

**Corporate Social Responsibility: Three Experimental Studies**

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# **CORPORATE SOCIAL RESPONSIBILITY: THREE EXPERIMENTAL STUDIES**

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University of Pittsburgh, 2013

My dissertation consists of three experimental studies that examine the impact of the societal benefits associated with corporate social responsibility (CSR) activities on managers' and investors' behavior. My first study finds that owner-managers willingly contribute a portion of their firm's earnings to a green cause, even though this reduces their payoff from selling the firm's stock. Although investors reduce their bids when the owner-manager contributes to a green cause, they do not do so by the full amount of the contribution. These results provide evidence that both owner-managers and investors value the societal benefits associated with CSR.

My second study (a joint project with Don Moser) extends the first study by changing the ownership structure of the firm from 100% manager-owned to partial management ownership and giving managers disclosure options regarding their CSR investment decisions. This study finds that managers often make green investments even when this reduces shareholder value and often disclose their investments and focus their disclosures on the societal benefits rather than on the cost to the firm. Disclosure lowers the cost of the investment to managers and other current shareholders because potential investors' standardized bids for the firm are higher when managers disclose their investments than when they do not, and this result is stronger when disclosures focus on the societal benefits.

My third study examines how honesty preferences and the ability to consume slack influence managers' reporting in a CSR decision setting. In my baseline setting, in which managers do not have the ability to consume slack and honesty preferences play no role, I find that managers act to implement less profitable CSR projects even though this reduces their personal payoff and firm profit. However, in a setting in which managers must misreport to implement a less profitable CSR project, the frequency of such projects decreases, suggesting that managers' honesty preferences can reduce the frequency of less profitable CSR projects. Finally, in a setting in which lower-level managers can also build slack into their reports, their misreporting in favor of the less profitable CSR project increases, offsetting the deterrent effect of honesty preferences on such misreporting.

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## 1.0 INTRODUCTION

The phrase “corporate social responsibility” (hereafter CSR) has been used extensively in the business press and academic research, but what exactly does this phrase mean? To some, it refers to corporate charitable donations. To others it refers to efforts to “be a good corporate citizen” (Carroll 1999) or to “sacrificing profits in the social interest” (Benabou and Tirole 2010). The common thread in most definitions of CSR activities is that such activities are voluntary and are associated with an incremental positive societal impact.<sup>1</sup>

Despite extensive CSR research, the extent to which the positive societal impact associated with CSR influences managers’ decisions or investors’ responses to these decisions is not fully understood. In particular, we do not know whether managers make CSR decisions differently from other business decisions because of the associated societal benefits. In addition, it is difficult to use archival data to determine whether investors value the societal benefits associated with CSR activities because it is not easy to distinguish investor reaction to societal benefits from investor reaction to economic benefits. Finally, we know very little about the extent to which the societal benefits associated with CSR activities’ influence managers’ internal

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<sup>1</sup> The basic functions of a business can also be thought of as having a positive societal impact (i.e., providing a product or service generates positive economic value). However, the societal benefits of the basic functions of a business do not require separate consideration in decision-making because they arise naturally as a by-product of the goal of wealth-maximization. In contrast, because CSR activities are voluntary, the societal benefits of CSR activities can be thought of as incremental to the societal benefits that arise from the basic functions of the business and decision-makers may not be simply trying to maximize wealth when making decisions regarding CSR activities.

reporting behavior. Managerial reporting can affect CSR decisions when information asymmetry makes it necessary for lower-level managers to communicate decision-relevant information to upper-level managers. If lower-level managers value the societal benefits associated with CSR activities, they may bias the information they communicate to upper-level managers in favor of such activities even when they have financial incentives to communicate unbiased information.

My dissertation reports the results of three experimental studies that examine the issues described above. Collectively, my studies show that managers' and investors' decisions are influenced by the societal benefits associated with CSR activities. Because managers and investors value the societal benefits of CSR activities, such activities may not always maximize firm profit. In addition, the presence of information asymmetry between upper-level managers who make CSR decisions and lower-level managers who provide information regarding the profitability of CSR activities may increase the frequency of CSR activities that do not maximize firm profit.

The remainder of my dissertation is organized as follows. Chapter 2 presents background information and research that is relevant to all three studies. I first discuss the primary focus of prior CSR research, which has been to examine whether there is a positive association between a firm's CSR activities and a firm's financial performance. I next discuss the advantages of using experiments to examine certain CSR questions. Finally, I discuss the similarities and differences between CSR projects that do not maximize firm profit and traditional agency costs.

Chapter 3 presents my first study, in which I examine the behavior of owner-managers and investors in a setting in which the owner-managers can contribute a portion of their firm's earnings to a green fund and investors bid for the firm's stock. The results indicate that the owner-managers are quite willing to contribute a portion of the firm's earnings to a green cause,

even though this reduces their payoff from selling the firm's stock. Although investors reduce their bids when the owner-manager contributes to a green cause, they do not do so by the full amount of the contribution. The resulting payoffs to the managers and investors indicate that managers bear approximately two-thirds of the cost of the contribution, while investors bear approximately one-third of the cost. This result provides evidence that some managers and investors are willing to accept lower payoffs in exchange for the societal benefits of going green. Although the existence of such motivation by investors and managers has been debated in prior research, my experiment provides a more direct test than prior research of managers' and investors' willingness to bear personal costs to achieve societal benefits.

Chapter 4 presents my second study (coauthored with Don Moser), which builds on the results of the first study by varying the ownership structure of the firm as well as giving managers different disclosure options regarding their CSR activities. Specifically, this study examines whether preferences for societal benefits lead managers (who are 50% shareholders) to invest in unprofitable green projects, what information they disclose regarding such investments, and how investors react to those disclosures. This study finds that managers often make green investments even when this reduces shareholder value. They also disclose their investments and focus their disclosures on the societal benefits rather than on the cost to the firm. Disclosure lowers the cost of the investment to managers and other current shareholders because potential investors' standardized bids for the firm are higher when managers disclose their investments than when they do not, and this result is stronger when disclosures focus on societal benefits. Finally, managers who invest large amounts often disclose that they have invested but not the amount, suggesting that they anticipate a favorable reaction for investing but an unfavorable reaction to very large investment amounts. These results show that managers and investors trade

off personal wealth for societal benefits and help explain why voluntary CSR disclosures often focus on the benefits to society and the firm rather than on the cost to the firm.

Chapter 5 presents my third study, which examines the role of managerial reporting in the CSR decision-making process. Managerial reporting can affect CSR decisions when information asymmetry makes it necessary for lower-level managers to communicate decision-relevant information to upper-level managers. If lower-level managers value the societal benefits associated with CSR activities, they may bias the information they communicate in favor of such activities even when they have financial incentives to communicate unbiased information. I find that when lower-level managers recommend whether a CSR or a non-CSR project be implemented, they bias their recommendations in favor of the CSR project even though this reduces their personal payoff and firm profit. However, when lower-level managers must misreport to cause the less profitable CSR project to be implemented, their bias in favor of the CSR project is significantly reduced, suggesting that their honesty preferences act as a partial, but not full, control against their preference for CSR projects. Nevertheless, when lower-level managers can also build slack into their reports as they can in many actual settings, their biased reporting significantly increases, offsetting the deterrent effect of honesty preferences on their bias in favor of CSR projects. I also find that some lower-level managers are motivated primarily by wealth, some primarily by honesty, and some primarily by a preference for CSR. Those motivated primarily by a preference for CSR take significantly less slack than those motivated primarily by wealth, leading to higher firm profit when lower-level managers are motivated primarily by a preference for CSR. These results have implications for upper-level managers who rely on lower-level managers' reports, for shareholders because biased reporting affects firm profit, and for members of society who are affected by CSR decisions.

Chapter 6 provides a discussion of the three studies and my conclusions. Collectively, my studies suggest that a significant portion of managers value the societal benefits associated with CSR activities, and, thus they may choose to pursue CSR activities even when such activities reduce firm profit. This effect appears to be rather robust in that managers engage in profit reducing CSR activities even when this reduces their own personal payoff (as in all three studies) and the payoff of other shareholders (as in studies 2 and 3), or requires misreporting (as in study 3).

My first two studies also provide evidence that investors value the societal benefits of CSR activities by showing that when investors know that the manager has engaged in CSR activities, the investors bid more for the firm's earnings. As further evidence that investors value the societal benefits of CSR, study 2 provides evidence that investors bid more for a firm's stock when disclosure of CSR activities focuses on the societal benefits rather than the cost of such activities.

My findings are important for several reasons. First, they provide an important caveat to the claim in much of the recent CSR literature that CSR performance is associated with better financial performance. My studies provide evidence that managers likely engage in unprofitable CSR activities, which suggests that any small overall positive association between CSR and financial performance does not mean that all CSR activities are profitable, but rather that, on average, profitable CSR activities slightly outweigh unprofitable ones. My studies not only provide evidence that unprofitable CSR activities are likely to exist, they also provide evidence that the existence of such activities is not solely due to the fact that CSR projects that were expected to be profitable turned out to be unprofitable. Rather, my studies suggest that a

significant portion of managers may knowingly choose to engage in CSR activities that reduce the profitability of the firm.

Second, my findings add to our understanding of CSR disclosures by suggesting that the voluntary CSR disclosures that we see in practice are likely to be driven by managers' expectations of investors' response to such disclosures. In other words, CSR disclosures focus on the societal benefits of CSR activities while being largely silent on the cost of such activities to the firm because managers recognize that such disclosures elicit the best response from investors. Understanding the motivations behind current CSR disclosures may also inform standard setters who may be considering whether to require certain CSR disclosures, which currently are almost completely voluntary.

Finally, my third study adds to our understanding of how institutional features may influence CSR decision making. Specifically, I find that individuals who make CSR decisions may be getting information about the profitability of CSR activities that is biased in favor of CSR activities. This occurs because managers who report information about the profitability of CSR activities value the societal benefits associated with such activities. My results also show that, although managers who bias their reports in favor of CSR activities reduce firm profit, managers who do not bias their reports in favor of CSR projects but rather report in a more self-interested manner actually reduce firm profit even more. These findings could help firms decide the types of employees they prefer to hire.

## **2.0 BACKGROUND**

### **2.1 ARE CSR ACTIVITIES ALWAYS PROFIT MAXIMIZING?**

There are several reasons why managers might choose to engage in CSR activities. The standard economic view is that financial incentives drive these decisions. In other words, firms “do well by doing good” (Karnani 2010). For example, being more socially responsible could add customers, increase sales, or increase pricing power (Lev et al. 2010), attract or motivate employees (Balakrisnan et al. 2011, Bhattacharya et al. 2008), lower the cost of equity capital (Dhaliwal et al. 2011) or reduce the risk of governmental regulation.

However, even though certain economic benefits may follow from CSR, debate continues about what it means to be socially responsible because it is not clear that corporate decision makers only engage in those CSR activities that result in profit maximization. For example, do firms invest in green projects only when this maximizes shareholder value or do they sometimes do so even when this decreases shareholder value? It is common in the economics, finance and accounting literatures (e.g., Friedman 1970, Shank et al. 2005, Dhaliwal et al. 2011) and even sometimes in the popular business press (Karnani 2010) to argue or assume that firms would never invest in any socially responsible activities unless such investments maximize shareholder value. In contrast, researchers in other fields (e.g., Reinhardt et al. 2008, Kolstad 2007) and some in the popular business press (Grow et al. 2005, Friedman et al. 2005) argue that true CSR

requires that firms sacrifice profits in the social interest. Benabou and Tirole (2010, 2) adopt this latter view, noting that “A standard definition of CSR is that it is about sacrificing profits in the social interest. For there to be sacrifice, the firm must go beyond its legal and contractual obligations, on a voluntary basis.”

Prior CSR research has primarily focused on resolving this debate. That is, much of the prior CSR research has examined the relationship between CSR and firm financial performance. The takeaway from this research has been largely inconclusive. The most recent meta-analysis of the relationship between CSR and firm financial performance (Margolis et al. 2009) examined 251 studies that were conducted over the past 40 years and concluded that while there appears to be a positive association between CSR and firm financial performance, it is quite small and is even smaller for studies conducted in the past 10 years.

## **2.2 THE BENEFITS OF USING EXPERIMENTS TO STUDY CSR ISSUES**

While prior research shows a small positive association between CSR and firm financial performance, this does not preclude the possibility that non-profit-maximizing CSR activities exist. In fact, given the small size of the association, it seems likely that many CSR activities may not maximize firm profit. However, because field data regarding the profitability of individual CSR activities are not available, it is very difficult to use field data to document the existence of CSR activities that do not maximize profits. In addition, because the economic benefits of CSR activities are often uncertain and rely on projections of the future, it is very difficult to study whether managers knowingly choose to pursue CSR activities that do not maximize profit.

Because of the limitations of available archival data, archival CSR studies alone are unlikely to provide a full understanding of the motivations for, and consequences of, CSR activities and managers' related disclosure choices. Consequently, I use controlled experiments to address these important CSR issues that are difficult to address effectively using archival data.<sup>2</sup>

A primary strength of experiments is that they can overcome some of the key limitations of CSR field data. For example, in addition to the difficulty of identifying actual CSR expenditures or the profitability of specific expenditures, Brammer and Millington (2008, 1326) note that CSR performance is a “*multidimensional construct that encompasses a large and varied range of corporate behavior in relation to its resources, processes, and outputs.*” Consequently, different aspects of CSR performance are likely to result from different motivations or to represent responses to different societal needs or demands, and thus the effects of different types of CSR on financial performance may vary. This suggests 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. While the available archival data include some information regarding individual components of CSR, they do not provide data on expenditures by individual category. In contrast, I can directly measure such expenditures in my controlled experimental settings.

Further, even in cases in which individual components of CSR expenditures or their profitability can be estimated from available field data, such individual components are potentially confounded by many other contextual factors that need to be controlled for in any

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<sup>2</sup> Consistent with the view that experiments can offer useful insights into important CSR issues, Benabou and Tirole (2010) draw heavily on experimental work on pro-social behavior from Psychology and Economics to shed light on the underlying mix of motivations for CSR.

related analyses. Controlling for such potential confounds is often difficult because good measures of, or proxies for, the necessary control variables may not exist. For example, field managers might invest in CSR projects because this boosts their reputation in the community or among special interest groups whose admiration they value. Such behavior could confound other effects that researchers are trying to identify and finding a good archival proxy for such reputation effects may be difficult. In contrast, this problem can be addressed directly and effectively in experiments by keeping managers actions anonymous, thereby ruling out reputation effects as an explanation for managers' CSR investments.

Another important issue that can be examined more effectively in an experiment than with currently available archival data is the effect of internal managerial reporting on CSR decision making. I use an experimental setting to examine the role of internal reporting on CSR decisions for two main reasons. First, because my research question concerns internal managerial reporting, there are no archival data available to address this question. Second, using an experiment allows me to study CSR decisions in a setting in which the effect of investing in a CSR project on the reporting manager's personal wealth and the firm's profit is known with certainty by the reporting manager. This allows me to separate CSR decisions that do not maximize personal wealth and firm profit from those that do. Further, because my experimental setting allows for CSR decisions that reduce both personal wealth and firm profit, I am able to separate the effects of conventional economic forces from preferences for CSR and preferences for honesty on CSR decisions.

### **2.3 IS CSR JUST ANOTHER FORM OF AGENCY COST?**

If some managers pursue CSR activities that do not maximize firm profit because they value the societal benefits associated with such activities, this will result in conflicting preferences between owners and managers if owners do not place the same value on the societal benefits associated with the CSR activities. However, because separation of management and ownership inevitably results in information asymmetries between owners and managers of firms (Jensen and Meckling 1976), the owners of the firm may not be able to preclude managers from pursuing CSR activities that do not maximize firm profit.

The presence of conflicting preferences between owners and managers along with information asymmetry makes CSR activities that do not maximize firm profit similar to other agency costs. As with other agency costs, the cost to the firm of eliciting managers' knowledge about CSR costs and benefits, as well as the cost of monitoring managers' associated CSR activities, precludes optimal contracts from eliminating all unprofitable CSR investment. Further, as with other agency costs, disciplining capital or labor market forces may reduce, but are unlikely to eliminate, all such CSR investment.

However, there is an important aspect of CSR decisions that do not maximize firm profit that distinguishes them from typical agency costs. Typical agency costs are thought to arise from managers' preferences to maximize their own personal wealth. In contrast, managers' desire to pursue unprofitable CSR activities does not arise from a preference to maximize their own wealth, because the benefits from such activities accrue to society at large and not to them individually.

This distinction yields different theoretical predictions of manager behavior when facing financial incentives in CSR decision settings versus other typical settings that give rise to agency

costs. The introduction of financial incentives that tie the manager's payoff to firm profit should theoretically eliminate unprofitable CSR activities because such activities decrease the manager's personal wealth with no offsetting personal benefit.

This theoretical prediction differs from that for most other activities that lead to agency costs. For example, manager perquisite consumption (a larger office, a nicer firm car) would not be theoretically eliminated by the introduction of financial incentives that tie the manager's compensation to firm profit. This is true because the personal benefits that accrue to the manager from perquisite consumption will always be greater than the reduction in their personal payoff from the detrimental impact of perquisite consumption on firm profit.<sup>3</sup>

Because all three of my studies include financial incentives that tie manager's payoff to firm profit, the theoretical prediction would be that managers will not pursue unprofitable CSR activities in any of my studies. However, as reported later, a significant portion of managers do pursue unprofitable CSR activities in all three of my studies, providing evidence that such standard theoretical predictions regarding managerial behavior are not supported in my experimental settings.

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<sup>3</sup> This is true because if managers are less than 100% owners, they will personally benefit from 100% of their perquisite consumption but only bear their ownership portion of the costs of such perquisites, with the remainder of the perquisite cost being borne by the other owners of the firm. To eliminate perquisite consumption the financial incentives would need to make the manager's personal payoff be equivalent to what it would be if they owned 100% of the firm.

### **3.0 STUDY 1: WHY MANAGERS “GO GREEN” AND INVESTORS’ REACTION**

#### **3.1 OVERVIEW**

This chapter presents the first of three experimental CSR studies. Section 3.2 develops the individual research questions to be tested. Section 3.3 describes the design and procedures of the experiment used to test the hypotheses and research questions. Section 3.4 provides an analysis of the experimental data, with results for the tests of the hypotheses and research questions. Finally, section 3.5 provides a discussion of the study including a summary of the findings, conclusions that can be reached based on the experimental data, and limitations.

Firms are increasingly focused on promoting the fact that they are conducting their businesses in a more environmentally conscious or “green” manner, a phenomenon commonly referred to as “going green”. A recent survey of business leaders conducted by the accounting firm Grant Thornton in conjunction with Business Week found that 77% of those surveyed anticipated spending more on environmental programs (Grant Thornton LLP & BusinessWeek Research Services 2007). Moreover, the type of firm likely to pursue a green strategy does not appear to be limited to large corporations or to firms in specific industries. For instance, over

1,000 organizations of every size and type are listed as members of the EPA's Green Power Partners.<sup>4</sup>

What has made going green such a popular strategy for firms? There are several possible economic benefits to going green that could influence management's choice to pursue such initiatives. First, certain green initiatives may help to contain long-term costs. For instance, building more energy efficient buildings could reduce energy expenditures in the future. Second, green initiatives may be a public relations strategy to appeal to consumers who might be influenced to purchase products from an environmentally conscious firm (Lev, et al. 2010, Neilson Global Survey on Corporate Social Responsibility 2013)<sup>5</sup>. Third, green initiatives may be a way for the firm to attract potential employees and boost employee productivity (McGuire et al. 1988, Balakrishnan et al. 2011). Finally, green initiatives may be a signal to the market about the future earnings strength of the firm, since it would be easier for firms with consistent levels of high earnings to pursue green initiatives (Lev et al. 2010).

Can the going green phenomenon be explained solely through the types of economic benefits described above that such a strategy might provide? If the economic benefits of going green do not outweigh the costs, economic theory predicts that no firm would ever pursue a strategy of going green. Because we know that many firms are currently pursuing green initiatives, to accept this view we would have to conclude that in all these cases the economic benefits of pursuing green initiatives outweigh the costs. How realistic is this assumption?

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<sup>4</sup> A Green Power Partner is defined by the EPA's Green Power Partnership Requirements to be an organization that purchases at least a specified percentage of their annual electricity use from green sources. The minimum percentage of green power that must be purchased ranges from 2% to 10% depending on the overall annual electricity usage (U.S. Environmental Protection Agency 2008).

<sup>5</sup> The Neilson Global Survey on Corporate Social Responsibility found that 50% of the 29,000 individuals surveyed said that they are willing to pay more for products or services from a company that has programs in place to give back to society.

While the economic benefits associated with going green may clearly outweigh the costs for some firms, it seems unlikely that the top managers of all firms pursuing green initiatives have reached this conclusion, particularly since the possible economic benefits associated with green initiatives are typically uncertain and difficult to quantify, while the costs are often known with certainty. For example, in the spring of 2007 PepsiCo announced the purchase of 3 billion kilowatt hours of renewable energy credits to offset the total amount of electricity that would be used by all of PepsiCo's U.S. facilities over the next three years (Horovitz 2007). These renewable energy credits are sold separately from the sale of electricity and act to subsidize the higher cost of producing electricity from renewable sources. Although PepsiCo did not disclose the purchase price of the credits, there is no doubt that the cost was significant and known to management, while the economic benefits arising from this decision would be much less transparent.

If we accept the premise that perhaps some managers pursue green initiatives even when the economic costs to such initiatives may outweigh the benefits, what motivates managers to do so? Perhaps managers have an intrinsic motivation to pursue green initiatives even when the green initiatives are likely to be detrimental to earnings because they believe it is the "right thing to do." It is very difficult to use field data to determine if such an intrinsic motivation on the part of managers exists because the true net cost or benefit of going green is very difficult to quantify for actual cases of corporate environmental initiatives.

Assuming some managers are intrinsically motivated to pursue green initiatives even in the absence of economic benefits, the question then becomes, how do investors react to such a decision? If investors act to maximize their utility for wealth, presumably they will reduce their bids for the firm's stock in a manner that will cause them to achieve the same rate of return as

they enjoyed without the green initiatives. However, if some investors value green initiatives, perhaps they will be willing to accept a lower rate of return on their investment, thereby bearing a portion of the cost of going green.

To answer these questions, I conduct an experiment in which going green had a net cost to participants (i.e. the overall amount available to managers and investors was reduced). Analyzing the behavior of managers and investors in a setting where there are no economic benefits associated with going green allows me to examine whether managers nevertheless choose to contribute to a green cause and how investors respond to managers' decisions. Since there are no economic benefits for managers in my experimental setting, contributions by managers provide evidence that they value the societal benefits of going green. Likewise, if investors do not lower their bids for the firm's stock by the full amount of the manager's contribution, this provides evidence that, like some managers, some investors also value the societal benefits of green initiatives.

The results of my experiment show that, inconsistent with conventional economic reasoning, managers (who were also 100% owners of the firm) were willing to contribute to a green fund, even though this contribution was costly to them personally. Moreover, even though managers bear a significant cost for going green, investors were willing to share at least a portion of this cost. Overall, these results suggest that both managers and investors are willing to accept lower payoffs to support a green initiative. This result is important because it shows a willingness on the part of both managers and investors to share the cost of providing societal benefits.

## **3.2 DEVELOPMENT OF RESEARCH QUESTIONS**

Conducting business in a more environmentally friendly manner is closely related to the broader topic of CSR. CSR includes not only responsibility for the environment, but also extends to a responsibility for other societal concerns, such as human rights and community development. The evidence from the related existing empirical research is mixed, with some studies finding a negative relationship between CSR and financial performance, some finding a positive relationship, and still others with inconclusive results (Griffin & Mahon 1997). There are several significant obstacles to using field data to assess the relationship between CSR and financial performance. A lack of an adequate proxy to measure the level of CSR is a common problem in these studies, as well as a lack of consensus on the appropriate financial measure used to evaluate performance.<sup>6</sup> However, even if an adequate proxy for CSR were available and an appropriate financial measure was agreed upon, disentangling the various motives of managers for pursuing CSR is very difficult because the potential motives occur simultaneously in the natural environment.

### **3.2.1 Managers' decision to go green**

Empirical studies are not the only relevant area of research regarding the decision to go green. Experimental public goods studies typically ask participants to contribute an amount that is costly to them personally, but beneficial to the overall earnings of the group. The general

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<sup>6</sup> In the 51 studies reviewed by Griffin and Mahon (1997), 80 separate financial measures were used, 57 of which were used only once.

conclusion from these public good studies is that individuals contribute approximately 40-60 percent of their endowment to the public goods in a single play game (Fehr and Gächter 2000).

Although the rate of contribution to the public good in previous studies has been shown to be quite high, my study differs from such previous studies in two important ways. First, in the public goods experiments the amount given generally increased by a specified multiple and was divided evenly among all of the individuals within the experimental group. The effect of the multiple used in these experiments is to expand the overall amount of earnings available to all participants. In contrast, in my study contributions to the green fund were not multiplied by any amount, making the total amount of money to be divided among participants in the experiment and the green fund constant. Since contributions in public goods experiments generally increased overall earnings while contributions in my study decreased overall earnings, this should reduce the amount of contributions in my study relative to that generally found in public goods experiments. Second, in the public goods experiments, the amount contributed to the public good was distributed back to the participants involved in the experiment who could use this money in any way they saw fit. In my study contributions to the green fund go to a third-party organization constrained to use these funds to reduce greenhouse gases. Because of these design differences, a contribution to the green fund by a manager in my study *decreased* the amount that is received by the investors, while a contribution to the public good in public goods experiments *increased* the amount received by the other participants. Therefore, in the absence of other offsetting forces, one would expect the amount contributed to the green fund in my experiment to be lower than the amount contributed to public goods in previous experiments.

However, a potential force that may increase the level of contributions in my experiment is the fact that the contribution is to an actual green fund and this could motivate managers

concerned with environmental issues. Offsetting this view, however, is survey data indicating a belief-behavior gap. In Mainieri's 1997 survey, although a majority of the respondents to their survey were very concerned about environmental issues, only 14-30% of individuals indicated that environmental considerations actually had an impact on the items they purchase.<sup>7</sup>

Although some prior evidence supports the expectation that some managers in my experiment will contribute a portion of their firm's earnings to a green fund, the previous evidence is far from conclusive. Therefore I examine this issue as a research question rather than offer a directional hypothesis:

**RQ1:** *In the absence of any economic benefit, will some managers contribute a portion of their firm's earnings to a green fund?*

### **3.2.2 Investors' reaction to managers' decision to go green**

If some managers contribute a portion of their firm's earning to a green fund, how will investors react when such a decision has no possible economic benefits? Traditional financial models assume that the price investors pay for a share of stock is determined by the associated future stream of cash flows and a rate used to discount these future cash flows (Sharpe 1964). Under these models, if investors base their bids on the expected value of the liquidating dividend (i.e., cash flow) associated with a share of stock, a contribution to a green fund that reduces the liquidating dividend should cause the investors to reduce their bids by exactly the amount of the contribution.

However, if some investors value the societal benefits of green initiatives, these investors may accept a lower rate of return from a firm engaging in such initiatives. The existence of

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<sup>7</sup> Other surveys cited by Mainieri et al. such as Gutfield (1991) reported a similar belief-behavior gap.

mutual funds that invest in only socially responsible firms suggests there may be some such investors. There are several empirical studies seeking evidence of the existence of “ethical” investors who reward firms for socially responsible behavior, but these studies are focused on the economic benefits from green initiatives that may reward investors, rather than investors who reduce their required rate of return for firms who engage in green initiatives (Belkaoui 1976, Mahapatra 1984, Shane and Spicer 1983). A more recent examination of this issue did find some limited evidence that socially responsible investment funds in Europe and Asia underperform their benchmark portfolios (Renneboog 2008), hinting that socially responsible investors may be willing to accept a lower return in exchange for furthering the social good.

Since there are no economic benefits associated with going green in my study, the cost of any contribution to the green fund by the manager must be borne by the manager or the investors. If there are investors who value green initiatives even when these initiatives have no possible economic benefits, all or a portion of the cost of going green could be borne by the investor rather than being borne entirely by the manager. To my knowledge such an intrinsic motivation on the part of investors to invest in green firms has not been documented in a market setting in prior research. Therefore, I do not make a prediction regarding the extent to which investors will reduce or increase their bids when managers contribute to a green fund, but rather I pose a research question as follows:

**RQ2:** *In the absence of any economic benefit, will investors reduce their bids when managers make a contribution to the green fund, and how will this bidding behavior affect the earnings of both managers and investors?*

### 3.3 EXPERIMENTAL DESIGN

The research questions described above are investigated using a computerized experimental market environment. I used an experiment because of the control over environmental factors that an experimental setting affords. Because my study examines whether managers and investors value going green in the absence of economic benefits, my ability to isolate the effect of going green in the absence of any economic benefits is crucial. In my experimental setting, the cost of the going green has been operationalized as a contribution to Carbonfund.org, a real non-profit organization that uses contributions to reduce greenhouse gases.<sup>8</sup> Manager contributions are real in that the amount contributed to Carbonfund.org in the study was actually donated to Carbonfund.org by the experimenter. Contributions made by participants to Carbonfund.org reduced the amount of money available to be divided among managers and investors in the experiment.

By controlling for all factors other than the immediate negative economic effect of contributions to Carbonfund.org, I am able to ascertain whether managers in my study are willing to take a socially conscious action and how investors react if they do. Purely economic managers would never contribute to Carbonfund.org because they would anticipate a negative investor response. However, if managers are intrinsically socially conscious, they may contribute anyway. In addition, if some investors are also socially conscious, they may respond favorably to the manager's action by paying more for the stock than economic theory predicts.

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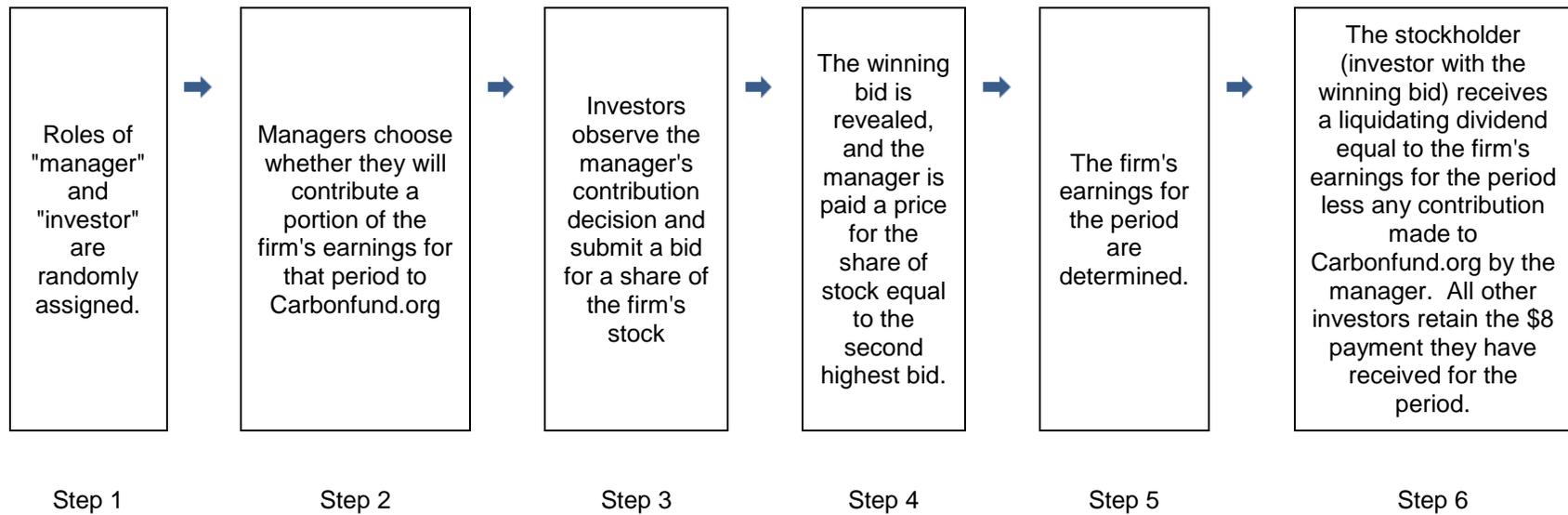
<sup>8</sup> Carbonfund.org's stated mission includes " supporting renewable energy, energy efficiency and reforestation projects globally that reduce carbon dioxide emissions and the threat of climate change." More than 1,000 businesses and organizations are listed as CarbonFree partners by Carbonfund.org and include well known businesses such as Amtrak, Dell, and Volkswagen.

Twenty-eight undergraduate accounting students participated in this study in two separate sessions that lasted approximately 60 minutes each.<sup>9</sup> Each experimental session consisted of 15 periods in which investors bid for the shares of stock offered for sale by the managers.

Figure 1 is a flowchart detailing the steps followed in the experiment. In Step 1, participants in the experiment were randomly assigned either the role of “manager” or “investor” at the beginning of the experiment, and these roles did not change for the duration of the experiment. Three investors were randomly matched with a different manager at the beginning of each period so that there would be no reputation effects.

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<sup>9</sup> The first experimental session had 16 participants, and the second session had 12 participants.



**Figure 1: Steps in the Experiment for Study 1**

At the beginning of each period managers were endowed with a share of stock to be offered for sale to the three investors with whom they were matched for that period. Each share of stock carried with it a liquidating dividend equal to the net earnings of the firm for that period. This liquidating dividend accrued to the stockholder (winning investor) at the conclusion of each period. The firm generated one of the following possible earnings amounts each period using the probabilities shown below:

**Table 1**

<b>“Low” earnings (1/3 chance)</b>	<b>“Normal” earnings (1/3 chance)</b>	<b>“High” earnings (1/3 chance)</b>
\$4	\$8	\$12

In step 2 each manager was given the choice to contribute a portion of their firm’s current period earnings to Carbonfund.org, a real non-profit organization that invests in carbon offsetting projects. Managers were able to choose contributions ranging from \$0 to \$4 in 50 cent increments. This contribution reduced the earnings of the firm that were distributed as a liquidating dividend to the investor who owned the firm’s stock at the end of each period. That is, the liquidating dividend distributed to the winning investor at the conclusion of each period was determined as follows:

$$\text{Liquidating Dividend} = \text{The Firm’s Earnings} - \text{Contribution to Carbonfund.org}$$

In Step 3, after the manager made their contribution decision, each investor bid in a second-price auction for the share of stock offered for sale by the manager.<sup>10</sup> Each investor was provided with funds with which to bid for the share of stock, consisting of a \$5 show-up fee and an additional \$8 endowment. Each investor could view on their computer screen the range of possible liquidating dividends that they could receive if they purchased the stock of the firm. The range of possible liquidating dividends for the share of stock was determined based on the contribution decision of the manager and the possible earnings for the firm as shown above.

As mentioned previously, in each period each investor made a bid to purchase the share of the firm's stock being offered for sale by the manager. In Step 4, the investor that submitted the highest bid purchases the share of stock at the amount of the second highest bid. After this winning investor for the period is determined, he/she pays to the manager the purchase price of the stock, which is the second-highest bid.

In step 5, the computer randomly selected one of the three possible earnings amounts for the firm; \$4, \$8 or \$12, with each possible earnings amount having an equally likely chance of being selected.

In Step 6, after the firm's earnings for the round are determined, the winning investor receives the liquidating dividend associated with the share of stock. At this time, both managers and investors see their total earnings for the period on the computer screen. Winning investors receive their endowment of \$8 plus the liquidating dividend less the amount they pay to purchase the share of stock. All other investors retain their endowment of \$8. Managers receive the purchase price for the share of stock. Managers and investors see their earnings and decisions from prior periods throughout the experiment.

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<sup>10</sup> A second-price auction was used because it is a theoretically demand-revealing mechanism that does not depend on expectations of rivals bids (Cox et al. 1982).

At the conclusion of the 15 periods, one of the 15 periods was selected at random as the period for which the participants were paid. Participants completed a post-experimental questionnaire to assess whether participants believed contributions made in the experiment were real and would actually be donated to Carbonfund.org. The post-experimental questionnaire also asked several questions that assessed the level of participant concern regarding environmental causes.

In my experimental setting the variable portion of manager's earnings relies on the bidding behavior by investors. Basing the manager's compensation on the behavior of investors is similar to the real world in that most management compensation is tied in some manner to the price of their stock, either through direct stock ownership or stock options. Because of this design, a reduction in bids by investors will also reduce manager's earnings, causing them to bear at least a portion of the cost of going green. This setting is similar to that of an IPO, where owner-managers are selling the firm to public investors.<sup>11</sup>

## **3.4 RESULTS.**

### **3.4.1 Overview**

I begin with a general overview of the results. Descriptive statistics of the amount and frequency of contributions to Carbonfund.org by the managers are found in Panel A of Table 2. As we can see from these data, although a zero contribution is the most frequent contribution amount (36%

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<sup>11</sup> This IPO setting was used in contrast to other settings to control for the possible confounding effects of agency costs.

of the total), more managers made a contribution to Carbonfund.org (64% of the total) than did not make a contribution. Panel B of Table 2 shows the overall average contribution to Carbonfund.org was \$0.95 (24% of the maximum allowed contribution of \$4) and the average non-zero contribution to Carbonfund.org was \$1.49 (37% of the maximum allowed contribution of \$4). Panel A of Figure 2 shows the average contribution to Carbonfund.org by period, where we see that there is no discernible trend in the level of contributions over time.

**Table 2**

**Panel A: Descriptive statistics regarding contribution and bidding behavior**

<b>Available contribution levels</b>	<b>Frequency of contributions at each available level</b>	<b>Percent of total contributions made at each available level</b>	<b>Expected value of liquidating dividend<sup>a</sup></b>	<b>Average bid by investors</b>
0	38	36.19%	\$8.00	\$9.24
\$.50	14	13.33%	\$7.50	\$9.15
\$1.00	18	17.14%	\$7.00	\$8.21
\$1.50	11	10.48%	\$6.50	\$8.08
\$2.00	15	14.29%	\$6.00	\$7.99
\$2.50	3	2.86%	\$5.50	\$8.41
\$3.00	3	2.86%	\$5.00	\$6.75
\$3.50	1	0.95%	\$4.50	\$8.00
\$4.00	2	1.90%	\$4.00	\$6.83

<sup>a</sup> The expected value of the liquidating dividend is always equal to \$8 minus the contribution since \$8 is the expected value of the earnings draw of the firm calculated as follows:  $(1/3 * \$4 + 1/3 * \$8 + 1/3 * 12) = \$8$

**Panel B: Information regarding average overall contributions and average overall bids**

<b>Weighted average overall contribution to Carbonfund.org<sup>a</sup></b>	<b>Weighted average non-zero contribution to Carbonfund.org<sup>b</sup></b>	<b>Average Bid by Investors when no contribution to Carbonfund.org was made<sup>c</sup></b>	<b>Average Bid by Investors when a contribution was made to Carbonfund.org<sup>d</sup></b>
\$ .95	\$1.49	\$9.24	\$8.23

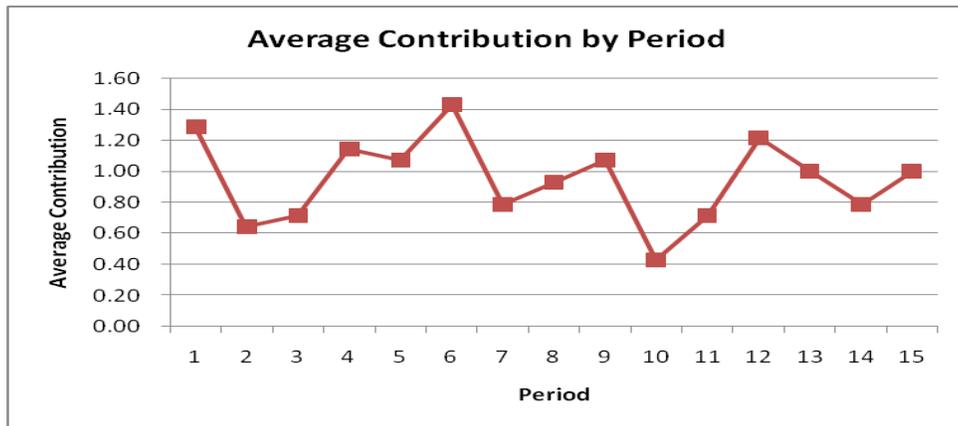
<sup>a</sup> This measure is calculated by multiplying each available contribution level times the frequency of contributions made at that level, summing these amounts and dividing by the total number of contribution decisions made by managers in this experiment.

<sup>b</sup> This measure is calculated by multiplying each available contribution level times the frequency of contributions made at that level, summing these amounts and dividing by the total number of positive contribution decisions made by managers in this experiment (this measure excludes the number of times that no contribution was made).

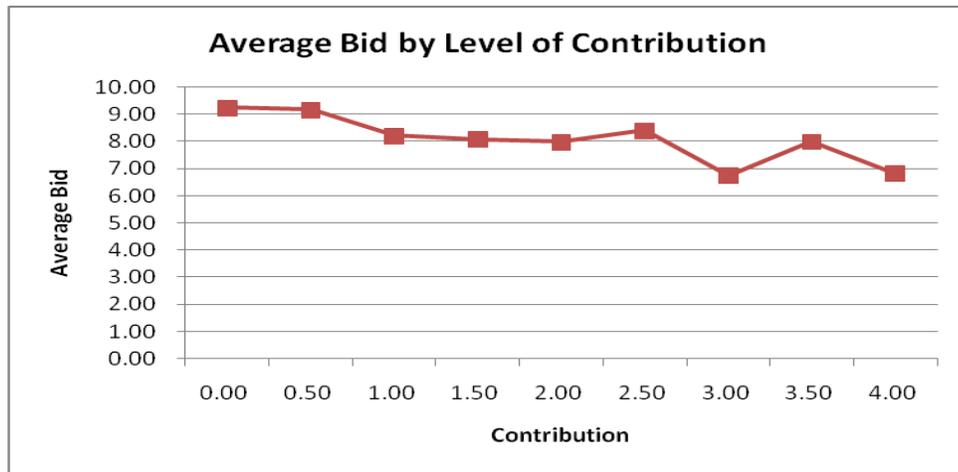
<sup>c</sup> This is the value of the average bid when managers did not make a contribution to Carbonfund.org (as shown in Panel A above).

<sup>d</sup> This measure is calculated by summing all bids made when managers made a contribution to Carbonfund.org and dividing by the total number of bids in this condition.

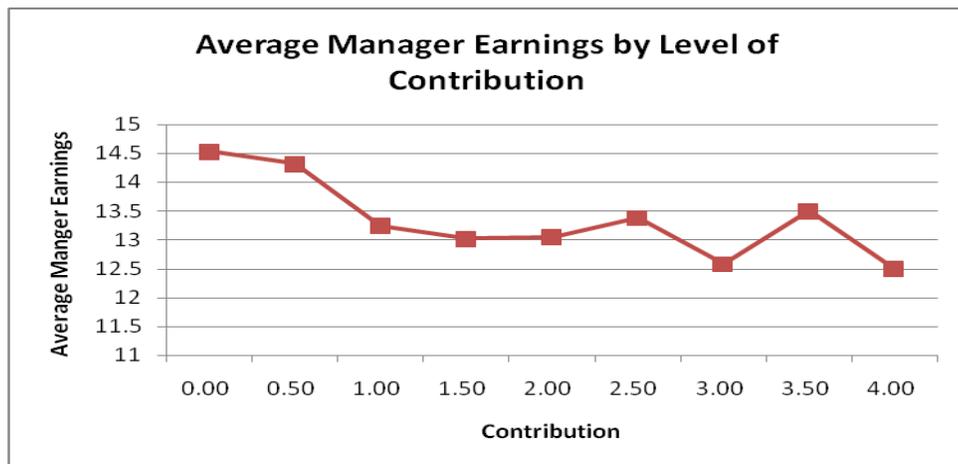
**Panel A**



**Panel B**



**Panel C**



**Figure 2**

Table 2 also provides data concerning the bidding behavior of investors. As shown in Panel A of Table 2, on average, investors reduced their bids when a contribution to Carbonfund.org was made. (Average bids for positive contribution amounts are all lower than the average bid with no contribution.) As further evidence that investors reduced their bids whenever a contribution to Carbonfund.org was made, we can see in Panel B of Table 2 that investors' average bid was \$9.24 when there was no contribution by managers to Carbonfund.org, and \$8.23 when a contribution was made to Carbonfund.org. Panel B of Figure 2 shows the average bid by contribution level and is a graphical representation of the tendency of investors to reduce their bids as the contribution level increases. Panel C of Figure 2 is further graphical evidence supporting H2 in that managers earnings show a general tendency to decrease as the contribution level increases.

The descriptive data discussed above provide an overview of the results. Statistical tests of Research Questions 1 and 2 are provided below.

### **3.4.2 Test of RQ1**

RQ1 asked whether a portion of managers would be willing to contribute some of their firm's earnings to Carbonfund.org. The 95% Agresti-Coull confidence interval for the proportion of managers choosing a non-zero contribution is 54.27% to 72.38%. Since this confidence interval does not include the economic prediction of zero, this supports the conclusion that, contrary to the economic prediction that no managers will make a contribution, a statistically significant portion of managers chose to contribute a portion of their firm's earnings to Carbonfund.org.

### 3.4.3 Tests of RQ2

RQ2 asked if investors reduced their bids in response to a contribution by a manager of a portion of their firm's earnings to Carbonfund.org, and how this bidding behavior effected both manager and investor earnings.

I first test for the effect of a contribution on investor bidding behavior by testing the effect on managers' earnings. Managers' earnings in my experiment consist of a \$5 participation fee and the payment they receive from the winning investor, which is equal to the second highest bid. Since the variable portion of managers' earnings was based solely on the bidding behavior of investors, lower bids by investors when a contribution was made will reduce managers' earnings. If a contribution is shown to reduce managers' earnings, this would provide evidence that the contribution caused investors to reduce their bids.

To test the effect of a contribution on managers' earnings, I ran a regression using the contribution to Carbonfund.org as an independent variable, and manager earnings as the dependent variable. The results of this regression are found in Panel A of Table 3. The results show that the contribution has a negative and significant effect on the payment received by the manager from the winning investor. (t-value = -4.45, p-value <.0001 ) That is, investors reduced their bids when managers contributed to Carbonfund.org, lowering the earnings of the manager. The value of the coefficient on contribution of -.63 indicates that a contribution to Carbonfund.org of \$1 reduced the payment that the manager received from the winning investor by an average of \$0.63. This result indicates that managers bore a cost for making a contribution.

**Table 3**

**Regression analysis of the relation between contribution and manager and winning investor earnings**

**Panel A:** Regression model analyzing the effect of contribution on manager's earnings <sup>a</sup>

	<b>Coefficient</b>	<b>t-value</b>	<b>p-value</b>
<b>Contribution</b>	-0.63	-4.45	<.0001

**Panel B:** Regression model analyzing the effect of contribution on the winning investor's earnings <sup>b</sup>

	<b>Coefficient</b>	<b>t-value</b>	<b>p-value</b>
<b>Contribution</b>	-.37	-2.67	.0076
<b>Earnings Draw (\$4, \$8, or \$12)</b>	1.04	30.13	<.0001

<sup>a</sup> The regression model in Panel A uses manager's earnings as the dependent variable and contribution amount as the independent variable

<sup>b</sup> The regression model in Panel B uses the winning investor's earnings as the dependent variable and contribution amount and earnings draw of the firm as the independent variables

Results from the previous regression show that investors reduce their bids whenever managers make a contribution to Carbonfund.org, resulting in a reduction to the manager's earnings. RQ2 also asks what affect the bidding behavior by investors whenever managers make a contribution to Carbonfund.org has on investor earnings. This is an important question because investors could be reducing their bids enough that the entire cost of the contribution is borne by the manager, or reducing their bidding by an amount less than the full cost of the contribution, thereby bearing a portion of the cost themselves. To test this research question I ran a regression using the earnings of the winning investor as the dependent variable, and contribution as the independent variable. Since the earnings of the winning investor in my experiment depend not only on the contribution and investor bidding behavior, but also the earnings draw of the firms, I included earnings draw as a control variable in this regression. The results of this regression are

shown in Panel B of Table 3, where we see that a contribution had a negative and significant effect on the earnings of the winning investor (t-value = -2.67, p-value=.0076)<sup>12</sup> after controlling for the effects of the earnings draw of the firm. The value of the coefficient for contribution of -.37 indicates that a contribution to Carbonfund.org of \$1 reduced the earnings that the winning investor received as a liquidating dividend by an average of \$0.37.<sup>13</sup> The contribution had a negative effect on winning investor earnings, even though the investors had the opportunity to adjust their bids to fully compensate for any contribution the manager made to Carbonfund.org. This finding provides evidence that winning investors place a value on the societal benefits associated with contributions the manager made to Carbonfund.org because they willingly accepted a lower payoff when a contribution had been made to Carbonfund.org.

### 3.5 DISCUSSION AND CONCLUSION

The results of this experiment provide information on the behavior of individuals when CSR activities have no possible economic benefits. I find that a majority of managers were willing to contribute to Carbonfund.org, even though doing so reduces their earnings. When managers made a contribution to Carbonfund.org, investors reduced their bids, but did not reduce them enough to fully take into account the reduction in their expected liquidating dividend caused by the managers' contribution. The net effect of the bidding behavior by the investors caused the investors to bear approximately one-third of the cost of going green, leaving the remaining two-thirds of the cost of going green to be borne by the manager.

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<sup>12</sup> The results of this regression have been adjusted for the effects of repeated measures.

<sup>13</sup> An analysis of the average percentage of the cost of the contribution assumed by the investor by contribution level did not reveal a discernible trend as the contribution level increased.

Prior research attempting to establish a link between environmental social responsibility and financial performance has failed to reach a consensus on whether green initiatives are associated with positive or negative financial performance. While more recent meta-analysis of the studies examining the link between corporate CSR and corporate financial performance (CFP) have found a small positive association (Margolis et al. 2009, Orlitzky 2003), most scholars agree that it is still difficult to reach any definite conclusions from these findings. As Margolis and Walsh 2003, 278 note, “the imperfect nature of these studies makes research on the link between CSP and CFP self-perpetuating: each successive study promises a definitive conclusion, while also revealing the inevitable inadequacies of empirically tackling the question.”

Part of the reason for inconsistent results in these prior studies could be due to the mixed effects of green initiatives, namely the economic benefits that may be associated with such initiatives in addition to their cost. My study used an experiment to eliminate the possibility of any economic benefits associated with going green for the specific purpose of documenting possible considerations by managers and investors of the societal benefits of green initiatives. The results indicate that some managers and investors are willing to forego individual economic benefits in return for doing something that benefits society as a whole.

Typical economic models assume a lack of a consideration on the part of managers and investors for the societal benefits that may arise from going green. Such models lead to dire predictions of the eventual outcome of such totally self-interested behavior. Hardin’s (1968) treatise on the tragedy of the commons warns of the eventual doom of our planet if we do not act to reign in such pure self-interest. The willingness of managers to pursue green initiatives even

if they are costly to themselves personally and the willingness of investors to share some of the costs of going green may be a force to counter-act problems such as the tragedy of the commons.

There are some important limitations to my study. First, the specific scenario examined in this experimental setting relied on the fact that there were no economic benefits to going green. While this is useful to establish a baseline of behavior in such a setting, it limits the ability to generalize from this setting. In the real world there are certainly economic benefits to going green, ranging from additional revenue from environmental conscious consumers to reduced costs if the plan to go green includes a net reduction in energy usage. Second, although the experiment showed a willingness by investors to accept a lower rate of return when investing in a green firm, assessing the true magnitude of this reduction in the rate of return in the real world is difficult.

Despite these limitations, the results of this research are important because they show that managers may be willing to pursue going green even if there is no economic benefit to doing so, and that investors may be willing to accept lower rates of return in exchange for investing in green firms.

## **4.0 STUDY 2: MANAGERS' GREEN INVESTMENT DISCLOSURES AND INVESTORS' REACTION**

### **4.1 OVERVIEW**

This chapter presents the second experimental CSR study (a joint project with Don Moser). Section 4.2 provides background and general motivation for the study. Section 4.3 develops the individual hypotheses to be tested. Section 4.4 describes the design and procedures of the experiment used to test the hypotheses and research questions. Section 4.5 provides an analysis of the experimental data, with results of the tests of the hypotheses and research questions. Finally, section 4.6 provides a discussion of study including a summary of the findings, conclusions that can be reached based on the experimental data, and limitations.

Study 1 provides evidence that managers and investors value the societal benefits associated with CSR. However, the setting used in study 1 is missing two key elements that are typically found in a CSR decision setting. First, managers in study 1 were 100% owners of the firm, although managers typically own only a portion of the firm. This is an important distinction because managers may vary their CSR decisions when other shareholders are also affected by such decisions. Second, any CSR investments in study 1 were always completely disclosed to investors, although in practice CSR disclosure is voluntary and managers can choose how much, if anything, they want to disclose about their CSR investments. While study 1 was an important

first step to show that managers and investors place a value on the societal benefits associated with CSR activities, study 2 is an important follow-up study that builds on these findings in a setting that more closely parallels many actual corporate settings.

Study 2 incorporates the two key elements described above that were not present in study 1. That is, in study 2 managers are only partial owners of the firm, which means that other current shareholders' payoffs are affected by the managers' CSR investment decision. In addition, managers in study 2 not only made a decision about how much of a CSR investment to make, they also decided what information, if any, to disclose to investors about their CSR investment decision. As in study 1, investors in study 2 placed bids to purchase the firm, but unlike in study 1, they did not always know the manager's CSR investment decision prior to bidding. Rather, they placed their bids after receiving any CSR investment report the manager wished to send to them. Similar to study 1, study 2 examines a particular type of CSR activity, green investing, in an experimental market setting in which the firm manager and current and potential shareholders know for certain that the financial cost to the firm of a green investment always exceeds the financial benefit (i.e., the investment is always unprofitable).<sup>14</sup>

Consistent with expectations, we find that manager participants often make unprofitable green investments even though this decreases their and other current shareholder participants' payoffs, suggesting that such managers value the societal benefits associated with their investment.<sup>15</sup> Of course, there are also cases in which managers do not make green investments,

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<sup>14</sup> This is an essential design feature because if the green investment could have been profitable, we could not address our research questions, which require that managers first make a green investment that lowers shareholder value.

<sup>15</sup> From this point forward we drop the word "participant" when referring to the manager, current shareholder or potential investor participants in our experiment. That is, we refer to such participants simply as "managers", "current shareholders" or "potential investors" to simplify and facilitate our exposition.

suggesting that managers sometimes are unwilling to impose the cost of investing on themselves or on other current shareholders in order to benefit society. Also consistent with expectations, we find that managers who make an unprofitable green investment often disclose to potential investors that they have done so and focus their disclosure on the societal benefits of the investment rather than on the cost to the firm. It appears that managers provide such disclosures because potential investors' standardized bids for the firm are higher when managers disclose their green investments than when they do not, which, in turn, lowers the cost of the unprofitable green investment borne by the managers and other current shareholders. Finally, we also find some evidence that the cost of the green investment borne by the managers and other current shareholders is lower when managers' disclosures of their unprofitable green investments focus on the societal benefits of their investment rather than on the cost to the firm.

In addition to the expected findings reported above, one unexpected finding is that, while managers who invest very high amounts in unprofitable green initiatives often disclose that have made such investments, they typically do not disclose the *amount*. This result is consistent with managers' responses to a post experiment question indicating that, although they expected potential investors to react favorably to lower green investment amounts, they also expected that potential investors might react unfavorably to very high green investment amounts. Consistent with managers' expectations regarding lower amounts of green investment, we document a positive correlation between potential investors' standardized bids and the *disclosed* amount of investment. However, because managers rarely disclosed very high green investment *amounts*, we do not have sufficient data to test the validity of managers' concern that investors' might react unfavorably to such high green investment amounts.

The contributions of this study are threefold. First, for those who believe that firm managers should only invest in activities that benefit society when such investments also maximize shareholder value, our results identify an agency problem (i.e., managers making green investments at the expense of shareholders).<sup>16</sup> However, for those who believe firm managers should invest in activities that benefit society even when this lowers shareholder value, our results could be viewed positively because they suggest that managers sometimes act in the interest of society even when this lowers their and other current shareholders' personal wealth.

Second, our results show that managers can craft disclosures of their unprofitable CSR investments in ways that encourage investors to help lower the cost of those investments to the manager and other current shareholders. This helps explain why firm managers tend to disclose the societal benefits of their investments, while often downplaying the cost of such investments to shareholders. However, our results also suggest that managers expect investors to view very high amounts of unprofitable green investments unfavorably. Finally, our study demonstrates the advantages of using experiments to examine important CSR issues that are difficult to study satisfactorily using archival data.

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<sup>16</sup> Although this is an agency problem because managers are taking an action that harms other shareholders financially, as noted in section 2.3 this happens in our setting despite the presence of financial incentives designed to eliminate such agency costs if managers were wealth-maximizers.

## 4.2 BACKGROUND AND MOTIVATION

Although not required, most large firms now issue a CSR report that includes some information on environmental performance.<sup>17</sup> The KPMG International Survey of CSR (2011) reports that 95 percent of the 250 largest global firms and 83 percent of the 100 largest US firms now engage in some type of voluntary CSR disclosure. Most such disclosures relate to the impact of corporate activities on society (e.g., the extent of carbon emissions or the energy cost savings from improved efficiency) rather than to the overall financial impact on firm profits (Jose and Lee 2007). Thus, CSR disclosures differ from most other disclosures studied by accounting researchers, which often provide information regarding the financial impact of actions or events on earnings to help investors or creditors assess the effect on future cash flows.

CSR disclosures may partly be a response to a large and growing group of investors who want to invest in socially responsible firms. The Social Investment Forum (2010) estimates that \$3.07 trillion of the \$25.2 trillion being professionally managed in the US in 2010 was invested using criteria based on social responsibility. In addition, the amounts invested using such criteria grew at a 13% annual rate from 2007 to 2009, with over 250 separate socially responsible mutual funds now available. Such statistics suggest that some investors, value the societal benefits associated with CSR activities. In a review of the literature assessing the performance of socially responsible investment (SRI) funds, Renneboog et al. (2008, 1724) conclude that “in the US and UK, there is little evidence that the risk adjusted returns of SRI funds are different from those of conventional funds.” However, because there is some evidence that SRI funds in Continental

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<sup>17</sup> Although most CSR disclosures are voluntary, domestic U.S. public companies are required to disclose any material risks resulting from the legislative, regulatory, business, market, or physical impact of climate change (SEC, 2010. Commission Guidance Regarding Disclosure Related to Climate Change).

Europe and Asia-Pacific underperform benchmark portfolios, their overall conclusion is that “the existing studies hint but do not unequivocally demonstrate that SRI investors are willing to accept suboptimal financial performance to pursue social or ethical objectives.” (1723)

Because CSR reports are voluntary and typically not verified by an independent third party, managers have considerable leeway in what they disclose.<sup>18</sup> Given this, managers likely put a positive spin on the information they disclose. Indeed, casual examination of actual CSR reports suggests that managers tend to highlight the benefits of their CSR activities to both society and the firm, while remaining silent about the related costs to the firm. For example, Coca-Cola reports in its 2008/2009 Sustainability Report that “In 2009, our Firm office in Belgium made significant lighting, heating and cooling efficiency upgrades and switched to 100 percent renewable energy, reducing its ecological footprint by more than 25 percent.” This is a typical presentation of CSR information in that it includes information about efficiency and the positive environmental impact without mentioning the cost to the firm.

Because managers can selectively disclose the benefits and costs of their CSR activities, it is difficult to use field data to draw reliable conclusions about the impact of such activities on the firm’s profits or cash flows. In turn, it is difficult to use field data to reliably determine whether investors’ reactions to CSR disclosures are driven by the impact on profit or by investors’ preferences for the associated societal benefits. We overcome these difficulties by removing all economic incentives for managers to invest in CSR activities and for investors to value CSR activities in our experiment. This allows us to isolate and measure the effect of

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<sup>18</sup> Although some companies use independent third parties to verify their adherence to a specific CSR reporting framework, this appears to be the exception. For example, of the 100+ US firms that used the Global Reporting Initiative’s framework for CSR reporting in 2009, less than 10 used a third party to verify their reported level of adherence to the Global Reporting Initiative’s framework.

preferences for societal benefits on managers' CSR investment decisions and the related reactions of investors.

In our experimental setting the combined effect of the financial costs and financial benefits to the firm always has a direct negative effect on the firm's current cash flows but no effect on the firm's future cash flows. This is an essential feature because this means that the effect of any green investment on the firm's cash flows is negative with certainty. Consequently, neoclassical economic theory makes an unambiguous prediction that managers who are also shareholders in the firm will never make a green investment because doing so reduces their personal wealth. In addition, any disclosures that managers make about their green investments are irrelevant for firm value because potential investors already know the after-investment distribution of cash flows and therefore will value the firm based only on these cash flows.

We do not include cases in our study in which CSR investment is profit-maximizing because firms would be expected to make such investments and investors would be expected to react positively (Karnani 2010). Examining such cases would not allow us to answer our research questions which require that we first establish that some managers invest in green projects even when this lowers shareholder value.

We distinguish between "potential investors" and "current shareholders" in our study and measure investor reaction based on the stock price set by the potential investors. That is, in our experimental setting, the other current shareholders do not play a role in setting the stock price. However, it was important to include other current shareholders in our design to reflect the fact that, like managers, other current shareholders also bear a direct financial cost when managers make an unprofitable green investment.

### **4.3 DEVELOPMENT OF RESEARCH QUESTION AND HYPOTHESES**

There are several reasons why managers might choose to engage in socially desirable activities such as green investing. The standard economic view is that financial incentives drive these decisions. In other words, firms “do well by doing good” (Karnani 2010). For example, being more socially responsible could add customers, increase sales, or increase pricing power (Lev et al. 2010), attract or motivate employees (Balakrisnan et al. 2011, Bhattacharya et al. 2008), lower the cost of equity capital (Dhaliwal et al. 2011) or reduce the risk of governmental regulation. Based on such economic arguments, researchers have often focused on establishing a positive association between CSR and measures of financial performance. Based on a meta-analysis of 251 such studies over the last 40 years, Margolis et al. (2009) conclude that “the overall effect is positive but small...and the results for the 106 studies for the past decade are even smaller.” Of the 251 studies, 59% reported a non-significant result, 28% found a positive result, 2% a negative result, and the remaining 10% did not report sample size or significance.

The small positive association or more frequent failure to establish a reliable association between CSR and financial performance suggests that improved financial performance may not be the only reason firm managers engage in socially desirable activities. An alternative possibility is that managers sometimes over-invest in CSR (Barnea and Rubin 2010). That is, in addition to financial incentives, some managers may value the societal benefits (versus only considering the firm’s financial costs and benefits) of green investments, and thus might sometimes pursue unprofitable green projects. Even when an overall positive relation between CSR and financial performance is found with archival data, it is still possible that some unprofitable CSR activities are offset by other profitable CSR activities. Providing direct

evidence regarding unprofitable CSR activities with archival data is difficult because unprofitable green projects cannot be reliably separated from profitable ones.<sup>19</sup>

Many individuals contribute personal wealth to charity, and to green causes specifically (Giving USA Foundation 2010). In addition, the results of study 1 show that managers who are 100% owners willingly reduce their firm's earnings by making a contribution to a real "green" fund. However, corporate settings are more complex than individual giving settings or the setting found in study 1 because corporate managers are often only partial owners of their firm. Consequently, they can shift a portion of the cost of their unprofitable green investment to the other current shareholders of the firm. This has two potential effects not present in individual giving settings: 1) managers who value the societal benefits may be more likely to invest in unprofitable green projects because they personally bear only part of the cost, and 2) managers may be less likely to invest in unprofitable green projects because they are reluctant to harm the other current shareholders. Thus, relative to individual giving settings, the first effect provides a financial incentive for managers to increase their investment, while the second effect provides a reason for them to decrease their investment. Because our experimental corporate setting introduces these two opposing forces, it is not clear how often managers will make unprofitable green investments. However, because study 1 shows that some individuals value the societal benefits associated with green investments over their personal wealth, we test the following hypothesis:

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<sup>19</sup> Barnea and Rubin (2010) point out that it is not even possible to know the overall amount of firms' CSR expenditures, noting that "a major limitation of CSR studies is the latent CSR expenditure level." (p. 71). Using CSR ratings by Kinder, Lydenberg and Domini as a possible proxy for CSR expenditures, they provide evidence that insiders' ownership and leverage are negatively associated with these ratings, while institutional ownership is not. They interpret these findings as evidence of a possible conflict between different shareholders, with insiders inducing "firms to over-invest in CSR when they bear little of the cost of doing so."

**H1:** *Some managers will value the societal benefits associated with green investing and therefore invest in an unprofitable green project even though this reduces their own and other current shareholders' wealth.*

Managers who invest in an unprofitable green project, then must decide whether to disclose their investment to investors.<sup>20</sup> In our setting, potential investors know for certain that the cost of any green investment is already reflected in the after-investment distribution of possible cash flows that they see before bidding on the firm's stock. Therefore, wealth-maximizing potential investors are indifferent to whether a green investment was made and any related disclosures are irrelevant for firm value.

However, if some potential investors value the societal benefits associated with green investing, they may respond positively to disclosure that a green investment was made.<sup>21</sup> Consistent with this possibility, study 1 found that investors were willing to bear part, but not all, of the cost of a green investment made by the sole owner of a firm. In addition, Elfenbein and McManus (2010) used data from eBay auctions to show that customers were more likely to buy, and pay higher prices for, items for which the seller had committed to donate a portion of the sales proceeds to charity than identical items for which the seller had not made such a commitment. Again, the higher prices paid by customers reduced, but did not fully offset, the

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<sup>20</sup> Although in some cases it is difficult to conceal a green investment (e.g., when the investment involves visible solar panels), in most cases investors would be unaware of firms' green investments unless the manager disclosed them. For example, investors would not know if the company purchased renewable energy credits, invested in renewable power sources, purchased energy efficient fleets of vehicles, or built energy efficient office buildings or warehouses unless the managers disclosed such information.

<sup>21</sup> Rob Bloomfield, the discussant on this study at the HBS/JAE Conference on Corporate Accountability Reporting, noted that a favorable response by investors can be viewed in the context of gift exchange. Gift exchange occurs in labor markets and involves firms giving a gift of a wage above the market clearing wage and workers responding with a gift of higher effort than the minimum enforceable level. This reciprocal relationship typically results in higher financial payoffs for both firms and workers. Although gift exchange has not been previously related to manager-investor interactions, in our setting, the managers' green investments could be viewed as a gift by investors who value the associated societal benefit to which they respond with a gift of a higher bid for the firm. However, in our setting managers' financial payoffs are always lower when managers invest and the financial payoffs of potential investors who purchase the company are always lower when they bid more for the firm. Thus, to the extent that reciprocity between managers and investors plays a role in our setting, it would need to operate through shared beliefs in the value of the societal benefits associated with green investing rather than through financial payoffs.

cost to the firm of the charitable contribution. These results suggest managers who make unprofitable green investments because they value the associated societal benefits may decide to disclose that they have done so to investors in the hopes of reducing their own and other current shareholders' cost of the investment. This leads to our second and third hypotheses:

**H2:** *Managers who make an unprofitable green investment will often disclose to investors that they have done so.*

**H3:** *Holding the distribution of possible cash flows constant, potential investors will respond more favorably to disclosure of an unprofitable green investment than to no report about green investing.*

If managers decide to disclose their unprofitable green investment, they must also decide how much detail to disclose. For example, managers could disclose the amount of the green investment, thereby emphasizing the societal benefit from reducing carbon emissions, the net cost of the green investment to the firm (i.e., the amount of the investment minus any related energy cost savings), or both. In our setting, wealth-maximizing potential investors should not be influenced by any such disclosures because the societal benefits of the green investment have no effect on their personal wealth and the net cost to the firm is already reflected in the after-investment distribution of cash flows they use to value the firm.

However, if some potential investors value the societal benefits of managers' green investments as predicted in H3, they may forgo some personal wealth and pay more for the firm when managers disclose that they have made a green investment than when they do not. If so, managers may try to focus their disclosures on the societal benefits to frame the investment more positively. In contrast, managers would likely downplay the cost to the firm because focusing on the cost would frame the investment more negatively (see Levin et al. 1998 for a review of the related framing literature). Thus, we expect managers who disclose their green investment to

focus on the societal benefits and downplay the costs to the firm and that investors will react positively to such disclosures. This leads to our third and fourth hypotheses:

**H4:** *Managers' disclosures of green investments will more often focus on the societal benefits of unprofitable green investments than on the cost to the firm.*

**H5:** *Potential investors will react more favorably to disclosures that focus on the societal benefits of unprofitable green investments than on disclosures that focus on the costs to the firm of such investments.*

## **4.4 EXPERIMENT DESIGN AND PROCEDURES**

### **4.4.1 Overview of Experiment**

We conducted our experimental markets using z-tree software in a networked computer lab (Fischbacher 2007). We recruited 90 volunteer participants on a first-come first-served basis from a lab participant pool of approximately 1,300 individuals. Our participants were 55% male and averaged 21 years of age. Three experimental sessions with 30 participants each were conducted. Each experimental session consisted of 20 independent periods and lasted approximately 90 minutes. At the conclusion of each session, one of the 20 periods was randomly selected and participants were paid their \$5 participation fee plus their earnings for the randomly selected payment period. Participants' earnings depended on the decisions that they and other participants made during the experiment (details provided below).

In each of the three sessions, participants were randomly assigned to one of three roles: 1) a manager who was a shareholder in the firm, 2) another current shareholder in the firm, or 3) one of three potential investors in the firm. These randomly assigned roles were constant

throughout the experiment. Each period, one manager was randomly matched with one current shareholder and three potential investors, creating a group of 5 participants. There were 6 such groups of 5 in each of our 3 experimental sessions, resulting in a total of 18 groups. Thus, our 90 participants consisted of 18 managers (one per group), 18 current investors (one per group) and 54 potential investors (three per group). With 20 periods in each session, this resulted in 360 observations (investment and reporting decisions) from managers (18 managers x 20 periods) and 360 observations (winning bids) from the potential investors (one winning bid for each of the 18 groups of three investors x 20 periods). Because managers, current shareholders and potential investors were randomly re-matched into new 5-member groups each period, they never knew with whom they were matched at any point in their experimental session.

At the start of each period, the manager and the other current shareholder each owned one-half of the firm. This ownership structure captures forces that are important in actual corporate settings. Specifically, this structure provides managers with 1) a personal financial deterrent against investing in the unprofitable green project, 2) a deterrent against investing in the unprofitable green project because of a fiduciary responsibility to the other current shareholder, and 3) an incentive to invest in the unprofitable green project because half of the cost of the investment can be shifted to the other current shareholder.

Managers decided whether to make a green investment and what to disclose about their investment choice to potential investors. Potential investors then placed bids to purchase the firm. Both managers and potential investors knew that any amount of green investment that was made had a real societal benefit in reducing carbon emissions because they knew that the full amount of any green investment would be donated by the researchers to Carbonfund.org, a real non-profit environmental organization that invests contributions in renewable energy and

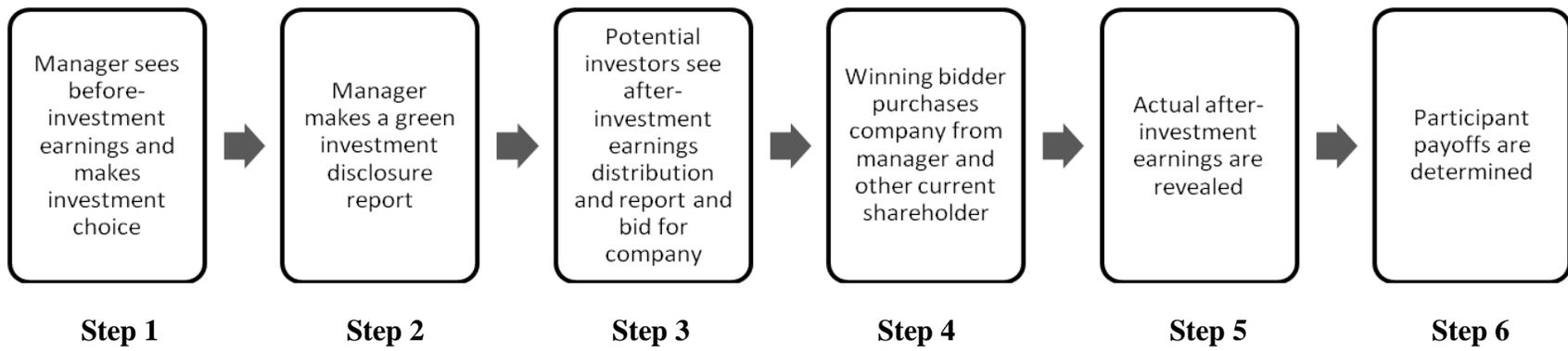
reforestation projects that reduce the amount of greenhouse gases in the environment.<sup>22</sup> After the experiment was completed, the actual dollar amount of the green investment made by managers for the randomly selected payment period was contributed to Carbonfund.org.

#### **4.4.2 Detailed Experimental Procedures**

A time-line of the steps in each period of each experimental session is provided in Figure 3. As shown in Step 1, each period managers learned the amount of earnings for the firm before they made any green investment (hereafter referred to as the “before-investment earnings”) and then decided whether to invest a portion of those earnings to reduce carbon emissions. Possible green investment amounts ranged from \$0 to \$20 in \$1 increments.

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<sup>22</sup> See [www.carbonfund.org](http://www.carbonfund.org) for additional information



**Figure 3: Steps in the Experiment for Study 2**

The firm's before-investment earnings for each period were drawn from a uniformly distributed distribution ranging from \$25-\$35 in two stages. In the first stage, a distribution with a smaller \$5 range was randomly drawn from the uniformly distributed larger \$10 range (\$25-\$35). We refer to this smaller \$5 range as the "before-investment earnings range." In the second stage, the before-investment earnings amount (i.e., a single specific earnings amount) was randomly drawn from the uniformly distributed smaller \$5 before-investment earnings range. This specific amount is the before-investment earnings amount that managers saw before making their green investment decision. As described in more detail later, the firm's before-investment earnings were selected using this two-stage process to limit the inferences potential investors could make regarding whether a green investment had been made.

Because any amount of green investment reduced the firm's energy costs, the net cost of the green investment to the firm was always less than the amount contributed to Carbonfund.org. (hereafter referred to as the societal benefit associated with the investment)<sup>23</sup>. In other words, every \$1 of green investment the manager made to reduce carbon emissions resulted in a net cost to the firm of \$0.50. This design feature reflects the fact that in many cases green investments have both societal benefits and financial benefits for the firm and that in some cases the benefits to society exceed the costs to the firm.

As shown in Step 2 of Figure 3, after managers made their investment decision, they decided what information to disclose about their decision to the potential investors and other current shareholder. Managers chose one of the reporting options shown in Table 4 depending on

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<sup>23</sup> We recognize that not all individuals view the reduction in carbon emissions caused by the contribution to Carbonfund.org when managers invest in the green project as resulting in the same amount of societal benefit, or even any societal benefit at all. However, describing the amount of the green investment as the "societal benefit" is at least partially justified because unless participants valued the effect of the contribution on society there would be no reason to ever make a green investment in the experiment. That is, managers' expected payoffs in the experiment were always higher when they did not make a green investment. For this reason and to facilitate exposition, we refer to the amount of a manager's green investment as the societal benefit.

whether they chose to make a green investment. If they made a green investment, they could 1) send no report, 2) disclose that they made an investment to reduce carbon emissions without any amounts, 3) disclose that they made an investment to reduce carbon emissions along with the amount of the investment, 4) disclose that they made an investment to reduce carbon emissions along with both the amount of investment and the related cost to the firm, and 5) disclose that they made an investment to reduce carbon emissions along with only the net cost to the firm. If they did not make a green investment, they could 1) send no report, or 2) send a report indicating that they did not make an investment to reduce carbon emissions. Table 4 provides the exact wording used on the computer screens for each type of report. The computer program ensured that any report the manager made to the investors was truthful.<sup>24</sup>

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<sup>24</sup> Managers were only allowed to truthfully report whether they invested to reduce carbon emissions, and if they chose to report the amount of their green investment or the cost to the company of their green investment, these amounts had to be reported truthfully as well. We required that all reports be truthful to ensure a clean test of investors' reaction to the content of the reports. We decided against allowing blatantly dishonest reporting (e.g., reporting that a green investment was made when none actually was) for two reasons: 1) investors reactions to the reports would have been confounded by their concerns regarding the credibility (versus the content) of the report, and 2) we were concerned that the amount of blatantly dishonest reporting and investors expectations of such reporting would have been higher in the experiment than in actual corporate settings where there would be future consequences if the lies were exposed. We note that our managers still had considerable leeway in what information they chose to disclose, ranging from disclosing no information to full information about their green investments and the cost to the company.

**Table 4**

**Managers' Reporting Choices**

Exact screen wording for reporting options when the manager chose to make a green investment<sup>a</sup>

1. No report
2. A portion of this periods' earnings have been invested to reduce carbon emissions.
3. \$ \_\_\_ of this periods' earnings have been invested to reduce carbon emissions.
4. \$ \_\_\_ of this periods' earnings have been invested to reduce carbon emissions at a cost to the firm of \$\_\_\_.
5. A portion of this periods' earnings have been invested to reduce carbon emissions at a cost to the firm of \$\_\_\_.

Exact screen wording for reporting options when the manager chose not to make a green investment:

1. No report
2. No amount of this periods' earnings have been invested to reduce carbon emissions.

<sup>a</sup> \$\_\_ shown in reports represents the actual dollar amount of green investment or the actual dollar amount of the cost to the firm as indicated in the report

Any disclosure managers chose to make was provided to the potential investors, along with the \$5 range of possible after-investment earnings. This \$5 range of after-investment cash flows was obtained by subtracting the cost to the firm of any green investment the manager made from the \$5 before-investment range described above.<sup>25</sup>

As shown in Step 3 of Figure 3, after receiving the \$5.00 range of equally likely after-investment firm earnings and any report that the manager chose to provide, each potential investor submitted a bid indicating the price s/he was willing to pay for the entire firm. At the start of each period, each potential investor received a \$30.00 endowment amount, which along with the \$5.00 participation fee could be used to purchase the firm. The potential investor

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<sup>25</sup> For example, assume that the \$5 before-investment range was \$27-\$32. If the manager made a green investment of \$2 that cost the company \$1, the after-investment earnings range shown to potential investors would be \$26-\$31.

making the highest bid purchased the firm from the manager and current shareholder. In the event of a tie, the computer randomly determined which potential investor making a highest bid purchased the firm. At the conclusion of each period, potential investors were required to repay \$15 of their \$30 endowment.<sup>26</sup>

**Table 5**

**Expected payoff for participants**

Assumptions: 1) potential investors are risk neutral, 2) \$0 green investment, 3) expected value of liquidating dividend = \$30 (midpoint of the \$25 - \$35 range).

**Potential Investors' payoff**

**Potential investor who purchased the firm for its expected value**

Expected value of the liquidating dividend (\$30) –purchase price for the firm (\$30) +\$5 participation fee + the \$30 endowment - \$15 (one half of the endowment) = \$20

**Potential investor who did not purchase the firm**

\$5 participation fee + the \$30 endowment - \$15 (one half of the endowment) = \$20

**Manager's payoff**

50% of the selling price for the firm (\$15) + \$5 participation fee = \$20

**Current Investor's payoff**

50% of the selling price for the firm (\$15) + \$5 participation fee = \$20

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<sup>26</sup> Investors were required to repay \$15 (one-half of the initial \$30 endowment) in order to keep the expected payoffs for the participants in different roles roughly comparable. The following assumptions were made when calculating the expected payoffs: 1) potential investors are risk neutral, 2) \$0 green investment, 3) expected value of liquidating dividend = \$30 (midpoint of the \$25 - \$35 range). As shown in Table 5, these assumptions yield an expected payoff of \$20 for all participants.

As shown in Step 4, the potential investor making the highest bid purchased the firm from the manager and current shareholder. Because the amount paid by the potential investor who purchased the firm is shared evenly by the manager and the other current shareholder as 50% owners, potential investors knew that their bidding decisions would affect the wealth of both the manager and the other current shareholder.

As shown in Step 5, after the winning bid was determined, potential investors learned which specific amount from the \$5.00 distribution of equally likely after-investment earnings was the actual after-investment earnings amount. This amount was paid as a liquidating dividend to the potential investor who purchased the firm.

Finally, as shown in Step 6, participants' payoffs for the period were determined as specified in Table 6. Because managers initially owned one-half of the firm, they received 50% of selling price of the firm (i.e., the winning bid) + their \$5 participation fee. Potential investors' payoff depended on whether they purchased the firm. Potential investors who purchased the firm received the liquidating dividend (i.e., the actual firm earnings) - the price they paid to buy the firm + their \$5 participation fee + \$15 (\$30 endowment -\$15 repayment). Potential investors who did not purchase the firm received their \$5 participation fee + \$15 (\$30 endowment -\$15 repayment). Because current shareholders initially owned one-half of the firm, they received 50% of the selling price of the firm + their \$5 participation fee. The six steps described above were repeated for each of the 20 periods in each of the three experimental sessions.

**Table 6**

**Calculation of payoffs**

**Manager's payoff**

Because the manager initially owned one-half of the firm, s/he receives one-half of the selling price of the firm, which is equal to 50% of the highest bid made by any of the three potential investors and the participation fee. Thus, the manager's total payoff is:

Payoff = 50% of the selling price of the firm + the \$5 participation fee.

**Potential investors' payoff**

If a potential investor purchased the firm, s/he earns the amount of the actual after-investment earnings as the liquidating dividend minus the amount s/he paid for the firm. In addition, the investor receives the participation fee plus the initial endowment minus the repayment of one-half of the endowment. Thus, the total payoff is:

Payoff = the liquidating dividend for the firm - the purchase price of the firm + \$5 participation fee + 15 (the \$30 endowment - \$15 repayment).

If a potential investor did not purchase the firm, s/he receives the \$5 participation fee and retains one-half of the original endowment. Thus, the total payoff is:

Payoff = \$5 participation fee + 15 (the \$30 endowment- \$15 repayment).

**Current investor's payoff**

Because the current investor initially owned one-half of the firm, s/he receives one-half of the selling price of the firm, which is equal to 50% of the highest bid made by any of the three potential investors and the participation fee. Thus, the current investor's total payoff is:

Payoff = 50% of the selling price of the firm + the \$5 participation fee.

After all periods were completed, participants responded to a post-experiment questionnaire, a volunteer participant drew a number from a container holding the numbers 1 through 20 to determine the payment period, and participants received their participation fee and their payoff amount for this randomly selected period.

#### 4.4.3 Procedures to Limit Investor Inferences

Two features of the experimental procedures described above were designed specifically to limit investors' inferences about whether a green investment was made or the amount or cost of any investment. First, the managers knew the underlying \$10 distribution from which the smaller \$5 before-investment earnings ranges were selected, but the potential investors were never provided any information about this larger initial distribution. Using a fairly wide range of randomly selected smaller distributions drawn from the larger distribution ensured that there was significant variation in the distributions potential investors encountered across periods.<sup>27</sup> Had the same distribution been used each period, repeated observations may have allowed potential investors to infer the distribution and therefore infer whether the manager had made a green investment. In addition, had potential investors known that the underlying range was from \$25-\$35, they would have been able to infer the amount of any green investment for some randomly drawn smaller distributions because the after-investment distribution could have included an amount below \$25. For example, a green investment with a cost to the firm of \$2 could have resulted in a range of \$23-\$28 being shown to potential investors, allowing the investors to infer that the manager had made a green investment with a cost to the firm of at least \$2.

Second, managers making a green investment knew that their investment reduced the firm's energy cost by an amount equal to 50% of their investment, but this exact percent of cost

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<sup>27</sup> In each period of each session, a separate randomly determined \$5 before-investment earnings distribution was randomly drawn from the underlying range of \$25 to \$35 for each of the six managers. Then a separate before-investment actual earnings amount was drawn randomly from this randomly determined \$5 before-investment earnings distribution. With 20 periods in each session, this resulted in a total of 120 randomly determined \$5 before-investment distributions and randomly determined before-investment actual earnings amounts (6 managers x 20 periods). These 120 separate \$5 before-investment distributions and before investment actual earnings amounts were used in each of the three experimental sessions to limit any differences across experimental sessions.

reduction was not known by the potential investors.<sup>28</sup> If potential investors had been provided with this exact percentage (i.e., 50%), they would have been able to infer with certainty either the amount of the investment (i.e., the societal benefit) or the net cost to the firm whenever the manager chose to disclose either one of these in their reports. For example, if the manager's report disclosed that the green investment was \$2, potential investors would have been able to infer with certainty that the net cost to the firm was \$1. Likewise if the manager's report disclosed that the cost to the firm was \$1, potential investors would have been able to infer with certainty that the amount of the green investment was \$2. Because we are interested in potential investors' reaction to the specific information that managers choose to disclose, it was important that investors not be able to infer information about managers' green investment decisions beyond that disclosed by the managers.

We took the steps described above to limit the inferences investors could make about the manager's green investment decision despite the fact that any report managers provided to investors about their investment decision was irrelevant for how a wealth-maximizing investor would value the firm. As explained earlier, wealth-maximizing investors would base their bids exclusively on the after-investment distribution of cash flows. However, because our hypotheses assume that some potential investors value the societal benefits associated with green investments, it was important that they could not infer information about managers' green investments beyond that which managers chose to disclose.

Although we believe our procedures severely limited any inferences investors could make about the manager's green investment, we cannot be absolutely sure that investors were

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<sup>28</sup> This reflects the asymmetric information regarding the net cost of green investments between managers and potential investors.

not able to infer any information about the manager's green investment as they gained experience in the market after multiple periods. However, if investors were able to infer any information regarding manager's green investments beyond that disclosed by managers, this works against our ability to find differences in investors' bidding behavior across different disclosures.

## **4.5 RESULTS**

### **4.5.1 Overview**

As indicated earlier, our experimental design yields 360 group-level responses (i.e., 18 groups x 20 periods). Summary data of our results are presented in Panels A and B of Table 7, which report the frequency and percentage of green investments by amount of green investment (Panel A) and frequency and percentage of report type (Panel B).

**Table 7**

**Managers' Green Investment and Reporting Decisions**

**Panel A- Frequency and Percent of Managers' Green Investment Amounts**

<b>Green Investment Amount<sup>a</sup></b>	<b>Frequency<sup>b</sup></b>	<b>% of total investment decisions</b>
<b>No Green Investment</b>		
\$0	180	50.0%
<b>Green Investment</b>		
\$1	60	16.7%
\$2	33	9.2%
\$3	13	3.6%
\$4	6	1.7%
\$5	13	3.6%
\$6	4	1.1%
\$7	4	1.1%
\$8	1	0.3%
\$9	1	0.3%
\$10	8	2.2%
\$12	1	0.3%
\$14	1	0.3%
\$15	3	0.8%
\$18	2	0.6%
\$20	30	8.3%
<b>Subtotal - Green Investment</b>	<b>180</b>	<b>50.0%</b>
<b>Total</b>	<b>360</b>	<b>100%</b>

**Panel B – Frequency and Percent of Manager Reports**

	<b>Frequency<sup>b</sup></b>	<b>% of total reports</b>
<b>No Green Investment (50% of 360 cases)</b>		
No Report <sup>c</sup>	32	17.8%
No Green Investment <sup>c</sup>	148	82.2%
All No Green Investment	180	100%
<b>Green Investment (50% of 360 cases)</b>		
<b><u>Green Investment Not Disclosed</u></b>		
No Report	25	13.9%
<b><u>Disclosed Green Investment</u></b>		
Green Investment <sup>c</sup>	56	31.1%
Green Investment Amount <sup>c</sup>	31	17.2%
Green Investment Amount and Cost <sup>c</sup>	35	19.4%
Green Investment and Cost <sup>c</sup>	33	18.3%
<b>Subtotal – Disclosed Green Investment</b>	<b>155</b>	<b>86.1%</b>
All Green Investment	180	100%

Notes:

<sup>a</sup> Possible investment amounts ranged from \$0 to \$20 in one dollar increments

<sup>b</sup> Frequency equals the total number of times managers made the specified amount of green investment (Panel A) or the number of times managers provided the specified type of report (Panel B)

<sup>c</sup> See Table 4 for a more detailed explanation of the information contained in each type of report

Recall that neoclassical economic theory predicts that wealth maximizing managers will never make a green investment and that managers' disclosures will have no effect on wealth maximizing potential investors' behavior. As can be seen in Panel A of Table 7, contrary to the first economic prediction, managers made a green investment 50% of the time (180 out of 360 cases). Regarding managers' disclosure (Panel B of Table 7), it appears that managers made some report types more often than others, which could reflect their expectations that potential investors will react more favorably to some report types than others. We discuss these issues in more detail below in conjunction with the tests of our hypotheses.

#### **4.5.2 Test of H1**

H1 predicts that some managers will make a green investment even though this decreases their own and the other current shareholder's payoff. Panel A of Table 7, reports the frequency of green investment by amount of investment. The amount invested in the green project exceeded zero in 50% of cases (180 out of 360). Most of the investments were for lower amounts, i.e., \$1.00 (16.7%) or \$2.00 (9.2%), but the next highest percentage was for the maximum possible amount of \$20.00 (8.3%). For the 180 cases in which an investment was made, the average investment was \$6.17, which represents 21% of the firm's expected earnings of \$30. Seventeen of the 18 managers (94.4%) made a green investment, with 5 managers making more than 15 investments, 4 making 11 to 15, 3 making 6 to 10, and 5 making 5 or less, for an average of 10.6 investments in each of the 20 periods. Because the 95% confidence interval for the proportion of managers who chose to make a green investment ( $.50 \pm .052$ ) does not include zero, we conclude that the frequency of green investment (50% of cases) is significantly greater than zero.

Given the frequency of green investment and the clear financial disincentive against making such an investment in our experiment, it is very unlikely that the large number of green investments were random errors. In addition, as described more fully in section 5, managers in a similar setting in study 3 made a less profitable green investment 47.2% of the time while making a less profitable non-green investment only 6.5% of the time. Finally, managers' responses to a post experiment question suggest that those who made green investments did so because they value the associated societal benefits. Managers rated their willingness to contribute to environmental causes on a 7 point Likert scale with endpoints of 0 (Not Willing) and 6 (Very High Willingness), and a midpoint of 3 (Moderate Willingness). Responses indicate that managers have, on average, a greater than moderate willingness to contribute to green causes (mean manager response = 3.83).

### **4.5.3 Test of H2**

H2 predicts that managers who make a green investment will disclose to investors that they have done so. As can be seen in Panel B of Table 7, consistent with this prediction, managers disclosed their green investment in 155 of the 180 cases (86.1%) in which they made a green investment. To formally test H2, we use a conservative test that compares the proportion of cases that disclosed the green investment (86.1%) to 80%, which is the expected proportion of such reports if managers chose their reports randomly (i.e., if they made 20% of each of the five possible types of reports, four of which disclosed the green investment). The proportion of cases

in which the green investment was disclosed was significantly greater than would be expected if choices were random ( $z=2.05$ ,  $p=.02$ ).<sup>29</sup>

Our post experiment questionnaire data provide corroborating evidence that managers' reporting decisions were driven by their expectations regarding potential investors' reaction. Managers rated the extent to which their reporting choice was influenced by their concern about potential investor reaction using a 7 point Likert scale with endpoints of 0 "No Influence" and 6 "Very High Influence," and a midpoint of 3 "Moderate Influence." Their average response was 3.56, suggesting that their expectations regarding potential investor reaction had a greater than moderate influence on their reporting choice.

#### **4.5.4 Test of H3**

H3 predicts that investors will respond more favorably to disclosure of a green investment than to no report regarding the manager's green investing decision. Table 8 reports data by type of report managers made to investors. For each report type, the table shows the frequency, the average before-investment earnings, the managers' average green investment, the average net cost of the investment to the firm (i.e., the investment amount reduced by the 50% cost savings), the average after-investment earnings range, the average winning bid, and the average "Share Value." The Share Value measure was calculated by subtracting the lowest value in the \$5 distribution of the after-investment cash flows from the winning bid for the firm. This standardizes the winning bid to remove the effect of the variance in the distributions of after-investment earnings across report types because of differing amounts of investment across report

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<sup>29</sup> Because this and all subsequent hypotheses make directional predictions, all reported p-values are one-tailed unless otherwise specified.

types. For purposes of testing H3, we excluded two of the 360 observations from the data reported in Table 8 because they were extreme outliers, resulting in 358 overall observations.<sup>30</sup>

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<sup>30</sup> The two outliers that we dropped from our data were both more than 6 standard deviations away from the mean Share Value (with the most extreme one being more than 9 standard deviations away). Because these two outliers arise from potential investors' bids they only affect our Share Value measure, and therefore are only removed to test H3 and H5. Selection of a standard deviation cutoff of 5, 4, or 3 rather than 6 does not change the statistical inferences for our test of H3 and H5, except that a standard deviation cutoff of 4 or 5 results in removing one additional data point, which moved the result for our test of H3 to marginal significance ( $p=.065$ ). Removal of outliers has no implications for any tests other than H3 and H5.

**Table 8**

**Summary of Results by Type of Manager’s Report**

Report Type <sup>a</sup>	Frequency <sup>b</sup>	Average Before-investment Earnings Range <sup>c</sup>	Average Green Investment <sup>d</sup>	Average Cost of Investment to Firm <sup>e</sup>	Average After-investment Earnings Range <sup>f</sup>	Average Winning Bid <sup>g</sup>	Average Share Value <sup>h</sup>
No Green Investment <sup>h</sup>	148	\$27.42 – \$32.42	\$0.00	\$0.00	\$27.42 – \$32.42	\$29.40	\$1.99
No Reports							
No Report – No Green Investment	32	\$27.69 - \$32.69	\$0.00	\$0.00	\$27.69 - \$32.69	\$28.89	\$1.21
No Report – Green Investment	24	\$27.20 - \$32.20	\$10.66	\$5.33	\$21.87 - \$26.87	\$23.72	\$1.85
All No Reports	56	\$27.48 - \$32.48	\$4.57	\$2.29	\$25.19 - \$30.19	\$26.67	\$1.48
Disclosed Green Investment							
Green Investment Only	56	\$27.36 - \$32.36	\$7.91	\$3.96	\$23.40 - \$28.40	\$25.58	\$2.18
Green Investment Amount	31	\$27.98 - \$32.98	\$3.35	\$1.68	\$26.30 - \$31.30	\$28.51	\$2.21
Green Investment Amount and Cost	34	\$27.92 - \$32.92	\$3.82	\$1.91	\$26.01 - \$31.01	\$28.19	\$2.18
Green Investment Cost	33	\$27.55 - \$32.55	\$4.70	\$2.35	\$25.20 - \$30.20	\$26.70	\$1.49
All Disclosed Green Investment	154	\$27.65 - \$32.65	\$5.40	\$2.70	\$24.95 – \$29.45	\$26.99	\$2.03
Total	358 <sup>i</sup>	\$27.53 – \$32.53	\$3.04	\$1.52	\$26.01 – \$31.01	\$27.94	\$1.93

Notes:

<sup>a</sup> See Table 1 for a more detailed explanation of the information contained in each type of report.

<sup>b</sup> Frequency equals the total number of times managers provided the specified type of report.

<sup>c</sup> Average before-investment earnings range = the mean of the \$5 ranges that were randomly drawn from the uniformly distributed larger range of \$25 - \$35.

<sup>d</sup> Average green investment = the mean of the amounts managers chose to invest in reducing carbon emissions.

<sup>e</sup> Average cost of investment to firm = the mean of the net costs to the firm of the green investment. The net cost to the firm of the green investment is equal to the amount of the green investment less a 50% cost savings achieved through energy reduction.

<sup>f</sup> Average after-investment earnings range = mean of before-investment earnings ranges less the costs of investment to the firm.

<sup>g</sup> Average winning bid = the mean of the highest bids that potential investors made for the firm.

<sup>h</sup> Average share value = the mean of the share value, which is the winning bid standardized by subtracting the lowest value in the \$5 range of after-investment earnings to adjust for differences in the distributions of after-investment earnings across report types resulting from differing amounts of investment across report types.

<sup>i</sup> The total number of reports shown on this table (358) reflects the fact that two outliers were removed when performing analysis using the Share Value measure.

We test H3 by comparing Share Value for cases in which the manager reported that they made a green investment versus cases in which they made no report (see Table 8).<sup>31</sup> For this and all subsequent analyses involving Share Value, we use the Huber-White method to estimate robust standard errors after adjusting for non-independence caused by repeated measures (Huber 1967; White 1982). As shown in Panel A of Table 9, consistent with H3, Share Value was significantly higher ( $t = 1.79$   $p < .04$ ) when managers disclosed that they made a green investment (Share Value = \$2.03 from Table 8) than when managers made no report (Share Value = \$1.48 from Table 8). This result is consistent with investors responding favorably to managers' disclosure that they made a green investment because of its associated societal benefits.

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<sup>31</sup> We use all cases in which managers made no report ( $n=56$  in Table 8) for this test because when potential investors received no report they did not know whether the manager had or had not made a green investment.

**Table 9**

**Regression Models**

<b>Panel A – Test of H3</b>		<b>Panel B – H5 (First Comparison)</b>		<b>Panel C – H5 (Second Comparison)</b>		<b>Panel D – Investment Amount</b>	
<b>Dependent Variable: Share Value<sup>a</sup></b>		<b>Dependent Variable: Share Value<sup>a</sup></b>		<b>Dependent Variable: Share Value<sup>a</sup></b>		<b>Dependent Variable: Share Value<sup>a</sup></b>	
Constant	1.48*** (.26)	Constant	2.18*** (.36)	Constant	2.21*** (.30)	Constant	1.81* ** (.23)
Green disclosure <sup>b</sup>	0.55** (0.30)	Cost to firm <sup>c</sup>	-.069** (0.41)	Cost to firm <sup>d</sup>	-.03 (.42)	Investment Amount <sup>e</sup>	.11** (.06)
Number of participants	50	Number of participants	36	Number of participants	35	Number of participants	35
Number of observations	210	Number of observations	89	Number of observations	65	Number of observations	65

Notes:

\*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% levels, respectively (one-tailed for predicted signs).

Standard errors are presented in parentheses and estimated with Huber-White corrected standard errors clustered by participant

<sup>a</sup> Share Value is the winning bid standardized by subtracting the lowest value in the \$5 range of after-investment earnings to adjust for differences in the distributions of after-investment earnings across report types resulting from differing amounts of investment across report types.

<sup>b</sup> Green disclosure is equal to one if the manager’s report disclosed that a green investment had been made and equal to zero if the manager made no report.

<sup>c</sup> For this comparison, cost to firm is equal to one if the report to investors is “Green Investment and Cost” and zero if the report to investors is “Green Investment”

<sup>d</sup> For this comparison, cost to firm is equal to one if the report to investors is “Green Investment Amount and Cost” and zero if the report to investors is “Green Investment Amount”

<sup>e</sup> Investment amount is equal to the amount of their firm’s earnings that a manager invested to reduce carbon emissions

In the result reported above, we suggest that potential investors' bidding behavior was at least partially driven by the value they place on the societal benefits of a green investment. Although actual behavior in the experiment provides the strongest support for this interpretation, we corroborate this interpretation with data from our post experiment questionnaire. Potential investors rated their willingness to contribute to environmental causes on a 7 point Likert scale with endpoints of 0 (Not Willing) and 6 (Very High Willingness), and a midpoint of 3 (Moderate Willingness). Responses to this question indicate that potential investors have, on average, a greater than moderate willingness to contribute to green causes (mean potential investor response = 3.55).

Although the results reported above show that potential investors respond more favorably to certain report types than others, we note that in all cases in which the manager chose to make a green investment, the manager and the current shareholder nevertheless bore a significant financial cost. Specifically, as shown in Table 10, the winning bid was negatively affected ( $t=-17.40$ ,  $p<.001$ ) by the amount of green investment after controlling for the before-investment earnings range. In addition, when the association between the winning bid and the amount of the green investment is examined separately for each possible report type, the amount of the winning bid was negatively affected by the amount of green investment for each report type (all  $t$ 's  $>2.59$ ,  $p$ 's  $<.01$ ).

**Table 10**

<b>Cost of Investment to Managers and Current Shareholders by Report Type</b>						
<b>Dependent Variable: Winning Bid<sup>a</sup></b>						
	All Report Types	No Report <sup>d</sup>	Green Investment Only <sup>d</sup>	Green Investment Amount <sup>d</sup>	Green Investment Amount and Cost <sup>d</sup>	Green Investment Cost <sup>d</sup>
Constant	2.35 (3.06)	-12.07 (8.46)	6.61 (6.79)	15.53** (6.89)	5.08 (4.21)	-.40 (3.19)
Cost of investment <sup>b</sup>	-.93*** (.03)	1.09*** (.09)	-.85*** (.08)	-.70*** (.27)	-.78*** (.12)	-.99*** (.14)
Before-invest earnings range <sup>c</sup>	.98*** (.11)	1.53*** (.32)	.82*** (.24)	.51** (.25)	.88*** (.15)	1.07** (.11)
Number of participants	49	19	30	24	22	21
Number of observations	178	24	56	31	34	33

Notes:

\*\*\*, \*\*, \* Statistically significant at the 1%, 5% and 10% levels, respectively (one-tailed for predicted signs).

Standard errors are presented in parentheses and estimated with Huber-White corrected standard errors clustered by participant

<sup>a</sup> Winning bid is equal to the highest bid placed by one of the three potential investors in each group

<sup>b</sup> The cost of the investment to the firm, which is 50% of the amount of investment

<sup>c</sup> The before-investment earnings range is defined in the regression as the lowest point of the randomly determined \$5 before investment range. This variable controls for the variability in the earnings range shown to potential investors that is not caused by differing amounts of investment.

<sup>d</sup> See Table 4 for a more detailed explanation of the information contained in each type of report

#### 4.5.5 Test of H4

H4 predicts that managers who disclose their green investment will focus their disclosure on the societal benefits of their investment more often than on the cost to the firm. To test this hypothesis, we examined the types of reports that managers chose to make to the investors. As reported earlier, in 155 of the 180 cases (86 %) in which managers made a green investment, they also disclosed to investors that they had done so.

We used two comparisons of report types from the data reported in Panel B of Table 7 to test H4. First we compared Green Investment (n = 56) to Green Investment and Cost (n = 33) and then we compared Green Investment Amount (n = 31) to Green Investment Amount and Cost (n = 35). We used these comparisons of report types because the only difference between the two report types in each comparison is cost information. For both comparisons we compared the proportion of the first type of report (the one that focused on the societal benefits without the cost) to 50%, the expected proportion of the first type of report if report types were purely random.

For the first comparison, there were significantly more ( $z = 2.44, p < .01$ ) reports that focused on the societal benefits ( $56/89 = 62.9\%$ ) of the green investment than those that also disclosed specific information about the cost to the firm ( $33/89 = 37.1\%$ ). This result is consistent with managers more often focusing their disclosures on the societal benefits than on the cost to the firm. However, for the second comparison, the proportion of reports for the two report types ( $31/66 = 47.0\%$  and  $35/66 = 53.0\%$ ) is not significantly different ( $z = 0.492$ ) and therefore this result is not consistent with H4. Although this analysis only provides support for H4 using one of our two comparisons, there is a potential explanation for this result. Because H4

is closely related to H5, we defer discussion of this explanation until after we report our tests of H5.

#### **4.5.6 Test of H5**

H5 predicts that investors will react more favorably to disclosures that focus on the societal benefits of green investments than those that focus on the cost to the firm. We tested whether Share Value was higher for cases in which the managers' disclosure focused only on the societal benefits than when they also provided specific information about the cost to the firm. We used the same two comparisons we used to test H4 to test H5 because these comparisons provide the cleanest tests of the H5.

For the first comparison, as shown in Panel B of Table 9, Share Value is significantly higher ( $t = 1.68$ ,  $p = .05$ ) when managers' disclosure focused on the societal benefit ( $n = 56$ , Share Value = \$2.18 from Table 8) than when they also reported the specific cost to the firm ( $n = 33$ , Share Value = \$1.49 from Table 8). That is, consistent with H5, investors reacted more favorably to disclosures that focused on the societal benefits of the green investment than those that also reported the cost to the firm. However, as shown in Panel C of Table 9, for the second comparison there was no significant difference ( $t = .07$ ) when managers' disclosure focused on the societal benefit ( $n = 31$ , Share Value = \$2.21) than when they also reported the specific cost to the firm ( $n = 34$ , Share Value = \$2.18).

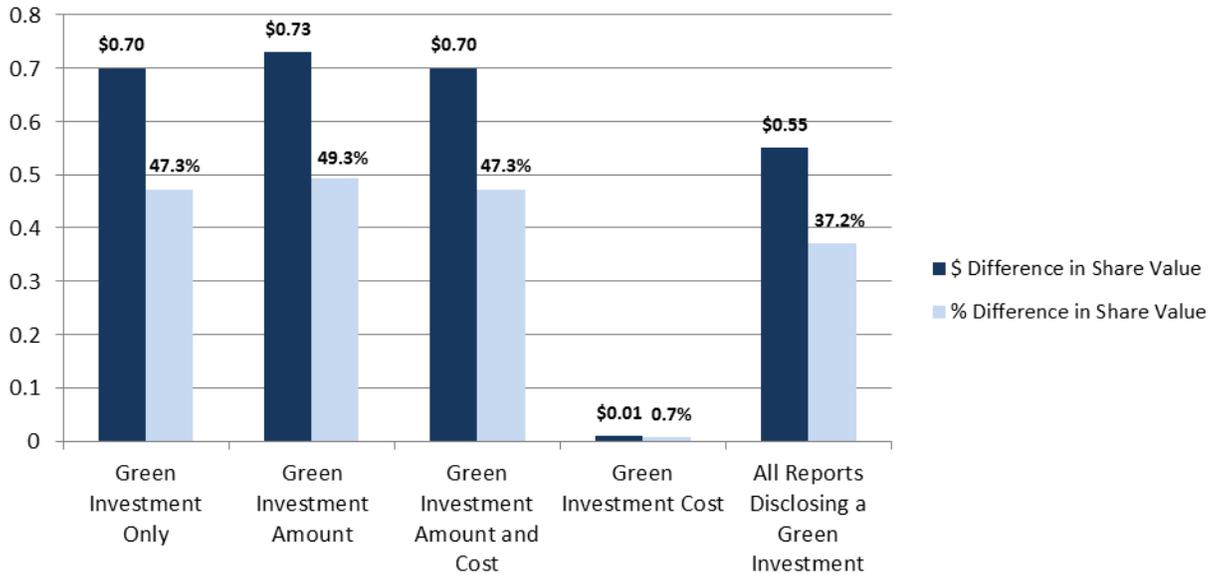
The pattern of results reported above for H4 and H5 suggests that managers may not always expect cost information to lead to a less favorable reaction by investors as suggested in H4, and that investors may not always react less favorably to such cost information as predicted in H5. In fact, we find that disclosing specific cost information does not lead to a less favorable

reaction when the associated societal benefit is simultaneously disclosed (i.e., for the second comparison in our tests of H 4 and H5). Although we did not anticipate this result, there appears to be a reasonable explanation. Cost information that is disclosed along with the amount of the societal benefit (as in the second comparisons in our tests of H4 and H5) may not be viewed less favorably because such disclosure makes salient the reduction in energy costs associated with the green investment. In our setting, while any green investment had a net cost to the firm, the amount of the societal benefit was twice as high as the net cost to the firm, and this positive aspect of any green investment was made salient when the report included information about both the specific amount of the societal benefit and the cost to the firm. This may explain why the first comparisons provided support for H4 and H5, while our second comparisons did not.

#### **4.5.7 Summary of Investor Response to Different Report Types**

Our tests of H3 and H5 reported above show that, although managers and current investors bear a cost when a green investment is made, potential investors respond differently to different reports about the green investment. Figure 4 depicts these results by showing both dollar and percentage differences between Share Value for cases in which managers disclosed their green investment versus when they made no report. The last column of Figure 4 corresponds to the results for H3, showing that on average Share Value was \$0.55 and 37% higher when managers disclosed that a green investment was made versus when they gave no report. The first four columns of Figure 4 correspond to the results for H5. The first three columns of Figure 4 show that there is a positive difference between Share Value and No Report for the Green Investment Only (\$0.70 and 47.3%), Green Investment Amount (\$0.73 and 49.3%) and Green Investment Amount and Cost (\$0.70 and 47.3%) reports, respectively. The fourth column in Figure 4 shows

that there is virtually no different in Share Value (.01 and 0.7%) between the Green Investment Cost report and No Report.



**Figure 4: Differences in Average Share Value for Reports that Disclosed Green Investments Compared to No Report**

#### 4.5.8 Trend Analysis

With 20 periods in our experiment, some of our reported results could have weakened or strengthened over the course of the experiment. To test this, we re-tested our hypotheses using data from the first ten periods only and then data from the last ten periods only. We find that all previously reported results and statistical inferences hold for both the first and the second half of our experiment. While our statistical inferences are unchanged, we note a slight decline in the rate of investment from the first half to the second half of our experiment. However, the rate of

investment remained well above the economic prediction of zero in the second half of the experiment (44% in the second half versus 55% in the first half).

#### **4.5.9 Additional Analysis**

##### **4.5.9.1 Amount of Green Investment.**

Our test of H3 provides some evidence that investors value knowing that a green investment was made because Share Value is higher for reports that disclose a green investment. However, our test of H3 did not examine whether there was an incremental effect on investor behavior of disclosing the amount of the investment. To test this, we examined whether Share Value increased as the disclosed amount of investment increased. As shown in Panel D of Table 9, Share Value is significantly positively associated with the disclosed amount of the investment, with Share Value increasing approximately \$0.11 for each \$1.00 increase in disclosed investment amount ( $t=1.69$   $p=.05$ ). Thus, not only is Share Value higher when a green investment is disclosed, it also increases as the disclosed amount of the investment increases.

Despite the positive relation between Share Value and disclosed amount of green investment reported above, our data also suggest that managers did not expect potential investors to react favorably to all *amounts* of green investments. In particular, our data suggest that managers were concerned that potential investors may view very high amounts of unprofitable green investment unfavorably. When managers made a green investment of \$10 or less ( $n=143$ ), they disclosed the amount of the investment 44.8% of the time. In contrast, when managers made a green investment of more than \$10 ( $n=37$ ), they only disclosed the amount of the investment 5.4% of the time. While managers did not often disclose the amount of their investment when

they invested more than \$10, they nevertheless still mostly disclosed the fact that they made an investment, doing so 67.6% (25/37) of the time when investing more than \$10.<sup>32</sup>

Managers' tendency to not disclose the amount of very high investments can be seen in the average investment amounts reported in Table 8. Specifically, the "Average Green Investment" amounts are larger for managers who invested and did not disclose the amounts of their investment (No Report = \$10.66 and Green Investment Only = \$7.91, combined average investment = \$8.74) than for managers who invested and disclosed the amount of their investment (Green Investment Amount = \$3.35 and Green Investment Amount and Cost = \$3.82 combined average investment = \$3.60).<sup>33</sup>

As further evidence that managers expected that very high amounts of green investments could be viewed less favorably by investors than lower amounts, we examined managers' responses to a post experiment question that asked them to rate how they thought investors would respond to all possible amounts of green investment (\$0 through \$20 in one dollar increments) on a seven point Likert scale with endpoints of 0 (Very Unfavorably) and 6 (Very Favorably) and a midpoint of 3 (neither favorable or unfavorable). Managers gave an average "favorable" rating of 4.22 for investment amounts of \$5 and below, indicating that they believed that investors would react favorably to lower investment amounts. However, managers gave an average "unfavorable" rating of 1.43 for all investment amounts above \$5, indicating that they believed that investors would react unfavorably to such high investment amounts. Specifically,

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<sup>32</sup> We use \$10 as the cutoff for very high green investments because this is the midpoint of possible green investments, which ranged from zero to \$20. An investment greater than \$10 represented more than one-third of the company's expected earnings of \$30. The results are similar for cutoffs of \$5 (41.6% of managers disclosed investments of \$5 and below while 25.5% of managers disclosed investments greater than \$5) or \$15 (43.9% of managers disclosed investments of \$15 and below while 3.1% of managers disclosed investments greater than \$15).

<sup>33</sup> The average amount invested by managers who did not disclose any amounts related to their investment (\$8.74) is significantly larger ( $t=3.01$ ,  $p<.01$ ) than the amount invested by managers who disclosed the amount of their investment (\$3.60).

managers' average ratings decreased monotonically from \$0 to \$20, with the switch from favorable to unfavorable ratings occurring at \$6 of investment.

In summary, our results regarding the amount of the green investment show that managers who invested very high amounts disclosed the amount of those investments less often than managers who invested lower amounts. It appears that managers were reluctant to disclose the *amount* of their very high green investments because they were concerned that potential investors would view such investment amounts unfavorably. Because managers rarely disclosed the amount of their very high investments, we cannot test how potential investors would actually react to such investment amounts. Rather, we are only able to directly test how investors reacted to *disclosed* green investment amounts, and for these cases, we find that investors reacted more positively as managers increased the amount of their green investment.

#### **4.5.9.2 No Green Investment.**

The analyses reported thus far have focused on the 50% of cases in which the manager made a green investment. We now consider the other 180 out of 360 cases (50%) in which the manager chose not to invest. Presumably managers did not invest in these cases because, although potential investors' bids lowered the cost of any green investment, their bids never fully offset the cost of the investment. Thus, any manager who did not want to bear the personal cost of investing or impose the cost of investing on the current investor would not make a green investment. As can be seen in Panel B of Table 7, in 148 of the 180 cases (82%) in which managers did not invest, they disclosed that they did not make a green investment, while in the remaining 32 cases managers made no report. Moreover, as can be seen in Table 8, potential investors reacted more favorably ( $t = 1.83$ ,  $p < .04$ ) when managers disclosed that no green investment had been made ( $n = 148$ , Share Value = \$1.99) than when they made no report ( $n = 32$ ,

Share Value = \$1.21). Initially, we were surprised by these results because we expected that managers who did not invest would make no report to investors as appears to be the case in real-world corporate reporting settings. However, as discussed below, in hindsight these results are not that surprising given our experimental setting.

In actual corporate environments investors typically cannot ascertain whether firms' green investments are profitable or unprofitable, and thus managers would not usually explicitly disclose that they did not make any green investments. Rather, real-world managers who did not make unprofitable green investments will likely remain silent (i.e., make no report). In contrast, in our experiment managers knew that investors knew that any green investment was always unprofitable. Although this was an important design feature for examining our research questions, this may have introduced a negative investor reaction to green investing that would not be present in real-world settings in which green investments could be profitable or unprofitable. This, in turn, may have made managers more likely to disclose that they did not make a green investment and caused investors to react more positively to this disclosure.<sup>34</sup>

It is important to note that, while the potential negative investor reaction described above is likely to explain the results for cases in which managers *did not* make an unprofitable green investment, there are two reasons why this works against finding support for our hypotheses, all of which relate to cases in which managers *did* make an unprofitable green investment. First, investors reacting negatively toward unprofitable green investments works against our finding

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<sup>34</sup> Our post experiment questionnaire provides additional evidence supporting our argument that managers expected that potential investors would respond more favorably to a report that no green investment was made than to no report. Managers rated how favorably or unfavorably they expected investors to react to either a report that no green investment was made or to no report on a 7 point Likert scale with endpoints of 0 (Very Unfavorably) to 6 (Very Favorably), and a midpoint of 3 (Neither Favorably or Unfavorably). The average response for a report that no green investment was made (4.44) indicates that, on average, managers expected potential investors to react favorably to such a report. The average response for no report (1.89) indicates that managers, on average, expected no report to be viewed unfavorably. The difference between the two responses was highly significant ( $t=5.25$ ,  $p<.001$ ).

that potential investors responded more favorably to disclosure of an unprofitable green investment than to no report (H3). Second, faced with a potential negative investor reaction, managers who made an unprofitable green investment would be less likely to disclose that they had done so and this works against our finding that managers who made an unprofitable green investment were very likely to disclose that they had done so (H2).

We note one final aspect of our results. Potential investors reacted less favorably to no report than to disclosure that a green investment was made and to disclosure that no green investment was made. This suggests that simply resolving uncertainty or being forthcoming about whether a green investment was made might help explain why potential investors responded more favorably to reports that the manager made a green investment versus no report (H3). While we cannot entirely dismiss this possibility, the results for the first test of H5 show that this cannot explain our overall pattern of results.

Specifically, in our first test of H5 we compared reports disclosing only that a green investment was made (i.e., no amounts were disclosed) to reports disclosing that a green investment was made and the net cost of the investment to the firm. Both of these reports inform potential investors that an unprofitable investment was made, but in the second case, the report also informs potential investors of the net cost to the firm of that investment. As reported earlier, Share Value is significantly higher ( $t = 1.68, p=.05$ ) for reports disclosing only that a green investment was made ( $n=56$ , Share Value=\$2.18) than for those disclosing both that a green investment was made as well as the net cost to the firm of the green investment ( $n=33$ , Share Value=\$1.49). This finding indicates that framing the report in terms of societal benefits (i.e., a green investment was made) versus the net cost to the firm has an effect on potential investors' bidding behavior beyond any potential effect of uncertainty resolution. In fact, the report that

includes the net cost to the firm resolves more uncertainty and is more forthcoming and therefore the finding that this report is received less favorably is actually in the opposite direction of that expected if uncertainty resolution or managers willingness to be forthcoming were driving potential investors' bidding behavior.

#### **4.6 DISCUSSION AND CONCLUSIONS**

Debate continues about whether firm managers only act in the social interest when this maximizes shareholder value or whether they sometimes do so at the expense of shareholder value. This question is very difficult to answer with field data because the limited and voluntary disclosure of socially desirable investments makes it impossible to reliably separate unprofitable from profitable investments. We overcome this difficulty by designing an experiment in which the socially desirable investment is always unprofitable. This allows us to examine whether managers make unprofitable green investments, what information they disclose to potential investors about their unprofitable green investments, and how potential investors react to such disclosures.

We find that managers often willingly make unprofitable green investments because of the associated societal benefits even though this reduces shareholder value, thereby lowering their own and other current shareholders' financial payoffs. Although disclosures regarding an unprofitable green investment are irrelevant for firm value in our setting, when managers made unprofitable green investments, they often voluntarily disclosed that they had done so to potential investors, and potential investors responded more favorably to this disclosure than to no report. Moreover, we provide some evidence that managers more often focused their specific

voluntary disclosures on the societal benefits of their green investment than on the cost to the firm, and that investors responded more favorably to the former than the latter. Finally, we find that, although managers very frequently disclosed that they made a green investment when they had done so, they tended to not disclose the *amount* of their investment when they invested very high amounts. Managers' responses to a post experiment question suggest that this reflects their concern that investors may view such high investment amounts unfavorably. However, managers more often disclosed the amount of their lower investment amounts and investors actually responded more favorably as the amount of these *disclosed* investment amounts increased.

Our study contributes to the broader CSR literature by providing evidence that managers may, in fact, "overinvest" in some CSR activities. Of course, such overinvestment would be viewed as an agency problem by those who believe that firm managers should only take socially responsible actions if such actions maximize shareholder value. However, for those who believe that firms have an obligation to be socially responsible even when this hurts the bottom line, our results could be viewed more positively because they suggest that corporate managers may sometimes act in the interest of society even when this lowers their personal wealth and the wealth of other shareholders.

Our results also suggest that managers can craft disclosures of their unprofitable investments that benefit society in ways that encourage investors to help lower the costs of such investments to the firm. This finding helps explain why firm managers tend to disclose the benefits of their environmental investments to society or to the firm, while often remaining silent about or downplaying the costs of these investments to the firm.

Finally, our study demonstrates the benefits of using experiments to examine important CSR issues that are difficult to address with archival data. Using an experiment allowed us to

examine unprofitable CSR investment decisions which are nearly impossible to study with archival data because 1) data on profitable versus unprofitable CSR investments, or even good data on overall CSR investments, are not available, and 2) any CSR data that do exist are subject to significant limitations because the disclosures from which they are obtained are voluntary, unverified, and most likely slanted toward firm and societal benefits with limited, if any, disclosure regarding costs to the firm.

Using an experiment also allowed us to design a setting that removed many confounding effects present in actual corporate settings. For example, in actual settings, the uncertain future benefits of current CSR investments such as positive customer or employee reactions can be used to justify currently unprofitable CSR investments. By making all costs and benefits certain and limiting them to the current period in our experiment, we were able to rule out such alternative explanations for managers' investment decisions and investors' reaction. Similarly, in actual settings, some managers might invest in CSR projects because this boosts their reputation in the community or among special interest groups whose admiration they value (e.g., the Sierra Club). This could lead managers to make unprofitable CSR investments if such external personal reputational benefits exceed the financial costs they bear within the firm. Because our managers make their investment decisions anonymously, such external reputational benefits cannot explain the unprofitable CSR investments we observe in our experiment.

We note that our experimental setting is somewhat unusual in that we did not exogenously manipulate whether managers invested in the unprofitable green investment or what reports they made to potential investors. Rather we allowed our managers to decide whether to make an unprofitable green investment and what information to report about their investment choice to potential investors. We did so because forcing participants into roles that they would

not naturally assume could have yielded results that differ significantly from behavior in the natural environment.<sup>35</sup> That is, we consciously traded off tighter experimental control for better generalizability.

Of course, any experiment raises the usual questions regarding the generalizability of the results to the field. Because the participants in our experiment were not practicing corporate managers or sophisticated investors and the financial stakes in the experiment were not as large as those in the field, we cannot be sure that our results would generalize to field settings. However, there are no obvious reasons to assume that corporate managers would not have preferences for societal benefits as strong as those of the participants in our experiments. In fact, there are reasons to believe that corporate managers may have stronger preference given that they have access to more resources and may feel an obligation to a broader group of stakeholders than just current shareholders (Moser and Martin 2012). Our participants had no such external pressure to make green investments. Regarding our investor participants, the prevalence of socially responsible investment funds suggests that many actual institutional and individual investors value firms' CSR activities. Regarding the size of the financial stakes, there is evidence that the results of experiments using smaller financial stakes generalize fairly well to settings with larger financial stakes (Kachelmeier and Shehata 1992, see also Camerer 2011 and Falk and Heckman 2009 for general discussions of the generalizability of experiments to the field).

Despite years of study and considerable philosophical debate regarding CSR issues, we understand very little about how managers actually make such decisions, what information they

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<sup>35</sup> For example, consider the potential effects of assigning a participant who is assigned in which s/he had made an unprofitable green investment when s/he is a strictly economic type who never would do this. As a result, s/he may provide no disclosure to potential investors because s/he believes making an unprofitable investment is wrong and s/he does not want investors to know s/he has done so. In contrast, if a participant chooses to make a green investment because s/he believes it is the right thing to do, s/he may want to let investors know s/he has done so.

voluntarily disclose about those decisions, and how investors react to such disclosures. Despite some concerns regarding the generalizability of our results as discussed above, given that no archival data are currently available to test our questions as directly as we were able to in our experiment, we hope that our study spurs future research using experiments, archival data, or other research approaches to extend or modify our findings.

## **5.0 STUDY 3: CORPORATE SOCIAL RESPONSIBILITY AND MANAGERIAL REPORTING**

### **5.1 OVERVIEW**

This chapter presents my final experimental study. Section 5.2 develops the individual hypothesis and research questions to be tested. Section 5.3 describes the design and procedures of the experiment used to test the hypothesis and research questions. Section 5.4 provides an analysis of the experimental data, with results of the tests of the hypotheses and research questions. Finally, section 5.5 provides a discussion of study including a summary of the findings, conclusions that can be reached based on the experimental data, and limitations.

Studies 1 and 2 provide evidence that managers value the societal benefits associated with CSR activities and consequently pursue such activities even when this reduces their own and other shareholders payoffs. While these findings expand our knowledge of the CSR decision process, much is still unknown about how firms make decisions involving CSR initiatives. A common assumption is that upper-level managers make such decisions after carefully evaluating the costs and benefits of alternative courses of action (Sprinkle and Maines 2010).<sup>36</sup> However,

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<sup>36</sup> Sprinkle and Maines (2010) relate CSR decisions to other business decisions such as the purchase of materials, product promotion and pricing, explaining that “decisions related to corporate responsibility also can be viewed through the lens of benefits reaped by, and costs incurred by, the company” and that “effective CSR decisions rely on assessments of value and opportunity costs.”

this assumption may be too simplistic because it fails to capture an important aspect of actual CSR decision environments: Where do upper-level managers get the information needed to make CSR decisions? As with most business decisions, upper-level managers likely acquire the necessary information to make CSR decisions from lower-level managers who produce and report such information to the upper-level managers. My study examines the role that such reporting plays in CSR decisions.

Considering whether and how the need for reporting by lower-level managers affects CSR decisions is important because this introduces the possibility that lower-level managers' reports could be biased in favor of CSR projects.<sup>37</sup> Lower-level managers may bias their reports if they have preferences for CSR because they value the societal benefits associated with CSR projects.<sup>38</sup>

Assuming that lower-level managers value the societal benefits associated with CSR projects, there are two separate aspects of the reporting environment that could influence the extent to which they bias their reports in favor of CSR projects. First, because making a report that is biased in favor of a CSR project requires dishonest reporting, honesty preferences could act as a natural control against biased reports. Second, reporting settings with information asymmetry between lower-level and upper-level managers often allow lower-level managers to build slack into their reports. As explained later, the ability to consume slack could either

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<sup>37</sup> I define a lower-level manager's report as being biased in favor of a CSR project if it causes a less profitable CSR project to be implemented rather than a more profitable non-CSR project. This definition reflects the fact that, if the upper-level manager does not share the lower-level manager's preference for the CSR project, the upper-level manager would consider such a report to be biased in favor of the CSR project.

<sup>38</sup> Lower-level managers who exhibit a preference for CSR can be thought of as demonstrating other-regarding preferences in that they are not acting to maximize their own personal wealth. Prior research has shown that individuals exhibit other-regarding preferences in numerous settings. Other-regarding preferences have been shown in public goods settings (Ledyard 1995), in dictator and ultimatum games as well as gift exchange settings (Cooper and Kagel 2009).

increase or decrease lower-level managers' willingness to bias their reports in favor of CSR projects.

To isolate the effect of honesty preferences and the ability to consume slack on the extent of bias in lower-level managers' reports, I conduct an experiment with three conditions (No Reporting, Reporting-w/o Slack, and Reporting-w Slack). In my No Reporting condition, participants assume the role of a lower-level manager who observes the actual costs of both a CSR and a non-CSR project and then recommends which project to implement. The recommended project is then automatically implemented.<sup>39</sup> In my Reporting-w/o Slack condition, participants also assume the role of a lower-level manager who observes the same actual costs of the same CSR and non-CSR projects. However, in this condition lower-level managers must report the costs of each project. The project with the lowest reported cost is then automatically implemented. In both the No Reporting and the Reporting-w/o Slack conditions, lower-level managers' payoffs are based on the actual cost of the project that is implemented. Therefore, the only difference between these two conditions is that there is a reporting requirement in the Reporting-w/o Slack condition but not in the No Reporting condition. Because honesty preferences can only come into play when lower-level managers must make a report, I can isolate the effect of honesty preferences on the frequency with which the less profitable CSR project is implemented (i.e., the bias in favor of CSR projects) by comparing the

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<sup>39</sup> Rather than using real upper-level managers in my study who make an implementation decision based on the information communicated to them by the lower-level manager, I use an implementation rule that maximizes firm profit based on the lower-level managers' recommendation or report. Using actual upper-level managers could have increased the frequency with which less profitable CSR projects were implemented because actual upper-level managers might have implemented the CSR project even when it was less profitable if they have a personal preference for projects that benefit society. However, the focus of my study is the potential impact of lower-level managers' biased recommendations or reports on the frequency of less profitable CSR project implementation and not on the frequency of less profitable CSR project implementation as a result of the upper-level managers' preferences for CSR projects. Therefore, I did not use actual upper-level manager participants in my study.

frequency of such projects in the No Reporting condition to that in the Reporting-w/o Slack condition.

In my Reporting-w Slack condition, as in my Reporting-w/o Slack condition, the lower-level manager must report the costs of both the CSR and the non-CSR projects, with the lowest reported cost project being automatically implemented. However, in contrast to my Reporting-w/o Slack condition in which lower-level managers' payoffs are based on the **actual** cost of the implemented project, lower-level managers' payoffs in my Reporting-w Slack condition are based on the **reported** cost of the implemented project.<sup>40</sup> Consequently, in the Reporting-w Slack condition, lower-level managers are able to build slack into their reports. Because the only difference between the Reporting-w Slack condition and the Reporting-w/o Slack condition is the ability of lower-level managers to build slack into their reports, I can isolate the effect of the ability to consume slack on any bias in favor of CSR projects by comparing the frequency of CSR project implementation across these two conditions.

I find a strong bias in favor of CSR projects in my No Reporting condition. Specifically, lower-level managers in the No Reporting condition recommend the less profitable CSR project for implementation 47% of the time, even though this reduces both their personal payoff and firm profit. In comparison, lower-level managers in my Reporting-w/o Slack condition report to implement the less profitable CSR project only 22% of the time. That is, honesty preferences in the Reporting-w/o Slack condition act as a partial control against the bias in favor of the CSR project documented in my No Reporting condition. Finally, I find that lower-level managers in

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<sup>40</sup> Although My Reporting-w/o Slack condition is used primarily to isolate the effect of the ability to consume slack on biased reporting in favor of CSR projects, this condition reflects a possible real world setting. For example, if a company has a strong control system in place, the actual cost of a prospective project could be discovered after the project has been implemented, which would prevent the lower-level managers from building slack into their reports.

my Reporting-w Slack condition report to implement the less profitable CSR project 36% of the time, showing that the ability to consume slack significantly offsets the ability of honesty preferences to reduce biased reports in favor of CSR projects.

My study expands our knowledge of CSR because it is the first to examine the impact of internal reporting on the information used to make CSR decisions. Specifically, my results indicate that lower-level managers bias their reports in favor of CSR projects, and that this bias is likely to persist in reporting environments in which lower-level managers are able to build slack into their reports. Thus, even if upper-level managers intend to make CSR decisions that maximize firm profit, the need to acquire inputs for CSR decisions from lower-level managers can lead to the implementation of less profitable CSR projects. Because of the possible effect of biased reporting on firm profit, both upper-level managers and shareholders should be interested in my findings. In addition, although my results show that lower-level managers' biased reports negatively impact firm profit, as explained in more detail later, evidence from my Reporting-w Slack condition suggests that firms can actually be more profitable when lower-level managers have a strong preference for CSR than when they have a strong preference for wealth.

## **5.2 DEVELOPMENT OF HYPOTHESIS AND RESEARCH QUESTIONS**

### **5.2.1 Background**

There are two reasons why I use an experimental setting to examine the role of internal reporting in CSR decisions. First, because my research question concerns internal managerial reporting, there are no archival data available to address my question. Second, using an experiment allows

me to study CSR decisions in a setting in which the effect of investing in a CSR project on the reporting manager's personal wealth and the firm's profit is known with certainty by the reporting manager. This allows me to separate CSR decisions that do not maximize personal wealth and firm profit from those that do. Further, because my experimental setting allows for CSR decisions that reduce both personal wealth and firm profit, I am able to separate the effects of conventional economic forces from preferences for CSR and preferences for honesty on CSR decisions.

### **5.2.2 Setting**

The setting I use is one in which a lower-level manager communicates information about a CSR project and a non-CSR project to an upper-level manager.<sup>41</sup> The need for lower-level managers to communicate information to the upper-level managers exists because of information asymmetry about the costs of the CSR and non-CSR projects between the upper-level and lower-level managers. I examine whether lower-level managers use this information asymmetry to bias their reports in favor of the CSR project, and the extent to which two factors, the need to make a factual assertion regarding costs and the ability to build slack into reports, affects the extent of any such bias.

I define biased recommendations or reports as cases in which the lower-level manager makes a recommendation or report that causes the less profitable CSR project to be implemented. In my setting, such a recommendation or report lowers both the lower-level

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<sup>41</sup> The upper-level manager can be thought of as separate from the firm as long as the firm is owned by more than one individual. Since this is the case for most firms, I treat the upper-level manager and the firm as two separate entities.

manager's personal wealth and firm profit, which gives lower-level managers a financial incentive to always ensure that the more profitable (i.e., lowest cost) project is implemented. Thus, my primary dependent measure is the frequency of less profitable CSR project implementation.

I assume that upper-level managers know that lower-level managers have financial incentives to ensure that the project with the lowest actual cost is implemented. Thus, upper-level managers expect lower-level managers to recommend or report in a manner that causes the more profitable project to be implemented. Consequently, in my experiment, rather than using real upper-level managers, I use an implementation rule such that the recommended project is always implemented (in the No Reporting setting) or the project with the lower reported cost is always implemented (in the Reporting-w/o Slack and the Reporting-w Slack settings). In actual corporate settings the upper-level manager could ignore the lower-level managers' recommendation or cost reports. However, by using an implementation rule based on the financial incentives of the lower level managers to implement the more profitable project, I can focus on the lower-level managers' recommendation or reporting choice, which is the primary focus of my study.

### **5.2.3 Development of Hypothesis and Research Questions**

Lower-level managers maximize their personal payoff and firm profit by ensuring that the lower cost project is implemented, whether that is the CSR or the non-CSR project. Therefore, in order to examine whether a reporting requirement influences CSR decisions, it must first be established that some lower-level managers knowingly bias their recommendations or reports in favor of less profitable CSR projects even when this lowers their personal wealth and firm profit.

Based on the results found in study 2 in which 50% of managers in a similar experimental setting chose to make a green investment even though this lowered the manager's personal wealth and firm profit, my first hypothesis is:

**H1:** *A significant portion of lower-level managers will bias their recommendation in the No Reporting setting to implement the less profitable CSR project even though this reduces their personal wealth and firm profit.*

Assuming that, consistent with H1, a significant portion of lower-level managers make biased recommendations in favor of less profitable CSR projects in a setting with no reporting requirement, my next question is whether requiring lower-level managers to make a factual assertion in their report affects the extent of any such bias. The need to make a factual assertion in a reporting setting has been shown to influence reporting choices (Rankin et al. 2008).

Specifically, prior research demonstrates that some individuals are deterred from misreporting by a preference for honesty (Evans et al. 2001; Stevens 2002; Hannan et al. 2006; Hobson et al. 2011).

Because in my setting the project with the lower reported cost is always implemented, lower-level reporting managers who want the higher cost CSR project to be implemented will need to misreport the CSR project as having the lower cost.<sup>42</sup> In turn, because lower-level managers must misreport to get the CSR project implemented in my setting, lower-level managers' preferences for honesty could reduce or eliminate any bias that managers may otherwise have in favor of the CSR project.

Although prior research shows that honesty preferences can act as a significant control against misreporting, there are several reasons why the role of honesty preferences in reducing

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<sup>42</sup> For example, if the actual cost of the CSR project is \$13 and the actual cost of the non-CSR project is \$10, misreporting the cost of the non-CSR project as \$14 will cause the CSR project to be implemented even though it has the higher actual cost.

the frequency of less profitable CSR projects in my setting is not so clear. First, there is an important distinction between the role of honesty preferences in prior budgeting settings and my setting. In the prior budgeting studies showing that honesty preferences can significantly reduce self-interested wealth-maximizing behavior (Evans et al. 2001; Stevens 2002; Hobson et al. 2011), the sole motive for misreporting was to **increase** the misreporting manager's personal payoff. In contrast, misreporting to implement a less profitable CSR project in my study **decreases** the misreporting manager's personal payoff, while simultaneously benefiting society. Managers most likely can more easily justify misreporting (at a personal cost) to benefit society than to justify misreporting that is solely for their own personal gain. Consistent with this reasoning, Church et al. (2012) find that managers' misreporting increases when it does not solely benefit the manager, but also benefits a third party. Similarly, misreporting in my setting benefits others and thus honesty preferences may have less of a deterrent effect on misreporting.

Second, prior research has shown that, when examined separately, honesty preferences can be a significant factor in motivating behavior (Evans et al. 2001; Rankin et al. 2008; Hobson et al. 2011). However, in my setting, the effect of reporting on lower-level managers' bias in favor of the CSR project does not depend only on the reporting manager's preference for honesty. Rather, it depends on the relative strength of the reporting manager's preference for honesty versus his or her preference for CSR.

There are several possible outcomes when reporting managers have preferences for both honesty and CSR. If the preference for honesty dominates, the preference for honesty will act as a complete control against the implementation of less profitable CSR projects. Alternatively, if the preference for CSR dominates, the preference for honesty will have no deterrent effect on the implementation of less profitable CSR projects. Finally, the preference for honesty could

dominate the preference for CSR for some managers, while the preference for CSR could dominate the preference for honesty for other managers. In this case, the preference for honesty would act as a partial control against the implementation of less profitable CSR projects.

Because I am unable to make a clear directional prediction regarding the effect of honesty preferences on the implementation of less profitable CSR projects, I investigate the following research question:

**RQ1:** *In a reporting setting that requires a factual assertion will honesty preferences act as a complete, partial, or no control against the implementation of less profitable CSR projects?*

If information asymmetry regarding the costs of the two projects persists after one of the projects has been implemented, this not only allows a lower-level manager to misreport which project has the lower cost, it also allows the lower-level manager to build slack into his or her report by misreporting the cost of the project that will be implemented to be higher than it actually is.<sup>43</sup> Prior research that examined reporting settings in which managers can build slack into their reports (Young 1985; Evans et al. 2001; Stevens 2002; Hannan et al. 2006; Rankin et al. 2008; Brown et al. 2009; Hobson et al. 2011) finds that most individuals in a reporting setting with slack will misreport to consume some, but not all, of the slack available.

Although misreporting to consume slack does not directly affect the frequency of less profitable CSR project implementation, it could indirectly affect the frequency in two opposite ways. First, because the consumption of slack increases a lower-level manager's payoff, they

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<sup>43</sup> If the upper-level manager can never find out the true cost of either project, the lower-level manager can 1) misreport to implement the project with the higher cost, or 2) misreport to consume slack, or 3) misreport to do both. For example, if the actual cost of the CSR project is \$13 and the actual cost of the non-CSR project is \$10, a lower-level manager who wants the CSR project to be implemented could accurately report the cost of the CSR project as \$13 but then report the cost of the non-CSR project as \$14. No slack is built into this report because the reported cost is equal to the actual cost for the CSR project that will be implemented. However, if the lower-level manager wishes to get the CSR project implemented while also consuming \$2 of slack s/he could report the cost of the CSR project to be \$15 and the cost of the non-CSR project to be \$16. The CSR project will still be implemented because it has the lower reported cost, but now the lower-level manager has built \$2 of slack into his/her report (the \$15 reported cost - \$13 actual cost of the implemented CSR project).

may view consuming slack as a way to reduce or eliminate the personal cost of misreporting to get the less profitable CSR project implemented.<sup>44</sup> This opportunity to offset the personal cost of reporting to implement a less profitable CSR project by consuming more slack could result in an **increase** in the frequency of less profitable CSR projects in the Reporting-w Slack condition as compared to the Reporting-w/o Slack condition.

Second, reporting to implement a less profitable CSR project decreases the amount of slack available for the lower-level manager to consume. If this reduction in available slack reduces the amount of slack that the lower-level manager actually takes, this results in an additional personal cost to the lower-level manager of implementing the less profitable CSR project in the Reporting-w Slack condition as compared to the Reporting-w/o Slack condition, if.<sup>45</sup> This increase in the personal cost to the lower-level manager could result in a **decrease** in the frequency of less profitable CSR projects implemented in the Reporting-w Slack condition as compared to the Reporting-w/o Slack condition.

Although it is unclear which, if either, of the two potential effects described above will occur, evidence from prior budgeting studies offers some insights. As explained above, lower-level managers would need to plan to consume very high amounts of slack for the ability to consume slack to decrease the frequency of less profitable CSR projects. We know from prior budgeting experiments that few individuals take all of the available slack and that most take only

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<sup>44</sup> For example, if a lower-level manager's payoff is reduced by \$1 through their incentive contract when they report to implement a less profitable CSR project, they could increase their slack consumption by \$1 to offset the personal cost of implementing such a project.

<sup>45</sup> For example, if the actual cost of the CSR project was \$13 and the actual cost of the non-CSR project was \$10, a lower-level manager who reports to get the CSR option implemented will reduce their available slack by \$3 (since slack is measured as reported cost minus the actual cost, increasing the actual cost of the implemented project by \$3 reduces the available slack by \$3). If the lower-level manager was planning on consuming an amount of slack that would include some portion of this \$3, this is an incremental cost to reporting to implement the CSR project in the Reporting-w Slack condition that is not present in the Reporting-w/o Slack condition. Because lower-level managers in the Reporting-w/o Slack condition could not consume slack, the cost of implementing a less profitable CSR project in this condition could not include the cost of foregone slack.

a portion (Evans et al. 2001). Therefore, it is unlikely that the ability to consume slack would increase the cost of implementing a less profitable CSR project for most lower-level managers, and thus also unlikely that the ability to consume slack would result in a decrease in the frequency of less profitable CSR projects in the Reporting-w Slack condition versus the Reporting-w/o Slack condition.

If most lower-level managers only consume a portion of available slack, it becomes more likely that they would reduce or eliminate the personal cost of reporting to implement a less profitable CSR project by increasing the amount of slack they take. Recent work in the area of moral reasoning suggests that individuals who do something “good” or are reminded of something good about themselves feel more license to engage in subsequent unethical acts (Zhong et al. 2009; Mazar and Zhong 2010; Sacdeva et al. 2009). Thus, when a lower-level manager implements the CSR project in my study, s/he could feel good about doing so, and this could help to offset any guilt s/he has about taking more slack to offset the personal cost of implementing the less profitable CSR project.

However, there is an important difference between the prior moral reasoning studies and my study. The “good” act in my study is less clearly a “good” act than those used in prior moral reasoning studies because it also includes elements that can be viewed as unethical. That is, even a manager who reports to implement a less profitable CSR project is engaging in pro-social behavior at one level (the “good” act), this requires misreporting and reduces firm profits (which both could be viewed as unethical). This makes it less likely that lower-level managers in my study who bias their reports in favor of the less profitable CSR project will engage in moral reasoning to justify taking more slack.

Finally, there is another way in which the ability to consume slack could influence the frequency of less profitable CSR project implementation. The Reporting-w Slack condition provides strong financial incentives for lower-level managers to misreport to consume slack. Prior research shows that many individuals are influenced by financial incentives to misreport to consume at least some of the available slack (Evans et al. 2001), and thus the effectiveness of honesty preferences to act as a deterrent against misreporting for a different purpose may be reduced. Specifically, because the ability to consume slack leads to misreporting for one purpose (to consume slack for financial gain), honesty preferences may be less effective in preventing misreporting for another purpose (to implement the less profitable CSR project) because the report can no longer be 100% honest. In other words, the ability to consume slack may increase misreporting to implement a less profitable CSR project because reports that consume slack are already dishonest.

Because the possible effects outlined above do not clearly predict how the ability to consume slack will influence the frequency of less profitable CSR project implementation, my second research question is as follows:

**RQ2:** *Will lower-level managers' ability to consume slack in a reporting setting influence the frequency of less profitable CSR project implementation compared to a reporting setting in which lower-level managers cannot consume slack?*

In the Reporting-w Slack condition, there are three possible preferences that could guide the lower-level manager's reporting behavior: a preference for wealth, a preference for honesty and a preference for CSR. Those whose actions are dominated by wealth (hereafter, "wealth types") would never misreport to implement a less profitable CSR project, but would misreport to consume a large amount of slack. Those whose actions are dominated by a preference for honesty (hereafter, "honest types") would also never misreport to implement a less profitable

CSR project but, unlike the wealth types, would not misreport to consume slack. Those whose actions are dominated by a preference for CSR (hereafter, “CSR types”) would misreport to implement a less profitable CSR project, but it is unclear what amount of slack, if any, such individuals would take. CSR types could misreport only to get the CSR project implemented, but not to consume any slack, which would make their slack consumption similar to that of the honest types. Alternatively, CSR types could misreport to consume the maximum amount of slack remaining after misreporting to get the CSR option implemented, which would make their slack consumption similar to that of the wealth types. Finally, CSR types could misreport to consume some, but not all, of the available slack, which would make their slack consumption greater than that of the honest types, but less than that of the wealth types. Thus, my third research question is:

**RQ3:** *What percentage of slack will lower-level managers whose reporting choices are dominated by a preference for CSR take relative to lower-level managers whose actions are dominated by either preferences for honesty or preferences for wealth?*

Whether the lower-level manager’s report causes a less profitable CSR project to be implemented and how much slack is consumed by the lower-level manager both affect firm profit. Firm profit is highest when the lower-level manager’s reporting behavior is dominated by a preference for honesty. This is because honest types will never report to implement the less profitable CSR project or to consume slack. Firm profit is lowest when the lower-level managers’ reporting behavior is dominated by a preference for wealth. This is because even though such managers would not report to implement the less profitable CSR project, they would consume as much slack as possible.

By definition, lower-level managers whose actions are dominated by a preference for CSR generate less firm profit than lower-level managers whose actions are dominated by a

preference for honesty because firm profit decreases when the less profitable CSR option is implemented. However, it is unclear whether lower-level managers whose actions are dominated by a preference for CSR will generate more firm profit than lower-level managers whose actions are dominated by a preference for wealth. This is because, as discussed in the development of RQ3, it is not clear how much, if any, slack lower-level managers whose actions are dominated by a preference for CSR will consume. Thus, my fourth research question is as follows:

**RQ4:** *When lower-level managers reporting choices are dominated by a preference for CSR how does firm profit compare to when lower-level managers' actions are dominated by preferences for wealth?*

## 5.3 METHOD

### 5.3.1 Design

My experiment uses three experimental conditions (No Reporting, Reporting-w/o Slack and Reporting-w Slack) to test the hypothesis and research questions described above. In the No Reporting condition participants assume the role of a lower-level manager who must **recommend** either a CSR project or a non-CSR project to their upper-level manager, with the recommended project automatically being implemented. In both the Reporting-w/o Slack and the Reporting-w Slack conditions participants also assume the role of a lower-level manager, but in these conditions they must **report** the cost of both the CSR and the non-CSR projects to their upper-level manager, with the lowest cost project automatically being implemented. In both the No Reporting and the Reporting-w/o Slack conditions, participants' payoffs are based on the *actual* cost of the implemented project. In contrast, participants' payoffs in the Reporting-w

Slack condition are based on the *reported* cost of the implemented project. This allows participants in the Reporting-w Slack condition to build slack into their reports. These three conditions allow me to isolate the effect of a reporting requirement and the ability to consume slack on the frequency of less profitable CSR project implementation. Detailed procedures for each condition are provided below.

Participants were recruited from MBA and upper-class undergraduate business classes at the University of Pittsburgh. There were 108 participants in total, with 36 participants in each experimental condition.<sup>46</sup> Several experimental sessions were conducted for each experimental condition, with each experimental session consisting of 24 periods.<sup>47</sup> At the conclusion of each experimental session, one of the 24 periods was selected at random to be the payment period, and all participants were paid their participation fee and the payoff that they earned for the payment period.

### **5.3.2 No Reporting Condition Procedures**

Participants in the No Reporting condition assumed the role of a lower-level manager in a firm whose task was to recommend one of two separate and competing projects to their upper-level manager for implementation (only one of the projects could be implemented). The first project

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<sup>46</sup> I collected the following demographic information for each participant: Gender, age, years of work experience, years of college education, number of economics classes, US/Non-US citizen and Graduate/Undergraduate student. Only one of these variables (US/Non-US citizen) varied significantly across the three conditions. To ensure that this difference did not affect my results, I included this variable as a control variable in all tests that use data from more than one condition. Because the results of these tests did not change any of the statistical inferences except for one case in which including this variable strengthened the statistical significance from marginal to less than  $p=.05$ , all results reported in the paper are for tests that exclude this variable.

<sup>47</sup> Because of the availability of participants, the data for the No Reporting condition were collected in four experimental sessions, the data for the Reporting-w/o Slack condition were collected in two experimental sessions, and the data for the Reporting-w Slack condition were collected in three experimental sessions.

was a “CSR” project that resulted in lower carbon emissions. The second project was a “non-CSR” project that did not result in lower carbon emissions. Either project provided an additional \$40 in cash flows to the firm. Each lower-level manager recommended either the CSR or the non-CSR project for implementation to their upper-level manager. The upper-level manager then automatically selected the recommended project for implementation. Prior to making their recommendation, the lower-level managers knew the actual cost for the CSR project and the actual cost for the non-CSR project.

As indicated above, the lower-level managers’ recommendation determined whether the CSR project or the non-CSR project was implemented. Lower-level managers knew that if their recommendation resulted in the CSR project being implemented, this had a real societal benefit because it resulted in a donation of real dollars to the Carbonfund. The Carbonfund is a real non-profit environmental organization that uses contributions to invest in renewable energy and reforestation projects that reduce the amount of greenhouse gases in the environment. To reflect the fact that the CSR project had real societal benefits, the lower-level managers were aware that each time their recommendation resulted in the CSR project being implemented, 50% of the actual cost of the CSR project was contributed to this real “green” fund.<sup>48</sup> Specifically, at the conclusion of the experiment, I made a donation of real dollars equal to 50% of the actual cost of any CSR project implemented in the randomly selected payment period to the Carbonfund.

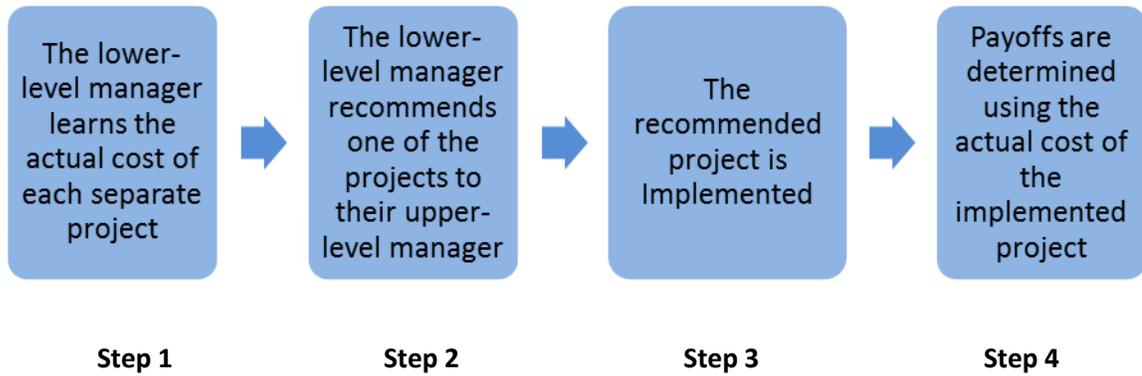
The specific steps for each period of the No Reporting condition are shown in Panel A of Figure 5. In Step 1, each lower-level manager learned the actual cost of both the CSR project and the non-CSR project with certainty. The lower-level managers were informed that their

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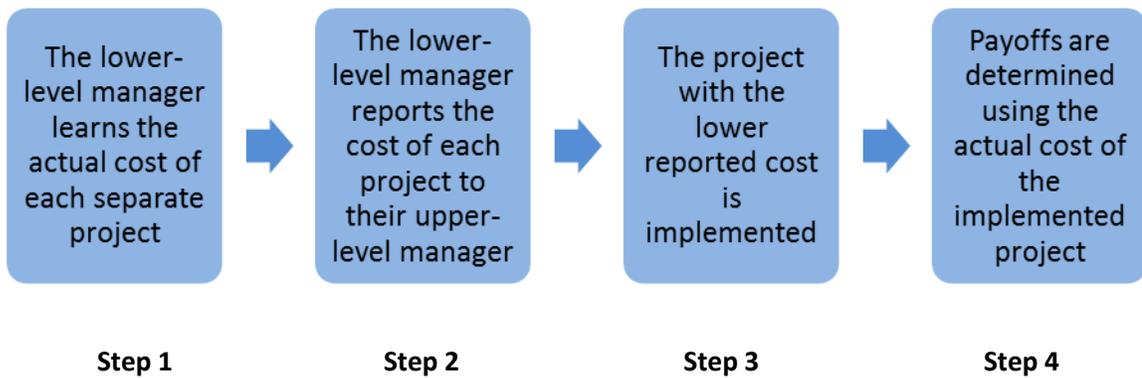
<sup>48</sup> While any portion of the cost would technically make the societal benefit real, I chose to donate 50% of the cost of any CSR project implemented in the payoff period to ensure that participants viewed the societal impact as substantial.

upper-level manager knew that the actual cost of the CSR project and the non-CSR project could range from \$10 to \$20. They were also informed that they were the only individual with access to the actual cost information and that their upper-level manager could never learn which project had the lowest actual cost. In Step 2, the lower-level manager recommended one of the projects to their upper-level manager for implementation. In step 3, the recommended project was automatically implemented. Finally in Step 4, payoffs to the lower-level manager and the firm were calculated using the actual cost of the implemented project.

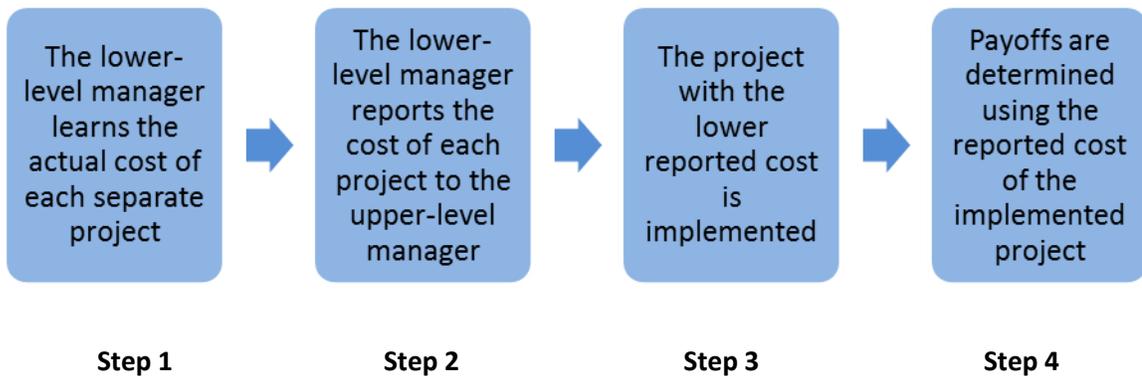
**Panel A – No-Reporting Condition**



**Panel B – Reporting-w/o Slack Condition**



**Panel C – Reporting-w Slack Condition**



**Figure 5: Steps in Each of the Experiments for Study 3**

Eight different actual cost pairs were used in the experiment. As shown in Table 11, the lower cost project in each cost pair always had a cost of \$10, while the higher cost project in each cost pair was one of the following costs: \$11, \$13, \$15 or \$20. Each of the eight specific cost pairs was provided three times (8 cost pairs x 3 = 24 total periods). The order in which the cost pairs were presented to the participants was randomly chosen prior to the experimental sessions, with this randomly chosen pattern used in all experimental sessions in all conditions.

**Table 11**

**Cost Pairs (All Conditions)<sup>a</sup>**

**CSR Project – Highest Cost<sup>b</sup>**

CSR Project Cost	Non-CSR Project Cost
\$11	\$10
\$13	\$10
\$15	\$10
\$20	\$10

**Non-CSR Project – Highest Cost<sup>c</sup>**

CSR Project Cost	Non-CSR Project Cost
\$10	\$11
\$10	\$13
\$10	\$15
\$10	\$20

<sup>a</sup> A cost pair consists of a cost for the CSR project and a cost for the non-CSR project. Exactly one half of the time the CSR project had the highest cost and one half of the time the non-CSR project had the highest cost. The lower cost project of each cost pair was always \$10, while the higher cost project was \$11, \$13, \$15 or \$20.

<sup>b</sup> Each of the four rows in the table below represent one possible cost pair in which the CSR project has a higher actual cost than the non-CSR project.

<sup>c</sup> Each of the four rows in the table below represent one possible cost pair in which the non-CSR project has a higher actual cost than the CSR project

The actual cost pairs provided to the participants followed a balanced design in which the CSR project had a lower cost in four of the cost pairs, and the non-CSR project had a lower cost in the remaining four cost pairs. This balanced design allowed me to ensure that lower-level managers who recommended or reported to implement a less profitable CSR project were not making mistakes by comparing the frequency of less profitable CSR project implementation to the frequency of less profitable non-CSR project implementation.

The lower-level managers' payoff in the No Reporting condition consisted of a bonus equal to 45% of the firm's pre-bonus profit from the project as shown below:

Lower-level manager's payoff = 45% x (\$40 project cash flows - the actual cost amount of implemented project)

Using this payoff calculation, we can see that lower-level managers maximize their payoff by always recommending the project with the lowest actual cost (see Panel A of Table 12).

**Table 12**

**Panel A: Lower-Level Manager’s Possible Payoffs – No Reporting & Reporting-w/o Slack Conditions**

<b>Actual Cost - Higher Cost Project<sup>a</sup></b>	<b>Actual Cost-Lower Cost Project</b>	<b>Project Implemented Based on Recommendation or Report<sup>b</sup></b>	<b>Manager’s Payoff<sup>c</sup></b>
\$11	\$10	Lower Cost Project	\$13.50
\$11	\$10	Higher Cost Project	\$13.05
\$13	\$10	Lower Cost Project	\$13.50
\$13	\$10	Higher Cost Project	\$12.15
\$15	\$10	Lower Cost Project	\$13.50
\$15	\$10	Higher Cost Project	\$11.25

<sup>a</sup> One-half of the time the CSR project was the higher cost project and one-half of the time the non-CSR project was the higher cost project.

<sup>b</sup> The lower-level manager could recommend or report to get either the higher cost project or the lower cost project to be implemented.

<sup>c</sup> The lower-level manager’s payoff was calculated by the following formula: 45% \* (\$40 – actual cost of the recommended project)

**Panel B: Lower-Level Manager’s Possible Payoffs – Reporting-w Slack Condition**

<b>Actual Cost - Higher Cost Project<sup>a</sup></b>	<b>Actual Cost-Lower Cost Project</b>	<b>Implemented Project<sup>b</sup></b>	<b>Manager’s Payoff Range<sup>c</sup></b>
\$11	\$10	Lower Cost Project	\$13.50 - \$18.45
\$11	\$10	Higher Cost Project	\$13.05 - \$17.45
\$13	\$10	Lower Cost Project	\$13.50 - \$18.45
\$13	\$10	Higher Cost Project	\$12.15 - \$15.45
\$15	\$10	Lower Cost Project	\$13.50 - \$18.45
\$15	\$10	Higher Cost Project	\$11.25 - \$13.45

<sup>a</sup> One-half of the time the CSR project was the higher cost project and one-half of the time the non-CSR project was the higher cost project.

<sup>b</sup> The implemented project was the project with the lowest reported cost.

<sup>c</sup> The lower-level manager’s payoff range was calculated using the following formula: 45% \* (\$40 – reported cost of the implemented project) + (reported cost – actual cost of the implemented project) The reported cost of the implemented project could range from a low of the actual cost to a high of \$19.

Firm profit in the No Reporting condition was equal to the cash flows from the implemented project less the actual cost of the implemented project and less the cost of the bonus paid as shown below:

The firm's profit = \$40 project cash flows – the actual cost amount of the implemented project – bonus paid

Using this firm profit calculation, we can see that firm profit is highest when the lower-level manager recommends the project with the lowest actual cost.

### 5.3.3 Reporting-w/o Slack Condition Procedures

The specific steps for the Reporting-w/o Slack condition are shown in Panel B of Figure 5. The Reporting-w/o Slack condition setting is the same as the No Reporting condition, except for one important difference. In the Reporting-w/o Slack condition, lower-level managers do not recommend a project to be implemented, but rather must **report** the cost of each of the projects (Step 2 in Panel B of Figure 5). The project with the lowest reported cost is then automatically implemented (Step 3 in Panel B of Figure 5). In contrast, as shown in Panel A of Figure 5, in the No Reporting condition lower-level managers recommend a project to be implemented (Step 2 in Panel A of Figure 5), with the recommended project being automatically implemented (Step 3 in Panel A of Figure 5). Except for the presence of the reporting function, all other procedures, parameters and payoffs described earlier for the No Reporting condition are the same for the Reporting-w/o Slack condition.

### 5.3.4 Reporting-w Slack Condition Procedures

The specific steps for the Reporting-w Slack condition are shown in Panel C of Figure 5. The Reporting-w Slack condition setting is the same as the Reporting-w/o Slack condition, except for one important difference. The payoff to the lower-level manager in the Reporting-w/o Slack condition is based on the **actual** cost of the implemented project (Step 4 in Panel B of Figure 5). Because their payoff is based on the actual cost of the implemented project, lower-level managers cannot misreport to consume slack in the Reporting-w/o Slack condition.

In contrast, as shown in Step 4 in Panel C of Figure 5, in the Reporting-w Slack condition the payoff to the lower-level manager is based on the **reported** cost of the implemented project. This allows lower-level managers to build slack into their reports because the lower-level manager can report a cost that is higher than the actual cost for the project that will be implemented. Thus, the lower-level managers' payoff in the Reporting-w Slack condition includes two components 1) a bonus equal to 45% of the firm's pre-bonus profit from the project, and 2) the difference between the reported and the actual cost of the project that is implemented as shown below:

Lower-level manager's payoff = 45% x (\$40 project cash flows - the reported cost amount of implemented project) + (Reported cost of the implemented project – actual cost of the implemented project)

Using this payoff calculation, we can see that the range of personal payoffs for the lower-level manager is always higher when their report causes the project with the lowest actual cost to be implemented (see Panel B of Table 12).<sup>49</sup>

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<sup>49</sup> Panel B of Table 12 provides a range of possible lower-level manager payoffs rather than a single payoff because the actual lower-level manager's payoff depends not only on which project is implemented, it also depends on how much slack the lower-level manager has built into his or her cost report.

The firm's profit from the implemented project is equal to the cash flows from the project less the reported cost for the implemented project and less the cost of the bonus paid as shown below:

The firm's profit = \$40 project cash flows – the reported cost amount of the implemented project – bonus paid

From this firm profit calculation, we can see that range of possible firm profits is higher when the lower-level manager's report causes the project with the lowest actual cost to be implemented. Except for the lower-level manager's ability to consume slack and the related effect on the lower-level manager's payoff and firm profit described above, all other procedures and parameters described earlier for the Reporting-w/o Slack condition are the same for the Reporting-w Slack condition.

### **5.3.5 Additional Payoff Procedures – All Conditions**

Before each experimental session began, participants were informed that at the conclusion of the experimental session, one period would be selected at random to be the payment period, and all participants except for one would be paid based on the payoff that they earned in their role as a lower-level manager for that period. However, to ensure that the participants felt that the impact of their actions on the firm's profit was real, they were also informed prior to the experimental session that one participant would be randomly chosen to be paid the average firm profit for the randomly selected payment period rather than the payoff they earned as a lower-level manager. To ensure that participants' considerations of the firm's profit was as similar to the real world as possible, the firm profit associated with the randomly selected participant was excluded from the calculation of the average firm profit that was paid to the randomly selected participant. This

ensured that, as in the real world, lower-level managers' knew that their reporting choices would have a real impact on the firm's profit, but they would not be impacting their own personal payoff through their impact on the firm's profit.

## 5.4 RESULTS

### 5.4.1 Tests of H1

H1 predicts that a significant portion of lower-level managers will recommend the less profitable CSR project in the No Reporting condition.<sup>50</sup> As shown in Panel A of Table 13, lower-level managers recommend the less profitable CSR project in the No Reporting condition 47.2% of the time (153 out of 324 opportunities). The 95% confidence interval for the proportion of lower-level managers who recommended a less profitable CSR for implementation is  $(.472 \pm .054)$ . Since this confidence interval does not contain the wealth-maximizing prediction of zero, H1 is supported.

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<sup>50</sup> A CSR project is less profitable in this particular setting if it has the higher actual costs of the two projects. For this reason, the terms "less profitable", "higher cost" and "more costly" are used interchangeably.

**Table 13**

**Panel A: Project Frequency by Cost – No-Reporting Condition**

<u>Project Implemented<sup>a</sup></u>	<u>CSR Highest Cost<sup>c</sup></u>		<u>Non- CSR Highest Cost<sup>d</sup></u>	
	N	%	N	%
CSR	153	47.2%	303	93.5%
Non-CSR	171	52.8%	21	6.5%
<b>Total</b>	<b>324</b>	<b>100%</b>	<b>324</b>	<b>100%</b>

**Panel B: Project Frequency by Cost – Reporting-w/o Slack Condition**

<u>Project Implemented<sup>b</sup></u>	<u>CSR Highest Cost<sup>c</sup></u>		<u>Non- CSR Highest Cost<sup>d</sup></u>	
	N	%	N	%
CSR	72	22.2%	308	95.1%
Non-CSR	252	77.8%	16	4.9%
<b>Total</b>	<b>324</b>	<b>100%</b>	<b>324</b>	<b>100%</b>

**Panel C: Project Frequency by Cost – Reporting-w Slack Condition**

<u>Project Implemented<sup>b</sup></u>	<u>CSR Highest Cost<sup>c</sup></u>		<u>Non- CSR Highest Cost<sup>d</sup></u>	
	N	%	N	%
CSR	117	36.1%	315	97.2%
Non-CSR	207	63.9%	9	2.8%
<b>Total</b>	<b>324</b>	<b>100%</b>	<b>324</b>	<b>100%</b>

<sup>a</sup> In the no-reporting condition, the project that was implemented was the project that was recommended by the lower-level manager. The lower-level manager could recommend either the CSR or the non-CSR, regardless of which project had the higher cost.

<sup>b</sup> In the reporting with and without slack conditions, the project that was implemented was the project with the lower reported cost. These tables includes only instances in which a lower-level manager could report either the CSR or the non-CSR as having the lower cost, regardless of which project actually had the lower cost.

<sup>c</sup> This column represents instances in which the CSR project had the higher actual cost. Exactly one-half of the time the CSR project had the higher actual cost and one-half of the time the non-CSR project had the higher actual cost.

<sup>d</sup> This column represents instances in which the non-CSR project had the higher actual cost. Exactly one-half of the time the non-CSR project had the higher actual cost and one-half of the time the CSR project had the higher actual cost.

A limitation of using the confidence interval reported above to test H1 is that, because lower-level managers can only err in one direction, any mistakes are misclassified as evidence supporting H1. To overcome this limitation, I compare how often lower-level managers recommended the less profitable **CSR** project to how often they recommended the less profitable **non-CSR** project. As shown in Panel A of Table 13, lower-level managers recommended the less profitable non-CSR project for implementation only 6.5% of the time (21 out of 324 opportunities). This percentage is significantly lower ( $z=29.79$ ,  $p<.001$ ) than the percentage of lower-level managers who recommended a less profitable CSR project (47.2%) for implementation. This result is consistent with lower-level managers knowingly recommending the less profitable CSR project because they had a preference for the CSR project, and not because they were making mistakes. Finally, the statistical support for H1 is not driven by a small number of participants. Thirty-one of the 36 participants (86.1%) chose to recommend a less profitable CSR project at least once, with 14 of those participants (38.9%) doing so more than 50% of the time (not tabulated).

Data from a post experiment question provides further evidence that participants in the No Reporting condition knowingly recommended the less profitable CSR project for implementation because they valued the societal benefits associated with the CSR project. Specifically, participants rated their willingness to contribute to environmental causes on a 7-point Likert scale with end points of zero (Not Willing) and 6 (Very High Willingness) and a midpoint of 3 (Moderate Willingness). Their responses are significantly positively associated with the frequency with which they recommended the less profitable CSR project for

implementation, suggesting that their recommendations reflected their preferences for the societal benefits associated with the CSR project.<sup>51</sup>

#### 5.4.2 Tests of RQ1

RQ1 asks how a reporting requirement influences the frequency of less profitable CSR project implementation. A setting with a reporting requirement requires a factual assertion, and this introduces a role for honesty preferences to possibly reduce the frequency of less profitable CSR project implementation. For this reason RQ1 asks whether the introduction of honesty preferences in a reporting setting acts as a full, partial or no control against the implementation of less profitable CSR projects.

I first examined whether honesty acted as a full control by testing whether a significant portion of lower-level managers in the Reporting-w/o Slack condition reported in a way that implemented a less profitable CSR project. If honesty preferences introduced by the reporting requirement act as a full control against the implementation of the less profitable CSR project, the frequency of less profitable CSR project implementation should be zero in the Reporting-w/o Slack condition. As shown in Panel B of Table 13, lower-level managers in the Reporting-w/o Slack condition chose to misreport to implement the CSR project 22.2% of the time (72 out of 324 opportunities). The 95% confidence interval for the proportion of lower-level managers who misreported to implement the CSR project when it had the higher actual cost is  $(.222 \pm .045)$ . Since this confidence interval does not include zero, this analysis indicates that a significant

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<sup>51</sup> Responses to this post experiment question in both the Reporting-w/o Slack and the Reporting-w Slack conditions are also significantly positively associated with the frequency with which the lower-level managers reported to implement the less profitable CSR project.

portion of lower-level managers chose to implement the CSR project in the Reporting-w/o Slack condition. That is, honesty preferences introduced by a reporting requirement did not act as a full control against the implementation of less profitable CSR projects in the Reporting-w/o Slack condition.

However, as explained in the analysis for H1, establishing that the confidence interval for the frequency of less profitable CSR projects does not include zero does not account for the fact that some lower-level managers making reports to implement a less profitable CSR project may simply be making mistakes. Therefore, I again control for the possibility of mistakes by comparing how often participants report to implement a less profitable **CSR** project to how often participants report to implement a less profitable **non-CSR** project. As shown in Panel B of Table 13, lower-level managers reported to implement a less profitable non-CSR project only 4.9% of the time (16 out of 324 opportunities). This proportion is significantly smaller ( $z=14.35$ ,  $p<.001$ ) than the proportion of lower-level managers who misreported to implement a less profitable CSR project (22.2%). This result provides evidence that in most cases in which lower-level managers misreported to implement a less profitable CSR project, they did so because they had a preference for the CSR project, and not because they made a mistake. Finally, this documented behavior is not driven by a select few participants. Eighteen of the 36 participants (50%) chose to misreport to implement a less profitable CSR project at least once, with 5 of those participants (13.9%) choosing to do so more than 50% of the time (not tabulated).

Since a significant portion of managers implement a less profitable CSR project in my Reporting-w/o Slack condition, it is clear that a reporting requirement does not act as a complete control for the implementation of less profitable CSR projects. However, the honesty

preferences introduced when there is a reporting requirement could still act as a partial control on the implementation of less profitable CSR projects.

I tested this possibility using a logistic regression with whether a less profitable CSR project was implemented (yes or no) as the dependent variable, and experimental condition (No Reporting or Reporting-w/o Slack) as the independent variable. Using a logistic regression allows me to control for repeated measures since managers made multiple decisions within my experiment. The results show that, when controlling for repeated measures, the frequency of less profitable CSR project implementation is significantly lower ( $z=-3.2$ ,  $p=.001$ ) in the Reporting-w/o Slack condition than in the No Reporting condition.

In summary, a comparison of the frequency of less profitable CSR project implementation in the Reporting-w/o Slack condition versus the No Reporting condition provides evidence that the reporting requirement acted as a significant, but not full, control against the implementation of less profitable CSR projects.

Although managers' behavior in the experiment provides the strongest evidence that preferences for honesty reduced the frequency of less profitable CSR in the Reporting-w/o Slack condition as compared to the No Reporting condition, data from a post experiment question provide additional support for this interpretation. Participants in the Reporting-w/o Slack condition indicated the extent to which their reporting choices were influenced by a desire to report honestly on a 7-point Likert scale with endpoints of zero (No Influence) and 6 (Very High Influence), and a midpoint of 3 (Moderate Influence). The responses were significantly negatively correlated with how often a participant misreported to implement the less profitable CSR project, supporting the conclusion that individuals' preferences for honesty reduced their willingness to misreport to implement the less profitable CSR project.

### 5.4.3 Tests of RQ2

As discussed earlier, the presence of information asymmetry between lower-level and upper-level managers regarding project costs not only allows the lower-level manager to misreport which project has the lower cost, it could also allow lower-level managers to misreport to consume slack. RQ2 asks if this ability to consume slack affects the frequency of less profitable CSR project implementation.

To test RQ2, I compare the frequency of less profitable CSR project implementation in the Reporting-w Slack condition to the frequency in the Reporting-w/o Slack condition. As shown in Panel C of Table 13, the rate of less profitable CSR implementation in the Reporting-w Slack condition was 36.1%. In contrast, recall that the rate of less profitable CSR project implementation was only 22.2% in the Reporting-w/o Slack condition. The frequency of less profitable CSR project implementation in the Reporting-w Slack condition (36.1%) is significantly higher ( $z=-5.21$ ,  $p<.001$ ) than in the Reporting-w/o Slack condition (22.2%), suggesting that the ability to consume slack increased the frequency of less profitable CSR project implementation.

However, the simple comparison of frequencies reported above does not control for the fact that participants in both conditions made multiple choices. Therefore, I also compared the frequencies across these two conditions using a logistic regression that controls for repeated measures. The dichotomous dependent variable is whether the less profitable CSR project was implemented (yes or no), and the dichotomous independent variable is the experimental condition (Reporting-w Slack or Reporting-w/o Slack). The results provide marginal support ( $z=-1.82$ ,  $p=.069$ ) for the conclusion that the frequency of less profitable CSR project implementation is higher in the Reporting-w Slack condition than the Reporting-w/o Slack

condition. Overall, my results suggest that the ability to consume slack increases the willingness of lower-level managers to misreport to implement a less profitable CSR project.

As described earlier in the development of RQ2, the ability to consume slack could have either increased or decreased the willingness of lower-level managers to report to implement the less profitable CSR project. The results above indicate that the ability to consume slack increased the frequency of less profitable CSR project implementation. A possible reason for this finding is that the ability to consume slack allowed lower-level managers to offset the personal cost of misreporting to implement the less profitable CSR project by consuming slack. If this is case, lower-level managers' payoffs should be higher in the Reporting-w Slack condition than in the Reporting-w/o Slack condition.

I tested this using a regression with the lower-level manager's payoff when they misreported to implement the less profitable CSR project as the dependent variable and condition (1 if the observation was in the Reporting-w Slack condition and zero if the observation was in the Reporting-w/o Slack condition) as the independent variable. Because the actual cost of the implemented project also affected the lower-level manager's payoff, I included it in the regression as a control variable.

I find that the lower-level manager's payoff was significantly higher ( $t=6.31$ ,  $p<.001$ ) by an average of \$1.79 when they misreported to implement the less profitable CSR project in the Reporting-w Slack condition than when they misreported to implement the less profitable CSR project in the Reporting-w/o Slack condition. This result is consistent with the ability to consume slack leading to higher payoffs for lower-level managers when they reported to implement the less profitable CSR project in the Reporting-w Slack condition. In turn, it is likely that lower-

level managers' higher payoffs in the Reporting-w Slack condition increased their willingness to misreport to implement the less profitable CSR project in that condition.

#### **5.4.4 Test of RQ3**

RQ3 asks how the percentage of slack varied across three different types of lower-level managers; those whose reports were dominated by preferences for honesty, those whose reports were dominated by preferences for wealth and those whose reports were dominated by preferences for CSR. To examine this question I first divided lower-level managers in the Reporting-w Slack condition into three separate groups based on the three preferences described above. Managers who never misreported to implement a less profitable CSR project and reported to consume less than half of the available slack were classified as “Honest” types. Managers who never misreported to implement a less profitable CSR project but reported to consume more than half of the available slack were classified as “Wealth” types. Finally, managers who chose to implement a less profitable CSR project more than half of the time were classified as “Strong CSR” types.<sup>52</sup>

As shown in Table 14, based on these classifications, 7 of the 36 participants (19.4%) were classified as Honest types, 4 participants (11.1%) were classified as Wealth types, and 10 participants (27.8%) were classified as Strong CSR types. Table 14 also reports the average response to three post experiment questions that deal with preferences for honesty, wealth, and

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<sup>52</sup> Because some individuals likely did not have a dominant preference for wealth, CSR or honesty, 15 of the 36 participants in the Reporting-w Slack condition have been classified as “Weak CSR” types since all of these individuals choose to implement a less profitable CSR project at least once, but did not do so more than 50% of the time. To ensure that my results regarding RQ3 and RQ4 were not driven by my definition of CSR types, I repeated all of the reported tests for Strong CSR types including the Weak CSR types. All statistical inferences using both Strong CSR and Weak CSR types were unchanged from the reported inferences using only the Strong CSR types.

CSR. Consistent with the classifications based on their behavior, Honest types gave the highest average response on the post experiment question relating to honesty (5.00). Strong CSR types gave the highest average response to the post experiment question related to CSR (5.22) and Wealth types gave the second highest average response to the post experiment question relating to wealth (0.00).

As also shown in Table 14, the average percentage of slack was highest for Wealth types (92.4%), next highest for Strong CSR types (43.0%) and lowest for Honest types (2.7%). A statistical comparison of these averages shows that the average percentage of slack for the Strong CSR types (43.0%) is significantly lower ( $t=-4.62$ ,  $p<.001$ ) than the average percentage of slack for the Wealth types (92.4%), but significantly higher ( $t=4.76$ ,  $p<.001$ ) than the average percentage of slack for the Honest types (2.7%).

**Table 14**

**Types of Lower-Level Managers in the Reporting-w Slack Condition**

<u>Types</u>	<b>N</b>	<b>Frequency of Type</b>	<b>Mean % of Slack Taken <sup>e</sup></b>	<b>Mean Response Honesty PEQ <sup>f</sup></b>	<b>Mean Response CSR PEQ <sup>g</sup></b>	<b>Mean Response Wealth PEQ <sup>h</sup></b>
Strong CSR <sup>a</sup>	10	27.8%	43.0%	3.22	5.22	-0.11
Weak CSR <sup>b</sup>	15	41.7%	53.0%	2.88	3.88	0.50
Total CSR Types	25	69.5%	49.4%	3.00	4.36	.028
Wealth <sup>c</sup>	4	11.1%	92.4%	0.25	0.25	0.00
Honest <sup>d</sup>	7	19.4%	2.7%	5.00	0.86	-2.86
Total Participants	36	100%	45.1%	3.08	3.22	-0.36

<sup>a</sup> Strong CSR types are defined as individuals who have reported to implement a less profitable CSR project more than one-half of the time.

<sup>b</sup> Weak CSR types are defined as individuals who have reported to implement a less profitable CSR project at least once, but less than one half of the time

<sup>c</sup> Wealth types are defined as individuals who never reported to implement a less profitable CSR project and who took more than one-half of the available slack.

<sup>d</sup> Honest types are defined as individuals who never reported to implement a less profitable CSR project and who took less than one-half of the available slack.

<sup>e</sup> Mean % of slack taken is measured as (slack taken / slack available).

<sup>f</sup> Participants were asked to rate their response to the question “To what extent was your reporting choice regarding the cost of the two projects influenced by a desire to report honestly?” on a 7 point Likert scale with end points of zero “No Influence” and 6 “Very High Influence” and a midpoint of 3 “Moderate Influence.”

<sup>g</sup> Participants were asked to rate their response to the question “To what extent was your reporting choice regarding the cost of the two projects influenced by a desire to implement the green project?” on a 7 point Likert scale with end points of zero “No Influence” and 6 “Very High Influence” and a midpoint of 3 “Moderate Influence.”

<sup>h</sup> Participants were asked to indicate the extent to which they agree with the following statement: “When the green project had the higher actual cost, I considered the amount my possible payoff would be reduced in deciding whether to misreport to get the green project implemented” on a 7 point Likert scale with end points of -3 “Strongly Disagree” and 3 “Strongly Agree” and a midpoint of zero “Neither Agree nor Disagree.”

#### **5.4.5 Test of RQ4**

RQ4 asks how firm profit when lower-level managers are Strong CSR types compares to firm profit when lower-level managers are Wealth types. Since the results of RQ3 show that Strong CSR types do not consume as much of the available slack as Wealth types, firm profit is likely to be higher with Strong CSR types than with Wealth types. However, because Strong CSR types reduce firm profit by misreporting to implement less profitable CSR projects, and Wealth types do not, the results regarding RQ3 are not sufficient to show that firm profit will be higher for Strong CSR types than for Wealth types. A comparison of firm profit across these two types of lower-level managers shows that average firm profit is significantly higher ( $t=4.35$ ,  $p=.001$ ) for Strong CSR types (\$14.14), than for Wealth types (\$11.93). This result is obtained despite the fact that the Strong CSR types reduce firm profit by implementing less profitable CSR projects and Wealth types do not. This finding shows that under certain conditions, firms may be better off when lower-level managers have strong CSR preferences than when lower-level managers have strong preferences for wealth.

#### **5.4.6 Additional Analysis**

Because I vary the cost of recommending or reporting to implement a less profitable CSR project, I can examine whether preferences for CSR activities are impacted by the cost of such activities. As shown in Table 15, the frequency of less profitable CSR project implementation decreased in all conditions when the cost of the CSR project increased. A logistic regression in which the dependent variable is whether the less profitable CSR project was implemented (yes or

no), and the dichotomous independent variable is the cost of the CSR project, shows a negative and significant ( $z=-7.12$ ;  $p<.001$ ) relationship between the cost of the CSR project and the frequency with which it was implemented. However, as shown in Table 15, a significant portion of managers in all three conditions continued to recommend or report to have the less profitable CSR project implemented even when the cost of the CSR project increased from 10% to 50% higher than the non-CSR alternative.<sup>53</sup>

**Table 15**

**Frequency of Less Profitable CSR Project Implementation by Cost of CSR project and Experimental Condition**

	<b>No Reporting</b>	<b>Reporting – w/o slack</b>	<b>Reporting – w slack</b>	<b>Average – All Conditions</b>
\$11 (10% higher than non-CSR cost of \$10) <sup>a</sup>	74.1%	36.1%	56.5%	55.6%
\$13 (30% higher than non-CSR cost of \$10) <sup>b</sup>	38.9%	18.5%	29.6%	29.0%
\$15 (50% higher than non-CSR cost of \$10) <sup>c</sup>	28.7%	12.04%	22.2%	21.0%
Overall – by condition	47.2%	22.2%	36.1%	35.2%

<sup>a</sup> When the actual cost of the CRR project was \$11, the actual cost of the CSR project was \$1 higher than the actual cost of the non-CSR project (\$11-10) and 10% higher than the actual cost of the non-CSR project (\$1/\$10).

<sup>b</sup> When the actual cost of the CRR project was \$13, the actual cost of the CSR project was \$3 higher than the actual cost of the non-CSR project (\$13-10) and 30% higher than the actual cost of the non-CSR project (\$3/\$10).

<sup>c</sup> When the actual cost of the CRR project was \$15, the actual cost of the CSR project was \$5 higher than the actual cost of the non-CSR project (\$15-10) and 50% higher than the actual cost of the non-CSR project (\$5/\$10).

<sup>53</sup> In addition, if all of the prior tests are repeated using only instances in which the cost of the CSR project was 50% higher than the cost of the non-CSR project, all previously reported statistical inferences for H1 and RQ's 1 and 2 are unchanged. While results for RQ's 3 and 4 followed a similar pattern as the previously reported results, because both of these research questions are tested using only data from the Reporting-w Slack condition, the reduction in sample size makes statistical inferences difficult for these two research questions.

## 5.5 CONCLUSION

Prior research implicitly assumes that upper-level managers decide whether to engage in CSR activities after carefully weighing the associated costs and benefits (Kim et al. 2012; Barnea and Rubin 2010). Missing from this assumption is how such upper-level decision makers get the cost and benefit information needed to make CSR decisions. Such information often comes from lower-level managers. For this reason, I conduct an experiment to investigate whether, in such a setting, lower-level managers bias their communication to upper-level managers in favor of CSR projects, leading to the implementation of less profitable CSR projects rather than more profitable non-CSR projects.

Two factors often present in a setting in which lower-level managers communicate information to upper-level managers could influence the extent to which such information is biased in favor of CSR activities. First, the communication of information from lower-level managers to upper-level managers often takes the form of a report that requires a factual assertion regarding the costs or benefits of alternative courses of action. The need to make a factual assertion introduces a potential role for honesty preferences to influence the extent to which lower-level managers bias their reports. Second, in many reporting settings lower-level managers can build slack into their reports. Because the ability to consume slack affects lower-level manager's payoffs, this ability could also influence the extent to which they bias their reports.

I find that lower-level managers recommendations cause the less profitable CSR project rather than the more profitable non-CSR project to be implemented 47% of the time. The frequency of less profitable CSR project implementation decreases to 22% when lower-level managers must misreport to implement the less profitable CSR project, suggesting that their

honesty preferences act as a significant, but not full, control against the implementation of less profitable CSR projects. However, when lower-level managers are also able to build slack into their reports, the frequency of less profitable CSR projects increases to 36%, suggesting that the ability to consume slack offsets the deterrent effect of honesty preferences against the implementation of less profitable CSR projects.

My results add to our understanding of how CSR decisions are made within firms. Specifically, the results of my study show that information reported by lower-level managers to upper-level managers can be biased in favor of less profitable CSR activities. This finding has implications for upper-level managers who rely on such information and therefore unknowingly implement less profitable CSR projects. Since all three settings examined in my study include financial incentives for lower-level managers to provide unbiased information, upper-level managers may not recognize that they are nevertheless being provided biased information. If upper-level managers value unbiased information, they may want to consider investing resources to reduce information asymmetry between themselves and lower-level managers about the actual cost of CSR versus non-CSR activities.

My results also have implications for shareholders because of the impact of biased reports on firm profit. In settings that do not allow lower-level managers to consume slack, biased communication in favor of CSR projects reduces firm profit because such biased communication causes less profitable CSR projects to be implemented. Assuming that shareholders are wealth maximizers, they would not want such projects to be implemented. Thus, like upper-level managers, shareholders may want to invest resources to reduce information asymmetry between themselves and lower-level managers about the actual cost of CSR versus non-CSR activities.

However, in settings in which lower-level managers can consume slack, shareholders may be willing to tolerate lower-level managers who bias reports in favor of less profitable CSR projects even when shareholders are wealth maximizers. This is because firm profit is higher when lower-level managers bias their reports in favor of less profitable CSR projects than when they do not, but then take all or most of the available slack. This result occurs because lower-level managers with a strong preference for CSR take considerably less of the available slack than managers who have a strong preference for wealth, and this effect more than offsets the negative impact of less profitable CSR project implementation on firm profit.

My study is subject to several limitations. First, the participants of my study were business students and not actual current managers. To the extent that the participants in my experiment have different mixes of preferences for wealth, honesty and CSR, than various groups of actual managers, my results may not generalize to all such groups of managers. However, since two-thirds of my subjects were graduate business students, 61% of whom had three or more years of work experience, such participants may already have experience as managers. In addition, the other one-third of my participants were upper-level business majors, and as such will likely hold manager positions in the near future. Second, the specific socially responsible cause used in my experiment was a “green” cause. Other socially responsible causes may result in stronger or weaker effects of the type documented in my study depending on the strength of preferences that managers have for such causes. Finally, the financial stakes in my experiment were smaller than those found in actual CSR decision settings, and thus the results of my study may not generalize to settings in which the financial stakes are much larger. However, numerous studies provide evidence that the smaller stakes used in experimental settings often

generalize to settings in which the stakes are much larger (Kachelmeier and Shehata 1992; Falk and Heckman 2009; and Camerer 2011).

## **6.0 DISCUSSION AND CONCLUSION**

### **6.1 OVERVIEW**

This final chapter provides an overall discussion of my studies and my conclusions. Section 6.2 provides a summary of the findings of my studies. Section 6.3 discusses the contributions that these studies have made to the existing literature and to practice. Finally, Section 6.4 concludes by considering the limitations of my studies and areas for future research.

### **6.2 SUMMARY OF FINDINGS**

The results of study 1 provide evidence regarding the behavior of managers and investors when CSR activities are costly to the firm. Specifically, the results show that a majority of managers were willing to make a contribution to reduce carbon emissions, even though doing so reduced their earnings. When managers made a contribution to reduce carbon emissions, investors reduced their bids, but did not reduce them enough to fully take into account the reduction in the expected liquidating dividend caused by the contribution. The net effect of the bidding behavior by the investors resulted in investors bearing approximately one-third of the cost of the contribution, leaving the remaining two-thirds of the cost to be borne by the manager.

The results of study 2 (a joint project with Don Moser) build on the findings of study 1 by making the manager a 50% owner rather than a 100% owner as in study 1 and allowing the manager discretion over what to report to investors regarding their green investment decision. In study 2 we find that managers willingly make unprofitable green investments 50% of the time even though this reduces shareholder value, thereby lowering their own and other current shareholders' financial payoffs. Although disclosures regarding unprofitable green investments are irrelevant for firm value in our experimental setting, managers often voluntarily disclosed to potential investors that they made unprofitable green investments, and potential investors responded more favorably to this disclosure than to no report. Study 2 also provides some evidence that managers more often focused their specific voluntary disclosures on the societal benefits of their green investment rather than on the cost to the firm, and that investors responded more favorably to such disclosures.

Studies 1 and 2 both provide evidence that managers choose to pursue CSR activities even when doing so reduces firm profit and their own personal payoff. Study 3 expands the set of preferences that may influence managerial decision making by examining the role of honesty preferences on CSR decisions. In study 3, I find that when honesty preferences play no role because managers do not need to misreport to cause a less profitable CSR project to be implemented, managers decide to implement a less profitable CSR project rather than a more profitable non-CSR project 47% of the time. This rate of less profitable CSR project implementation is quite consistent with the rate of unprofitable CSR investment of 50% in study 2.<sup>54</sup> However, the frequency of less profitable CSR project implementation decreases to 22%

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<sup>54</sup> Study 2 and the setting without a role for honesty preferences in study 3 are quite similar because in both instances managers are reducing their own payoff and the payoff of another shareholder when making an unprofitable CSR investment. Study 1 found a higher rate of unprofitable CSR investment, 64%. This higher rate of

when lower-level managers must misreport to implement the less profitable CSR project, suggesting that their honesty preferences act as a significant, but not full, control against the implementation of less profitable CSR projects. Finally, when lower-level managers are also able to build slack into their reports, the frequency of less profitable CSR projects increases to 36%, suggesting that the ability to consume slack offsets the deterrent effect of honesty preferences against the implementation of less profitable CSR projects.

### 6.3 CONTRIBUTIONS

The three studies reported in my dissertation make several contributions to the existing literature. First, all three studies utilize the strength of experiments to answer questions about CSR that are difficult to answer with archival data. For example, because all three studies make the effect of any CSR investment on the firm's current earnings known with certainty and did not allow the possibility of any impact on future cash flows, motivations on the part of managers or investors cannot be explained by traditional rational economic behavior. That is, any economic benefits that could be associated with CSR such as the ability to add customers or charge higher prices, the ability to attract and retain employees or the reduction in the risk of governmental regulation cannot explain the presence of CSR activities in my studies because none of these economic benefits were possible in my experimental settings.

Second, my studies contribute to the agency literature by showing how CSR activities that do not maximize firm profit are similar to agency costs. That is, the presence

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unprofitable green investment is likely due to the fact that managers were only affecting their own payoff when making a CSR investment in study 1.

of conflicting preferences for CSR activities between owners and managers along with information asymmetry are the necessary components for both unprofitable CSR activities and other traditional agency costs. My studies also contribute to the agency literature by providing evidence that certain theoretical predictions of traditional agency theory concerning unprofitable CSR activities are not supported by managers' actual behavior. Specifically, traditional agency theory that assumes that managers always act to maximize their own personal wealth would predict that the financial incentives in my settings that tie the manager's payoff to firm profit would prevent investment in unprofitable CSR activities. This is because in my settings investing in unprofitable CSR reduces the manager's payoffs. Because I find that a significant portion of managers in all three of my studies engage in unprofitable CSR activities, the traditional agency theory prediction that unprofitable CSR activities would be prevented is not supported.

Finally, studies 1 and 2 contribute to the growing literature on investor reaction to CSR disclosure by providing evidence that some investors value the societal benefits associated with CSR. A positive reaction by investors may help to explain the recent growth in socially responsible investing. The Social Investment Forum (2010) estimates that \$3.07 trillion of the \$25.2 trillion being professionally managed in the US in 2010 was invested using criteria based on social responsibility. In addition, the amounts invested using such criteria grew at a 13% annual rate from 2007 to 2009, with over 250 separate socially responsible mutual funds now available. The positive investor reaction to CSR investment shown in studies 1 and 2 suggest that such statistics could be driven by the value investors place on the societal benefits associated with CSR activities.

My studies also make several contributions to practice. First, results from study 2 suggest that managers can craft disclosures of their unprofitable investments that benefit society in ways

that encourage investors to help lower the costs of such investments to the firm. This finding helps explain why firm managers tend to disclose the benefits of their environmental investments to society or to the firm, while not reporting or downplaying the costs of these investments to the firm. Such results may be of interest to standard setters who are considering whether CSR disclosure should be required, what information should be disclosed, and whether such disclosures should be audited.

Second, the results of study 3 add to our understanding of how CSR decisions are made within firms. Specifically, the results of this study show that information reported by lower-level managers to upper-level managers can be biased in favor of less profitable CSR activities. This finding has implications for upper-level managers who rely on such information and therefore could unknowingly implement less profitable CSR projects. Since all three settings examined in study 3 included financial incentives for lower-level managers to provide unbiased information, upper-level managers may not recognize that they are nevertheless being provided biased information. If upper-level managers value unbiased information, they may want to consider investing resources to reduce information asymmetry between themselves and lower-level managers about the actual cost of CSR versus non-CSR activities.

Study 3 also finds that when managers can both implement unprofitable CSR projects and consume slack, firm profit is significantly higher for managers who have strong preferences for CSR than for managers who have strong preferences for wealth. This finding may have implications for recruiting and hiring practices since it shows that, under certain conditions, both wealth-maximizing shareholders and shareholders with CSR preferences of their own may prefer to recruit managers who have strong preferences for CSR rather than strong preferences for wealth.

## 6.4 LIMITATIONS AND FUTURE RESEARCH

The studies reported in this dissertation are subject to several limitations. First, participants in all three studies were students and not actual managers or investors. To the extent that the participants in my experiments have different preferences for the societal benefits associated with CSR activities than various groups of actual managers and investors, my results may not generalize to all groups of managers and investors. However, there are no obvious reasons to assume that actual corporate managers or investors would have weaker preferences for societal benefits than participants in my experiments. In fact, there are reasons to believe that corporate managers may have stronger preferences for CSR activities given that they have access to more resources and may feel an obligation to a broader group of stakeholders than just current shareholders (Moser and Martin 2012). None of the manager-participants in my studies had such external pressures to make green investments. In addition, actual corporate managers and investors may support CSR activities to let others know that they are socially conscious. Because all decisions in my experiments were made anonymously, this is another reason why actual managers and investors may exhibit stronger preferences for CSR than the participants in my experiments.

Second, the specific socially responsible cause used in all three of my studies was a “green” cause. Other socially responsible causes may result in stronger or weaker effects of the type documented in my study depending on the strength of preferences that managers and investors have for other such causes.

Finally, the financial stakes in my experiment were smaller than those in actual CSR decision settings, and thus the results of my study may not generalize to settings in which the financial stakes are much larger. However, numerous studies provide evidence that the smaller

stakes used in experimental settings often generalize to settings in which the stakes are much larger (Kachelmeier and Shehata 1992; Falk and Heckman 2009; and Camerer 2011).

There are several opportunities for follow-up research regarding the issues examined in my studies. One obvious extension would be to investigate mandatory versus discretionary disclosure regarding CSR activities. While some archival research has used changes in reporting standards in other countries to examine this issue (Ioannou and Serafeim 2011), we still know very little about this issue because managers have significant leeway in what they choose to report about their firm's CSR activities even in countries that have adopted some form of required CSR disclosure. As noted in KPMG's Global Sustainability Services and United Nations Environment Programme (2006), the existing mandatory CSR disclosure requirements "remain largely fragmented and in most cases do not fit an integrated strategy to regulate sustainability reporting." KPMG's Global Sustainability Services and United Nations Environment Programme also notes that even the most comprehensive of the existing mandatory reporting requirements, France's Nouvelles Regulations Economiques, results in only partial compliance, with some firms completely ignoring its provisions.

Another possible extension would be to allow the current shareholder to express their wishes regarding the CSR activity to their manager prior to the manager making their CSR decision. Allowing this type of communication may increase or decrease the overall frequency with which managers choose to invest in a CSR activity that reduces firm earnings. Yet another possible extension would be to allow managers to make CSR reports that were not entirely truthful. In such an environment, investors may not react to disclosure of CSR activities because they may discount this disclosure in such a reporting environment. Such a result would point toward the possible value of assurance on CSR reports.

In conclusion, there are many unanswered questions regarding important CSR issues that could be addressed in future research. I believe experiments will be a significant part of this body of research going forward because of the lack of the relevant field data and the inherent limitations of archival data that are available. The three studies reported in this dissertation expand our knowledge of CSR activities, but much work remains to be done.

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