# Investor views, investment screen use, and socially responsible investment behavior

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## Abstract

**Purpose** – Despite the increasing demand for socially responsible investments (SRIs) and the importance of information intermediaries in providing corporate social responsibility (CSR) performance information through SRI screens, relatively little is known about the relationship between nonprofessional investors' views regarding SRI, their use of SRI screens and their actual SRI behavior. This study aims to distinguish between investor views about the importance of corporate environmental responsibility (environmental performance importance views) and whether they view environmentally responsible firms as yielding higher returns (environmental performance return views). It examines the association between these views, SRI screen use and reported SRI holdings.

**Design/methodology/approach** – Nonprofessional investor participants completed an online survey about their SRI investment views, screen use and investment behavior. The survey yielded 201 usable responses.

**Findings** – The strength of participants' environmental performance importance and environmental performance return views is positively associated with their use of SRI screens and the proportion of their portfolios held in SRIs. SRI screen use only partially mediates the association between investors' environmental performance importance and return views and their SRI holdings.

**Research limitations/implications** – The study does not precisely address what types of SRI screens nonprofessional investors may be using. It does not control for investors' specific experience with SRIs, nor does it examine how or why investors come to believe that environmental responsibility may improve a company's return potential.

**Practical implications** – The fact that SRI screen use only partially mediates the association between investors' views and their SRI holdings suggests that either reliable, unfiltered CSR information is important for nonprofessional investors or some investors are choosing SRIs without obtaining adequate relevant information.

**Social implications** – The study's findings confirm earlier research findings which show an association between investors' pro-environmental views and their decision to invest in SRIs (Williams, 2007; Nilsson, 2008) and suggest that nonprofessional investors are becoming aware of the positive relation between environmental performance and firm value (Dhaliwal *et al.*, 2011; Clarkson *et al.*, 2013; Hawn *et al.*, 2014; Matsumura *et al.*, 2014).

Sustainability Accounting, Management and Policy Journal
Vol. 7 No. 2, 2016
pp. 246-267

2040-8021
DOI 10.1108/SAMPJ-07-2015-0066

The authors gratefully acknowledge comments from workshop participants at Iowa State University, the 25th CSEAR International Congress on Social and Environmental Accounting Research, the 2013 American Accounting Association Annual Meeting and the 2013 European Accounting Association Annual Meeting.

**Originality/value** – This study simultaneously examines the influence of environmental performance importance (an "alternative" investment perspective) and environmental performance return (a "traditional" investment perspective) on investors' SRI behavior.

**Keywords** Sustainability reporting, Socially responsible investment, Retail investors, Investment screening

**Paper type** Research paper



## 1. Introduction

This study examines the relationships among nonprofessional investors' views regarding the relative importance of corporate social responsibility (CSR) performance and whether CSR performance affects firm investment returns, their use of socially responsible investment (SRI) screening tools and their actual SRI behavior. The demand for SRIs, either directly or through SRI mutual funds, has increased considerably in recent years, as the investing community has become increasingly aware of concerns about CSR (Friedman and Miles, 2001; Sparkes and Cowton, 2004; Nilsson, 2008; Berry and Junkus, 2013; Paetzold and Busch, 2014; USSIF, 2014). As of the beginning of 2014, more than one out of every six dollars under professional management in the USA is held in SRIs. These investments total US$6.57 trillion, a 76 per cent increase since the beginning of 2012 (USSIF, 2014). On a global scale, there are over 1,400 signatories to the United Nations-supported Principles for Responsible Investment (PRI). These firms manage a total amount of US$59 trillion of assets as of April 2015 (PRI, 2015a).

Research suggests that socially responsible investors use CSR performance information (Cohen *et al.*, 2011), and that the supply of such information is rapidly increasing (Holder-Webb *et al.*, 2009; KPMG, 2013). Individuals considering SRI, however, are often challenged by the unavailability of consistent, reliable information concerning companies' CSR performance (Paetzold and Busch, 2014; Eccles *et al.*, 2015). SRI screening tools (i.e. SRI screens) attempt to mitigate this problem by providing CSR data in a summarized, standardized format (Berry and Junkus, 2013). For example, the GMI ESG (Environmental, Social and Governance) Composite Rating is a measure of how effectively companies manage environmental, social and governance risks and address these opportunities (Fidelity Investments, 2015). The information aggregator (GMI Ratings) develops these ratings by gathering publicly available data, summarizing the data and rating each company's environmental, social and governance performance on a three-level scale. Similarly, the Newsweek (2015) Green Rankings summarize and present environmental performance metrics on standardized scales. Investors can use these SRI screens directly to invest in socially responsible companies, or rely on them indirectly by investing in a mutual fund such as the TIAA-CREF Social Choice Equity Fund, which uses ESG screens as part of its investment selection criteria (TIAA-CREF, 2015).

Despite the increasing demand for SRI and the importance of information intermediaries in providing CSR performance information through SRI screens, relatively little is known about the relationship between investors' views regarding SRI, their use of SRI screens and their actual SRI behavior. McLachlan and Gardner (2004), Williams (2007) and Nilsson (2008) all find a positive relationship between investor views regarding specific aspects of CSR and individuals' SRI behavior. While proponents argue that SRI screens convey important information to investors beyond

what is contained in traditional investment research (MSCI, 2016), previous studies do not consider investors' SRI screen use when examining these relationships.

Specifically, this study distinguishes between two investor views with respect to CSR that are suggested by the accounting (Moser and Martin, 2012) and management (Cheah *et al.*, 2011) research literature. The first is an "alternative" view that some investors give higher priority to the goals of promoting social concerns than to maximizing shareholder wealth. Such investors are likely to have the attitude that a company's CSR performance is more important than its financial performance. A second, "traditional" view is that companies engage in socially responsible activities only when doing so maximizes shareholder value. Investors with this view are likely to have the belief that companies which are socially responsible yield higher returns than socially irresponsible companies.

One problem with examining the relationship between investors' attitudes about CSR performance, their information use and investment behavior in a research setting is that CSR performance is a multidimensional construct which encompasses a varied range of corporate activities (Brammer and Millington, 2008). Therefore, this study follows Moser and Martin's (2012) suggestion to isolate individual CSR performance components when developing and testing CSR-related research questions. Given the prominence of environmental performance in CSR reporting (GRI, 2013; KPMG, 2013) and the importance that many investors place on the environmental aspect of CSR (Hassel *et al.*, 2005; de Villiers and Van Staden, 2010; Eccles *et al.*, 2012; Berry and Junkus, 2013), it focuses specifically on investors' views regarding the relative importance of environmental versus financial performance (i.e. environmental performance importance) and whether environmental performance affects firm investment returns (i.e. environmental performance return). Therefore, the study examines the relationships between these two views and investors' SRI screen use and SRI holdings.

To examine these relationships, 201 nonprofessional investors' environmental performance importance and environmental performance return views are assessed. Study participants are also asked about their use of SRI screens and the percentage of their investment portfolio held in SRIs. Results indicate that both investors' environmental performance importance and environmental performance return views are positively associated with their use of SRI screens and the percentage of their portfolio held in SRIs. Further, there is a positive association between investors' SRI screen use and the percentage of their portfolio held in SRIs. However, the use of SRI screens does not fully mediate the relationship between investors' views and the percentage of their portfolio held in SRIs. Instead, there is still a significant, direct relationship between both investors' views and the percentage of their portfolios held in SRIs, even after controlling for investment screen use.

The finding that the strength of nonprofessional investors' environmental performance importance views is positively associated with their SRI screen use and tendency to hold SRIs is consistent with earlier research which finds an association between investors' pro-environmental views and their decision to invest in SRIs (Rosen *et al.*, 1991; Williams, 2007; Nilsson, 2008). The finding that the strength of investors' environmental performance importance views is positively associated with their SRI screen use suggests that nonprofessional investors are aware of a positive relation between environmental performance and firm value (Dhaliwal *et al.*, 2011; Clarkson

*et al.*, 2013; Hawn *et al.*, 2014; Matsumura *et al.*, 2014). Further, the association between investors' environmental performance importance views and their SRI holdings indicates that investors are willing to incorporate information regarding a positive relation between environmental performance and firm value into their investment decisions.

The finding that SRI screen use only partially mediates the influence of environmental performance importance and environmental performance return views on nonprofessional investors' SRI holdings suggests that investors are considering other sources of information besides SRI screens when making their decisions to hold SRIs. This indicates the importance of direct CSR disclosures for at least some nonprofessional investors and supports the idea that independent assurance is important for providing reliable information to these investors (Casey and Grenier, 2015; Cohen *et al.*, 2015). Alternately, it is possible that investors with strong environmental performance and return views are choosing SRIs without obtaining adequate relevant information. If this were indeed true, then there would be a need to better educate such investors about the existence of screened environmental performance information and to improve the availability and reliability of this information.

The next section reviews the relevant research and develops the research hypotheses. The following two sections describe the research method and present the study's results. The final section summarizes its findings and discusses future research opportunities with respect to the issues addressed in this paper.

## 2. Theory and hypotheses

### *2.1 Investor perspectives and socially responsible investment behavior*

Moser and Martin (2012) describe two different perspectives on CSR activities. One perspective is that companies might make socially responsible expenditures to benefit society, even if doing so decreases shareholder value. Moser and Martin (2012) describe this as an "alternative" perspective and state that it is advocated by scholars in disciplines such as sociology and business ethics, as well as by some writers in the popular business press. This perspective is consistent with the idea that individuals might invest in socially responsible companies because they perceive that such investments benefit society, even if this involves an "ethical penalty" for lower returns (Rosen *et al.*, 1991; McLachlan and Gardner, 2004; Williams, 2007). The other perspective is that companies engage in socially responsible activities only when doing so maximizes shareholder value. This second, more "traditional" perspective is consistent with the beliefs of many scholars in accounting, economics and finance, as well as those of writers in the financial press. It suggests that individuals invest in socially responsible companies because they perceive that such investments yield higher returns.

The first and third of four investor "views" about SRI described by Cheah *et al.* (2011) closely parallel the alternative perspective described by Moser and Martin (2012). Cheah *et al.*'s (2011) first view is that some investors believe that a company's social and environmental performance is more important than its financial performance. This view is driven by the idea that some investors give higher priority to the goals of promoting social and environmental concerns than to maximizing shareholder wealth, even if this means incurring an "ethical penalty" for lower returns on investment (McLachlan and Gardner, 2004). Cheah *et al.*'s (2011) third view is that companies should be more

responsible to the broader society than to their shareholders. This closely overlaps the first view, given that non-shareholder stakeholders, such as labor groups and community leaders, are likely to be more concerned about social and environmental issues than firm returns (Chen and Roberts, 2010). Cheah *et al.*'s second investor view is that companies which are socially and environmentally responsible yield higher returns than irresponsible companies. This environmental performance return view is consistent with the traditional perspective described by Moser and Martin (2012)[1].

The idea of investing based on social principles can be traced back to various religious movements in the early nineteenth century (Berry and Junkus, 2013). Early socially responsible investors tended to follow an exclusionary strategy, refusing to invest in companies engaged in activities deemed objectionable, such as alcohol, gambling, pornography, tobacco and weapons (McLachlan and Gardner, 2004). It was not until the 1980s that the concept of SRI based on a holistic set of criteria began to take hold (Berry and Junkus, 2013). This holistic concept is aligned with Moser and Martin's (2012) alternative perspective and Cheah *et al.*'s (2011) first and third investor views regarding SRI.

Prior research provides evidence of an association between investors' pro-social attitudes and SRI behavior, consistent with these alternate views regarding investment in socially responsible companies. Rosen *et al.* (1991) find that a substantial majority of socially responsible investors engage in activities such as donating and belonging to cause-related groups and boycotting products of companies with poor social records. Williams (2007) reports that investor beliefs such as whether a company's social and environmental performance is as important as its financial performance and whether a company should be more responsible to society than to its shareholders influence the decision to invest in SRIs. Similarly, Nilsson (2008) finds a positive association between investors' pro-social attitudes specific to SRI, such as whether it is important that the companies they buy from respect workplace rights, work actively with environmental issues, respect human rights, do not produce harmful goods (i.e. weapons) and do not use unethical business practices, and the percentage of their portfolio that they hold in SRI-profiled mutual funds. Berry and Junkus (2013) report that socially responsible investors tend to focus on positive, as opposed to negative, aspects of companies' socially responsible behavior. Further, these investors judge a company's total record with regards to social responsibility, as opposed to evaluating specific actions or products. Finally, de Zwaan *et al.* (2015) report that retirement fund participants are strongly interested in investments that consider environmental and social issues and agree that they feel good when taking environmental and social issues into consideration. These research results are all consistent with the view that investors choose SRIs as a means of promoting social and environmental concerns.

The traditional view regarding CSR is consistent with agency theory, which suggests that management will only undertake socially responsible business strategies if such strategies satisfy shareholders' wealth maximization objectives (Jensen and Meckling, 1976). More recently, Porter and Kramer (2011) have argued that socially responsible businesses can simultaneously enhance their competitive position and advance economic and social conditions in the communities in which they operate. Consistent with Porter and Kramer's (2011) arguments, empirical evidence of a positive relation between CSR performance and firm value is emerging (Dhaliwal *et al.*, 2011; Clarkson *et al.*, 2013; Hawn *et al.*, 2014; Matsumura *et al.*, 2014). Thus, investors' views that

socially responsible companies yield higher returns may be based on their understanding of agency theory, their awareness of recent empirical results regarding the relationship between CSR performance and firm value or both. Indeed, Nilsson (2008) finds that investors who believe that SRIs yield higher, or at least similar, returns as conventional investments tend to hold a higher percentage of their portfolios in SRIs. Further, Nilsson (2009) reports that 29 per cent of surveyed SRI fund investors invest in these funds primarily out of concerns about investment profits, and an additional 52 per cent invest because of both profit and social responsibility concerns.

This discussion thus far has focused on investors' overall views with respect to CSR activities overall. CSR performance, however, is a multidimensional construct that encompasses a varied range of corporate behavior (Brammer and Millington, 2008). Indeed, managers continue to struggle with the concept of the exact nature of CSR, "as they remain focused on disconnected environmental, health, human resources, or philanthropic initiatives" (KPMG 2013, p. 24). Thus, this study follows Moser and Martin's (2012, p. 802) suggestion that "it is important to isolate individual components of CSR performance when developing and testing research questions regarding the effects of CSR performance on other variables of interest".

There is substantial evidence that investors consider environmental performance to be more important than the other aspects of CSR reporting (Rosen *et al.*, 1991; Hassel *et al.*, 2005; de Villiers and Van Staden, 2010; Eccles *et al.*, 2012; Berry and Junkus, 2013; Cohen *et al.*, 2015). Further, environmental performance is more easily quantifiable and is covered by a larger number of ratings schemes than social performance (Delmas *et al.*, 2013), and current sustainability reporting guidelines place substantial emphasis on environmental metrics (GRI, 2013). For these reasons, this study focuses on the environmental component of CSR.

Therefore, the remainder of the paper refers to the view that environmental performance is more important than financial performance, or that investors choose SRIs as a means of promoting environmental concerns, as the "environmental responsibility importance" view. Based on previous research, there should be a positive relationship between the strength of investors' environmental responsibility importance views and the percentage of their portfolios held in SRIs. Similarly, the paper refers to the view that companies engage in environmentally responsible activities only when doing so maximizes shareholder value as the "environmental performance return" view. In addition, there should be a positive relationship between the strength of investors' environmental performance return views and the percentage of their portfolios held in SRIs. Thus, the two perspectives on socially responsible corporate activities described by Moser and Martin (2012), as well as the divergent investor views on SRI described by Cheah *et al.* (2011), suggest the following hypotheses:

*H1a*. Investors' environmental responsibility importance views will be positively associated with the percentage of their portfolio held in SRIs.

*H1b*. Investors' environmental performance return views will be positively associated with the percentage of their portfolio held in SRIs.

### *2.2 Investors' screen use and SRI behavior*

Shafer (2006) finds a positive association between pro-environmental attitudes and support for corporate environmental accountability, as defined on three dimensions:

(1) individual executive accountability;
(2) corporate accountability; and
(3) adoption of standards for environmental accountability, including mandatory reporting rules.

Nilsson *et al.* (2010) find that investors with higher levels of social, ethical and environmental involvement search for sustainability-related information to a greater extent than those with lower levels of involvement. de Villiers and van Staden (2010) report that the most frequently stated reason US and UK investors demand environmental performance disclosure is that companies should be accountable for their environmental stewardship, followed by the importance of such disclosures for making the financial decision to buy/hold/sell shares. The Shafer (2006) and Nilsson *et al.* (2010) findings, as well as the first de Villiers and van Staden (2010) finding, all indicate that investors who place a high priority on the goals of promoting social and environmental concerns are likely to use sustainability information in making investment decisions. de Villiers and van Staden's (2010) finding that investors demand environmental performance disclosures for making the financial decision to buy/hold/sell shares suggests that investors who believe that environmentally responsible companies yield higher returns search for information on environmental performance.

However, locating consistent, reliable information concerning companies' environmental performance can be problematic for investors (Eccles *et al.*, 2015). Companies' environmental disclosures are less heavily regulated than financial disclosures, and there are considerable differences in the amount and type of environmental performance information that they disclose (Cohen *et al.*, 2012; Berry and Junkus, 2013). Recent standards issued by the Global Reporting Initiative (GRI, 2011, 2013) are one attempt to achieve consistency in reporting environmental and other sustainability performance data. However, adoption of these standards is voluntary for most organizations. Further, the GRI disclosure framework is quite complex. For example, the G4 Sustainability Reporting Guidelines (GRI, 2013) incorporate 34 different environmental performance metrics. Thus, the task of evaluating a company's environmental performance possesses high input complexity (Bonner, 1994), due to the number of different cues available to the investor and the lack of consistency in cue measurement across firms. This complexity can make it difficult for nonprofessional investors to evaluate environmental performance.

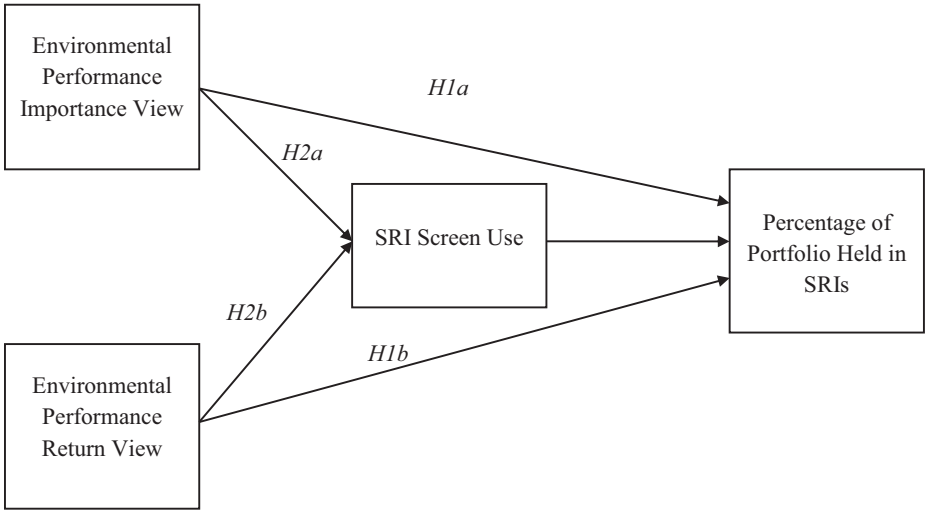
Therefore, the unfiltered environmental performance information contained in companies' sustainability reports may not be consistent from firm to firm. This factor, coupled with the complexity of some companies' environmental performance disclosures, makes it difficult for investors to acquire and process this information. SRI screens such as the GMI ESG Composite Rating (Fidelity Investments, 2015) and Newsweek (2015) Green Rankings filter this information by summarizing it and presenting on standardized scales. These screens simplify and facilitate the interpretation of environmental performance information, in much the same way that analyst reports do for financial information (Elliott *et al.*, 2008). Indeed, Cohen *et al.* (2011) find that socially responsible investors' preferred source for CSR information is third parties, followed by financial professionals and advisors. This indicates that environmentally responsible investors may seek out and use the summary, standardized information provided in SRI screens, regardless of whether they are

motivated by environmental responsibility importance or environmental performance return views. This suggests the following hypotheses:

*H2a*. Investors' environmental responsibility importance views will be positively associated with their use of SRI screens.

*H2b*. Investors' environmental performance return views will be positively associated with their use of SRI screens.

Figure 1 diagrams the relationships suggested by the above hypotheses. *H1a* and *H1b* predict a direct relationship between investors' environmental performance importance and return views and the percentage of their portfolio held in SRIs. Additionally, *H2a* and *H2b* suggest that if a majority of environmentally responsible investors do indeed obtain environmental performance information from SRI screens, then SRI screen use should mediate the relationship between investor views and SRI investment holdings. An alternative prospect is that some environmentally responsible investors might rely on a combination of filtered environmental performance information obtained from SRI screens and unfiltered information obtained directly from companies' sustainability reports. Indeed, Elliott *et al.* (2008) find that while nonprofessional investors earn lower returns as their use of unfiltered relative to filtered information increases, investing experience mitigates this negative association. Environmentally responsible investment, however, is a relatively recent phenomenon, and it is unlikely that a large number of individuals will have experience with environmentally responsible investment or the use of unfiltered environmental performance information (Paetzold




**Notes:** H3a predicts that the relationship between environmental performance importance views and the percentage of portfolio held in SRIs will not be significant, after controlling for SRI screen use; H3b predicts that the relationship between environmental performance return views and percentage of portfolio held in SRIs will not be significant, after controlling for SRI screen use

**Figure 1.**
Hypothesized relationships between investor attitudes, SRI screen use and SRI behavior

and Busch, 2014; de Zwaan *et al.*, 2015). Therefore, it appears likely that SRI screen use will mediate the relationship between investor views and SRI investment holdings. This suggests the following hypotheses:

*H3a*. Investors' use of SRI screens will mediate the relationship between their environmental responsibility importance views and the percentage of their portfolio held in SRIs.

*H3b*. Investors' use of SRI screens will mediate the relationship between their environmental performance return views and the percentage of their portfolio held in SRIs.

## 3. Method

### *3.1 Participants and procedure*

A survey was performed to test the study's hypotheses. Participants completed the survey after participating in another study in which they made investment judgments for a hypothetical company. In all, 202 nonprofessional investors participated in the study. All participants had experience buying or selling individual companies' common stock or debt securities. Eighteen were recruited through a survey firm and completed the study online. One hundred sixty-six were faculty and staff at a large public university recruited though an e-mail announcement and 18 were MBA students enrolled in an introductory finance course at a large public university. Faculty/staff and MBA participants completed the study in a computer lab under the supervision of one of the authors. Online and faculty/staff participants received a fixed cash payment for their participation; MBA students participated as a classroom exercise.

Participants' mean age is 43.0 years, and ranges from 22 to 75. Eighty (39.8 per cent) are female. One hundred fifty-five (77.1 per cent) reported actively trading stock for more than two years. Participants completed the study using custom-designed software.

Participants completed questions designed to assess their environmental responsibility importance and environmental performance return views (see Appendix 1)[2]. Responses to these items form the basis for the independent measures used in the hypotheses tests. They responded to two further questions: "I use socially responsible investing products or services, such as SRI stock and mutual fund screens." and "Please estimate the percentage of the value of your portfolio presently invested in socially responsible investments[3]." Responses to these two items are used as dependent measures in the hypotheses tests. Finally, participants responded to a series of demographic questions.

To assess whether participants attended to the survey and demographic questions, the amount of time they spent completing these items was analyzed. Mean completion time was 724.7 seconds. One individual took only 263.6 seconds to complete the survey. This time was 1.99 standard deviations lower than the mean, and 39.8 per cent lower than the next highest completion time (438.1 seconds). Therefore, that individual's responses were deleted, and the analysis is performed on data from the remaining 201 respondents.

### *3.2 Variables and method of analysis*

*3.2.1 Environmentally responsible investment views.* The first independent construct is investors' views regarding the relative importance of environmental responsibility

versus financial performance (ENV_RESP_IMP). The second independent construct is investors' views regarding whether environmentally responsible companies have higher investment returns (ENV_PERF _RET). Measures of these constructs are shown in Appendix 1.

The first two measures of ENV_RESP_IMP are derived from Cheah *et al.*'s (2011) first CSR investment view, that is, a company's environmental performance is more important than its financial performance. The second two measures are derived from Cheah *et al.*'s (2011) third CSR investment view, that companies should be more responsible to the broader society than to their shareholders. As discussed earlier, both of these views are consistent with the alternative perspective described by Moser and Martin (2012). Therefore, the two views are treated as representing a single construct. The two measures of ENV_PERF _RET are derived from Cheah *et al.*'s (2011) second CSR investment view, that companies which are socially responsible are more profitable than socially irresponsible companies. This view is consistent with the traditional perspective on CSR investment described by Moser and Martin (2012).

ENV_RESP_IMP and ENV_PERF_RET are treated as formative constructs because they can be perceived as explanatory combinations of indicators (Fornell and Bookstein, 1982). Unlike reflective measures, formative measures are not expected to be correlated. Thus, a change in one indicator does not necessarily imply a similar directional change in others (Chin 1998).

*3.2.2 SRI screen use and percentage of portfolio held in SRIs.* The SRI screen use (SRI_SCREEN) and percentage of portfolio held in SRIs (PERC_SRI) questions are based on participants' reported investment behavior. Participants responded to the question about SRI screen use with a yes/no answer; therefore, SRI_SCREEN is a dichotomous variable. PERC_SRI is a continuous variable with endpoints of 0 and 100 per cent, and 5 per cent increments.

*3.2.3 Control variables.* Based on a review of the SRI literature, several control variables which might have an effect on SRI_SCREEN or PERC_SRI were identified. There is evidence that a majority of socially responsible investors are women (Schueth, 2003; Nilsson, 2008). This suggests that women may be more likely to use SRI screens and hold a larger proportion of their investments in SRIs; therefore, GENDER is included as a control variable.

Cohen *et al.* (2011) report a negative association between investors' age and their demand for CSR information. Further, McLachlan and Gardner (2004) report that individuals over the age of 65 are less likely to engage in SRI. As investors tend to perceive the returns from SRIs to be more volatile (de Zwaan *et al.*, 2015; Paetzold and Busch, 2014), older investors may decide to avoid SRIs in favor of investments that are perceived to have more stable returns. These results suggest that older individuals may be less likely to use SRI screens and hold SRIs, so participants' reported AGE is included as a control variable.

Elliott *et al.* (2008) find that more experienced investors are better able to use unfiltered financial information to increase their portfolio returns. Thus, it is possible that more experienced investors will also be able to use unfiltered sustainability performance information in a similar fashion, suggesting that they will be less likely to use SRI screens. At the same time, there is evidence of inertia (i.e. a status quo bias) among socially responsible investors, which suggests that "investors maintain consistency in the risk level of their investments over time and when considering new

| Variables | Mean | SD | Minimum | Maximum |
|---|---|---|---|---|
| *ENV_RESP_IMP* | 0.036 | 0.791 | −2.00 | 1.75 |
| *ENV_PERF_RET* | −0.002 | 0.694 | −2.00 | 2.00 |
| *GENDER* | 0.398 | 0.491 | n/a | |
| *AGE* | 43.040 | 12.300 | 22.00 | 75.00 |
| *TRADE_EXP* | 2.662 | 1.202 | 1.00 | 4.00 |
| *MAJOR* | 0.144 | 0.352 | n/a | |
| *SRI_SCREEN* | 0.383 | 0.487 | n/a | |
| *PERC_SRI* | 35.846 | 28.732 | 0.00 | 100.00 |

**Notes:** [a] *ENV_RESP_IMP, ENV_PERF_RET*: mean response to measures of the environmental responsibility importance and environmental performance return constructs, as defined in Appendix 1; *GENDER,* coded 1 for female and 0 for male; *AGE,* participant's reported age in years; *TRADE_EXP,* experience directly trading securities, coded as: 1: greater than 0, up to 2 years, 2: 3 to 5 years, 3: 6 to 10 years, 4: more than 10 years; *MAJOR,* coded 1 for accounting or finance college major, 0 for all others; *SRI_SCREEN,* coded 1 if participant reports using SRI screens, 0 otherwise; *PERC_SRI,* percentage of the participant's investment portfolio held in SRIs

**Table I.**
Study variables: descriptive statistics[a]

investments" (Auger *et al.*, 2012, p. 7). This inertia effect may reduce the relative proportion of SRIs held in experienced investors' portfolios. Therefore, participants' reported trading experience (TRADE_EXP) is included as a control variable.

Finally, there is no evidence which directly indicates whether individuals trained and experienced in the use of financial information will be more likely to use SRI screens or invest in SRIs. Even so, individuals with such training might be subject to an inertia effect, similar to that described by Auger *et al.* (2012) for experienced investors. Thus, individuals trained and experienced in the use of financial information may be slow to adjust their views regarding the importance of sustainability performance information and the desirable investment in SRIs. Therefore, respondents' college MAJOR (accounting or finance vs all others) is used to control for the effects of training and experience in the use of financial information.

*3.2.4 Method of analysis.* The model indicated by Figure 1 was fit using partial least squares structural equation modeling (PLS-SEM). PLS-SEM "conceptually and practically […] is similar to using multiple regression analysis" (Hair *et al.*, 2011, p. 140). We used PLS-SEM as opposed to covariance-based structural equation modeling (CB-SEM) because our main objective in this study is to assess whether investors' views predict their investment behavior, rather than confirm structural relationships (Hair *et al.*, 2011). SEM-PLS readily incorporates formative constructs, such as ENV_RESP_IMP and ENV_PERF_RET. It also accommodates variables that violate normality assumptions, such as the dichotomous SRI_SCREEN variable. Finally, SEM-PLS is recommended over CB-SEM when using a fairly small sample size.

The WarpPLS v. 4.0 program was used to analyze the study's data (Kock 2013, 2015). As WarpPLS uses a bootstrapping technique to model parameters and $p$-values, it is not necessary for dependent measures to meet parametric expectations (Kock 2014a). Thus, it allows for the use of dichotomous dependent variables such as SRI_SCREEN. In addition, WarpPLS calculates the significance levels of indirect effects (Kock 2013), thereby providing a means of testing the mediation effects proposed in *H3a* and *H3b*.

## 4. Results

Tables I and II present descriptive statistics and show the correlations among the measures analyzed in this study.

### *4.1 Formative construct validity*

There are two commonly used measures of formative construct validity, variance inflation factors (VIF) and outer weights for formative measures. These are shown in Table III. VIFs indicate whether collinearity exists among formative construct measures. All VIFs for the construct measures are less than the commonly accepted threshold of 3.3 (Kock and Lynn, 2012), indicating that collinearity is not present among these measures. All of the outer weights for the construct measures are significantly different from zero ($p < 0.001$), indicating that the measures are valid indicators of the formative constructs.

### *4.2 Structural model and control variable results*

The research model shown in Figure 1 was analyzed, including GENDER, AGE, TRADE_EXP and MAJOR as control variables for both SRI_SCREEN and PERC_SRI. None of the control variables had a significant effect on PERC_SRI at conventional levels ($p > 0.10$), except for AGE. Therefore, a second model was fit that included GENDER, TRADE_EXP and MAJOR as control variables for SRI_SCREEN and AGE as a control variable for both SRI_SCREEN and PERC_SRI. Results for this model are shown in Figure 2. *R*-square values for SRI_SCREEN and PERC_SRI are 0.140 and 0.355, respectively.

The path coefficient from GENDER to SRI_SCREEN is positive and significant ($\beta = 0.159$; $p = 0.003$). The path coefficients from TRADE_EXP to SRI_SCREEN ($\beta = -0.123$; $p = 0.02$), and from MAJOR to SRI_SCREEN ($\beta = -0.094$; $p = 0.05$) are both negative and significant. Consistent with expectations, these results indicate that female investors are more likely to use SRI screens and that more experienced investors and investors with accounting or finance college degrees are less likely to use SRI screens. Contrary to expectations, there is a significant positive path coefficient from AGE to SRI_SCREEN ($\beta = 0.117$; $p = 0.02$), indicating that older investors are more likely to use SRI screens. At the same time, the path coefficient from AGE to PERC_SRI is negative and marginally significant ($\beta = -0.084$; $p = 0.07$), consistent with research which suggests that older investors will be less likely to hold SRIs (McLachlan and Gardner, 2004; Paetzold and Busch, 2014).

### *4.3 Hypotheses test results*

*H1a* and *H1b* predict that investors' environmental responsibility importance and environmental performance return views will be positively associated with the percentage of their portfolio held in SRIs, respectively. To test these hypotheses, we used PLS-SEM to fit a model with the formative constructs ENV_RESP_IMP and ENV_PERF_RET as independent variables, AGE as a control variable and PERC_SRI as the dependent measure (not tabulated). *R*-squared for PERC_SRI in this model is 0.122. The paths from both ENV_RESP_IMP ($\beta = 0.265$; $p = 0.001$) and ENV_PERF_RET ($\beta = 0.171$; $p = 0.002$) to PERC_SRI are both positive and significant[4]. Therefore, the results support both *H1a* and *H1b*.

*H2a* and *H2b* predict that investors' environmental responsibility importance and environmental performance return views will be positively associated with their use of

**Table II.**
Study variables: Pearson correlations[a,b]

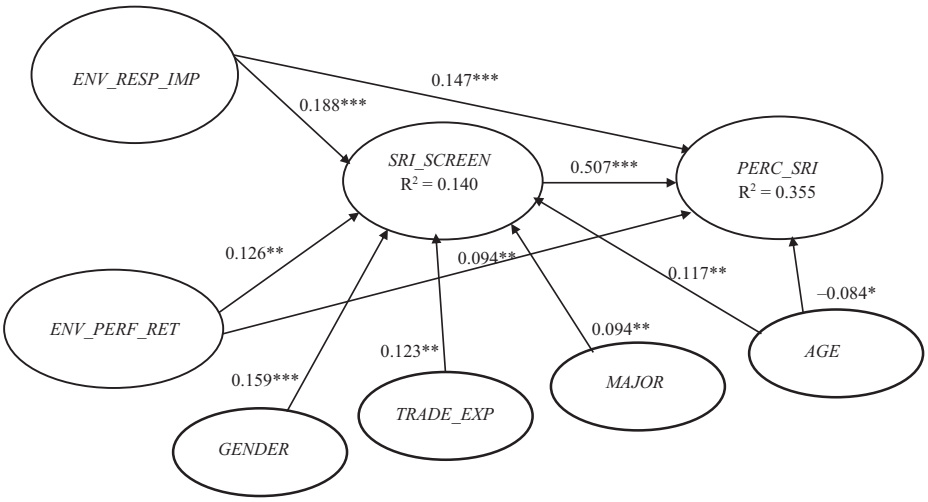
| Variables | *ENV_RESP_IMP* | *ENV_PERF_RET* | *GENDER* | *AGE* | *TRADE_EXP* | *MAJOR* | *SRI_SCREEN* |
|---|---|---|---|---|---|---|---|
| *ENV_PERF_RET* | 0.245*** | | | | | | |
| *GENDER* | 0.153** | 0.084 | | | | | |
| *AGE* | 0.017 | −0.024 | 0.066 | | | | |
| *TRADE_EXP* | −0.127* | −0.037 | −0.093 | 0.557*** | | | |
| *MAJOR* | −0.086 | 0.020 | 0.013 | −0.014 | 0.104 | | |
| *SRI_SCREEN* | 0.269*** | 0.185*** | 0.216*** | 0.061 | −0.111 | −0.120* | |
| *PERC_SRI* | 0.295*** | 0.199*** | 0.157** | −0.050 | −0.069 | −0.069 | 0.561*** |

**Notes:** [a] *ENV_RESP_IMP*, *ENV_PERF_RET*: mean response to measures of the environmental responsibility importance and environmental performance return constructs, as defined in Appendix 1; *GENDER*, coded 1 for female and 0 for male; *AGE*, participant's reported age in years; *TRADE_EXP*, experience directly trading securities, coded as: 1: greater than 0, up to 2 years, 2: 3 to 5 years, 3: 6 to 10 years, 4: more than 10 years; *MAJOR*, coded 1 for accounting or finance college major, 0 for all others; *SRI_SCREEN*, coded 1 if participant reports using SRI screens, 0 otherwise; *PERC_SRI*, percentage of the participant's investment portfolio held in SRIs; [b]Significance levels for correlations: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$

| Measure[a] | Variance inflation factor | Outer weights[b] *ENV_RESP_IMP* | *ENV_PERF_RET* |
|---|---|---|---|
| ENV_RESP_IMP1 | 1.549 | 0.413 | 0.000 |
| ENV_RESP_IMP2 | 1.405 | 0.388 | 0.000 |
| ENV_RESP_IMP3 | 1.269 | 0.305 | 0.000 |
| ENV_RESP_IMP4 | 1.214 | 0.301 | 0.000 |
| ENV_PERF_RET1 | 1.012 | 0.000 | 0.671 |
| ENV_PERF_RET2 | 1.012 | 0.000 | 0.671 |

**Notes:** [a]Measures are defined in Appendix 1; [b]Outer weights for each measure are significantly different from 0 ($p < 0.001$)

**Table III.**
Formative construct validity measures




**Notes:** *** Significant at $p < 0.01$; ** Significant at $p < 0.05$; * Significant at $p < 0.10$

**Figure 2.**
SEM results for entire model

SRI screens, respectively. These hypotheses are tested in the model depicted in Figure 2. The paths from both ENV_RESP_IMP ($\beta = 0.188$; $p = 0.001$) and ENV_PERF_RET ($\beta = 0.126$; $p = 0.002$) to SRI_SCREEN are both positive and significant. Therefore, the results support both *H2a* and *H2b*.

*H3a* and *H3b* predict that investors' use of SRI screens will mediate the relationships between investors' environmental responsibility importance and environmental performance return views and the percentage of their portfolio held in SRIs, respectively. The three conditions specified by Baron and Kenny (1986) are evaluated to test this effect. First, ENV_RESP_IMP and ENV_PERF_RET have a significant direct effect on PERC_SRI, as shown in the tests of *H1a* and *H1b*. Second, ENV_RESP_IMP and ENV_PERF_RET influence the mediating variable SRI_SCREEN, as shown in the tests of *H2a* and *H2b*. For the third condition to hold, the effects of ENV_RESP_IMP and ENV_PERF_RET on PERC_SRI should become nonsignificant when controlling for the mediating variable SRI_SCREEN. As shown in Figure 2, the mediating variable

SRI_SCREEN has a significant effect on PERC_SRI ($\beta = 0.507$ $p = 0.001$). Consistent with this result, participants who report using SRI screens hold 56.2 per cent of their portfolios in SRIs, on average, while those who do not use SRI screens hold only 23.2 per cent of their portfolios in SRIs. As shown in Table IV, including SRI_SCREEN in the model reduces the ENV_RESP_IMP to SRI_PORT_VAL path coefficient from 0.265 to 0.147; however, the coefficient remains significant ($p = 0.006$). Similarly, including SRI_SCREEN in the model reduces the ENV_PERF_RET to SRI_PORT_VAL path coefficient from 0.171 to 0.094, and the coefficient remains significant ($p = 0.05$).

To assess whether these results indicate partial or no mediation, the indirect effects of ENV_RESP_IMP and ENV_PERF_RET on SRI_PORT_VAL through SRI_SCREEN are assessed using WarpPLS version 4.0[5]. ENV_RESP_IMP has a significant indirect effect ($\beta = 0.095$; $p = 0.01$), and ENV_PERF_RET has a marginally significant indirect effect ($\beta = 0.064$; $p = 0.06$) on SRI_PORT_VAL. The presence of significant indirect effects therefore indicates that investors' use of SRI screens partially mediates the relationships between their environmental responsibility importance and environmental performance return views and the percentage of their portfolio held in SRIs.

## 5. Conclusions, limitations and opportunities for future research

### *5.1 Conclusions*

Nonprofessional investors' SRI holdings have increased substantially over the past several years (USSIF, 2014; PRI, 2015a). CSR performance information can often be complex and difficult to interpret; therefore, the role of information intermediaries in providing CSR performance information through SRI screens is increasingly important. Further, research exploring how nonprofessional investors' views regarding SRI affect their information use and investment decisions is limited. Consequently, this study examines the relationships among nonprofessional investors' views regarding SRI, their use of SRI screens and their SRI holdings. In doing so, it distinguishes between two different investor views: an "alternative" view that a company's CSR performance is

**Table IV.**
Mediating effects of SRI screen use

| Hypotheses and effects | Path coefficient ($\beta$) | $p$-value |
|---|---|---|
| *H3a. SRI_SCREEN* mediates the effect of *ENV_RESP_IMP* on *SRI_PORT_VAL* | | |
| Direct effect of *ENV_RESP_IMP* on *SRI_PORT_VAL* without *SRI_SCREEN* in model (*H1a*) | 0.265 | 0.001 |
| Direct effect of *ENV_RESP_IMP* on *SRI_PORT_VAL* with *SRI_SCREEN* in model | 0.147 | 0.006 |
| Indirect effect of *ENV_RESP_IMP* on *SRI_PORT_VAL* through *SRI_SCREEN* | 0.095 | 0.01 |
| *H3b. SRI_SCREEN* mediates the effect of *ENV_PERF_RET* on *SRI_PORT_VAL* | | |
| Direct effect of *ENV_PERF_RET* on *SRI_PORT_VAL* without *SRI_SCREEN* in model (*H1b*) | 0.171 | 0.002 |
| Direct effect of *ENV_PERF_RET* on *SRI_PORT_VAL* with *SRI_SCREEN* in model | 0.094 | 0.05 |
| Indirect effect of *ENV_PERF_RET* on *SRI_PORT_VAL* through *SRI_SCREEN* | 0.064 | 0.06 |

more important than maximizing investment returns and a more "traditional" view that companies engage in activities which increase CSR performance only when doing so maximizes shareholder returns.

Results from this study indicate that investors' views regarding the importance of environmental relative to financial performance and with respect to an association between environmental performance and financial returns have significant, direct effects on their SRI screen use and tendency to hold SRIs. The fact that both investor views examined in this study are associated with SRI screen use extends previous research that suggests an association between pro-social attitudes and investors' use of sustainability-related information (Nilsson *et al.*, 2010). The finding that both views are associated with investors' SRI holdings is consistent with Nilsson's (2009) earlier finding that a majority of SRI fund investors invest out of both social responsibility and profit maximization returns.

Contrary to predictions, SRI screen use only partially mediates the influence of environmental performance importance and environmental performance return views on investors' SRI holdings. While a mediation analysis shows that the two investor views do have a significant, indirect effect on SRI holdings through SRI screen use, the two views still continue to have a significant, direct effect on SRI holdings. This finding indicates that nonprofessional investors may be relying on unfiltered CSR information when making SRI decisions and supports the idea that independent assurance is important for improving the reliability of this information (Casey and Grenier, 2015; Cohen *et al.*, 2015). Alternately, some investors may be choosing SRIs without obtaining adequate relevant information. This latter possibility indicates a need to improve the reliability and availability of SRI screening tools to attract more usage.

Indeed, Delmas *et al.* (2013) identify substantial differences among the types of environmental performance measures reported by three leading environmental rating agencies. Thus, while the filtered environmental performance information from the rating agencies may make it easier for nonprofessional investors to make comparisons across individual companies, there still may be potential problems with the consistency of information provided by these agencies. There are also issues with the availability of filtered CSR information for the nonprofessional investor. Many brokerage firms now provide their clients with summarized CSR information, such as the GMI ESG Composite Rating (Fidelity Investments, 2015). These ratings, however, only inform the investor whether a firm's performance in each of the three CSR categories is high, medium or low. They do not provide the same level of detail as the filtered financial performance information typically available from brokerage firms. Access to the metrics underlying the composite CSR ratings is generally available only to institutional investors.

Agencies such as the PRI initiative are engaged in a concerted effort to improve the availability and reliability of both unfiltered and filtered CSR information (PRI, 2015a). While the PRI signatories are primarily institutional investors, it stands to reason that nonprofessional investors will also benefit from these activities. Indeed, numerous nonprofessional investors hold shares in mutual funds or retirement plans managed by PRI signatories. Our findings which suggest that nonprofessional investors may be relying on unfiltered CSR information, or perhaps, not relying on CSR information at all when making SRI decisions highlight the need for and importance of making filtered CSR information more available and understandable for nonprofessional investors.

*5.2 Limitations and opportunities for future research*

Similar to previous research (Cohen *et al.*, 2011), this study uses a broad definition of SRI screens, which potentially includes both pre-screened investment funds and summarized CSR performance information. Evidence is emerging that pre-screened funds do not always provide a good fit for many investors' SRI strategies (Berry and Junkus, 2013). In turn, this suggests that some investors may favor selecting individual investments based on summarized CSR information, as opposed to selecting pre-screened funds. Still other investors may make the effort to acquire detailed CSR information directly from company reports or from an aggregator such as Bloomberg (Eccles *et al.*, 2011). Therefore, a useful extension of the study would be to examine how investors' preferred information source for selecting SRIs influences the relationship between their SRI views and their SRI holdings.

Second, the study does not control for investors' specific experience with SRIs. Specifically, a socially conscious investor who has been in the market for a long time and who has substantial conventional investment holdings may be slow to invest in SRIs due to a status quo bias or "inertia effect" (Auger *et al.*, 2012), even though their attitudes suggest that they otherwise would be favorably inclined toward holding SRIs. Therefore, another useful extension of the study would be to replicate it with investors who have varying degrees of investment experience with SRIs and examine how such experience influences the relationship between investors' CSR attitudes and their SRI holdings.

Third, the study is based on a sample of US investors. SRI, however, is an international concept, and institutional investors' involvement in SRI has been substantially driven by the UN-supported PRI[6]. Indeed, the PRI has been co-funded by the European Commission in partnership with the International Corporate Governance Network and the European Federation of Financial Analysts Societies (PRI, 2015b). Thus, investors outside the USA, especially in Europe, may be more aware of the types of information available for SRI activities. It therefore would be interesting to replicate this study with a sample of non-US investors.

Finally, the study does not examine how or why investors come to believe that environmental responsibility may improve a company's return potential. Studies have examined the association between demographic variables such as age and gender (Cheah *et al.*, 2011) with attitudes regarding the relative importance of environmental versus financial performance. They have also examined the association between individual attitudes toward environmentally responsible actions (Shafer, 2006; Nilsson *et al.*, 2010) and the importance of environmental performance information. It is not known, however, how investors proceed from having the opinion that environmental performance information is important to believing that such information can be an indicator of a firm's potential returns. Obtaining a greater understanding about how investors form their views is important, as academics, standard setters and other concerned parties consider how to more effectively communicate with investors about the emerging evidence of a positive relation between CSR performance and firm value (Dhaliwal *et al.*, 2011; Clarkson *et al.*, 2013; Hawn *et al.*, 2014; Matsumura *et al.*, 2014). Indeed, the PRI initiative has made communication between academics and investors about this and other SRI-related issues one of the objectives of its 2015-2018 strategic plan (PRI, 2015a).

## Notes

1. Cheah *et al.*'s (2011, p. 309) fourth view of CSR investment is that "the accuracy of financial statements of many companies cannot be trusted". This relates entirely to the reliability of financial information and is therefore also not relevant to our theory development.
2. Participants also completed the revised New Environmental Paradigm (NEP) instrument, which is 15 questions designed to assess individuals' overall attitudes toward environmental responsibility (Dunlap *et al.*, 2000), and answered a set of questions about the perceived importance of various financial and environmental performance metrics. These data are not reported in the paper.
3. The wordings of these questions are the same as in Cohen *et al*'s (2011) study of the decision-usefulness of CSR disclosures.
4. AGE does not have a significant relationship with PERC_SRI in this model ($\beta = -0.062$; $p = 0.13$).
5. Estimation of indirect effects was performed instead of the commonly used Sobel test. As SRI_SCREEN is a dichotomous variable, it violates the normality assumption of the Sobel test, which may lead to a biased test result (Kock, 2014b).
6. We acknowledge an anonymous reviewer for this observation.

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## Appendix 1

*Environmentally responsible investment view measures*[a]

*Views toward importance of corporate environmental responsibility (ENV_RESP_IMP).*

(1) It is more important that a company maximize its financial performance as opposed to its environmental performance.[b]

(2) I would invest in a company whose environmental performance was one of the best in its industry, even if its financial performance was below average for the industry.

(3) When considering investments to improve environmental performance, companies should be more responsible to their shareholders' interests than to the broader society.[b]

(4) I believe that companies will become more environmentally responsible if I only invest in environmentally responsible companies.

*Views regarding the extent to which environmentally responsible activities increase investment returns (ENV_PERF_RET).*

(1) Companies that are environmentally responsible yield higher returns for their shareholders than those that are not. CHEAH2AR.

(2) The costs of improving a company's environmental performance are greater than the financial benefits to the company.[b] CHEAH2BR.

[a]All items are coded on a scale where -2 equals strongly disagree and +2 equals strongly agree; [b]Reverse-coded item, so that higher values indicate greater agreement with the construct.

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