ARE SHAREHOLDERS ENVIRONMENTAL "LAGGARDS"? CORPORATE GOVERNANCE AND ENVIRONMENTAL FIRM PERFORMANCE*

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Abstract

From a reactive, antagonistic stance towards environmental regulations, many firms have evolved to act in a pro-active fashion to integrate environmental issues into their core strategies. Driving force behind this development is a growing insight that environmental efforts can potentially be a source of val ue. Yet, while shareholders appear to be laggards with respect to r ecognizing this potential, managers appear to have a more accurate and acute perception of these possibilities of environmental strategies. Using measures of different corporate governance instruments that proxy for the ability of managers or shareholders to implement their strategic preferences we dem onstrate empirically that shareholders are indeed laggards because they lower firm environmental performance while the latter actually has positive effects on f irm financial performance. Managers, however, push for better environmental and hence financial performance and thus act against shareholders preferences, but in their interest.

Keywords

Environmental performance, financial performance, corporate governance

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DE8-114-I

While empirical evidence is mounting that firm environmental performance has a (mostly positive) impact on firm performance (e.g., Russo & Fouts, 1997; U.S. EPA, 2000; Hart & Ahuja, 1996; Christmann, 2000; Dowell, Hart & Yeung, 2000; Delmas, 2001; Melnyk, Sroufe & Calantone, 2003), several studies also suggest that equity investors are either on the sidelines or outright negatively disposed when it comes to firm strategies dealing with environmental issues (UNEP, 2004; U.S. EPA, 2000; Molloy, Erekson & Gorman, 2002). Yet, we do observe many firms that, through their managers, go "beyond compliance" and engage in pro-active strategies to reduce pollution levels (e.g. Melnyk at al., 2003) or to even benefit from developing unique capabilities related to their environmental efforts (e.g. Russo & Fouts, 1997; Delmas, 2001).

The question raised by these observations, and the central focus of this paper, is whether shareholders are "laggards" in the sense that they resist a development that has potentially positive implications for themselves and that their agents already engage in. In fact, it appears as though equity investors consider environmental issues still primarily as a potential drag on profits, as related expenses will ultimately come out of their residual claims to the firm and are thus something to be avoided, if possible. Yet, managers appear to have a different, more proenvironmental perspective. We suggest that several reasons may account for such a difference of opinion. First, managers, being more involved in day to day operations, may be able to judge better than shareholders whether recent ideas suggesting that environmental performance may add rather than destroy value are indeed applicable to their firms. From this perspective, managers would simply use such better information to work in the interest of "laggard" shareholders. A second possibility is that managers may heed calls and pressure for better environmental performance by governments, organizations like Greenpeace, employees or other groups, in order to appease such external stakeholders. This may allow managers to satisfy their own consciousness or keep these groups from interfering with firm strategies or inflicting economic or legal harm on the firm or its executives. To the extent that managers indeed "buy" more strategic freedom with pro-environmental strategies, they again act in the interest of shareholders. However, if managers' primary concern lies in satisfying other stakeholders' demands for the purpose of enhancing their own reputation, avoiding personal retributions, or satisfying their own consciousness, the issue is not primarily one of "laggard" shareholders, but that of a moral hazard agency problem – at least from the perspective of shareholders.

This study aims to assess to what extent investors are indeed laggards in their stance towards environmental management by focusing on the relationship between different corporate governance structures (particularly monitoring versus incentives) that may provide more or less leverage for shareholders, respectively managers, to implement their ideas, and a firm's observed environmental performance levels. We further examine whether the interpretation of laggard or agency problem is more appropriate by analyzing whether, if higher environmental performance is driven by managerial actions, such performance also positively affects the bottom line - indicating support for the laggard theory - or not - suggesting a potential agency issue.

DE8-114-I

Our contributions are thus, on one hand, to addresses the crucial policy question of the extent to which shareholders or managers work for or against achieving high levels of environmental performance, which also adds to existing work on the motivations for firms to engage in environmental activities (e.g. Bansal & Roth, 2000) and the role of managerial discretion in this context (e.g. Arragón-Correa, Matías-Reche & Senise-Barrio, 2004; Sharma, 2000). On the other hand, we deliver new evidence on the link between environmental and firm performance and identify the moderating role of governance structure for this relationship. This contributes to the corporate governance literature, as well as to the emerging strategic literature on pro-environmental management, which has so far concentrated on analyzing the resource-based underpinnings of the link between environmental and financial performance as well as identifying internal and external moderators such as industry growth, uncertainty, complexity, or complementary assets (e.g. Russo & Fouts, 1997; Aragón-Correa & Sharma, 2003; Christmann, 2000).

THEORY AND HYPOTHESES

According to the U.S. environmental protection agency (U.S. EPA, 2000), responses of firms to environmental issues fall into three, roughly historically successive phases. In the first phase, firms accustomed to treat the environment as a free source of inputs and equally free deposit for waste materials, took a strongly negative view of emerging environmental legislation. Accordingly, the focus, shared by managers and owners, was that of minimizing or avoiding the costs associated with compliance, which usually took the form of "end-of-pipe" solutions like adding filters. These rather reactive solutions created little or no value added, leading to a de facto negative correlation between environmental investments and financial performance (e.g., Jaggi & Freedman, 1992, for evidence on the late 1970s).

In a second phase, firms, searching for less costly ways to comply, turned to a more proactive approach that included conducting internal audits and implementing environmental management systems (EMS) that, by redesigning entire productive processes, were intended to ensure regulatory compliance while at the same time improving operating margins by reducing required inputs and productively using by-products that were formerly wasted. Along the same line fall attempts to implement concepts of eco-efficiency (DeSimone & Popoff, 1997), which prescribe ways to achieve a sustainable development by, for instance, reducing the material or energy intensity or enhancing the durability and recyclability of products. Multiple studies provide evidence that the introduction of an EMS indeed results in significant benefits for firms by finding, for example, increases in self-reported levels of competitive advantage (Delmas, 2001), or increases in various measures of corporate performance (Melnyk et al., 2003).

However, these authors caution that positive effects only accrue, or are much stronger, if firms do not simply pay lip service to implementing an EMS or focus on simple environmental compliance, but use the process of implementation to form strong relationships with internal and external stakeholders (Delmas, 2001), or maximize organizational involvement by actually certifying their EMS within the ISO 14000 family of standards (Melnyk et al., 2003).

DE8-114-I

Conceptually, these views on the value of EMSs lead over to a third phase, which is characterized by firms going beyond compliance and focusing on value creation through environmental strategies that include creating environmentally friendly products for increasingly environment-conscious customers, and the creation of unique organizational capabilities. The latter issue includes, for instance, combining off-the shelve hardware with firm specific organizational routines in the environmentally oriented redesign of whole firms, which can lead to uniquely efficient capabilities that are difficult to match by less environmentally pro-active competitors (Russo & Fouts, 1997). Supporting this theory, Russo and Fouts (1997) indeed find higher environmental performance linked to higher financial performances (return on assets). Other authors have further theoretically and empirically supported this link and identified important moderators such as external contingencies or pre-existing complementary capabilities (Aragon-Correa & Sharma, 2003; Christmann, 2000).

Accompanying these three phases, we also observe an increase in the level and severity of environmental legislation ranging from new regulations on environmental disclosure by the U.S. EPA to the Kyoto protocol. Epstein (1996), for instance, describes a significant change in the criminal enforcement of environmental laws that includes going directly after corporate officers (with potential prison fines) in an attempt to enforce greater adherence to the laws, and reports that manager's concern for environmental liability is rising strongly. Simultaneously, we can observe increasing environmental activism by groups such as Greenpeace, which may include boycotts or public relations campaigns that have the potential to seriously hurt the target firms' financial performance (see greenpeace.org).

Altogether, there has been a development from a purely antagonistic relationship between firms and environmental topics towards a rather pro-active embrace of these issues driven by increasing social pressures on one hand, and by a consideration of the potential of value creation on the other. Particularly the latter point is supported by a growing empirical literature confirming that environmental performance indeed appears to be positively linked to firm financial performance and other measures of competitive advantage.

Shareholders

We suggested above that equity investors demonstrate a lack of interest in environmental topics. In fact, a recent United Nations' study (UNEP, 2004), while finding that environmental, among other social factors, do affect long term shareholder value, complained about the general lack of interest in these topics among brokerage house analysts. Likewise, the U.S. EPA report (2000:5) on the relationship between environmental and financial performance, suggests that while equity investors care about environmental issues in traditionally sensitive areas like mining, they do not generally understand how environmental decisions affect a firm's future and "remain sceptical about the value of understanding corporate environmental performance." Moreover, while showing overall little active involvement in environmental issues, "equity investor tend to think that environmental protection has potentially negative consequences for firms" (U.S. EPA,

2000:5). Molloy et al.'s (2002) empirical findings further "suggest that if investors consider environmental performance at all, they perceive environmental improvements and management as costly, unless made to avoid non-compliance penalties."

These accounts indicate that shareholders are mainly concerned with the potential downsides of environmental issues – the costs involved in compliance with environmental regulations, and the risks of non-compliance. Potentially positive effects on firm capabilities, as suggested above, seem to play a minor, if any, role in shareholders concerns, which suggests that they are indeed "laggards", at least in the sense of maintaining a "phase 1" type perception of environmental issues. In fact, Molloy et al. (2002) find a negative relation between low emissions and stock returns within industries, implying that shareholders still consider environmental performance as something rather to be avoided.

Several studies focusing on the impact of measures expressing potentially negative implications for firms (e.g. fines, lawsuits, negative reports) and market based measures of return further support the suggestion that shareholders' primary concern is with the cost involved in environmental activities and particularly risks created by environmental legislation. Muoghalu, Robinson, and Glascock (1990), for example, find a strong negative reaction to lawsuits filed against polluters. Hamilton (1995) finds negative market returns for firms included in the first release of the toxic release inventory (TRI – see below) data in June, 1989. These effects were stronger, the more exposure (different types of controlled chemicals) a firm had. In a similar study, Lanoie, Laplante, and Roy (1998) find negative market reactions to firms that were named repeatedly on a Canadian government listing of polluters. In fact, stock market reactions are usually much larger than the expected fines or immediate costs would warrant, suggesting that such negative news may be taken by investors as general indications of lacking management quality, since, for instance, Porter and Van der Linde (1995) suggest that pollution efficiency is often associated with overall productive efficiency.

Overall, these results are consonant with the view that mainstream investors focus on the downside risk. While another group of "ethical investors" exists, who only invest in firms with good environmental performance, regardless of financial implications (i.e. these investors are willing to "pay to be green"), this group does not appear to be very strong. In fact while the percentage of U.S. financial assets under management that is invested in socially responsible investments has recently risen to as much as 11% (Social Investment Forum, 2003), investment funds that exclusively focus on environmental issues have all but disappeared due to the greater importance currently associated with broader social issues (interviews with SRI fund managers).

Consequently, the prevailing reaction of shareholders with respect to environmental issues will be one of trying to merely comply with or avoid environmental regulations that may apply to firms they are invested in, reflecting a general mindset that sees environmental efforts as a drain on firm performance and thus as a pure cost to the equity owner. This stance is quite consonant with the way investors <u>and</u> managers viewed the initial introduction of environmental legislation in the first phase described above (U.S. EPA, 2000). Hence, we expect that shareholders, to the

DE8-114-I

19 - 01 - 2005

extent that they care at all, will prefer firms to hold back on investments into improving firm environmental performance.

Proposition 1: Shareholders prefer to limit investments into firm environmental performance.

Executives

It is a reasonable assumption, and in fact a basic tenet of agency theory (e.g. Zajac, 1990), that managers have a greater depth of information on the specific operating conditions within a firm than shareholders. Executives are therefore more likely to recognize whether environmental strategies like implementing an EMS, subscribing to eco-efficiency standards, or building unique environmental capabilities, may indeed generate value for their firm and shareholders. Melnyk et al. (2003), for instance, report that managers indeed perceive of benefits well beyond pollution control when implementing a formal EMS. Thus, managers will have a more <u>accurate</u> understanding than shareholders of how environmental technologies have progressed through the three stages described above from being a pure cost to a potential source of value.

Yet, executives may also have a more acute awareness of environmental issues than shareholders given their exposure as the representatives of their firms to the demands of external and internal stakeholders for good environmental citizenship. Employees may prefer to work for "green" firms, Greenpeace (see greenpeace.org) and other non-governmental organizations threaten polluting firms with potentially damaging public relations campaigns, and government regulators increasingly tighten the noose around the executives' neck by assigning personal liability for environmental violations (e.g. Epstein, 1996). Hence, executives will feel more immediately challenged and more personally threatened than shareholders by reactions to negative environmental performance records or environmental accidents like the Bhopal disaster or the Exxon Valdez Oil Spill, and thus make "greener management de rigueur in corporate board rooms" (Gabel and Sinclair-Desagné, 1993: 231). A pro-active environmental management stance by executives can then be useful in maintaining or building firm value by preventing damaging reactions from such stakeholders. Yet, since environmental performance require significant investments, there may also be a limit to the value creating environmental investments a firm should undertake in balancing environmental and financial aspects of performance. Managers with an acute sense of the social desirability of a high environmental performance may overstep this boundary in an attempt to appease external stakeholders, which could earn the manager added strategic freedom (no interference from stakeholders) or personal satisfaction (high social esteem, or satisfy own desire to be "green"). Another reason for overstepping the limit may lie in the fact that executives bear disproportional more risk than shareholders due to their personal, criminal liability. However, Campbell, Sefcik and Soderstrom (2004) find that executives in many firms are explicitly compensated for these risks, which should mitigate this tendency. Altogether, executives' more accurate and acute perception of environmental issues suggests that executives will be predisposed to increase environmental performance for reasons of competitiveness, legitimation and personal ecological responsibility, which have also been

DE8-114-I

19 - 01 - 2005

identified by Bansal and Roth (2000) as major drivers for firms in general to engage in corporate ecological responsiveness. This leads to our second proposition:

Proposition 2: Managers will invest into improving firm environmental performance.

Although focusing on different issues, some prior research supports this proposition by showing that managers, under certain conditions, are protagonists of pro-environmental management. Aragón-Correa, et al. (2004), for example, find that organizations in which specific individuals assume responsibilities (and have discretion) for environmental management achieve a higher environmental commitment than others. Similarly, Sharma (2000) reports that firms are more likely to engage in voluntary environmental strategies when managers, because of a pro-environmental firm orientation or available slack, interpret environmental issues as opportunities.

Corporate Governance Structure as Moderator

It is a reasonable conjecture that the ability of shareholders to enforce their preferences will depend on the particular corporate governance choices made in each firm. Specifically, the structure of a firm's corporate governance mechanism will matter to the extent that managers (as agents of shareholders) obtain more or less ability to influence firm strategies. Generally, if principals could costlessly monitor the actions of managers, they would do so, but as the cost of directly assessing managers' actions increases, a different governance mechanism is needed (e.g. Zajac & Westphal, 1994). In recent years, the provisioning of incentives via equity-based compensation has therefore been used in many firms to supplement the monitoring task by assuring that managers' incentives are aligned with those of stockholders (e.g. Hall & Liebman, 1998; Yermack, 1995). At the same time, however, top executives have gained more discretion in their strategic choices as they are relatively less tightly monitored. Given this situation, firms in which monitoring is relatively prevalent should afford shareholders with a greater opportunity to implement their views in actual strategies. Coupled with proposition 1 from the preceding discussion, this suggests:

Hypothesis, 1: By allowing shareholders to implement their preferences, high levels of monitoring will lead to lower corporate environmental performance.

Further, if shareholders are indeed laggards in the sense that they reject pro-active environmental strategies although such efforts may be positive for them, the following hypothesis should hold:

Hypothesis 2a: Although high levels of monitoring lead to negative effects on environmental performance, the latter has a positive effect on financial firm performance (laggard theory).

If, on the other hand, environmental issues are indeed just a cost for firms, then shareholders, if they indeed hold back on environmental efforts, are simply protecting their own interests as suggested in the next hypothesis.

Hypothesis 2b: While high levels of monitoring lead to negative effects on environmental performance, the latter also has a negative effect on financial firm performance (protector theory).

Yet, as suggested before, increasing organizational complexity that places a greater demand on managerial involvement can lead to situations where monitoring becomes exceedingly difficult and hence costly. Under such circumstances, alternative governance mechanisms that attempt to align managerial and shareholder incentives are likely to be used. Zajac and Westphal (1994), for instance, find that diversification increases the use of equitybased managerial incentives to the extent that such diversification boosts the complexity of the managerial task. Accordingly, they found monitoring to be most prevalent for simple firms and those following a very diversified conglomerate strategy, which commonly uses relatively easy to monitor financial oversight mechanisms. Monitoring was less, and incentives more prevalent in firms with intermediate degrees of diversification, reflecting the need for managers to have enough discretion to create complex interrelationships between related business units. Similarly, technology intensive businesses or internationalisation create complex and management intensive growth options that appear to also increase management complexity and lead to more incentive pay (e.g., Henderson & Frederickson, 1996; Sanders & Carpenter, 1998). Altogether, there is considerable support for Zajac and Westphal's (1994) suggestion that "...some corporate strategies are generally more complex than others, and ... complex corporate strategies are costlier for boards of directors to monitor." This evidence shows that as information-asymmetry between shareholders and managers grows, monitoring becomes increasingly difficult and costly and will be replaced by incentive based measures. The latter, especially when based on equityinstruments, are provided to align managers' incentives with the equity-owner goal of share price maximization (e.g. Jensen & Murphy, 1990), and thus to assure that managers use their strategic discretion in solving these information-intensive issues in the best interest of the shareholders.

Yet, this also suggests that firms with an existing high level of incentive pay do grant their executives a high degree of freedom to implement what the managers' believe to be best for the firm and its shareholders. Hence, following the argument above, reflected in proposition 2, the presence of incentive based compensation programs should positively affect managers' ability to carry out strategies to improve a firm's environmental performance.

Hypothesis 3: By giving managers more discretion, high levels of (equity-based) incentive pay will lead to positive effects on environmental firm performance.

As discussed above, while perhaps not complying with an expressed or implicit shareholder preference of shying away from environmental performance enhancing activities, such an action may still be in the shareholders' best interest if managers are convinced that environmental performance will indeed be positively linked to financial performance. The empirical findings that incentive pay will be high in more <u>complex</u> firms lend further support to the suggestion that managers (in cases of high incentives) have more in-depth firm knowledge that allows them to more accurately judge – as compared to shareholders – whether

environmental activities can indeed yield additional value in their respective firms because of positive performance effects or because of creating strategic insulations from stakeholder claims. In this case, undertaking environmentally positive actions is entirely in line with the managers' incentive structure, as such actions are believed to strengthen financial performance and subsequently equity values, which in turn benefits managers via their incentive compensation schemes. Specifically, whether or not equity-investors have an ex-ante negative expectation of the financial value of environmental activities (which are difficult to observe), managers would expect positive investor reactions to observable increases in the firms' actual financial performance. In this manner, managers may act against shareholder preferences, but in the latter's interests because shareholders, in this situation, are laggards. In fact, here, managers simply perform in a way that is expected of them, as they receive equity-based incentives and related discretion precisely in order to manage tasks for which shareholders have insufficient information. In this case, the following hypothesis should hold:

Hypothesis 4a: High levels of incentives lead to positive effects on environmental performance, which in turn has a positive effect on financial firm performance (laggard theory).

Yet, the added freedom managers enjoy in firms with high incentive-based pay, may also allow executives to not only act against shareholder preferences but also against shareholder interests. Particularly, if managers pursue environmental strategies not because of a belief in their added value but because of a quest of sources of private value, a moral hazard problem occurs.

Theoretically, incentives are designed to balance out executives' desire to gain private benefits from the firm. However, as discussed before, shareholders, if they are indeed laggards, may not be aware of or interested in environmental affairs and thus may not have thought of incorporating provisions to counter potential private incentives for executives arising from this side. Another reasonable assumption is that, if shareholders are laggards and still hang on to an early view that environmental performance is bad for business, they may expect to share this view with executives. Hence they would not include any specific governance provisions to align managerial with shareholder interests concerning environmental strategies. Coupled with the historical progression of executives views on this matter (increasingly pro-active behaviors due to either beliefs in value-added properties or awareness of increasingly severe personal liabilities of environmental issues), a reasonable assumption is therefore that the pressures (and personal incentives) that have build over the last two to three decades on executives have not been (fully) integrated in incentive pay schemes. Thus, managers may derive private benefits (reputation with outside stakeholders, acting according to their own consciousness) that may outweigh a possible negative impact on their equity based compensation and thus cause managers to act against shareholder interests in this case. The critical issue, therefore, is that the same corporate governance instrument – high incentive-based compensation – that is traditionally used to align managerial incentives with those of shareholders also allows for a certain level of strategic discretion that can enable managers to pursue such strategies. This leads to our final hypothesis:

DE8-114-I

Hypothesis 4b: High levels of incentives lead to positive effects on environmental performance, which in turn has a negative effect on financial firm performance (agency theory).

METHODS

We have assembled a database on U.S. firms from several sources to perform two types of analyses in order to test our hypotheses. First, we relate measures of environmental performance to measures of corporate governance indicating high degrees of monitoring or incentive compensation to assess the role played by shareholders or managers in pushing for more or less environmental firm performance. Second, we analyze whether these measures of environmental performance affect firm financial performance in order to shed light on the type of motivation driving shareholders or managers in their attitude towards environmental performance.

Dependent Variables

Environmental Measures. To create measures of environmental performance we rely on data from the Investor Responsibility Research Center (IRRC), which has been used in prior studies on environmental issues (e.g. Molloy, Erekson & Gorman, 2002; Hart and Ahuja, 1996). IRRC aggregates plant level filings on type and amount of waste production and treatment to the U.S. environmental protection agency (the "toxic release inventory"), and also provides information on fines and penalties for environmental violations. Since IRRC data is mostly reported on a mandatory basis (firm pollution data), or reflects factual outcomes (penalty data), this data provides a reasonably objective measure of firm environmental performance. We use this data to generate three different measures that reflect whether or not a firm follows a pro-active approach towards environmental issues.

The first measure of environmental performance is based on the total amount of toxic chemical waste produced by a firm in a given year. Firms in SIC codes 2000 to 3999 (entire manufacturing sector) are required to report emissions for a considerable number of toxic chemicals once they exceed certain minimum thresholds of emissions. To construct a variable indicating pro-active environmental management ("relative waste production" or REL WASTE), we identified in each 2-digit industry the firm with the highest value of total waste and then subtracted from this worst polluter's amount of total waste (as natural log) the waste amounts of each firm in the industry (also in logs). Given this specification, increasing values of this proxy indicate a greater distance to the worst polluting firm and thus a better environmental performance. Although several firms in other SIC code industries also report values for chemical wastes (e.g. if they have minor operations in manufacturing industries and therefore have to report as well), we chose to limit the data to the manufacturing sector to ensure that the distance between worst polluting and focal firm is indeed a meaningful measure. Including other industries may impair our ability to compare levels of waste if reported waste applies to only a fraction of a firm's operations, or if few firms report levels (for involvement in potentially different other industries - although results for models including all observations yield essentially

the same results as those reported here). With respect to our hypotheses, following a pro-active approach with regard to the environment is likely to result in firm practices that lead to a lower value of waste generation, particularly as compared to firms in the same industry with a less pro-active stance. Hence, given our hypotheses 1 and 3, we expect that "incentives" will be positively related to this measure by giving managers discretion to act indeed pro-actively, while "monitoring" should be negatively related, as shareholders may be afraid of the costs involved and thus attempt to hold the firm back from making related investments.

For a second variable, we exploit the fact that the IRRC has recently begun to break up the reporting of waste production into three (additive) elements – "toxic chemicals transfers and releases," which represent the fraction of waste that is directly emitted into air or water, or deposited – untreated – in off-site locations (often private hazardous waste disposal facilities), as well as "energy recovery and recycling" and "treatment," which denote the fraction of total waste that is treated by the firm, or recycled or burned for energy recovery. Given a total level of waste, the last two elements actually denote positive aspects of firm environmental performance. In fact, recovery, recycling and treatment are part of what an environmental management system prescribes for the waste still produced even in environmentally pro-active firms. Thus, we expect that the fraction of total waste that is recovered, recycled and treated (RECOVERY), increases with pro-active management practices, and hence be positively related to incentives and negative to monitoring. For this measure, we utilize all available data (i.e. on manufacturing and other industries), as the concern regarding industry membership discussed above does not apply. What is of importance for the RECOVERY measure is whether, given a total amount of waste already reported, efforts were made to recycle, treat or recover.

For the final environmental performance measure, we use the reported number of environmental penalties in a given year. However, this count variable is somewhat difficult to interpret – specifically, with respect to our theory, there may be a large difference between having no penalties and having one, but, given that the firm is already part of the "violators", a value greater than one may be less informative. In keeping with our goal to create variables that measure whether firms are run based on integrating pro-active management practices, we have therefore created a dummy variable (VIOLATOR) that takes on the value of one if firms are fined, and zero otherwise. Having a value of one is thus equal to belonging to the "violator" set of firms, which is the case for about 20% of firms in a given year. We expect incentives to be negatively related to this measure (if managers are pro-active and thus <u>prevent</u> firms from incurring fines), and monitoring positive (i.e. shareholders, by trying to hold back environmental investments make it more likely that firms become a violator). Like RECOVERY, we use all available observations, since IRRC collects information on all environmentally related fines and convictions across all industries, and there are occurrences in a wide array of SIC codes.

In general, pro-active approaches to environmental performance, even the capability generating effects described by Russo & Fouts (1997), are based to a large extent in changing processes that have as a common effect the (potentially beyond compliance) reduction of environmental wastes (and thus also the avoidance of fines). Hence, these three measures, while

DE8-114-I

19 - 01 - 2005

not being able to directly assess the actual extent to which a firm has become pro-active and involved in environmental capability creation, should deliver a good first approximation of the strategy a firm is taking.

For the variables REL_WASTE and RECOVERY, we use data on the last available year (2001) and the two preceding years, while VIOLATOR is collected for 2000 to 2002 (last available year). In each case, availability of these environmental variables (together with the availability of data on monitoring – see below) determines the final sample size, which consists of 187 unique firms for REL WASTE, 269 for RECOVERY and 487 for VIOLATOR.

<u>Financial Measures.</u> To test the hypotheses postulating a link between environmental and financial performance, we use a simple accounting measure of performance. Our hypotheses call for assessing whether good environmental performance is positively associated with financial performance and potential value increases for shareholders. Since one of our hypotheses conceptualises a lack of interest or a negative pre-disposition of shareholders in environmental issues, it must be expected that such a bias could influence any direct relationship between high environmental performance and stock market measures of value. Therefore, we are focusing on ROA as a measure of firm performance (e.g. as used by Russo & Fouts, 1997). Increases in this measure indicate a positive direct effect on firm financial performance effect, which can then form the basis for stock market valuations.

Independent Variables

<u>Main independent variables.</u> To measure the degree of incentives given, we focus on the compensation of the CEO as the top decision maker in firms and use data from Execucomp to calculate two alternative variables that express the degree of incentive compensation and allow us to analyze the potentially varying effects of different elements of CEO pay structure. Specifically, for "EQUITY-INC" we calculate the fraction of stock options and restricted stock grants received in a given year over the total annual compensation received to assess the impact of the fraction of equity-based compensation. Since our hypotheses were formed with the discretionary effects of primarily equity-based compensation in mind we focus in our analysis on this measure. However, in order to gauge the effects of different types of incentive compensation we form a second ratio, "NON-EQUITY-INC," with annual bonus and long-term incentive pay in the numerator. These are common approaches to assess pay structure (e.g. Zajac & Westphal, 1994) and suitable to analyze the impact of different levels of incentive pay on the dependent variable. Further, data from the Execucomp database is frequently used in corporate governance work (e.g. Carpenter & Sanders, 2002; Aggarwal & Samwick, 1999).

To assess the degree of monitoring, we use information from the compensation consultancy firm Spencer & Stuart to calculate the ratio of outsiders to total members of the board of directors (OUTSIDER). This measure has been used in several previous studies (e.g. Zajac & Westphal, 1994; Lambert, Larcker & Weigelt, 1993) as a proxy for the independence of the board and thus for the potential strength of monitoring in a firm. Furthermore, Fields and

19 - 01 - 2005

Keys (2003) recently summarized the evidence suggesting that outside directors indeed perform important monitoring functions for shareholders.

<u>Controls.</u> First, a frequently mentioned problem in assessing the relationship between environmental actions and firm performance is that it is unclear whether good environmental performance causes good financial performance, or whether firms with good financials can simply afford to be green (e.g. U.S. EPA, 2000). We therefore control for prior firm performance in assessing the unique contribution of governance structure on environmental performance in the first type of models we estimate by including return on assets (ROA) as a control.

Further, we include a number of variables that control for other effects on performance that are frequently considered in the literature (see Capon, Farley & Hoenig, 1990). In selecting these controls for firm and industry characteristics, we also follow closely Russo & Fouts' (1997) study relating environmental and financial performance. In particular, as indicators of firm characteristics, we include measures of firm growth rate, size and capital intensity. To address the characteristics of the industry, we further include a measure of industry concentration, as well as two dummy variables indicating whether firms operate in the 25% highest or lowest polluting industries (for the REL_WASTE variable, these dummies are re-calculated exclusively for the manufacturing sector). Finally, since we are pooling data for 3 years, we include year dummies to control for the fixed effects of particular events in a given year.

Utilizing Compustat data, we operationalized these controls as follows. The variable GROWTH is calculated as the annual increase in firm sales as a percentage term. SIZE is defined as the log of firm sales, and capital intensity (CAPITAL_INT) as the ratio of assets to sales. For the industry concentration rate (IND_CONC) we calculated the four firm concentration ratio for each four digit industry based on Compustat data. These controls are included in all models.

Model

Our basic model links the three environmental performance variables to the contemporaneous variables expressing incentives (the CEO pay structure) and monitoring, as well as a number of controls. Due to the fact that incentives and particularly monitoring are not expected to vary much over time, the use of a fixed effects model has been ruled out. Instead, the observations for each firm are pooled and dummies to control for high and low polluting industries as well as year are included.

Env.Perf._t =
$$\alpha + \beta_a$$
 Incentive_t + β_b Monitoring_t + β_c CONTROL_t + PERIOD + ε (1)

We use simple OLS regression for most models except for those with VIOLATOR as dependent variable. Since the latter is a binary variable, we use a logistic regression procedure for these models.

The second type of models, linking environmental to financial performance has a similar

DE8-114-I

structure in terms of relating ROA to the same set of governance and control variables (minus ROA) as (1), plus including a measure of environmental performance as independent variable. All variables are lagged by one period relative to ROA in order to be able to assess causality.

 $ROA_{t+1} = \alpha + \beta_a Env.Perf_t + \beta_b Incentive_t + \beta_c Monitoring_t + \beta_d CONTROL_t + PERIOD + \epsilon$ (2)

RESULTS AND DISCUSSION

Table 1 displays some simple statistics and correlations for our dataset. While we did not find any excessively large correlations, several significant relationships that pre-sage the results of our more detailed analyses are worth noting. First, firm success, as measured in terms of ROA, is apparently positively related to our first two environmental variables, but shows a negative association with equity-incentives and monitoring. Further, we observe an intuitively plausible relationship among two of our environmental variables – a greater distance from the worst polluter in an industry (REL_WASTE) decreases the risk of becoming a VIOLATOR. Finally, we find a significant positive relationship between all environmental variables and incentives, and a negative one with monitoring at least for two of these variables (as noted above, VIOLATOR is a variable of bad environmental performance, thus, negative correlations indicate a positive effect of another variable on good environmental performance).

Insert Table 1 about here

It therefore does not surprise very much that the results of the first set of regressions (models 1-6 in table 2) strongly support our hypotheses 1 and 3 - for all three measures ofenvironmental performance, we find a significantly positive relationship between incentives and higher environmental performance (please note that the negative coefficient in model 6 indicates that incentives decrease the probability of being a violator). Simultaneously, we find that the ratio of outsiders on the board - our measure of monitoring - is negatively related to good environmental performance at least for the VIOLATOR variable (model 6 - where the highly significant positive parameter estimate indicates that monitoring strongly increases the probability of becoming a violator) and for the relative waste measure (model 2). In each case, the introduction of the incentive and monitoring variables significantly enhances the model (Rsquare and chi-square tests, respectively). Thus, we indeed find that managers and shareholders appear to follow different strategies with respect to firm environmental policies. While managers utilize their strategic discretion to enhance a firm's environmental profile, shareholders seem to work against that goal. These effects are also of economic significance, as a one standard deviation increase in incentive pay (which would increase the fraction of equity-based pay over total pay by 28.2 percentage points) decreases the likelihood of becoming a violator by 1.6 percentage points (or by about 17%, evaluated at the means of all variables), while increasing the

DE8-114-I

19 - 01 - 2005

percentage of treated waste by 6.5 percentage points, and increasing the distance-measure relative to the worst polluting firms in terms of total waste by .40 (the mean of the distance measure is 3.20, the worst polluting firm is at zero). Similarly, for a one standard deviation increase in monitoring (increasing the fraction of outside directors by 11.4 percentage points), we would expect the likelihood of becoming a violator to increase by 4 percentage points (or by 42%) and the distance-measure to the worst polluter to shrink by .24.

Insert Table 2 about here

Yet, the question remains whether shareholders are indeed laggards in terms of hesitating to subscribe to a more developed notion of environmental management and to accept the possibility that environmental investments could indeed generate rather than destroy value. If environmental efforts are indeed bad for business, then shareholders simply protect their investments (although this may be negative for other stakeholders including society at large). For managers, we have the similar question whether their pushing for higher environmental performance is motivated by an information advantage over shareholders, in terms of having simply more accurate insights into the production process and the value generation potential of environmental strategies, or whether they pursue more personal goals such as appeasing external stakeholders to relieve pressures and potential liabilities from their own shoulders.

The second set of models (7-18) in table 3 provides some answers to these questions (which are captured in hypotheses 2a&b, and 4a&b). Specifically, for all three environmental variables we find a consistently positive relationship between good environmental performance and financial (accounting) performance (please note again that negative parameter estimates for VIOLATOR indicate a positive effect on firm performance of not incurring fines). As before, introducing the environmental variables significantly enhances each model (albeit only marginally for RECOVERY).

Insert Table 3 about here

These results lend support to hypotheses 2a and 4a, postulating the "laggard" theory, and reject the alternative hypotheses 2b and 4b. In other words, after finding that managers use their discretion to enhance environmental performance, and shareholders to do the opposite, we have also established a positive link between these measures of environmental and a widely accepted measure of firm financial performance. This suggests that shareholders are indeed laggards, and that managers seem to act (primarily) based on an information advantage, and thus fully in line with the interests, if not the preferences, of their shareholders. On the other hand, the results are

DE8-114-I

clearly not consistent with either an agency view (i.e. managers push for more environmental performance, but against the interests of shareholders) or the idea that shareholders are simply protecting their interests.

Utilizing the method of path analysis (Duncan 1975), we can also compute the magnitude of the indirect effects that incentives or monitoring, via the environmental variables, have on firm performance. Using the results from the first set of regression as the direct effect of incentive or monitoring on each environmental variable, we can compute the indirect effect by multiplying these values with the parameters we obtain for the environmental variables' effects on ROA in the second set of regressions, where we specified full models including the direct effects of incentives and monitoring on ROA (models 10, 14, and 18). Following this procedure, a one standard deviation increase in incentives would lead to a positive change in ROA of .31, .36, and .15 percentage points via the environmental variables VIOLATOR, REL_WASTE, and RECOVERY, respectively. For monitoring, the effects are a decrease in ROA of -.76 and -.22 percentage points, via VIOLATOR and REL_WASTE, respectively. Given a mean of ROA of 13.7%, these numbers are non-trivial.

Insert Table 4 about here

Finally, looking at the impact of our two different proxies for incentive pay reveals some interesting additional insights. Models 19-20, 22-23, and 25-26 in Table 4 show that for all three environmental variables, the effect of equity and non-equity based incentives is the exact opposite. Thus, while equity-based incentives apparently lead managers to engage in more proenvironmental strategies, incentives that are more short term in nature – or do not relate managerial income directly to the stock performance of their firms – seem to induce a negative stance towards environmental efforts. What causes these puzzling results? One explanation may be related to Campbell, Sefcik and Soderstrom's (2004) recent finding that non-equity incentives like bonuses and long term incentive plans are used by many firms to explicitly compensate managers for their additional risk exposure due to environmental issues. Having such compensation may tend to outweigh managers' concerns over the impact of external stakeholders on the firm or the managers themselves, and thus alleviate the incentive to engage in more environmental efforts. This appears to be in line, as well, with an interpretation that understands such additional elements of compensations as explicit incentives to adhere to shareholders' preferences of abstaining from environmental investments.

Another possible explanation, which concurs with the spirit of our findings so far, is that managers do believe in a positive effect of environmental performance on financial performance, which should eventually find its way also into an enhanced stock performance. In this case, equity-based incentives should provide a relatively higher stimulus to undertake environmental efforts than non-equity based incentives. While this does not explain why the effect of non-equity

DE8-114-I

based incentives appears to be negative, if we include both, equity and non-equity-based incentive variables in the same model (see models 21, 24, and 27) we find that the parameter estimates for non-equity incentives lose their significance, while the equity-based incentives continue to be significant and close to their original estimates. Thus, the primary effect appears to be the one emanating from equity-based incentives, which we discussed in length above.

CONCLUSION

We have started this paper with a discussion of the apparently changing relationships between firms and environmental issues. From a reactive, antagonistic stance towards environmental regulations, many firms have evolved to act in a pro-active fashion to integrate environmental issues into their core strategies. The driving force behind this development appears to be the growing insight that environmental efforts can potentially be a source of value for firms. Yet, shareholders do not seem to share these emergent views. In fact, they appear to be laggards with respect to recognizing the potential value of environmental strategies. Managers, on the other hand, are likely to have a more accurate and acute perception of these trends and possibilities. More accurate because of information asymmetries that afford them with a better perspective on the potential value creating properties of pro-active environmental activities; more acute because their role as the representatives of their firm exposes them to the growing demands of several stakeholder groups for a better environmental performance. Such demands can, indeed, become threats to managers' personal future by potentially tainting their reputation or leading to personal and even criminal liability in case of severe environmental underperformance. This twofold reason for managers to take environmental issues into account, however, also lead us to suspect that managers – if they push for more environmental performance – may either act very much in the interest of their shareholders, or follow private incentives in what, from the shareholders' perspective, would constitute a moral hazard situation. In this situation, a firm's corporate governance structure takes on a central role, as different solutions to the general governance problem create more or less ability for managers or shareholders to implement their preferences for or against higher environmental performance.

Our empirical results deliver strong support for the view that shareholders are indeed "laggards" in that they apparently act to hold back the environmental performance of firms – while this very performance has apparently positive implications for firm financial performance. At the same time, we observe that managers, when having a relatively high level of strategic discretion as expressed in high equity-based incentive pay levels, push for a better environmental performance. While this seemingly violates the (empirically revealed) preferences of their shareholders, it does appear to be perfectly in line with investor's primary interest of value maximization.

These findings add to the emerging literature on the value of environmental policies and particularly underscore the validity of Russo and Fouts' (1997) finding that environmental and financial performance are positively linked. As such, our results are clearly relevant for shareholders and other actors in financial markets – going forward, the apparently antagonistic

DE8-114-I

relationship many equity-investors still display with respect to environmental issues should be challenged on the basis that shareholders may actually act against their own interest. Relatedly, our second main contribution, i.e. highlighting the differential role played by different governance mechanisms in promoting firm environmental performance, points to specific potential levers to influence firm environmental performance in the short term. Absent a change in investors' expressed preferences, increasing equity-based incentives could help a firm to utilize managers' apparently more accurate and acute understanding of environmental issues in order to improve environmental and subsequently firm performance. This constitutes a novel perspective in the current public discussion concerning the value and potential dangers of endowing executives with high levels of incentive pay following the significant corporate governance problems encountered in firms such as Enron over the last few years. In any case, these results add to the literature on corporate governance on specific firm strategies and firm performance (e.g. Jenkins & Seiler, 1990; Sanders, 2001a, 2001b).

Further, our results add to the ongoing debate on the value of environmental and social issue management and highlight the apparent fact that equity-investors are indeed still predisposed to an antagonistic view of environmental issues, while managers appear to be more pro-active. This paper makes a first step towards understanding the interactions between these pre-dispositions and the structural elements of a firm's corporate governance structure in affecting a critical social issue – the environmental performance of firms. More research into these interactions is likely to yield a better comprehension of the firm internal drivers of environmental performance and the available levers for policy makers as well as for firm boards intent on enhancing a firms' social performance.

Finally, two additional findings warrant further inquiry. First, the differential impact of equity vs. non equity-based incentives is still quite puzzling. We have offered two alternative explanations and believe further work is needed to explain this effect. Second, our regressions with firm financial performance as dependent variables show a negative effect of incentive pay on financial performance in our sample of several hundred U.S. firms over three years. While we do not have the space to explore these results in more depth, they add to a stream of not always consistent findings regarding the effect of incentives on performance (e.g., Sanders, 2001b; Akhigbe, Madura & Tucker, 1995; Mehran, 1995), and demonstrate the need for a better understanding of these relationships.

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		N	MEAN	STD. DEV.	1	2	3	4	5	6	7	8	9	10	12	13
1	GROWTH	1552	11.050	38.629												
2	SIZE	1552	8.700	1.191	.03											
3	CAPITAL_INT	1552	2.402	3.191	.01	.01										
4	IND_CONC	1552	.209	.183	05*	.13***	24***									
5	ROA	1741	.137	.101	.07**	05*	43***	.15***								
6	REL_WASTE	783	3.201	2.750	03	31***	08*	<.01	.17***							
7	RECOVERY	785	.688	.333	09*	.05	19***	.12**	.19***	.06^						
8	VIOLATOR	1552	.201	.401	.10***	.23***	09**	.03	03	22***	05					
9	EQUITY_INC	1552	.559	.282	.01	00	.02	07**	05^	.10*	.20***	09**				
10	NON_EQUITY_ INC	1552	.204	.179	.05*	.15***	.07*	.04	.09***	10*	11**	.09**	65***			
12	OUTSIDER	1552	.784	.114	05*	.19***	.08**	00	12***	11**	01	.18***	-0.01	.07**		
13	DIRTY	1805	.279	.449	.05^	.12***	13***	07**	-0.00	.05	09*	.39***	08***	.07**	.15***	
14	CLEAN	1805	.223	.417	06*	.09***	.40***	12***	11***	18***	05	22***	01	.02	11***	33***

Table 1: Correlations

^<.1, *<.05, **<.01, ***<.001

Dep. Variable:	RI	EL WASTE	RE	COVERY		VIO		
Model:	1	- 2	3	4		5	6	
NITEDCEDT	8.52***	9.79***	.50***	.38**		-6.32***	-8.36***	
INTERCEPT	(1.10)	(1.34)	(.10)	(.14)		(.66)	(.93)	
ROA	8.70***	8.40***	.46**	.45**		-4.39***	-4.27***	
	(1.42)	(1.40)	(.15)	(.15)		(1.10)	(1.10)	
CDOWTH	01	01	00	00		<.01	<.01	
GKUWIH	(<.01)	(.01)	(<.01)	(<.01)		(<.01)	(<.01)	
CLZE	86***	91***	.02^	.02		.52***	.48***	
SIZE	(.10)	(.10)	(.01)	(.01)		(.07)	(.07)	
	.75***	.65**	04 **	04***		04	05	
CAPITAL-INT	(.22)	(.22)	(.01)	(.01)		(.04)	(.04)	
	.43	.84	.13 *	.16 *		.32	.26	
IND_CONC	(.58)	(.59)	(.07)	(.06)		(.43)	(.43)	
	0.55*	0.55*	03	01		1.75***	1.64***	
HIGH_POLL	(.27)	(.27)	(.03)	(.03)		(.17)	(.18)	
	-0.57^	-0.57*	.10	.11		-1.25***	-1.21***	
LOW_POLL	(.29)	(.29)	(.08)	(.07)		(.29)	(.30)	
		1 43***		23***			-0 72*	
EQUITY-INC		(42)		(04)			(29)	
		-2.12*		03			3 47***	
OUTSIDER		(1.07)		(.13)			(.86)	
Ν	472	472	663	663	Ν	1312	1312	
R^2	.242	.265	.074	.111	-2 Log L	1017.41	992.90	
ΔR^2	-	.023	-	.037	LR (γ^2 Test)	-	24.51**	
F-Test for ΔR^2	-	7.213**	-	13.568**				

Table 2: Impact of Governance Structure on Environmental Performance

Standard errors in parentheses. All tests are two-sided. All models are overall significant at the <.001 level. OLS for REL_WASTE and RECOVERY; Logistic regression for VIOLATOR estimates probability that firm <u>did</u> incur a fine. Thus, a <u>negative</u> parameter estimate indicates a <u>better</u> environmental performance.

^<.1, *<.05, **<.01, ***<.001;

]	ROA vs. F	REL_Was	ste	F	ROA vs. RECOVERY				ROA vs. VIOLATOR			
Model	7	8	9	10	11	12	13	14	15	16	17	18	
INTERCEPT	.26***	.16***	.28***	.17***	.18***	.17***	.22***	.21***	.18***	.17***	.21***	.20***	
	(.04)	(.04)	(.05)	(.05)	(.03)	(.03)	(.04)	(.04)	(.02)	(.02)	(.02)	(.02)	
GROWTH	<.01	<.01	<.01	<.01	00	00	00	00	00	00	00	00	
	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	
SIZE	01 ^	<.01	01	<.01	00	00	00	00	00 ^	00	00	00	
	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	
CAPITAL-	07***	06***	06***	06***	02***	02***	02***	02***	01***	01***	01***	01***	
INT	(.01)	(.01)	(.01)	(.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	
IND CONC	.01	<.01	<.01	00	.02	.02	.02	.01	.04**	.04**	.04**	.04**	
IND_CONC	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)	(.02)	(.01)	(.01)	(.01)	(.01)	
HIGH POLI	.03**	.02*	.03**	.02*	00	00	00	00	00	<.01	01	<.01	
IIIOII_I OLL	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	(.01)	
LOW POLL	.02^	.02*	.02^	.02*	.04 ^	.03	.03	.03	.01	.01	.01	.01	
Low_roll	(.01)	(.01)	(.01)	(.01)	(.02)	(.02)	(.02)	(.02)	(.01)	(.01)	(.01)	(.01)	
Environmental		.01***		.01***		.02^		.02*		02*		02**	
Variable		(<.01)		(<.01)		.010		(.01)		(.01)		(.01)	
FOLITV NG			02	03^			02^	03*			02**	03**	
EQUITY-INC			(.02)	(.02)			(.01)	(.01)			(.01)	(.01)	
OUTSIDED			03	01			04	04			03	02	
OUTSIDER			(.04)	(.04)			(.03)	(.03)			(.02)	(.02)	
Ν	472	472	472	472	662	662	662	662	1292	1292	1292	1292	
R^2	.173	.226	.176	.233	.129	.133	.134	.141	.164	.169	.170	.175	
ΔR^2	-	.053	.003	.060	-	.004	.005	.012	-	.005	.006	.011	
F-Test for ΔR^2	-	37.70**	.84	12.02**	-	3.01^	1.88	3.03*	-	7.72**	4.63**	5.69**	

Table 3: Impact of Environmental Performance on ROA

Standard errors in parentheses. All tests are two-sided. F-tests for Δ R-square in each case relate to the basic model without environmental and governance variables. All models are overall significant at the <.001 level. In all regressions, ROA is the dependent variable, and all other variables are lagged 1 period vis-à-vis ROA. For each model, the respective "environmental variable" is the variable named in the head of the column. Since VIOLATOR is a dummy that is 1 if firm incurred a fine, a negative estimate for this measure of "bad" environmental performance indicates a positive contribution to ROA.

^<.1, *<.05, **<.01, ***<.001;

Dep. Variable:		REL WAST	ГЕ		RECOVE	RY		VIOLATOR			
Model:	19	20	21	22	23	24	25	26	27		
NITEDCEDT	9.79***	10.11***	9.73***	.38**	.45**	.37**	-8.36***	-8.71***	-8.38***		
INTERCEPT	(1.34)	(1.36)	(1.36)	(.14)	(.14)	(.14)	(.93)	(.92)	(.93)		
	8.40***	8.95***	8.31***	.45**	.52***	.43**	-4.27***	-4.50***	-4.29***		
ROA	(1.40)	(1.43)	(1.44)	(.15)	(.15)	(.15)	(1.10)	(1.10)	(1.11)		
CDOWTH	01	01	01	00	00	00	<.01	<.01	<.01		
GROWIN	(.01)	(.01)	(.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)	(<.01)		
SIZE	91***	84***	91***	.02	.02 *	.01	.48***	.46***	.48***		
SIZE	(.10)	(.10)	(.11)	(.01)	(.01)	(.01)	(.07)	(.07)	(.07)		
CADITAL DIT	.65**	.72***	.65**	04***	03**	04***	05	06	05		
CAPITAL-INT	(.22)	(.22)	(.22)	(.01)	(.01)	(.01)	(.04)	(.04)	(.04)		
IND CONC	.84	.56	.86	.16*	.13 *	.16*	.26	.30	.26		
IND_CONC	(.59)	(.58)	(.59)	(.06)	(.07)	(.06)	(.43)	(.43)	(.43)		
HIGH DOLL	0.55*	0.58*	0.68*	01	03	01	1.64***	1.66***	1.64***		
HIGH_POLL	(.27)	(.27)	(.27)	(.03)	(.03)	(.03)	(.18)	(.17)	(.18)		
	-0.57*	-0.58*	-0.58*	.11	.10	.11	-1.21***	-1.19***	-1.21***		
LOW_FOLL	(.29)	(.29)	(.29)	(.07)	(.08)	(.07)	(.30)	(.30)	(.30)		
	1.43***		1.56*	.23***		.27***	72*		68^		
EQUITY-INC	(.42)		(.61)	(.04)		(.06)	(.29)		(.38)		
NON EOUITY-		-1.43*	.28		22**	.08	× ,	.79^	.10		
INC		(.65)	(.93)		(.07)	(.10)		(.46)	(.59)		
OUTCIDED	-2.12*	-1.95^	-2.13*	.03	.06	.02	3.47***	3.49***	3.47***		
OUTSIDER	(1.07)	(1.07)	(1.07)	(.13)	(.13)	(.13)	(.86)	(.86)	(.86)		
Ν	472 [´]	472 ´	472 ´	663	663	663	1312	1312	1312		
R^2	.265	.255	.265	.111	.088	.112					

Table 4: Effect of different Types of Incentives

Standard errors in parentheses. All tests are two-sided. All models are overall significant at the <.001 level. Models 19, 22, and 25, are identical to models 2, 4, and 6, respectively, and reproduced here to facilitate comparisons.

^<.1, *<.05, **<.01, ***<.001;

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