, 2003, The Myth of Social Investing: A Critique of its Practice and Consequences for Corporate Social Performance Research, *Organization & Environment* 16, 352–368.

Eurosif, 2012a, *European SRI Study 2012*, European Sustainable Investment Forum.

Eurosif, 2012b, *High Net Worth Individuals & Sustainable Investment 2012*.

Eurosif, 2014, *European SRI Study 2014*, European Sustainable Investment Forum.

Favilukis, Jack, 2013, Inequality, stock market participation, and the equity premium, *Journal of Financial Economics* 107, 740–759.

Fifer, Simon, John Rose, and Stephen Greaves, 2014, Hypothetical bias in Stated Choice Experiments. Is it a problem? And if so, how do we deal with it?, *Transportation Research Part A: Policy and Practice* 61, 164–177.

FNG, 2014, *Marktbericht Nachhaltige Geldanlagen 2014. Deutschland, Österreich und die Schweiz*, Forum Nachhaltige Geldanlagen.

FNG, 2015a, *Informations-Event zum Start der Bewerbungsphase des FNG-Siegels: ein Rückblick*.

FNG, 2015b, *Marktbericht Nachhaltige Geldanlagen 2015. Deutschland, Österreich und die Schweiz*, Forum Nachhaltige Geldanlagen.

FNG, 2016, *Nachhaltige Geldanlagen*. http://www.forum-ng.org/de/nachhaltige-geldanlagen/nachhaltige-geldanlagen.html (accessed February 24, 2016).

Frey, Bruno S., and Felix Oberholzer-Gee, 1997, The Cost of Price Inventives: An Empirical Analysis of Motivation Crowding-Out, *The American Economic Review* 87, 746–755.

Friede, Gunnar, Timo Busch, and Alexander Bassen, 2015, ESG and financial performance. Aggregated evidence from more than 2000 empirical studies, *Journal of Sustainable Finance & Investment* 5, 210–233.

García, María J. R., 2013, Financial Education and Behavioral Finance: New Insights into the Role of Information in Financial Decisions, *Journal of Economic Surveys* 27, 297–315.

Georgarakos, D., and G. Pasini, 2011, Trust, Sociability, and Stock Market Participation, *Review of Finance* 15, 693–725.

Graham, John R., Campbell R. Harvey, and Hai Huang, 2009, Investor Competence, Trading Frequency, and Home Bias, *Management Science* 55, 1094–1106.

Greene, William H., 2012, *Econometric Analysis* (Pearson Education, Edinburgh Gate, Harlow).

Grinblatt, Mark, Matti Keloharju, and Juhani T. Linnainmaa, 2011, IQ and Stock Market Participation, *The Journal of Finance* 66, 2121–2164.

Guiso, Luigi, and Tullio Jappelli, 2008, Financial Literacy and Portfolio Diversification, *EUI Working Papers* ECO 2008/31.

Guiso, Luigi, Paola Sapienza, and Luigi Zingales, 2008, Trusting the Stock Market, *The Journal of Finance* 63, 2557–2600.

Haigh, Matthew, 2008, What Counts in Social Managed Investments: Evidence from an International Survey, *Advances in Public Interest Accounting* 13, 35–62.

Haliassos, Michael, and Carol C. Bertaut, 1995, Why do so Few Hold Stocks?, *The Economic Journal* 105, 1110–1129.

Hamilton, Stephen F., and David Zilberman, 2006, Green markets, eco-certification, and equilibrium fraud, *Journal of Environmental Economics and Management* 52, 627–644.

Hess, David, 2007, Social Reporting and New Governance Regulation: The Prospects of Achieving Corporate Accountability Through Transparency, *Business Ethics Quarterly* 17, 453–476.

Hong, Harrison, and Marcin Kacperczyk, 2009, The price of sin. The effects of social norms on markets, *Journal of Financial Economics* 93, 15–36.

Hummels, Harry, and Diederik Timmer, 2004, Investors in Need of Social, Ethical, and Environmental Information, *Journal of Business Ethics* 52, 73–84.

Ibanez, Lisette, and Gilles Grolleau, 2008, Can Ecolabeling Schemes Preserve the Environment?, *Environmental and Resource Economics* 40, 233–249.

Junkus, Joan C., and Thomas C. Berry, 2010, The demographic profile of socially responsible investors, *Managerial Finance* 36, 474–481.

Kaustia, Markku, and Sami Torstila, 2011, Stock market aversion? Political preferences and stock market participation, *Journal of Financial Economics* 100, 98–112.

Kempf, Alexander, and Peer Osthoff, 2007, The Effect of Socially Responsible Investing on Portfolio Performance, *European Financial Management* 13, 908–922.

Kiymaz, Halil, 2012, SRI Mutual Fund and Index Performance, in Harold Kent Baker, and John R. Nofsinger, eds.: *Socially responsible finance and investing*. *Financial institutions, corporations, investors, and activists* (Wiley, Hoboken, NJ).

Knell, Markus, and Helmut Stix, 2015, Trust in Banks during Normal and Crisis Times-Evidence from Survey Data, *Economica*, 995–1020.

Kornherr, Christian, 2012, *Österreichisches Umweltzeichen. Nachhaltige Finanzprodukte* .

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert W. Vishny, 1996, Trust in Large Organizations, *NBER Working Paper Series*.

Lewis, Alan, and Craig Mackenzie, 2000, Morals, money, ethical investing and economic psychology, *Human Relations* 53, 179–191.

Loureiro, Maria L., and Justus Lotade, 2005, Do fair trade and eco-labels in coffee wake up the consumer conscience?, *Ecological Economics* 53, 129–138.

Lusardi, Annamaria, and Olivia S. Mitchell, 2007, Baby Boomer retirement security. The roles of planning, financial literacy, and housing wealth, *Journal of Monetary Economics* 54, 205–224.

MacLean, Richard, and Kathee Rebernak, 2007, Closing the credibility gap: The challenges of corporate responsibility reporting, *Environmental Quality Management* 16, 1–6.

McFadden, Daniel, 1974, Conditional logit analysis of qualitative choice behavior, *Frontiers in econometrics*, 105–142.

McLachlan, Jonathan, and John Gardner, 2004, A Comparison of Socially Responsible and Conventional Investors, *Journal of Business Ethics* 52, 11–25.

Nilsson, Jonas, 2008, Investment with a Conscience: Examining the Impact of Pro-Social Attitudes and Perceived Financial Performance on Socially Responsible Investment Behavior, *Journal of Business Ethics* 83, 307–325.

Nilsson, Jonas, Sebastian Siegl, and Fredric Korling, 2012, The complex decision making environment of socially responsible mutual fund investors: Introducing a disclosure famework focusing on information quality, *SIRP Working Paper 12-01*.

Novethic, 2015a, *The Green Fund Label*.

Novethic, 2015b, *The SRI Label*.

Owen, Ann L., and Yejun Qian, 2008, Determinants of Socially Responsible Investment, *Hamilton College Working Paper*.

Paetzold, F., and T. Busch, 2014, Unleashing the Powerful Few. Sustainable Investing Behaviour of Wealthy Private Investors, *Organization & Environment*, 347–367.

Pérez-Gladish, Blanca, Karen Benson, and Robert Faff, 2012, Profiling socially responsible investors: Australian evidence, *Australian Journal of Management* 37, 189–209.

Rathner, Sebastian, 2013, The Influence of Primary Study Characteristics on the Performance Differential Between Socially Responsible and Conventional Investment Funds: A Meta-Analysis, *Journal of Business Ethics* 118, 349–363.

Renneboog, Luc, Jenke Ter Horst, and Chendi Zhang, 2008, The price of ethics and stakeholder governance: The performance of socially responsible mutual funds, *Special Issue: Contractual Corporate Governance European Corporate Governance Institute (ECGI) Symposium on Contractual Corporate Governance* 14, 302–322.

Rhodes, Mark J., 2010, Information Asymmetry and Socially Responsible Investment, *Journal of Business Ethics* 95, 145–150.

Riedl, Arno, and Paul Smeets, 2014, Social Preferences and Portfolio Choice, *CESifo Working Paper*.

Rosen, Barry N., Dennis M. Sandler, and David Shani, 1991, Social Issues and Socially Responsible Investment Behavior: A Preliminary Empirical Investigation, *Journal of Consumer Affairs* 25, 221–234.

Salaber, Julie, 2013, Religion and returns in Europe, *European Journal of Political Economy* 32, 149–160.

Sammer, Katharina, and Rolf Wüstenhagen, 2006, The influence of eco-labelling on consumer behaviour – results of a discrete choice analysis for washing machines, *Business Strategy and the Environment* 15, 185–199.

Sandberg, Joakim, Carmen Juravle, Ted M. Hedesström, and Ian Hamilton, 2009, The Heterogeneity of Socially Responsible Investment, *Journal of Business Ethics* 87, 519–533.

Schrader, Ulf, 2006, Ignorant advice – customer advisory service for ethical investment funds, *Business Strategy and the Environment* 15, 200–214.

Taufique, Khan, Chamhuri Siwar, Basri Talib, Farah Sarah, and Norshamliza Chamhuri, 2014, Synthesis of Constructs for Modeling Consumers' Understanding and Perception of Eco-Labels, *Sustainability* 6, 2176–2200.

Teisl, Mario F., Brian Roe, and Robert L. Hicks, 2002, Can Eco-Labels Tune a Market? Evidence from Dolphin-Safe Labeling, *Journal of Environmental Economics and Management* 43, 339–359.

Tippet, John, and Philomena Leung, 2001, Defining Ethical Investment and its Demography in Australia, *Australian Accounting Review* 11, 44–55.

van Rooij, Maarten, Annamaria Lusardi, and Rob Alessie, 2011, Financial literacy and stock market participation, *Journal of Financial Economics* 101, 449–472.

van Rooij, Maarten C., Annamaria Lusardi, and Rob J. Alessie, 2012, Financial Literacy, Retirement Planning and Household Wealth, *The Economic Journal* 122, 449–478.

Vissing-Jorgensen, Annette, 2004, Perspectives on Behavioral Finance: Does "Irrationality" Disappear with Wealth? Evidence from Expectations and Actions, *National Bureau of Economic Research Macroeconomics Annual 2003* 18, 139–208.

von Gaudecker, Hans-Martin, 2015, How Does Household Portfolio Diversification Vary with Financial Literacy and Financial Advice?, *The Journal of Finance* 70, 489–507.

von Wallis, Miriam, and Christian Klein, 2015, Ethical Requirements and Financial Interest: A Review of the Socially Responsible Investment Literature, *Business Research* 8, 61–98.

Vyvyan, Victoria, Chew Ng, and Mark Brimble, 2007, Socially Responsible Investing: the green attitudes and grey choices of Australian investors, *Corporate Governance: An International Review* 15, 370–381.

Wilcox, Ronald T., 2003, Bargain Hunting or Star Gazing? Investors' Preferences for Stock Mutual Funds, *The Journal of Business* 76, 645–663.

Winkelmann, Rainer, and Stefan Boes, 2010, *Analysis of microdata* (Springer, Berlin).

Wins, Anett, and Bernhard Zwergel, 2015, Private Ethical Fund Investors Across Countries and Time: A Survey-based Review, *Qualitative Research in Financial Markets* 7, 379–411.

Wins, Anett, and Bernhard Zwergel, 2016, Comparing those who do, might and will not invest in sustainable funds. A survey among German retail fund investors, *Business Research* (forthcoming).

Young, William, Kumju Hwang, Seonaidh McDonald, and Caroline J. Oates, 2010, Sustainable consumption. Green consumer behaviour when purchasing products, *Sustainable Development* 18, 20–31.

Appendix

Table 1: Overview of existing SRI fund labels

Label	Launch [year]	No. of cert. retail funds in 2014	Labeling body, domicile	Validity	Detailed label criteria publicly available on the internet	Purpose (according to labeling body)
Austrian Ecolabel	2004	48	Austrian Federal Ministry of Agriculture, Austria	-	yes	The label is intended to be used by individual investors as a quality standard. It guarantees systematic integration of ethical, social and ecological criteria into fund management.
Certified Responsible Investment	2005	?	Responsible Invest-ment Association Australasia (RIAA), Australia	-	no	Designed to act as a navigational tool, the Symbol helps consumers identify products and services that take environmental, social, ethical or governance issues into account which have been certified by RIAA.
Ethibel Excellence Label	2004	8	Forum Ethibel, Belgium	-	yes	The label indicates that the fund only invests in companies which perform above average within their industry in terms of corporate social responsibility (CSR).
Ethibel Pioneer Label	1991	1	Forum Ethibel, Belgium	-	yes	The label indicates that the fund only invests in companies which stand out within their industry in terms of corporate social responsibility (CSR).
European SRI Transparency Code	2008	> 500	Eurosif, Belgium	-	yes	It primarily aims at increasing accountability and clarity of SRI practices for European investors. The Code focuses on SRI funds distributed publicly in Europe
Luxflag Environmental Label	2011	10	LuxFLAG, Luxembourg	one year	yes	The primary objective is to reassure investors that the Investment Fund actually primarily invest their assets in environment-related sectors in a responsible manner.
Luxflag ESG Label	2014	3	LuxFLAG, Luxembourg	one year	yes	The primary objective is to reassure investors that the Investment Fund actually invest their assets in an investment fund which incorporates ESG considerations throughout its investment process.

Luxflag Microfinance label	2006	27	LuxFLAG, Luxembourg	one year	yes	The primary objective is to reassure investors that the MIV actually invests, directly or indirectly, in the Microfinance sector.
Novethic SRI Label	2009	111	Novethic, France	one year	yes	The label is intended to be used by individual investors as a quality standard. It guarantees systematic integration of ESG criteria into fund management.
Novethic Green Fund Label	2013	7	Novethic, France	one year	yes	The label was introduced to provide investors with a benchmark by guaranteeing the environmental characteristics described by the fund management company.

Table 2: Descriptive statistics of all variables

Variables	# of observations	Mean	Variance	Minimum	Maximum
		Dependent variables			
Investor type	801	3.0749	1.05	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 3: 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 Transparency logo by NGO Transparency logo by state	No transparency logo Transparency logo by NGO Transparency logo by state

Table 4: 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 5: Relative frequency distributions for the four investor groups (SR, SK, INT and CONV) regarding the statements that build the basis for the dummies of the following tables.

Investor group	1 I totally disagree [%]	2 [%]	3 [%]	4 [%]	5 I totally agree [%]	No answer [%]	Median
I know too little about sustainable investments.							
SR (N = 109)	14.68	26.61	36.70	13.76	3.67	4.59	3
SK (N = 83)	6.02	19.28	31.33	28.92	10.84	3.61	3
INT (N = 248)	3.23	10.89	33.47	33.87	16.94	1.61	4
CONV (N = 361)	4.43	5.82	27.15	24.10	31.86	6.65	4
I feel poorly informed about sustainable investments.							
SR (N = 109)	9.17	20.18	32.11	31.19	4.59	2.75	3
SK (N = 83)	6.02	13.25	26.51	39.76	13.25	1.20	4
INT (N = 248)	2.83	8.10	18.62	46.56	22.67	1.21	4
CONV (N = 361)	3.32	7.76	22.99	32.41	29.92	3.60	4
My bank has not offered me sustainable investments yet.							
SR (N = 109)	11.01	16.51	26.61	18.35	22.02	5.50	3
SK (N = 83)	6.02	8.43	38.55	25.30	14.46	7.23	4
INT (N = 248)	2.02	7.69	16.19	31.98	38.46	3.64	4
CONV (N = 361)	1.66	3.05	26.32	18.84	38.78	11.36	5
I do not trust that providers of sustainable investments follow the sustainability guidelines they publish in their investment information.							
SR (N = 109)	11.93	10.09	45.87	16.51	10.09	5.50	3
SK (N = 83)	2.41	6.02	43.37	31.33	9.64	7.23	3
INT (N = 248)	5.67	12.55	47.37	22.27	8.50	3.64	3
CONV (N = 361)	2.77	6.93	39.06	22.71	15.79	12.94	4

Table 6: Descriptive analysis of the different statements across all investors that took part in the DCE and answered the respective questions.

Variables		SR		SK		INT		CONV		χ^2 test p values	SR vs. SK	SR vs. INT	SR vs. CONV	SK vs. INT	SK vs. CONV	INT vs. CONV
		[%]	N	[%]	N	[%]	N	[%]	N							
Too little knowledge	0	81.7	104	58.8	80	48.3	244	40.1	337	0.000***	(<)***	(<)***	(<)***	(<)*	(<)***	(<)**
	1	18.3		41.2		51.7		59.9			0.00	0.00	0.00	0.05	0.00	0.02
Poorly informed	0	63.2	106	46.3	82	30.2	245	35.3	348	0.000***	(<)**	(<)***	(<)***	(<)***	(<)**	(<)
	1	36.8		53.6		69.8		64.7			0.01	0.00	0.00	0.00	0.03	0.90
No offer by bank	0	57.3	103	57.1	77	27.2	239	35.0	320	0.000***	(<)	(<)***	(<)***	(<)***	(<)***	(<)
	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 return	0	51.0	100	36.5	74	43.8	226	35.8	246	0.041**	(<) **	(<)	(<)***	(<)	(<)	(<)**
	1	49.0		63.5		56.2		64.2			0.03	0.11	0.00	0.87	0.46	0.04
Higher risk	0	80.4	102	68.4	76	71.1	228	57.5	259	0.000***	(<)**	(<)**	(<)***	(<)	(<)**	(<)***
	1	19.6		31.6		29.0		42.5			0.03	0.04	0.00	0.67	0.04	0.00
Higher fees	0	72.0	100	75.00	72	64.5	217	58.1	246	0.016**	(<)	(<)*	(<)***	(<)*	(<)***	(<)*
	1	28.0		25.00		35.5		41.9			0.67	0.09	0.01	0.05	0.00	0.08

Direction of the alternative hypothesis: > "greater"; ≠ "two-sided"; < "less"; *, **, *** indicate significance at the ten percent, five percent, and one percent level, respectively.

Table 7: 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.

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)	

Note: *** (**, *) means that the corresponding parameter estimates are significantly different from zero on a 1% (5%, 10%) significance level.

Table 8: 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.

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)

Note: *** (**, *) means that the corresponding parameter estimates are significantly different from zero on a 1% (5%, 10%) significance level.

Table 9: 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.

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

Note: *** (**, *) means that the corresponding parameter estimates are significantly different from zero on a 1% (5%, 10%) significance level.

Table 10: 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.

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)	-

Note: *** (**, *) means that the corresponding parameter estimates are significantly different from zero on a 1% (5%, 10%) significance level.