

BOARD COMPOSITION AND PRIVATE INUREMENT IN NONPROFIT ORGANIZATIONS: EVIDENCE FROM HOSPITALS

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This study uses data from hospitals to examine whether board composition affects a nonprofit organization's ability to limit private inurement. We find that both the level and change in CEO pay are positively associated with CEO power on the board. Additional findings, however, suggest that the compensation premium is not necessarily "excess" pay. Rather it potentially reflects unmeasured CEO talent and risk that accompanies a hospital's decision to allocate power to the manager. Our study suggests that a larger agency concern results from physician representation. In nonprofit hospitals, physicians can extract resources in numerous ways. Our evidence indicates that donations systematically decrease with physician representation on the board, but increase with management representation on the board. Examples from the media suggest that the potential conflict between donors and private interest groups extends to other nonprofit organizations.

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1. Introduction and Overview

Recent business scandals (e.g., Arthur Andersen, Enron, Global Crossing, and WorldCom) have generated global interest in corporate governance. Attention has not been limited to for-profit organizations. For example, in the wake of these scandals the New York State Attorney General proposed accounting and management “reforms” for nonprofit organizations similar to those contained in the Sarbanes-Oxley Act of 2002 for publicly traded corporations.¹ Past scandals at nonprofit organizations, such as the United Way and Delphi University, have reinforced these concerns.

While a significant body of empirical evidence exists on governance in for-profit corporations, relatively little attention has been paid to governance in nonprofit organizations.² This study provides evidence on whether board composition affects a nonprofit’s ability to limit expropriation of organizational resources (in this case by top management and physicians in nonprofit hospitals).

a. Incentive Conflicts in Nonprofit Organizations

The defining characteristic of a nonprofit organization is that the persons who control the organization — including the board, officers, and members — are forbidden from receiving the organization’s residual profit. Laws do not preclude nonprofit organizations from making a “profit”; indeed, some nonprofit organizations regularly

¹ For example, see “NY’s Attorney General Seeks to Apply Sarbanes-Oxley Act,” *Nonprofit Times*, March 1, 2003.

² Recent empirical papers on the topic include Brickley and Van Horn (2002), Eldenburg and Krishnan (2003), Eldenburg, et al. (2001), Frumkin and Keating (2001), Hallock (2000), and Roomkin and Weisbrod (1999). Eldenburg and Krishnan and Eldenburg, et al. provide evidence on how the role of the board of directors varies across different types of nonprofits hospitals in California (e.g., government versus private). The other papers provide evidence on incentive compensation and incentives from the threat of turnover.

realize revenues that substantially exceed their costs. Nonprofit organizations often receive significant tax benefits and regulations require that their net surplus (“profits”) be used for social purposes, such as the arts, education, or charity.³ Nonprofit organizations are typically private and self-governing.

Organizational economists argue that nonprofit organizations have a comparative advantage over for-profit organizations in raising donations since nonprofit organizations do not have residual shareholders who would have incentives to expropriate contributions.⁴ For similar reasons, governments typically do not grant tax-exempt status or other subsidies to for-profit organizations to promote social objectives.

While nonprofit organization avoids incentive conflicts between donor/governments and shareholders, it does not eliminate concerns about the expropriation of donations and governmental subsidies. Indeed, one of the most prominent agency concerns in nonprofit organizations is *private inurement* — the expropriation of organizational resources by managers, employees, board members, and other private interest groups.⁵ For example, in March 2004 a former executive director of the United Way in the Washington area pleaded guilty to stealing \$487,298 of charitable contributions (Johnston (2004)). An earlier audit indicated that the actual amount was over \$1.6 million.

³ Most nonprofit organizations in the United States fall into one of two categories based on the U.S. Tax Code: 501(c) 3 charitable organizations and religious congregations and organizations, and 501(c) 4 social welfare organizations. These organizations are exempt from most federal, state, and local taxes; some receive tax-deductible contributions; some can issue tax-exempt bonds.

⁴ See Hansman, (1980) and Fama and Jensen, (1983b).

⁵ Shleifer and Vishny (1997) argue that “corporate governance deals with the ways that suppliers of finance to corporations assure themselves of getting a return on their investment.” This fundamental conflict between capital suppliers and insiders, however, extends to all forms of organization. For example, even in a sole proprietorship there are potential incentive conflicts between the owner and banks. Donors and governments can be viewed as suppliers of finance to nonprofit organizations. Nonprofit governance addresses conflicts between these entities and organizational decision makers.

b. Corporate Governance in Nonprofit Organizations

Nonprofit organizations do not face the disciplinary pressures exerted by takeover markets, concentrated owners, or equity-based compensation. Donors monitor nonprofit organizations and can withhold donations. However, donors do not have legal standing to file derivative lawsuits against the management or the board. Also their ability to monitor is constrained because donors are not the direct recipients of the organization's output or financial flows. Laws and regulations limit private inurement, but tend to be enforced only in extreme situations.

The primary mechanism for addressing agency conflicts in nonprofit organizations is the Board of Directors.⁶ Individual board members, however, do not answer to owners (as they do in for-profit organizations); they may or may not be committed to fulfilling the organization's mission. The prospect for private gain can attract individuals to apply for board service. As Bowen (1999, p. 82) notes:

Nonprofits of all kinds suffer from the presence of board members out to advance personal agendas.

In a competitive marketplace, poorly organized firms are eventually competed out of existence. Tax subsidies and donations can shield inefficient nonprofit organizations from competitive pressures. At any point in time, there is likely to be cross-sectional variation in how effectively nonprofit boards control agency problems.

⁶ State laws typically require that the initial directors be named in the Articles of Incorporation. From that point on, boards are either self-perpetuating or elected by members (when the organization chooses to have members). Having members increases administrative costs for holding director elections and for voting on major decisions. Most nonprofit organizations choose not to have formal membership structures (Mancuso (2002)). In hospital "systems" the central nonprofit corporation is typically the sole member of its system hospitals, and thus can choose their Boards. We do not include system hospitals in our analysis unless the Board has "independent authority" on executive compensation.

Fama and Jensen (1983a) argue that a nonprofit board will be more effective if it does not contain managers or employees. They assert that “nonprofit boards generally include few if any internal agents as voting members” to guard against managerial expropriation of organizational resources (such as donations). At least one professional organization warns that having the CEO serve as a voting member of the board can introduce a conflict of interest (BoardSource (2002)). By extension, board participation by other private interest groups (e.g., physicians on hospital boards or representatives of specific groups that receive charity on philanthropic association boards) might also increase agency conflicts.

Organizational economists argue that donors are savvy enough to understand that it is better to contribute to a nonprofit organization than to a for-profit organization. It seems reasonable to assume that donors differentiate (at least to some degree) between well-governed and poorly-governed nonprofit organizations. Holding other factors constant, donors would be expected to give more to better-governed organizations. For example, revelations of thefts and weak board oversight at United Way of the National Capital Area were associated with a decline in donations from workers at local companies from \$45 million in 2000 to \$18 million in 2001 (Johnston (2004)).

These arguments have two testable implications. First, private benefits (expropriation) should increase with management and private-interest group representation on the board. Second, organizations with greater management and private-interest group representation on the board will receive fewer donations. This paper provides evidence on these two predictions by examining whether managerial and

physician participation on nonprofit hospital boards affects CEO compensation and private donations.

c. Overview of Empirical Results

Our analysis of CEO compensation is highly analogous to existing research on publicly traded corporations.⁷ The primary empirical question is whether CEO pay is related to CEO power on the board (after controlling for other factors that are expected to influence CEO pay). Our analysis of donations examines whether board composition affects an organization's ability to raise donations (i.e., do prospective donors withhold contributions to hospitals that have management or physician-dominated boards?).

Our focus on physicians is motivated by the widely-held view within the hospital industry that physicians exert significant influence over hospital policies because of their power to refer patients to the hospital. Because hospitals cannot pay physicians for their referrals, they may reward physicians with seats on the board that they can use to advance their private objectives. According to one well-known model, the hospital is, in effect, run as a physician's cooperative (Pauly and Redisch, (1973)).

The potential for private inurement by physicians has also been long recognized by the Internal Revenue Service. Prior to 1997, the IRS limited physician representation on nonprofit hospital boards to 20%. During the late 1990s the IRS relaxed this standard. Nevertheless, there are still significant regulations that attempt to limit expropriation of organizational resources by physicians.⁸

⁷ See Bebchuck and Fried, (2003), for a review of this literature.

⁸ Under the new regulations relating to board service, the IRS expected *community representatives* to hold at least 51% of the board seats. The other 49% could be held by management and physicians. Hospitals were expected to develop internal control procedures to limit private inurement. Also, Congress allowed

We find that both the level and rate of increase in CEO compensation are higher in organizations where the CEO and other officers are voting members of the board (controlling for many other factors). CEOs with voting rights earn an estimated 10% higher salary, *ceteris paribus*. They also enjoy annual raises that are estimated to be 2.5 percentage points higher for each additional member of the management team placed on the board (e.g., CFO). While these findings are consistent with the hypothesis that CEO influence on the board increases the likelihood of “excess” compensation, other interpretations (discussed below) are possible.

Our second major finding is that private donations are negatively related to physician participation on the board. We conservatively estimate that a 50% reduction in physician composition is associated with an annual increase in private donations of 24%. Conversely, we find that CEO and other officer participation on the board do not discourage donations; in fact the association between CEO voting rights and private donations is positive. Both the signs and significance of these findings are robust to alternative specifications and estimation technique, including instrumental variables.

Our finding of a positive association between donations and CEO representation on the board appears inconsistent with our findings on CEO pay. One possibility is that managerial power results in “excess” pay that is too small to have a major effect on donations. A second possible explanation is that donors benefit from having strong CEOs because they help to control the opportunistic behavior of physicians (donations increase as a result). A third possible explanation is that the incremental CEO pay is not “excessive”. While we have controlled for numerous hospital and CEO characteristics

the IRS to impose sanctions on individuals who receive an excess benefit. See Whitehead, Moore and Pritchard, (1998).

that are likely to affect CEO pay, it is possible that our regressions (including the first-difference models) omit factors that simultaneously drive CEO decision rights and compensation.

Theoretical and empirical factors limit our ability to address this possibility through simultaneous equations estimation. As an alternative, we provide evidence by examining correlations among organizational variables, following Holmstrom and Milgrom (1994). Incentive theory suggests that greater decision authority and incentive compensation are complements. If certain hospitals optimally allocate greater decision rights to their managers by placing them on the board (e.g., due to their specific knowledge), their managers should also receive a greater percentage of incentive-based compensation.

Consistent with the incentive-theory argument, we document significant positive correlations among the following organizational variables: 1) whether the CEO has voting rights; 2) whether the CEO has a written incentive plan; 3) whether the board conducts a formal evaluation of the CEO; 4) whether the CEO's compensation is linked to the formal evaluation; and 5) the percentage of other employees on the board.⁹ These findings suggest that the association between CEO pay and board participation could be at least partially driven by unmeasured CEO talent and a compensating differential for incentive-based pay.

d. Implications

Our results suggest that the potential conflict between managers and donors/governments is not necessarily the most important agency conflict in nonprofit

⁹ We include the percentage of other employees on the board because some governance experts argue that it is important to include other managers on the board to limit the power of CEOs.

hospitals. Our findings are consistent with the hypothesis that donors view physician, rather than CEO participation as the greater threat to the hospital's achieving the donors' objectives. This is not surprising given that physicians arguably have more opportunities to divert donations for their private benefit than do CEOs. Board members face significant tax and legal exposure under Section 4958 of the Internal Revenue Code if they authorize excessive compensation. This regulation places a potentially important constraint on excess CEO compensation. Physicians, on the other hand, can benefit from a wide variety of hospital management decisions. For example, because the hospital serves as a complementary input to the physician's labor, hospital resource allocations can be used to increase physician productivity. While the IRS has adopted regulations to limit expropriation by physicians, it is arguably more difficult to write laws and regulations to prevent physician rather than management expropriation.

While our results suggest that physician representation on the board generates certain costs, the results do not necessarily imply that hospitals should remove physicians from their boards. Our study highlights one potential cost of having physicians on hospital boards. It does not provide a comprehensive analysis of all the costs and benefits of having physicians on the board. Similarly, our results also do not necessarily imply that the IRS's decision to relax rules on physician participation on nonprofit boards was wrong. Our results do suggest that donors are unconvinced that agency conflicts with physicians are resolved by the current regulation.

The remainder of this paper is organized as follows. Section 2 describes our data and empirical strategy. Section 3, 4 and 5 present our empirical results on CEO

compensation, private donations, and endogenous policy choices, respectively. The paper concludes with a brief summary and discussion.

2. Sample

a. Sample Design

Our sample consists of 308 nonprofit hospitals providing acute care services during the period from 1998 through 2002. A hospital has to meet the following criteria to be in our sample: (1) the hospital responded to the Governance Institute’s bi-annual survey of hospital governance practices in either 2000 or 2002; (2) we can obtain a hard copy of the hospital’s IRS Form 990 for one or more years between 1998-2002; (3) the governance survey indicates that the board of directors has “independent” authority on executive compensation¹⁰; (4) the CEO is an employee of the hospital and not an employee of a contract management organization; and (5) the hospital’s primary objective is to provide acute care hospital services. These criteria result in a relatively homogenous sample of short-term acute care hospitals for which we have the relevant data to conduct our tests.

The Governance Institute surveys contain information on 651 unique hospitals where the board has independent authority on executive compensation. Our name match of these organizations with the IRS Business Master File and associated IRS 990 forms eliminates all for-profit hospitals (since for-profit hospitals do not file 990’s), reducing the possible observations to 437. A manual review of the IRS 990 Forms to exclude

¹⁰ Most of the hospitals in our sample (82 percent) are legally independent in that the board does not report to a “higher authority.” The remaining hospitals are members of systems but their boards have “independent authority on executive compensation.” A system hospital is not included in our sample if its board has to seek approval on executive compensation from a “higher board or authority.” Our primary results are similar when we exclude system hospitals from our analysis.

contract-managed hospitals and hospitals that do not focus on short-term acute care eliminates another 129 observations leaving us with a final sample of 308 hospitals. The number of valid observations varies across tests due to missing values.

We use data from five different sources. The Governance Institute's bi-annual survey of hospital governance practices is used to identify the role of the CEO on the hospital board as well as hospital governance practices.¹¹ We obtain values for CEO compensation, total assets, return on assets, private donations and total revenues from an electronic database of IRS 990 forms. To help ensure the accuracy of the compensation information, we manually review each hospital's IRS 990 Form.¹² When the form indicates that the CEO did not hold the position for the complete year, we convert the average monthly compensation for these CEOs to a "full-year's" worth of compensation.

We obtain information on the CEO's tenure with the organization, tenure as CEO, age and gender from the Academy of Health Care Executives (ACHE) online affiliate directory. The database does not contain the birth date of the executive. We estimate the age based on the year that the executive obtained his/her undergraduate degree. We assume that college graduation occurs at age 22.

We use the county to proxy for the hospital's market area. We obtain data on population density, per capita income, the number of hospitals in the county, percent of the population enrolled in Medicare, percent of the population enrolled in Medicaid, percent of the population in poverty and percentage of the physician population between

¹¹ Not all firms responded to the survey in both years. Where the firm responds in both years, we use the 2002 information. Otherwise, we use the available observations and assume that the governance structure is the same across the two years.

¹² The digitized executive compensation data captures information from part V of the IRS form 990 on the five highest paid officers. Frequently the highest paid officer is the president/ CEO. Some organizations, however, erroneously list the president / CEO under Part A of Form 990 which refers to the five highest paid non-officer employees. To help ensure data accuracy and integrity we manually reviewed each 990 form to validate the CEO compensation information.

the ages of 35 and 65 (an instrumental variable in our analysis) from the Area Resource File. We obtain the hospital case-mix index from the Centers for Medicare and Medicaid Services. The case-mix index is a measure of the service complexity of the hospital.

We collect CEO compensation data for the years 1998-2002, inclusive, yielding a maximum of 1,218 non-missing observations for CEO compensation. Governance structure varies little across the sample period, and both CEO compensation and donations are highly correlated over time. We restrict the sample to one observation per hospital to obtain conservative estimates of the standard errors for our parameter estimates. We select the most recent year that the hospital reports CEO compensation and donations (in cases where the hospital reports values for multiple years). We find that 276 of our 308 hospitals report at least one value for CEO compensation between 1999 and 2002. Selecting a sample composed of the most recently available observations results in a data set with 149 observations from 2002, 117 from 2001, 6 from 2000 and 4 from 1999. Likewise, 300 hospitals provide at least one observation for donations. Our donations data set contains 163 observations from 2002, 126 from 2001, 7 from 2000 and 4 from 1999.

We also conduct analysis of *changes* in CEO compensation which makes use of the entire sample of observations on CEO compensation. Changes in CEO compensation are less correlated over time than levels of CEO compensation. To promote unbiased standard errors, we apply an AR (1) correction to the data using the Prais-Winsten procedure (Greene, (2000)). After first-differencing, we have 809 valid observations of changes in CEO compensation.

b. Descriptive Statistics

Table 1 presents descriptive statistics. The median values for CEO cash compensation, change in compensation and percent change in compensation are \$210,560, \$10,800, and 6.1% respectively. The median CEO in our sample is 51 years old, has been CEO for 7 years, and has worked for the hospital for a total of 10 years. Ten percent of the CEOs are women. The highest degree for almost all of the CEOs in our sample is a Masters Degree in either a health-related field or business (not reported in Table 1).

The median hospital has 14 board members. IRS regulations require that at least 51% of the board members be community representatives. Community outsiders hold tens seats in the median firm in our sample (71 percent of the total), while physicians (who have a non-employee affiliation with the hospital) typically hold three seats. The median firm has one management director (the CEO); about 30% have one or more non-CEO employee directors (e.g., the CFO).

The CEO has full voting rights on the board in 53 percent of the hospitals. We use CEO voting rights as our primary proxy for CEO influence on the board. As previously discussed, certain academics and professional associations argue that nonprofit CEOs should not have voting rights. Also, relative to other potential proxies, CEO voting rights are easily observable. Full voting rights do not imply that the CEO necessarily votes on his/her own compensation. Some states preclude this action, while in other cases the CEO may voluntarily abstain from the vote. CEO voting rights should be thought of as a measure of the manager's overall decision authority on the board.

TABLE 1
DESCRIPTIVE STATISTICS

This table presents the mean and median values of selected variables employed in our econometric tests of the relation between CEO compensation, donations and hospital governance. Measures of CEO compensation and financial performance are derived from IRS Form 990. Hospital CEO characteristics are obtained from the Academy of Health Care Executives' (ACHE) affiliate directory. Hospital board characteristics are from the Governance Institute Survey. Market characteristics are from the Area Resource File. The sample is drawn from the period 1999-2002. The most recent observation is used for each hospital. For models of compensation changes we employed data from 1998-2002.

	N	Mean	Standard Deviation	25th Percentile	Median	75th Percentile
CEO Compensation						
CEO Compensation (in thousands)	274	253.41	159.71	151.74	210.56	305.15
Change in Compensation (in thousands)	809	16.12	48.72	0.00	10.80	25.51
Percent Change in Compensation	809	8.7%	20.3%	0.0%	6.1%	13.2%
CEO Characteristics						
CEO Age	219	51.08	6.36	47	51	55
CEO Tenure with Hospital	223	12.33	9.06	5	10	18
Tenure as CEO of Hospital	222	8.64	6.50	3	7	12
CEO is a Woman	298	0.10	0.30	0	0	0
Board Characteristics						
Number of Board Members	298	15	6	11	14	17
Number of Employees on Board	294	1	1	0	1	1
Number of Physicians on Board	297	3	2	2	3	4
Number of Outside Board Members	294	12	10	8	10	13
CEO has Voting Rights on Board	298	53.4%	0	0	1	1
Management Percentage of Board	294	5.0%	6.9%	0.0%	5.0%	7.1%
Physician Percentage of Board	297	19.2%	9.9%	13.3%	19.0%	25.0%
Hospital Characteristics						
Total Assets (in millions)	300	113.02	168.05	24.11	61.12	135.95
Hospital Case Mix	273	1.28	0.20	1.14	1.25	1.35
Return on Assets	300	3.5%	5.2%	0.8%	4.0%	6.4%
Donations as Percentage of Revenue	298	0.83%	1.52%	0.08%	0.28%	0.74%
Market Characteristics						
Population Density	294	638	1421	49	120	403
Per Capita Income (in thousands)	296	25.91	6.63	21.82	24.67	28.28
Number of Hospitals	296	5	12	1	2	4
Medicare Percentage in the County	277	0.17	0.05	0.14	0.16	0.19
Medicaid Percentage in the County	276	0.16	0.13	0.08	0.13	0.20
Percentage of Physician Population between 35 and 65	276	62.5%	13.6%	59.1%	64.3%	69.8%

The median hospital in our sample has \$61 million in assets, is neither part of a system, nor a religious order, and earns a 4% return on assets. The median hospital faces only one competitor in a market with a per capita income of \$24,670 and a population density of 120 persons per square mile. Its market has a Medicare percentage of 16% and a Medicaid percentage of 13%; 64% of county physicians are between the ages of 35 and 65 (this variable is used as an instrument in our simultaneous estimation).

The median hospital in our sample receives donations equal to .28% of revenues, which is 10% of its net income.¹³ The mean hospital receives donations equal to .83% of revenues. The median value translates into \$184,260 in private donations for the median hospital in our sample with revenues of \$65,807,040. Our measure of donations excludes government contributions, including government grants.¹⁴

The median hospital in our sample is larger than the typical hospital in the population of nonprofit hospitals that filed an IRS Form 990 in 2000 (median asset size of \$61 million compared to \$20 million for the population).¹⁵ Our hospitals also differ from the population in that they are less likely to be part of a religious organization or a hospital system (system hospitals often fail to meet our criterion that the board has independent authority on executive compensation). Our hospitals have similar median performance with a return on assets of 4%, compared with the population median of 3.4%. The geographic distribution (based on the nine census regions) of our sample closely resembles that of the overall hospital population.

¹³ For the purposes of computing donations as a percentage of net income, we exclude observations in our sample where reported net income is negative.

¹⁴ Specifically, our measure of donations sums line (1a), “direct public support” and line (1b), “indirect public support” from IRS Form 990. We exclude line (1c), “government contributions (grants)”.

¹⁵ For the purposes of this comparison we identify nonprofit hospitals as being those organizations classified in the National Taxonomy of Exempt Entities (NTEE) Classification System as E22.

3. Empirical Results on CEO Compensation

a. Defining “Excess” Compensation

Labor economics (e.g., hedonic wage models) predicts that in a competitive labor market less attractive organizations (e.g., due to high risk or poor working conditions) will have to pay compensating differentials to attract and retain a CEO. Economic theory also predicts that more productive CEOs will be paid more than less productive CEOs (in a competitive labor market rents go to the valuable resource rather than to the organization). In this setting, an organization is paying “excess” compensation when it pays the existing CEO more than is necessary to attract and retain a replacement CEO of equal ability. Excess compensation can be detected if all relevant CEO and job characteristics are controlled for and the CEO’s pay exceeds the predicted amount.

Several researchers have estimated regression models of CEO compensation to provide evidence on the effects of governance features in for-profit organizations.¹⁶ The typical model includes various CEO and/or organizational characteristics as controls for economic factors that are expected to cause CEO pay to vary across organizations. The studies focus on governance characteristics, such as board composition and size. The maintained assumption is that board characteristics do not have an independent effect on CEO pay unless board features influence the degree of managerial agency problems. While the evidence from these studies is mixed, there is some support for the hypothesis

¹⁶ Specific papers on governance and CEO pay in the for-profit sector include Borokhovich, Brunarski and Parrino (1997), Core, Holthausen and Larcker (1999), Bertrand and Mullainathan (2000), Benz, Kucher and Stutzer (2001), Chang, Nagar and Rajan, (2001), Cyert, Kang and Kumar (2002), Hartzell and Starks, (2002), and Hallock (1997). Related models have also been estimated by labor economists to test for the presence of compensating wage differentials. See, for example, Viscusi (1978), Smith (1979) and Hwang, Reed and Hubbard (1992).

that for-profit corporations with more independent boards pay their CEOs less than firms with boards that have strong insider representation.¹⁷

Similar in spirit to the prior literature, we focus on manager and physician participation on the board. The null hypothesis is that controlling for CEO, hospital, and market characteristics, board composition will have no influence on CEO pay.

b. Econometric Issues

Potential endogeneity and omitted variable biases exist in this and all related past studies. For example, in our study unobserved factors that jointly affect board composition and compensation could drive any observed correlation between the variables.

There are at least four reasons why potential biases are less of a concern in our study than in most past work. First, our sample is drawn from one industry. All of the organizations are short-term acute care hospitals; where almost all of the executives have similar training (i.e., almost all have masters degrees). This relative homogeneity implies that omitted factors such as industry, firm and CEO characteristics are less likely to be driving the results than in studies with more heterogeneous samples. Second, our data enable us to control for numerous individual and organizational characteristics. Studies from the for-profit sector tend to include relatively few controls. Third, our sample is drawn from the nonprofit sector. Substitutability and complementarity among alternative control devices (takeover markets, equity-based compensation, etc.) make it difficult to

¹⁷ Eldenburg and Krishnan (2003), Frumkin, and Keating (2001) and Hallock (2000) provide evidence on the determinants of managerial pay in nonprofit organizations. The evidence from all three studies indicates that managerial compensation is positively correlated with organizational size, free cash flow and managerial ability. None of the existing papers on nonprofit governance examine the effects of board composition on CEO compensation.

ascertain the marginal effect of each mechanism in for-profit firms. Since nonprofit organizations rely on one major internal control device (the board of directors), substitutability and complementarity among alternative devices is not a major concern. Also we do not have to deal with executive stock options which can be difficult to value and which in the for-profit sector are often awarded in irregular patterns across years. Fourth, the manager's role on the board is largely predetermined with respect to the current CEO's compensation contract. While corporate bylaws (which specify the manager's voting rights) can typically be changed by a vote of the board and/or the members, bylaw changes are relatively infrequent events among the firms in our sample¹⁸.

While we are unable to conduct a meaningful simultaneous equations analysis due to the lack of reasonable instruments for CEO voting rights, we do estimate models using the change and percentage change in CEO compensation. Regressions of changes in compensation are less prone to bias from omitted CEO and job characteristics, which vary little over time, than regressions using levels of compensation. In a subsequent section of the paper, we present additional evidence on potential endogeneity by examining correlations among various organizational policy variables (as suggested by Holmstrom and Milgrom (1994)).

¹⁸ The mean hospital in our sample reports that it has had its current bylaws in place for 11 years. However, not all hospitals report this statistic.

c. Level of CEO Cash Compensation

Table 2 presents six regression models. In each model, the dependent variable is the natural logarithm of cash compensation received by the CEO in the year.¹⁹ The primary variables of interest are: 1) a dummy variable equal to one where the CEO is a voting member of the board; 2) the percentage of the board comprised of management employees *excluding* the CEO (“other management insiders”); and 3) the percentage of the board composed of physicians.²⁰

The specifications in models 1-3 are based on prior studies of CEO compensation in for-profit firms that control for the natural logarithm of total assets and the return on assets (ROA) in the observation year. Virtually all past studies of CEO pay in the for-profit sector control for organizational size. Many past studies also control for financial performance (stock returns and/or ROA). We augment this basic model by also including the hospital’s case-mix index, which proxies the complexity of the CEO’s job. Models 1-3 include these controls and a single governance variable.

The remaining three models enter all of the governance variables simultaneously and sequentially add controls for market and CEO characteristics. These controls are motivated by various past studies of executive pay, as well as wage regressions contained in the labor economics literature. Population density, per capita income, the number of hospitals in the county (a measure of competition) and regional dummies are added to

¹⁹ Similar results are found when we use “total compensation” as the dependent variable (combines cash compensation with other compensation and benefits reported in the IRS 990 form). We focus on cash compensation because valuing other compensation is more subjective and not necessarily the same across organizations.

²⁰ We also estimate models that include the total number of board members (not shown here). This variable is statistically insignificant and its inclusion has virtually no effect on the estimated coefficients of the other governance variables. For these reasons, we omit total number of board members from our final specifications.

TABLE 2

OLS REGRESSION OF LOG OF CEO COMPENSATION ON GOVERNANCE, HOSPITAL, MARKET AND CEO CHARACTERISTICS

Table 2 presents six OLS regressions of the log of CEO cash compensation on governance, hospital, market and CEO characteristics. The sample is restricted to short-term acute care nonprofit hospitals. CEO compensation is taken from column C of IRS form 990 Part V: "Compensation of Officers and Directors". The observations are for the period 1999-2002. Hospital governance characteristics are obtained from the bi-annual Governance Institute Survey. Hospital size and ROA are from IRS Form 990, and hospital case mix index is obtained from the Centers for Medicare and Medicaid Services. Market characteristics are from the Area Resource File. CEO characteristics are from the Academy of Health Care Executives' (ACHE) online affiliate directory. Regional controls include a dummy variable corresponding to one of the eight census regions of the United States. T-statistics are in parentheses.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Observations</i>	249	245	248	245	241	180
Intercept	5.889 *** (16.94)	5.826 *** (16.20)	5.772 *** (16.08)	5.922 *** (16.50)	6.333 *** (17.55)	6.286 *** (13.93)
Hospital Governance						
CEO has Voting Rights	0.110 *** (2.77)			0.105 ** (2.57)	0.086 ** (2.22)	0.097 ** (2.17)
Percentage Other Management Insiders		0.413 (1.61)		0.314 * (1.22)	0.251 (1.03)	0.202 (0.71)
Percentage Physicians			-0.025 (-0.14)	-0.092 (-0.52)	-0.191 (-1.14)	-0.108 (-0.48)
Hospital Characteristics						
Log of Assets	0.329 *** (13.28)	0.333 *** (13.06)	0.337 *** (13.20)	0.327 *** (12.84)	0.282 *** (10.80)	0.275 *** (9.27)
Return on Assets	0.458 (1.47)	0.394 (1.24)	0.396 (1.25)	0.455 (1.44)	0.697 ** (2.28)	0.638 (1.57)
Case Mix Index	0.367 *** (2.69)	0.421 *** (3.04)	0.422 *** (3.04)	0.382 *** (2.74)	0.342 *** (2.59)	0.370 ** (2.41)
Market Characteristics						
Log of Population Density					0.041 ** (2.24)	0.033 (1.50)
Per Capita Income (in thousands)					0.010 *** (3.37)	0.008 ** (2.38)
Number of Hospitals					-0.001 (-0.80)	0.019 ** (2.38)
CEO Characteristics						
CEO Age						0.003 (0.71)
Tenure as CEO						0.016 *** (3.41)
Tenure with Firm						-0.010 *** (-2.89)
CEO is a Woman						-0.062 (-0.94)
Region Effects	Y	Y	Y	Y	Y	Y
Year Effects	Y	Y	Y	Y	Y	Y
<i>Adjusted R-Squared</i>	0.732	0.717	0.716	0.723	0.751	0.766

* Statistically significant at the .10 level in two-tailed tests

** Statistically significant at the .05 level in two-tailed tests

*** Statistically significant at the .01 level in two-tailed tests

control for market factors that potentially affect compensation. CEO-specific controls include age, tenure as CEO, tenure with the hospital and gender (female). Because sample size systematically decreases as we add controls, there is a tradeoff between using more controls versus having a large sample size.

The estimated coefficient for the CEO voting rights variable is positive and significant in all four models in which it is entered (significance levels range from .05 to .01). The magnitude of the estimated effect is relatively stable across the four models ranging from .086 to .110. The coefficients from Model 1 and Model 6, which are estimated with the largest number of observations and with the most controls respectively, are very close in magnitude. The coefficient from Model 6 indicates that CEO voting rights are associated with about a 10 percent increase in compensation. This translates into \$21,056 for the median CEO in our sample with cash compensation of \$210,560.

The point estimate of the “other management insider” variable is also positive in the models in which it is entered and approaches statistical significance in Model 2 ($t = 1.61$). Finally, the estimated effect of percentage physician board members is negative but statistically insignificant in all models.

The signs on the control variables are generally as one might expect. The significance levels of the coefficients vary across variables and specifications. Consistent with past studies, the association between compensation and size is positive and highly significant. Compensation is also positively associated with the hospital’s case-mix index, hospital financial performance, population density, per capita income in the market area, number of hospitals in the market, CEO age and tenure in the position. All effects,

except for financial performance, population density and CEO age, are statistically significant in Model 6. The associations between compensation and gender (woman) and compensation and tenure with the hospital are negative; the tenure effect is statistically significant.

d. Changes in CEO Cash Compensation

Tables 3 and 4 present regression results of *changes* in CEO compensation. Changes in compensation are statistically “noisier” than levels of compensation, making it more difficult to precisely estimate the effect of board composition on CEO compensation. The benefit of working with changes in compensation is that unmeasured CEO and job attributes, such as ability or job difficulty, are less likely to drive changes in CEO compensation than levels of CEO compensation. This results in an arguably less biased test of the effects of managerial representation on CEO pay.

Table 3 presents results for dollar changes in compensation using five separate models. The presentation is similar to Table 2. In addition to our governance variables, we include a basic set of firm attributes that includes log of assets, return on assets and case-mix index. In our most complete specifications, we also include CEO attributes. CEO attributes may be proxies for the rate at which the CEO’s value to the organization or his outside opportunities are changing. For example, older CEOs may reach a point in their careers where their value to the organization peaks or where their outside opportunities diminish. If this is true, age should be a negative predictor of wage increases.

The results in Table 3 indicate that CEO voting rights are positively related to compensation changes, with a statistically significant finding in two of the three models

TABLE 3

OLS REGRESSION OF THE CHANGE IN CEO COMPENSATION ON GOVERNANCE, HOSPITAL, AND CEO CHARACTERISTICS

Table 3 presents five OLS regressions of the change in CEO cash compensation on governance, hospital, and CEO characteristics. The sample is restricted to short-term acute care nonprofit hospitals. CEO compensation is taken from column C of IRS form 990 Part V: "Compensation of Officers and Directors". The observations are for the period 1998-2002. Hospital governance characteristics are obtained from the bi-annual Governance Institute Survey. Hospital size and ROA are from IRS Form 990, and hospital case mix index is obtained from the Centers for Medicare and Medicaid Services. CEO characteristics are from the Academy of Health Care Executives' (ACHE) online affiliate directory. Regional controls include a dummy variable corresponding to one of the eight census regions of the United States. The regression incorporates an AR(1) transformation. T-statistics are in parentheses.

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Observations</i>	714	701	713	701	487
Intercept	-2,799 (-0.16)	-5,329 (-0.30)	-6,801 (-0.38)	-3,774 (-0.21)	14,368 (0.68)
Hospital Governance					
CEO has Voting Rights	8,022 ** (-2.17)			7,008 * (1.85)	3,463 (0.78)
Percentage Other Management Insiders		65,955 *** (2.67)		59,011 ** (2.35)	96,674 *** (3.26)
Percentage Physicians			-20,244 (-1.24)	-28,542 * (-1.72)	-17,444 (-0.73)
Hospital Characteristics					
Log of Assets	-1,206 (-0.94)	-1,013 (-0.78)	-934 (-0.73)	-1,109 (-0.86)	1,391 (0.79)
Return on Assets	116,270 *** (3.41)	112,024 *** (3.23)	113,993 *** (3.34)	114,151 *** (3.30)	45,331 (0.99)
Case Mix Index	34,337 *** (2.92)	38,317 *** (3.29)	41,236 *** (3.51)	37,897 *** (3.18)	44,444 *** (3.06)
CEO Characteristics					
CEO Age					-1,212 *** (-3.55)
Tenure as CEO					38 (0.08)
Tenure with Firm					177 (0.49)
CEO is a Woman					-13,657 * (-1.93)
Region Effects	Y	Y	Y	Y	Y
Year Effects	Y	Y	Y	Y	Y
<i>Adjusted R-Squared</i>	0.065	0.073	0.060	0.078	0.118

* Statistically significant at the .10 level in two-tailed tests

** Statistically significant at the .05 level in two-tailed tests

*** Statistically significant at the .01 level in two-tailed tests

in which the measure is included. The effect of CEO voting rights on the CEO's salary increase ranges from \$3463 to \$8022. Adding other management insiders to the board also accelerates CEO compensation. The estimated coefficient is significant at the (.01) to (.05) confidence level across all specifications. In the most complete model, adding an additional management insider (increasing management representation by about 7%) increases the CEO's raise by about \$6,767. Physician percentage is consistently negative, but insignificant (it is marginally significant in model 4).

Among the controls, case mix and return on assets are positively related to the CEO's raise, although the effect of return on assets becomes insignificant when CEO controls are added. CEOs in hospitals with a higher case mix may have a lengthy learning curve because the hospital's services are more complex. As a result, CEOs in these hospitals may become progressively more valuable to their organizations over time, as they master the intricacies of these organizations. CEO age and gender (woman) are associated with smaller raises. The effects of job tenure as CEO and with the firm are statistically insignificant.

Table 4 provides a similar set of specifications that instead use the *percentage change* in CEO compensation as the dependent variable. In this table, the estimated effect of other management board members on changes in compensation is again positive and statistically significant across all specifications. The magnitude of the coefficient in Model 5 indicates that adding one additional management insider (increasing the percentage of other management insiders by about 7%) increases the CEO's raise by 2.5 percentage points ($.07 * .356 = .025$). Likewise, CEO voting rights also have a positive point estimate, although the effect is statistically insignificant in Models 4 and 5.

TABLE 4

**OLS REGRESSION OF THE PERCENTAGE CHANGE IN CEO COMPENSATION ON
GOVERNANCE, HOSPITAL, AND CEO CHARACTERISTICS**

Table 4 presents five OLS regressions of the percentage change in CEO compensation on governance, hospital, and CEO characteristics. The sample is restricted to short-term acute care nonprofit hospitals. CEO compensation is taken from column C of IRS form 990 Part V: "Compensation of Officers and Directors". The observations are for the period 1998-2002. Hospital governance characteristics are obtained from the bi-annual Governance Institute Survey. Hospital size and ROA are from IRS Form 990, and hospital case mix index is obtained from the Centers for Medicare and Medicaid Services. CEO characteristics are from the Academy of Health Care Executives' (ACHE) online affiliate directory. Regional controls include a dummy variable corresponding to one of the eight census regions of the United States. The regression incorporates an AR(1) transformation. T-statistics are in parentheses.

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Observations</i>	714	701	713	701	487
Intercept	0.234 *** (3.13)	0.221 *** (2.96)	0.230 *** (3.07)	0.228 *** (3.05)	0.312 *** (3.30)
Hospital Governance					
CEO has voting Rights	0.030 * (1.91)			0.023 (1.46)	0.010 (0.50)
Percentage Other Management Insiders		0.227 ** (2.21)		0.201 * (1.92)	0.356 *** (2.70)
Percentage Physicians			-0.004 (-0.06)	-0.037 (-0.54)	0.089 (0.83)
Hospital Characteristics					
Log of Assets	-0.011 ** (-2.03)	-0.010 * (-1.87)	-0.010 ** (-1.94)	-0.011 ** (-1.95)	-0.009 (-1.19)
Return on Assets	0.424 *** (2.97)	0.404 *** (2.80)	0.408 *** (2.85)	0.411 *** (2.84)	0.141 (0.69)
Case Mix Index	0.084 * (1.70)	0.098 ** (2.02)	0.101 ** (2.05)	0.090 * (1.81)	0.102 (1.58)
CEO Characteristics					
CEO Age					-0.001 (-0.89)
Tenure as CEO					-0.001 (-0.38)
Tenure with Firm (x1000)					-0.003 (-0.17)
CEO is a woman					-0.039 (-1.23)
Region Effects	Y	Y	Y	Y	Y
Year Effects	Y	Y	Y	Y	Y
<i>Adjusted R-Squared</i>	0.015	0.019	0.010	0.020	0.027

* Statistically significant at the .10 level in two-tailed tests

** Statistically significant at the .05 level in two-tailed tests

*** Statistically significant at the .01 level in two-tailed tests

Percentage of physicians on the board is statistically insignificant. Most of the control variables take on the same sign as in Table 3. However, none of the CEO characteristics is statistically significant in Table 4.

Our analyses of both the level and change in CEO compensation produce consistent results — controlling for many other factors, CEO pay is higher where CEOs and other employees are voting members of the board. While this finding is consistent with the hypothesis that increased managerial power on the board leads to “excess compensation,” our inability to address endogeneity issues more completely leads to other possible interpretations. For example, our analysis potentially omits factors that lead to both higher compensation and managerial voting rights. We address this issue in more detail below by examining the effect of managerial board representation on donations, and by examining the correlations among various organizational policy variables.

Finally, physician representation is not significantly related to CEO compensation in any of the regressions and generally has a negative point estimate. This finding is inconsistent with the hypothesis that physicians vote or advocate for higher CEO pay increases in an attempt to gain the CEO’s support for their agendas (i.e., that CEO and physicians form a coalition to jointly expropriate organizational resources).

4. Empirical Results for Private Donations

a. Background

We use the hospital’s flow of private donations to provide an indirect test of the agency costs of management and physician membership on the board. Donations are a relatively small percentage of hospital revenues, (.28% at the median) but can constitute a

sizeable percentage of the hospital's net surplus (profits) (10 % at the median in our sample.)

Reductions in donations may occur where incentive conflicts cause the hospital's practices to diverge from the charitable goals of its donors. Since expropriation of donations reduces the marginal utility of giving from the donor's perspective, poorly governed hospitals should attract few donations. A negative association between donations and management or physician representation on the board therefore would suggest that donors view this participation as increasing the likelihood that their donations will be expropriated for private uses.

There have been several prior studies of the determinants of institution-level donations (Yetman and Yetman, (2003), Khenna and Sandler, (2000), Okten and Weisbrod, (2000), Weisbrod and Dominguez, (1986), Schiff, (1985) and Schmitz, (1984)). These studies have investigated the effects of fundraising on donations, the "crowding out" and "crowding in" effects of government grants and taxable revenues and the relationship between the "price" of charitable output and the flow of donations.²¹ To our knowledge, previous studies have not examined the effects of governance structure on organizational donations. Our approach is similar in spirit to efforts to measure the "price" of charitable output to donors. Agency costs that arise from the presence of insiders on the board increase the price of charitable output to the extent that they cause

²¹ In this literature, "price" is a conceptual measure of the donor's after-tax cost of "giving" one dollar's worth of the organization's charitable *output*, as opposed to giving one dollar of revenue. Price incorporates both the tax effect of giving as well as the negative effect that administrative and fundraising expenses have on organizational expenditures on its charitable purpose. For example, increases in administrative expenses increase the price to the donor of giving one dollar's worth of charitable *output*.

donations to be diverted away from the donor's original purpose. This causes a slippage between donations and actual dollars spent on the donor's objectives.

We estimate donations equations as a function of board governance measures controlling for hospital-level and market area factors. We focus on our measures of board composition. The null hypothesis of no agency conflicts predicts that manager and physician membership will not reduce private donations.

As in the case for CEO compensation, donations and governance structures may be jointly determined. Unobserved factors might simultaneously change the flow of donations and cause the hospital to change the composition of its board.²² To address this possible bias we also estimate instrumental variables (IV) models. In the IV analysis we obtain a predicted value of physician board participation in a first-stage regression which is subsequently used as an instrument in the second-stage donations regression. The first stage identifying variable is the percentage of county physicians in the 35-65 age range. All of other the variables included in the second-stage donations regression are also included in the first-stage regression. Our identifying variable is a plausible predictor of the level of community physician involvement in hospital governance, because physicians in this age group have both the requisite level of expertise and the economic motivation to be board members, more so than physicians outside of this age group.

²² For example, a hospital in an affluent area may, for unmeasured reasons, choose to focus on clinical excellence. This decision may simultaneously influence the flow of its donations and also cause the hospital to add physicians to increase the board's clinical expertise. As a result, an apparent relationship exists between donations and board structure that is not causal in nature, leading to biased coefficient estimates.

b. Tobit Estimates

Tables 5 and 6 provide estimates of the effects of governance structure on private donations. The dependent variable in these regressions is private donations measured as a percentage of hospital revenues. Table 5 provides five different models, using our governance measures, as well as a set of hospital and market-level controls. Both ROA and log assets serve as proxies for the economic stability of the hospital. Donors may be reluctant to contribute to hospitals that are financially unstable.

In selecting the set of market controls, we note that markets in which there is a great deal of discretionary income and where the community derives great benefits from charitable services should supply the hospital more private donations, *ceteris paribus*. We use per capita income to proxy discretionary income and the county-level percentage of persons in poverty to proxy community benefits from charity. Likewise, we also include the county's Medicaid percentage, reasoning that Medicaid is a public program that may either "crowd in" or "crowd out" private donations to hospitals. For example, Medicaid coverage may "crowd out" donations if Medicaid coverage results in less community need for hospital charity care. On the other hand, Medicaid coverage may "crowd in" private donations if Medicaid coverage induces the hospital to offer services that traditionally lose money which in turn stimulates private donations. We also include a control for the percent of the population receiving Medicare coverage using the same rationale. We include the number of other hospitals in the county to control for the number of other institutions competing for donations. The predicted effect of other hospitals in the market on the hospital's own donations is negative. We include board

TABLE 5

TOBIT REGRESSION OF HOSPITAL DONATIONS AS A PERCENTAGE OF REVENUES ON GOVERNANCE, HOSPITAL, AND MARKET CHARACTERISTICS

Table 5 presents five Tobit regressions of hospital donations as a percentage of revenues on governance, hospital, and market characteristics. The sample is restricted to short-term acute care nonprofit hospitals. The donation percentage is defined as the share of total revenue accounted for by nongovernment donations taken from IRS form 990 Part I. The observations are for the period 1999-2002. Hospital governance characteristics are obtained from the bi-annual Governance Institute Survey. Hospital size and ROA are from IRS Form 990. Market characteristics are from the Area Resource File. Regional controls include a dummy variable corresponding to one of the eight census regions of the United States. Asymptotic t-statistics are in parentheses.

	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Observations</i>	271	267	270	267	245
Intercept	0.034 ** (2.17)	0.029 * (1.85)	0.027 * (1.76)	0.031 ** (1.99)	0.011 (0.57)
Hospital Governance					
CEO has voting Rights	0.003 * (1.75)			0.004 ** (2.10)	0.003 * (1.78)
Percentage Other Management Insiders		-0.003 (0.28)		-0.006 (0.53)	0.007 (0.52)
Percentage Physicians			-0.018 ** (2.39)	-0.020 *** (2.62)	-0.021 *** (2.73)
Hospital Characteristics					
Log of Assets	-0.001 (0.89)	-0.001 (0.64)	-0.001 (0.48)	-0.001 (0.70)	-0.0003 (0.22)
Return on Assets	0.002 (0.10)	0.000 (0.00)	0.001 (0.10)	0.003 (0.22)	-0.0002 (0.00)
Casemix Index	-(0.01) (1.34)	-(0.01) (1.13)	-(0.01) (0.90)	-(0.01) (1.05)	-(0.01) (0.88)
Board Size (in ten's)	0.002 (1.51)	0.003 * (1.75)	0.003 * (1.76)	0.0002 (1.44)	0.0002 (0.10)
Market Characteristics					
Log of Population Density					-0.001 (1.18)
Per Capita Income (x 10,000)					0.004 ** (1.94)
Number of Hospitals (x 1000)					0.100 (1.56)
County Medicare Percentage					0.057 *** (2.92)
County Medicaid Percentage					0.009 (1.28)
County Percent of Persons in Poverty					-0.001 ** (2.07)
State Personal Income Tax Rate					0.001 (1.30)
Region Effects	Y	Y	Y	Y	Y
Year Effects	Y	Y	Y	Y	Y
Scale Parameter	0.012	0.012	0.012	0.012	0.012
<i>Log Likelihood</i>	697.969	682.648	695.784	687.704	644.749

size because a larger board might reflect a larger potential pool of donors. Finally, we include the state income tax rate as a measure of the donor's net cost of giving.

Our main finding in Table 5 is that private donations are significantly and negatively related to the percentage of physicians on the board. This effect is robust and significant at the (.01) to (.05) confidence level in all of the models in which percentage of physicians is included. The point estimate in Model 5, (-.021), implies that a reduction in physician board representation by half (from 19.2% to 9.6%) is associated with an increase in private donations as a percent of revenues of about $(.096) * (.021) = .202\%$, or about \$213,000 for the median hospital.²³ This increase, compared to the sample mean in which donations average .83% of hospital revenue, represents a 24% increase in private donations. It also represents an 11% increase in the average hospital's net income.²⁴

Interestingly, the association between CEO voting rights and donations is *positive* and at least marginally significant in all specifications. This is noteworthy because it implies that management insiders do not discourage donations to the same degree as physician representation (CEO participation may actually serve to increase donations). The implications of this finding are considered in more detail below.

Among the set of control variables, we find that per capita income is positively related to donations, as expected, while Medicare coverage appears to "crowd in" donations. Percent of the population in poverty reduces donations. Other controls are statistically insignificant.

²³ The actual effect is slightly smaller than this, to account for the probability that the hospital receives any donations at all (this is why the Tobit estimator is used). However, 90% of the hospitals in our data set receive positive levels of private donations, so the actual impact of physician representation on donations is very close to the figure cited here.

²⁴ For the purposes of the computing the percentage increase in the average hospital's net income, we excluded hospitals in our sample that reported negative net income.

c. Instrumental Variables

A Hausman Test for endogeneity suggests that physician service on boards and donations are jointly endogenous. Based on this test, we estimate models using instrumental variables.

Two sets of instrumental variables results are provided in Table 6. Tobit and instrumental variables results are presented side by side for Models 3 and 5. Compared to the non-instrumented Tobit results, the instrumental variables models show more negative point estimates for the effects of physician representation on private donations. The differences are substantial, representing about an order of magnitude (e.g., -.23 compared to -.021 in Model 5). The estimated effects of reducing physician representation on donations are still reasonable, however. According to the instrumental variables estimates in Model 5, a 50% reduction in physician board representation (from 19.2% to 9.6%) is associated with an increase in donations as a percent of revenues of about $(.096)(.227) = 2.18\%$. While this effect is large relative to the mean level of donations, it lays within one and a half standard deviations of the mean of the dependent variable.²⁵

The other noteworthy finding in Table 5 is that CEO voting rights have a positive and statistically significant effect on donations where we instrument for physician board composition. In Model 5, the magnitude is more than double the original Tobit estimate. Likewise, the effect of other management insiders is also significant in Model 5, once instrumental variables are employed.

²⁵ That is, the standard deviation of donations as a percent of hospital revenues is 1.52%, so that an increase of 2.18% represents a movement of about one and a half standard deviations.

TABLE 6
COMPARISON OF TOBIT AND INSTRUMENTAL VARIABLE REGRESSION
RESULTS OF HOSPITAL DONATIONS AS A PERCENTAGE OF REVENUES ON
GOVERNANCE, HOSPITAL, AND MARKET CHARACTERISTICS

Table 6 replicates the Tobit regressions of hospital donation percentage in models 3 and 5 from Table 5 with the same specification estimated using instrumental variables to predict the percentage of physicians on the board. The sample is restricted to short-term acute care nonprofit hospitals. The donation percentage is defined as the share of total revenue accounted for by nongovernment donations taken from IRS form 990 Part I. The observations are for the period 1999-2002. Hospital governance characteristics are obtained from the bi-annual Governance Institute Survey. Hospital size and ROA are from IRS Form 990. Market characteristics are from the Area Resource File. Regional controls include a dummy variable corresponding to one of the eight census regions of the United States. Asymptotic t-statistics are in parentheses.

	Model 3		Model 5	
	Tobit	IV	Tobit	IV
<i>Observations</i>	270	250	245	244
Intercept	0.027 * (1.76)	0.010 (0.61)	0.011 (0.57)	0.008 (0.45)
Hospital Governance				
CEO has voting Rights			0.003 * (1.78)	0.006 *** (3.15)
Percentage Insiders			0.007 (0.52)	0.023 * (1.75)
Percentage Physicians	-0.018 ** (2.39)	-0.175 *** (3.73)	-0.021 *** (2.73)	-0.227 *** (3.63)
Hospital Characteristics				
Log of Assets (x 1000)	-0.001 (0.48)	0.001 (0.75)	0.000 (0.22)	-0.001 (0.77)
Return on Assets	0.001 (0.10)	0.011 (0.76)	0.000 (0.00)	0.017 (1.14)
Casemix Index	-0.005 (0.90)	0.011 (1.46)	-0.005 (0.88)	0.015 * (1.76)
Board Size (in ten's)	0.003 * (1.76)	0.002 (1.08)	0.0002 (0.10)	0.0004 (0.20)
Market Characteristics				
Log of Population Density			-0.001 (1.18)	0.001 (1.01)
Per Capita Income (x 10000)			0.004 * (1.94)	0.004 *** (3.16)
Number of Hospitals (x 100)			0.100 (1.56)	0.002 (0.48)
County Medicare Percentage			0.057 *** (2.92)	0.079 *** (3.78)
County Medicaid Percentage			0.009 (1.28)	0.029 *** (2.99)
County Percent of Persons in Poverty			-0.001 ** (2.07)	-0.001 * (1.88)
State Personal Income Tax Rate			0.001 (1.30)	0.0004 (0.92)
Region Effects	Y	Y	Y	Y
Year Effects	Y	Y	Y	Y
Scale Parameter	0.012	0.012	0.015	0.012
<i>Log Likelihood</i>	695.784	657.346	656.938	647.129

* Statistically significant at the .10 level in two-tailed tests

** Statistically significant at the .05 level in two-tailed tests

*** Statistically significant at the .01 level in two-tailed tests

5. Empirical Results for Organizational Variables

Our finding of a positive association between donations and CEO representation on the board appears to be inconsistent with our finding that CEO pay is positively associated with managerial representation on the board. One possibility is that the “excess” pay is sufficiently small that it does not have a major effect on donations. Another possible explanation is that donors benefit from having strong CEOs to control the opportunistic behavior of physicians, and that donations increase as a result.

A third alternative is that the positive association between CEO voting rights and CEO pay does not reflect excessive compensation. While we have controlled for many hospital and CEO characteristics that are likely to affect CEO pay, it is possible that our regressions (including the first-difference models) omit factors that simultaneously drive CEO decision rights and compensation.

As we have discussed, theoretical and empirical factors limit our ability to address this possibility through simultaneous equation estimation. Holmstrom and Milgrom (1994) argue that meaningful evidence can sometimes be provided in this situation by examining correlations among organizational variables. Incentive theory suggests that greater decision authority and incentive compensation are complements. If certain hospitals optimally allocate greater decision rights to their managers by placing them on the board (e.g., due to their specific knowledge), these hospitals should also utilize incentive-based compensation to pay these managers.

Holmstrom and Milgrom (1994) identify conditions under which complementarity among organizational policy variables produces positive correlations among policy variables in cross-sectional data. Positive correlations between greater managerial

decision authority and incentives would provide suggestive evidence that the correlation between pay and managerial representation on the board is driven by omitted variables related to CEO talent and risk premiums for incentive compensation (rather than by weak governance).

Table 7 presents correlation coefficients (phi-correlation coefficients for the dummy variables) among five organizational policies variables: 1) CEO has voting rights; 2) whether the CEO has a written incentive plan; 3) whether the board conducts a formal evaluation of the CEO; 4) whether the CEO's compensation is linked to the formal evaluation; and 5) the percentage of other employees on the board. We include the percentage of other employees on the board because some governance experts argue that it is important to include other managers on the board to limit the power of CEOs (they serve as a non-CEO source of information for outside board members). If so, having other employees on the board is likely to be a complement with granting the CEO additional decision rights.

Consistent with the incentive-theory argument, the correlations among the variables are positive and in most cases highly significant. These findings suggest that the previously documented association between CEO pay and board representation might not reflect "excess compensation." Rather some hospitals might be optimally granting CEO's power on the board (e.g., because of their specific knowledge); the higher pay potentially reflects higher CEO talent and/or risk.

6. Summary

Our regressions of the level and change in CEO pay document a strong positive relation between CEO pay and managerial power on the boards of nonprofit hospitals. In

TABLE 7
CORRELATIONS AMONG SELECTED DECISION RIGHTS, PERFORMANCE
EVALUATION AND GOVERNANCE MEASURES

Table 7 presents correlations among CEO voting rights, written incentive plan, formal evaluation of the CEO, compensation linked to formal evaluation of the CEO and the percentage of other employees on the board. The sample is restricted to 298 short-term acute care nonprofit hospitals. The observations are for the period 1999-2002. All variables are obtained from the Bi-annual Governance Institute Survey. T-statistics are in parentheses.

	CEO has voting rights	CEO has written incentive plan	Board conducts a formal evaluation of the CEO	CEO compensation is linked to the formal evaluation	Percentage of other employees on Board
CEO has voting rights	1				
CEO has written incentive plan	0.296 (0.001)	1			
Board conducts a formal evaluation of the CEO	0.140 (0.02)	0.235 (0.001)	1		
CEO compensation is linked to the formal evaluation	0.138 (0.02)	0.229 (0.001)	0.515 (0.001)	1	
Percentage of other employees on Board	0.691 (0.001)	0.178 (0.00)	0.093 (0.11)	0.103 (0.08)	1

contrast to existing studies from the for-profit sector, we are able to control for many factors (personal, market, and organizational characteristics) that might affect CEO compensation. While these results are consistent with the contention that failure to separate management from the board leads to excessive compensation, other explanations are possible. Our analysis of donations and correlations among organizational variables suggest that the additional pay is not necessarily “excessive” (private inurement). Rather it could reflect unmeasured CEO talent and risk that accompanies a hospital’s optimal decision to allocate power to the manager (e.g., due to valuable specific knowledge).

Our results on the determinants of donations to nonprofit hospitals are consistent with the hypothesis that donors view physician, rather than CEO participation, as the greater threat to the hospital’s achieving the donors’ objectives. This is not surprising given that physicians arguably have more opportunities to divert donations for their private benefit than do CEOs.

While our results suggest that physician representation on the board generates certain costs, the results do not necessarily imply that hospitals should remove physicians from their boards. Our study highlights one potential cost of having physicians on hospital boards. It does not provide a comprehensive analysis of all the costs and benefits of having physicians on the board. Similarly, our results do not necessarily imply that the IRS’s decision to relax rules on physician participation on nonprofit boards was wrong. Our results do suggest that donors are unconvinced that agency conflicts with physicians are resolved by the current regulation.

Our findings underscore the importance of studying the role of economically-interested groups, other than management, on the governance structures of nonprofit

organizations. While the academic literature on for-profit governance differentiates between inside and “grey directors” (non-employee outsiders who nonetheless benefit from the business transactions of the firm, e.g., investment bankers and suppliers) the distinction has not been stressed in the academic literature on nonprofit organizations. Given that the board is the primary control mechanism in nonprofit organizations, it is particularly important to understand the effects of special-interest groups in nonprofit organizations.

While our study focuses on hospitals, there are examples of this type of incentive conflict in other nonprofit organizations. For example, the news media recently reported that board members of a large philanthropic organization diverted funds to construction and other projects to obtain private benefits.²⁶ A reasonable number of other examples also exist.

²⁶ See, “Turmoil Hits Charity Fund Over Its Handling of Money,” *New York Times*, February 14, 2004.

References

- Abrams, B. and M. Schmitz, (1984), The Crowding-Out Effect of Governmental Transfers on Private Charitable Contributions: Cross-Sectional Evidence, *National Tax Journal*, 563-568.
- Bebchuck, L. and J. Fried, (2003), Executive Compensation as an Agency Problem, NBER Working Paper 9813.
- BoardSource, (2002), Should the CEO Be a Voting Board Member?, Internet Posting.
- Brickley J. and R. L. Van Horn, (2002), Managerial Incentives in Nonprofit Organizations: Evidence from Hospitals, *Journal of Law and Economics*, 45, 227-249.
- Benz, M., Kucher, M. and A. Stutzer, (2001), Stock Options: The Managers' Blessing: Institutional Restrictions and Executive Compensation, Working Paper 61, University of Zurich Institute for Empirical Research in Economics.
- Bertrand, M. and S. Mullainathan, (2001), Are CEO's Rewarded for Luck? The Ones Without Principals Are, *Quarterly Journal of Economics*, 901-932.
- Borokhovich, K., Brunarski, K. and R. Parrino, (1997), CEO Contracting and Anti-Takeover Amendments, *Journal of Finance*, 52, 1495-1517.
- Brickley, J., Coles, J. and G. Jarrell, (1997), Leadership Structure: Separating the CEO and Chairman of the Board," *Journal of Corporate Finance*, 3: 189-220.
- Bowen, W. (1999), When a Business Leader Joins a Nonprofit Board, *Harvard Business Review on Nonprofits*, Harvard Business Press (Boston).
- Cheng, S., Nagar, V. and M. Rajan, (2001), Control Versus Risk in Stock-Based Incentives: Evidence from Antitakeover Regulation, Working Paper, University of Michigan Business School.
- Core, J., Holthausen, R. and D. Larcker (1999), Corporate Governance, Chief Executive Compensation and Firm Performance, *Journal of Financial Economics*, 51, 371-406.
- Cyert, R., Kang, S. and P. Kumar, (2002), Corporate Governance, Takeovers and Top-Management Compensation: Theory and Evidence, *Management Science*, 48, 453-469.
- Eldenburt, L. and R. Krishnan, (2003), Public versus Private Governance: A Study of Incentives and Operational Performance, *Journal of Accounting and Economics*, 35, 377-404.

- Eldenburg, L., Hermalin, B., Weisbach, M. and M. Wosinska, (2001), Hospital Governance, Performance Objectives and Organizational Form, NBER Working Paper 8201.
- Fama, E. and M. Jensen, (1983a), Separation of Ownership and Control, *Journal of Law and Economics*, 26, 301-325.
- Fama, E. and M. Jensen, (1983b), Agency Problems and Residual Claims, *Journal of Law and Economics*, 26, 327-349.
- Frumkin, P. and E. Keating, (2001), *The Price of Doing Good: Executive Compensation in Nonprofit Organizations*, working paper, Harvard University, Cambridge.
- Greene, W., (2000), *Econometric Analysis*, 4th Edition, Prentice Hall, USA.
- Hallock, K., (1997), Reciprocally Interlocking Boards of Directors and Executive Compensation,” *Journal of Financial and Quantitative Analysis*, 32, 331-343.
- Hallock, K., (2000), *Governance and Managerial Pay in American Nonprofits*, working paper, University of Illinois, Champaign-Urbana.
- Hansmann, H., (1980), The Role of Nonprofit Enterprise, *Yale Law Journal*, 89, 835-901.
- Hartzell, J. and L. Starks, (2002), *Institutional Investors and Executive Compensation*, Working Paper, New York University Stern School of Business.
- Hermalin, B., and M. Weisbach, (1998), Endogenously Chosen Boards of Directors and Their Monitoring of Management, *American Economic Review*, 88, 96-118.
- Holmstrom B. and P. Milgrom (1994), The Firm as an Incentive System,” *American Economic Review*, 7, 972-991.
- Hwang, H., Reed, R., and C. Hubbard, (1992), Compensating Wage Differentials and Unobserved Productivity, *Journal of Political Economy*, 100, 835-858.
- Jeff Jones, (2003), NY’s Attorney General Seeks to Apply Sarbanes-Oxley Act, *The Nonprofit Times*, March 1, 2003.
- Johnston, D. (2004), “Former Head of United Way in the Washington Area Pleads Guilty to Theft,” *New York Times*, March 4.
- Khanna, J. and T. Sandler, (2000), Partners in Giving: The Crowding-In Effects of UK Government Grants, *European Economic Review*, 1543-1546.
- Mancuso, T. (2002), “How to Form a Nonprofit Corporation,” Nolo Books, USA.

Okten, C. and B. Weisbrod, (2000), Determinants of Donations in Private Nonprofit Markets, *Journal of Public Economics*, 255-272.

Pauly, M. and M. Redisch, (1973), The Not-For-Profit Hospital as a Physicians' Cooperative, *American Economic Review*, 63, 87-99.

Roomkin, M. and B. Weisbrod, (1999), Managerial Compensation and Incentives in For-Profit and Nonprofit Hospitals, *Journal of Law, Economics and Organizations*, 15, 750-781.

Salamon, L., (1999), *Americas's Nonprofit Sector: A Primer*, The Foundation Center, New York.

Schiff, J., (1985), Does Government Spending Crowd Out Charitable Contributions?, *National Tax Journal*, 535-547.

Shleifer, A. and R. Vishny, (1997), A Survey of Corporate Governance, *Journal of Finance*, 52, 737- 783.

Smith, R., (1979), Compensating Wage Differentials and Public Policy: A Review, *Industrial and Labor Relations Review*, 32, 339-352.

Viscusi, K., (1978), Wealth Effect and Earnings Premiums for Job Hazards, *The Review of Economics and Statistics*, 60, 408-416.

Weisbrod, B. and N. Dominguez, (1986), Demand for Collective Goods in Private Nonprofit Markets: Can Fundraising Expenditures Help Overcome Free-Rider Behavior?, *Journal of Public Economics*, 30, 83-95.

Whitehead, R., Moore, P. and J. Pritchard, (1998), IRS Rules on Governance of Integrated Delivery Systems With Physician Participation, *CPA Journal*, April.

Yetman, M. and R. Yetman, (2003), The Effect of Nonprofits' Taxable Activities on the Supply of Private Donations, *National Tax Journal*, 243-2

APPENDIX TABLE 1

**OLS REGRESSION OF PHYSICIAN BOARD PERCENTAGE ON MARKET,
GOVERNANCE, AND HOSPITAL CHARACTERISTICS**

This table presents the first stage OLS regression used for Model 5 in Table 6. The percentage of physicians on the hospital board is regressed on governance, hospital, and market characteristics. Physician board percentage is uniquely identified by the percentage of physicians in the hospital county between the ages of 35 and 65. The observations are for the period 1999-2002. Hospital governance characteristics including the percentage of physicians on the board are obtained from the bi-annual Governance Institute Survey. Hospital size and ROA are from IRS Form 990, and hospital case mix index is obtained from the Centers for Medicare and Medicaid Services. Market characteristics are from the Area Resource File. Regional controls include a dummy variable corresponding to one of the eight census regions of the United States. T-statistics are in parentheses.

	<i>Observations</i>	243
Intercept		-0.0295 (-0.18)
Identifying Variable		
Percentage of Physician Population Between Ages 35 and 65		0.1134 * (1.84)
Hospital Governance		
CEO has voting Rights		0.0130 (0.85)
Percentage Insiders		0.0747 (0.70)
Board Size (x 100)		-0.0127 (-0.09)
Hospital Characteristics		
Case Mix Index		0.0940 * (1.85)
Log of Assets		-0.0070 (-0.66)
Return on Assets		0.0686 (0.55)
Market Characteristics		
Log of Population Density		0.0099 (1.37)
Per Capita Income (x 10,000)		0.0149 (0.98)
Number of Hospitals (x 1000)		-0.6957 (-0.94)
County Medicare Percentage		0.1798 (1.08)
County Medicaid Percentage		0.0937 (1.62)
County Percent of Persons in Poverty (x1000)		0.0830 (0.04)
State Personal Income Tax Rate (x 1,000)		-0.8050 (-0.26)
Region Effects		Y
Year Effects		Y
	<i>Adjusted R-Squared</i>	0.0511

* Statistically significant at the .10 level in two-tailed tests

** Statistically significant at the .05 level in two-tailed tests

*** Statistically significant at the .01 level in two-tailed tests