Access, Board Size, and Incentives in Non-Profit Firms[*]

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Abstract:

We study the relation between board size and managerial incentives in non-profit firms. We present a model where board membership is granted to parties that wish to direct the manager's actions in exchange for assets that they bring within the organization, but differ in the relative value they place on the nonprofit's activities. In this setting, we show that the manager's incentives are lower than would be had the board been smaller, although the nonprofit's ability to raise funds is higher. Empirically, we find evidence consistent with our model's predictions: non-profits that pursue more objectives have larger boards, lower managerial pay-performance sensitivities and higher revenue and program spending growth rates.

1 Introduction

Modern nonprofit (or not-for-profit) organizations were effectively established in the United States by the Tariff Act of 1913. This act exempted organizations that operated exclusively for religious, charitable, scientific, and educational purposes from the Sixteenth Amendment, which established the federal income tax.[1] To maintain its tax-exempt status, an organization must satisfy three criteria: one, its activities must satisfy a public policy purpose; two, it must satisfy a non-inurement clause that prohibits the distribution of earnings (revenues less expenses); and three, it must have a governance structure. The non-inurement clause that legally bars a nonprofit from distributing profits leads to the absence of residual claimants who would otherwise direct and focus the organizations mission, thereby lowering a nonprofit's opportunity cost to pursue multiple objectives.[2] In this paper, we propose that the number of objectives pursued by a nonprofit organization is related to the size of its board of directors and explore the consequences for managerial incentives.

We posit that directors of firms potentially have differing, possibly conflicting, objectives and that their board membership confers on them the

[1] This exemption was subsequently extended to organizations that operated for a literary purpose and those that operated to prevent cruelty towards children and animals.

[2] Past research claims that the non-distribution constraint is both the cause of agency problems that lead nonprofits to be less efficient than for-profits (Alchian and Demsetz 1972; Fama and Jensen 1983), and a way to resolve agency problems that would lead for-profit firms to under-supply a good or service (Hansmann 1996; Weisbrod 1988; Glaeser and Shleifer 2001).

ability to direct the organization's managers to pursue these different goals. An organization benefits from having these directors on the board because they hold assets that it can employ to further its mission. The directors join the board because they value the right to direct the firm's manager to pursue their goals. We then examine how the equilibrium size of an organization's board is associated with managerial incentives and its ability to raise and spend funds. Specifically, we address three questions. First, is the size of the board of directors associated with the variety of programs pursued by the firm? Second, does board size affect managerial incentives or pay-for-performance? Finally, how does board size affect a nonprofit's ability to raise and spend funds?

We propose that managerial incentives are determined in equilibrium, through optimal contracting between a founder and outside parties that value access to the manager, and also between managers and a board of directors that represent the outside parties that are granted access. We begin by presenting a model where a risk-averse agent is employed by a firm.[3] Initially, the firm's founder, who cares about a single objective, has the sole right to direct the manager's actions. However, he can share this right by conferring board membership (contracting rights) to other parties that value access to directing managerial activites. The founder prefers to grant access to the other parties because he directly benefits from assets that they own and

[3]Our model is rather general in that the tensions explored apply more broadly to all organizations, for-profit and nonprofit. We believe, however, that the lack of a fiduciary duty to a residual claimant in nonprofits makes it apply particularly well in this context.

bring within the firm once granted the right to direct the manager's activities. This relationship is characterized by incomplete contracting because the firm cannot write explicit contracts with an external constituency that promise the provision of a good that the constituency values in exchange for its asset. The only way a constituency can ensure the provision of the good is by itself directing the firm's manager to provide it. Once granted access, the parties collectively act as a single principal (the board) who offer an explicit (complete) contract to a single agent (the manager) in a setting similar to the multi-task principal-agent model of Holmstrom and Milgrom (1991). In this setting, we show that the agent's incentives are lower than they would be had the contract been offered only by the founder.

Our view of what the board of directors does complements the monitoring view prevalent in the literature on for-profit firms. This monitoring view suggests that the role of a board is to observe the manager's actions and intervene when necessary to resolve agency conflicts between managers and owners (see, for example, Hermalin and Weisbach 2001.) We take the view that the function of a nonprofit board is to establish firm objectives and contract with top management (the agent) about these objectives on behalf of the stakeholders and constituencies that it represents.[4] For example, a community hospital is responsible to physicians, patients, staff, health

[4]For example, Ben-Ner and Van Hoomissen (1991) state, "A nonprofit organization will be formed only if a group of interested stakeholders (individuals or organizations) has the ability to exercise control over the organization. Stakeholder control is a *sine qua non* for the existence of nonprofit organizations, because it avails the trust required for patronizing the organization, revealing demand to it, and making donations to it."

maintenance organizations and the government. To the extent that boards reflect the concerns of interested parties about non-profit activities, the nature of contracting between boards and management will be influenced by these concerns.

There are three empirical implications of our theory. First, our theory predicts that board size will be larger when nonprofit firms pursue more objectives. Second, the more directors there are (i.e., the larger the board size), the weaker the pay-performance incentives are for managers. This second prediction is the implication of multi-task agency (see Holmstrom and Milgrom (1991)). Finally, we predict that a nonprofit's ability to raise and spend funds is positively related to the size of its board. The last implication arises because, at the margin, the value of a director's asset always exceeds the marginal loss in output from all other activities.

The existing literature characterizes nonprofits as having varied objectives such as prestige maximization, maximization of employee income, income redistribution, or maximization of the supply of some good (see, for example, Steinberg 2004 and Hansmann 1980 and 1987.)[5] Therefore, we test our model's predictions using a sample of 501(c)3 nonprofit firms that filed Form 990's with the Internal Revenue Service between 1998 and 2000. The sample consists of 70,524 firm-year observations from 24,027 unique firms. The Form 990 contains information about financial performance, program services

[5]Drucker (1992) states, "One of the basic differences between businesses and non-profits is that non-profits always have a multitude of constituencies."

offered, listing of officers and directors, and compensation paid to the officers or directors. We find that the number of directors on a nonprofit's board is positively related to the number of program activities pursued by the organization. In fact, after controlling for firm size the coefficient on program activities is approximately one, suggesting that each program activity (on average) is associated with one additional director on a board.

We construct two measures of pay-performance sensitivity for each CEO or Executive Director. The first, the sensitivity of compensation to financial performance, is derived by regressing the annual change in compensation on the change in revenue and the change in yield (see Baber, et al. 2002). The change in revenue measures a nonprofit's effectiveness in raising funds and the change in yield measures its efficiency in using funds.[6] Since nonprofit performance is unlikely to be solely measured in financial terms, we employ a second measure, the coefficient of variation of chief executive's compensation, to proxy for overall incentives based on both financial and non-financial measures. Our results show that both measures of managerial incentives are negatively related to the number of program activities and to board size. The statistical and economic magnitudes of this negative association are significant, and are robust to a myriad of specifications and controls for firm and industry characteristics. Finally, we find that nonprofits' revenue and program spending growth are positively related to the number of programs

[6]Specifically, the change in yield captures the change in program spending ratio that is not attributable to a change in funds raised by the organization.

pursued by the nonprofit, its board size, and to managerial incentives. The remainder of the paper is organized as follows. In Section 2, we present our model. In Section 3, we describe our data and measures of incentives, board characteristics and firm programs. We present the econometric results in Section 4. Section 5 concludes.

2 A Theory of Board Size

In this section, we present a theory of the size of a nonprofit organization's board of directors based on incomplete contracting (see Grossman and Hart 1986 and Hart and Moore 1990) and multitasking (see Holmstrom and Milgrom 1991). The organization in our model is *initially* controlled by a single founder who is the sole party that has rights to direct the organization's manager to undertake activities. However, the founder can share access to the manager by awarding contracting rights to other parties that may wish to direct the manager's activities. The founder may want to grant access to these other parties because he directly benefits from assets that they own and bring within the organization if they are granted access (see Rajan and Zingales 1998). In our model, the founder and the other parties that are granted access to the manager are the board, and the board contracts with the agent (the manager) in a setting similar to the multi-task principal-agent model of Holmstrom and Milgrom (1991). Each director encourages the manager to pursue activities that he values, unconstrained by any fiduciary duty to

residual claimants. This characterization reflects the nonprofit orientation of the organization.

There exist a set of $\overline{N}$ activities, corresponding to $\overline{N}$ parties that value them, that the organization can perform. The initial rights to direct the organization are controlled by a single party that we designate the founder, e, who only cares about one activity. The other parties, $\overline{N}\backslash\{e\}$, care about other activities that this organization may engage in. For example, a school principal must satisfy a number of constituencies such as teachers, taxpayers, parents and students. We assume that these activities do not directly affect the founder's activity. The parties, other than the founder, also control assets which are potentially valuable to the organization. In the case of a school, parents control which school their child attends, taxpayers control the ability of local governments to fund the school, and the teachers determine the quality of education and also have the ability to withhold their effort by striking. The value of party i's asset is A_i where for simplicity we assume that $A_i = A > 0, \forall i \in \overline{N}\backslash\{e\}$.

We assume that assets owned by outside parties and activities desired by these parties are both noncontractible. We make this assumption because different types of nonprofits are likely to face different forms of contractual incompleteness. In some cases, the ownership of an asset is inalienable so the founder is unable to purchase the asset from the other party.[7] We can

[7]Strictly speaking, there are many instances in which assets that are valuable for production can be bought by the organization or complete contracts can be written governing their use. We assume that these assets will be bought or contracted for and that there is

think of these assets as relationship-specific investments similar in spirit to Grossman and Hart (1986) and Hart and Moore (1990). For example, an asset of this type would be the ability of a party, say a former government official, to lobby the government on behalf of a nonprofit. Such an asset would be valuable to a nonprofit organization dependent upon government grants. As an example that does not conform to our setting, consider the case of a university with a donor who wants it to name a library after him in exchange for a donation. Our model does not apply to this setting because this is a case where the university and the donor can write an explicit contract. Our model better applies to a museum with a benefactor who has access to a network of potential donors (an asset that cannot be contracted upon) which the museum can benefit from. The benefactor may wish to gain access to the museum to promote a particular type of art that he favors.

In other cases, a founder cannot commit ex ante to contract with the agent (management) to deliver ex post the desired amount of another interested party's activity. Contracting with management as well as management's choice of activities is unverifiable to external constituencies. Thus, the only way in which the founder can benefit from the assets owned by the other parties is by granting them access to contracting with the agent. In this case,

no need for access to be granted to the (former) owners of such assets. We are concerned with situations in which control of an asset is difficult to contract over. We also note that in many instances, nonprofits in effect pay for services from individuals by granting the individual board membership (see Lynn and Smith 2005). This, of course, also then conveys access to the management of the nonprofit.

the parties bring their assets within the organization and the founder benefits from them. This situation is commonplace in nonprofits that rely on large donations. The founder is resource constrained and typically seeks out alternative sources of funding, typically donors. If the donor and the founder's interests and objectives are perfectly congruent, then a simple transfer of funds is sufficient. While congruence may hold for some donations it is unlikely to hold in general and as donations get larger. Further, as the number of donors increases, divergence in objectives across donors is also likely to increase. In these situations, the ability to direct the use of the funds becomes more important for the donor.

While the asset, in this case money, seems as if it may be contractible, writing a complete contract governing the use of a fungible asset is difficult since funds can be shifted from other sources to circumvent the contract. In cases of large donations, this problem is more severe as funds are added to an endowment and used over a long period of time. Further, Glaeser and Shleifer (2001) point out that the use of explicit contracts governing donations can cause them to lose their tax-advantaged status. For these reasons, the ability to influence the activities of the nonprofit will depend more on access (board membership) and less on contracts. If the donation is large enough and there is sufficient divergence in objectives, then we expect that the donor will receive board membership.[8]

[8] To further illustrate this idea, suppose an organization that initially has the objective of finding a cure for cancer – a pure scientific research activity – has a small board solely composed of medical researchers. This organization approaches a potential contributor

Our model has two potential sources of contractual incompleteness that lead to the use of access to influence management. If outside parties' assets and the nonprofit's activities are noncontractible, then the founder grants the parties access so that the founder may influence the use of their assets. So, before the board contracts with the manager (at time 0), the founder chooses the number of parties to grant access to the manager, or in other words, chooses the size of the board.

Each party prefers to influence the organization's activities (i.e., gain access to the manager) if the value of their asset is lower than the benefit they receive from directing the manager's activities. Under what conditions would the founder be willing to provide the other parties access to the manager in exchange for their assets and under what conditions would the other parties be willing to part with their assets in exchange for access to directing the manager? The payoff (net of payment to the manager) to the founder from granting access to the $N-1$ other parties ($\{N-1\} \subset \overline{N} \backslash \{e\}$) in exchange for their $N-1$ assets is:[9]

$$\pi_e(N) = z_e(N) + (N-1)A, \tag{1}$$

who believes that educating the masses regarding ways to avoid cancer is also a worthwhile objective. The existing board adds the contributor to the board in exchange for contributed assets, and in return, adds the objective of education, as well as, scientific research to the organization agenda. This addition creates a multiple-objective situation which both increases board size (adding the new contributor) and also creates incentives to pursue two, not one, objective – that is, both education and research, not just research.

[9] Note that *not* every party that cares about the firm's activities will be granted access to the agent.

where $\{N\} = \{N-1\} \cup \{e\}$. The founder's payoff is comprised of two elements: $z_e(N)$ represents the net payoff to the founder from contracting with the manager over the task the founder prefers, and $(N-1)A$ is the value of the assets contributed by the other parties to the task the founder prefers.

The payoff (net of payment to the manager) to party i ($i \in \{N-1\}$) from gaining access to the manager in exchange for party i's asset is:

$$\pi_i(N) = z_i(N) - A, \tag{2}$$

where $z_i(N)$ represents the net payoff to party i, $i = 1, ...N-1$, from contracting with the manager.

We seek the equilibrium number of parties N^* that will be granted access to the manager (the founder plus the $N-1$ other parties). An equilibrium board size N^* is described by:

(1) $\forall m < N^*, \pi_e(m) \leq \pi_e(N^*)$

(2) $\pi_i(N^*) \geq 0, i = 1, ...N^* - 1.$

The first condition implies that the founder grants access to the number of parties that maximize his value. The second condition implies that only parties that gain more than the value of their asset wish to get access to the manager. Collectively, the founder and the $N-1$ other parties that have access to the manager (N total) form the board of directors. If the founder grants access to no one, then $N = 1$, and only the founder has access to

the manager. For $N > 1$, there are multiple board members who direct the managers' activities.

At time 1, the organization employs a manager to produce output on various tasks. Once access to directing the manager's actions is granted, the founder and the $N-1$ other parties contract with the manager over the organization's activities. Given that there are N board members, there are N tasks or values that matter at the organization level. What we have in mind is that organizations may care about values or activities other than the initial activity for which they were established. Of course, it may be the case that some of these activities also impact the founder's activity, but these may also be values that matter to the organization independent of the founder's wishes. We associate these N tasks with N directors who contract with the single manager performing these activities. Further, each task is associated with a single director, who solely cares about that task and is indifferent to the other $N-1$ tasks.

So, at time 1, the board contracts with the manager in order to induce him to work on the tasks that the board members care about. For director i, $i \in N$, who cares about task i, the gross payoff from the manager taking action x_i is:

$$v_i = x_i + \varepsilon_i, \tag{3}$$

where $\varepsilon_i \sim N[0, \sigma_i^2]$ is a normally distributed shock to the performance measure v_i for task i. For simplicity, we assume that the variances of the N

shocks are identical ($\sigma_i^2 = \sigma^2$ for all i) and that the N shocks are uncorrelated.

We assume that the manager dislikes working in general, and working on multiple tasks in particular. The disutility from working on task i is given by $c_i x_i^2$ and the disutility from working on any pair of tasks i and j is given by $c_{ij} x_i x_j$. Here c_i and c_{ij} parameterize the cost of working on the tasks. For simplicity, we assume that $c_i = c_{ij} = c > 0$ for all i and j.

We assume that the manager is risk averse with coefficient of absolute risk aversion r. We assume that the N directors are risk neutral. We restrict our analysis to linear contracts. Holmstrom and Milgrom (1987) show that linear contracts are equilibrium contracts in this setting, although there may also be nonlinear equilibrium contracts. The board offers the manager a contract of the form:

$$w = \beta + \sum_{i=1}^{N} \alpha_i v_i. \tag{4}$$

So, the manager receives a fixed payment of β and performance related payments of $\alpha_i v_i$ for all $i \in N$ tasks on which the manager may work. The expected net payoff to the board from contracting with the manager is z, where:

$$z = \sum_{i=1}^{N} E(v_i) - w = \sum_{i=1}^{N} x_i - w, \tag{5}$$

which, as we shall see, will depend on the number of directors N. This payoff to the board is net of payments to the manager and independent of the assets A which have already been committed when contracting with the manager

occurs.

We can now define the manager's aggregate certainty equivalent utility from contracting with the board as:

$$u = \beta + \sum_{i=1}^{N} \alpha_i x_i - c \sum_{i=1}^{N} x_i^2 - \frac{c}{2} \sum_{i=1, i \neq k}^{N} \sum_{k=1}^{N} x_k x_i - \frac{r}{2} \sum_{i=1}^{N} \alpha_i^2 \sigma^2. \tag{6}$$

At time 2, the manager maximizes this certainty equivalent over the N tasks and chooses an equilibrium activity level, x_i, for each task i. At time 3, outputs are realized and all payoffs are made.

The first order condition for any task i is:

$$\alpha_i = 2cx_i + c \sum_{k=1, k \neq i}^{N} x_k. \tag{7}$$

Solving all N first order conditions simultaneously, we get that the optimal action taken on task i is:

$$x_i = \frac{N\alpha_i - \sum_{k=1, k \neq i}^{N} \alpha_k}{(N+1)\, c}. \tag{8}$$

Here the $-\sum_{k=1, k \neq i}^{N} \alpha_k$ arises because any work done on task k detracts from work done on task i (due to the negative complementarity between all pairs of tasks) and α_k provides incentives to work on task k. The board's net

payoff from contracting with the agent is given by:

$$z = \sum_{i=1}^{N} x_i - c\sum_{i=1}^{N} x_i^2 - \frac{c}{2}\sum_{i=1,i\neq k}^{N}\sum_{k=1}^{N} x_k x_i - \frac{r}{2}\sum_{i=1}^{N}\alpha_i^2\sigma^2, \tag{9}$$

where we assume that the agent will be held to his reservation utility. Substituting the agent's action x_i on every task i into the board's objective function and maximizing over the contract weights yields the equilibrium contracts. Holmstrom and Milgrom (1991) have shown that the optimal contract for a setting in which a single principal contracts with an agent over N tasks would provide the agent with incentives for any task i of:

$$\alpha_i' = \frac{1}{cr\sigma^2\left(N+1\right)+1}. \tag{10}$$

It follows that the manager's incentives for any task i are decreasing in the cost of performing tasks, c, the manager's risk aversion, r, and the variance of the performance measures, σ^2. These are standard results for the linear principal-agent model. More importantly, the manager's incentives for any task i are decreasing in the number of tasks N. This is the comparative static we will focus on in this paper.

Further, in equilibrium, the amount of managerial action on task i as a function of number of tasks is:

$$x_i^*(N) = \frac{1}{c^2 r\sigma^2\left(N+1\right)^2 + (N+1)c} \tag{11}$$

Consequently, the board's net payoff z from contracting with the manager is decreasing and convex in the number of tasks N.

Given the payoffs to the N tasks, the equilibrium board size is obtained by maximizing the founder's value, $\pi_e(N)$, subject to the participation constraints implied by needing to induce the other interested parties to give up their assets and join the board. So, the equilibrium is determined as the solution to the following program:

$$\begin{aligned} &\arg\max_{N} \ \pi_e(N) \\ &s.t. \ \ \pi_i(N^*) \geq 0, i = 1, ...N^* - 1 \end{aligned} \tag{12}$$

The following proposition establishes the existence of an equilibrium board size.

Proposition 1 *The equilibrium number of parties, including the founder, allowed access to contracting with the manager is N^*, where*

1. $N^* = 1$, *if* $A > z_i(2)$ *or* $A < z_i(1) - z_i(2)$[10]
2. $1 < N^* < \infty$, *if* $A < z_i(2)$ *and* $A \geq z_i(1) - z_i(2)$.[11]

Proof. *If $A > z_i(2)$ then no outside party wishes to participate as the value of their asset is greater than the value to them of the manager performing any activity in addition to the one desired by the founder. If $A < z_i(1) - z_i(2)$, the founder's gain from an outside party's asset is smaller than the loss from providing them access to the manager, so he prefers to retain all rights to*

[10] Alternatively, $A < -z_i'(1)$.

[11] Alternatively, $A \geq -z_i'(1)$.

contracting with the agent. $A < z_i(2)$ *and* $A \geq z_i(1) - z_i(2)$ *imply that the asset value for at least one party, other than the founder, is less than the value from the manager performing their task, and that the founder benefits from granting access to at least one other party. Further, since* $z_i(N) = z_e(N)$ *and* $z_i(N)$ *is monotonically decreasing in N, there exists an* $\widehat{n}$ *such that* $\pi_i(\widehat{n}) \geq 0$ *and* $\pi_i(m) < 0$ *for* $m > \widehat{n}$. ■

These results show that the founder either chooses to add no parties to the board of directors or chooses to keep adding parties to the board of directors until the reduction in incentives from adding more directors no longer makes it worthwhile for incremental parties to join the board. To see this, consider $A \geq z_i(1) - z_i(2)$. In this case, $A \geq z_i(m) - z_i(m+1), \forall m > 1$, and the founder gains more from successively adding parties to the board of directors than he loses in output. Thus, if the founder is willing to let one additional party join the board, then the founder is willing to let all additional parties join the board. From the founder's perspective, the value or payoff to the founder is strictly increasing in additional parties (past the initial additional party).

However, this does not imply that the size of the board will be unbounded. Other parties must be willing to participate. Since $z_i(m) - z_i(m+1) > 0$, $\exists\ \widetilde{n} > 1$ such that $\pi_i(\widetilde{n}) - \pi_i(\widetilde{n}+1) < A$, and additional parties choose not to join the board. Thus, what limits the size of the board of directors is the contracting friction induced by having multiple directors that reduce the gains from contracting with the manager. For example, a donor may choose

not to contribute to a large nonprofit because the activities that the donor cares about will be diluted by the prior existence of a large number of other tasks. Instead, the donor will find a smaller nonprofit where the donor will have a greater ability to direct what the manager of the nonprofit does. The optimal board size is determined by the tradeoff between the value of the assets owned by outside parties and the value of the output produced by the manager.

Our model has several implications. In our model, directors differ only to the extent that they have different objectives and consequently the number of firm objectives is increasing in the number of directors. Hence, the number of tasks performed by an organization is increasing in the number of directors on the board. Further, our model shows that managerial incentives, and consequently output, on every task is decreasing in the number of tasks represented by directors on an organization's board. Last, our model shows that the payoff to the founder is increasing in the number of additional board members, even though the output on any given task is decreasing in additional board members. These implications form the basis of the hypotheses we test in the following sections of the paper.

3 Data & Sample Selection

We obtain data on nonprofit organizations from the National Center for Charitable Statistics (NCCS) for 1998-2000. The NCCS compiles data on

Section 501(c)3 nonprofit organizations' Form 990 tax returns filed with the Internal Revenue Service (IRS). The filed Form 990s contain firms' financial data, compensation data for officers, directors, and other key employees, as well as data on program services. The organizations are classified by industry through a system called the National Taxonomy of Exempt Entities (NTEE). The NTEE classifies each organization into one of 26 industries. We require that each sample firm have all three years of data. We remove firms for which no officer or key employee is paid, firms with missing or negative financial variables for any year, or firms that experience CEO turnover during the sample period. The final sample, after deletion of outliers (discussed below), consists of 70,524 firm-years and 24,027 unique firms. Table 1 provides descriptive statistics for our sample.

We proxy for the number of firm objectives by the number of programs listed in Part III, "Statement of Program Service Accomplishments," on the IRS 990. In this section of the return, firms are required to describe "their exempt purpose achievements in a clear and concise manner." These achievements are totaled for each firm-year in order to obtain the number of programs. The mean (median) value for number of programs is 2.02 (1).

In addition to data on firm objectives, we need information on board size, CEO incentives, and firm characteristics. The number of directors on the board is listed in Part V, "List of Officers, Directors, Trustees, and Key Employees," on the IRS 990. The listed directors are totaled for each firm-year in order to obtain board size. The mean (median) number of directors

is 15.00 (11). Because this variable is somewhat skewed we use its natural logarithm in some specifications.

We use two measures of CEO pay-performance incentives. Our first measure is based on a specification used by Baber, Daniel, and Roberts (2002). This pay-performance relation is derived as follows. Let $PSPENDING_t$, REV_t, and $RATIO_t$ be the amount that the nonprofit spends on program activities, raises in revenue, and the ratio of program expense to total revenue, respectively, in year t. Then,

$$PSPENDING_t = REV_t \times RATIO_t \tag{13}$$

and

$$\Delta PSPENDING_t = [REV_t \times RATIO_t] - [REV_{t-1} \times RATIO_{t-1}] \tag{14}$$

or

$$\Delta PSPENDING_t = [\Delta REV_t \times RATIO_{t-1}] + [REV_t \times \Delta RATIO_t]\,. \tag{15}$$

The first term is the change in program spending that is explained by the change in revenue and the second term is the change in program spending that is explained by the change in the average fraction of each revenue dollar the nonprofit spends on program activities. If we deflate the above by program spending in year $t-1$, and substitute $RATIO_{t-1} = \frac{PSPENDING_{t-1}}{REV_{t-1}}$,

we get

$$\frac{\Delta PSPENDING_t}{PSPENDING_{t-1}} = \%\Delta REV_t + \Delta YIELD_t, \tag{16}$$

where

$$\Delta YIELD_t = \frac{[REV_t \times \Delta RATIO_t]}{PSPENDING_{t-1}}. \tag{17}$$

Now, $\%\Delta REV_t$ indicates the organizations fundraising performance and $\Delta YIELD_t$ indicates its performance in fund usage. If we posit that compensation partly depends on performance along these two financial dimensions we obtain the regression specification

$$\%\Delta COMP_t = \beta_0 + \beta_1 \%\Delta REV_t + \beta_2 \Delta YIELD_t + \epsilon_t, \tag{18}$$

where $\%\Delta COMP_t$ is the percentage change in compensation from year $t-1$ to year t. In this specification, β_1 and β_2 represent pay-performance sensitivities to fundraising and fund usage activities.

We obtain compensation data for CEOs from Part V of Form 990. If a CEO or Executive Director is not designated, we use compensation data for the highest paid officer, director, trustee, or key employee obtained from the same section of the IRS return. We define total compensation as the sum of base compensation, contributions to employee benefit plans and deferred compensation, and expense accounts. We observe qualitatively similar results throughout if we only use base compensation. $\%\Delta COMP_t$ is defined

as follows:

$$\%\Delta COMP_t = (COMP_t - COMP_{t-1})/COMP_{t-1} \tag{19}$$

The mean (median) percentage change in total CEO compensation is 8.73% (4.99%). We obtain total revenue from Line 12 of Part I, "Revenues, Expenses, and Changes in Net Assets or Fund Balances," on the Form 990. $\%\Delta REV_t$ is defined as follows:

$$\%\Delta REV_t = (REV_t - REV_{t-1})/REV_{t-1}. \tag{20}$$

The mean (median) percentage change in total revenue is 12.25% (7.15%). We obtain program spending from Line 13 of Part I on the Form 990. The mean (median) level of program spending is \$5.42 million (\$0.62 million). The mean (median) percentage change in program spending is 12.29% (7.93%) and the mean (median) value for the change in $YIELD$ is 0.03 (0.43). While our descriptive statistics for the change in compensation, revenue and change in program spending are comparable to Baber, et al., our descriptive statistics for $YIELD_t$ are not. The mean (median) value for change in yield in Baber, et al., is -2.18 (-0.40). One potential reason for this difference is that they use a significantly smaller sample of much larger firms. In contrast, Krishnan, Yetman, and Yetman (2006) report a median value for change in yield of 0.21, which is more comparable to what we report.

Since financial performance is unlikely to completely capture a non-profit

manager's performance, we develop an alternative measure for incentives–the coefficient of variation (COV) of total CEO compensation.[12] The coefficient of variation is defined as the standard deviation of compensation for the manager divided by the manager's mean compensation. Higher variation in compensation is indicative of stronger pay-performance incentives conditional on both there being time series variation in performance and the organization's use of pay-performance incentives. In our reported tests, the coefficient of variation is calculated for total compensation, although we obtain qualitatively similar results using base compensation. The mean (median) values for this variable using base and total compensation are 10.27 (6.76) and 10.67 (7.28), respectively.[13]

We measure firm size as the beginning of the year book value of the nonprofit's total assets. The mean (median) value for beginning of year assets is $11.98 million ($0.66 million). Because this variable is highly skewed we use the natural logarithm of this variable in our regression specifications to control for firm size.

Univariate correlations are presented in Table 2. These results show that board size, number of programs, and organization size are all significantly positively correlated. In particular, the Pearson (Spearman) corre-

[12]For instance, Duca (1996) states that, "Nonprofit social services organizations rarely have a measure of profitability and often have multiple program goals and objectives. This makes it very difficult to identify any one or two performance measures that can be applied across a variety of programs."

[13]In computing the COV variable, there are only two observations for some firms because of oulier deletion. As a robustness check, we restrict the sample to three observations per firm and obtain similar results.

lation for board size and number of programs is 0.156 (0.174). The results also provide preliminary evidence on pay-performance sensitivities. In particular, percentage change in compensation is positively correlated with percentage change in revenue, change in yield, and percentage change in program spending. Pearson (Spearman) correlations among these variables are 0.152 (0.127), 0.020 (0.023), and 0.189 (0.168), respectively. In addition, percentage change in revenue and change in yield are significantly negatively correlated (-0.566 for Pearson and -0.507 for Spearman). The relations among these variables are further investigated in our main empirical tests.

4 Empirical Results

Our model predicts relations between the number of non-profit objectives (programs), non-profit board size, managerial incentives, and organization performance. In particular, board size increases in firms' objectives, managerial incentives for any task will be decreasing in board size, whereas performance on a task will be increasing in incentives for that task. We begin by presenting univariate evidence on nonprofit organizations that are differentiated by their source of funding. For instance, if the only source of funding for an organization is program service revenues, it often behaves much like a for-profit entity.[14]

In Table 3, we provide univariate evidence that program variety, board

[14]Steinberg (2004) terms such organizations as *Commercial Nonprofits*.

size, and managerial incentives (as measured by the coefficient of variation in pay) vary systematically with a nonprofit's orientation as determined by its source of funding. We identify three sources of funding, program service revenues (Revenues), public support (Donations) and government funding (Government Grants). We find that more focused organizations, which have a single source of funds, have smaller boards, fewer programs, and higher managerial incentives than do less focused organizations. As the number of funding sources increases, so do board size and program variety, while incentives are reduced. For instance, organizations whose sole funding source is program service revenues (and thus are more likely to behave as for-profits) have on average 8.5 directors, 1.5 programs, and a COV of 12.06.

By contrast, organizations that have both program service revenues and public support have boards with 15.11 members, pursue 1.93 programs, and the CEO's COV is 10.95, on average. For organizations that raise funds through program service revenues, public support, and government grants, the corresponding statistics are: 17.59 directors, 2.3 programs, and a COV of 9.74, on average. Similarly, organizations that raise funds through donations and government grants have larger boards (14.13 versus 13.12 and 9.16), more programs (1.96 versus 1.78 and 1.65), and somewhat lower incentives (10.11 versus 12.71 and 9.62), than do organizations that solely raise funds through either donations or government grants. From this preliminary evidence we conclude that focused nonprofits have smaller boards, fewer programs and greater managerial incentives. This evidence, albeit univariate, is consistent

with the predictions of our theory.

To confirm this preliminary evidence we perform several multivariate tests. We first examine the impact of a firm's number of programs on board size after controlling for firm size. Second, we examine the effect of firm objectives and board size on pay-performance sensitivity by augmenting equation (18) with interaction terms for the number of programs and board size. Third, we use the coefficient of variation of compensation as an alternative measure of managerial incentives and test for its relation to board size and number of programs. Finally, we show that program variety, board size, and the coefficient of variation of compensation are all positively related to a nonprofit organization's revenue and program spending growth.

4.1 Number of Programs and Board Size

To examine whether a nonprofit's board size is related to its pursuit of multiple programs, we estimate the following specification:

$$BOARD_i = \beta_0 + \beta_1 PROG_i + \beta_2 \ln(ASSETS_i) + \tau_i + \epsilon_i. \qquad (21)$$

$BOARD_i$ is average board size over the sample period, $PROG_i$ is the average number of programs over the sample period, and $\ln(ASSETS_i)$ is the natural log of average beginning of the year assets over the sample period. Industry effects are represented by τ_i. Because we use averages, this specification is estimated over the cross-section of 24,027 firms. In all of our tests, we delete

outliers with respect to the three variables in equation (18) at the 1% and 99% levels.

The results are presented in Table 4. Column 1 contains results for the specification in equation (21). The coefficient on number of programs is positive and significant. The coefficient magnitude (0.927) is very close to the predicted sensitivity of the model, which predicts that each additional objective is associated with an additional board member. Columns 2 through 5 contain additional results using either different specifications for the dependent variable or different estimation procedures. Column 2 uses the natural log of board size. Columns 3, 4, and 5 describe year-by-year Poisson regressions since our dependent variable can only take integer values. In each specification, the coefficient on number of programs is positive and significant, as predicted, suggesting that board size is, in fact, related to the number of programs pursued by a nonprofit firm.

Endogeneity is a potential concern with the above results in that it is plausible that the size of the board drives the number of programs pursued. However, we believe our interpretation of the results is appropriate. Our theory asserts that board representation is granted to parties with differing objectives based on whether they have assets which are valuable to the firm. Thus, objectives and assets are the primitives of the model and determine the organization's mission and in turn the size of its board. Further, both variables are fairly invariant over time, implying that they are potentially innate to an organization's business model. Nevertheless, the cross-sectional

association between the two variables is sufficient to validate our model even though causality is virtually impossible to unambiguously establish.

4.2 Board Size and Pay-Performance Incentives

We next examine the effect of firm objectives and board size on pay-performance sensitivity. Our first set of tests is based on the sensitivity of CEO compensation to financial performance. We estimate the following version of equation (18):

$$\begin{aligned} \%\Delta COMP_{it} &= \beta_0 + \beta_1 \%\Delta REV_{it} + \beta_2 \Delta YIELD_{it} + \beta_3 PROG_{it} \quad (22) \\ &\quad + \beta_4 \ln(BOARD)_{it} + \beta_5 (\%\Delta REV_{it} \times PROG_{it}) \\ &\quad + \beta_6 (\Delta YIELD_{it} \times PROG_{it}) \\ &\quad + \beta_7 (\%\Delta REV_{it} \times \ln(BOARD_{it})) \\ &\quad + \beta_8 (\Delta YIELD_{it} \times \ln(BOARD_{it})) + \mu_t + \tau_i + \epsilon_{it}. \end{aligned}$$

This specification extends equation (18) by including the interaction effects of number of programs and board size, along with their main effects. Thus, the coefficients on the interaction terms represent the incremental effect of an increase in the number of programs (or board size) on the pay-performance sensitivity with respect to the percentage change in total revenue and the change in yield. Our model predicts that the coefficients on the board size interactions will be negative, indicating that managerial incentives are

decreasing in board size. Year effects, μ_t, and industry effects, τ_i, are included in all regressions. The results are presented in Table 5.

In Column 1, we estimate the base regression from Equation (18).[15] The coefficients on percentage change in revenue (0.166) and change in yield (0.115) are both positive and significant, and somewhat larger in magnitude (0.090 and 0.076, respectively) to those obtained by Baber, et al. (2002). In Columns 2 and 3, we add program main effects and interactions, and board main effects and interactions separately. As predicted, the coefficients on both interactions for both the number of programs and board size are negative and significant. In Column 4, we include all main effects and interactions in the same regression. Again, the coefficients on the interactions are negative and significant as predicted.

In Column 5, we replace the change in revenue and yield with the change in program spending, $\%\Delta PSPENDING_{it}$. We use this specification in order to investigate an alternative performance measure based on the percentage change in program spending alone. We choose this performance measure because, based on the derivation in Section 3, the percentage change in program spending is the sum of the percentage change in revenue and change in yield. Thus, this specification combines the performance measures used in the regressions so far and avoids potential (negative) collinearity problems present when using percentage change in revenue and change in yield sepa-

[15] Since the regression contains multiple observations for each firm, the reported t-statistics are based on standard errors that are clustered by firm.

rately. Column 5 reveals that the coefficient on percentage change in program spending is significant and positive (0.224) and the coefficients on both interaction terms are significant and negative, consistent with our predictions. Overall, these results are consistent with our theory that the number of programs, through its effect on board size, reduces managerial pay-performance incentives, as measured by financial pay-performance-sensitivity.

In nonprofit firms, managerial performance is likely to be measured in non-financial as well as financial terms, thereby limiting the prior measure's ability to sufficiently capture pay-for-performance. Our second measure of managers' pay-performance incentives, the coefficient of variation of compensation, captures incentives tied to financial and non-financial performance. To examine the relations between compensation variability, board size, and programs we estimate the following regression specification:

$$\begin{aligned} COV_i &= \beta_0 + \beta_1 PROG_i + \beta_2 \ln(BOARD_i) \\ &\quad + \beta_3 COV(Revenue_i) + \beta_4 \ln(ASSETS_i) + \tau_i + \epsilon_i. \end{aligned} \tag{23}$$

COV_i measures each firm's manager's coefficient of variation of total compensation. Industry effects, τ_i, are included in all specifications. Since larger organizations are likely to have lower performance volatilility and consequently a lower coefficient of variation of pay, we add the coefficient of variation of total revenue, $COV(Revenue_i)$, as an additional regressor. We control for firm size by using the natural logarithm of firm assets, $\ln(ASSETS_i)$, as an

independent variable.

Table 6 presents the results. In Columns 1 and 2, we regress COV_i on the number of programs and board size individually. The coefficients for both are negative and significant as predicted. In Column 3, we estimate the full specification as in Equation (23). The coefficients for number of programs and board size remain both negative and significant, albeit smaller in magnitude. In Column 4, we use board size deciles as a measure of board size with similar results. These results provide further evidence on the negative relation between managerial incentives and the number of programs and board size, consistent with our theory.

4.3 Programs, Board Size, Incentives and Performance

Our final tests examine the effect of firm objectives, board size, and pay-performance sensitivity on a nonprofit's ability to raise funds. Our tests examine whether a nonprofit's program spending and revenue growth is affected by its program variety, board size, and managerial incentives. We estimate the following equation :

$$\begin{aligned} PERF_i &= \beta_0 + \beta_1 COV_i + \beta_2 \ln(BOARD_i) + \beta_3 PROG_i \\ &\quad + \beta_4 \ln(ASSETS_i) + \tau_i + \epsilon_{it}. \end{aligned} \tag{24}$$

$PERF_i$ is the performance measure used in the regression, either the nonprofit's average program spending growth or its average revenue growth rate.

Our model predicts that the coefficients β_1, β_2, and β_3 will be positive, indicating that organizational performance is increasing in managerial incentives, board size, and program diversity. Industry effects, τ_i, are included in all regressions. The results are presented in Table 7.

In Column 1 and 2, we estimate the model with program spending growth rate as the dependent variable, and in Columns 3 and 4, we use revenue growth rate as the dependent variable. The coefficients on COV, our measure of incentives, are reliably positive and significant across all specifications, indicating that nonprofit performance is increasing in managerial pay-performance sensitivity. In Columns 2 and 4, the coefficients on number of programs and board size are also positive and significant, indicating that a nonprofit's ability to raise funds is also positively related to program variety and board size. These results are consistent with our theory that board members bring with them assets that are valuable to the nonprofit, which increases its funds. This occurs because, at the margin, the asset value is always in excess of the output loss on any one program.

4.4 Robustness Tests

Our empirical tests make a number of assumptions about the measures constructed from Form 990 data. To examine whether our inferences are affected by these assumptions we conduct a number of robustness tests that relax these assumptions or make alternative assumptions about the data. Our first robustness test deals with our measure of board size. In the prior

analyses, board size is defined as the total number of directors, officers, or key employees from Part V of IRS Form 990, and compensation is defined as the sum of base compensation, benefits, and expense accounts. We re-run all our tests by measuring board size as the total number of unpaid directors and measuring compensation as base compensation only. Our results and inferences are unaffected.

The next robustness test deals with the definition of the chief executive or the highest ranked officer in a nonprofit organization. For purposes of measuring incentives, we identify the top officer as the CEO (or other comparable title). If such a title is not found, we use the highest paid officer or director. These criteria are consistent with that used in other studies (e.g., Baber, et al. 2002). As a robustness check, we identify the top officer as the highest paid officer regardless of whether he or she is identified as the CEO. All results are identical to those reported in the prior sections.

The results described in the previous sections include "government related" nonprofits. Since "government-related" nonprofits can be fundamentally different from other nonprofits we performed all tests using a reduced sample in which firms were eliminated if more than 40% of their revenues (Form 990 Lines 1 through 3) were from government sources. This criterion reduces the sample size by approximately 25%. All results are qualitatively similar to those reported previously.

Our measure of the number of programs pursued by a nonprofit may be subject to bias if nonprofits report the number of programs for publicity

reasons and not to reflect the true goals of the organization. To address this concern we use the program-related expenses in the Form 990 to construct an index that captures program diversity. This index is similar to a Herfindahl index used to measure the degree of competition in a given industry. Our variant of this index is:

$$P_i = \frac{1}{\sum_{j=1}^{N} \left(\frac{PSPENDING_{ij}}{TOTAL\ PSPENDING_i} \right)^2} \tag{25}$$

$PSPENDING_{ij}$ is the program spending on program j and organization i. $TOTAL\ PSPENDING_i$ is measured as the sum of all the program-related expenses from Part III for organization i. This measure captures the number of programs which are weighted based on their relative program spending. For instance, for organizations with one program, $P_i = 1^2 = 1$. For organizations with 2 programs which have equal amounts of program expenses, $P_i = \frac{1}{2 \times 0.5^2} = 2$.

When using this measure of the number of programs, all results are similar to those previously reported with two exceptions. The coefficient on the interaction between number of programs and change in yield in specification (22) is insignificant (with a t-statistic of 1.10). When the change in program spending is the dependent variable, the coefficient on programs in specification (24) is also insignificant (with a t-statistic of 1.17).

Finally, we conduct two additional robustness tests that address the concerns raised by Krishnan, Yetman, and Yetman (2006) implying that non-

profit firms misreport fundraising expenses. If program expenses are misreported, our independent variables are measured with error and the relations identified could potentially be spurious. Our first robustness check eliminates firms that report zero fundraising expenses, since their data are most likely to be suspect. Using this restricted sample, we reestimate regression (22) and obtain similar results.

Next we reestimate regressions (22) and (23) separately for firms that employ an outside accountant to audit their statements and those that do not. Krishnan, et. al., report that firms with audited statements are less likely to misreport expenses. Our results remain qualitatively similar in both samples, albeit somewhat stronger in statistical terms for firms that employ an outside accountant and somewhat weaker in the sample of firms that do not have audited statements.

5 Conclusion

In this paper, we study the effect of a nonprofit organization's board of directors on managerial incentives. We present a model where a risk-averse agent performs multiple tasks for a nonprofit firm that is governed by multiple directors who differ in the relative value they place on each task. We show that the manager's incentives are lower than they would be had the board been smaller, although the organization's ability to raise funds is higher.

We test these predictions using data on nonprofits from their Form 990

filings with the IRS. Our empirical results are consistent with our model's predictions. Specifically, we find that board size is positively associated with the number of programs pursued by a nonprofit and negatively related to its manager's pay-performance sensitivities. We also show that program spending and revenue growth are positively related to incentives, board size, and program variety. Our results are robust to various specifications and the inclusion of numerous controls.

While our empirical results are consistent with the model, we have only begun to scratch the surface of the model's implications for explaining board behavior. Our proxies for board heterogeneity are rather crude. While it is certainly plausible that greater board size reflects greater disagreement about firm objectives, it would be preferable to have direct measures of differences in board members' objectives. For example, European firms often have employee union representation on the board, bank or debtholder representation on the board, and in some cases, charitable foundation representation on the board. To the extent that we have been able to find results consistent with the theory in US nonprofit data, this suggests that multiple objectives may in fact explain board behavior more generally.

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TABLE 1
Descriptive Statistics

Variable	N	Mean	Standard Deviation	Q1	Median	Q3
Levels Variables[a]*:*						
Board Size	70,524	15.00	15.36	5.00	11.00	20.00
No of Programs	70,524	2.02	1.34	1.00	1.00	3.00
Total Assets, beginning of year (in $000s)	70,524	11,979.61	162,130.31	160.22	658.73	2,793.44
Program Spending (in $000s)	70,524	5,420.24	36,074.74	216.94	620.56	2,179.47
Total Revenue (in $000s)	70,524	7,223.83	53,621.66	307.60	868.87	2,959.57
Change Variables[b]*:*						
%Change in Compensation	46,501	8.73	22.15	0.00	4.99	11.71
%Change in Revenue	46,501	12.25	32.00	-2.81	7.15	20.69
Change in Yield	46,501	0.03	29.91	-8.66	0.43	9.93
%Change in Program Spending	46,501	12.29	28.89	-0.25	7.93	19.12
Coefficient of Variation Variables[c]*:*						
COV, Base Compensation	24,027	10.27	11.06	3.71	6.76	12.43
COV, Total Compensation	24,027	10.67	10.94	4.00	7.28	13.11

[a]Includes three years of data, 1998-2000.

[b]Includes two years of data, 1999-2000.

[c]Number of unique firms is 24,027. At least two years of data per firm are required.

TABLE 2
Univariate Correlations

Correlations of levels variables (described in Table 1) are based on 70,524 observations. Correlations of changes variables (described in Table 1) are based on 46,501 observations. Pearson (Spearman) correlations are presented below (above) the diagonal.

	Ln (Board Size)	Programs	Ln (Assets)	Ln (Revenue)	%Δ Compensation	%Δ Revenue	Δ Yield	%Δ PSpending
Ln (Board Size)		0.1738	0.3867	0.3590	0.0465	0.0227	-0.0017	0.0282
		<.0001	<.0001	<.0001	<.0001	<.0001	0.7196	<.0001
Programs	0.1557		0.1814	0.2174	0.0175	0.0192	-0.0013	0.0187
	<.0001		<.0001	<.0001	0.0002	<.0001	0.7797	<.0001
Ln (Assets)	0.3660	0.1748		0.8169	0.0258	-0.0422	0.0528	0.011
	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001	0.0181
Ln (Revenue)	0.3401	0.2116	0.8320		0.0514	0.0989	-0.0383	0.0623
	<.0001	<.0001	<.0001		<.0001	<.0001	<.0001	<.0001
%Δ Compensation	-0.0138	-0.0044	-0.0268	-0.0099		0.1271	0.0227	0.1681
	0.0030	0.3476	<.0001	0.0323		<.0001	<.0001	<.0001
%Δ Revenue	0.0084	0.0121	-0.0582	0.0572	0.1520		-0.5067	0.4772
	0.0701	0.0093	<.0001	<.0001	<.0001		<.0001	<.0001
Δ Yield	-0.0067	0.0052	0.0380	-0.0436	0.0202	-0.5663		0.3693
	0.1474	0.2659	<.0001	<.0001	<.0001	<.0001		<.0001
%Δ PSpending	0.0023	0.0080	-0.0251	0.0182	0.1893	0.5214	0.4080	
	0.6128	0.0835	<.0001	<.0001	<.0001	<.0001	<.0001	

TABLE 3

Differences in Board Size, Number of Programs and PPS Across Types of Nonprofits

Categories are determined based on average (over 3 years) values for program service revenue (Form 990, Line 2); donations (Form 990, Line 1a + Line 1b); and government grants (Form 990, Line 1c). The nonprofits orientation refers to the source of funding, program service revenue (Revenue), public support (Donation) and government funding (Government Grants). For example, "Revenue" orientation refers to nonprofits for which program service revenues is the only source of funds. Cells contain means and medians (below).

Orientation	Firms	Board Size		Programs		COV	
Revenue	1,486	8.47		1.49		12.06	
		6.00		1.00		7.86	
Revenue and Donation	7,432	15.11	***	1.93	***	10.95	***
		11.33	***	1.33	***	7.40	**
Revenue and Government Grants	661	10.36	***	1.92	***	10.72	**
		8.33	***	1.00	***	7.25	**
Revenue, Donation and Government Grants	8,796	17.59	***	2.30	***	9.74	***
		14.42	***	2.00	***	7.01	***
Donations	2,851	13.12	***	1.78	***	12.71	
		8.67	***	1.00	***	8.21	
Government Grants	226	9.16		1.65	**	9.62	***
		6.67	**	1.00	***	5.59	***
Donation and Government Grants	2,332	14.13	***	1.96	***	10.11	***
		11.33	***	1.33	***	6.99	***

***,**,* represent significant difference vs. the "Revenue" group at the 1%, 5%, and 10% levels, respectively. Significance is based on t-test of mean differences above, and Wilcoxon rank sum test below.

TABLE 4
Programs and Board Size

All variables are averages for each firm over 1998-2000. Column headers describe dependent variables. There are 24,027 unique firm observations in all regressions. Industry dummies are included in all regressions. T-stats based on robust standard errors are in parentheses.

Variable	Board Size	Ln (Board Size)	Board Size - Poisson (2000)	Board Size - Poisson (1999)	Board Size - Poisson (1998)
Constant	-22.562	-0.198	-0.373	-0.3655	-0.428
	(-11.26)	(-0.97)	(-4.36)	(-4.19)	(-4.93)
Programs	0.927	0.073	0.046	0.050	0.040
	(12.49)	(17.87)	(35.38)	(38.46)	(36.36)
Ln (Assets)	2.533	0.162			
	(43.63)	(64.88)			
Ln (Revenue)			0.192	0.194	0.198
			(192.00)	(176.36)	(198.00)
F-Statistics	196.06	226.62			
Adjusted R^2	0.18	0.20	n/a	n/a	n/a

TABLE 5
Effect of Programs and Board Size on CEO Financial Pay Performance Sensitivity

The dependent variable is the percent change in total CEO compensation for each firm for 1999 and 2000. There are 46,501 firm-year observations in each regression. Industry and year dummies are included in all regressions. T-stats, based on standard errors clustered by firm, are in parentheses.

Variable	(1)	(2)	(3)	(4)	(5)
Constant	13.085	12.904	12.678	12.548	13.162
	(2.94)	(2.94)	(2.82)	(2.82)	(2.89)
%Δ Revenue	0.166	0.193	0.240	0.258	
	(24.23)	(15.17)	(13.10)	(12.66)	
Δ Yield	0.115	0.134	0.164	0.177	
	(18.10)	(11.34)	(9.57)	(9.39)	
%Δ PSpending					0.224
					(11.98)
Programs		0.076		0.071	0.054
		(0.87)		(0.80)	(0.63)
Ln (Board Size)			0.092	0.080	0.048
			(0.78)	(0.67)	(0.41)
%Δ Revenue * Programs		-0.014		-0.011	
		(-2.71)		(-2.21)	
%Δ Revenue * Ln (Board Size)			-0.034	-0.032	
			(-4.70)	(-4.43)	
Δ Yield * No of Programs		-0.010		-0.008	
		(-2.10)		(-1.72)	
Δ Yield * Ln (Board Size)			-0.022	-0.021	
			(-3.38)	(-3.14)	
%Δ PSpending * Programs					-0.010
					(-1.99)
%Δ PSpending * Ln (Board Size)					-0.028
					(-4.25)
F-Statistics	76.18	69.62	71.43	65.60	65.25
Adjusted R^2	0.04	0.04	0.04	0.05	0.04

TABLE 6
Effect of Programs and Board Size on Compensation Coefficient of Variation

All variables (except coefficient of variation) are averages for each firm over 1998-2000. The dependent variable is coefficient of variation of total CEO compensation in all specifications. There are 24,027 unique firm observations in all regressions. Industry dummies are included in all regressions. T-stats based on robust standard errors are in parentheses.

Variable	(1)	(2)	(3)	(4)
Constant	15.868	15.685	15.725	14.887
	(5.68)	(5.59)	(5.62)	(5.31)
Programs	-0.189		-0.135	-0.132
	(-3.38)		(-2.41)	(-2.35)
Ln(Board Size)		-0.760	-0.736	
		(-8.52)	(-8.20)	
Board Size decile				-0.229
				(-8.56)
COV (Revenue)	0.144	0.143	0.144	0.144
	(21.16)	(21.13)	(21.14)	(21.16)
Ln (Assets)	-0.419	-0.314	-0.300	-0.293
	(-11.40)	(-8.30)	(-7.81)	(-7.55)
F-Statistics	53.40	55.86	54.14	54.21
Adjusted R^2	0.06	0.06	0.06	0.06

TABLE 7

Effect of Programs, Board Size, Compensation Coefficient of Variation on Performance

All variables (except coefficient of variation) are averages for each firm over 1998-2000. The dependent variable is the average change in program spending in the first two specifications and the change in revenue in clumns 3 and 4. There are 24,027 unique firm observations in all regressions. Industry dummies are included in all regressions. T-stats based on robust standard errors are in parentheses.

Variable	Pspending	Pspending	Revenue Growth	Revenue Growth
Constant	14.898	14.834	26.421	26.302
	(2.63)	(2.62)	(2.29)	(2.28)
COV	0.275	0.277	0.216	0.221
	(12.52)	(12.65)	(10.06)	(10.30)
Programs		0.246		0.471
		(2.02)		(3.70)
Ln (Board Size)		0.500		0.998
		(2.79)		(5.26)
Ln (Assets)	-0.177	-0.293	-0.523	-0.750
	(-2.41)	(-3.54)	(-7.07)	(-9.01)
F-Statistics	19.53	18.65	16.00	16.59
Adjusted R^2	0.02	0.02	0.02	0.02