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**MANAGERIAL REWARDS AND THE BEHAVIOR OF FOR-PROFIT,
GOVERNMENTAL, AND NONPROFIT ORGANIZATIONS: EVIDENCE FROM
THE HOSPITAL INDUSTRY**

Jeffrey P. Ballou
Northwestern University

Burton A. Weisbrod
Northwestern University

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Studies of mixed industries frequently focus on differential behavior between for-profit and either nonprofit or governmental producers. Substantially less is known about differences among governmental, religious nonprofit, and secular nonprofit organizations. We examine the compensation of hospital CEOs to assess the extent to which these three organizational forms pursue similar objectives. Compensation levels, the use of salaries versus bonuses as proxies for weak versus strong incentives, and the criteria organizations use to determine bonuses are analyzed. We conclude that the CEO incentive contracts at religious nonprofit, secular nonprofit, and governmental hospitals imply substantive differences in the behavior of these organizations.

Keyword(s): Nonprofit; Comparative institutional form; Organization behavior; Incentives

JEL Classification: L2; L3

* Respectively, Assistant Research Professor and John Evans Professor of Economics and Fellow, Institute for Policy Research (IPR), Northwestern University. Corresponding author: Burton Weisbrod. Mailing address: Department of Economics, Northwestern University, 2003 Sheridan Road, Evanston, Illinois 60208-2600. Phone: (847) 467-1235. Fax: (847) 491-7001. Email: b-weisbrod@northwestern.edu.

1. Introduction

The role of different forms of institutions has been fundamental to economics since at least the days of Adam Smith. The choice between relying on private markets and on government continues to concern both economics and public policy debates. The debate has increasingly been expanded to encompass the option of relying on a third form of institution, private nonprofit organizations. In recent decades, as the nonprofit sector's share of gross domestic product has increased while the public sector share declined (U. S. Census Bureau 1999), it has become increasingly important to understand both the forces that affect the choice among organizational forms and the efficiency consequences of these choices.

Research on mixed industries—examples of which include hospitals, nursing homes, colleges, day care centers, and museums—has focused heavily on the distinction between for-profit firms and organizations that are subject to a “nondistribution constraint,” which prohibits organizations from distributing profits to their managers, trustees, or owners. It is important to note that such a constraint does *not* prohibit organizations from actually earning positive profits. Two common ownership types—religious private nonprofit and secular private nonprofit—are both legally bound by an explicitly stated nondistribution constraint. Governmental organizations, while not legally subject to the same nondistribution constraint as are private nonprofits, are subject to political and legal constraints that also effectively constrain governmental organizations from distributing their profits. Thus, the religious nonprofit, secular nonprofit, and governmental institutional forms are all constrained with respect to the distribution of their profits, and, as a consequence, studies that rely on nondistribution constraints to explain differences in organization behavior cannot account for any systematic differences that may exist among these forms.

While there are many industries in which one or more of the three types of these distribution-constrained organizations are present, typically along with for-profit firms, relatively little is known about whether and how these various forms of organization differ in their behavior and outputs and, hence, the degree to which they are substitutes. Such information would be useful in assessing how the presence of multiple organizational forms influences consumer welfare. Additionally, better knowledge of differences (or

similarities) in behavior across religious nonprofit, secular nonprofit, and governmental organizational forms would contribute to the development of a more general model of the mixed industry that is capable of explaining the presence and distribution of multiple organizational forms.¹

By examining the structure of executive compensation in one large mixed industry (hospitals), we seek to answer the question of whether different types of distribution-constrained organizations—religious nonprofit, secular nonprofit, and governmental—behave similarly. We postulate that the incentives provided by any organization through its executives' compensation are likely to reflect the organization's objectives—which we define as those established by the board of directors (at nonprofits) or higher-level governmental authority—whenever organizations are similarly constrained with respect to the set of contracts that they can write. Incentives, in turn, influence managerial behavior, which can ultimately be expected to influence the nature of outputs. Thus, if different organizational forms pursue identical objectives and are similarly constrained, one would expect them to offer their executives identical incentives. Equivalently, if we observe systematic differences in compensation contracts, this would suggest that substantive differences exist across organizational forms that likely affect organization behavior and the nature of outputs. Our analysis reveals both strong similarities across organizational forms in certain dimensions of compensation and sizable differences in others.

Understanding executives' incentive structures across institutional forms is of interest in its own right, as well as for other reasons. Such knowledge would contribute to a better understanding of managerial labor markets, the relationships between incentives and organization behavior in input and output markets, the use of strong relative to weak incentives to reward workers, the modeling of organizational behavior in mixed industries, the wisdom of applying anti-trust law to nonprofit organizations, the efficiency of public subsidies to both religious and secular nonprofits, the effects of privatizing governmental activities to nonprofit relative to for-profit producers, and the effects of conversions of organizations between nonprofit and for-profit status.

Recent research has examined managerial reward structures in the hospital industry, comparing for-profit and nonprofit organizations (Arnould, Bertrand, and Hallock 2000; Brickley and Van Horn 2000; Roomkin and Weisbrod 1999). In its empirical work, this study is closest in spirit to the work of Roomkin and Weisbrod, and yet it asks an entirely separate question. Unlike Roomkin and Weisbrod, we focus on the extent to which the three different forms of distribution-constrained organizations differ in the incentives that they provide to their executives as a means of addressing the larger question of whether they are likely to pursue different goals. By contrast, the Roomkin and Weisbrod paper focuses only on distinctions between for-profit and nonprofit organizations. If religious nonprofit, secular nonprofit, and governmental organizations all behave similarly, nothing is lost in such an approach. If these three types of distribution-constrained organizations do differ in their behavior, however—and the results of our study suggest that they do—then any approach that emphasizes solely the distinction between for-profits and nonprofits will fail to capture the true extent of the heterogeneity in the mixed industry.

Our analysis is distinct from the work of Roomkin and Weisbrod in two other important ways. First, we focus in greater depth on the performance measures that different hospitals report using in the determination of executive bonuses. Due to limitations of the data on for-profits, the prior study was not able to do this effectively. Second, our analysis of differences in compensation among the three forms of distribution-constrained organizations—relative to differences between each of those types of organizations and for-profit firms—provides some evidence on the importance of nondistribution constraints relative to other influences in determining differences in managerial reward structures across organizational forms.

The next section outlines the theoretical framework that motivates our empirical analysis. Section three discusses the data and methodology, setting forth the hypotheses to be tested and describing the empirical models. Results and discussion follow in the fourth and fifth sections.

2. Linking compensation schemes with organizational behavior and outputs

Our analysis is predicated on the theory that organizational forms with similar objectives will reward their executives with similar incentive packages, other things equal. An organization reveals its objectives through its compensation schemes in various ways, not only by how much it pays its management but, more importantly, by *how* it pays and motivates its management. Some organizations rely primarily on base salaries, while others rely extensively on performance-based bonuses. In addition, organizations may use different criteria for determining both whether a bonus is paid and the size of the bonus. Our data—which contain information on salaries, bonuses, and criteria used in determining bonuses—permit us to analyze the extent to which these elements of the compensation contract vary in systematic ways across the three distribution-constrained organizational forms.

The theoretical literature on comparative institutional forms typically focuses on the choice between two institutional forms: private nonprofit status and for-profit status.² With the exception of Weisbrod (1975), however, theory has not rationalized the presence of both governmental and nonprofit organizations, and no theory, to our knowledge, has addressed the joint presence of religious and secular nonprofits. Whether additional theory is needed depends, of course, on the extent to which meaningful differences actually exist in the behavior of these different organizational forms.

Previous empirical research has addressed the question of whether differences in outputs exist among various types of distribution-constrained organizations and in a number of industries.³ Our approach, which involves inferring differences in managerial behavior from observable compensation structures, has advantages over existing studies that rely on direct measures of output. Theory suggests that different organizational forms may differ significantly in the provision of outputs or product attributes that are costly for buyers to monitor relative to easily-monitored outputs (Hansmann 1980, Weisbrod 1988). Since the former are those that the researcher is least able to observe, the empirical strategy of focusing research on identifying systematic differences in observable attributes may miss the most important differences among organizational forms.

An additional reason to be cautious of relying on differences in observable outputs to infer differences in organization goals and behavior is that the nature of an organization's outputs is influenced not only by its objective function and institutional constraints but also by competitive pressures in the marketplace. The presence of competition can cloud the interpretation of differences or similarities in outputs across organizational forms. For example, when consumers have homogeneous preferences over outputs, a competitive market may lead different institutional forms to produce a homogeneous output even if producers have diverse objective functions (Hirth 1999). Conversely, when consumers have heterogeneous preferences, product differentiation may result, even if all producers share a common objective function. The relationship between executive compensation and organization objectives is less likely to be confounded by external market forces: The organization is free to choose any legally valid, incentive-compatible contract as long as it pays at least the certainty equivalent compensation level that the executive would receive elsewhere.⁴

Our focus on incentive contracts is not without shortcomings, however. To the extent that unobserved heterogeneity in managerial talent is correlated with organizational form, our analysis is unable to separate the effects of differential managerial talent on pay differentials from any effect resulting more directly from differences in objectives, independent of differences in managerial ability.⁵ We discuss this point in greater depth below. Additionally, to the extent that relevant differences in organizational behavior can be captured by measurements of observable outputs—as when two different organizational forms offer homogeneous products but at different prices—a study of outputs may be the most effective means of assessing differences in organizational objectives.

For a given set of institutional constraints, we link organization objectives with the structure of managerial compensation by applying Holmstrom and Milgrom's (1991) multitasking model to an environment in which different organizational forms have (potentially) different goals.⁶ Their model describes optimal compensation schemes in a principal-agent environment in which agents may engage in n different activities and the principal imperfectly observes an agent's actions. The contract—which is designed to provide the agent with incentives to undertake the activities that the principal prefers at the lowest expected

monetary cost—consists of a salary and a set of bonus piece rates, the latter indicating the reward associated with each activity in the activity set. Since the principal cannot observe the agent’s efforts, the contract must instead be based on noisy performance measures. The optimal contract must satisfy an incentive compatibility constraint (the agent accepting the contract must prefer to engage in the prescribed activities at the levels desired by the principal) and a participation constraint (the agent must receive at least his reservation utility). Holmstrom and Milgrom show that the optimal n -vector of bonus piece rates is

$$b = \left[I + r \frac{\partial^2 c}{\partial e^2} \Sigma \right]^{-1} \frac{\partial V}{\partial e}, \quad (1)$$

where r is the agent’s coefficient of risk aversion, e are the actions taken by the agent, $c(\cdot)$ is a function mapping $\mathfrak{R}^n \rightarrow \mathfrak{R}$ with constant second derivatives that measures the personal cost to the agent of taking those actions, Σ is the variance of the noise in available performance measures, V is the principal’s objective function, and I is an n -by- n identity matrix. Let r_i and $c_i(\cdot)$ jointly characterize agent i ’s type.

Suppose that two different organizational forms have identical objectives. Then both forms want their agents to take the same actions and consequently set identical piece rates for any given type of agent. Actual piece rates will differ across the two organizational forms only if they hire different types of agents. (It is assumed that Σ is the same for all organizations.) With identical objectives, however, each organization will hire the same type of agent—namely, the type that accomplishes the organization’s goals at the lowest expected cost to the organization.⁷ Thus, the variables on the right side of equation 1 are identical for two organizational forms with identical objectives, implying that they set identical piece rates. Holmstrom and Milgrom show that both base salaries and expected bonuses are ultimately functions of the bonus piece rates, which implies that the two organizational forms will also pay identical salaries and expected bonuses. Equivalently, if we observe that different institutional forms pay their agents systematically different salaries and bonuses, this suggests the pursuit of different goals whenever organizations are similarly constrained.

Further examination of equation 1 reveals that activities that are linked more closely to outputs that are highly weighted in the principal's objective function will be associated with higher bonus piece rates than those that are not (i.e., b_j is increasing in $\frac{\partial V}{\partial e_j}$ for any activity j), regardless of institutional form.⁸ This is unsurprising, as principals want to attach the highest rewards to those objectives that are most important to them. Our data contain information on the criteria that hospitals of each institutional form use to determine their incentive contracts. If criteria differ, one can plausibly infer the presence of differential organization objectives. Thus, while we do not observe piece rates per se, we do have reasonable measures of whether piece rates for given goals ("profit", "quality", etc.) are zero or positive. These variables allow us to make limited inferences about the role and nature of piece rates in the contracts offered by different organizational forms.

Ideally, we would like to use the model outlined here to infer differences in organization objectives based on differences in contracts. To do so would imply accepting three assumptions, however. If any one of these three assumptions fails, then one might observe organizations with identical objectives writing different contracts. The first assumption is that a model that links objectives to contracts assumes that each form of organization operates efficiently in pursuit of its goals. It has frequently been argued, however, that government and nonprofit organizations lack the incentive to be efficient (a consequence of nondistribution and soft-budget constraints), and so they may fail to set optimal incentives for managers (Alchian and Demsetz 1972).⁹ The second assumption is that different organizational forms face the same externally imposed constraints with respect to the form of compensation contracts that they may write. If this assumption does not hold, then one might observe contract provisions and outcomes that differ systematically across organizational forms even if they share identical objectives. For example, the optimal contract may require profit sharing. While a for-profit may engage in profit sharing with its CEOs, it is illegal for a nonprofit to do so, even if that nonprofit is also seeking to maximize profits. Thus, the assumption of identical constraints on contracts clearly fails when for-profit and distribution-constrained organizations are

compared. The extent to which the three types of distribution-constrained organizations are differentially constrained in their abilities to write certain, specific contracts is less clear. A third assumption implicit in the model outlined here is that managerial talent is not rationed. If talent is plentiful, then organizations with identical objectives do not need to compete for it. Conversely, if managerial talent is scarce, then certain organizations will be compelled to hire their second or third options. To the extent that talent is rationed in a systematic way across organizational forms, then differences in observed elements of contracts need not imply differences in objectives.

The upshot is that one must be careful when concluding that differences in observed contracts imply differences in underlying objectives. Nonetheless, we believe that the nature of our data is such that some limited conclusions in this direction may be advanced, based on the results of our analysis.

3. Data and methodology

3.1 Data

We rely on data for 1992 from Hay Management Consultants and the American Hospital Association (AHA) to analyze patterns of compensation and incentives across institutional forms. The Hay Hospital Compensation Survey surveyed all 6,550 general and specialty hospitals in the United States, to which 1,268 hospitals responded. Thus, our sample is nonrandom. Analysis of the data reveals that, among organizations subject to a nondistribution constraint, the difference in the response rates of secular nonprofits and religious nonprofits is statistically insignificant. Government response rates tend to be slightly lower, however. Additionally, larger hospitals were more likely to respond to the survey than were smaller ones.

The Hay data are subject to confidentiality restrictions, and hospitals were aware that their responses would be kept confidential when completing the survey. Thus, respondents had little incentive to distort their responses. To the extent that a hospital's data would be used in a future consulting relationship with the Hay Group on compensation practices, that facility had an even greater incentive to provide accurate information.

We examined compensation patterns for the hospitals' chief executive officers (CEOs), as we believe that the CEO is in the best position to affect the hospital's behavior and thereby achieve its goals.¹⁰ It is therefore the CEO's incentives that will be linked most closely to organization goals. The data include information on (1) base salary as of January 1, 1992, (2) performance-based bonuses in the prior year, and (3) criteria (financial performance, quality, etc.) that the hospital uses in determining CEO bonuses.

The data also permit comparisons across institutions of the complexity of responsibilities for managers having the same job titles. Job points measure a given job's content by assessing three aspects of the position: specialized know-how, problem solving, and accountability. The Hay Group assigned a point score to each CEO position based on this analysis. More job points indicate more complex jobs.¹¹ For all organizational forms studied here, the correlation between base pay and job points is positive and statistically significant, ranging from 0.51 at for-profits to 0.74 at secular nonprofits. The correlation between realized bonus pay and job points is substantially lower: 0.23 at secular nonprofits, 0.16 at for-profits, and insignificantly different from zero at the other two ownership types.

The American Hospital Association data are drawn from the 1992 American Hospital Association's Guide to the Health Care Field, and include information on the hospital's location, organizational form, number of licensed beds, number of full-time equivalent employees, total expenses, procedures offered/facilities available, and specialty hospital status. We formed the sample of 730 observations used in the analysis by merging the two data sets and eliminating observations containing bad or missing values.¹²

The data sets lack information on several variables of interest to any study of executive compensation. First, the compensation data are incomplete. We have no data on executives' stock options (for for-profit firms) or "phantom" stock options (for distribution-constrained organizations), which surely constitute a portion of executive compensation. Second, while we have a measure of job complexity (job points) for each CEO, we lack important information on the individual executives that may make them differentially productive. In particular, we do not know their ages, experience, seniority, or education. We use

the limited information on whether the executive is an incumbent—i.e., held the position the previous year, according to the Hay Group—as a rough proxy for seniority with the organization.

Descriptive statistics are presented in Table 1. Note that while mean base salaries are highest in the nonprofit sector and lowest in the for-profit sector, bonuses are largest in the for-profit sector, much lower among secular nonprofits, still lower among religious nonprofits, and lowest among government facilities. The differences in mean salaries are statistically significant across all organizational forms, with the exception of the difference between the mean religious nonprofit and mean secular nonprofit salaries. While the difference between the mean for-profit bonus and the mean bonus for each of the distribution-constrained organizations is significant, there are no significant differences in mean bonus pay *among* different types of distribution-constrained organizations. The range in bonus eligibility across organizational forms is striking: 85 percent of for-profit CEOs were bonus-eligible, whereas only 28 percent of government hospital CEOs were offered a performance-based bonus. Nonprofits are intermediate, with religious nonprofits being more like governmental hospitals while secular nonprofits are more like for-profits.¹³ We assumed that a particular CEO is eligible for a bonus if any of three conditions holds: (1) the hospital indicated the presence of an incentive program for executives in general, or (2) the hospital listed the CEO as bonus-eligible, or (3) the hospital reported that a positive bonus was paid to the CEO.¹⁴ Table 1 also reports descriptive information on incumbency. Based on this limited information, CEO turnover in the past year appears to have been greatest at government hospitals while generally lowest at for-profit hospitals.¹⁵ Job points, measuring a position's complexity, are highest for government CEOs and lowest for for-profit CEOs.

Table 1 also provides some information about the hospitals at which the CEOs are employed. Specialty hospitals are the exclusive domain of the secular nonprofit sector. Government facilities tend to be the largest and for-profits the smallest, as measured by total staffed beds. Roughly three out of four private hospitals in the sample locate in a major urban area, but that percentage is significantly lower for public hospitals, only 63 percent of which are in cities. Moreover, different organizational forms appear to have

different regional niches, with religious nonprofits concentrated in the Midwest and government and for-profit facilities in the South; secular nonprofits are distributed fairly proportionately across the country.

The statistics on whether the hospital reports establishing executive bonuses on the basis of financial performance and/or quality of care require comment. Respondents to the Hay survey are asked to indicate which of six performance measures they use in determining bonuses: net income, return on equity/assets, operating efficiency, growth in earnings, quality of care, and other. Hospitals were asked to check all measures that apply. From the data on bonus criteria, we created two dummy variables: The “financial” dummy is equal to one if the respondent indicates that net income, return on equity/assets, operating efficiency, or earnings growth is used as a performance measure, and zero otherwise. The “quality” dummy is equal to one if the respondent indicates that quality of care is used as a performance measure.

In general, respondents were significantly less likely to answer the questions on bonus criteria than other questions in the survey. While it is not clear when no response should be interpreted as a missing value, it should be noted that only three for-profits (or one percent of all for-profits in the sample) provided an answer to this question, suggesting that missing values are pervasive. For those hospitals that did respond by checking one or more bonus criteria, the data show that hospitals are more likely to reward financial performance than quality of care in their bonus schemes, and this result is consistent across organizational forms. We discuss this observation further below.

3.2 Methodology

We do not present a formal model of executive compensation. Rather, we examine the empirical relationships between compensation variables and ownership types in order to test the null hypothesis that there are no differences among the organizational forms.

We estimate six equations, each with a different element of compensation as the dependent variable. We examine (1) base salary; (2) bonus pay; (3) the ratio of bonus to base salary; (4) whether the hospital offers an executive incentive program; (5) whether the hospital uses a measure of financial performance as a

criterion for determining bonuses, conditional on having an incentive program; and (6) whether the hospital uses a measure of quality of care as a criterion for determining bonuses, conditional on having an incentive program. The base salary regression is estimated using ordinary least squares, whereas the bonus and bonus-base ratio regressions utilize tobit procedures to account for the prevalence of zero values (roughly half of all observations). The latter three regressions are probit estimations.

Each dependent variable is regressed on a set of ownership dummies and control variables.¹⁶ For each regression, we test the null hypothesis that the expected value of each dependent variable is equal for all three forms of distribution-constrained organizations, *ceteris paribus*. We will reject the hypothesis—which we refer to as our “primary hypothesis”—if the ownership effects for such organizations are significantly different from each other.

We also test a second set of hypotheses by making pairwise comparisons across all four ownership types—for-profits and the three forms of organizations that are subject to nondistribution constraints. Thus, for all possible pairs of the four ownership types we test the null hypothesis that the expected values of the various dependent variables characterizing executive compensation are equal.

In addition to the set of ownership dummies, we include the following control variables in all regressions since they are correlated with organizational form and can be expected to influence compensation: total staffed beds, and a set of indicator variables for (1) specialty status, (2) whether the hospital is located in a metropolitan statistical area, and (3) the census division in which the hospital is located. In the base salary and bonus pay regressions, we also include the number of job points and an indicator variable for incumbency. In the bonus pay regression, we further include two variables indicating whether the organization provides incentives for either or both (1) financial performance or (2) quality of care. In an alternative set of regressions, we added a case mix variable to the list of controls described above; the results reported here were not sensitive to the variable’s inclusion or omission.¹⁷ In a second set of alternative regressions, we used a finer set of controls for location, replacing the three census division dummy variables with eight census region dummy variables; again, the results were largely unchanged.¹⁸

We hypothesize that bonuses will be larger at hospitals that emphasize the goal of financial performance, since financial performance is significantly easier to measure than are, for example, quality of care or the value of collective goods outputs.¹⁹ We expect that activities associated with less easily measured objectives will carry weaker rewards (i.e., a lower ratio of bonus pay to base salary).

Variables for which we cannot control econometrically may also influence compensation patterns; we interpret the error term in our regressions as capturing the effects of these variables on the compensation variables. The profitability of the organization may also determine (endogenously) how much managers are paid, particularly when it comes to incentive pay. We expect ties between incentive pay and profits to be significantly weaker in the government and nonprofit sectors than in the private for-profit sector (Roomkin and Weisbrod 1999).

It is not always possible to distinguish between zero values and missing values in the data. To determine the sensitivity of estimates to the treatment of missing values we made two sets of estimates. In the reported results, we treat all blank responses for paid bonuses as zero values, but we treat blank responses for salary as missing. The reason is that we expect that all CEOs are paid a salary, while not all are paid a bonus; leaving a blank space may be one way of communicating a zero bonus. We also estimated a second set of regressions, reinterpreting blank values as missing values; the qualitative results remain largely unchanged.²⁰

4. Results

4.1 Base salary

Results from the regression of the log of base salary on ownership dummies and controls are in the first column of Table 2.²¹ Our primary hypothesis that CEOs' base salaries at religious nonprofits, secular nonprofits, and government hospitals are alike is easily rejected (see the F statistic in bold type). The lower panel of the table reveals that, among organizations subject to a nondistribution constraint, religious nonprofits pay their CEOs the highest base salaries and government organizations the lowest. The differences between each of the two types of nonprofit and the public sector are large—on the order of

fifteen to twenty percent. Base salaries at all three types of organization that are not for-profit are predicted to be higher than at for-profits, although the coefficient on government status is not significant. In general, the other coefficients have the anticipated signs.

4.2 Bonuses

Results of the bonus regressions are in the second, third, and fourth columns of Table 2. The second column displays the results of a tobit model with heteroskedastic errors that predicts bonus pay. As with the base salary regressions, we reject the hypothesis that all three forms of distribution-constrained organizations offer identical bonuses to their CEOs, other things equal. The results imply that government hospitals pay their CEOs bonuses that are roughly \$3,400 and \$7,900 (30 and 50 percent) less than those paid by religious and secular nonprofit hospitals, respectively. Expected CEO bonuses vary by \$4,500 between religious and secular nonprofits. The second column of the lower panel of Table 2 shows that differences in expected bonus pay among the distribution-constrained organizations are dwarfed by differences in expected bonus pay between those organizations and for-profits, which are expected to pay \$26,000 to \$34,000 more.

The second column of Table 2 also reveals that bonuses tend to be substantially larger at organizations that emphasize financial performance in their determination of bonuses. In contrast, hospitals that reward performance based on quality of care do not pay significantly higher bonuses.

The effects of rewarding financial performance are not small, even among distribution-constrained organizations. Among secular nonprofits, for instance, bonuses are \$5,100 higher (32 percent of the expected bonus for CEOs at that type of organization) at organizations that reportedly reward financial performance than at otherwise comparable secular nonprofits that do not. It is important to note in this context that nonprofits and governmental organizations are not legally precluded from paying bonuses as rewards for many forms of “performance,” although they do face legal and political constraints on rewarding profit.

That organizations offering performance-based bonuses would reward financial performance is not surprising. Holmstrom and Milgrom (1994, 1991) argue that when the cost of monitoring performance is low,

an employer will tie compensation to the fulfillment of the employer's objectives. However, when the cost of monitoring is high—as it might be when a hospital focuses on producing such collective goods as high quality care, research, or education—then compensation will *not* be tied closely to verifiable performance measures.

We also analyzed a more flexible model of bonus pay due to Cragg (1971), which estimates two separate sets of coefficients, one set for nonlimit observations and one set for limit observations. The model was estimated with homoskedastic standard errors, as the analogous model with heteroskedastic errors failed to converge. The predicted values of the bonuses diverge substantially across the two specifications. (For example, the predicted for-profit bonus in the Cragg model exceeded \$69,000, which is substantially larger than either the for-profit sample mean of \$44,000 or the value of \$42,000 that is predicted by the tobit.) Nonetheless, the rank order of bonuses as well as the statistical significance of differences in bonuses across institutional forms remains comparable. For both specifications, we rejected the null hypothesis that the three types of distribution-constrained organizations pay comparable bonuses.

In the third column of Table 2 we examine the extent to which the strength of incentives, as measured by the ratio of bonus pay to base pay, varies across institutional forms. We again reject the hypothesis that the strength of incentives is the same across religious nonprofit, secular nonprofit, and governmental organizations. The lower panel of the table shows that CEO bonuses at secular nonprofits are estimated to be 7.7 percent of their base salaries, as compared with 5.7 percent for religious nonprofits and 4.1 percent for governmental organizations. While the differences between the two types of nonprofit are not significant, the difference between secular nonprofit and governmental organizations is significant. Bonus-to-salary ratios for CEOs are vastly larger at for-profits than at any of the other institutional forms.²²

The final column of Table 2 focuses on the factors influencing whether an organization offers executives an employment contract that includes a performance-based bonus. The results show that government hospitals are least likely to have an incentive program in place (24 percent), while, not surprisingly, for-profits are highly likely to offer a contract including bonus pay (86 percent). Nonprofits

occupy the intermediate positions, with religious nonprofits closer to government hospitals and secular nonprofits closer to for-profits in the estimated probability of using bonus incentive plans.

4.3 Bonus Criteria

We now turn to the various specific criteria that hospitals report using when determining bonuses. An organization's assessment of "good performance" is presumably related to its objective function. Whether the various forms of institutions make differential use of strong incentives is one matter. Whether those incentives reward the same *kinds* of behavior at the various forms of institutions is another.

We omit for-profit hospitals from our analysis of bonus criteria since only three responded to these questions on performance criteria and we are concerned that those respondents may not be representative of for-profits more generally. Thus, we limit our analysis to the three forms of distribution-constrained organizations. In subsequent hypothesis tests, however, we will compare the predicted values for distribution-constrained organizations with those that might be expected at a "pure" for-profit organization, namely, one that rewards profit with probability one and quality per se with probability zero.

Table 3 predicts the probabilities that a hospital with a bonus program will report that it rewards its CEOs for achieving good financial performance (first column) or high quality of care (second column), conditional upon offering incentive pay to CEOs. The results in the first column show that, conditional upon having a bonus program, the expected probability that a hospital rewards strong financial performance is highest among religious nonprofits, at 86 percent, followed closely by secular nonprofits, at 85 percent, and government hospitals, at 63 percent. However, none of the differences across organizational forms is statistically significant, and so we fail to reject the hypothesis that government, religious nonprofit, and secular nonprofit hospitals are equally likely to report rewarding financial performance, given that they offer some form of performance-based incentive.²³

The second column of Table 3 reveals, by contrast, that religious nonprofits are far more likely to report rewarding quality of care than are either secular nonprofit or government hospitals. The expected

probability that a religious facility will report offering bonuses based on quality of care is 62 percent, as compared with 35 percent and 24 percent for secular nonprofit and government hospitals, respectively. We reject the hypothesis that government, religious nonprofit, and secular nonprofit hospitals are equally likely to reward quality of care.

A comparison of the two columns in the bottom panel of Table 3 makes it clear that those hospitals that have incentive programs are much more likely to reward strong financial performance than the production of high quality of care, regardless of ownership type. That even hospitals subject to a nondistribution constraint are more likely to reward financial performance than quality of care is not surprising. Measurement of quality of care is problematic and it is likely that any operational measure of quality upon which a bonus might be based will distort behavior (Weisbrod 1988, Baker 1992). If one hospital cares more about offering high quality than another, we expect the former to be more likely to offer incentives to reward high quality care, conditional upon offering a performance-based bonus. However, given the difficulties inherent in measuring quality, we expect that a hospital that focuses on high quality care will emphasize performance-based bonuses *less* than would a hospital that cares such financial variables as profit.

Even if distribution-constrained organizations are “bonoficers”—i.e., they do not seek to maximize profits to the exclusion of all other goals—financial considerations are important, as distribution-constrained organizations (nonprofits particularly) are compelled to rely more on retained earnings to finance investment and pursue costly nonfinancial goals. Thus, nonprofit and governmental organizations can be expected to reward strong financial performance—a hypothesis consistent with our findings—even if their goals differ from pure profit maximization.

As a summary of our findings, Table 4 reports the differences across organizational forms in the predicted values of various compensation variables and for each difference tests the hypothesis that the result is statistically equal to zero. Generally speaking, compensation patterns at religious nonprofits, secular nonprofits, and government hospitals are distinct from one another in many respects. Comparing private nonprofit and governmental hospitals first, we find that the latter pay substantially lower base salaries and

bonuses and generally offer the weakest incentives. The differences tend to be largest and most significant between government and secular nonprofit organizations. Religious nonprofit and government hospitals also differ significantly, however, in base salary, in the probability of paying bonuses, and (for those organizations paying bonuses) in the probability of rewarding quality of care.

Religious and secular nonprofits appear to compensate their CEOs similarly in certain dimensions. Predicted bonus pay does not differ significantly between them; neither does the (conditional) probability of basing bonuses on financial performance. Religious nonprofits pay significantly higher salaries than otherwise comparable secular nonprofits, however. Moreover, religious organizations with incentive plans are more likely to pay bonuses based on quality of care than are otherwise comparable secular nonprofits. Secular nonprofits, on the other hand, are more likely to offer incentive plans.

Not only do differences exist, but in some cases they are large relative to differences that have traditionally been studied, namely those between for-profits and the aggregate of all distribution-constrained organizational forms. For example, the expected difference in CEO base salary between for-profits and the aggregate of all other types is roughly \$13,700 per year.²⁴ However, the differences *among* these other types are actually larger (in both absolute and statistical significance terms): We estimate, for example, that religious hospitals pay their CEOs an average of \$22,540 more in base salary than do government hospitals.

5. Discussion: Interpreting differences in compensation across organizational forms

We have found that large and statistically significant differences in managerial incentives exist within a major mixed industry: hospitals. Not only does the for-profit sector of the industry make considerably greater use of performance-based bonus compensation relative to base salary, as has been documented in previous research, but we find important differences among organizations outside the private for-profit sector. In general, we find that the null hypothesis asserting that distribution-constrained organizational forms are indistinguishable in various dimensions of their CEO compensation contracts is rejected.

Our findings are subject to a number of interpretations. In this section, we present our interpretation of the results in the context of the model sketched earlier in the paper. We also consider alternative interpretations of the results that are implied by differences in institutional constraints, differences in operating efficiency, heterogeneous managerial preferences, and heterogeneous managerial abilities.

We argued above that similarly constrained organizations with identical goals should offer their CEOs identical contracts. A finding of different contracts across institutional forms would therefore imply that different institutional forms either pursue different goals, are differentially constrained, or both. Turning first to the differences that we observe between religious and secular nonprofits, a reasonable conclusion is that the differences between secular nonprofit and religious nonprofit reward structures reflect their pursuit of different objectives, since the two types are similarly constrained: Both organizational forms face identical legal constraints, and both are exempt from taxation under section 501(c)(3) of the Internal Revenue Code, which makes no distinction between them. While it is possible that observed differences in contracts may have resulted from differences in non-legal “constraints” such as the availability of monetary donations, the distinction between an objective and a constraint is not necessarily clear if the constraint in question is not clearly exogenous to the organization’s decision-making process. For example, donor capital may be easiest to acquire for organizational forms that pursue objectives that donors like.

Differential compensation structures at governmental hospitals, as compared with either type of nonprofit hospital, may also reflect differences in objective functions. For example, nonprofit and government facilities may all care about access—i.e., making certain that low-income or other “deserving” individuals have access to their output (Steinberg and Weisbrod 2000)—but government organizations may be relatively more concerned about such distributional goals. Government providers may act as suppliers of last resort, emphasizing access while giving lower weight to quality of care, as compared with private nonprofits (Kapur and Weisbrod 2000). Governmental organizations are subject to some different exogenous constraints, however, such as the political budgeting process whereby tax revenues are allocated. Additionally, public disclosure and open government laws generally require these institutions to make the details of their

compensation (especially pecuniary) to their CEOs known; this may create incentives for government hospitals to emphasize perquisites relative to cash in their compensation schemes. Differential constraints may thus influence the differences in salary that we observe between government and nonprofit facilities.

Due to the previously discussed limitations of the data, our findings are subject to additional interpretations. The differential compensation structures across ownership forms could result from differential inefficiencies in contract writing. It has been argued that private nonprofits have a stronger incentive than governmental organizations do to operate efficiently, as they are required to earn positive profits to remain viable (Shleifer 1998). Thus, the differences that we observe between governmental and nonprofit organizations could be the result of inefficient contracting in the government sector. Since both types of nonprofit organization face the same constraints, however, the argument that these two types operate at different levels of efficiency is more difficult to make.

There may also be unmeasured compensating differentials across organizational forms. CEOs who prefer a particular environment—as characterized by job security, stress levels, base-bonus compensation mixes, perquisites, and other variables that we are unable to observe—may be willing to accept lower cash compensation, in certainty equivalent terms, in exchange for the opportunity to work there. Alternatively, CEOs may have preferences over the outputs produced by the hospital, or the persons to whom they are provided, and these could also influence equilibrium compensation levels. (Under such circumstances, the existence of compensating differentials is a reflection of differential goals across institutional forms.) While the compensating differentials explanation may explain why levels of compensation differ across organizational forms, it does not explain the differentials in the use of strong relative to weak incentives.

Another interpretation of our results is that CEOs' abilities, another unobserved variable, vary systematically across organizational forms, and differences in contracts reflect differences in abilities.²⁵ Government hospitals pay the lowest salaries and bonus-to-base salary ratios, and they are least likely to have incentive programs for their executives. Taken together, these findings are consistent with the possibility that government hospitals hire the weakest executives. If all prospective CEOs are equally risk averse and ability is

strongly correlated with expected bonus pay, then the most productive candidates will want to work at hospitals that offer stronger incentives, whereas weaker candidates will prefer a higher base salary relative to bonus. Weaker candidates would also have lower total compensation, since their reservation compensation—as measured by the pay that they would receive elsewhere—would be lower. This explanation of differences in nonprofit and government pay structures does not explain why, in equilibrium, governmental organizations actually *offer* systematically weaker incentives, however.²⁶ Neither does it explain the differing criteria that the various organizational forms report using to determine bonuses.

Our data do not permit us to distinguish definitively among these various interpretations, but the findings are consistent with the hypothesis that organizational forms vary in the objectives that they pursue. Indeed, the differential goals explanation does the best job of explaining all of our results, from the base salary and bonus regressions to the analyses of bonus criteria. Moreover, the presence of compensating differentials or systematic sorting of heterogeneous managers may actually *reflect* the pursuit of different goals.

6. Conclusion and directions for future research

We have presented evidence consistent with the hypothesis that organizational behavior—as defined by the interaction of institutional objectives and constraints, and as reflected by a number of financial compensation variables—differs systematically not only between for-profits and other types of organization, but also among three types of organization that are subject to nondistribution constraints: religious nonprofits, secular nonprofits, and governmental organizations. While a variety of models may explain the differences that we find, a model in which organizational objectives vary systematically across institutional form is particularly attractive when it comes to explaining all of our findings, taken together.

Our results have implications for several different areas of economics research. Most immediately, our results highlight the necessity of incorporating measures of organizational form when modeling executive compensation or studying compensation contracts. Whether due to differences in objective functions or institutional constraints, these differences are meaningful and influence the nature of the contract.

For similar reasons, our results have implications for the literature on comparative institutional behavior. While researchers in this field have traditionally relied on the presence or absence of a nondistribution constraint to generate differences in behavior across organizational forms, our findings suggest that a more general model of mixed industries is needed—one that distinguishes between religious and secular nonprofits, and between each of these and governmental suppliers. Since the differences that we find among religious nonprofit, secular nonprofit, and governmental organizations cannot be attributed to the presence or absence of nondistribution constraints—as all three types are subject to them—other systematic differences must exist, in objective functions or constraints other than the nondistribution constraint. Further research into the sources of these differences would be useful.

Finally, our results have implications for government policy. If different institutional forms pursue different objectives, then the process of privatizing government operations might include consideration of nonprofit sector alternatives to private for-profit organizations. With respect to the application of antitrust law, our results suggest that treating all nonprofits or, more broadly, all private organizations identically under antitrust law may not be optimal, as differential objectives will in many circumstances imply differential behavior. For example, a merger between two religious nonprofits may have very different behavioral implications than a merger between a for-profit and a secular nonprofit.

We have reason to believe that the work presented here and in a companion paper by Roomkin and Weisbrod (1999) have broad applicability outside the hospital industry. Our informal inquiries suggest, for example, that in the post-secondary education industry, managers of for-profit enterprises are more likely to be compensated with performance-based bonuses than are their counterparts in public or private nonprofit universities.²⁷ Similarly, in the fitness-center industry the use of performance-based bonuses is common at for-profit centers but rare at nonprofit YMCAs. Systematic studies of the use of performance-based bonuses and of the criteria on which they are based would be useful in these and other mixed industries such as nursing homes, museums and galleries, theater and the arts, and day care.

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¹ Our focus on four types of organization—for-profit, religious nonprofit, secular nonprofit, and governmental—is admittedly arbitrary. After all, we could have examined an even finer disaggregation that separates, for example, rural “district hospitals” from other governmental hospitals. We have focused on these four types because (1) existing economic literature commonly distinguishes between public and private organizations and, increasingly, between for-profit and nonprofit organizations; and (2) we believe that it makes sense to begin with a fairly coarse disaggregation of organizational forms, allowing any measured differences to inform the direction that more detailed future studies should take.

² Recent work on mixed industries and the role of nonprofit organizations has sought to answer such questions as what induces private entrepreneurs to choose nonprofit or for-profit legal status, and why industries with both types exist (Glaeser and Shleifer 2001, Hirth 1999, Lakdawalla and Philipson 1999, Bilodeau and Slivinski 1998, Young 1983).

³ See, for example, Mauser (1998), Weisbrod (1988), Kapur and Weisbrod (2000), and Duggan (2000).

⁴ Even if an organization’s directors seek to provide outputs that are identical to those produced by other organizations, they may object, on principle, to offering incentive pay to their executives. In such a case, the organization’s preferences over outputs are not unique, but its preferences over how it runs its organization do differ. As this example illustrates, an organization’s objectives should be construed quite broadly, to include not only the outputs that are produced, but also which inputs produce them, by what process, and for whom.

⁵ The availability of multiple years of data in which executives change jobs across organizational forms would enable us to separately identify these two effects; unfortunately, such data was not available to us.

⁶ A similar approach is taken by Brickley and Van Horn (2000).

⁷ If there is more than one type of agent that minimizes the principal’s expected costs, then organizations are indifferent among all such agents, and different organizations may hire different types of agents. The patterns of hiring under such circumstances will be random across organizations and not be systematically related to the organizational form of the hiring firms.

⁸ This result relies on standard assumptions regarding the principal’s objective function and the agent’s cost function. Specifically, if the cost function is strictly convex with constant second derivatives and the objective function is concave, these conditions are sufficient for the result. This result will not hold, however, if all activities are perfect substitutes in the agent’s cost function. See Holmstrom and Milgrom (1991) for a brief discussion of this possibility.

⁹ Efficiency may also differ *among* organizations bound by nondistribution constraints. The general intuition that the nondistribution constraint by itself encourages inefficiency is incomplete. Efficiency in production is defined relative to an organization’s objectives, stated or otherwise. Any organization with well-defined objectives can and presumably will operate efficiently, in principle. Inefficiency, to the extent that it arises, will likely have its roots elsewhere. For example, agency issues become more problematic when objective functions are not well defined or achievement of objectives is not easily measurable. We revisit this issue in the discussion section.

¹⁰ The Hay Group collected information on the compensation of eighty different managerial positions, of which there are reasonably complete compensation data for sixteen top executive and management jobs.

¹¹ Spector and Beer (1985) describe the system that Hay uses to evaluate different jobs.

¹² “Bad” values—of which there were four in our data—are any records in the data that are logically inconsistent. For example, hospitals reporting a negative number of licensed beds were eliminated from the analysis.

¹³ It should be noted that nonprofit and governmental organizations are not precluded legally from paying bonuses or even bonuses based on financial performance. Nonprofits are restricted, however, in the extent to which the bonus can be based on profit. Government organizations are restricted by legislation from higher level units.

¹⁴ Of the 730 hospitals analyzed here, a total of 473 hospitals were assumed to have bonus-eligible CEOs: 390 paid nonzero bonuses, 150 reported the use of incentive pay for their executives, and 175 specifically listed the CEO as bonus-eligible. (The numbers do not add to 473 since many CEOs qualified as bonus-eligible under multiple criteria.) The differing criteria appear to be more or less internally consistent. For example, only 10 hospitals paid a bonus to their CEOs while failing to indicate the presence of an incentive program for executives or a bonus-eligible CEO. On the other hand, 83 hospitals indicated the presence of a bonus program or a bonus-eligible CEO but then failed to report a positive bonus for their CEOs; 81 of these were distribution-constrained organizations. Thus, 17.55 percent of the organizations that were assumed to have a bonus-eligible CEO did not report paying any bonus to the CEO. Either these hospitals did not pay their CEOs a bonus or they neglected to record that bonus on the survey.

¹⁵ Any turnover implied by the incumbency variable may reflect either voluntary or involuntary turnover; our data do not permit us to assess whether turnover was voluntary or not.

¹⁶ We include data on for-profit executives when estimating the salary and bonus equations; we omit for-profit data from the bonus criteria regressions, however, due to small for-profit sample sizes.

¹⁷ Case mix is likely to be endogenous, since the incentives offered to a CEO may influence the cases that the CEO encourages the hospital to admit. Therefore, in our alternative set of regressions, we instrumented for case mix using the rank order of that variable. The estimates from this regression and all others that are referenced in the paper but not reported in the tables can be accessed via the Institute for Policy Research website at Northwestern University. The URL is www.northwestern.edu/IPR.

¹⁸ The exceptions were the probit regressions that predict whether a given hospital pays bonuses that are based on measures of financial performance or quality. In the former regression, inclusion of the census region dummies resulted in a slightly more precise measurement of the differences across institutional forms; in the latter regression, the census region dummies had the opposite effect, increasing the standard errors of the estimated coefficients. In all regressions, the rank order of coefficients was unaffected by the set of location dummies employed.

¹⁹ It is possible that different institutional forms pay bonuses in more or less explicit ways. For example, for-profits may pay explicit bonuses at the end of the year, whereas nonprofits—mindful of a possible distaste on the part of donors for the payment of large bonuses to management—may instead try to disguise bonuses by rolling them into the coming year's salary. To the extent that this occurs, our results will overstate differences in the strength of incentives across institutional forms.

²⁰ It is not obvious that one approach is superior to the other. The approach reported here will tend to understate the average bonus paid, conditional on having a bonus program, whereas the alternative approach will undoubtedly overstate it. Leaving a question unanswered on the survey may indicate either that the answer is zero or that the respondent neglected to provide an answer. We have no means of checking the data to determine the difference between zeros and errors. Of the 340 bonuses that we coded as zeros in the results reported here, 64 were recorded as zero values in the original data, and 276 were recorded as blank values.

²¹ We assumed that the distribution of salary was lognormal. We also experimented with alternative specifications in which the total beds and job points regressors were logged, and in which the dollar value of salary (rather than its log) was used as a dependent variable. The key findings were not sensitive to the specification employed, so the results of these alternative specifications are not reported here.

²² We also estimated, but do not report here, an ordinary least squares regression of the sum of base pay and bonus on ownership dummies and controls. The results showed that for-profits paid the highest bonus-plus-base, other things equal, while government hospitals paid the lowest. Religious and secular nonprofits occupied an intermediate position and did not differ significantly from each other.

²³ We also examined the relative propensities of the three different institutional forms to pay bonuses based on the more specific criterion of cost minimization (not reported in the tables). Here again, we found that religious nonprofits were most likely to utilize this criterion, whereas governmental hospitals were least likely to do so. With the exception of the difference between religious nonprofits and governmental institutions, all measured differences between the distribution-constrained organizational forms were insignificant.

²⁴ To compute this result, we re-ran the base salary regressions including only a single ownership type dummy that was equal to one if the organization was constrained by a nondistribution constraint and zero otherwise. The number reported here is the coefficient on that dummy variable (which was significant), multiplied by one thousand.

²⁵ Ideally, we would have liked to incorporate various proxies for CEO productivity (age, education, experience, etc.) into the models presented here in order to control for heterogeneity in executive abilities. Unfortunately, the data do not contain such information. Even if such data were available, however, unobserved heterogeneity would likely remain as a result of differences across managers in characteristics that are inherently difficult to quantify, such as motivation.

²⁶ Organizations bound by the nondistribution constraint are *not* prohibited from paying very large bonuses, only from tying them closely to profits. However, even this restriction may be sufficient to drive the high performers into the for-profit sector. Additionally, organizations bound by a nondistribution constraint may feel constrained for separate reasons—e.g., donor preferences—and therefore may not offer strong incentives, lest the advantages in terms of increased profit be more than offset by reduced donations. (For an analysis of such revenue interdependence see Okten and Weisbrod 1999.)

²⁷ For a recent pay-performance study of private university and college presidents, see Ehrenberg et al. (2000).

Table 1
Sample Means and Standard Deviations: Hospital CEOs

	Pooled Data	Religious Nonprofit	Secular Nonprofit	Government	For-profit
SALARY (000's)	128.41 48.87	139.33 43.72	141.91 51.72	126.41 45.20	102.71 36.76
BONUS (000's)	19.62 35.16	8.07 17.39	10.24 17.51	6.86 21.29	43.86 50.48
BONUS ELIGIBLE (1/0)	0.65 0.48	0.43 0.50	0.67 0.47	0.28 0.45	0.85 0.36
REWARD FINANCIAL PERFORMANCE (1/0)	0.17 0.38	0.15 0.36	0.30 0.46	0.09 0.29	0.01 0.12
REWARD QUALITY OF CARE (1/0)	0.08 0.27	0.11 0.31	0.13 0.34	0.03 0.18	0.01 0.10
INCUMBENT (1/0)	0.50 0.50	0.47 0.50	0.37 0.48	0.34 0.48	0.77 0.42
JOB POINTS	1516.69 488.52	1540.17 406.90	1635.01 508.71	1796.09 723.05	1244.58 226.53
SPECIALTY (1/0)	0.02 0.13	0 0	0.04 0.19	0 0	0 0
TOTAL BEDS	231.51 163.03	252.02 151.26	257.51 178.73	295.30 217.17	162.44 88.03
LOCATED IN AN MSA (1/0)	0.75 0.44	0.75 0.44	0.78 0.42	0.63 0.49	0.73 0.44
LOCATED IN THE NORTHEAST (1/0)	0.10 0.30	0.09 0.29	0.19 0.40	0 0	0 0
LOCATED IN THE SOUTH (1/0)	0.41 0.49	0.22 0.42	0.24 0.43	0.55 0.50	0.71 0.45
LOCATED IN THE MIDWEST (1/0)	0.23 0.42	0.44 0.50	0.27 0.45	0.22 0.42	0.06 0.23
LOCATED IN THE WEST (1/0)	0.26 0.44	0.25 0.43	0.29 0.46	0.23 0.43	0.23 0.42
Observations	730	122	326	64	218

Standard deviations are in small print.

Table 2

Regressions of Salaries, Bonuses, and the Ratio of Bonus to Salary, on Controls and Ownership Status

	Salary	Bonus	Bonus/Salary	Bonus Eligible (1/0)
CONSTANT	4.018 *** 0.052	54.680 *** 7.796	0.627 *** 0.076	1.0802 *** 0.169
RELIGIOUS NONPROFIT	0.159 *** 0.033	-51.384 *** 5.970	-0.617 *** 0.050	-1.297 *** 0.172
SECULAR NONPROFIT	0.106 *** 0.029	-40.768 *** 4.427	-0.554 *** 0.042	-0.6482 *** 0.146
GOVERNMENTAL	-0.030 0.040	-61.722 *** 10.518	-0.682 *** 0.067	-1.8015 *** 0.210
SPECIALTY HOSPITAL	0.289 *** 0.062	20.621 ** 8.832	0.130 0.113	0.5917 0.445
TOTAL BEDS	0.00043 *** 0.00014	0.036 * 0.020	0.00040 ** 0.00020	0.0011 *** 0.0004
JOB POINTS	0.00031 *** 0.00005	-0.013 ** 0.006	-0.00010 0.00010	
INCUMBENT	-0.032 0.020	-4.526 * 2.596	-0.105 *** 0.031	
REWARD FINANCIAL PERFORMANCE		10.210 *** 3.133	0.179 *** 0.050	
REWARD QUALITY		6.463 4.448	0.003 0.064	
LOCATED IN AN MSA	0.163 *** 0.023	-0.883 2.796	-0.029 0.036	-0.1924 0.132
LOCATED IN THE NORTHEAST	0.080 ** 0.037	-16.006 *** 6.504	-0.175 *** 0.060	-0.4863 *** 0.186
LOCATED IN THE SOUTH	0.009 0.024	-6.229 ** 2.998	-0.061 * 0.037	-0.1082 0.135
LOCATED IN THE MIDWEST	0.005 0.027	-8.002 ** 3.536	-0.067 0.042	-0.1141 0.146
Log Likelihood	-3.227	-2140.456	-309.843	-412.548
Chi-Squared Value	23.22 ***	9.15 ***	5.16 *	47.84 ***
Observations	730	730	730	730
Number of Nonzero Values	730	390	390	473
Expected Value of Dependent Variable:				
Religious Nonprofit	130.71	11.31	0.057	0.419
Secular Nonprofit	123.99	15.78	0.077	0.671
Governmental	108.17	7.90	0.041	0.239
For-Profit	111.47	42.10	0.439	0.863

The base case is the for-profit hospital located in the west region. Salary and bonus are expressed in thousands of dollars. Standard errors are in small print. The salary specification is ordinary least squares with robust standard errors. The bonus and bonus/salary specifications are tobit with robust standard errors. The bonus eligible specification, in which the dependent variable is equal to one if the CEO is determined to be bonus eligible and zero otherwise, is a probit. *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Table 3
The Probabilities of Offering a Bonus, Rewarding Financial Performance, and Rewarding Quality

	Reward Financial Performance (1/0)?	Reward Quality (1/0)?
CONSTANT	1.174 ** 0.599	-0.521 0.501
RELIGIOUS NONPROFIT	-	-
SECULAR NONPROFIT	-0.047 0.384	-0.700 ** 0.312
GOVERNMENTAL	-0.766 0.582	-1.009 * 0.577
SPECIALTY HOSPITAL	-0.618 0.599	0.819 0.586
TOTAL BEDS	0.0006 0.0008	0.0004 0.0006
LOCATED IN AN MSA	-0.654 0.439	-0.071 0.337
LOCATED IN THE NORTHEAST	0.392 0.443	1.204 *** 0.419
LOCATED IN THE SOUTH	0.304 0.362	0.759 ** 0.380
LOCATED IN THE MIDWEST	0.415 0.358	0.894 ** 0.370
Log Likelihood	-63.114	-89.598
Chi-Squared Value (Primary Hypothesis)	2.29	5.66 *
Number of Observations	147	147
Number of Events	122	58

Expected Probability of:	Rewarding Financial Performance	Rewarding Quality
Religious Nonprofit	0.863	0.621
Secular Nonprofit	0.852	0.348
Governmental	0.628	0.242
For-profit	-	-

The dependent variables are equal to one if the organization rewards the listed criterion, and zero otherwise. The sample is restricted to those organizations offering a performance-based bonus. It omits observations on for-profits due to small sample sizes. The base case is the religious nonprofit hospital located in the west region as the base case. Both regressions are probits. Standard errors are in small print.
 *** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Table 4
Summary of Differences in Dependent Variables Across Ownership Types

Differences Between Ownership Types	Base Salary	Bonus	Ratio of Bonus to Base Salary	Probability of Offering Bonus Incentives	Probability of Rewarding Financial Performance	Probability of Rewarding Quality of Care
Religious Nonprofit - Secular Nonprofit	6.72 **	-4.47	-0.020	-0.253 ***	0.011	0.273 **
Religious Nonprofit - Governmental	22.54 ***	3.42	0.016	0.180 **	0.235	0.379 **
Religious Nonprofit - For-Profit	19.24 ***	-30.78 ***	-0.382 ***	-0.444 ***	-0.137(e) **	0.621(e) ***
Secular Nonprofit - Governmental	15.82 ***	7.88 **	0.036 **	0.432 ***	0.224	0.106
Secular Nonprofit - For-Profit	12.52 ***	-26.32 ***	-0.362 ***	-0.191 ***	-0.148(e) ***	0.348(e) ***
Governmental - For-Profit	-3.30	-34.20 ***	-0.398 ***	-0.624 ***	-0.372(e) ***	0.242(e) ***

Differences for salaries and bonuses are reported in thousands of dollars. Note that predicted probabilities of rewarding financial performance and quality are based on reduced sample sizes.

(e): Small sample sizes for for-profits precluded the direct estimation of these differences. The difference provided here is the difference between the predicted value for the distribution-constrained institutional form and the "pure" for-profit, which rewards financial performance with probability 1 and quality of care with probability 0.

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.