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A Dollar for a Tree or a Tree for a Dollar? The Behavioral Effects of Measurement Basis on Managers' CSR Investment Decision

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ABSTRACT: We experimentally investigate how managers' decisions to invest discretionary resources in the company's corporate social responsibility (CSR) initiatives are affected by whether the investment decision is denominated in financial or nonfinancial measures (i.e., the measurement basis used for decision making). We posit that nonfinancial measures bring attention to the society-serving nature of CSR investments, thus activating the pro-CSR social norms of the company and managers' personal CSR norms. Norm activation, in turn, influences managers' investment decisions to the extent that social norms are congruent with personal norms. As predicted, we find that the level of CSR investment is higher under a nonfinancial measurement basis than under a financial measurement basis, but only when the manager is personally supportive of CSR. Supplemental analysis indicates that CSR-supportive managers continue to invest more under a combined financial/nonfinancial measurement basis than under a financial measurement basis only. Theoretical and practical implications are discussed.

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We dedicate this paper to Bryan Church's family.

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I. INTRODUCTION

In recent years, corporate social responsibility (CSR) has become a mainstream corporate practice (KPMG 2017). From a management control perspective, companies could pursue their CSR goals by directing managers how to act within a centralized control system. However, extant research suggests that decentralized corporate governance structures handle CSR complexity better than a centralized structure (Pirson and Turnbull 2018). Consistent with this view, large companies often decentralize CSR decision making to facilitate CSR implementation and enhance morale (Brammer and Millington 2004; Wong, Ormiston, and Tetlock 2011).[1] In these companies, after top management determines the overall CSR strategy, middle managers make decisions regarding how to implement the strategy, including resource allocation and usage (Reagan, Tekleab, Levi, and Lichtman 2015). In this paper, we focus on this emerging trend of autonomous CSR implementation and explore middle managers' CSR investment decisions.

Managers' decisions to invest in CSR can involve the contribution of financial *or* nonfinancial resources (Seifert, Morris, and Bartkus 2004; Kotler and Lee 2005). Survey findings indicate that, on average, 17 percent of corporate giving in 2014 included non-cash contributions, with the percentage being particularly high in industries such as communications (52 percent) and health care (37 percent) (Prince and Brynildsen 2015). In these cases, the CSR investment decision is denominated in nonfinancial terms, although relevant financial information is typically available. Accounting systems play an important role in identifying and measuring these CSR program resources (Ramanathan 1976; Sprinkle and Maines 2010). While traditional accounting systems mainly supply data from business operations, recently, firms often reconfigure the accounting system to capture additional information relevant to their CSR engagement (Gond, Grubnic, Herzig, and Moon 2012; Ditillo and Lisi 2016). Accordingly, managers may use this broader set of information (financial and nonfinancial) in their CSR decision making (Ballou, Casey, Grenier, and Heitger 2012). In particular, depending on the nature of the CSR program, managers make decisions that are denominated in financial or nonfinancial measures, which we refer to as the *measurement basis* of decision making (e.g., Christie, Dyck, Morrill, and Stewart 2013; Caliskan 2014). Standard economic theory suggests that measurement basis should not affect decision making if it does not change the decision maker's information set or personal incentives. However, drawing on psychological theory, we predict that measurement basis will interact with managers' personal norms toward CSR to impact their investment decisions.

Our study focuses on managers' decision making in decentralized environments where there is a pro-CSR injunctive norm from top management, but investing in CSR is contrary to managers' economic self-interest. In such environments, individuals' personal norms have the primary influence on their socially responsible behavior (Thøgersen 2006, 2009). Specifically, managers hold different personal normative beliefs about the extent to which CSR activities justify sacrificing profits and, potentially, one's economic well-being (Moser and Martin 2012). The traditional viewpoint is that a company's fundamental responsibility is to maximize shareholders' interests, thus making CSR difficult to justify (Friedman 1970). The contrasting perspective is that companies have a responsibility to a broad set of stakeholders, extending beyond shareholders to include employees, customers, suppliers, and local communities (Campbell 2007). From this vantage, CSR is a social imperative producing a socially desirable outcome (Matten and Moon 2008).

We posit that a *nonfinancial* measurement basis draws attention to specific activities associated with CSR programs (e.g., planting trees, feeding the needy), and thereby underscores the company's involvement in social causes.[2] This heightened societal focus activates the pro-CSR injunctive social norm of the firm and the manager's personal norm as to whether firms should engage in CSR at a financial cost (Schwartz 1977; Cialdini, Reno, and Kallgren 1990). The ultimate effect on managers' investment decisions then depends on whether the injunctive norm is congruent with managers' personal norm. Specifically, managers who are personally supportive of CSR believe that such programs are legitimate and justified. In response, they promote CSR even though doing so affects their economic well-being. By comparison, a *financial* measurement basis encourages a more conventional evaluation of investment opportunities, with a focus on economic costs and benefits. In this case, relevant norms are not activated and, thus, have minimal effect on managers' decision making. In sum, we predict that a nonfinancial measurement basis, relative to a financial measurement basis, increases CSR investment when managers are

[1] For example, Hyatt Hotels has a decentralized CSR governance structure where the implementation of the company's CSR strategy is localized (Witt 2012). In Bertelsmann, a media, service, and education corporation, "specific corporate responsibility projects and measures are implemented locally. Bertelsmann's divisions and companies are responsible for implementing their own structures and processes according to their local needs" (see: https://www.bertelsmann.com/corporate-responsibility/strategy/organization/). As another example, a survey of large U.S. corporations finds that about one-third of surveyed companies have philanthropic funding decisions made at regional or local levels (Indiana University–Purdue University Indianapolis [IUPUI] 2013).

[2] Nonfinancial measures used in CSR decision making are typically descriptive of the targeted activities (e.g., the number of trees, the pounds of food). Unless otherwise specified, our notion of "nonfinancial measurement basis" refers to this type of measure. Notwithstanding, it is possible that a CSR project involves nonfinancial metrics that are not as obviously linked to the specific activity involved. We do not expect such metrics to sensitize individuals to the society-serving features of the CSR project. We discuss this issue in detail later in the paper.

supportive of CSR. However, when managers are not supportive of CSR, a nonfinancial measurement basis will not increase CSR investment because these managers' activated personal norm is not aligned with investing in CSR initiatives.

We conduct a laboratory experiment in which student participants assume the role of a division manager in a corporation. The company's board decided to promote CSR and initiated a tree-planting project. Participants individually decide on the amount of divisional resources to invest in this project. In our experiment, investing in tree planting has a real social benefit in that a portion of the amount invested is donated to a nonprofit tree-planting organization, but the investment negatively affects participants' personal wealth because a portion of the amount *not* used for tree planting increases participants' earnings. We manipulate between participants the measurement basis used for the investment decision. In one condition, participants decide how much money (i.e., dollars) to spend on tree planting, and in the other condition, decide how many trees to plant (i.e., number of trees). Importantly, participants' information (e.g., the cost and benefits of tree planting) and economic incentives are identical between the two conditions. We elicit a measure of participants' personal norm toward CSR in a pre-test conducted two weeks prior to the main experiment.

Consistent with our prediction, we find a statistically significant interactive effect between measurement basis and participants' personal CSR norm on their investment decision. Participants who are supportive of CSR invest more in tree planting when they decide on the number of trees to plant (a nonfinancial measurement basis) than when they decide on the amount of money to spend planting trees (a financial measurement basis). By contrast, financial versus nonfinancial measurement basis does not affect the investment decisions of participants who are non-supportive of CSR. Structural equation modeling (SEM) analyses reveal that participants' societal concerns mediate our main findings. Importantly, using additional data, we also find that when the investment decision is denominated in dollars *and* number of trees (a combined financial/nonfinancial measurement basis), CSR-supportive individuals continue to invest more in tree planting than when the investment decision is denominated in dollars only. On the other hand, when the investment decision is denominated in a neutral unit unrelated to tree-planting activities, the investment made by CSR-supportive individuals does not differ from when the investment decision is denominated in dollars only. Finally, we replicate our main findings with professional manager participants.

Our findings have important theoretical and practical implications. First, a fundamental objective of accounting is to provide relevant information for managerial decision making (Balakrishnan, Sivaramakrishnan, and Sprinkle 2012). While financial metrics have traditionally played a predominant role in making investment decisions (Gray 1992, 2010), our study suggests that the choice of metric can influence managers' willingness to allocate resources to CSR initiatives. Such an influence, in turn, has important implications for the success of the firm's CSR endeavors because "[while] CSR refer to corporate actions, it is the individuals within firms who actually create, implement, sustain, or avoid such policies and actions" (Jones Christensen, Mackey, and Whetten 2014, 165). Firms should understand the impact of measurement basis to ensure that final investment decisions are consistent with their goals.

Further, our study contributes to the emerging accounting literature exploring the effect of behavioral factors on managers' decisions to invest in CSR (Moser and Martin 2012; Martin and Moser 2016). We expand this literature by showing that individuals will go against economically rational decision making, conditional on the nature of measurement basis and on their personal CSR norm. We find that CSR-supportive individuals invest more in CSR, but, perhaps counterintuitively, only when they make decisions in nonfinancial measures. More importantly, this effect persists even when financial and nonfinancial measures are provided concurrently. These findings also support prior literature suggesting that the alignment between social and personal norms impacts behavior, but only after these norms are activated.

Finally, from a management control perspective, our study highlights a practical boundary condition for the view that firms can induce managers to act in line with the firm's CSR goals using social norm-based informal controls. Specifically, we show that the effects of pro-CSR tone from the top on managers' investment decisions are impacted by the interaction of measurement basis used in decision making and by the manager's personal norm toward CSR. Firms need to consider these effects when encouraging managers to support CSR activities. For example, firms can invest in employee-selection systems to "attract employees who share similar values or beliefs with those of the firm" (Abernethy, Dekker, and Schulz 2015, 635).

The remainder of the paper is organized as follows. Section II presents the background and hypothesis development. Section III describes the experimental method. Section IV reports experimental results and supplemental data. Section V discusses the findings and concludes.

II. BACKGROUND AND HYPOTHESIS DEVELOPMENT

In recent times, companies have increasingly engaged in CSR (Helmig, Spraul, and Ingenhoff 2016; KPMG 2017). Prior research provides insight into the strategic motives underlying a company's CSR investments, primarily by examining whether CSR is associated with favorable economic outcomes. For example, CSR performance is positively linked to capital market reactions (Dhaliwal, Li, Tsang, and Yang 2011; Dhaliwal, Radhakrishnan, Tsang, and Yang 2012; Flammer 2013), employee

effort and attitudes (Balakrishnan, Sprinkle, and Williamson 2011; Glavas and Kelley 2014), and consumers' purchase intentions (Boehe and Cruz 2010; Groza, Pronschinske, and Walker 2011). Others assert that companies promote CSR to maintain a favorable public reputation (Brammer and Millington 2005) and to help attract and retain talented employees (Hemingway and Maclagan 2004; Sprinkle and Maines 2010). Recent accounting studies have begun to directly examine the determinants of CSR investment. For example, Eldenburg, Gaertner, and Goodman (2015) report that the use of earnings-based incentives leads managers to reduce investment in charity care and instead divert resources toward profit-maximizing activities. In Martin and Moser's (2016) experimental market, firms invest in a green initiative 50 percent of the time despite its financial cost, suggesting that the investment decision is influenced by a consideration of societal benefits. Our paper extends this literature by exploring behavioral factors that impact middle managers' decisions to invest in CSR projects initiated by top management.

We are interested in middle managers' CSR investment decisions because large companies often decentralize CSR decision making due to efficiency and morale considerations (Maclagan 1999; Wickert, Scherer, and Spence 2016). From an efficiency perspective, the societal needs of local communities can be highly heterogeneous and, therefore, there may be considerable variation across regions/divisions in terms of the best way to convert the firm's CSR strategy into actionable initiatives (Jamali 2010; Barkemeyer and Figge 2014). From a morale perspective, participative CSR decision making increases managers' satisfaction and organizational identification (H. Kim, M. Lee, H. Lee, and N. Kim 2010; Kolk, van Dolen, and Vock 2010). Prior research has provided evidence that decentralization of CSR decision making improves firms' social performance (Muller 2006; Wong et al. 2011).

When CSR decision making is decentralized, middle managers have considerable discretion in allocating resources toward CSR (Maon, Lindgreen, and Swaen 2009; Reagan et al. 2015). An agency problem can arise if the implementation of the firm's CSR strategy is at odds with middle managers' economic self-interest (Guth and MacMillan 1986; Cordoba-Pachon, Garde-Sanchez, and Rodriguez-Bolivar 2014). One possible solution to the agency problem is to use formal controls (e.g., incentive contracts) linking the manager's compensation to CSR investment or performance. However, due to information asymmetry, it may not be feasible for top management to determine the optimal investment level or reliably measure the manager's CSR performance (Institute of Chartered Accountants in England and Wales [ICAEW] 2004; Moser and Martin 2012). Therefore, current research suggests that decentralized governance structures are superior at coping with CSR complexities (Pirson and Turnbull 2018). Consistent with this perspective, a recent survey finds that, even in the sustainability-focused resource transformation sector (e.g., chemicals; industrial machinery), 28 percent of the surveyed companies do not use any variable compensation linked to sustainability goals (Johnson, Sutton, and Theis 2018). In these settings, as elaborated below, an alternative behavioral solution can be useful for addressing the agency problem.

The Role of Behavioral Norms in CSR Decision Making

Research proposes that top management can set a pro-CSR tone and communicate its core values to middle managers (Slack, Corlett, and Morris 2015; Lueg and Radlach 2016). Specifically, top management's decision to pursue specific CSR goals may convey an injunctive norm about what it believes is appropriate (Collier and Esteban 2007). It is argued that when formal controls are not available, social norm-based informal controls can motivate managers to act toward the firm's goals (Noreen 1988; Simons 1995; Lee and Hageman 2018).[3] However, the effect of injunctive norms on people's behavior is often moderated by contextual factors, such as the presence of other standards or principles (Schultz, Tabanico, and Rendon 2008; Bicchieri and Xiao 2009). For example, Chen, Nichol, and Zhou (2017) find that an injunctive norm increases the likelihood of whistleblowing only when there is also a strong descriptive norm supporting whistleblowing. Extending this line of research, we posit that a pro-CSR injunctive norm influences managers' decision making to the extent that it is aligned with their personal norms toward CSR (i.e., managers' own views on the role of CSR in for-profit businesses).

Personal norms and injunctive norms are related, but different (de Groot, Abrahamse, and Jones 2013). Personal norms develop as internalized injunctive norms, and the extent to which an injunctive norm can be internalized depends on "its relation to the person's own goals" (Thøgersen 2009, 349).[4] In CSR decision making, personal norms, as opposed to injunctive norms, play a central role because they stem from people's "inner moral conviction that is defended irrespective of the expectation of others" (Hunecke, Blobaum, Matthies, and Hoger 2001, 832). Along these lines, empirical evidence suggests

[3] Social norms include injunctive norms (i.e., what one should do) and descriptive norms (i.e., what others do) (Cialdini and Trost 1998). In this paper, we focus on injunctive norms that develop through normative influences from top management.

[4] Some injunctive norms (e.g., honesty) may be mostly consistent with personal norms. By comparison, in CSR-related domains, there is large variation in individuals' beliefs. For example, recent surveys show that nearly a third of Canadians do not believe that climate change is caused by human activity (Zimonjic 2018), only 32 percent of Americans say they care a great deal about the environment (Sifferlin 2015), and only 61 percent of Americans believe that the earth is warming (Motel 2014).

that personal norms have a greater impact on socially responsible behavior than injunctive norms have (Minton and Rose 1997; Stern, Dietz, Abel, Guagnano, and Kalof 1999; Thøgersen 2006).

However, for injunctive and personal norms to influence behavior, they must be activated (Bicchieri 2006; de Groot et al. 2013). The focus theory of normative conduct contends that injunctive norms "should motivate behavior primarily when they are activated (i.e., made salient or otherwise focused on)" (Cialdini et al. 1990, 1015). Similarly, the norm activation model (NAM) suggests that personal norms need to be activated to affect other-regarding behavior and pro-environmental behavior (Schwartz 1977; Thøgersen 1999, 2009). For example, Kallgren, Reno, and Cialdini (2000) find that people who have a strong anti-littering personal norm are less likely to litter than others, but only when their personal norm is activated. de Groot et al. (2013) find that activating injunctive and personal norms against using plastic bags in grocery shopping results in a decrease in use. If norms are not the focal point of attention, though, then the attendant effect on behavior is limited (Cialdini and Trost 1998; Kallgren et al. 2000). In our setting, the measurement basis used for CSR decision making plays an important role in the activation of relevant injunctive and personal norms, as we discuss next.

Measurement Basis

Accounting systems collect, summarize, and report information that allows managers to evaluate CSR investment opportunities. Measurement basis is integral to the accounting system and is directly linked to managers' investment decisions (Szekely and Knirsch 2005; Gond et al. 2012). Measurement basis can be expressed in financial or nonfinancial terms (Seifert et al. 2004; Kotler and Lee 2005). Specifically, managers can decide how much money to allocate to a CSR project, such that the decision is denominated in dollars. The use of a financial measurement basis leads managers to evaluate the CSR project just like any other non-CSR project (Bierman and Smidt 2007). As a result, managers adopt a conventional decision frame, assessing the prospects of the project by weighting the economic costs and benefits (Heyman and Ariely 2004; Kouchaki, Smith-Crowe, Brief, and Sousa 2013). This approach is common to corporate investment decisions (Datar and Rajan 2014). When the decision is denominated in dollars, CSR-related injunctive and personal norms are not integral in decision making and, therefore, have minimal effect (Houghton and Tipper 1996; Bodenhousen and Macrae 1998).

Alternatively, managers can make a decision that is denominated in goods or services and involves a nonfinancial metric. For example, managers might decide how many trees to plant (Pearce and Doh 2005), how many cartons of medicines to donate to outreach organizations (Tickel 2002), or how many pounds of food to give to the needy (Reagan et al. 2015). We are interested in nonfinancial measures that provide a palpable descriptor of targeted activities, allowing managers to envision the welfare-improving aspects of CSR (Lewan 1999; Herendeen 2000; Kleine and Von Hauff 2009). We argue that nonfinancial measures draw attention to the tangible activities underlying CSR (e.g., planting trees; serving meals), and thereby make the society-serving nature of such programs salient (Cernea 1992; Ferng 2002). In this way, nonfinancial measures provide a contextual cue emphasizing the CSR program's societal involvement. Notably, contextual cues, even subtle cues, serve as a norm-activating mechanism (Cialdini et al. 1990; Rege and Telle 2004) because they increase the cognitive accessibility of related concepts that are applied to subsequent judgment or decision making (Higgins and Brendl 1995; Bodenhousen and Macrae 1998).

Prior research shows that the way a task is framed affects norm activation (Rege and Telle 2004; Lindenberg 2006). For example, labeling a prisoner's dilemma or a public goods game as a "community game" increases participants' cooperation (Liberman, Samuels, and Ross 2004; Dufwenberg, Gachter, and Hennig-Schmidt 2011). In accounting, Luft (1994) and Hannan, Hoffman, and Moser (2005) provide evidence that employees perceive incentive schemes that are framed in bonus terms to be fairer than the same schemes framed in penalty terms.[5] For our purpose, by drawing attention to targeted activities, nonfinancial measures nudge managers toward contemplating the society-serving features of CSR and, thus, bring thoughts about firms' social responsibilities to the forefront of decision making. Therefore, a nonfinancial measurement basis reinforces the normative influences from the top and activates the injunctive norm.

However, to the extent that a nonfinancial measurement basis heightens managers' awareness of the societal orientation of CSR projects, it also underscores the potential inconsistency with managers' profit-driven objectives. Accordingly, managers contemplate the use of corporate resources to produce societal benefits and evaluate the trade-off between societal interests and their own economic interests. In this way, nonfinancial measures also activate managers' personal norms regarding whether

[5] Note that prior framing research typically examines whether contextual cues activate a generally accepted norm (e.g., cooperation or fairness) in line with social consensus regarding what one should do. By comparison, we investigate whether measurement basis activates a personal norm where individuals' beliefs are known to be heterogeneous. Therefore, as elaborated below, we predict an interaction effect rather than a main effect of measurement basis on decision making.

firms *should* pursue social causes at a financial cost. Next, we discuss differences in managers' personal norms toward CSR and how such differences interact with measurement basis to affect their investment decisions.

Interactive Effect: Measurement Basis and Personal CSR Norm

As noted earlier, managers generally hold one of two differing personal normative beliefs toward CSR (Barnett 2007; Moser and Martin 2012). Those holding a favorable view believe that CSR is a social obligation because such activities improve social welfare, irrespective of whether CSR increases corporate profits or shareholder value (Carroll 1999; Maignan and Ferrell 2004; Laczniak and Murphy 2006). Therefore, CSR investment is warranted as the societal benefits outweigh the costs (Thorpe 2013). We refer to managers who ascribe to this viewpoint as supportive of CSR. For these managers, a nonfinancial measurement basis activates both the pro-CSR injunctive norm and their personal CSR norm. Because there is congruence between the injunctive norm and personal norm, these managers quite naturally believe that CSR activities are justified and that they are socially obliged to promote CSR. Hence, they are more likely to invest in CSR programs than when investment decisions are denominated in a financial measurement basis.

In contrast, those holding a more traditional view believe that companies should maximize shareholders' interest and "make as much money as possible while conforming to the basic rules of society" (Friedman 1962; 1970, 13; Karnani 2010). According to this viewpoint, CSR diverts resources away from other profit-making activities and negatively impacts shareholder value (Reinhardt and Stavins 2010; Flammer 2013).[6] Furthermore, investing in CSR can negatively affect managers' economic well-being because their compensation is frequently linked to corporate performance or shareholder value (Murphy 2000; Dah, Abosedra, and Matar 2012). We refer to managers who ascribe to this viewpoint as non-supportive of CSR. For these managers, CSR initiatives are difficult to justify or endorse. Thus, even though a nonfinancial measurement basis makes the injunctive norm salient, their personal belief is that CSR is not within the business purview. Because the pro-CSR tone from the top is not aligned with these managers' personal norm, they are not likely to increase investment in CSR even when the decision is denominated in a nonfinancial measurement basis.[7]

To summarize, the use of a financial measurement basis leads to a conventional focus on economic costs and benefits, whereby consideration of relevant norms toward CSR is minimized in decision making. By comparison, the use of a nonfinancial measurement basis activates the injunctive and personal norms toward CSR, so managers who are supportive of CSR invest more in such programs, but managers who are non-supportive of CSR do not increase their investment.[8] Our research hypothesis is formally stated as follows.

H: Managers invest more in CSR activities if the investment decision is denominated using a nonfinancial measurement basis *and* if managers are personally supportive of CSR than when these two factors are not aligned.

III. METHOD

An Overview of Research Design

We conduct a laboratory study to test our hypothesis. In our main experiment, participants make a CSR investment decision whereby the investment increases societal benefits, but decreases participants' personal earnings. The main experiment has a 2×2 between-participants design, with a manipulated variable and a measured variable. The manipulated variable is the measurement basis of the CSR investment decision (financial versus nonfinancial). The measured variable is participants' personal norm toward CSR (supportive versus non-supportive). Because we are interested in participants' underlying normative belief (apart from the experimental context), we conduct a pre-test two weeks prior to the main experiment to identify individuals who are supportive/non-supportive of CSR. We elicit the participant's personal normative belief in a pre-test, rather than as part of the main experiment, to preclude potential confounding effects (Sawyer 1975; Fazio and Williams 1986).

[6] Certain types of CSR activities potentially generate financial benefits. For instance, companies may be able to reduce production costs by using energy-saving technology or increase sales by attracting customers who endorse sustainable business practices (Porter and Kramer 2006; Sprinkle and Maines 2010). Sometimes such benefits do not materialize during a manager's tenure (Doane and Abasta-Vilaplana 2005). When CSR generates financial benefits immediately, the net effect on company performance is an empirical question (e.g., Peloza 2009).

[7] In fact, it is possible that a nonfinancial measurement basis, by activating personal CSR norms, might generate a negative reaction to spending on CSR for managers who are non-supportive of CSR (e.g., Smith et al. 2012). Importantly, CSR has become more mainstream, likely leading those who are non-CSR supportive to react less strongly to a nonfinancial measurement basis than in the past. While we predict that a nonfinancial measurement basis will not increase the investment made by non-supportive managers, we do not make a formal prediction as to whether their investment will be the same or lower than under a financial measurement basis.

[8] One could argue that a nonfinancial measurement basis might reduce the social distance (i.e., perceived closeness or attachment) between the decision maker and the CSR project (e.g., Charness and Gneezy 2008). We provide supplemental analysis in Section IV to address this possibility.

Participants and Pre-Test

Undergraduate students enrolled at a U.S. public university were recruited to participate in our study (the use of human subjects was approved by the university's IRB). Ninety students took part in the pre-test, whereby they completed a general survey on their opinions about certain social issues (e.g., how acceptable it is for airlines to overbook flights, whether the labeling of genetically modified food should be required by law, etc.). Participants responded to each item on an 11-point Likert scale. One item included in the questionnaire, "How strongly do you personally believe that companies should sacrifice profitability to promote social causes?" (1 = "not at all" and 11 = "very much"), is used to measure participants' personal norm toward CSR. Our measure captures the trade-off participants make between firm profitability and societal benefits, that is, the extent to which participants are supportive of CSR activities, recognizing that such activities have an explicit cost.

Seventy participants provided responses to the personal CSR norm item that were above or below the scale midpoint. These participants took part in our main experiment. Thirty-three (37) provided responses above (below) the scale midpoint and are classified as supportive (non-supportive) of CSR. Hereafter, we refer to these participants as SUPPORTIVE and NON-SUPPORTIVE, respectively.[9]

Experimental Task and Procedures

In the main experiment, participants assume the role of a division manager at a corporation. To establish a pro-CSR tone at the top, participants are told that the board of directors "recently held prolonged meetings to identify proactive measures to advance sustainable development. The board has decided to endorse means to promote the company's corporate social responsibility (CSR). The belief is that being a good corporate citizen is good for business in the long run." Participants are further told that the board appointed a task force to compare various CSR projects and, based on the task force recommendation, the board initiated a tree-planting project.[10] The division manager needs to determine the amount of the division's discretionary funds to invest in the project. Discretionary funds can be used to spend from $0–$1,000 planting trees, and the manager can freely decide the level of investment.[11] To ensure that the manager's CSR investment decision has a real social benefit, 1 percent of the funds committed to tree planting is donated to a nonprofit tree-planting organization after the study is completed. We are interested in CSR investment decisions that negatively impact the manager's economic interests. To operationalize this negative impact and ensure that the decision has direct economic consequences, the manager receives 1 percent of any discretionary funds that are *not* used for tree planting. The manager also receives a base salary of $5.

We manipulate between participants the measurement basis used in the tree-planting investment decision. In one condition, participants decide how much money (dollars) to spend planting trees, hereafter referred to as the DOLLAR condition. In the other condition, participants decide how many trees to plant, hereafter referred to as the TREE condition. We randomly assign 17 SUPPORTIVE participants to the DOLLAR condition and 16 to the TREE condition. We randomly assign 17 NON-SUPPORTIVE participants to the DOLLAR condition and 20 to the TREE condition. Importantly, in both conditions, participants know that the average cost of planting one tree is $1.[12] They are told that their share of the discretionary funds not used for tree planting will be paid to them privately in cash at the end of the experiment. Participants are also provided with a summary of the major societal benefits of tree planting. These design choices ensure that participants' information and economic incentive are identical in the two conditions. From the standard economic perspective, decision making should not differ, irrespective of the measurement basis. Therefore, differences between the two conditions are attributable to behavioral factors.

The experimental procedures are the same in the DOLLAR and TREE conditions. After participants arrive, the experimental instructions are distributed and read aloud. The instructions include background information and describe the experimental task. Then participants complete a quiz to ensure that they fully understand the instructions; no one can proceed

[9] Twenty participants who provided a response to the personal CSR norm item at the scale midpoint do not complete the main experiment because their CSR norm is ambiguous and, as such, would likely lead to unreliable insights (Breckler 1994; Weems and Onwuegbuzie 2001).

[10] Tree planting is a common CSR initiative (Rondinelli and Berry 2000; Stubbs and Cocklin 2008), and the way firms invest in these initiatives differs. For example, Enterprise Rent-A-Car makes financial contributions to nonprofit foundations for tree planting (see Abdelhamid 2015). By comparison, Toyota directly decides on the number of trees to plant and makes plans accordingly (see: https://www.toyota-global.com/sustainability/social_contribution/environment/overseas/rainforest_restoration/).

[11] We do not impose any accountability on decision making to mimic an incomplete contracting environment where formal controls are not readily available. This design choice also allows us to isolate the behavioral effects we aim to examine, thus providing a clean test of our theory. Note that we do not assume that top management *always* desires higher investment in CSR because even pro-CSR companies need to consider the cost of CSR initiatives. Instead, we assume that the upper limit of the divisional discretionary fund is within the company's acceptable CSR investment scope. Thus, within this range, higher investment is more aligned with the company's CSR goal.

[12] We set the average cost at $1 per tree in order to hold constant the magnitude of the numerical scale between the DOLLAR and TREE conditions, thereby precluding a potential confound caused by the "scale" effect (Kuhberger, Schulte-Mecklenbeck, and Perner 1999; Holt and Laury 2002).

until all quiz questions are answered correctly. Next, a decision sheet is passed out to participants. In the DOLLAR condition, the decision sheet asks, "How much do you want to spend planting trees? $_____." Participants fill in the blank with a number between 0 and 1,000. In the TREE condition, the decision sheet asks, "How many trees do you want to plant? _____ trees." Again, participants fill in the blank with a number between 0 and 1,000. After participants make the investment decision, the decision sheets are collected and a post-experiment questionnaire is distributed. Finally, participants are paid privately in cash. They are paid their base salary and 1 percent of the difference between $1,000 and the amount invested in the tree-planting project.

IV. RESULTS

Measurement of Main Variables

As described earlier, participants' personal CSR norms are measured by their responses to the pre-test question, "How strongly do you personally believe that companies should sacrifice profitability to promote social causes?" labeled *NORM*. Participants are classified as a SUPPORTIVE (NON-SUPPORTIVE) type if their response is higher (lower) than the scale midpoint. We create a dummy variable, *NORM_TYPE,* defined as 1 for the SUPPORTIVE type, and 0 for the NON-SUPPORTIVE type. The treatment condition is indicated by a dummy variable, *CONDITION,* defined as 1 for the DOLLAR condition, and 0 for the TREE condition. The main dependent variable is the level of investment in the tree-planting project (in dollars or in the number of trees), labeled *INVESTMENT*.

The mean *NORM* of the SUPPORTIVE type (8.3) is significantly higher ($p < 0.001$) than that of the NON-SUPPORTIVE type (3.9).[13] Panel A of Table 1 presents the descriptive statistics of *INVESTMENT* made by the SUPPORTIVE and NON-SUPPORTIVE types in the TREE and DOLLAR conditions, including the mean, standard deviation, and the frequencies (percentages) of *INVESTMENT* lower than or equal to, versus higher than, the midpoint of the possible investment range (500).[14] Figure 1 plots the mean *INVESTMENT* for the two norm types in the two conditions.

Hypothesis Tests

Our hypothesis predicts that a nonfinancial measurement basis will increase the level of investment, but only if managers are personally supportive of CSR. Specifically, we expect that the level of investment will be higher for SUPPORTIVE participants in the TREE condition than otherwise. To test our hypothesis, we first conduct a full factorial ANOVA using *INVESTMENT* as the dependent variable and *CONDITION, NORM_TYPE,* and their interaction as independent variables. As shown in Panel B of Table 1, the interaction term between *CONDITION* and *NORM_TYPE* is marginally significant ($p = 0.077$).[15] Because we predict an ordinal interaction effect, the appropriate test is a contrast analysis (Buckless and Ravenscroft 1990). As reported in Panel B of Table 1, the contrast result reveals a significant interaction effect ($p = 0.019$), suggesting that the level of investment is higher in the SUPPORTIVE/TREE condition than in the other conditions.[16] These results support our hypothesis.

We also repeat our hypothesis test using participants' personal CSR norm measure as a continuous variable. We conduct an ordinary least squares (OLS) regression of *INVESTMENT* on *CONDITION, NORM,* and their interaction. As shown in Panel C of Table 1, consistent with the results reported above, the interaction term between *CONDITION* and *NORM* is statistically significant ($p = 0.029$).

To shed light on the nature of the significant interaction effect, we test the simple effects. The results are reported in Panel B of Table 1. First, we examine the differential effects of measurement basis on SUPPORTIVE versus NON-SUPPORTIVE participants. Consistent with our theory, SUPPORTIVE participants invest significantly more ($p = 0.049$) in the TREE condition than in the DOLLAR condition, but the investment made by NON-SUPPORTIVE participants does not differ significantly ($p = 0.749$) between these two conditions. In addition, SUPPORTIVE participants make significantly more ($p =$

[13] The p-values reported in this section are one-tailed for directional predictions and two-tailed otherwise.

[14] We use the midpoint of the investment range to split our data because prior literature finds that individuals use an equality heuristic when deciding how to share value (Messick and Schell 1992). In our setting, participants must decide how much of their discretionary resources to provide to the CSR option. Thus, as in prior literature, participants likely use an equal split as an anchoring point. We consider those who provide more than 500 (hereafter referred to as "high investment") as investing in a supportive manner.

[15] We repeat the ANOVA (1) with participants' gender, age, year of study, or professional experience included as a covariate, and (2) with an alternative pre-test item ("How strongly do you personally believe that companies should engage in socially responsible activities in general?") as the norm-type measure, and statistical inferences are unchanged.

[16] In the contrast analysis, we use codes (−1, +3, 0, −2) for the NON-SUPPORTIVE/TREE, SUPPORTIVE/TREE, NON-SUPPORTIVE/DOLLAR, and SUPPORTIVE/DOLLAR cells, respectively. The residual analysis of the contrast yields a non-significant result ($p = 0.454$), suggesting that our contrast model provides a good explanation for the variation in our data (Abelson and Prentice 1997).

TABLE 1
Hypothesis Tests

Panel A: Descriptive Statistics: *INVESTMENT*

	Non-Supportive CSR Norm			Supportive CSR Norm		
The TREE Condition	474			713		
	[385]			[363]		
	INVESTMENT > 500:	8	(40%)	*INVESTMENT* > 500:	12	(75%)
	INVESTMENT ≤ 500:	12	(50%)	*INVESTMENT* ≤ 500	4	(25%)
	n = 20			n = 16		
The DOLLAR Condition	501			545		
	[385]			[301]		
	INVESTMENT > 500:	7	(41%)	*INVESTMENT* > 500:	8	(47%)
	INVESTMENT ≤ 500:	10	(59%)	*INVESTMENT* ≤ 500:	9	(53%)
	n = 17			n = 17		

Panel B: ANOVA (Dependent Variable = *INVESTMENT*)

Variables	Partial SS	df	MS	F-statistic	p-value
CONDITION	384.59	1	384.59	1.00	0.322
NORM_TYPE	1227.10	1	1227.10	3.18	0.079
CONDITION × *NORM_TYPE*	800.10	1	800.10	2.07	0.077*
Residual	25464.38	66	385.82		
The overall contrast test of the predicted interaction				4.45	0.019*
Simple-Effect Tests:					
For the SUPPORTIVE type: TREE versus DOLLAR				2.82	0.049*
For the NON-SUPPORTIVE type: TREE versus DOLLAR				0.10	0.749
In the TREE Condition:					
the SUPPORTIVE type versus the NON-SUPPORTIVE type				5.31	0.012*
In the DOLLAR Condition:					
the SUPPORTIVE type versus the NON-SUPPORTIVE type				0.06	0.811

Panel C: OLS Regression (Dependent Variable = *INVESTMENT*)

Variables	Coefficient	Std. Error	t-statistic	p-value
Intercept	12.61	7.56	1.67	0.100
CONDITION	16.01	11.48	1.39	0.168
NORM	4.25	1.18	3.60	0.001
CONDITION × *NORM*	−3.44	1.77	−1.94	0.029*

* Indicates a one-tailed test for a directional prediction.

The entry in Panel A includes the following descriptive statistics for each experimental condition: the mean and [standard deviation] of *INVESTMENT;* the frequencies (percentages) of *INVESTMENT* that are lower than or equal to, versus higher than, the midpoint of the possible investment range (500). The overall contrast test uses codes (−1, +3, 0, −2) for the NON-SUPPORTIVE/TREE, SUPPORTIVE/TREE, NON-SUPPORTIVE/DOLLAR, and SUPPORTIVE/DOLLAR cells, respectively.

Variable Definitions:

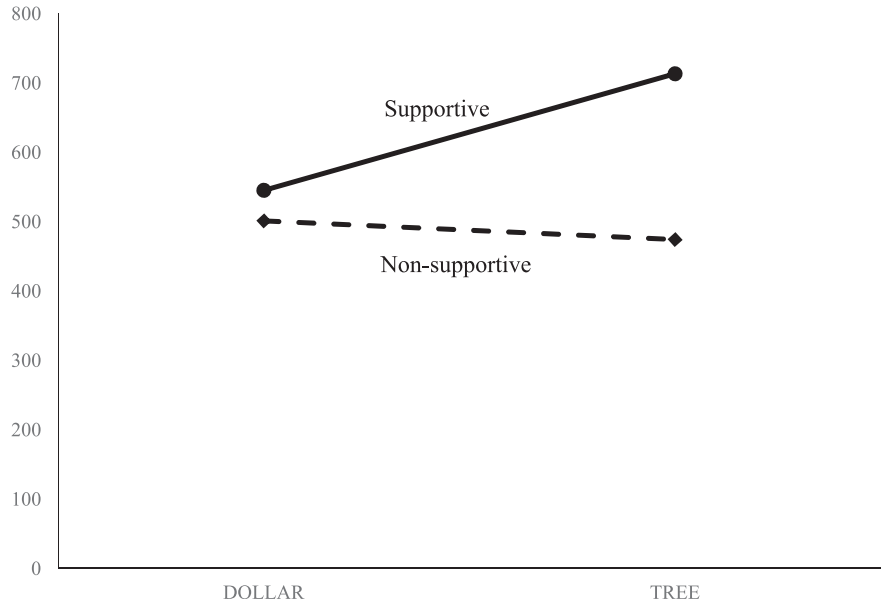
INVESTMENT = the level of tree-planting investment that the participant chose. In analyses where the level of investment is the dependent variable, ranked *INVESTMENT* data are used because the distribution of *INVESTMENT* is non-normal (Skewness/Kurtosis normality test: adjusted $\chi^2 = 23.7$, $p < 0.001$);

CONDITION = 1 for the DOLLAR condition, and 0 for the TREE condition;

NORM = the participant's response to the question, "How strongly do you personally believe that companies should sacrifice profitability to promote social causes"? on an 11-point Likert scale where 1 = "not at all" and 11 = "very much"; and

NORM_TYPE = 1 for the SUPPORTIVE group, and 0 for the NON-SUPPORTIVE group, based on whether the *NORM* measure is above (SUPPORTIVE) or below (NON-SUPPORTIVE) the scale midpoint.

FIGURE 1
Mean Investment Made by the SUPPORTIVE versus NON-SUPPORTIVE Types in the TREE and DOLLAR Conditions



0.054) high-investment choices in the TREE condition (75 percent) than in the DOLLAR condition (47 percent), but the frequency of high-investment choices made by NON-SUPPORTIVE participants does not differ ($p = 0.942$) between these two conditions (40 percent in TREE and 41 percent in DOLLAR).[17]

We also examine the differences in investment made by the two types of participants under a nonfinancial versus a financial measurement basis. In Table 1, Panel B, in the TREE condition, SUPPORTIVE participants invest significantly more ($p = 0.012$) than NON-SUPPORTIVE participants, whereas in the DOLLAR condition, the level of investment does not differ significantly ($p = 0.811$) between SUPPORTIVE and NON-SUPPORTIVE participants. Further, SUPPORTIVE participants make significantly more ($p = 0.021$) high-investment choices than NON-SUPPORTIVE participants in the TREE condition, but not in the DOLLAR condition ($p = 0.73$). Overall, these results suggest that a nonfinancial measurement basis increases CSR investment only when decision makers have a pro-CSR personal norm, providing further support for our hypothesis.[18]

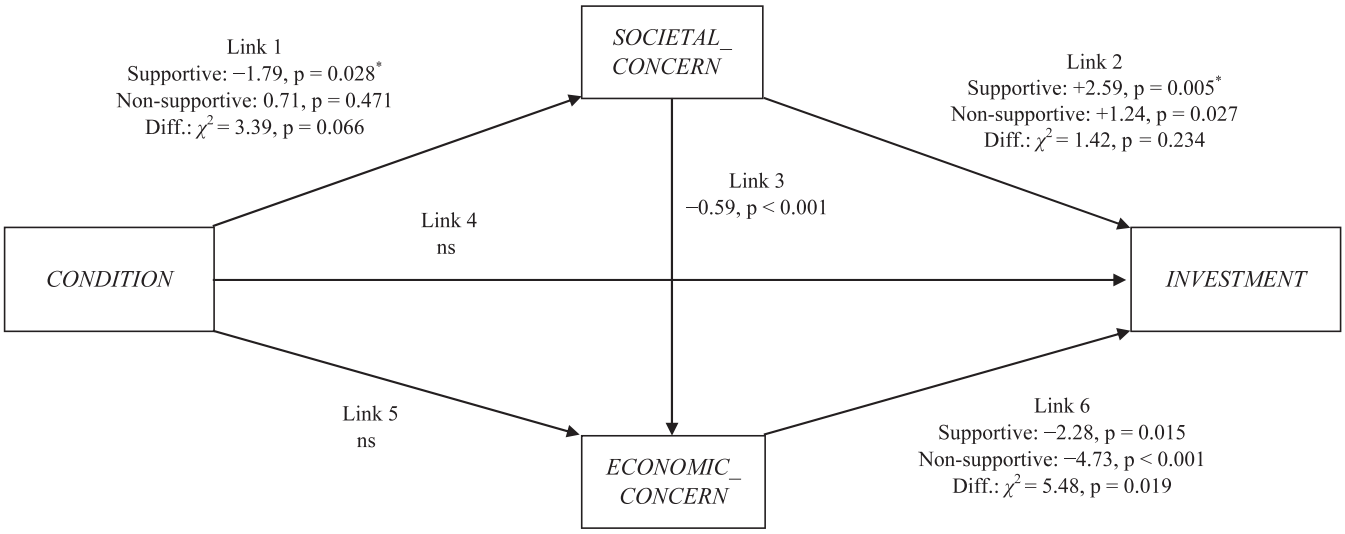
Mediation Analysis

Our theory suggests that a nonfinancial measurement basis increases the investment of CSR-supportive managers by activating relevant injunctive and personal norms. To the extent that norm activation reinforces these managers' beliefs in firms' social obligations, we expect that SUPPORTIVE participants will have greater concerns for social responsibility in the TREE condition than in the DOLLAR condition, but we do not expect such a difference for NON-SUPPORTIVE participants. In the post-experiment questionnaire, we ask participants to indicate the extent to which they agree that their tree-planting decision (1) makes a contribution to the society, (2) is helpful for the company's sustainable development, and (3) is valuable for fulfilling social responsibility, respectively, on an 11-point scale where 1 = "completely disagree" and 11 = "completely agree." We use the average rating on these three items (Cronbach's $\alpha = 0.95$) to measure participants' concern for social responsibility, labeled *SOCIETAL_CONCERN*. We test whether *SOCIETAL_CONCERN* mediates our main findings.

[17] All frequency (choice count) analyses throughout Section IV are conducted using untabulated logistic regression.

[18] As mentioned earlier, it is possible that a nonfinancial measurement basis reduces the social distance between the decision maker and the CSR project. To address this issue, we collect additional data using Amazon Mechanical Turk, an online platform (Farrell, Grenier, and Leiby 2017). We give participants background materials using a financial versus a nonfinancial measurement basis and ask them to rate the extent to which they agree with three statements: (1) "I feel personally connected to the CSR project," (2) "I feel close to the CSR project," and (3) "The CSR project is involving." We use the average of the three ratings (Cronbach's $\alpha = 0.91$) to proxy for participants' perceived social distance from the project. We find that measurement basis does not significantly influence social distance for all participants ($p = 0.453$), participants who are personally supportive of CSR ($p = 0.415$), or participants who are non-supportive of CSR ($p = 0.175$).

FIGURE 2
Results of Structural Equations Modeling



* Indicates a one-tailed test.

This model provides a path analysis that simultaneously tests the relationships among our main variables: *CONDITION, NORM_TYPE,* and *INVESTMENT* (see Table 1 for variable definitions), with two post-experimental measures, *SOCIETAL_CONCERN* and *ECONOMIC_CONCERN* (defined below).

The number of observations is 70. We show, next to each path, the path coefficient and p-value. The Tucker-Lewis index (1.10) provides a measure of the overall goodness of fit as measured through the proportion of improvement of the fit of the model over a null model. The goodness of fit is also confirmed with a Chi-square test (p = 0.724), a root mean square error of approximation (0.00), and a comparative fit index (1.00).

SOCIETAL_CONCERN equals participants' average rating of the extent to which they agree that their tree-planting decision (1) makes a contribution to the society, (2) is helpful for the company's sustainable development, and (3) is valuable for fulfilling social responsibilities, on an 11-point scale where 1 = "completely disagree" and 11 = "completely agree."

ECONOMIC_CONCERN equals participants' rating of the extent to which they were concerned about making money for themselves in decision making, on an 11-point scale where 1 = "not at all" and 11 = "very much."

Moreover, we examine whether our findings are subject to an alternative explanation. We assess whether financial measures decrease SUPPORTIVE participants' investment by underscoring self-interest, rather than nonfinancial measures increasing their investment (e.g., Fiske 1992; Lea and Webley 2006). To test this possibility, we elicit participants' concern for their economic well-being in the post-experiment questionnaire by asking them the extent to which they were concerned about making money in decision making (on an 11-point scale where 1 = "not at all" and 11 = "very much"), labeled *ECONOMIC_CONCERN*.

We conduct a structural equations-based path analysis. Model results are shown in Figure 2, with goodness of fit measures indicating good model fit: the Tucker-Lewis index (1.10) is above the accepted cutoff value of 0.90 (Kline 1998) and the Chi-square test has a p-value of 0.724. Consistent with our expectations, there is a significant relationship between *CONDITION* and *SOCIETAL_CONCERN* for SUPPORTIVE participants, with a higher level of *SOCIETAL_CONCERN* in the TREE condition (p = 0.028, Link 1). By comparison, the path is not significant for NON-SUPPORTIVE participants (p = 0.471, Link 1). These results confirm that concern for social responsibility is only enhanced when a participant is supportive of CSR *and* when the investment decision is denominated in nonfinancial measures. Further, the path between *CONDITION* and *ECONOMIC_CONCERN* is non-significant for both SUPPORTIVE and NON-SUPPORTIVE participants (Link 5). Hence, we find no evidence for the alternative explanation that financial measures draw people away from their pro-CSR personal norm by heightening concerns for self-interest. We provide supplemental data to further address this alternative explanation later.

Referring to Figure 2, the remaining paths are also consistent with model expectations. For both SUPPORTIVE and NON-SUPPORTIVE participants, we find a significantly positive path between *SOCIETAL_CONCERN* and the investment level (Link 2), and a significantly negative path between *ECONOMIC_CONCERN* and the investment level (Link 6). These results provide reassurance that the *SOCIETAL_CONCERN* and *ECONOMIC_CONCERN* measures capture participants' thought processes. Not surprisingly, the relationship between *SOCIETAL_CONCERN* and *ECONOMIC_CONCERN* is significantly negative (p < 0.001, Link 3). Taken as a whole, the results of the structural equations analysis are consistent with our theory

that increasing CSR investment requires the combination of societal focus activation and an underlying pro-CSR personal norm.[19]

Supplemental Data

Alternative Measurement Basis

While the results of the main experiment support our hypothesis, two important questions remain unanswered, and we collect additional data to address these questions. First, an alternative explanation for SUPPORTIVE participants' higher CSR investment in the TREE condition than in the DOLLAR condition is that financial measures pull them away from the supportive personal CSR norm, thereby weakening their desire to invest. We believe that our process-measure model results refute this possible explanation. However, to further address this issue, we add a supplemental condition and use a neutral measurement basis, within-company credits, to elicit participants' investment decision (referred to as the CREDIT condition). In the CREDIT condition, participants are told that each division of the corporation receives within-company credits that can be used for internal transactions, and that they need to decide how many of their discretionary credits should be used for tree planting. Participants are instructed that their discretionary credits can be used for planting up to 1,000 trees. Importantly, the average cost of planting one tree is $1 and one credit can be used to plant one tree. All other experimental procedures are identical to those in the main experiment.

The measurement basis of within-company credits is conceptually separate from the financial (i.e., dollars) and nonfinancial (i.e., number of trees) measures used in our main experiment. Within-company credits are not directly linked to the activity of tree planting, so the measure does not underscore the society-serving nature of the CSR program.[20] Based on our theory, we expect that the norm-activating effect observed in the TREE condition will not arise in the CREDIT condition. Thus, we expect the level of investment made by SUPPORTIVE individuals to be lower in the CREDIT condition than in the TREE condition.

The second issue that we use additional data to address is that in the main experiment, participants make the tree-planting decision either exclusively in financial measures or exclusively in nonfinancial measures. However, in practice, managers who make CSR investment decisions may consider both financial and nonfinancial implications of the decision (McWilliams and Siegel 2001; Schwartz and Carroll 2003). Thus, managers are likely to contemplate the decision in both financial and nonfinancial terms. To examine managers' decision making in such settings and give our theory a stronger test, we add another supplemental condition and let participants make the tree-planting decision in financial and nonfinancial measures simultaneously (referred to as the DOUBLE condition). In the DOUBLE condition, participants are randomly given one of two versions of the decision sheet, "I want to spend $_____ planting _____ trees," or "I want to plant _____ trees for $_____."[21] Other procedures are identical to those in the main experiment.

According to our theory, the financial measure leads to a conventional decision frame, whereas the nonfinancial measure reinforces the decision maker's personal norm toward CSR and magnifies the investment of CSR-supportive individuals. Therefore, consistent with our main analysis, we expect that the nonfinancial measure will maintain the norm-activating effect in the DOUBLE condition. As a result, the level of investment made by SUPPORTIVE individuals in the DOUBLE condition will be higher than that in the DOLLAR condition.

For the CREDIT and DOUBLE conditions, we recruit undergraduate students who did not participate in the main experiment and maintain the same two-step process of first administering the pre-test containing the personal CSR norm

[19] Research suggests that people experience positive affect (e.g., pride, self-esteem, security) when their behavior fulfills their inner goals or standards (Schwartz 1977; Markus and Kitayama 1991; Ellsworth and Scherer 2003). In the post-experiment questionnaire, we ask participants to rate the extent to which they felt "strong," "proud," "confident," "bold," and "fearless" when making the investment decision (Cronbach's $\alpha = 0.89$). An untabulated ANOVA of the average affect rating on *CONDITION, NORM_TYPE,* and their interaction reveals that participants have more positive affective feelings about their decision in the TREE condition than in the DOLLAR condition ($p = 0.003$; other effects are non-significant). This result provides evidence that, consistent with our theory, both SUPPORTIVE and NON-SUPPORTIVE participants made their investment decisions in line with their activated personal norms in the TREE condition.

[20] We considered several alternatives (e.g., labor hours, labor units, and volunteer hours) to use as a neutral measurement basis before selecting within-company credits. We did not use those alternatives because, compared to credits, they might be more closely related to the dollar measure used in the main experiment, thus working in favor of supporting our prediction. We collect data using Amazon Mechanical Turk to ensure that credits are deemed neutral. We ask respondents how using credits is perceived (relative to dollars and the number of trees). Responses are elicited on a seven-point scale, where 1 = "perceived to be the same as deciding how many trees to plant (in units)," 4 = "perceived to be in contrast (more neutral) to deciding how many trees to plant or how much to spend," and 7 = "perceived to be the same as how much to spend planting trees (in dollars)." The mode and median response is 4.0, and the mean is 4.6 ($n = 128$). Further, 59.4 percent of the responses are concentrated around the scale midpoint (responses of 3, 4, and 5), and a binomial test indicates that this percentage is significantly higher than 50 percent ($p = 0.042$). We, thus, conclude that credits are a neutral measurement basis.

[21] We randomize the sequence of financial and nonfinancial measures to control for possible confounds caused by presentation orders (Krosnick and Alwin 1987). We find that the presentation order does not significantly influence ($p = 0.825$) participants' investment levels.

TABLE 2

Supplemental Analyses for the SUPPORTIVE Participants with Inclusion of the CREDIT Condition and the DOUBLE Condition

Panel A: Descriptive Statistics: *INVESTMENT*

Condition	TREE		CREDIT		DOLLAR		DOUBLE	
The Mean [Standard Deviation] of *INVESTMENT*	713 [363]		593 [329]		545 [301]		711 [302]	
INVESTMENT > 500	12	(75%)	11	(50%)	8	(47%)	16	(70%)
INVESTMENT ≤ 500	4	(25%)	11	(50%)	9	(53%)	7	(30%)
n	16		22		17		23	

Panel B: ANOVA (Dependent Variable = *INVESTMENT*)

Variables	Partial SS	df	MS	F-statistic	p-value
CONDITION	2736.51	3	912.17	1.89	0.069*
Residual	35637.49	74	481.59		
Simple-Effect Contrast Tests					
The TREE condition versus The CREDIT condition				2.54	0.058*
The CREDIT condition versus The DOLLAR condition				0.27	0.606
The DOUBLE condition versus The DOLLAR condition				3.05	0.042*
The DOUBLE condition versus The TREE condition				0.17	0.685

* Indicates a one-tailed test for a directional prediction.

Data reported in this table are for participants classified as the SUPPORTIVE type. The entry in Panel A includes the following descriptive statistics for each experimental condition: the mean and [standard deviation] of *INVESTMENT;* the frequencies (percentages) of *INVESTMENT* that are lower than or equal to, versus higher than, the midpoint of the possible investment range (500). *INVESTMENT* equals the level of tree-planting investment that the participant chose. In Panel B, ranked *INVESTMENT* data are used in statistical analyses because the distribution of *INVESTMENT* is non-normal (Skewness/Kurtosis normality test: adjusted $\chi^2 = 7.63$, $p = 0.022$). *CONDITION* equals 1 for the TREE condition, 2 for the DOLLAR condition, 3 for the CREDIT condition, and 4 for the DOUBLE condition.

measure and then running the laboratory study two weeks later. As we are only interested in individuals who are classified as SUPPORTIVE, we utilize those participants whose response to the personal CSR norm measure is above the scale midpoint in the investment decision task.

Panel A of Table 2 presents the descriptive statistics of investment made by SUPPORTIVE individuals in the TREE, CREDIT, DOLLAR, and DOUBLE conditions, where the TREE and DOLLAR conditions are from our main experiment. As reported in Panel B of Table 2, an omnibus ANOVA indicates that the level of investment is marginally significantly different ($p = 0.069$) across the four conditions. First, we focus on participants' decisions in the CREDIT condition. The level of investment is significantly lower ($p = 0.058$) in the CREDIT condition (mean = 593) than in the TREE condition (mean = 713), but not significantly different ($p = 0.606$) between the CREDIT and DOLLAR (mean = 545) conditions. The frequency of high-investment choices is lower ($p = 0.063$) in the CREDIT condition than in the TREE condition, but does not significantly differ ($p = 0.855$) between the CREDIT and DOLLAR conditions. These results suggest that, consistent with our theory, denominating the investment decision in within-company credits (which is not directly related to tree planting) fails to produce the same norm-activating effect as when the investment decision is denominated in the number of trees. Moreover, the investment level in the CREDIT condition does not significantly differ from that in the DOLLAR condition. Thus, we find no evidence for the alternative explanation that financial measures pull participants away from the supportive CSR personal norm and reduce their desire to invest.

Next, we examine participants' decisions in the DOUBLE condition. The level of investment in Table 2 is significantly higher ($p = 0.042$) in the DOUBLE condition (mean = 711) than in the DOLLAR condition (mean = 545), but not significantly different ($p = 0.685$) between the DOUBLE condition and the TREE condition (mean = 713). Similarly, the frequency of high-investment choices is higher ($p = 0.078$) in the DOUBLE condition than in the DOLLAR condition, but not significantly different ($p = 0.711$) between the DOUBLE and TREE conditions. These results further support our theory: a nonfinancial measurement basis increases individuals' willingness to invest by activating their personal CSR norm, and this effect persists even when the investment decision is denominated in a combined financial/nonfinancial measurement basis.

Robustness Test Using Professional Manager Participants

Similar to several prior studies exploring psychological effects on managerial decision making (e.g., Mastilak 2011; Maas, van Rinsum, and Towry 2012), our study uses undergraduate student participants in the main experiment because the decision scenario is uncomplicated and the theory does not depend on managerial expertise (Haynes and Kachelmeier 1998; Libby, Bloomfield and Nelson 2002). However, to the extent that we focus on CSR investment under the agency relationship embedded in a corporate hierarchy, it is important to ensure that the decisions made by students with limited corporate experience mirror those made by experienced managers. For this purpose, we conduct a supplemental study and recruit participants from the Executive Development Program (EDP) at a major university in China.[22] The EDP is a part-time non-degree program designed to provide business curriculums for corporate managers.

The supplemental study is similar to the 2 (measurement basis) × 2 (personal CSR norm) main experiment, with three key modifications. First, due to situational constraints, we merge the pre-test (i.e., the social opinion survey containing the personal norm measure) with the investment decision task: participants complete the pre-test before making the investment decision. Second, to increase the appeal of the decision task, we ask participants to make an investment between $100,000 and $300,000 (or between 100,000 and 300,000 trees). Third, because it is difficult to practically implement appropriate incentives for executives, we do not pay participants based on their investment decisions (and, thus, do not make a charitable donation). Rather, participants are told that investing in the CSR project hampers financial results, reducing cash flows and net income.

Participants have an average of 14.3 years of full-time work experience and 9.0 years of managerial experience. Seventy-four percent of the participants are senior- or middle-level managers. Descriptive statistics are presented in Panel A of Table 3. As reported in Panel B of Table 3, an ANOVA finds that the interaction effect of measurement basis and personal CSR norm on investment is marginally significant ($p = 0.083$), and a contrast analysis reveals a significant interaction effect ($p = 0.011$).[23] Simple-effect tests show that SUPPORTIVE participants invest significantly more ($p = 0.015$) in the TREE condition than in the DOLLAR condition, but the investment made by NON-SUPPORTIVE participants does not significantly differ ($p = 0.441$) between these two conditions. Further, SUPPORTIVE participants make more ($p = 0.038$) high-investment choices in the TREE condition than in the DOLLAR condition, but the frequency of high-investment choices made by NON-SUPPORTIVE participants does not differ ($p = 0.604$) between these two conditions. Overall, the supplemental data using professional manager participants replicate the results of the main experiment, thus lending credence to our theory and enhancing the external validity of our research findings.

V. CONCLUSION

In this paper, we investigate the behavioral effects of measurement basis on middle managers' decisions to invest in CSR projects initiated by top management. We find that denominating the CSR investment decision in nonfinancial measures increases investment, but only when the manager is personally supportive of CSR. These findings are consistent with our theory that nonfinancial measures activate relevant injunctive and personal norms toward CSR and differentially affect managers' investment decision, depending on the alignment between these two types of norms. Additional analyses find that nonfinancial measures increase CSR-supportive individuals' societal concerns, which mediate their investment decision. Supplemental data suggest that the norm-activating effect is absent when the investment decision is denominated in a neutral unit unrelated to the underlying CSR activity, but the effect persists when the investment decision is denominated in both financial and nonfinancial measures. In addition, our main findings are robust to an alternative participant pool of professional managers. These supplemental results provide further support for our theory.

Our findings have important implications for research and practice. Practitioners and scholars have devoted considerable effort to understanding factors (e.g., strategic motives) that influence firms' CSR investment decisions. Our findings contribute to the CSR literature by providing insight into the effects of noneconomic contextual cues on managers' decision making. Our results show that a theoretically irrelevant factor, measurement basis, can significantly affect the level of CSR investment. Understanding these effects can help the firm use the accounting system more effectively in supplying relevant metrics to facilitate CSR decision making. Our findings also underscore the importance that firms consider managers' personal beliefs in delegating CSR investment decision rights. Firms have increasingly sought to understand employees' personality types (e.g., empathy or self-confidence) with the goal of screening the "right" person for the "right" job (Campbell 2012). In CSR

[22] Experimental instruments are translated from English to Chinese using the back-translation method (Brislin 1970, 1986).

[23] We repeat the ANOVA (1) with participants' work experience, managerial experience, and position as covariates, and (2) with participants' personal CSR norm as a continuous variable, and statistical inferences remain unchanged. The contrast model uses the same set of codes as in the main hypothesis test. The residual analysis of the contrast yields a non-significant result ($p = 0.438$), suggesting that the contrast model is a good fit for the data.

TABLE 3

Supplemental Data Using Professional Manager Participants

Panel A: Descriptive Statistic: *INVESTMENT*

	Non-Supportive CSR Norm			Supportive CSR Norm		
The TREE Condition	139,556			204,545		
	[57,905]			[90,704]		
	INVESTMENT > 200,000:	2	(7%)	*INVESTMENT* > 200,000:	5	(45%)
	INVESTMENT ≤ 200,000:	25	(93%)	*INVESTMENT* ≤ 200,000:	6	(55%)
	n = 27			n = 11		
The DOLLAR Condition	123,600			134,615		
	[48,208]			[64,370]		
	INVESTMENT > 200,000:	1	(4%)	*INVESTMENT* > 200,000:	1	(8%)
	INVESTMENT ≤ 200,000:	24	(96%)	*INVESTMENT* ≤ 200,000:	12	(92%)
	n = 25			n = 13		

Panel B: ANOVA (Dependent Variable = *INVESTMENT*)

Variables	Partial SS	df	MS	F-statistic	p-value
CONDITION	1975.18	1	1975.18	5.16	0.026
NORM_TYPE	787.22	1	787.22	2.06	0.156
CONDITION × *NORM_TYPE*	751.69	1	751.69	1.96	0.083*
Residual	27581.53	72	383.08		
The overall contrast test of the predicted interaction				5.45	0.011*
Simple-Effect Tests:					
For the SUPPORTIVE type: TREE versus DOLLAR				4.92	0.015*
For the NON-SUPPORTIVE type: TREE versus DOLLAR				0.60	0.441
In the TREE Condition:					
the SUPPORTIVE type versus the NON-SUPPORTIVE type				3.84	0.027*
In the DOLLAR Condition:					
the SUPPORTIVE type versus the NON-SUPPORTIVE type				<0.01	0.981

* Indicates a one-tailed test for a directional prediction.

The entry in Panel A includes the following descriptive statistics for each experimental condition: the mean and [standard deviation] of *INVESTMENT;* the frequencies (percentages) of *INVESTMENT* that are lower than or equal to, versus higher than, the midpoint of the possible investment range (200,000). The overall contrast test uses codes (−1, +3, 0, −2) for the non-supportive/TREE, supportive/TREE, non-supportive/DOLLAR, and supportive/DOLLAR cells, respectively.

Variable Definitions:

INVESTMENT = the level of tree-planting investment that the participant chose, from the range of [100,000, 300,000]. In analyses where the level of investment is the dependent variable, ranked *INVESTMENT* data are used because the distribution of *INVESTMENT* is non-normal (Skewness/Kurtosis normality test: adjusted $\chi^2 = 14.87$, p = 0.001);

CONDITION = 1 for the DOLLAR condition, and 0 for the TREE condition;

NORM = the participant's response to the question, "How strongly do you personally believe that companies should sacrifice profitability to promote social causes"? on an 11-point Likert scale where 1 = "not at all" and 11 = "very much"; and

NORM_TYPE = 1 for the SUPPORTIVE group, and 0 for the NON-SUPPORTIVE group, based on whether the NORM measure is above (SUPPORTIVE) or below (NON-SUPPORTIVE) the scale midpoint.

practices, to the extent that managers who naturally embrace CSR are affected by the decision context, firms can tailor decision-making mechanisms to better align CSR investment decisions with the firm's objectives.

Our study provides avenues for future research. We use a one-shot experiment because the simplicity of the decision task does not require multiple periods for learning purposes, and we want to preclude possible confounds such as the wealth effect. In practice, though, managers may make the investment decision repeatedly. Future research can study whether the effect of measurement basis on decision making will weaken over time as managers start to get used to it. In our main experiment, participants directly receive in cash a proportion of discretionary funds that are not used for tree planting. However, in practice, managers may derive personal economic benefits from withholding CSR investment in a less overt way. For instance, managers may redeploy resources to non-CSR projects that help increase near-term profits, and potentially increase their output-based

compensation. In these cases, other corporate personnel (e.g., superiors; stockholders) could also benefit financially from withholding CSR investment. It would be interesting to investigate whether these factors increase the perceived justifiability of diverting resources from CSR initiatives and, in turn, affect managers' investment decisions.

We exclude participants who exhibit ambiguous CSR personal beliefs because they may affect the manipulation of our independent variable. In our sample pools, only a small portion (22 percent in the main experiment and 21 percent in the supplemental study) belong to this "middle-of-the-road" type, and the majority have a relatively unambiguous preference for or against CSR. These findings add comfort that our research question is relevant for CSR decision making in practice, to the extent that our sample pools are representative of the general population of practicing managers. Future study can investigate how measurement basis influences people who do not have a clear preference.

We operationalize CSR by giving participants an opportunity to invest in tree planting. As indicated in the experimental stimuli, the tree-planting project is selected by the board of directors as a means to promote CSR and, therefore, provides a salient CSR proxy. However, CSR is an emerging space, and individuals could have varying levels of support for alternative components of the CSR construct. Such variation is not likely to substantially affect our results because it would add noise and work against our hypothesis. However, it potentially limits the generalizability of our findings to other CSR domains. Future research can examine whether alternative CSR activities create boundary conditions for our findings.

We choose not to impose any formal control or accountability on participants' decision making because we focus on decentralized managerial environments with incomplete contracting and because we want to ensure that our results are attributable to the behavioral variables of interest. To the extent that firms are sometimes able to reduce information asymmetry by acquiring usable performance signals, it would be interesting to explore how adding controls to the decision process may positively (e.g., provide incentives for goal alignment) or negatively (e.g., be perceived as distrustful or unfair if the signal is noisy) influence managers' behavior. Future research could also explore whether creating a centralized control environment requiring CSR involvement that is inconsistent with a manager's personal belief would lead to "reactance arousal" (Byrne and Hart 2009, 16) and a hostile reaction to the CSR initiative.

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